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Management of the California State Water Project

PETE WILSON, *Governor* STATE OF CALIFORNIA

DOUGLAS P. WHEELER, *Secretary for Resources* THE RESOURCES AGENCY

DAVID N. KENNEDY, *Director* DEPARTMENT OF WATER RESOURCES

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Cover: In 1992, with the help of water purchases and transfers, water conservation, and other water management techniques, the State Water Project delivered over 2 million acre-feet of water for municipal and industrial, agricultural, recreation, and fish and wildlife uses, mitigating the effects of six years of drought in California.
Photos: top- #BB-64-1; left- #8072-64; right- #A-1 1-184
Photographs by the Department of Water Resources

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State of California
The Resources Agency
Department of Water Resources

Pete Wilson
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Director
Department of Water Resources

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Foreword

This edition of the Bulletin 132 series is the thirty-first annual summary of the operation and management activities of the California State Water Project. Bulletin 132-93 reports on the 1991–92 water year, reviews project operations for the 1992 calendar year, and presents an analysis of project costs and financing though June 30, 1993. Forecasts of water supply needs as well as power requirements and resources are also included. In addition, the bulletin discusses activities and events between July 1, 1992, and June 30, 1993, that significantly affect management of the State Water Project. Programs to design and construct new project facilities, augment water supplies, and protect the environment are highlighted. As usual, Appendix B of this document presents data and computations used to determine the State Water Project contractors' Statements of Charges for 1994.

DAVID N. KENNEDY
Director

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Introduction
A Year in Review

On February 24, 1993, in response to a series of record-breaking storms that replenished depleted reservoirs throughout the state and deposited snowpack in the Sierra Nevada, Governor Pete Wilson declared an end to what is widely acknowledged as the most severe drought in recent California history. Five of the six water years during the 1987–92 period were classified as critically dry while the sixth was classified as dry. As one of the longest droughts on record, the 1987–92 drought also affected many more communities and farming operations than earlier droughts due to the state's increased population.

The reporting period of this Bulletin 132 coincides with the last year of the drought and provides an opportunity to discuss the management of the State Water Project during a period of unparalleled stress to water systems throughout California.

Response to Drought

Absent a drought, many Californians depend upon the ability of water managers to routinely deliver needed water supplies with their water storage and delivery systems. However, these systems are generally designed and operated to provide water supplies through short-term dry periods and thus were strained by the duration and severity of the 6-year drought. Regional water managers therefore resorted to programs involving water purchases and transfers together with nontraditional actions such as voluntary and mandatory water rationing, tiered pricing, and water conservation.

The Department, through its management of SWP, assumed a lead role among water agencies in meeting the water supply crisis and turned to innovative programs for providing relief to its water contractors and other agencies with critical water needs. With a series of aggressive, controlled programs, SWP was able to mitigate drought-related hardships by distributing water supplies among water agencies and communities in need. The success of this effort is reflected in the fact that, for the first 3 years of the drought, by following operational rules and criteria which had been developed with the long-term SWP contractors, SWP delivered 100 percent of all SWP water contractor requests. In 1990, the fourth year of drought, SWP was able to meet 100 percent of requests by urban water contractors and 100 percent of requests

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for water rights contractors (water agencies whose delivery rights pre-date construction of SWP) while agricultural contractors received 50 percent of their supply. In the fifth and sixth years of continuing dry conditions and dwindling reservoir storage and snowpack, SWP managed to meet 30 percent and 45 percent, respectively, of urban water contractor requests and 50 percent of water rights contractors' requests.

A key component of the Department's drought mitigation efforts was the creation and administration, pursuant to the governor's order, of a Drought Water Bank in 1991 and again in 1992. These water banks allowed water to be purchased from willing sellers and sold to areas of critical need. The 1991 Drought Water Bank processed 350 purchase contracts for a total of 820,665 acre-feet sold to 12 urban and agricultural agencies. SWP purchased 265,558 acre-feet of this amount as carryover storage for water contractors' 1992 water needs. Building upon experience gained from administering the 1991 Drought Water Bank, the Department acquired supplies for the 1992 Drought Water Bank after signed contracts were obtained from the parties purchasing water. The 1992 Drought Water Bank produced net supplies of 63,518 acre-feet for urban, and fish and wildlife purposes, and redistributed 95,250 acre-feet for agricultural purposes.

Although the drought was declared officially over as of February 24, 1993, water managers have discovered that many of their innovative drought relief measures will have continuing application in today's era of increasing competition for limited supplies. Thus, the Department is investigating the benefits of maintaining programs that proved effective in managing the drought crisis as a way to meet the continuing challenge of providing reliable water supplies to the state while also addressing environmental concerns in the Delta.

Water Supply Conditions

The variability of water supply conditions in California is a major reason for water supply projects such as the State Water Project. Therefore, an annual discussion of SWP activities generally includes a discussion of the water supply conditions that prevailed during the year. For Bulletin 132-93, the reporting period focuses on water year 1991–92 and also includes a preliminary discussion of water year 1992–93 due to its significant impact on the then-current drought.

Water Year 1991–92

The October 1 start date of the 1991–92 water year foresaw no relief from the continuing California drought. As of that date, storage in the state's 155 major reservoirs totaled 13.8 million acre-feet, which was about 61 percent of average or just 37 percent of capacity. The National Weather Service issued a 90-day outlook that called for below-normal rainfall and above-normal temperatures in most of the state.

Although a late October storm pushed monthly precipitation to 120 percent of average, the unfolding 1991–92 water year continued to worsen. The Lake Tahoe water elevation fell to a new record low of 6,221.64 feet in late November and would fall even lower by the end of the water year. December 1 storage in the state's 155 major reservoirs fell to 59 percent of average and 34 percent of capacity. Reservoirs in the federally operated Central Valley Project system north of the Delta stored 700 thousand acre-feet less than in 1990.

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Increasingly concerned water planners completed five 1992 Water Supply Option Workshops in December 1991. The workshops focused on methods for dealing with another year of drought. Carryover storage, increased ground water use, inter-area transfers, additional Colorado River water, conservation, reclaimed water, and the state's Drought Water Bank were all considered for coping with the drought.

In February and March the drought was weakened by a series of storms that brought 16 continuous days of rain and about 12 inches of precipitation to Northern California. Governor Pete Wilson declared a State of Emergency in five Southern California counties and the city of Los Angeles as the region suffered four deaths and over $100 million in damage from the effects of a fierce storm in early February.

By May, although the statewide water year precipitation average was about 85 percent of normal, considerable variation existed regionally. The Central Valley, Central Coast, Southern Coast, South Lahontan, and Colorado Desert areas received near-normal or well-above-normal precipitation; however, other regions continued to experience severe drought conditions. For the central and southern Sierra, the 6-year period from 1987 to 1992 was the driest in history by a wide margin. While the state's snowpack on May 1 of the 1990–91 water year was 65 percent of normal, the snowpack on May 1 of water year 1991–92 was, by comparison, only 25 percent of average. Adding to water supply problems, a warm 1992 summer caused 38 percent more surface water usage than during the same period in 1991.

Water year 1991–92 ended on September 30, 1992, with annual data that illustrated the severity of California's sixth year of drought:

- The past 6 years constituted the driest recorded 6-year period in California history as measured by Central Valley runoff
- Stream flows in the San Joaquin basin were 18 percent lower than during the "great" drought of 1929–34
- Although statewide precipitation was 86 percent of normal, runoff was only 43 percent of normal
- Colorado River system storage, a major source of water for southern California, was the lowest it had been during the 6 years of drought
- Lake Tahoe fell to its lowest recorded elevation (6,220.80 feet)
- Heavy ground water pumping left ground water levels in some San Joaquin Valley areas lower than at the end of the 1977 drought

Water Year 1992–93[1]

Storms in late October and early November 1992 produced statewide precipitation for those 2 months that was 170 percent of normal; however, dry conditions returned and caused water supply planners to consider a seventh year of drought.

Significant relief from the drought began with a series of heavy storms in December that continued into January and February with rainfall over much of the state. For the first time since 1986, statewide flooding dominated the California news. Reservoir storage in the state's major 155 reservoirs increased by 3 million acre-feet (MAF) in February alone to about 85 percent of average or 21 MAF.

[1]Information about the 1992-93 water year is preliminary. Detailed discussion of water year 1992-93 will be found in Bulletin 132-94, scheduled for publication in early 1995.

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On February 24, with statewide precipitation since the beginning of the water year at 155 percent of average and Sierra snowpack water content at 170 percent of average, Governor Wilson declared an end to the drought.

Favorable water supply conditions continued through the year, and on August 1, 1993, the state's 155 major reservoirs contained about 108 percent of average storage or 29 MAF, which was 13 MAF more than the previous year at the same time. The heavy Sierra snowpack contributed to July runoff of about 140 percent of normal. Statewide precipitation from October 1, 1992, through August 1, 1993, was about 150 percent of average.

Water Deliveries through State Water Project Facilities

The Department utilizes the State Water Project to deliver water for a variety of beneficial uses. In 1992 SWP was operated to:

- Deliver entitlement and entitlement-related water to 25 SWP water agencies pursuant to long-term water contracts
- Convey and store water for other public agencies through special agreements
- Provide water for environmental needs, and for wildlife and recreational uses
- Store, release, and deliver local runoff water from SWP facilities to agencies that hold local water rights

In calendar year 1992 the total amount of water conveyed through SWP to water contractors and other agencies for the above purposes was 2,233,982 acre-feet. That amount included 1,471,199 acre-feet of entitlement and 2,605 acre-feet of entitlement-related (recreation) water delivered to SWP contractors and 760,178 net acre-feet of nonproject water conveyed for other agencies. Detailed information about water deliveries made during 1992 and prior years can be found in Chapter 6, "Delivering Water."

Contract Deliveries to State Water Project Contractors

In 1992 SWP delivered water to 25 of the 29 agencies or districts that have a contract for water delivery service with the Department. Deliveries other than Drought Water Bank deliveries included the following types and amounts of water:

Current-year entitlement, 1,375,433 acre-feet (including 16,476 acre-feet of transferred entitlement)
Carryover entitlement, 92,282 acre-feet
Make-up water, 3,484 acre-feet
Surplus water (unscheduled), 1,156 acre-feet
Recreation and fish and wildlife water, 2,605 acre-feet
Loaned water, 14,949 acre-feet

Chapter 6 includes definitions of these water types and presents explanations of deliveries in each category. Tables 6-1, 6-2, and 6-3 contain detailed statistical information about SWP entitlement deliveries.

Deliveries of Non-SWP Water

In addition to delivering project water to long-term contractors, SWP facilities were also used in 1992 to transfer nonproject water[2] for other agencies such as the U.S. Bureau of Reclamation and to transfer water purchased through the 1991 and 1992 Drought Water Banks.

[2]Nonproject water is generally defined as water that is acquired by agencies other than the Department pursuant to special agreements and which is then transferred by, or stored in, SWP facilities for immediate or future delivery.

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Water transfers are recognized as an efficient way to use existing water storage and conveyance facilities. During the 1980s, increasing environmental concerns and drought related impacts led to a state law which directed water officials to "facilitate the voluntary transfer of water and water rights where it is consistent with the public welfare of the place of export and place of import."

Through its management of SWP, the Department is in a unique position to serve as a water transfer facilitator and convey water via SWP interconnections with other water delivery systems from sources of supply to areas of need.

In 1992 SWP conveyed nonproject water in the following categories and amounts:

Central Valley Project water conveyed through SWP facilities, 38,640 acre-feet including CVP transfers and exchanges

Drought Water Bank water, 71,115 acre-feet (includes 7,614 and 63,501 acre-feet for 1991 and 1992 Drought Water Banks, respectively)

Water rights permit water, 640,055 acre-feet

The SWP also conveyed a total of 30,381 acre-feet of nonproject water, including habitat preservation water, under various special agreements. While SWP conveyed 71,115 of Drought Water Bank water, the remaining Drought Water Bank water was conveyed by USBR. For additional information about nonproject water conveyed in 1992, see the section entitled "Nonproject Water" and Table 6-2 in Chapter 6.

Protecting the Environment

In 1992 and 1993, the Department's operation of SWP was subject to several decisions by jurisdictional agencies. Those decisions, which have been characterized as ushering in "a new era of water management in California," are included in the summaries presented below.

Minimizing any adverse impacts of SWP operations on the environment has always been a consideration of the Department. The Feather River Fish Hatchery and John E. Skinner Fish Protective Facilities were constructed to offset or minimize SWP impacts on fish.

The Department has since developed many additional programs to eliminate, minimize, or offset adverse environmental impacts while operating and maintaining SWP. These programs include:

- Examining impacts of water transfers
- Minimizing environmental impacts along the SWP right-of-way
- Minimizing impacts of water operations on Delta smelt and winter-run Chinook salmon
- Reducing losses of fish at Banks Pumping Plant
- Funding programs to increase fish populations
- Identifying and protecting threatened and endangered species in Suisun Marsh and maintaining the marsh's brackish habitat

Protecting the Delta

Many of the Department's environmental programs are designed to protect and restore the Sacramento-San Joaquin Delta by controlling salinity while providing good-quality water supplies for fish and wildlife protection and enhancement, and for municipal, industrial, agricultural, and recreational uses.

The Delta, with 738,000 acres of land interlaced with hundreds of miles of waterways and natural runoff and food flows from the Sacramento, San Joaquin, Mokelumne, and Cosumnes Rivers, supports hundreds of species of fish, wildlife, and plants. In addition, the Delta is an estuary, a constantly

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changing area where tidal and river currents meet and where salinity ranges between the extremes of ocean and fresh waters. That estuary provides a habitat for fish and wildlife, including wildfowl on the Pacific Flyway.

The Delta also serves as part of a large water delivery system designed to export water from the northern part of the state to at least 20 million Californians in the western and southern parts. It provides almost 55 percent of the state's water supply, including 40 percent of its drinking water.

Despite the environmentally conscious programs and efforts of the Department and other cooperating agencies, concerns over the health of the Bay-Delta estuary have increased.

Complying with recent regulations related to Delta water quality and protection of threatened and endangered species in the Delta has dramatically affected SWP operations. These regulations and their impacts on SWP operations are summarized below.

Biological Opinions

During 1992 and 1993 protecting winter-run Chinook salmon and Delta smelt were factors in controlling SWP operations in the Delta. These operational requirements were the result of formal consultations and resulting biological opinions on protecting endangered and threatened fish species in the Delta. The opinions determine if project operations will jeopardize the continued existence of the listed species and may include reasonable and prudent operational measures necessary to avoid jeopardy. During 1992 and the first six months of 1993 USBR and the Department were issued three opinions by the appropriate agencies to protect winter-run Chinook and Delta smelt. Their issue dates and descriptions follow.

- February 14, 1992: A 1-year opinion issued by the National Marine Fisheries Service on winter-run Chinook salmon
- February 12, 1993: A long-term opinion issued by NMFS on winter-run Chinook salmon
- May 26, 1993: A 1-year opinion issued by the U.S. Fish and Wildlife Service on Delta smelt

The first opinions placed restrictions on the operations of both projects to alleviate adverse impacts on the winter-run salmon. These operational restrictions included providing minimum flows below Keswick Dam, providing temperature control in the reach between Keswick Dam and Balls Ferry, opening the Red Bluff Diversion Dam gates for a longer period, keeping the Delta Cross Channel Gates closed through April 30, closing the Suisun Marsh Salinity Control Gates, and limiting flow reversal in the lower San Joaquin River.

The Department has also been actively involved in developing methods to protect the Delta smelt, which spends its 1-year life cycle only in the Sacramento-San Joaquin estuary. In March 1993 the Delta smelt was listed as *threatened* by USFWS. The California Fish and Game Commission denied listing the smelt as endangered in June 1990; however, a new petition was filed with the commission in March 1993, and on June 17, 1993, the Delta smelt was listed as threatened under the state act. When the commission first denied listing of the Delta smelt as endangered, the Department agreed to fund a 3-year study to obtain additional information needed to assess its population.

The Department also summarized all available information about the Delta smelt

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for inclusion in a report published in late 1993. The information will be used to analyze the effects the Department's current and future projects may have on the smelt.

Water Quality

The Department helps to protect the Delta by measuring physical, chemical, and biological properties of water in the Delta. The measurements are used to identify significant changes in water quality that may be related to SWP operations. The Department also monitors water and soil salinity at locations throughout Suisun Marsh as part of a program to ensure the marsh remains a brackish-water environment and to determine the effects on waterfowl.

These measurements are compared with standards adopted for the Delta by the State Water Resources Control Board, the agency charged with overseeing water rights and water quality for California. The Board in 1978 issued Water Rights Decision 1485: Sacramento-San Joaquin Delta and Suisun Marsh, which requires SWP and CVP to maintain water quality in the Delta at levels to protect vested rights and in-stream uses.

Bay-Delta Hearings

New Bay-Delta proceedings began in 1987 to replace the Decision 1485 standards. The proceedings are significant because the Board's decision will profoundly affect all Delta water users and fish and wildlife inhabitants. During the course of the proceedings, the Board issued draft Decision 1630, which contained interim quality and flow and export standards. The Department provided comments that indicated that the decision would have substantial adverse impacts on the delivery capability of SWP and CVP. Ultimately, the Board decided not to adopt draft Decision 1630 as an interim measure but will continue to consider the standards as an alternative in its environmental impact report for establishing long-term standards to replace Decision 1485. Currently, the Board is reviewing the regulatory needs of the estuary for the short term.

Bay-Delta Oversight Council

On December 9, 1992, Governor Wilson signed an executive order creating the Bay-Delta Oversight Council to assist and advise the administration in designing its comprehensive program to resolve the many problems affecting the Bay-Delta estuary. Twenty-two members are appointed to BDOC from a wide variety of interests and geographical areas. The BDOC process is expected to take 3 years to develop long-term solutions that will meet urban, agricultural, and environmental needs and to complete the work necessary to meet federal and state legal requirements.

The governor charged BDOC with developing solutions that "provide safe, reliable water supplies for cities, adequate long-term water supplies at a reasonable cost for agriculture, and the restoration and protection of fish, wildlife, and threatened and endangered species." In addition, "the physical integrity of Delta channels and levees must be addressed," he stated.

The BDOC will assist and advise the Water Policy Council, which was also created by the executive order. Members of the WPC include the secretaries, directors, and other heads of state offices, including the Department, who have interests in or concerns about state water policy. The WPC is chaired by the Secretary for Resources.

BDOC convened throughout 1993 to be briefed on the many issues surrounding the Delta and to develop objectives, alter-

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native solutions and criteria for evaluating the alternatives.

Central Valley Project Improvement Act of 1992

In 1992 Congress enacted and President George Bush signed legislation that included the Central Valley Project Improvement Act, making protection, restoration, and enhancement of fish and wildlife a major purpose of CVP (Public Law 102-575; 106 Stat. 4706). Because it requires specific water supply actions, the CVPIA directly affects the joint activities of CVP and SWP. The act indirectly influences SWP operations by addressing several Delta environmental issues.

The CVPIA is designed to (1) protect, restore, and enhance fish, wildlife, and associated habitats in the Central Valley and Trinity River basins; (2) address impacts of CVP on fish, wildlife, and associated habitats; (3) improve operational flexibility of the CVP; (4) encourage expanded use of voluntary water transfers and water conservation; (5) contribute to efforts to protect the Sacramento-San Joaquin Delta and estuary; and (6) achieve a reasonable balance among competing demands for CVP water, including fish and wildlife, agricultural, municipal, and power uses.

In addition to imposing further limitations on new and renewed CVP contracts and encouraging voluntary transfers of CVP water, the CVPIA requires the Secretary of the Interior to implement within 3 years a program to ensure, by the year 2002, natural production of anadromous fish sustainable at population levels twice the average sustained from 1967 to 1991. The act also requires the secretary to dedicate and manage 800,000 acre-feet of CVP yield for fish-and-wildlife purposes. This water is additional to firm supplies of water for wildlife refuges specified in the USBR Refuge Water Supply Report.

The CVPIA also directs the secretary to carry out specified measures to restore fish and wildlife and their habitat. Several measures, including installing a structural temperature control device at Shasta Dam, constructing specified Delta barriers, and acquiring supplemental wildlife refuge water, require cost sharing by the state of California. To fund specific measures, the Department, USBR, U.S. Fish and Wildlife Service, and Department of Fish and Game are developing a master cost-sharing agreement, with cost-share provisions negotiated separately for each restoration action.

USBR is establishing interim guidelines and procedures to implement the CVPIA requirements. The Department is working closely with USBR as these programs develop to manage any effects on SWP operations and minimize adverse impacts to threatened and endangered species.

Developing Water Supplies

Currently, the Department is involved in planning a surface reservoir, Los Banos Grandes, and developing a subsurface reservoir, Kern Water Bank. Both of these programs have been impacted by the uncertainties regarding firm water supplies created by the standards contained in the draft Decision 1630 and the biological opinions associated with threatened and endangered fish species.

Los Banos Grandes

A key component of the Department's effort to meet California's water needs has been through banking excess winter flows from the Delta in south-of-Delta storage. That

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banking process helps to reduce demands for water exported through the Delta in the summer, thereby alleviating concerns with meeting water quality standards and minimizing adverse impacts on threatened and endangered species.

Los Banos Grandes, authorized by the California legislature in 1984, is designed to be a primary south-of-the-Delta water bank for the Department. The facilities, consisting of a dam, an off-stream storage reservoir, several saddle dams, and two pumping-generating plants, will be located in Merced County on Los Banos Creek. A pumping-generating system would fill the reservoir from the California Aqueduct and recover energy when releases are made.

In the face of new regulation under the federal Endangered Species Act, the state water contractors requested that the Department halt all planning, design, and land acquisition related to the Los Banos Grandes program. Their request was prompted, in part, by concerns associated with environmental measures designed to protect winter-run Chinook salmon and uncertainties about the utility of additional storage south of the Delta in light of constraints on SWP pumping proposed in the draft Decision 1630. Consequently, the Department, in coordination with the water contractors, developed a reduced level of program activities and funding for the next several years.

In 1993 the Department acquired 1,718 acres of property that was for sale and that may be needed for the proposed Los Banos Grandes facilities and for mitigation. The Department purchased these lands to preserve the state's option to construct the Los Banos Grandes facilities. The decision to use the lands acquired under this action will not be made until additional feasibility studies and an EIR for the Los Banos Grandes facilities have been completed. In the meantime, the land's agricultural use will continue.

Kern Water Bank

The Kern Water Bank, a subsurface reservoir, is designed to store and receive SWP water in the ground water basin during wet years. Later, during dry years, water can be extracted for SWP purposes or left in place and substituted for entitlement water that otherwise would be delivered to Kern County.

The Kern Water Bank, as currently proposed, consists of separate projects or elements. One element, the Kern Fan Element, is proposed by the Department. To develop the Kern Fan Element the Department will construct recharge basins, extraction wells, and conveyance facilities and use other facilities already constructed as part of the La Hacienda Ground Water Program. As part of the La Hacienda program, the Department purchased 98,005 acre-feet of recharged ground water from La Hacienda, Inc., in 1990. To extract the water, the Department constructed extraction and conveyance facilities. About 15,000 acre-feet was extracted in 1992.

Stage one of the element will have a storage capacity of about 1 million acre-feet with water supply benefits of about 140,000 acre-feet per year.

To operate the Kern Fan Element, the Department thus far has prepared several environmental documents, including a draft supplemental environmental impact report. However, in February 1993 program activities were redirected to evaluate the impacts of draft Decision 1630 and the then-pending pumping restrictions associated with threatened and endangered species. Several actions were taken by the Department as a result of reevaluating the impact of Delta

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uncertainties on the Kern Water Bank. These included:

- Halting design work for facilities of the First Stage Kern Fan Element
- Halting preparation of contracts for regional monitoring of Kern Fan Element impacts and for water quality monitoring in petroleum production areas
- Halting new feasibility work for the local elements of the Kern Water Bank and the second stage of the Kern Fan Element until a solution to the Delta problems is determined

When the Department completes its evaluation of the impacts of pumping restrictions on the Kern Water Bank, activities will gradually be adjusted to an appropriate level. Minimum activities will include coordinating Kern County ground water planning efforts; continuing minimal ground water monitoring and reporting; coordinating related Department programs with the governmental agencies and Kern County interests; managing land; operating La Hacienda facilities; and coordinating local use of project lands and facilities.

Conjunctive-Use Programs

The Department has actively promoted conjunctive-use programs as a water management tool since the late 1970s. In a conjunctive-use program under study, the Department proposes financing the construction of facilities in exchange for water. Such a program provides SWP with a relatively low-cost method for storing water in times of above-average supplies for use during dry periods.

The Department is working with two agencies in San Joaquin County on a proposal for releasing CVP water from the New Melones Dam in exchange for financing facilities. Also, in 1992 the Department expanded its investigation of the potential for conjunctive use of surface water and ground water in the Sacramento Valley.

At this time the Department is preparing a draft environmental impact report and statement for the San Joaquin County program; the document is scheduled for release in 1994. Issues of concern to be identified in the report include fishery flows, water quality, and ground water levels.

Coastal Branch, Phase II

In June 1992 two water contractors, Santa Barbara County Flood Control and Water Conservation District and San Luis Obispo County Flood Control and Water Conservation District, requested that the Department proceed with completion of the Coastal Aqueduct, Phase II. These two contractors initially requested an annual total of 54,506 acre-feet of entitlement deliveries through the facilities. Final design activities and purchase of rights-of-way began immediately. Construction was scheduled to begin in July 1993, subject to acquisition of the appropriate permits and certificates.

Prior to the scheduled construction date, both contractors changed their original entitlement requests. As of July 1993, the total entitlement request had been revised downward to approximately 46,400 acre-feet per year. Also as of that date, the start of construction was rescheduled for later in 1993 in anticipation of obtaining all necessary agreements and environmental permits. The most critical document being pursued as of July 1993 is a "take" permit from the U.S. Fish and Wildlife Service through a Section 7 (Endangered Species) Consultation.

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Facilities and Deliveries

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1. Water Delivery Facilities

California is a land of contrast, with climate and geography ranging from desert to alpine to subtropical. In an average year some areas in California may receive 2 inches of rain while other areas receive 100 inches or more.

People have settled in all areas of the state, regardless of the amount of rainfall those areas receive. Consequently, California has long been faced with the problem of how best to conserve, control, and deliver water. For example, remains of aqueducts, canals, and dams still may be found near some of California's missions. And in the early twentieth century, several cities—San Francisco and Los Angeles, for example—built aqueducts to bring water from the Sierra Nevada and the Colorado River.

In 1951 the legislature authorized the construction of a water storage and supply system to capture and store rainfall in Northern California and deliver it to areas in Northern and Southern California, the San Francisco Bay Area, and the San Joaquin Valley.

Eight years later the legislature passed the Burns-Porter Act, which provided the mechanism for obtaining funds necessary to construct the initial facilities. In 1960 California voters approved an issue of $1.75 billion general obligation bonds, as authorized in the act, thereby obtaining funds to build the State Water Project.

Today SWP, managed by the Department of Water Resources, is the largest state-built, multipurpose water project in the country. Approximately 20 million of California's 32 million residents receive at least part of their water from SWP, and SWP water is used to irrigate approximately 600,000 acres of farmland. Also, SWP was designed and built to control floods, generate power, and provide recreational opportunities as well as enhance habitats for fish and wildlife (see Chapter 3 for information about recreational facilities).

This chapter contains information about SWP water delivery facilities as well as about methods of financing the construction of those facilities.

Project Design

The State Water Project begins with three small lakes on Feather River tributaries in Plumas County—Lake Davis, Frenchman Lake, and Antelope Lake, all of which are used for recreation.

The branches and forks of the Feather River flow into Lake Oroville, the project's principal reservoir, with a capacity of about

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3.5 million acre-feet. (An acre-foot consists of about 326,000 gallons.)

From Lake Oroville water flows through three hydroelectric power plants, then down the Feather River and Sacramento River before reaching the Delta. From the northern Delta, water is supplied to Napa and Solano Counties through the North Bay Aqueduct, which was completed in 1988.

In the southern Delta, near Byron, Harvey O. Banks Delta Pumping Plant lifts water into Bethany Reservoir. From this small reservoir, the South Bay Pumping Plant lifts water into the South Bay Aqueduct, which was completed in 1962. Through the South Bay Aqueduct, water is supplied to Alameda and Santa Clara Counties. Most of the water from the Bethany Reservoir, however, flows into the Governor Edmund G. Brown California Aqueduct, which winds along the west side of the San Joaquin Valley to O'Neill Forebay. From O'Neill Forebay part of the water is pumped through the William R. Gianelli Pumping-Generating Plant for storage in San Luis Reservoir until needed.

San Luis Reservoir, which has a storage capacity of more than 2 million acre-feet, and the B. F. Sisk San Luis Dam are jointly owned by the Department and the U.S. Bureau of Reclamation. The Department's share of gross storage in the reservoir is 1,067,900 acre-feet of water.

Water not stored in San Luis Reservoir continues to flow south down the valley and is raised 1,069 feet by four pumping plants—Dos Amigos, Buena Vista, John R. Teerink Wheeler Ridge, and Ira J. Chrisman Wind Gap—before reaching the foot of the Tehachapi Mountains.

In the southern San Joaquin Valley, the short Coastal Branch Aqueduct serves agricultural areas west of the California Aqueduct. That branch will be extended to serve Santa Barbara and San Luis Obispo Counties. For additional information about the Coastal Branch Aqueduct, see Chapter 15, "Increasing Storage and Delivery Facilities."

At the Tehachapi Mountains, the A. D. Edmonston Pumping Plant raises the water 1,926 feet—the highest single lift of any pumping plant in the world—to enter 8.5 miles of tunnels and siphons. Once the water has crossed the Tehachapi Mountains, it flows through the California Aqueduct into the Antelope Valley.

In the Antelope Valley, the California Aqueduct divides into two branches, the East Branch and West Branch. The East Branch carries water through the Antelope Valley into Silverwood Lake in the San Bernardino Mountains. From Silverwood Lake, the water enters the San Bernardino Tunnel and drops 1,418 feet into Devil Canyon Powerplant, then flows to Lake Perris, the southernmost SWP reservoir.

Water in the West Branch flows through the William E. Warne Powerplant into Pyramid Lake in Los Angeles County. From Pyramid Lake it flows through the Angeles Tunnel and Castaic Powerplant into Castaic Lake, terminus of the West Branch. For the location of SWP facilities , see Figure 1-1 at the end of this chapter.

The energy needed to operate SWP comes from a variety of its own sources including hydroelectric, coal-fired, and wind-generated plants as well as energy acquired from other utilities.

The project's eight hydroelectric power plants, including three pumping-generating plants, produce enough electricity to reduce SWP's demand for energy significantly. The energy produced—more than 6 billion kilowatt-hours in an average year—is enough to serve the entire needs of the city of San Francisco for one year.

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Water Delivery Facilities

The State Water Project depends on a complex system of reservoirs, dams, power plants, pumping plants, canals, and aqueducts to deliver water. Although initial facilities were completed in 1973, other facilities have been constructed since 1973, and still others are planned for construction in the future.

Initial Facilities

The initial SWP facilities include 22 dams and reservoirs, 14 pumping plants, 4 hydroelectric power plants, 3 pumping-generating plants, and 550 miles of aqueducts and pipelines. Those facilities were designed and built as part of a distribution system that under full development would be capable of delivering the 4.2 million acre-feet of water forecast to be needed 60 years after the project was authorized in 1960. To meet the project's ultimate yield, facilities were scheduled to be built as more water was needed.

For the names and locations of current and projected SWP facilities, see Figure 1-1. For information about the physical characteristics of reservoirs and dams, average amount of energy produced at power plants and required at pumping plants, and the total miles of aqueducts, see Table 1-1 through Table 1-5.[1]

Table 1-1 presents information about the capacity, surface area, and shoreline, if applicable, of SWP's primary reservoirs and storage facilities. Table 1-2 includes information about the crest elevation and length and structural height and volume of primary SWP dams.

Table 1-3 presents information about SWP pumping plants and the average annual amount of energy required to pump water at full development of the project. Data for Edward Hyatt Powerplant, Thermalito Powerplant, and William R. Gianelli Pumping-Generating Plant apply to pumped storage capability. At Edward Hyatt Powerplant and Thermalito Powerplant, pumped storage capability is used only under economically favorable conditions. Also, Buena Vista, John R. Teerink Wheeler Ridge, Ira J. Chrisman Wind Gap, A. D. Edmonston, Pearblossom, Devil's Den, Bluestone, Polonio Pass, and Casmalia Pumping Plants include a spare unit. Devil's Den, Bluestone, Polonio Pass, and Casmalia are future facilities; data are tentative.

The total flow at pumping plants listed in Table 1-3 reflects (1) the total rated capacity of the pumping units (including spare units) at the dynamic head used for the design criteria and (2) operation at maximum efficiency. Maximum operating flows through

TABLE 1-1
Physical Characteristics of Primary Reservoirs and Storage Facilities

Facility	*Gross Capacity (Acre-feet)*	*Surface Area (Acres)*	*Shoreline (Miles)*
Antelope Lake	22,600	930	15
Frenchman Lake	55,500	1,580	21
Lake Davis	84,400	4,030	32
Lake Oroville	3,537,600	15,800	167
Thermalito Forebay	11,700	630	10
Thermalito Afterbay	57,000	4,300	26
Clifton Court Forebay	28,700	2,110	8
Bethany Reservoir	4,800	180	6
Lake Del Valle	77,100	1,050	16
San Luis Reservoir	2,038,800	12,700	65
SWP storage, 1,067,900 AF			
O'Neill Forebay	56,400	2,700	12
SWP storage, 29,500 AF			
Los Banos Grandes (future facility)	1,728,000	12,870	
Los Banos Reservoir	34,600	620	12
Kern Water Bank			
Fan Element	1,000,000		
Other local elements	up to 2,000,000		
Pyramid Lake	171,000	1,300	21
Elderberry Forebay	28,200	460	7
Castaic Lake	324,000	2,240	29
Silverwood Lake	75,000	980	13
Lake Perris	131,000	2,320	10

[1]Names of facilities included in this publication are presented as they were adopted by the California Water Commission as part of the State Water Resources Development System.

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TABLE 1-2

Physical Characteristics of Primary Dams

Facility	*Crest Elevation (Feet)*	*Structural Height (Feet)*	*Crest Length (Feet)*	*Structural Volume (in thousand cubic yards)*
Antelope Dam	5,025	120	1,320	380
Frenchman Dam	5,607	139	720	537
Grizzly Valley Dam	5,785	132	800	253
Oroville Dam	922	770	6,920	80,000
Thermalito Diversion Dam	233	143	1,300	154
Thermalito Forebay Dam	231	91	15,900	1,840
Thermalito Afterbay Dam	142	39	42,000	5,020
Clifton Court Forebay Dam	14	30	36,500	2,440
Bethany Dam	250	121	3,940	1,400
Del Valle Dam	773	235	880	4,150
B. F. Sisk San Luis Dam	554	385	18,600	77,645
O'Neill Dam	233	88	14,350	3,000
Los Banos Detention Dam	384	167	1,370	2,100
Pyramid Dam	2,606	400	1,090	6,860
Castaic Dam	1,535	425	4,900	46,000
Cedar Springs Dam	3,378	249	2,230	7,600
Perris Dam	1,600	128	11,600	20,000

TABLE 1-3

Average Energy Required at Pumping Plants and Pumping Plant Characteristics

Facility and Number of Units	*Normal Static Head (ft)*	*Total Flow at Design Head (cfs)*	*Total Motor Rating (hp)*	*Average Annual Energy Required (in thousand kWh)*
Thermalito (p-g), 3	85-101	9,120	120,000	
E. Hyatt (p-g), 3	410-660	5,610	519,000	
Barker Slough, 9	95-120	228	4,800	13,000
Cordelia, 11	104-439	138	5,600	20,000
H. O. Banks Delta, 11	236-252	10,668	333,000	1,256,000
South Bay, 9	566	330	27,800	163,000
Del Valle, 4	0-38	120	1,000	1,600
W. R. Gianelli (p-g), 8	99-327	11,000	504,000	
SWP share				299,000
Dos Amigos, 6	107-125	15,450	240,000	
SWP share				544,000
Las Perillas, 6	55	461	4,000	15,000
Badger Hill, 6	151	454	11,800	38,000
Devil's Den (future facility), 6	515	150	9,000	50,000
Bluestone (future facility), 6	482	150	9,000	50,000
Polonio Pass (future facility), 6	524	150	9,000	50,000
Casmalia (future facility), 4	362	45	2,400	11,000
Buena Vista, 10	205	5,405	144,500	674,000
J.R. Teerink Wheeler Ridge, 9	233	5,445	150,000	773,000
I. J. Chrisman Wind Gap, 9	518	4,995	330,000	1,645,000
A. D. Edmonston, 14	1,926	4,480	1,120,000	5,821,000
Oso, 8	231	3,252	93,800	338,000
Pearblossom, 9	539-546	2,575	203,200	835,000
Total				**12,596,600**

pumping plants are lower than those listed in the table and depend on the actual capacity of each plant as a unit and pertinent conveyance facility. Motors at William R. Gianelli Pumping-Generating Plant are two-speed units; the value indicated reflects operation at higher revolutions per minute.

Table 1-4 includes information about the amount of energy produced at each facility at full development of SWP. The total flow at power plants reflects (1) the total rated capacity of the generating units at the design dynamic head and (2) operation at maximum efficiency. Total generator rating of Edward Hyatt Powerplant reflects upgrading of the generator units.

Table 1-5 includes information about SWP's three aqueducts and related branches. A small aqueduct, Grizzly Valley Pipeline, serves the city of Portola in the Upper Feather River area but is not included in the table.

The names of facilities included in Table 1-1 through Table 1-5 are listed according to geographical location; the facility at the northernmost point is listed first, and so forth. For locations of SWP facilities, see Figure 1-1 at the end of this chapter.

Recent and Proposed Facilities

When SWP was designed and built, the initial conservation and storage facilities were built to provide only 2.2 million acre-feet of water. Additional facilities were tentatively planned and scheduled to be built as more water was needed. Because of increased costs, lack of suitable sites, and changes in water management practices resulting, in part, from environmental concerns, the construction schedule was not followed.

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Instead, the Department reassessed its plans and developed conservation and storage facilities that incorporate environmental protection as well as contribute to SWP's storage capacity. Developing those projects involved the time-consuming process of finding technically suitable sites and satisfying the many complex environmental procedures, laws, and regulations.

Today, the Department is planning the off-stream storage complex, Los Banos Grandes, and has investigated and developed alternative methods of storing water, including the conjunctive-use ground water storage facility, Kern Water Bank.

Future facilities planned for SWP include dams and reservoirs, pumping plants, and power plants. Information about those facilities follows.

Dams and Reservoirs

Two dams and reservoirs are in the planning stages: either Dippingvat or Schoenfield (Red Bank Project) in Shasta and Tehama Counties and Los Banos Grandes in Merced County. See Table 1-1. For additional information about the Red Bank Project and Los Banos Grandes, see Chapter 15, "Increasing Storage and Delivery Facilities."

Pumping Plants

Four pumping plants, Devil's Den, Bluestone, Polonio Pass, and Casmalia, have been designated as future facilities. See Table 1-3.

Power Plants

One power plant, Mojave Siphon, is under construction and scheduled for completion in 1995. Another, San Luis Obispo, has been designated as a future facility.

Units 3 and 4 at Devil Canyon Powerplant were operational in early summer 1993.

TABLE 1-4

Average Energy Produced at Power Plants and Power Plant Characteristics, by Type of Facility

Type and Facility and Number of Units	*Normal Static Head (ft)*	*Total Flow at Design Head (cfs)*	*Total Generator Capability (kw)*	*Average Annual Energy Produced (in thousand kWh)*
Hydro				
Thermalito Diversion Dam, 1	63–77	615	3,000	23,000
Thermalito, 4 (3 p-g)	85–101	16,900	119,600	242,000
E. Hyatt, 6 (3 p-g)	410–675	16,950	813,000	1,907,000
W. R. Gianelli, 8 p-g	99–327	16,960	424,000	
SWP share			222,100	231,000
San Luis Obispo (future facility), 1	766	67	3,800	30,000
Alamo, 1	115-141	1,740	18,000	123,000
W. E. Warne, 2	719–739	1,564	78,200	733,000
Mojave Siphon (future facility), 3	95-146	2,880	32,400	107,000
Devil Canyon, 4	1,406	2,811	291,000	1,282,000
Thermal				
Reid Gardner, Unit 4, 1 (a			250,000	
SWP share			169,500	1,400,000
Total				**6,079,000**

a) Life of the plant is expected to extend through 2013.

TABLE 1-5

Total Miles of Aqueducts

Facility	*Channel and Reservoir*	*Canal*	*Pipeline*	*Tunnel*	*Total*
North Bay Aqueduct	0.0	0.0	27.4	0.0	27.4
South Bay Aqueduct	0.0	8.4	32.9	1.6	42.9
Subtotal	0.0	8.4	60.3	1.6	70.3
California Aqueduct, Main Line	1.4	67.0	0.0	0.0	68.4
Delta to O'Neill Forebay					
O'Neill Forebay to Kettleman City	2.2	103.5	0.0	0.0	105.7
Kettleman City to Edmonston Pumping Plant	0.0	120.9	0.0	0.0	120.9
A.D. Edmonston Pumping Plant to Tehachapi Afterbay	0.0	0.2	2.5	7.9	10.6
Tehachapi Afterbay to Lake Perris	2.9	93.4	38.3	3.8	138.4
Subtotal	6.5	385.0	40.8	11.7	444.0
California Aqueduct Branches					
West Branch	9.2	9.1	6.4	7.2	31.9
Coastal Branch (planned)	0.0	14.8	(a 101.0	0.0	115.8
Subtotal	9.2	23.9	107.4	7.2	147.7
Total	**15.7**	**417.3**	**208.5**	**20.5**	**662.0**

a) Existing

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Methods of Financing

Project facilities have been constructed with three general types of financing: general obligation bonds and tideland oil revenues (under the Burns-Porter Act, approved by voters in 1960), revenue bonds, and capital resources.

Operations, maintenance, power, and replacement costs are repaid by the 29 water contractors as the costs are incurred. Those contractors signed long-term water supply contracts with the Department in the 1960s to repay the cost of building and operating SWP facilities and to ensure that water can be delivered when needed.

The contracts provided for a combined maximum annual entitlement of 4,230,000 acre-feet of water. They were designed to be in effect for the longer of 75 years or throughout the project repayment period. However, as a result of contract amendments in the 1980s, the current combined maximum annual entitlement totals 4,217,786 acre-feet, and the contracts are in effect for the longest of (1) the project repayment period, which extends to the year 2035; (2) 75 years from the date of the contract; or (3) the period ending with the latest maturity date of any issued bond used to finance the construction costs of project facilities.

For additional information see Chapter 21, "Analyzing State Water Project Finances"; Chapter 22, "Analyzing Capital Requirements and Financing"; and Chapter 23, "Forecasting Revenues, Expenses, and Future Costs of Water Service."

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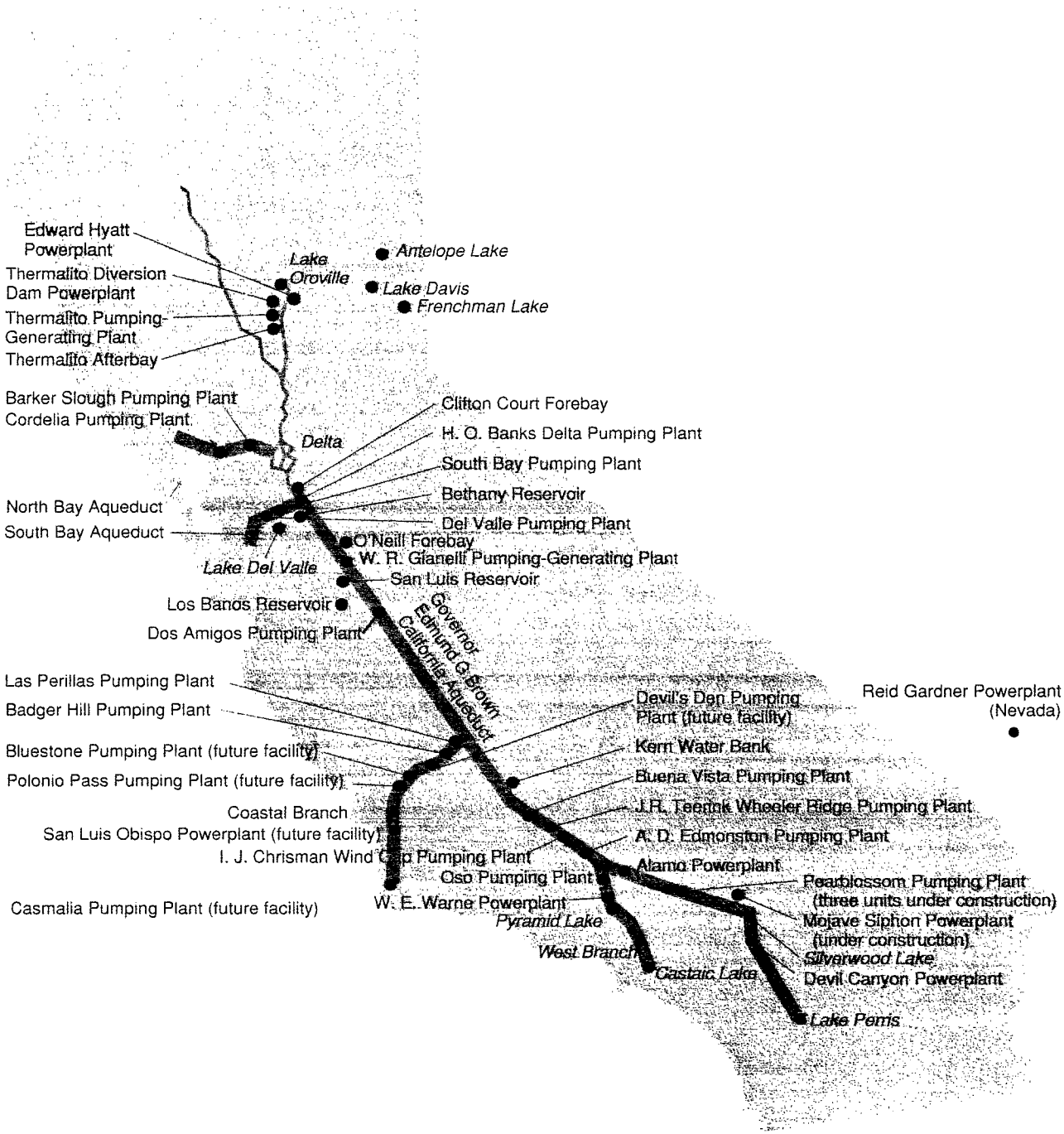

Fig. 1-1. Names and locations of primary water delivery facilities, current and projected

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2. Water Deliveries

The water delivered by the Department of Water Resources through State Water Project facilities originates in Northern California and is delivered to contractors and other agencies throughout the state through a system of reservoirs, dams, power and pumping plants, canals, and aqueducts.

The Department began delivering water through SWP facilities in 1962. Since that time, 64,752,164 acre-feet of water has been conveyed. See Table 2-1 at the end of this chapter.

This chapter presents information about the long-term contractors and other agencies to whom water is delivered as well as the amounts delivered and routes of delivery. The last section describes the Department's method of determining the amounts of water that can be delivered each year.

Long-Term Contracting Agencies

From 1963 through 1967, a total of 32 agencies or districts signed long-term water delivery contracts with the Department. However, in 1965 the City of West Covina was annexed to the Metropolitan Water District of Southern California; and in 1981 Hacienda Water District was assigned to Tulare Lake Basin Water Storage District.

On January 1, 1992, Castaic Lake Water Agency assumed all rights and obligations granted to Devil's Den Water District according to its long-term supply contract.

Twenty-nine agencies or districts had long-term contracts with the Department as of June 30, 1993. Those agencies or districts, listed according to geographical area, are:

Upper Feather River
City of Yuba City
County of Butte
Plumas County Flood Control and Water Conservation District

North Bay Area
Napa County Flood Control and Water Conservation District
Solano County Water Agency

South Bay Area
Alameda County Flood Control and Water Conservation District, Zone 7
Alameda County Water District
Santa Clara Valley Water District

San Joaquin Valley Area
Castaic Lake Water Agency (also listed under Southern California Area)
County of Kings
Dudley Ridge Water District

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Empire West Side Irrigation District
Kern County Water Agency
Oak Flat Water District
Tulare Lake Basin Water Storage District
Central Coastal Area
San Luis Obispo County Flood Control and Water Conservation District
Santa Barbara County Flood Control and Water Conservation District
Southern California Area
Antelope Valley-East Kern Water Agency
Castaic Lake Water Agency
Coachella Valley Water District
Crestline-Lake Arrowhead Water Agency
Desert Water Agency
Littlerock Creek Irrigation District
Metropolitan Water District of Southern California
Mojave Water Agency
Palmdale Water District
San Bernardino Valley Municipal Water District
San Gabriel Valley Municipal Water District
San Gorgonio Pass Water Agency
Ventura County Flood Control District

Figure 2-4, at the end of this chapter, shows the location of each contracting agency or district and lists the first year of SWP delivery service for each.

In 1992 SWP delivered entitlement and entitlement-related water to 25 of the 29 agencies or districts that have a contract for water delivery service with the Department.

Two agencies, Santa Barbara County Flood Control and Water Conservation District and Ventura County Flood Control District, did not take delivery of SWP water in 1992. Deliveries of entitlement water to San Luis Obispo County Flood Control and Water Conservation District are planned to begin in 1996 and to San Gorgonio Pass Water Agency in 2000.

In 1992 SWP delivered a total of 1,471,199 acre-feet of entitlement water—including 95,766 acre-feet of deferred entitlement—to 25 long-term contractors. In addition, SWP delivered 66,157 acre-feet of nonentitlement water to 10 long-term contractors including 1,156 acre-feet of unscheduled water to Napa County Flood Control and Water Conservation District.[1]

For information about water deliveries to specific areas, see Figure 2-5 at the end of this chapter. Also, see Table 6-1, "Total Amounts of Water Delivered in 1992 and Credits Granted to Long-Term Contractors through 1992, by Service Area."

Other Agencies

In 1992 approximately 696,626 acre-feet of water was delivered by SWP to 15 other agencies, including Central Valley Project contractors and 10 agencies entitled to water as part of water rights agreements. For a listing of those agencies and amounts of water delivered to them, see Table 6-2, "Total Amounts of Water Delivered in 1992, by Month."

Delivery Routes

Water delivered by SWP originates in the Upper Feather River and is stored in Lake

[1] Information concerning water deliveries and related power generation and recreational activities, including information contained in chapters 2, 3, 6, 9, 18, 19, and 20, is based on the 1992 calendar year. Except where indicated for information concerning water years, information contained in the remaining chapters is based on the 1992-93 fiscal year; that is, the period from July 1, 1992, to June 30, 1993.

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Oroville, the project's largest storage facility. From Lake Oroville the water flows through Oroville Dam, the tallest and one of the largest earth dams in the United States, into the Feather River and then on to the Sacramento River.

From the Sacramento River, water flows to the Delta, where it is pumped for delivery through the North Bay and South Bay Aqueducts and through the California Aqueduct.

Three long-term contractors receive water in the Feather River area. Two contractors in Napa and Solano Counties receive water through the North Bay Aqueduct; and three in Alameda and Santa Clara Counties, through the South Bay Aqueduct. Seven contractors in western San Joaquin Valley and 12 in Southern California receive water through the 444-mile-long California Aqueduct. See Figure 2-5 at the end of this chapter.

Diversions from the Delta

Generally, water diverted from the Sacramento-San Joaquin Delta is delivered to SWP storage facilities and to contractors through Harvey O. Banks Delta Pumping Plant and Barker Slough Pumping Plant.

In 1992 SWP diverted about 1,503,000 acre-feet of water at Harvey O. Banks Delta Pumping Plant, including 34,816 acre-feet of CVP water wheeled by the Department. See Figure 2-1 for the amounts of water pumped each month.

Water Conveyed South of San Luis Reservoir

Water is conveyed south of San Luis Reservoir, a joint-use facility shared between SWP and CVP, to two areas—the San Joaquin Valley and Southern California.

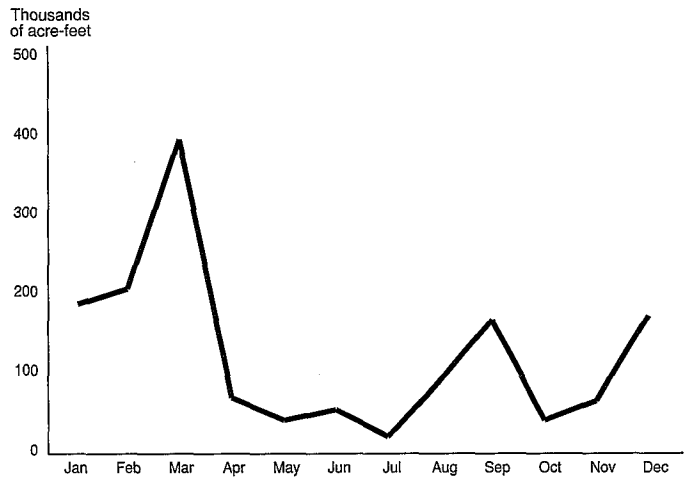

Fig. 2-1. Amount of water pumped each month at Harvey O. Banks Delta Pumping Plant during 1992

San Joaquin Valley

Generally, water is conveyed to the San Joaquin Valley through the San Luis joint-use aqueduct facilities to Kettleman City, then through the California Aqueduct. Water conveyed to the San Joaquin Valley is represented by the difference between the amount of water pumped over the Tehachapi Mountains and the amount conveyed past Kettleman City, which marks the end of the joint-use facilities shared with CVP.

In 1992 approximately 603,000 acre-feet of water was conveyed to the San Joaquin Valley. See Figure 2-2 for the amount of water conveyed each month.

Southern California

In 1992 approximately 752,000 acre-feet of water was delivered to Southern California through the California Aqueduct and the A.D. Edmonston Pumping Plant. See Figure 2-3 for the amount of water pumped at Edmonston Pumping Plant each month.

Before water can be delivered to Southern California, though, it first must cross the

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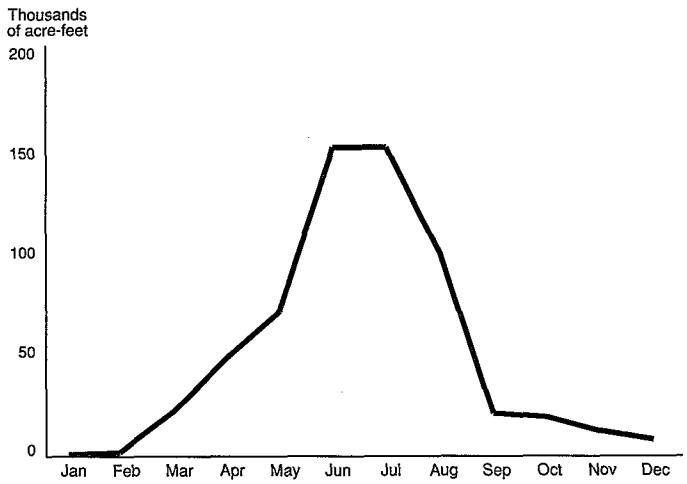

Fig. 2-2. Amount of water conveyed to San Joaquin Valley each month during 1992

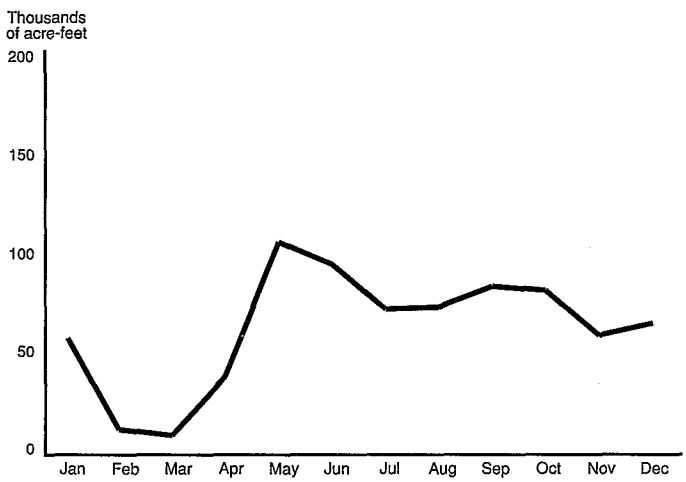

Fig. 2-3. Amount of water pumped each month at A.D. Edmonston Pumping Plant during 1992

Tehachapi Mountains. Pumps at A.D. Edmonston Pumping Plant, located at the foot of the Tehachapi Mountains, raise water 1,926 feet up the mountains—the highest single lift of any pumping plant in the world.

Lifted to enter 8.5 miles of tunnels and siphons, the water flows through the California Aqueduct into the Antelope Valley, where it is divided into the East Branch and West Branch. The East Branch carries water through the valley, into Silverwood Lake in the San Bernardino Mountains.

From Silverwood Lake, the water enters the San Bernardino Tunnel; drops 1,418 feet into Devil Canyon Powerplant; then flows to Lake Perris, the southernmost SWP reservoir.

Water in the West Branch flows through the William E. Warne Powerplant into Pyramid Lake in Los Angeles County. From there it flows through the Angeles Tunnel and Castaic Powerplant into Castaic Lake, terminus of the West Branch.

Forecasting Water Delivery Capabilities

Forecasting water delivery capabilities is an integral part of the Department of Water Resources' water management plan. In some years the State Water Project may not have the water supply necessary to deliver full amounts of entitlement water to long-term contractors. Consequently, the Department must annually determine the amount of water that can be approved for delivery while retaining a prudent reserve for future use. Once the amount of water to be delivered is determined, the Department must review contractors' annual requests for entitlement water and determine amounts it reasonably expects can be delivered.

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Water Budget

According to provisions contained in water supply contracts, contractors are required to request, on or before October 1 of each year, amounts of entitlement water for delivery in the following year. The Department must approve or modify those requests by December 1 of each year. However, because the Department cannot accurately predict the amount of precipitation and runoff California will receive in winter and spring, it must estimate the amount of water available to the State Water Project for delivery before the actual figures are known.

To determine the amount of water available to be delivered each calendar year, the Department uses a procedure called the water budget. That procedure was used in late 1992 to approve entitlement water for delivery in 1993.

Basis for Water Budget

The water budget is based on the relationship between four variables:

1. Water supplies forecast at a certain level of probability for the current water year
2. Current amount of carryover storage
3. Targeted amount of end-of-year carryover storage
4. State Water Project's total delivery capability for the calendar year

The Department's objective in formulating and using the water budget is to ensure that:

- Sufficient carryover storage will be maintained
- Next year's requirements to protect water quality in the Delta will be met
- At least emergency water deliveries could be made in the following year without the need for extraordinary measures

Modifications to Budget

Because of the difficulty in forecasting precipitation and the amount of runoff received during the year, the Department may have to modify the amount of entitlement water it approved in December for delivery during the next calendar year. The December approvals are usually calculated conservatively at a 90 percent probability confidence level. That means that nine times out of ten the December entitlement approval can be met by the Department.

Additionally, amounts of entitlement water approved also depend on the amount of water the Department is allowed to pump at Banks Pumping Plant under the pumping restrictions imposed by the National Marine Fisheries Service and the U.S. Fish and Wildlife Service to benefit endangered species.

Several years of consecutive drought can cause further budget modifications. It is increasingly difficult to estimate delivery capability if reservoirs south of the Delta have been depleted. Delta pumping capability becomes so constrained that it may not be possible to refill these reservoirs if the drought conditions continue.

Approval of Deliveries

In fall 1992 SWP contractors submitted requests for entitlement water for years 1993 through 1997. Contractors' long-range projections for entitlement water are included in Table B-5B, "Annual Water Quantities Delivered to Each Contractor," in Appendix B of this document.

Amounts of entitlement water initially requested by contractors in early October 1992

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for delivery in 1993 totaled 4,135,367 acre-feet. The amounts requested according to use include municipal and industrial, 2,623,287 acre-feet; and agricultural, 1,512,080 acre-feet. Those amounts include a total of 289,172 acre-feet of deferred entitlement requested by ten contractors.

According to initial operation studies, which were based on the water budget procedure and completed in November 1992, the initial allocation in December 1992 provided for 10 percent of requests for municipal, industrial, and agricultural uses. However, because of above-average precipitation from January through April 15, 1993, on April 16 the Department approved 4,135,367 acre-feet of water for delivery, which met all of the contractors' October 1992 requests. Some contractors subsequently reevaluated their needs and voluntarily accepted a figure lower than 100 percent of their initial requests to benefit SWP.

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TABLE 2-1

Total Amounts of Water Delivered, by Category, 1962 through 1992

	Water Delivered (Acre-feet)								
	Entitlement Water (a			Other Water Deliveries					
				Surplus and Unscheduled					
Year	Municipal and Industrial (1)	Agricultural (2)	Total (3)	Industrial (4)	Agricultural (5)	Other Water (b (6)	Feather River Diversions (c (7)	Recreation Water (8)	Total Deliveries (9)
1962						18,289			18,289
1963						22,456			22,456
1964						32,507			32,507
1965						44,105			44,105
1966						67,928			67,928
1967	5,747	5,791	11,538	0	0	53,605			65,143
1968	46,472	125,237	171,709	10,000	111,534	14,777	866,926		1,174,946
1969	34,434	158,586	193,020	0	72,397	18,829	794,374		1,078,620
1970	47,996	185,997	233,993	0	133,024	38,080	759,759		1,164,856
1971	85,286	272,054	357,340	2,400	293,619	44,119	778,362	8	1,475,848
1972	181,066	430,735	611,801	22,205	401,759	66,638	817,398	6,489	1,926,290
1973	293,824	400,564	694,388	3,161	293,255	42,511	800,743	1,155	1,835,213
1974	418,521	455,556	874,077	4,753	412,923	46,224	911,613	2,118	2,251,708
1975	641,621	582,369	1,223,990	21,043	601,859	63,793	862,218	3,377	2,776,280
1976	818,588	554,414	1,373,002	32,488	547,622	115,217	946,440	1,745	3,016,514
1977	280,919	293,236	574,155	0	0	389,065	581,994	1,111	1,546,325
1978	742,385	710,314	1,452,699	3,566	13,348	121,225	786,517	1,691	2,379,046
1979	690,659	969,237	1,659,896	66,081	582,308	187,630	882,549	1,766	3,380,230
1980	730,545	799,204	1,529,749	19,722	384,835	46,459	875,045	2,131	2,857,941
1981	1,057,273	852,289	1,909,562	12,000	896,428	279,161	838,557	4,688	3,940,396
1982	928,721	821,303	1,750,024	0	215,873	154,882	776,330	4,646	2,901,755
1983	483,499	701,370	1,184,869	0	13,019	181,453	602,905	7,849	1,990,095
1984	725,925	862,694	1,588,619	3,663	259,254	381,024	832,332	7,040	3,071,932
1985	992,538	1,002,915	1,995,453	9,638	298,034	404,842	870,008	4,033	3,582,008
1986	998,611	997,025	1,995,636	2,595	34,025	193,606	791,737	3,865	3,021,464
1987	1,096,368	1,033,718	2,130,086	6,949	107,958	377,592	831,947	7,672	3,462,204
1988	1,316,820	1,068,302	2,385,122	0	0	516,481	794,834	4,889	3,701,326
1989	1,602,454	1,251,293	2,853,747	0	0	487,567	809,250	8,135	4,158,699
1990	1,876,072	706,079	2,582,151	0	90	457,316	851,247	9,262	3,900,066
1991	536,672	12,444	549,116	3,521	0	551,048	565,395	4,912	1,673,992
1992	961,394	509,805	1,471,199	1,156	0	145,044	613,978	2,605	2,233,982
Total	**17,594,410**	**15,762,531**	**33,356,941**	**224,941**	**5,673,164**	**5,563,473**	**19,842,458**	**91,187**	**64,752,164**

a) Includes amounts of deliveries of carryover entitlement water and advance entitlement water.
b) Includes amounts of SWP and non-SWP water conveyed for SWP and non-SWP water contractors.
c) Includes amounts of water diverted according to various water rights agreements.

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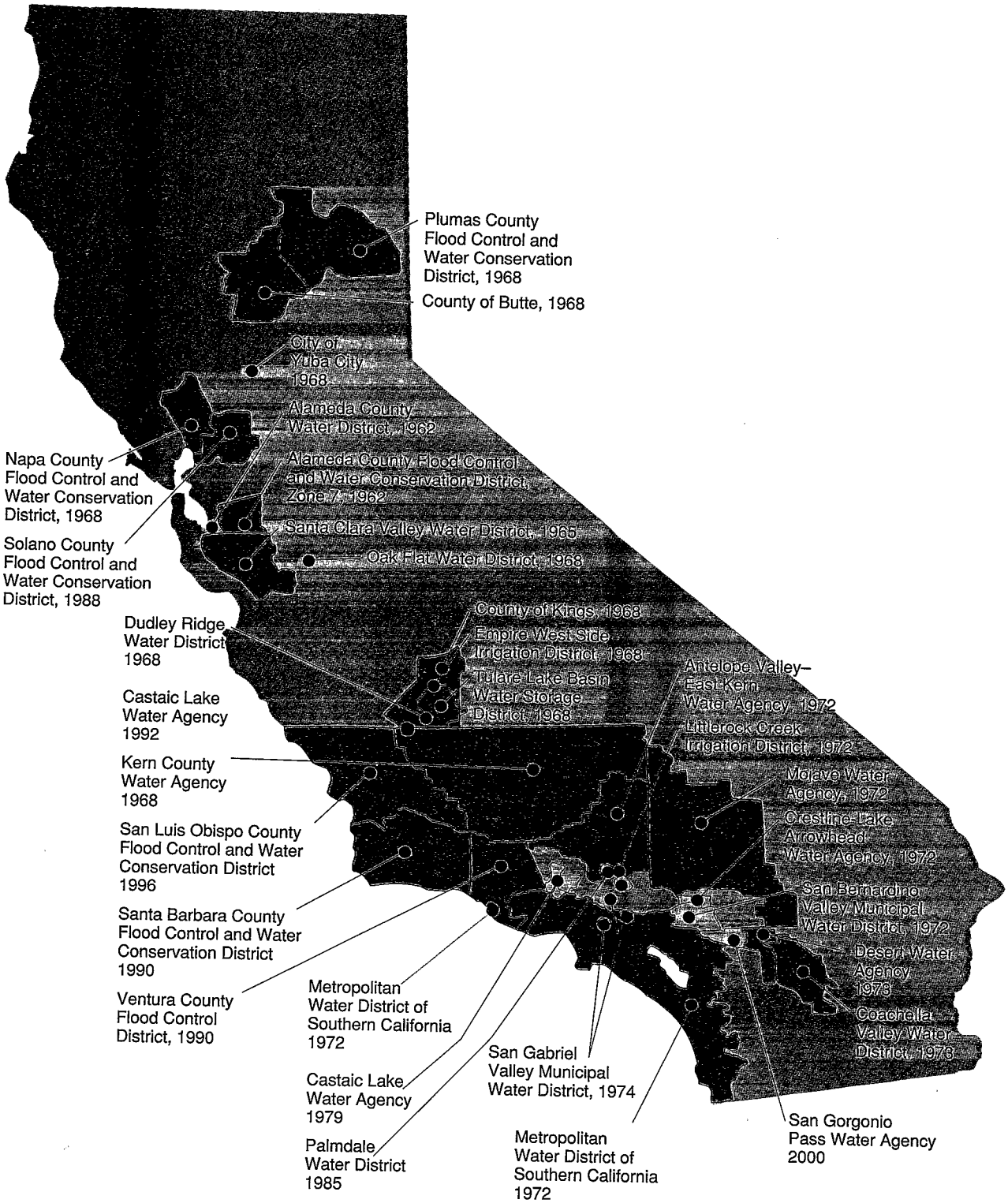

Fig. 2-4. Names and location of and first year of service to long-term contracting agencies, June 30, 1993

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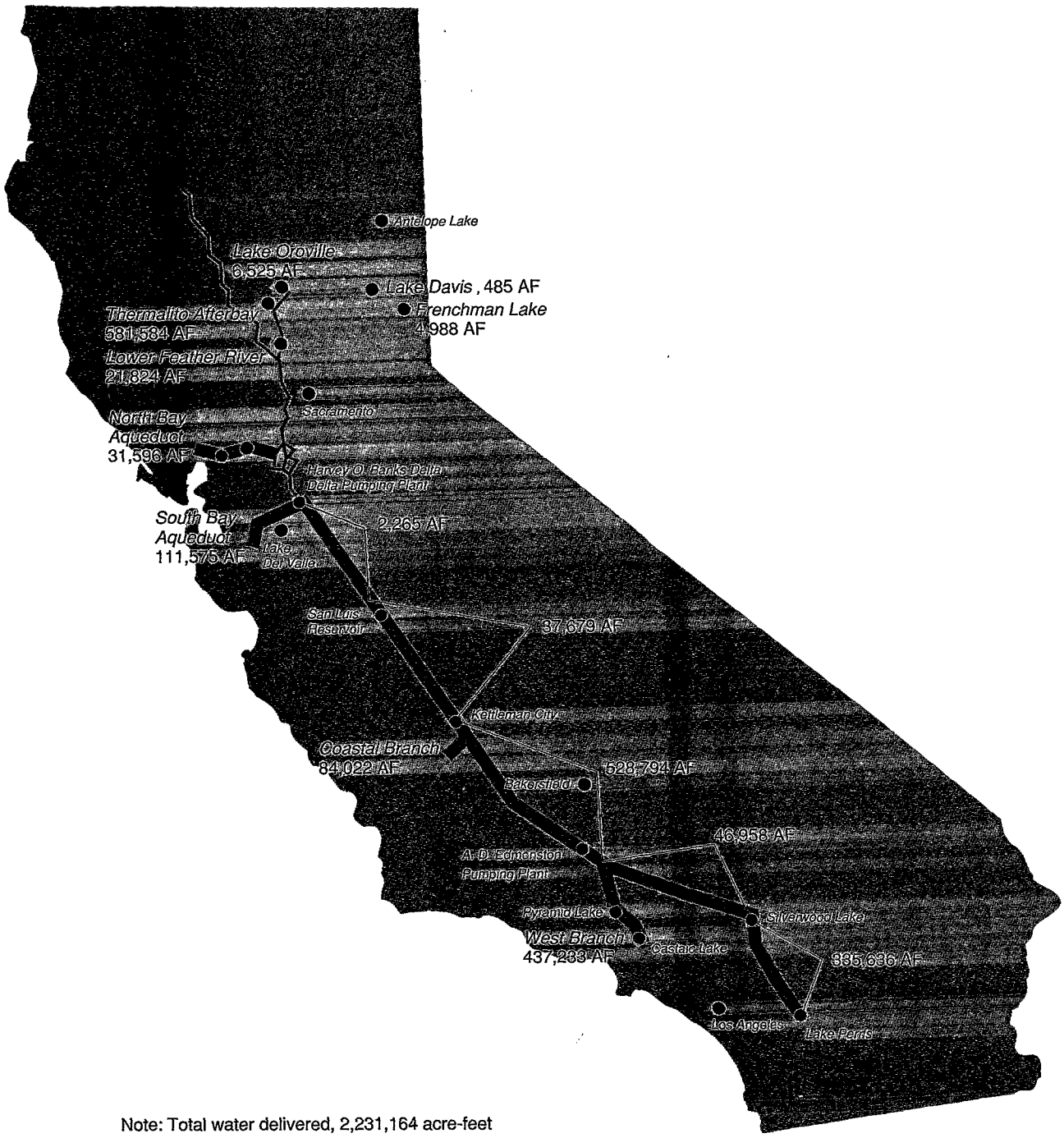

Note: Total water delivered, 2,231,164 acre-feet

Fig. 2-5. Amounts of water delivered and delivery locations, 1992

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3. Recreational Facilities

The State Water Project, managed by the Department of Water Resources, is a multipurpose project designed to provide many benefits to California residents.

In addition to providing water supply, flood control, and habitats for fish and wildlife, SWP provides extensive and varied recreational opportunities—tours, sight-seeing, and areas or sites that include facilities for fishing, hunting, camping, boating, water skiing, bicycling, and swimming.[1]

Information about SWP recreation areas, sites, and facilities, including information about methods of financing, follows.

Recreation Areas

The State Water Project has 37 recreation areas or sites located throughout California, including 17 developed fishing access sites. Most of the sites are located along the California Aqueduct. See Figure 3-1 on the next page for the location of each area. Numbers in the figure correspond to the numbers in the following list:

1. Antelope Lake Recreation Area
2. Frenchman Lake Recreation Area
3. Lake Davis Recreation Area
4. Lake Oroville State Recreation Area
5. White Slough Wildlife Area
6. Bethany Reservoir
7. Lake Del Valle State Recreation Area
8. Bikeway from Bethany Reservoir to O'Neill Forebay (70 miles)
9. Grant Line Road Fishing Access Site
10. Niels Hansen Fishing Access Site
11. Orestimba Fishing Access Site
12. Walk-in Fishing (63 miles)
13. Cottonwood Road Fishing Access Site
14. San Luis Reservoir State Recreation Area
15. Los Banos Reservoir
16. Canyon Road Fishing Access Site
17. Mervel Avenue Fishing Access Site
18. Fairfax Fishing Access Site
19. Access to Walk-in Fishing (208 miles of accessibility along the aqueduct)
20. Three Rocks Fishing Access Site
21. Huron Fishing Access Site

[1]According to the Davis-Dolwig Act (1961, *Water Code* sections 11900-11925), the Department has overall responsibility to acquire land, plan recreation, and ensure that enhancement of fish and wildlife habitat is included as part of the State Water Project. In addition, Federal Energy Regulatory Commission License Number 2100 and License Number 2426 require the Department to plan for recreational and associated activities at licensed SWP facilities.

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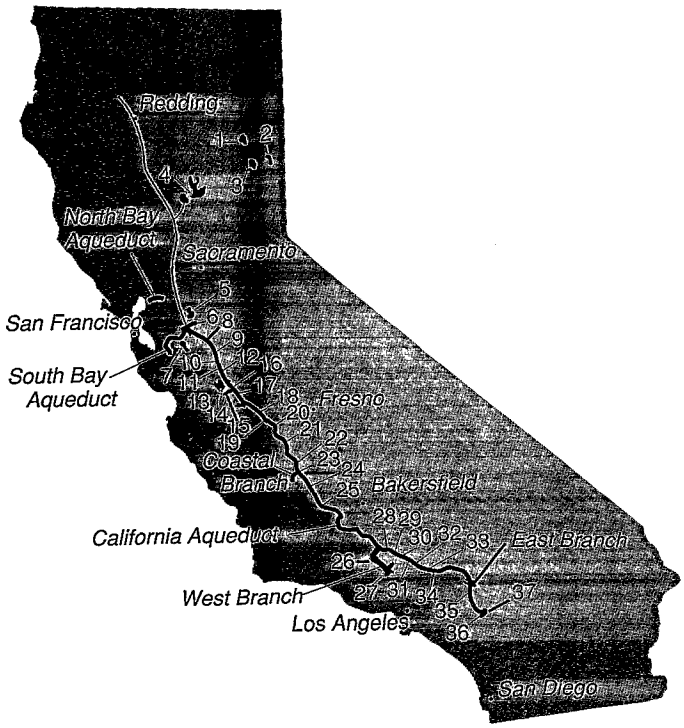

Fig. 3-1. Locations of recreation areas

22. Avenal Cutoff Fishing Access Site
23. Kettleman City Fishing Access Site
24. Lost Hills Fishing Access Site
25. Buttonwillow Fishing Access Site
26. Pyramid Lake State Recreation Area
27. Castaic Lake State Recreation Area
28. Munz Ranch Road Fishing Access Site
29. Bikeway from Quail Lake to Silverwood Lake (107 miles, not all accessible)
30. 70th Street West Fishing Access Site
31. Walk-in Fishing (83 miles)
32. Avenue S Fishing Access Site
33. 77th Street East Fishing Access Site
34. Longview Road Fishing Access Site
35. Silverwood Lake State Recreation Area
36. Lake Perris State Recreation Area
37. San Jacinto Wildlife Area

Use of Facilities

Use of facilities at SWP's 37 recreation areas is measured in terms of visitor-days and recreation-days. A visitor-day is counted when one person enters a visitors center, stops at an overlook, or participates in a guided tour of SWP facilities.

A recreation-day is counted when one person uses the recreational facilities for camping, boating, bicycling, swimming, or some other recreational activity for any part of a day.

Visitor-Days

In 1992 419,600 visitor-days were recorded at SWP facilities, a 10.2 percent decrease when compared with the 467,300 visitor-days recorded in 1991. That decrease was due to Department of Water Resources and Department of Parks and Recreation exhibit remodeling at the Oroville Visitors Center during most of the year. It was also due to the center reducing visiting days to five days per week instead of the usual seven. See Table 3-1 for visitor-days recorded by location.

Recreation-Days

In 1992 5,520,600 recreation days were recorded at SWP facilities, a 4.3 percent decrease when compared with 5,768,700 recreation-days recorded in 1991. That decrease was due to two factors: (1) recreational activities at some facilities were limited because of low water levels; and (2) sections of the bikeway along the California Aqueduct were closed for repairs. See Table 3-2 for total recreation days recorded at each facility.

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Because of the large population density in Southern California, recreational facilities in that area were used most often. The four largest SWP reservoirs in Southern California, Pyramid Lake, Castaic Lake, Silverwood Lake, and Lake Perris, accounted for 56 percent of the total recreation days accumulated in 1992.

Since SWP first began delivering water in 1962, more than 122 million recreation days have been recorded at SWP recreational facilities.

Improvements to Facilities

Improvements were made at Frenchman Lake, Lake Davis, Lake Oroville, Pyramid Lake, and Castaic Lake during 1992 to help meet recreational demands.

To make Frenchman Lake and Lakes Davis and Oroville more accessible to boaters during periods of drought and at times when the water surface in the lakes is well below normal, several existing boat launching ramps were extended to lower elevations. Other ramps were built at lower elevations than the existing ones. Also, additional parking areas were built at those elevations, and improvements were made to some of the existing ones. All the related construction work was performed by private contractors under the direction of the Department of Boating and Waterways and was funded by the Department of Boating and Waterways.

Frenchman Lake

The two existing boat launching ramps were extended to a lower elevation. Also, at Lunker Cove, an additional launching ramp and parking area were constructed at a lower elevation than the existing facilities.

TABLE 3-1
Total Number of Visitor-Days Recorded in 1992, by Location

Location	*Visitor-Days*
Project Operation Control Center, Sacramento	400
Oroville Field Division	108,400
Delta Field Division	1,200
San Luis Field Division	218,000
San Joaquin Field Division	5,600
Southern Field Division	86,000
Total	**419,600**

Lake Davis

At Lake Davis, the existing boat launching ramps at Camp 5 and Honker Cove were extended to a lower elevation.

Lake Oroville

Additional boat launching ramp extensions and parking area improvements at Lake Oroville were completed. Also, a launching ramp was built to provide access to the lake at Bidwell Canyon.

Pyramid Lake

Construction continued on the Vista del Lago Visitors Center at Interstate Highway 5. The center and the recreation development on Liebre Peninsula should be completed in late 1993.

Castaic Lake Closure

At Castaic Lagoon, an integral part of Castaic Lake, Department personnel detected high levels of the *E.coli* bacteria. Since the bacteria is mostly transmitted by swallowing the infected water, the lagoon has been closed to swimming since August 1992. This closure reduced the 1992 total use of the Castaic Lake

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TABLE 3-2

Total Number of Recreation-Days Recorded in 1992, by Division and Facility

Division	*Number of Days*
Oroville Field Division	
Antelope Lake	65,500
Frenchman Lake	190,000
Lake Davis	220,000
Lake Oroville and Thermalito Forebay	410,000
Thermalito Afterbay and Oroville Wildlife Area	185,400
Total	**1,070,900**
Delta Field Division	
White Slough Wildlife Area	11,000
Bethany Reservoir	28,900
Lake Del Valle	498,000
Fishing Access Sites	
Niels Hansen	100
Cottonwood Road	100
California Aqueduct	
Walk-in fishing	21,100
Bikeway	13,600
Total	**572,800**
San Luis Field Division	
San Luis Reservoir	248,000
O'Neill Forebay	395,900
Los Banos Reservoir	60,800
Fishing Access Sites	
Canyon Road	100
Mervel Avenue	100
Three Rocks	100
Huron	200
Avenal Cutoff	500
California Aqueduct	
Walk-in fishing	9,300
Wildlife areas	18,500
Total	**733,500**
San Joaquin Field Division	
Fishing Access Sites	
Kettleman City	3,600
Lost Hills	3,300
Buttonwillow	3,700
California Aqueduct	
Walk-in fishing	5,900
Total	**16,500**
Southern Field Division	
Pyramid Lake	348,600
Castaic Lake	960,000
Silverwood Lake	522,400
Lake Perris	1,290,300
Fishing Access Sites	
77th Street East	400
Longview Road	100
California Aqueduct	
Walk-in fishing	4,600
Bikeway	500
Total	**3,126,900**
Grand Total	**5,520,600**

recreation facilities by 10 percent compared to 1991. The lagoon will remain closed to swimming indefinitely.

Fish Plantings

The Department of Fish and Game continued its fish-planting activities at 12 SWP facilities and one facility owned by the Metropolitan Water District of Southern California (Lake Skinner) during 1992.

Fewer fish were planted in 1992 than in 1991. See Table 3-3 for a listing of facilities and number of fish planted at each facility.

In addition, a total of 15,660,300 fish were reared at the Feather River Fish Hatchery and the Thermalito Afterbay rearing ponds, up 83 percent from 1991. That figure includes a total of 15,300,300 Chinook salmon and 360,000 yearling steelhead trout.

Of the Chinook salmon reared, 5,185,500 were fingerlings; 7,038,400 were planted as advanced fingerlings; and 3,076,400, as yearlings.

Safety

Safe use of facilities at all 36 recreational areas is important to the Department. However, safety along the 23 sites located along the California Aqueduct, a 444-mile-long open canal used to deliver water to cities, farms, and industries in the San Francisco Bay Area, San Joaquin Valley, and Southern California, is particularly important. Recreationists use those sites for fishing and biking. In 1992, approximately 53,000 people fished and 14,000 people rode bicycles along the aqueduct.

Because the aqueduct is an open canal, water flowing in it is clearly visible and often appears to be shallow and calm. However, the calm surface is deceptive. The water is as much as 30 feet deep in some places and can

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start to flow rapidly without warning, creating turbulence and strong currents.

Turbulent currents created by buried pipelines and siphons used to carry water under roadways, streams, and railroad crossings, are not visible from the surface. Also, the concrete sides of the aqueduct are steep and slippery, making it difficult if not impossible to climb out of the canal without help.

To minimize risks to recreationists, the Department posted safety notices along the aqueduct; and in the aqueduct, the Department installed float lines and safety ladders at regular intervals. Through various media, including brochures available at recreational facilities, the Department regularly notifies visitors of safety precautions to take while fishing or walking along the aqueduct.

Also, trainers from the Department's field divisions regularly visit schools, churches, and other community organizations to discuss safety precautions and dispense brochures, posters, and videocassettes.

TABLE 3-3

Total Number of Fish Planted in 1992
(Thousands)

Location and Size	*Trout*			*Chinook*	
	Rainbow	*Brown*	*Brook*	*Salmon*	*Total*
Antelope Reservoir					
Catchable	7.7		22.6		30.3
Lake Davis					
Catchable	31.8				31.8
Fingerling		16.1			16.1
Frenchman Reservoir					
Catchable	20.5				20.5
Fingerling	199.8	15.8			215.6
Lake Oroville					
Catchable		69.0		36.0	105.0
Fingerling				87.0	87.0
Thermalito Forebay					
Catchable	41.0				41.0
Subcatchable	4.2				4.2
Lake Del Valle					
Catchable	40.1				40.1
Los Banos Reservoir					
Catchable	11.0				11.0
Pyramid Lake					
Catchable	27.1				27.1
Castaic Lake					
Catchable	98.7				98.7
Castaic Lagoon					
Catchable	30.3				30.3
Silverwood Lake					
Catchable	35.6				35.6
Lake Perris					
Catchable	21.8				21.8
Lake Skinner					
Catchable	22.8				22.8
Total	**592.4**	**100.9**	**22.6**	**123.0**	**838.9**

Methods of Financing

Recreational facilities are financed according to legislation enacted in 1961, the Davis-Dolwig Act, with modifications in 1989, and Assembly Bill 12 (1966).

Davis-Dolwig Act

When the legislature passed the Davis-Dolwig Act in 1961, it established a procedure for reimbursing the Department for SWP funds spent to enhance habitats for fish and wildlife and provide recreational facilities.

In passing the act, the legislature reasoned that because enhancing habitats for fish and wildlife and providing recreational facilities benefit all Californians, costs should be borne by all Californians.

Consequently, the Davis-Dolwig Act included provisions for reimbursing the Department for expenses each year. The reimbursements would be included in the Department's budget as appropriations from the General Fund and used by the Department to pay for operations, maintenance, power, and replacement costs associated with operating SWP.

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Assembly Bill 12 (1966)

In 1966 the legislature passed Assembly Bill 12 (*Public Resources Code* Section 6217) to provide for a $5 million annual appropriation from tideland oil and gas revenues for joint costs of state water projects allocated to (1) recreation, (2) enhancement of fish and wildlife, and (3) purchases of land for recreation.

Since the bill was passed, the Department has received approximately $90 million from the state's tideland oil and gas revenues for funding joint capital costs and purchasing land for recreational purposes. However, those appropriations have not been made since the 1985–86 fiscal year.

In 1989 the legislature passed Assembly Bill 1442, "Offset Legislation." This legislation offsets moneys owed the California Water Fund by the State Water Project with reimbursements owed the project by the General Fund for recreation and fish and wildlife expenditures under the Davis-Dolwig Act.

As of December 31, 1992, the state had spent $16,656,865 for operations and maintenance costs associated with SWP's recreational facilities.

See Chapter 23, "Forecasting Revenues, Expenses, and Future Costs of Water Service," for additional information on operating costs. In addition, *Appendix D, Costs of Recreation and Fish and Wildlife Enhancement,* to Bulletin 132 contains specific information about capital costs allocated to fish and wildlife enhancement and recreational development. This report to the legislature is published annually by the Department.

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Meeting Today's Water Needs

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4. Collecting and Storing Water

To meet its contractual obligations to State Water Project long-term contractors, the Department of Water Resources is involved in activities ranging from monitoring precipitation and calculating runoff to coordinating the operation of a complex system of dams and reservoirs, including conservation and storage facilities and regulatory storage facilities.

This chapter includes information about those activities, based on the 1992 calendar year and the 1991–92 water year.

Precipitation and Runoff

In a typical year, California receives about 193 million acre-feet (MAF) of water as rain or snow (an acre-foot consists of approximately 326,000 gallons, the amount normally used each year by a family of five).

Of the 193 MAF received in California, about 110 MAF—about 57 percent—falls in Northern California (North Coast, Sacramento River basin, and North Lahontan hydrological areas). The 110 MAF produces 53 MAF of runoff, which is about 75 percent of the total estimated runoff for the entire state. The balance—about 57 MAF—either evaporates, is consumed by plants, or percolates to ground water. Twenty-five percent of the state's runoff—about 18 MAF—occurs south of the Sacramento-San Joaquin Delta; however, about 75 percent of the state's total agricultural and urban water requirements are south of the Delta.

In the great Central Valley of California, which includes the Sacramento River basin along with San Joaquin and Tulare basins, the average annual precipitation is about 88 MAF. Of this 88 MAF, about 55 MAF is lost to evapotranspiration; about 3 MAF flows into, and evaporates from, closed lakes in Tulare Basin; and the remaining 30 MAF becomes the unimpaired runoff[1] to the Sacramento-San Joaquin Delta, the primary source of SWP water supply.

The Department carefully monitors and records precipitation and runoff according to the water year, the natural cycle in which rainfall and runoff occur. In California the water year extends from October 1 through September 30.

The data recorded throughout the water year are used by the Department to determine, in part, the amount of water that can be

[1] *Unimpaired runoff* is defined as the natural water production of a river basin, unaltered by upstream diversions, storage, or exports or imports of water to or from other watersheds. Under natural conditions, some of this runoff is consumed by wetlands and riparian vegetation in the Central Valley.

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delivered; the amount to be retained in storage, depending on the water year classification; and the amount needed for delivery in the future.[2]

Water year 1991–92 was the sixth year of continuous drought for California. Precipitation during the water year was about 10 percent more than during 1990–91; however, due to the distribution of precipitation during the 1991–92 water year, total statewide runoff was nearly identical to that of 1990–91.

Southern California precipitation was above average, marking the end of that area's drought and the beginning of local reservoir recovery. However, rainfall was light on the west slope of the Sierra Nevada where most of the runoff generates; as a result, the total runoff for California was less than half of average.

Precipitation

Precipitation for 1991–92 is recorded as a percentage of the 50-year average of amounts of rainfall recorded at each of the 10 hydrological areas located throughout the state. Those areas include:

- North Coast
- San Francisco Bay
- Central Coast
- South Coast
- Sacramento River Basin
- San Joaquin
- Tulare Lake
- North Lahontan
- South Lahontan
- Colorado River

See Figure 4-1 at the end of this chapter for statewide precipitation by hydrological area.

During the 1991–92 water year, early winter precipitation was only 50 percent of average. Precipitation on February 1, 1992, was about 60 percent of average, significantly more than the previous year's 25 percent on February 1. February was a wet month. Statewide precipitation averaged 160 percent of normal with a range of 50 percent of average in some northeastern areas, to more than 300 percent in parts of Southern California, particularly in the normally dry southeastern desert areas. By March 1, seasonal precipitation statewide was 85 percent of normal, a figure that was maintained through the end of the water year.

Runoff

During the water year, the Department calculates in acre-feet the amount of unimpaired runoff to streams in all hydrological areas in California. Those amounts are reported in *Water Conditions in California* (Bulletin 120), published by the Department in February, March, April, and May of each water year.

In addition to including information about first-of-the-month conditions for the months of February through May, those bulletins include forecasts of unimpaired runoff for the remaining months of the water year.

All forecasts of unimpaired runoff are used by SWP when planning operations. However, the May 1 forecast of the amount of unimpaired runoff to streams in the Sacramento River basin is particularly significant: SWP operations are regulated according to the water year classification based on that forecast.

[2]Water year classifications (*wet, above normal, below normal, dry,* and *critical*) are based on criteria included in Table II of *Water Right Decision 1485: Sacramento-San Joaquin Delta and Suisun Marsh,* issued by the State Water Resources Control Board in August 1978. See "Forecasting Water Delivery Capabilities" in Chapter 2 for information about the procedure used by the Department to estimate the amount of water needed for future deliveries.

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The water year classification is used to set water quality and flow requirements for the Delta according to standards included in Decision 1485. In cooperation with the Central Valley Project, SWP works to ensure those requirements are met by:

- Monitoring water quality at various points in the Delta
- Modifying releases and exports when necessary

The snowpack water content on April 1, 1992, was 60 percent of average, significantly less than the 75 percent observed a year earlier on April 1. During April, the snow melted quickly and by May 1, the snow pack water content was only 25 percent of average.

As reported in the May 1, 1992, edition of *Water Conditions in California,* the amount of unimpaired runoff to streams in the Sacramento River basin—commonly known as the Sacramento River Index—for the 1991–92 water year was forecast to be 9.4 million acre-feet or 51 percent of average.

Based on the 1991–92 water year forecast, the water year was classified as *critical* for fish and wildlife and for agricultural, municipal, and industrial uses. The actual amount of unimpaired runoff recorded for the 1991–92 water year in the Sacramento River basin was 8.9 million acre-feet or 48 percent of average.

Conservation and Storage Facilities

To collect and store water for future deliveries, SWP operates a complex system of 22 dams and reservoirs. Two reservoirs, Lake Oroville in Northern California and San Luis in the central part of the state, are primary SWP conservation facilities. The remaining 20 reservoirs are used primarily to regulate the conserved supply into water delivery patterns designed to fit local needs.

Information about those reservoirs, including amounts of unimpaired runoff to Lake Oroville and storage levels for SWP conservation and other storage facilities, follows. The information is based on the 1991–92 water year.

Lake Oroville

Lake Oroville, the keystone of SWP, has a maximum capacity of 3,537,580 acre-feet. Runoff from the Feather River is collected and stored in the reservoir; its release to the Sacramento-San Joaquin Delta is regulated through Oroville Dam, Thermalito Diversion Dam, and Thermalito Afterbay. At full reservoir, Lake Oroville has a surface area of 15,805 acres and a shoreline of 167 miles. Located 85 miles north of Sacramento, Lake Oroville is one of the most popular SWP recreational facilities.

The total inflow to Lake Oroville for the 1991-92 water year totaled only about 1.55 million acre-feet, 39 percent of average. Because of low storage at the beginning of 1992 and the small amount of runoff, storage peaked on May 4, 1992, at only 2,026,036 acre-feet, 58 percent of normal maximum operating capacity. By December 31, 1992, storage declined to 1,402,048 acre-feet, 40 percent of normal maximum operating capacity. See Figures 4-2 and 4-3 for monthly and cumulative inflow into Lake Oroville.

In years of normal operations, Lake Oroville is drawn down prior to the flood season to create the storage capacity necessary to prevent downstream floods. During 1992, however, storage levels remained far below

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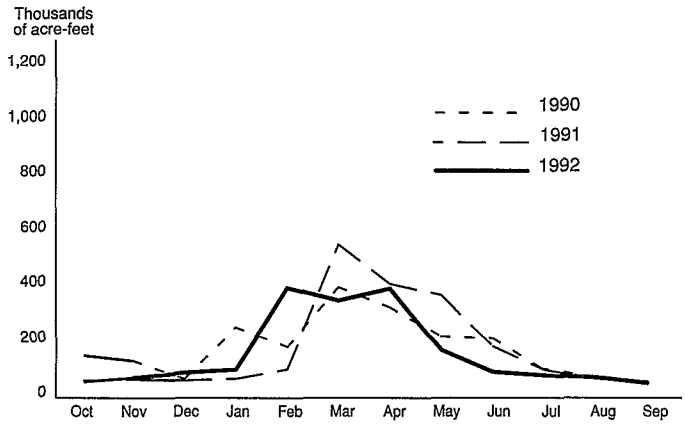

Fig. 4-2. Monthly amounts of inflow into Lake Oroville from Feather River, 1990 through 1992 water years

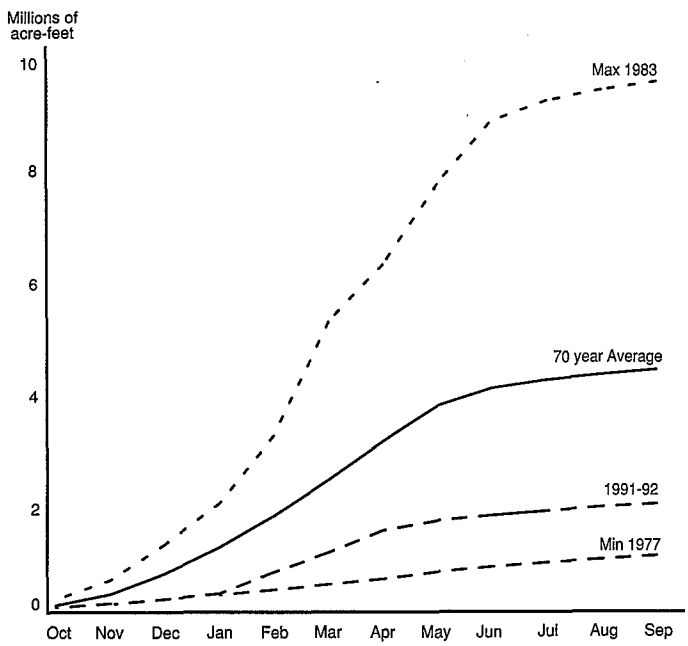

Fig. 4-3. Cumulative amounts of inflow into Lake Oroville from Feather River

any drawdown requirements for flood control because of the ongoing drought.

Specifically, storage during January through August was very low but remained above the extremely low levels for the same period in 1991. Storage from September through November was somewhat below levels for the same period in 1991. During December, the storage increased significantly and finished the year above the storage level of 1991. Because the reservoir was used to store water for the California Drought Water Bank program, storage for the 1992 calendar year was for the most part above 1991 levels (see Figure 4-4).

San Luis Reservoir

San Luis Reservoir, located about 12 miles west of the city of Los Banos in the eastern foothills of the Diablo Mountain Range, is operated jointly with the U.S. Bureau of Reclamation according to operating procedures finalized in June 1981.

With a normal operating capacity of 2,028,000 acre-feet, San Luis Reservoir is the largest off-stream storage reservoir in the United States (an off-stream storage reservoir is filled with water pumped from a source other than its natural watershed).

San Luis was designed to store surplus water pumped from the Sacramento-San Joaquin Delta through the California Aqueduct and the Delta-Mendota Canal during periods of high runoff. Later in the year, the stored water is released for distribution to state and federal service areas. The SWP share of San Luis's normal operating capacity is 1,062,000 acre-feet.

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At the beginning of 1992, San Luis Reservoir contained 41 percent of its normal maximum operating capacity; SWP's share was 417,519 acre-feet.

By April 9, 1992, San Luis Reservoir reached its maximum storage for 1992: 1,986,180 acre-feet, or 98 percent of normal maximum operating capacity; SWP's share of storage was 1,025,012 acre-feet (see Figure 4-5).

Regulatory Storage Facilities

Twenty reservoirs are used by SWP for regulatory and emergency storage. Of those 20 the five largest are Lake Del Valle, located in Alameda County, and Pyramid Lake, Castaic Lake, Silverwood Lake, and Lake Perris, located in Southern California. In addition, those reservoirs are used extensively for recreation.

Lake Del Valle is located approximately 4 miles from the city of Livermore. The four southern reservoirs, Pyramid Lake, Castaic Lake, Silverwood Lake, and Lake Perris, are located near the metropolitan areas of Southern California, where water supplies are primarily imported.

Lake Del Valle

Lake Del Valle, located off the South Bay Aqueduct, is used primarily to store water used in Santa Clara and Alameda Counties. At the beginning of 1992, Lake Del Valle held 24,995 acre-feet of water, 63 percent of normal maximum operating capacity.

By May 15 storage had increased to 41,301 acre-feet or about 100 percent of normal maximum operating capacity to provide for recreational activities and to serve as a buffer during the summer months when the demand for water is high.

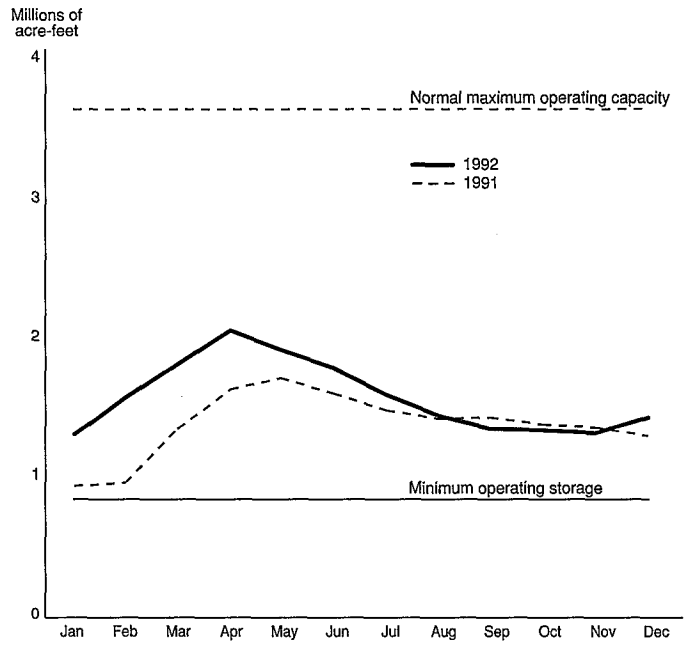

Fig. 4-4. End-of-month storage in Lake Oroville, 1991 and 1992 calendar years

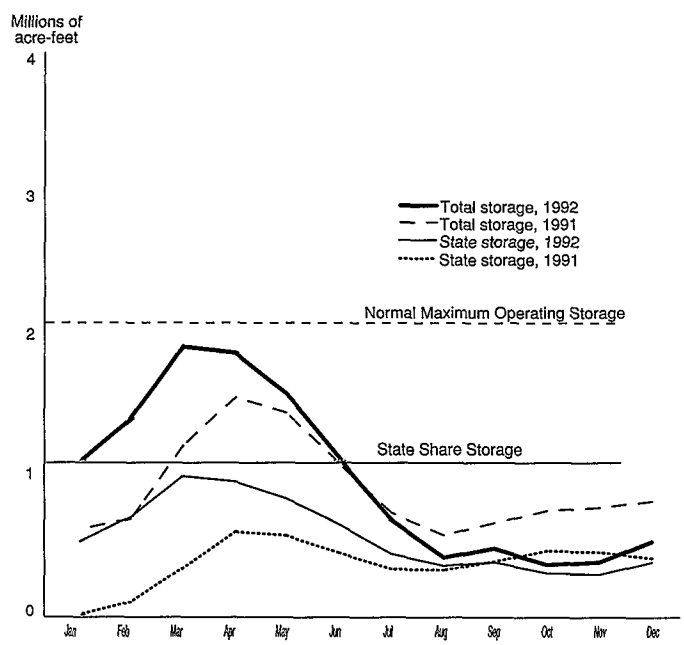

Fig. 4-5. End-of-month storage in San Luis Reservoir, 1991 and 1992 calendar years

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At the end of 1992 storage in Lake Del Valle had dropped to 25,922 acre-feet, 65 percent of normal maximum operating capacity.

Southern Reservoirs

During normal operating conditions, the Department maintains its four southern reservoirs, Pyramid, Castaic, and Silverwood Lakes and Lake Perris, at or near full operating capacity to ensure uninterrupted deliveries of water to Southern California contractors.

At the beginning of 1992, those reservoirs held 92 percent of their combined normal maximum operating capacity. At the end of 1992 they held 593,409 acre-feet, 86 percent of normal maximum operating capacity.

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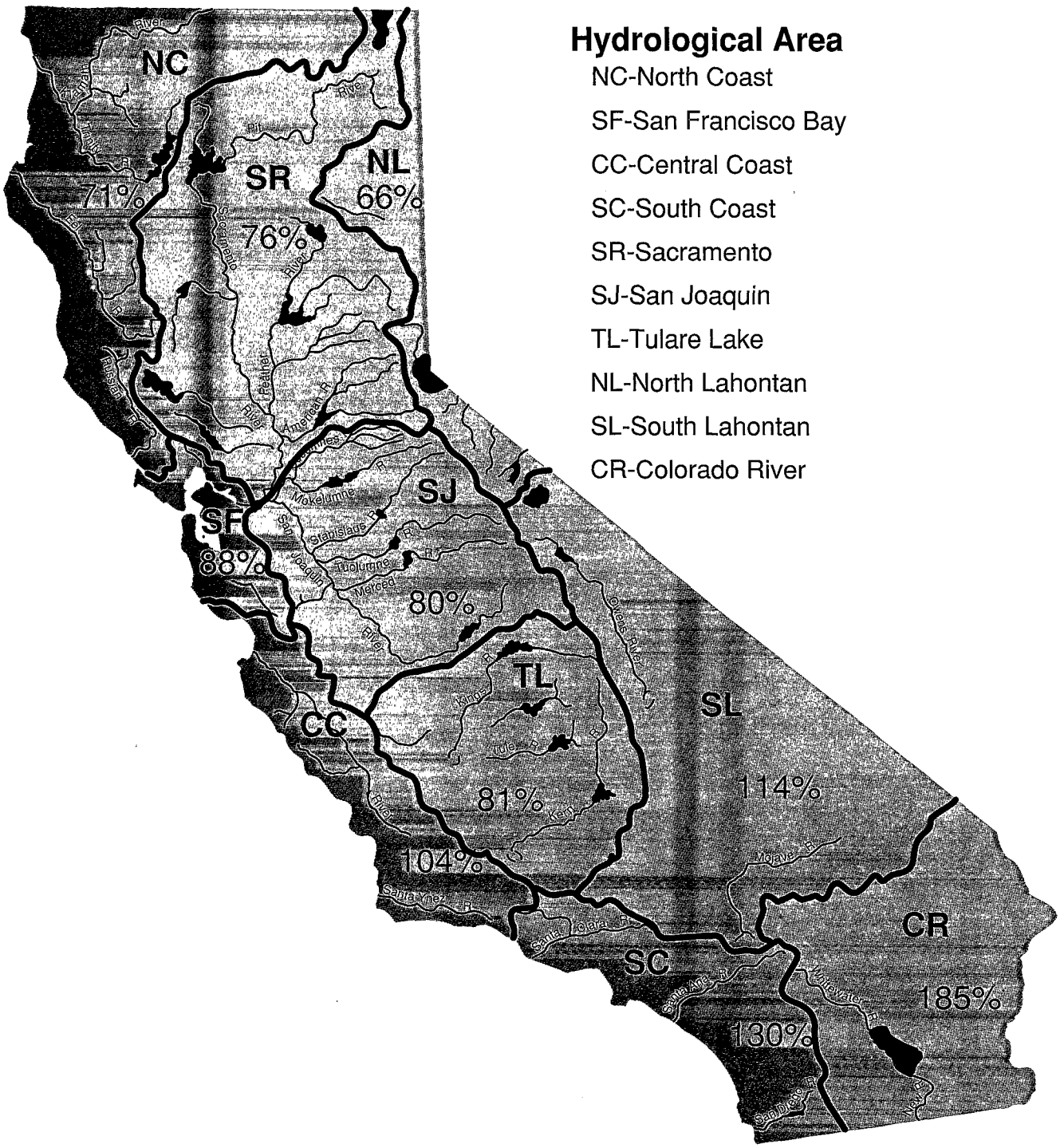

Fig. 4-1. Statewide precipitation by hydrological area, 1991–92 water year, in percentage of average

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5. Negotiating Contracts and Agreements

The long-term water supply contracts between the Department of Water Resources and local agencies for water service from the State Water Project are basic to the project's construction and operation. In return for water service, the agencies contractually agree to repay the SWP's capital and operating costs.

This chapter includes information about (1) SWP's long-term supply contracts and amendments to them, (2) short-term agreements with long-term contractors and other agencies as well as amendments to those agreements, and (3) the Department's contracts concerning claims to rights of usable water in the Delta.

Long-Term Contracts and Amendments

The first water supply contract was signed with the Metropolitan Water District of Southern California on November 4, 1960. The contract was negotiated by the Department and the district according to terms contained in *Contracting Principles for Water Service Contracts*. Those terms, some of the most rigid ever devised for a water project, were announced by Governor Edmund G. Brown on January 20, 1960.

The Metropolitan Water District contract served as the prototype for all water contracts; by the end of 1967, 31 agencies had contracted for water. In addition, a water supply contract was executed with the City of West Covina in December 1963 but was terminated in August 1965; the city's water entitlement was transferred to the Metropolitan Water District of Southern California through an amendment to the Department's contract with MWD. Long-term contracts with Hacienda Water District and Devil's Den Water District were also terminated when those districts transferred their water entitlements, through contracted amendments, to Tulare Lake Basin Water Storage District (in 1981) and Castaic Lake Water Agency (in 1992), respectively. Today SWP has long-term water supply contracts with 29 agencies. (See Chapter 2, "Water Deliveries," for a listing of long-term water supply contractors.) The long-term contracts have been amended repeatedly to incorporate mutually desired modifications.

Terms

All water contracts signed in the 1960s included an estimate of the date water would first be delivered and a schedule of the amount

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TABLE 5-1
Amendments to Water Supply Contracts, by Category

Category (a	*Description*
1. Revision of annual entitlements	Amendments to Table A, "Annual Entitlements," of water supply contracts resulting in changes in amounts of entitlement water
2. Enlargement of East Branch and Extension of Coastal Branch of California Aqueduct	Amendments for allocating costs and benefits of the enlargement of the East Branch and extension of the Coastal Branch of the California Aqueduct
3. Purchase of excess capacity	Amendments to allow contractors to purchase extra water service capacity from the California Aqueduct
4. Provisions to carry over entitlement water [Article 12(e)]	Amendments to allow contractors to carry over entitlement water from one year for delivery in the next year, providing certain conditions are met
5. Surplus water provisions	Amendments to allow contractors to take delivery of surplus water; that is, water in excess of that required to meet all demands for entitlement water—for example, water to be stored in reservoirs or to meet other SWP requirements
6. Unscheduled water provisions	Amendments to allow contractors to take delivery of unscheduled water; that is, water available for a very short period of time when excess water and SWP pumping capacity are available in the Delta
7. Wet-weather provisions	Amendments to allow contractors to take, under certain conditions, delivery of entitlement water in subsequent years if favorable local weather conditions result in adequate local water supplies

a) See Table 5-2, "Amendments to Water Supply Contracts, June 30, 1993, by Category and Contracting Agency," for names of contractors to which categories apply.

of water the agency could expect to be delivered annually (annual entitlement). That amount was designed to increase gradually until the maximum amount of annual entitlement was reached.

The contracts were initially designed to be valid for 75 years or until all bonds sold as part of the California Water Resources Development Bond Act were repaid, whichever period was longer. (See Chapter 22, "Analyzing Capital Requirements and Financing," for additional information about the Water Resources Development Bond Act.) The total combined annual entitlement for all water contracting agencies was also initially 4,230,000 acre-feet.

As a result of amendments to contracts in the 1980s, the current combined maximum annual entitlement totals 4,217,786 acre-feet, and the contracts are in effect for the longest duration of either (1) the project repayment period, which extends to the year 2035; (2) 75 years from the date of the contract; or (3) the period ending with the latest maturity date of any bond used to finance the construction costs of project facilities.

Amendments

All of the original contracts signed by the Department and local agencies have been amended to incorporate mutually desired changes. The amendments may be categorized as follows:

1. Revision of annual entitlements
2. Enlargement of the East Branch and extension of the Coastal Branch of the California Aqueduct
3. Purchase of excess capacity
4. Provisions to carry over entitlement water
5. Surplus water provisions
6. Unscheduled water provisions
7. Wet-weather provisions

See Table 5-1 for a list and description of categories of amendments; see Table 5-2 for a list of contractors to which those categories apply.

From July 1, 1992, to June 30, 1993, the Department signed one amendment. That amendment was executed with Santa Barbara County Flood Control and Water Conservation District.

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Santa Barbara County Flood Control and Water Conservation District

In November 1992 amendment number 14 was added to Santa Barbara County Flood Control and Water Conservation District's water supply contract. This amendment provides for an extension of the Coastal Branch of the California Aqueduct from the Santa Maria River to Tank 5, located 3.2 miles south of the town of Casmalia on Vandenberg Air Force Base.

Short-Term Agreements and Amendments

From July 1,1992, to June 30, 1993, the Department entered into various short-term agreements with long-term contractors and other agencies for conveying, transferring, and exchanging water. Those agreements also included terms and conditions for using the Cross Valley Canal, extracting ground water, and delivering unscheduled water.

During the same period, the Department also amended other agreements, including two agreements for conveying 1991 Drought Water Bank water. Two agreements provided for pumping specific amounts of non-SWP water into the California Aqueduct, at specific reaches, for delivery at different reaches in the aqueduct within the boundaries of the same contracting agencies.

Information about new agreements and amendments to agreements previously signed follow. The information is arranged alphabetically according to subject.

Agreements

Information about short-term agreements with various agencies involving deliveries of Central Valley Project, Drought Water Bank, entitlement, Kern Water Bank, and unscheduled water follow.

TABLE 5-2
Amendments to Water Supply Contracts June 30, 1993, by Category and Contracting Agency

	State Water Project Amendment Category (a						
Contracting Agency	*1*	*2*	*3*	*4*	*5*	*6*	*7*
Upper Feather River Area							
City of Yuba City	•				•		
County of Butte	•			•	•		
Plumas County Flood Control and Water Conservation District				•			
North Bay Area							
Napa County Flood Control and Water Conservation District	•			•	•	•	
Solano County Water Agency	•		•	•	•	•	
South Bay Area							
Alameda County Flood Control and Water Conservation District, Zone 7	•			•	•		•
Alameda County Water District				•	•	•	•
Santa Clara Valley Water District	•			•	•	•	•
San Joaquin Valley Area							
County of Kings				•	•		•
Devil's Den Water Disrict	•			•	•	•	
Dudley Ridge Water District	•			•	•	•	
Empire West Side Irrigation District	•			•	•	•	
Kern County Water Agency	•				•	•	
Oak Flat Water District				•	•	•	•
Tulare Lake Basin Water Storage District	•			•	•	•	•
Central Coastal Area							
San Luis Obispo County Flood Control and Water Conservation District				•	•		
Santa Barbara County Flood Control and Water Conservation District	•	•		•	•		
Southern California Area							
Antelope Valley-East Kern Water Agency	•	•	•	•	•		
Castaic Lake Water Agency	•			•	•		
Coachella Valley Water District	•	•		•	•		
Crestline-Lake Arrowhead Water Agency	•			•	•		
Desert Water Agency	•	•		•	•	•	
Littlerock Creek Irrigation District	•			•	•		
Metropolitan Water District of Southern California	•	•	•	•	•	•	
Mojave Water Agency	•	•		•	•		
Palmdale Water District	•	•		•	•		
San Bernardino Valley Municipal Water District	•	•		•	•		
San Gabriel Valley Municipal Water District	•		•	•	•		
San Gorgonio Pass Water Agency				•	•		
Ventura County Flood Control District				•	•		

a) Categories correspond to those listed in Table 5-1, "Amendments to Water Supply Contracts, by Category."

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Carryover Entitlement

Thirteen long-term contractors signed annual agreements to carry over up to 261,429 acre-feet of their 1992 SWP entitlement water for delivery during the spring of 1993. Names of the contractors and the amounts available to be carried over follow.

- Napa County Flood Control and Water Conservation District: 393 acre-feet
- Solano County Water Agency: 1,051 acre-feet
- Alameda County Flood Control and Water Conservation District, Zone 7: 1,566 acre-feet
- Santa Clara Valley Water District: 493 acre-feet
- Oak Flat Water District: 192 acre-feet
- Dudley Ridge Water District: 2,274 acre-feet
- Kern County Water Agency: 40,156 acre-feet
- Tulare Lake Basin Water Storage District: 6,760 acre-feet
- Antelope Valley-East Kern Water Agency: 1,650 acre-feet
- Metropolitan Water District of Southern California: 193,668 acre-feet
- Palmdale Water District: 1,923 acre-feet
- San Bernardino Valley Municipal Water District: 11,086 acre-feet
- San Gabriel Valley Municipal Water District: 217 acre-feet

In addition a letter agreement between the Metropolitan Water District of Southern California and the Department was signed on April 21, 1993, to provide for delivery of up to 50,000 acre-feet of MWD's 1992 carryover entitlement water to Kern County Water Agency. The water was delivered for temporary storage in the ground water basin within Semitropic Water Storage District, a member agency of KCWA.

Central Valley Project Water

In 1992 the Department negotiated agreements with six Cross Valley Canal contractors to convey a total of 30,954 acre-feet of CVP water stored in the Department's share of San Luis Reservoir. The Department conveyed (1) 28,504 acre-feet to Reach 12E of the California Aqueduct, including 2,455 acre-feet of water exchanged between several Cross Valley Canal contractors and Kern County Water Agency and (2) 2,450 acre-feet to Reach 5 in accordance with an agreement, described below, between the Department and Rag Gulch Water District. The following Cross Valley Canal contractors signed agreements: County of Fresno, County of Tulare, Kern-Tulare Water District, Lower Tule Irrigation District, Pixley Irrigation District, and Rag Gulch Water District.

An October 30, 1992, agreement between the U.S. Bureau of Reclamation and the Department approved the conveyance of up to 6,200 acre-feet of CVP water for the U.S. Fish and Wildlife Service. The water was conveyed to the Kern National Wildlife Refuge through the Buena Vista Water Storage District's turnout in Reach 10A of the California Aqueduct.

A letter agreement between the U.S. Bureau of Reclamation and the Department, dated November 9, 1992, approved conveying up to 49,840 acre-feet of water to nine CVP contractors. Only one CVP contractor, Musco Olive Products, Inc., scheduled the delivery of 142 are-feet of CVP water under the terms of this agreement.

On December 4, 1992, the Department and Rag Gulch Water District signed an agreement for conveying a portion of Rag Gulch's CVP water, stored in the Department's share of San Luis Reservoir, to Westlands Water District during 1992. Under that agreement

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the Department conveyed 2,450 acre-feet of water to Westlands Water District's turnout in Reach 5 of the California Aqueduct.

On April 1, 1993, the Department signed a contract with the Western Canal Water District to convey up to 4,600 acre-feet of water from Thermalito Afterbay through the Western Canal Outlet for the 1992–93 Sacramento Valley Ricelands/Wetlands conjunctive-use program. This water was part of an exchange with USBR in which USBR would release up to 5,000 acre-feet of CVP water from Shasta Lake under an operational exchange agreement between USBR and the Department based on the provisions of the Coordinated Operation Agreement.

Cross Valley Canal Use

At the end of 1992 the Department signed 1-year agreements with seven Cross Valley Canal participants, which allowed the Department to make simultaneous exchanges of SWP water for participants' water in the California Aqueduct during 1993. The SWP water is stored under the Kern Water Bank program and would normally be extracted and transported through the Cross Valley Canal to the California Aqueduct. The participants' water is CVP water that the Department agreed to store in San Luis Reservoir or pump from the Delta and then convey to the participants under other agreements. The agreements will benefit all parties, since the Department will pay less for use of the Cross Valley Canal, and the participants will pay lower conveyance costs.

The following Cross Valley Canal participants signed agreements: Rag Gulch Water District, Kern-Tulare Water District, Lower Tule Irrigation District, Pixley Irrigation District, County of Fresno, Tri-Valley Water District, and Arvin-Edison Water Storage District.

Drought Water Bank

Contracts for the conveyance of 1992 Drought Water Bank water were signed between the Department and four agencies. The agencies, dates of contracts, and the maximum quantities of water for conveyance are listed in Table 5-3. For additional information about the Emergency Drought Water Bank program see Chapter 16, "Augmenting the Water Supply."

An agreement between Dudley Ridge Water District and the Department, signed July 9, 1992, provided for the change in delivery point for up to 850 acre-feet of the district's 1991 Drought Water Bank water from Reach 8D to Kern County Water Agency's turnouts in reaches 9, 10A, and 31A.

Entitlement Water Exchanges

An agreement signed December 24, 1992, provides for the exchange of up to 5,000 acre-feet of the Metropolitan Water District of Southern California's 1992 SWP entitlement water for a like amount of San Gabriel Valley Municipal Water District's SWP entitlement water during 1993 or subsequent years.

TABLE 5-3

Agreements for Conveying 1992 Drought Water Bank Water, by Contracting Agency, Date of Contract, and Amount

Contracting Agency	*Date of Contract*	*Maximum Amount of Water for Conveyance (Acre-feet)*
City and County of San Francisco	November 30, 1992	19,000
Tulare Lake Basin Water Storage District	November 30, 1992	31,550
Metropolitan Water District of Southern California	December 23, 1992	15,000
Kern County Water Agency	March 3, 1993	8,170

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TABLE 5-4

Agreements for 1993 Service Area Transfers of Farmers' Entitlement Water, July 1, 1992, through June 30, 1993

Contracting Agency (a	*Date of Agreement*	*Contractual Amount of Water (Acre-feet)*
Castaic Lake Water Agency (F) Westlands Water District (T)	April 20, 1993	5,095
Tulare Lake Basin Water Storage District (F) Westlands Water District (T)	April 27, 1993	1,700
Dudley Ridge Water District (F) Westlands Water District (T)	April 29,1993	27,200
Oak Flat Water District (F) Westlands Water District (T)	June 11, 1993	2,000
Dudley Ridge Water District (F) Kern County Water Agency (T)	June 17, 1993	200 (b
Kern County Water Agency (F) Westlands Water District (T)	June 18,1993	10,000

a) F: Water delivered from; T: Water delivered to
b) 1992 carryover water for 1993 delivery

On June 28, 1993, an agreement between Kern County Water Agency and the Department was signed to provide for the exchange of up to 100,000 acre-feet of Kern County Water Agency's 1993 entitlement water with Westlands Water District for a like amount of Tulare Irrigation District's 1993 CVP water from the Friant-Kern Canal.

Service Area Transfers of Farmers' Entitlement Water

Between July 1, 1992, and June 30, 1993, the Department negotiated seven entitlement water transfer agreements with six long-term contractors. Six of the agreements allowed the contractors to transfer 1993 entitlement water to Westlands Water District. One agreement allowed Dudley Ridge Water District to transfer a portion of its 1992 carryover entitlement water to Kern County Water Agency. Requests for negotiating entitlement water transfer agreements were initiated by farmers who farm parcels of land within the boundaries of both agencies named in the agreement. The agreements allowed water to be delivered within the boundaries of the agencies where the farmers' most productive land was located. The transfer of entitlement water under these agreements was intended to partially relieve contracting agencies and involved landowners of drought-related financial hardships.

Contracting agencies, dates of agreements, and the contractual amounts of water for delivery are listed in Table 5-4.

Entitlement Water, Miscellaneous

An agreement signed August 7, 1992, approved a water release of up to 50 cubic feet per second from Silverwood Lake into the Mojave River for delivery to Mojave Water Agency as part of Mojave Water Agency's 1992 annual entitlement.

On August 20, 1992, the Department signed an agreement with Kern County Water Agency to provide for the return of 2,000 acre-feet of KCWA's SWP entitlement water to Antelope Valley-East Kern Water Agency. Under a turn-in agreement between the Department and AV-EKWA dated June 17,1991, AV-EKWA provided 2,000 acre-feet of its SWP entitlement water to Kern County Water Agency for use by Tejon Ranch. Kern County Water Agency will return the water to AV-EKWA within ten years. The turn-in agreement permits pumping local ground water into the California Aqueduct.

Ground Water Extraction

In 1990 the Department purchased 98,005 acre-feet of ground water from La Hacienda, Inc., a Kern County corporation. The water is located in the Kern County water basin and can be extracted according to terms of a December 20, 1990, operating agreement between the Department and Kern County

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Water Agency. After purchasing the water, the Department reconstructed existing wells formerly used by farmers and constructed conveyance facilities on property purchased for the Kern Fan Element of the Kern Water Bank.

According to the operating agreement, water can be extracted from the La Hacienda well field only during years when (1) SWP cannot deliver the total entitlement requested by the long-term contractors and (2) the Department projects storage levels in Lake Oroville to drop below the minimum power pool. This latter criterion, however, proved difficult to interpret to the satisfaction of Kern County Water Agency and the Department. As a consequence, an interim letter agreement, which applied only to the 1992-93 water year, waived the minimum power pool requirement and allowed the Department to extract ground water under temporary criteria to alleviate water shortages caused by the continuing drought. During 1992 a total of 14,878 acre-feet was extracted; however, only 14,854 acre-feet was delivered to SWP due to losses in conveyance systems. Negotiations to modify extraction criteria and amend the operating agreement are now under way.

In late June 1993 the Department signed an agreement with Kern County Water Agency for the use of 1 mile of the Pioneer Canal that traverses Kern Fan Element lands. Through March 31, 1994, up to 4,000 AF of water may be recharged in the canal.

In 1990, as part of the 1990 Ground Water Demonstration Program, the Department delivered 140,500 acre-feet of entitlement water to Kern County Water Agency for storage in ground water basins within its service area. The Department also purchased 9,500 acre-feet of ground water in storage for a total of 150,000 acre-feet for the Ground Water Demonstration Program. This water was stored for future extraction as part of the SWP water supply (for additional information see Bulletin 132-91, page 118).

During 1992 the Department utilized a total of 57,171 acre-feet of water previously stored under the 1990 Ground Water Demonstration Program. Names of the ground water elements and amounts are:

Semitropic Element, 41,499 acre-feet
Buena Vista Element, 9,300 acre-feet
Kern Delta Element, 2,814 acre-feet
Rosedale Element, 3,558 acre-feet

Miscellaneous Agreements

An agreement signed January 27, 1993, among Solano County Water Agency, Napa County Flood Control and Water Conservation District, and the Department approved the conveyance of up to 800 acre-feet of water through the North Bay Aqueduct facilities. The water supply was purchased by Solano County Water Agency and Napa County Flood Control and Water Conservation District from Glenn-Colusa Irrigation District under a separate agreement.

On June 21, 1993, the Department signed an additional agreement with Solano County Water Agency. This agreement was written to approve the conveyance of up to 600 acre-feet of water through North Bay facilities. The water was made available to Solano County Water Agency by Alhambra Pacific Joint Venture under a separate transfer agreement.

Unscheduled Water

According to provisions of the surplus water amendment for Napa County Flood Control and Water Conservation District—Amendment number 16, signed July 29, 1991—scheduling unscheduled water will be done pursuant to provisions of an annual agreement executed for any year when unscheduled water is available for delivery. On

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April 13, 1992, the district signed the required agreement for scheduling unscheduled water deliveries during 1992. Under this agreement the district took delivery of 1,156 acre-feet of unscheduled water.

Water Payback Agreement

On April 22, 1991, the Department signed an agreement with Kern County Water Agency for the use of the California Aqueduct for conveyance and storage of local water supplies from the Cross Valley Canal. The agreement, which dealt with the location of facilities, metering, and water quality, allowed the member units of the agency to pump local ground water into the aqueduct for redistribution within their service areas. However, in some areas the ground water could not be pumped fast enough to meet peak summer agricultural demands from May through August. The agency subsequently requested that the Department advance deliveries of surface water during this peak period and the agency would repay the loan during other months of the year by continuous pumping from the ground water wells. This letter agreement was signed on September 24, 1991, and all the water was eventually paid back by the end of 1992.

Amendments

This section includes information about amendments to agreements previously signed by the Department.

Amendments to Short-Term Agreements

Nine turn-in agreements, signed in 1991, allowed participating agencies to pump specific amounts of water into the California Aqueduct for later delivery or delivery at a different reach in the aqueduct. Of those agreements, seven were extended to 1992 under the original general terms and conditions. Two agreements were extended to 1993 under additional terms and conditions. The San Bernardino Valley Municipal Water District agreement was extended through December 31, 1993, and the Kern County Water Agency/Wheeler Ridge-Maricopa Water Storage District agreement was extended through February 28, 1993.

On October 5, 1992, the Department signed an agreement with Westlands Water District to extend use of San Luis Reservoir storage by Westlands Water District from March 31, 1992, to April 6, 1992. (The original agreement providing for Westlands' use of San Luis Reservoir was signed in 1991.) On April 6, the Department transferred the district's remaining 12,460 acre-feet of local water, stored in the Department's share of San Luis Reservoir, to USBR's share of San Luis Reservoir storage. The transfer was necessary to provide storage capacity for SWP water.

An agreement between Kern County Water Agency and the Department signed October 9, 1992, extended through March 1992 the 1991 contract for conveying 1991 Drought Water Bank water. The October 9 agreement allowed the carryover and delivery of 6,327 acre-feet of 1991 Drought Water Bank water through March 1992.

An agreement signed May 27, 1993, between Dudley Ridge Water District and the Department extended the November 7, 1991, agreement for conveying 1991 Drought Water Bank water to the district's turnouts in the California Aqueduct. The May agreement allowed the district to carry over up to 1,278 acre-feet of 1991 Drought Bank water for delivery through March 1992.

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Water Rights Management

This section includes information about water rights management contracts negotiated with Delta agricultural water users, including South Delta Water Agency and western Delta industrial and municipal water users.

The agencies claim rights to usable water in the Delta, and contracts with the agencies help the Department resolve those water rights issues.

Delta Agricultural Water Users

The Department successfully negotiated contracts with various Delta agricultural agencies to help SWP meet necessary water level, circulation, and quality standards throughout each agency's area.

Agency Contracts

In 1974 the Delta Water Agency was replaced by six Delta agricultural water agencies. Those agencies are North Delta Water Agency, South Delta Water Agency, Central Delta Water Agency, East Contra Costa Irrigation District, Contra Costa County Water Agency, and Byron-Bethany Irrigation District. Of those agencies, two—North Delta Water Agency and East Contra Costa Irrigation District— signed contracts with the Department in 1981.[1]

In September 1990 the Department completed negotiations for a long-term contract with the South Delta Water Agency and the U.S. Bureau of Reclamation. The three agencies are now working to obtain approvals from control agencies to sign the contract, which includes provisions to address SDWA's concerns, including those about the quality of water entering SDWA through the San Joaquin River system. Information about the long-term contract with SDWA and USBR follows.

[1]The Department also periodically conducts informational meetings with Central Delta Water Agency and is requesting to begin negotiations on contracts designed to meet the needs of that agency.

Contract Provisions

According to provisions of the proposed SDWA contract, parties agree to proceed with the design, construction, and operation of certain barrier facilities in the channels of SDWA. The facilities resolve those portions of the lawsuit that SDWA filed in 1982 relating to the alleged effects of export pumping by SWP or the Central Valley Project or both on water levels, quality, and circulation in the south Delta.

Barrier Facilities

At this time the Department is conducting a project designed to test barriers in SDWA's channels. The test involves:

- Reducing or eliminating some adverse water levels
- Improving hydraulic circulation
- Reviewing alternative timing patterns for the barriers
- Monitoring fish and vegetation
- Evaluating and reviewing computer model calibration
- Developing comprehensive environmental information
- Defining the potential effects on vegetation and fisheries

The biological information gathered during implementation of this project will be used as a guide for finding solutions to fishery resources and water use problems in the south Delta.

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Interim Releases

The proposed contract defines amounts of certain interim releases from New Melones Reservoir and other related actions to be taken by USBR as a temporary solution to that portion of the litigation relating to San Joaquin River flows and water quality as measured at Vernalis.

Additional Amendments

The proposed contract also includes the framework for USBR and SDWA to use in negotiating an amendment to provide a permanent settlement to the remaining issues in dispute. Those issues concern the quantity and quality of water as well as the salt entering SDWA boundaries from the south through the San Joaquin River system.

Western Delta Industrial Water Users

Industries near the cities of Antioch and Pittsburg in the western Delta use offshore water for processing. When offshore water quality falls below the industries' requirements, a substitute supply is provided through the Contra Costa Canal. According to terms of contracts signed in 1987 and 1991, at times the Department pays for providing that water.

Payment for Suitable Water

According to terms of a water entitlement contract executed in 1987, the Department makes payments to an operator of a mill located in the western Delta, Fibreboard Corporation and its successors (now Gaylord Container Corporation), in water years that do not include a sufficient number of days when water is deemed suitable for offshore use.

When the number of days in which water is deemed suitable for use is less than the number of days to which Gaylord is entitled, the Department compensates Gaylord for added costs by purchasing a substitute water supply and treating water needed to operate the mill. According to the provisions, payments were due in water years 1986–87, 1987–88, 1988–89, 1989–90, 1990–91, and 1991–92.

On November 19, 1991, the Department negotiated a second agreement with Gaylord Corporation regarding another mill Gaylord owns downstream of the mill purchased from Fibreboard. The provisions of that agreement are similar to those contained in the 1987 water entitlement agreement.

Determination of Payments

The contracts contain a chart used by the Department to determine the number of days for which Gaylord Container Corporation should be paid. The determination is based on the relationship between the Sacramento River Index and the number of days the corporation is entitled to suitable water quality.

The payment formula is the same in both contracts except for one factor relating to the method of obtaining water from the Contra Costa Canal. (The second mill obtains water by gravity flow; the first, by pumps.)

Western Delta Municipal Water Users

To compensate the Contra Costa Water District and the City of Antioch for purchasing water of usable quality when such water is not available in the Antioch-Pittsburg area, the Department signed contracts with those

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agencies in 1967 (Contra Costa Water District) and 1968 (City of Antioch).

Provisions for Payments

In 1993 the Department made compensation payments for the 1991–92 water year to Contra Costa Water District for 3,528 acre-feet of water of usable quality ($17,993) and to the City of Antioch for 1,192 acre-feet of usable water ($473,963).

According to terms of the contracts, the Department compensates each agency for additional costs of purchasing a substitute water supply from the Contra Costa Canal to replace offshore water supplies of usable quality lost because of SWP's operations. Credits for the number of days of above-average offshore water supplies of usable quality accrue to offset the number of below-average days in future years.

Basis for Payments

During the 1991–92 water year, water of usable quality was available to Contra Costa Water District for 11 days of the water year; its standard is 142 days. For the City of Antioch, usable water was available for 51 days; its standard is 208 days.

Because the 1990–91 water year was also deficient in water of usable quality, the actual deficient number of days in the 1991–92 water year (131 for Contra Costa Water District and 157 for the City of Antioch) were not offset by any accumulated credits specified in the contracts with the Department.

Transfer of the CVP

In response to various federal legislative efforts to impact water policy and fish and wildlife issues in California, Governor Wilson proposed in February 1992 that state and federal officials negotiate a transfer of the CVP to the state. Consequently, transfer of the CVP to the state became one of the key elements of the governor's Long-Term Water Policy Framework for California. Governor Wilson stated that operating CVP and SWP under the same rules and requirements will allow California to meet its needs in a balanced and integrated fashion.

In 1992 representatives of California and the Department of the Interior negotiated the Memorandum of Agreement for Transfer of the CVP. The MOA recognizes that any transfer requires authorizing legislation from Congress, sets forth a framework for negotiating terms and conditions for a transfer, and specifies procedures for complying with the National Environmental Policy Act and the California Environmental Quality Act. The MOA was signed by Governor Wilson and Secretary of the Interior Manuel Lujan, Jr. on December 14, 1992.

Further work on the CVP transfer has been on hold because of the immediate requirements of the Central Valley Project Improvement Act of 1992. The Department recognizes that implementing CVPIA requirements has priority, and any further efforts on the CVP transfer may await development of the programmatic EIS required by the act.

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6. Delivering Water

Water is delivered by the State Water Project for a variety of beneficial uses. In addition to delivering entitlement water to long-term water supply contractors, SWP:

- Conveys water to and stores water for other public agencies through special contracts and agreements
- Provides water for wildlife and recreational uses
- Stores, releases, and delivers local runoff water from SWP facilities to agencies that hold local water rights

In 1992 a total of 2,233,982 acre-feet of water was conveyed to 25 long-term contractors and 25 other agencies. That amount includes the following deliveries:

Entitlement and entitlement-related water: 1,471,199 acre-feet of entitlement and 2,605 of entitlement-related (recreation) water was delivered to long-term SWP contractors.[1]

Nonentitlement water: 760,178 acre-feet of nonentitlement water was delivered to satisfy agreements made with SWP contractors and other agencies, including the U.S. Bureau of Reclamation.

Specific information about water deliveries made to long-term contractors and other agencies during 1992 and historical deliveries from 1962 through 1992 has been organized into the following three sections, each with a corresponding table located at the end of this chapter:

1. Total amounts of water delivered and future credits granted to long-term contractors in 1992 (Table 6-1)
2. Total amounts of water delivered in 1992, by month (Table 6-2)
3. Total amounts of annual water entitlements and water conveyed from 1962 through 1992 (Table 6-3)

Water Deliveries and Credits to Long-Term Contractors

Information about the total amounts of water delivered in 1992 and future entitlement credits granted to long-term contractors through 1992 is included in Table 6-1.

Information about specific columns included in the table follows. The information is arranged according to column numbers.

[1]Entitlement water is defined as the amount of water long-term contractors may request each year as part of Article 12(a), "Procedure for Determining Water Delivery Schedule," of their water supply contract.

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1992 Entitlement Water Delivered

Column 1 includes the amount of current-year entitlement water delivered to each long-term water supply contractor in 1992.

In 1992 a total of 1,375,433 acre-feet of all categories of entitlement water was delivered, excluding 1991 carryover entitlement and make-up water under Article 12(d) of the long-term water supply contracts.

Article 12(d) Water Delivered

In some instances, with the Department's approval, contractors may defer delivery of entitlement water to another year (carryover entitlement water) or request delivery of previously acquired entitlement water credits according to provisions of their water supply contracts. Columns 2 and 3 show amounts of Article 12(d) water delivered.

In 1992 the State Water Project delivered a total of 92,282 acre-feet of entitlement water carried over from 1991 to seven contractors.

In addition, SWP delivered 38 and 3,446 acre-feet of Article 12(d) water to Napa County Flood Control and Water Conservation District and Solano County Water Agency, respectively (see Column 3).

Total Entitlement Water Delivered

Column 4 includes the sum of all entitlement water delivered in 1992. A total of 1,471,199 acre-feet of entitlement water was delivered in 1992.

Other Water Deliveries

Column 5 includes deliveries to long-term water contractors of project water other than entitlement water, such as unscheduled water, and deliveries of nonproject water.

Nonproject water is generally defined as water purchased from non-SWP agencies. Water is conveyed by the Department and in some instances stored in SWP facilities under special agreements for future deliveries.

In 1992 a total of 66,157 acre-feet of other water deliveries, including 1,156 acre-feet of unscheduled water, was delivered to long-term water contractors.

Total Deliveries

Column 6 includes total amounts of water delivered to long-term contractors. In 1992 SWP delivered 1,537,356 acre-feet to 25 long-term contractors, which included 1,471,199 acre-feet of entitlement water and 66,157 acre-feet of other SWP and nonproject water.

Make-up Water

Column 7 includes total amounts of make-up water credited to contractors according to Article 12(d) and Article 14(b) of the long-term water supply contracts.

According to Article 12(d), if in any year as a result of causes beyond the Department's control, water is not available for delivery according to the established schedule for that year, the water may be delivered at a later date. This type of credit is referred to as 12(d) water.

Article 14(b) provides for the delivery of water at a later time if, due to necessary investigations, inspections, maintenance, repairs, or replacement of SWP facilities, water is not delivered.

In 1992 long-term contractors earned credits for make-up water according to Article 12(d) and Article 14(b). However, the ex-

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act amount of those credits is being negotiated with the Department.

Wet-Weather Water

According to provisions of their water supply contracts, South Bay and certain San Joaquin Valley contractors may reduce deliveries of entitlement water in years when above-average amounts of local water are available and may request increased deliveries by an equal amount in later years.

No additional credits for wet-weather water were acquired during 1992. Column 8 includes the total amount of credits acquired in previous years, 283,668 acre-feet.

Carryover Water Approved for Delivery

For several years the Department has offered contractors the opportunity to carry over a portion of their entitlement water approved for delivery in the current year for delivery during the next year. The carryover program was designed to encourage the most effective and beneficial use of water and to avoid obligating the contractors to use or lose the water by December 31 of each year.

Because operational constraints may change from year to year, the Department prepares an agreement that lists the conditions of carryover water delivery for a given year. The agreement is signed by participating contractors.

Contractors were informed by the Department of its willingness to consider requests to carry over 1992 entitlement water to January, February, and March 1993 in *Water Service Contractors Council Memorandum* Number 2032.

Column 9 includes amounts of 1992 entitlement water approved for delivery in 1993. The total amount of 1992 entitlement water carried over for delivery in 1993 was 219,582 acre-feet.

Total Delivery Credits

Column 10 includes total amounts of future entitlement credits according to Articles 7, 12(d), and 45 of the long-term water supply contract for specific agencies. On January 1, 1993, the total amount of credits was 503,250 acre-feet, including 283,668 acre-feet of wet-weather water and 219,582 acre-feet of 1992 carryover water.

Reduction Credits

According to the provisions of their water supply contracts, South Bay and San Joaquin Valley contractors may increase their allocated entitlement water (up to their maximum annual entitlement) in years of need, provided that additional water is available from SWP according to Article 7 or Article 45 of the long-term water supply contracts.

Contractors who have increased their allocation of entitlement water in previous years may in any one year reduce their supply by the amount the supply had been increased previously. Column 11 includes those credits.

Oak Flat Water District has 2,466 acre-feet of future reduction credits available according to Article 45. At this time no other contractors have reduction credit balances.

Total Amounts Delivered in 1992, by Month

During 1992 SWP provided water service to 50 agencies, including 25 long-term water contractors. The names of those agen-

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cies and amounts of water delivered to them by month may be found in Table 6-2.

A summary of water deliveries is included in this section. Information is arranged according to the categories, "State Water Project Water" and "Nonproject Water."

State Water Project Water

State Water Project water is classified into the following categories:

Entitlement water
- current year entitlement (1992)
- carryover entitlement (1991)
- transfer entitlement
- Article 12(d) make-up water
- Article 14(b) water
- wet-weather water

Surplus water
- scheduled surplus
- unscheduled surplus

Recreation and fish and wildlife water
- enhancement
- mitigation

In addition, SWP may approve transfers of entitlement water among various contractors if certain conditions are met. The SWP may temporarily loan water to contractors if satisfactory arrangements are made for repayment and water is available within the system.

Entitlement Water

A total of 1,375,433 acre-feet of 1992 entitlement water was delivered to 25 long-term contractors.

Carryover Entitlement Water

In 1992 SWP delivered 92,282 acre-feet of 1991 carryover entitlement water to the following agencies: Napa County Flood Control and Water Conservation District, Solano County Water Agency, Alameda County Water District, Kern County Water Agency, Antelope Valley-East Kern Water Agency, Castaic Lake Water Agency, and Metropolitan Water District of Southern California.

Transfers of Entitlement Water

During 1992 a total of 16,476 acre-feet of entitlement water was transferred between six SWP long-term contractors and one non-SWP water agency as follows:

- Dudley Ridge Water District to Westlands Water District, 10,823 acre-feet
- Dudley Ridge Water District to Tulare Lake Basin Water Storage District, 280 acre-feet
- Mojave Water Agency to Antelope Valley-East Kern Water Agency, 1,310 acre-feet
- Metropolitan Water District of Southern California to San Gabriel Valley Municipal Water District, 4,063 acre-feet

Make-up Water

A total of 3,484 acre-feet of make-up water was delivered in 1992, 38 acre-feet to Napa County Flood Control and Water Conservation District and 3,446 acre-feet to Solano County Water Agency.

Unscheduled Water

Unscheduled water is surplus water that is available for only a short period of time when excess water and SWP pumping capabilities are available in the Delta.

In 1992 a total of 1,156 acre-feet of unscheduled water was delivered to Napa County Flood Control and Water Conservation District.

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Water for Recreation and Fish and Wildlife

A total of 2,605 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife.

Recreational Use

The State Water Project delivered 877 acre-feet of water for facilities at Lake Del Valle, O'Neill Forebay, Silverwood Lake, and Lake Perris.

In addition, 1,543 acre-feet was delivered to Castaic Lagoon, an impoundment downstream from Castaic Lake devoted entirely to recreation.

Trout Fishery

The State Water Project released 29 acre-feet of water to maintain a trout fishery in Piru Creek as a condition of obtaining a license from the Federal Energy Regulatory Commission to develop a power plant at Pyramid Lake.

Wildlife Management

The State Water Project delivered 156 acre-feet of water to use in managing wildlife in the Pilibos Wildlife Area, 40 miles south of Los Banos, and on about 770 acres of land near O'Neill Forebay.

Loans of SWP Water

The SWP loan program provided surface water to agricultural contractors during peak irrigation periods when ground water, pumped at a constant rate from agricultural contractors' wells, could not meet contractors' short-term water supply needs.

In 1992 SWP loaned a total of 14,949 acre-feet of water to Kern County Water Agency as an extension of the loan program initiated in 1991. Kern County paid back 36,383 acre-feet to repay loans in 1991 and 1992 and to make up for losses incurred. The payback included 20,871 acre-feet of local ground water and 15,512 acre-feet of the agency's entitlement water released to the Department.

Nonproject Water

In 1992 SWP facilities were used to deliver nonproject water for other agencies, including the Central Valley Project. In addition, SWP facilities were used to deliver water purchased from the 1991 and the 1992 Drought Water Banks. Also included in this category is nonproject water conveyed from one agency to another.

Central Valley Project Water

In 1992 the Department conveyed 38,640 acre-feet of CVP water through SWP facilities, including transfers and exchanges.

The deliveries were accomplished according to agreements negotiated with the U.S. Bureau of Reclamation throughout the year as well as with participants of existing three-party contracts for the use of the Cross Valley Canal, a water conveyance facility that connects with the California Aqueduct near Tupman in Kern County. Information about those deliveries follows.

Musco Olive Products, Inc.

According to terms of an annual conveyance agreement with USBR, the Department agreed to convey to CVP water contractors water furnished by USBR at O'Neill Forebay.

From January to December 1992, the Department delivered 136 acre-feet of water to Musco Olive Products, Inc.

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U.S. Fish and Wildlife Service

The Department conveyed 6,030 acre-feet of CVP water for the U.S. Fish and Wildlife Service according to provisions of an agreement with USBR. That water was conveyed from October through December 1992 to the Kern National Wildlife Refuge.

State Water Project facilities were also used to deliver 381 acre-feet of CVP water for recreational and fish and wildlife use.

U.S. Department of Veterans Affairs

A short-term agreement is signed annually with USBR to convey CVP water for the U.S. Department of Veterans Affairs. A long-term agreement is in the process of being negotiated. In 1992, 18 acre-feet of water was delivered through SWP facilities to maintain a national cemetery near Santa Nella, California.

Cross Valley Canal Contractors

The Cross Valley Canal in Kern County is used by seven CVP water or irrigation districts and two counties to obtain water from the California Aqueduct. These districts and counties include Ducor, Hills Valley, Lower Tule River, and Pixley Irrigation Districts; Kern-Tulare, Rag Gulch, and Tri-Valley Water Districts; and Counties of Fresno and Tulare.

In 1992 all contractors except Ducor Irrigation District received CVP water either through a water exchange with another agency or through deliveries made from the Cross Valley Canal. That water was made available by USBR at the Delta. Some CVP water was delivered directly from the Delta; the balance was stored in San Luis Reservoir and released for delivery later.

Water conveyed in 1992 totaled 32,075 acre-feet, including the following transfers and exchanges:

Cross Valley Canal Contractors and Kern County Water Agency. Water delivered included 2,455 acre-feet exchanged between several Cross Valley Canal contractors and Kern County Water Agency.

Rag Gulch Water District to Westlands Water District. From Rag Gulch Water District, 2,450 acre-feet was transferred to Westlands Water District.

Electrical energy required to convey CVP water through Harvey O. Banks Delta Pumping Plant and Dos Amigos Pumping Plant was supplied as needed by USBR.

Water Transfers

During 1992 the Department conveyed nonproject water according to terms of several water transfer agreements. Nonproject water includes water purchased through the 1991 and 1992 Drought Water Banks as well as water purchased by other agencies from non-SWP sources.

Agency Transfers

In addition to conveying the CVP water transfers discussed in "Cross Valley Canal Contractors," SWP transferred 1,835 acre-feet of non-SWP water for four water districts or agencies in 1992.

Dudley Ridge Water District to Kern County Water Agency. Dudley Ridge Water District transferred a total of 448 acre-feet of 1991 Drought Water Bank Water to Kern County Water Agency during March.

Kern County Water Agency to Westlands Water District. Kern County Water

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Agency transferred a total of 800 acre-feet of 1992 Drought Water Bank water to Westlands Water District.

Solano County Water Agency to Napa County Flood Control and Water Conservation District. Solano County Water Agency transferred 237 acre-feet of the City of Vallejo's water rights water to Napa County Flood Control and Water Conservation District during April and August.

Westlands Water District to San Luis Water District. Westlands Water District made available 350 acre-feet of CVP water to San Luis Water District during March.

1991 Drought Water Bank

In 1992 the Department conveyed a total of 7,614 acre-feet of 1991 Drought Water Bank water for three agencies, including 448 acre-feet transferred from Dudley Ridge Water District to Kern County Water Agency (see "Agency Transfers"). Names of those agencies and amounts follow.

City of San Francisco, 9 acre-feet
Kern County Water Agency, 6,327 acre-feet
Dudley Ridge Water District, 1,278 acre-feet

1992 Drought Water Bank

Three long-term SWP contractors and the City of San Francisco originally purchased a total of 68,720 acre-feet of water from the 1992 Drought Water Bank program. In 1992 the Department conveyed a total of 63,501 acre-feet of that water to those contractors, including 800 acre-feet transferred from Kern County Water Agency to Westlands Water District (see "Agency Transfers"). Names of those contractors and amounts follow.

City of San Francisco, 13,781 acre-feet
Kern County Water Agency, 8,170 acre-feet
Tulare Lake Basin Water Storage District, 31,550 acre-feet
Metropolitan Water District of Southern California, 10,000 acre-feet

The City of San Francisco carried over a total of 5,219 acre-feet for delivery in January and February 1993.

Habitat Preservation

In 1991 the Department of Fish and Game purchased 5,920 acre-feet of water, stored in Folsom Lake, from the City of San Francisco for wetlands management programs in the San Joaquin Valley. Under an agreement between the Department and DFG, DFG had the water released from the Folsom reservoir storage and made 4,736 acre-feet available to the Department for conveyance at Banks Pumping Plant. Under the agreement the Department conveyed the water to O'Neill Forebay and then pumped it, for later release, into the Department's share of storage of San Luis Reservoir. The balance, 1,184 acre-feet, was used for Delta outflow to satisfy Water Resources Control Board requirements. Two thousand acre-feet of that water was released during January, February, and March 1992; the balance—2,736 acre-feet—was transferred to the USBR's share of storage in San Luis Reservoir in March 1992 for later release and USBR conveyance to DFG.

Water Rights Permit Water

Water in this category is transported through SWP facilities to long-term SWP con-

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tractors and other agencies according to terms of various local water rights agreements. Some of this water simply passes through SWP transportation facilities, and a portion is stored in SWP reservoirs for release at a later time.

In 1992 a total of 640,055 acre-feet of water in this category was delivered to the Feather River, North Bay, South Bay, and Southern California areas.

Feather River Area

Nine nonproject agencies in the Feather River area received 613,978 acre-feet. Those agencies are Last Chance Creek Water District, Thermalito Irrigation District, Oroville-Wyandotte Irrigation District, Western Canal Water District, Joint Water Districts Board, Tudor Mutual Water Company, Oswald Water District, Garden Highway Water Company, and Plumas Mutual Water Company.

North Bay Area

In the North Bay area 11,275 acre-feet of water was delivered as Vallejo permit water to Solano County Water Agency. The City of Vallejo, as a member agency, has contractual rights to extra capacity in the North Bay Aqueduct to transport this water for which the city has a recognized water right. An additional 237 acre-feet of Vallejo permit water was transferred, under agreement, to Napa County Flood Control and Water Conservation District.

South Bay Area

In the South Bay area 13,512 acre-feet of local water was delivered to SWP contractors. Alameda County Flood Control and Water Conservation District, Zone 7, received 8,415 acre-feet and Alameda County Water District received 5,097. These two agencies have joint ownership of the water rights to the runoff from the Lake Del Valle watershed.

Southern California

In Southern California 1,053 acre-feet of local runoff from the Houston Creek watershed was stored and delivered to Crestline-Lake Arrowhead Water Agency. These local water rights have been signed over to the Department as part of the contractual arrangements for storing and delivering this local runoff for the Crestline-Lake Arrowhead Water Agency.

Total Amounts of Annual Water Entitlements and Water Delivered Since 1962

Information about the total amount of annual water entitlements and water conveyed for the past 30 years is contained in Table 6-3. Specific information about entitlements and water conveyed, arranged according to column number, follows.

Annual Entitlements

Columns 1 through 7 include the amount of each long-term contractor's entitlement water for years 1962 through 1992 as specified in the entitlement schedules (Table A, "Annual Entitlements") of the long-term water supply contracts. The information is arranged according to geographical area.

In some instances those entitlement schedules, projections of each contractor's

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need for water to 2035, have been amended to meet the needs of individual contractors.

The amounts of entitlement water each contractor may request for years 1962 through 2035 may be found in Table B-4, "Annual Entitlements to Project Water," in Appendix B.

Entitlement Water

Column 8 includes total amounts of entitlement water delivered each year from 1962 through 1992. In 1992 entitlement water delivered to 25 contractors totaled 1,471,199 acre-feet. That amount includes:

- 1991 carryover entitlement water (entitlement water carried over from 1991 and delivered in 1992), 92,282 acre-feet
- 1992 transfer entitlement water (entitlement water transferred from one contractor to another), 16,476 acre-feet
- Make-up water under Article 12(d) of the long-term water supply contracts, 3,484 acre-feet

Chapter 2, "Water Deliveries," includes information about the Department's procedure for determining amounts of entitlement water to be delivered.

Surplus and Unscheduled Water

Surplus water is water in excess of that required to meet all demands for entitlement water and water to be stored in SWP reservoirs.

Column 9 includes amounts of surplus and unscheduled water delivered during the year. During 1992 surplus water was not available.

In 1992 a total of 1,156 acre-feet of unscheduled water was delivered to Napa County Flood Control and Water Conservation District.

Other Water

Column 10 includes amounts of water classified as *other water* delivered in 1992, including Central Valley Project water conveyed through SWP facilities; regulated delivery of local supply; water loaned by SWP; water paid back to SWP; purchased, emergency relief, and preconsolidation repayment water; Vallejo water rights permit water; 1991-1992 Drought Water Bank water; and local water released and taken out of the SWP system.

In 1992 a total of 145,044 acre-feet of other water was delivered.

Feather River Diversions

Column 11 includes amounts of water from the Feather River delivered according to agreements for water rights water. In 1992 a total of 613,978 acre-feet in this category was delivered to contractors in the Feather River area.

Recreation Water

Column 12 includes the amount of water conveyed for recreational use or to provide water or improve water quality for fish and wildlife. In 1992 a total of 2,605 acre-feet of SWP water was conveyed for this purpose.

Initial Fill Water

The quantities listed in Column 14 represent the amounts used to initially fill to maximum operational capacities the aqueducts and reservoirs south of the Delta.

Initial filling began in 1962 with the filling of the South Bay Aqueduct and was completed in 1979 when Lake Perris reached its maximum operational capacity of 127,000 acre-feet.

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Operational Losses

Column 15 includes the total amounts of (1) water lost through evaporation and seepage, (2) net storage changes in reservoirs south of the Delta, and (3) amounts of inflow from local drainage areas, including inflows into San Luis Canal and from the Kern River Intertie. In 1992 that amount totaled 63,541 acre-feet.

Negative values are indicated for years when withdrawals and evaporation from reservoirs south of the Delta exceeded the amounts of water added to the reservoirs.

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TABLE 6-1

Total Amounts of Water Delivered in 1992 and Credits Granted to Long-Term Contractors through 1992, by Service Area

(Acre-feet)

	Water Deliveries in 1992						Future Entitlement Credits as of January 1, 1993				
	Entitlement Water Deliveries										
Long-Term Water Supply Contractor	*1992 Entitlement (1)*	*1991 Entitlement Delivered During 1992 (2)*	*Make-up Water per Article 12(d) (3)*	*Total Entitlement (4)*	*Other Water Deliveries (a (5)*	*Total Deliveries (6)*	*Make-up Water per Articles 12(d) or 14(b) (7) (b*	*Wet-Weather Water per Articles 7 or 45 (8)*	*1992 Carryover Approved for Delivery in 1993 (9)*	*Total Delivery Credit (10)*	*Future Entitlement Reduction Credit per Articles 7 or 45 (11)*
Upper Feather River Area											
City of Yuba City	642			642		642				0	
County of Butte	117			117		117				0	
Plumas County Flood Control and Water Conservation District	485			485		485				0	
North Bay Area											
Napa County Flood Control and Water Conservation District	3,146	817	38	4,001	1,509	5,510			40	40	
Solano County Water Agency	9,859	1,468	3,446	14,773	11,313	26,086			1,051	1,051	
South Bay Area											
Alameda County Flood Control and Water Conservation District, Zone 7	14,669			14,669	8,415	23,084		111,580	711	112,291	
Alameda County Water District	17,801	1,352		19,153	5,097	24,250		172,088		172,088	
Santa Clara Valley Water District	42,839			42,839		42,839			493	493	
San Joaquin Valley Area											
County of Kings	1,806			1,806		1,806				0	
Dudley Ridge Water District	23,770			23,770	1,278	25,048			2,077	2,077	
Empire West Side Irrigation District	1,354			1,354		1,354				0	
Kern County Water Agency	480,462	2,758		483,220	(4,482)	478,738			40,156	40,156	
Oak Flat Water District	2,239			2,239	128	2,367			27	27	2,466
Tulare Lake Basin Water Storage District	46,728 (c			46,728	31,550	78,278			6,760	6,760	
Central Coastal Area											
San Luis Obispo County Flood Control and Water Conservation District	0			0		0				0	
Santa Barbara County Flood Control and Water Conservation District	0			0		0				0	
Southern California Area											
Antelope Valley-East Kern Water Agency	28,041 (c	2,224		30,265	352	30,617			1,650	1,650	
Castaic Lake Water Agency	17,863	2,836		20,699		20,699				0	
Coachella Valley Water District	10,427			10,427		10,427				0	
Crestline-Lake Arrowhead Water Agency	264			264	1,053	1,317				0	
Desert Water Agency	17,197			17,197		17,197				0	
Littlerock Creek Irrigation District	251			251		251				0	
Metropolitan Water District of Southern California	629,486	80,827		710,313	10,000	720,313			164,809	164,809	
Mojave Water Agency	10,686			10,686		10,686				0	
Palmdale Water District	4,035			4,035		4,035			189	189	
San Bernardino Valley Municipal Water District	3,358			3,358	(56)	3,302			1,402	1,402	
San Gabriel Valley Municipal Water District	7,908 (c			7,908		7,908			217	217	
San Gorgonio Pass Water Agency	0			0		0				0	
Ventura County Flood Control District	0			0		0				0	
Total	1,375,433	92,282	3,484	1,471,199	66,157	1,537,356		283,668	219,582	503,250	2,466

a) See Table 6-2 for other water deliveries specified by non-entitlement category for each agency.
b) State Water Project long-term contractors and the Department are negotiating amounts of make-up water; exact amounts are not available at this time.
c) This amount includes entitlement water transferred from another agency.

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TABLE 6-2

Total Amounts of Water Delivered in 1992, by Month (Page 1 of 6)

(Acre-feet)

Contracting Agency and Type of Service	Month												1992 Total Deliveries	1992 Contract Entitlement	1992 Entitlement Not Delivered	Net Cumulative Entitlement Not Delivered through (a	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.				1991	1992(b
Feather River Area																	
City of Yuba City																	
Entitlement water	0	0	0	0	0	17	267	358	0	0	0	0	642	9,600	8,958	25,449	34,407
County of Butte																	
Entitlement water	12	35	16	1	0	0	0	0	0	5	0	48	117	1,200	1,083	17,778	18,861
Plumas County Flood Control and Water Conservation District																	
Entitlement water	12	8	8	30	73	77	80	82	62	34	9	10	485	1,120	635	8,308	8,943
Last Chance Creek Water District																	
Regulated delivery of local supply	0	0	0	375	2,472	1,032	802	307	0	0	0	0	4,988				
Thermalito Irrigation District																	
Regulated delivery of local supply	91	77	92	125	291	284	330	321	292	209	106	97	2,315				
Oroville-Wyandotte Irrigation District																	
Regulated delivery of local supply	130	121	128	132	813	950	984	1,060	1,030	772	241	164	6,525				
Western Canal Water District																	
Regulated delivery of local supply	0	0	0	1,530	50,623	36,779	36,552	31,059	4,677	12,530	12,973	6,813	193,536				
Joint Water Districts Board																	
Regulated delivery of local supply	1,202	0	0	6,510	79,771	65,272	74,274	68,456	29,011	25,030	19,080	17,010	385,616				
Oswald Water District																	
Regulated delivery of local supply	0	0	0	0	31	25	141	56	42	0	0	0	295				
Tudor Mutual Water Company																	
Regulated delivery of local supply	4	0	0	0	849	876	761	537	31	0	0	0	3,058				
Garden Highway Water Company																	
Regulated delivery of local supply	0	0	0	324	1,852	1,804	2,164	2,581	904	299	173	0	10,101				
Plumas Mutual Water Company																	
Regulated delivery of local supply	0	0	0	43	2,011	932	1,936	1,451	1,146	25	0	0	7,544				
SWP	24	43	24	31	73	94	347	440	62	39	9	58	1,244	11,920	10,676	51,535	62,211
Non-SWP	1,427	198	220	9,039	138,713	107,954	117,944	105,828	37,133	38,865	32,573	24,084	613,978				
Area total	1,451	241	244	9,070	138,786	108,048	118,291	106,268	37,195	38,904	32,582	24,142	615,222	11,920	10,676	51,535	62,211
North Bay Area																	
Napa County Flood Control and Water Conservation District (NCFCWCD)																	
Entitlement water	0	62	0	755	1,314	280	184	40	143	123	171	74	3,146	7,840	4,694	6,263	10,102
Carryover entitlement water	579	238	0	0	0	0	0	0	0	0	0	0	817				
General wheeling	0	0	0	0	0	0	0	0	0	116	0	0	116				
Article 12(d) M & I water	0	0	0	0	0	0	0	0	0	0	0	38	38				
Unscheduled water	111	313	690	42	0	0	0	0	0	0	0	0	1,156				
Vallejo permit water transferred from Solano Co. WA	0	0	0	101	0	0	0	136	0	0	0	0	237				
Agency total	690	613	690	898	1,314	280	184	176	143	239	171	112	5,510				
Solano County Water Agency																	
Entitlement water	0	0	0	471	1,030	2,975	2,302	2,346	514	125	96	0	9,859	24,170	14,311	20,961	30,358
Carryover entitlement water	1,069	399	0	0	0	0	0	0	0	0	0	0	1,468				
Vallejo permit water	551	442	0	1,774	1,938	0	0	0	1,736	1,937	1,720	1,177	11,275				
Vallejo permit water transferred to Napa Co. FCWCD	0	0	0	101	0	0	0	136	0	0	0	0	237				
Article 12(d) M & I water	357	657	1,915	136	0	0	0	0	0	0	0	381	3,446				
General wheeling (c	0	0	0	0	0	0	0	0	0	38	0	0	38				
Unscheduled water	0	0	0	0	0	0	0	0	0	0	0	0	0				
Agency total (excludes Vallejo permit water transferred to Napa County FCWCD)	1,977	1,498	1,915	2,381	2,968	2,975	2,302	2,346	2,250	2,100	1,816	1,558	26,086				
SWP	2,116	1,669	2,605	1,505	2,344	3,255	2,486	2,522	657	248	267	493	20,167	32,010	19,005	27,224	40,460
Non-SWP	551	442	0	1,774	1,938	0	0	0	1,736	2,091	1,720	1,177	11,429				
Area total	2,667	2,111	2,605	3,279	4,282	3,255	2,486	2,522	2,393	2,339	1,987	1,670	31,596	32,010	19,005	27,224	40,460

a) These columns include amounts of entitlement deferred or otherwise not delivered, regardless whether contractor received remuneration.
b) These amounts reflect 1991 carryover entitlement and/or Article 12(d) M & I water delivered in 1992.
c) General wheeling refers to non-SWP water conveyed by SWP under special agreements.

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TABLE 6-2

Total Amounts of Water Delivered in 1992, by Month (Page 2 of 6)

(Acre-feet)

Contracting Agency and Type of Service	Month: Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	1992 Total Deliveries	1992 Contract Entitlement	1992 Entitlement Not Delivered	Net Cumulative Entitlement Not Delivered through (a: 1991	1992(b
South Bay Area																	
Alameda County Flood Control and Water Conservation District, Zone 7																	
Entitlement water	319	1	88	839	947	1,066	2,819	2,842	2,279	2,295	1,142	32	14,669	36,000	21,331	188,944	210,275
Regulated delivery of local supply	337	825	1,280	1,102	1,736	1,658	204	0	177	109	0	987	8,415				
Agency total	656	826	1,368	1,941	2,683	2,724	3,023	2,842	2,456	2,404	1,142	1,019	23,084				
Alameda County Water District																	
Entitlement water	600	0	0	0	0	2,286	2,863	3,303	2,950	2,570	2,350	879	17,801	39,900	22,099	302,417	323,164
Carryover entitlement water	686	612	54	0	0	0	0	0	0	0	0	0	1,352				
Regulated delivery of local supply	0	0	489	1,269	2,501	838	0	0	0	0	0	0	5,097				
Agency total	1,286	612	543	1,269	2,501	3,124	2,863	3,303	2,950	2,570	2,350	879	24,250				
Santa Clara Valley Water District																	
Entitlement water	2,792	2,180	1,588	0	2,377	3,814	3,895	8,943	8,218	3,179	3,497	2,356	42,839	96,000	53,161	106,621	159,782
Agency total	2,792	2,180	1,588	0	2,377	3,814	3,895	8,943	8,218	3,179	3,497	2,356	42,839				
City of San Francisco																	
General wheeling (c	2,294	848	901	3,422	0	0	0	0	0	0	0	0	7,465				
1991 Drought Water Bank water	0	0	0	9	0	0	0	0	0	0	0	0	9				
1992 Drought Water Bank water	0	0	0	0	0	0	0	0	0	4,887	4,381	4,513	13,781				
Agency total	2,294	848	901	3,431	0	0	0	0	0	4,887	4,381	4,513	21,255				
Recreation/fish and wildlife water																	
Agency total	6	6	6	9	11	26	26	22	24	1	8	2	147				
SWP	4,403	2,799	1,736	848	3,335	7,192	9,603	15,110	13,471	8,045	6,997	3,269	76,808	171,900	96,591	597,982	693,221
Non-SWP	2,631	1,673	2,670	5,802	4,237	2,496	204	0	177	4,996	4,381	5,500	34,767				
Area total	7,034	4,472	4,406	6,650	7,572	9,688	9,807	15,110	13,648	13,041	11,378	8,769	111,575	171,900	96,591	597,982	693,221
San Joaquin Valley Area																	
SWP water																	
Castaic Lake Water Agency																	
Entitlement water	0	0	0	765	1,206	1,575	1,092	1,016	235	0	0	0	5,887				
County of Kings																	
Entitlement water	0	0	0	0	0	500	600	700	0	0	6	0	1,806	4,000	2,194	6,000	8,194
Dudley Ridge Water District																	
Entitlement water	0	0	0	708	1,874	2,860	3,143	2,335	446	630	410	261	12,667	57,700	33,930 (d	87,346	121,276
Transfer entitlement to Westlands WD	0	0	0	0	0	3,250	3,250	4,323	0	0	0	0	10,823				
Transfer entitlement to Tulare Lake Basin WSD	0	0	0	0	0	0	280	0	0	0	0	0	280				
1991 Drought Water Bank water	14	346	470	0	0	0	0	0	0	0	0	0	830				
Transferred to KCWA	0	0	448	0	0	0	0	0	0	0	0	0	448				
Agency total (excludes transferred water)	14	346	470	708	1,874	2,860	3,143	2,335	446	630	410	261	13,497				
Empire West Side Irrigation District																	
Entitlement water	0	0	0	0	0	142	530	616	19	0	47	0	1,354	3,000	1,646	16,523	18,169
Kern County Water Agency																	
Entitlement water	62	1,648	3,666	32,779	60,361	110,048	116,725	66,440	14,799	11,631	2,293	2,839	423,291	1,153,400	730,109	1,964,434	2,634,614
Carryover entitlement water	842	1,148	768	0	0	0	0	0	0	0	0	0	2,758				
Transferred 1991 Drought Water Bank water																	
Transferred from Dudley Ridge Water District	0	0	448	0	0	0	0	0	0	0	0	0	448				
Transferred pumped-in well water																	
Transferred from Oak Flat Water District	0	0	128	0	0	0	0	0	0	0	0	0	128				
Loan water from SWP	2,330	1,298	1,702	995	493	2,941	218	455	284	515	1,540	2,178	14,949				
Payback for loan water	(5,352)	(4,379)	(1,149)	(2,238)	(6,895)	(5,087)	(4,311)	(2,455)	(284)	(515)	(1,540)	(2,178)	(36,383)				
1991 Drought Water Bank water	277	589	5,461	0	0	0	0	0	0	0	0	0	6,327				
1992 Drought Water Bank water	0	0	0	0	0	0	0	114	4,719	2,537	0	0	7,370				
Transfer 1992 Drought Bank water to Westlands WD	0	0	0	0	0	0	0	800	0	0	0	0	800				
Exchange water with various CVC contractors	0	0	0	0	0	829	639	0	389	598	0	0	2,455				
Ground Water Demonstration Program	0	5,929	5,929	5,929	5,928	11,811	12,101	8,031	613	675	93	132	57,171				
Agency total (excludes water transferred to Westlands Water District)	(1,841)	6,233	16,953	37,465	59,887	120,542	125,372	72,585	20,520	15,441	2,386	2,971	478,514				

a) These columns include amounts of entitlement deferred or otherwise not delivered, regardless whether contractor received remuneration.
b) These amounts reflect 1991 carryover entitlement and/or Article 12(d) M & I water delivered in 1992 and Ground Water Demonstration Program water.
c) General wheeling refers to non-SWP water conveyed by SWP under special agreements.
d) This amount reflects deduction of entitlement transferred to other agencies.

C-059944

C-059944

TABLE 6-2

Total Amounts of Water Delivered in 1992, by Month (Page 3 of 6)

(Acre-feet)

Contracting Agency and Type of Service	Month: Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	1992 Total Deliveries	1992 Contract Entitlement	1992 Entitlement Not Delivered	Net Cumulative Entitlement Not Delivered through (a: 1991	1992(b
San Joaquin Valley Area (continued)																	
Oak Flat Water District																	
Entitlement water	0	0	0	51	456	390	669	234	331	108	0	0	2,239	5,700	3,461	9,049	12,510
Pumped-in well water transferred to KCWA	9	119	0	0	0	0	0	0	0	0	0	0	128				
Agency total (excludes water transferred to KCWA)	0	0	0	51	456	390	669	234	331	108	0	0	2,239				
Tulare Lake Basin Water Storage District																	
Entitlement water	0	0	0	237	369	19,452	22,805	0	0	0	3,116	749	46,728	118,500	71,772	258,412	330,184
1992 Drought Water Bank water	0	0	0	0	0	3,903	0	27,266	0	381	0	0	31,550				
Transferred entitlement water from Dudley Ridge WD	0	0	0	0	0	0	280	0	0	0	0	0	280				
Agency total	0	0	0	237	369	23,355	23,085	27,266	0	381	3,116	749	78,558				
Westlands Water District																	
Transferred entitlement from Dudley Ridge WD	0	0	0	0	0	3,250	3,250	4,323	0	0	0	0	10,823				
Transferred 1992 Drought Bank water from KCWA	0	0	0	0	0	0	0	800	0	0	0	0	800				
General wheeling (CVP) (c	0	0	14,329	3,347	0	0	0	0	0	0	0	0	17,676				
General wheeling (CVP) water transferred to San Luis Water District (c	0	0	350	0	0	0	0	0	0	0	0	0	350				
Agency total (excludes water transferred to San Luis Water District	0	0	14,329	3,347	0	3,250	3,250	5,123	0	0	0	0	29,299				
San Luis Water District																	
General wheeling (CVP) water transferred from Westlands Water District (c	0	0	350	0	0	0	0	0	0	0	0	0	350				
Agency total	0	0	350	0	0	0	0	0	0	0	0	0	350				
California Department of Fish & Game																	
Recreation/fish and wildlife water	36	47	26	40	15	0	33	21	30	17	98	28	391				
General wheeling (habitat preservation)(c	99	1,641	2,996	0	0	0	0	0	0	0	0	0	4,736				
Agency total	135	1,688	3,022	40	15	0	33	21	30	17	98	28	5,127	1,342,300	843,112	2,341,764	3,124,947
California Department of Parks and Recreation																	
Agency total	1	1	1	11	9	12	11	7	8	8	2	1	72				
SWP	904	8,725	10,363	40,469	70,192	150,026	161,195	83,695	16,443	13,044	5,965	3,981	565,004				
Non-SWP	(2,595)	(457)	24,412	2,155	(6,378)	2,598	(3,410)	26,208	5,146	3,541	100	29	51,349				
Area subtotal (SWP water)	(1,691)	8,268	34,775	42,624	63,814	152,626	157,785	109,903	21,589	16,585	6,065	4,010	616,353	1,342,300	843,112	2,341,764	3,124,947
San Joaquin Valley Area																	
CVP water conveyed																	
Annual contracts																	
Green Valley Water District	0	0	0	0	0	0	0	0	0	0	0	0	0				
Kings County Water District	0	0	0	0	0	0	0	0	0	0	0	0	0				
Lakeside Irrigation Water District	0	0	0	0	0	0	0	0	0	0	0	0	0				
Musco Olive Products, Inc.	7	8	10	10	11	12	11	13	13	16	12	13	136				
Tracy Golf and Country Club	0	0	0	0	0	0	0	0	0	0	0	0	0				
Cawelo Water District	0	0	0	0	0	0	0	0	0	0	0	0	0				
Veterans Administration Cemetery	1	1	2	0	2	1	4	1	3	1	1	1	18				
Subtotal	8	9	12	10	13	13	15	14	16	17	13	14	154				
Cross Valley Canal Contracts																	
Fresno County	0	0	274	155	203	118	0	0	0	0	0	0	750				
Lower Tule River Irrigation District	0	0	2,845	1,535	2,130	1,266	0	0	0	0	0	0	7,776				
Pixley Irrigation District	0	0	2,845	1,535	2,130	437	0	0	0	0	0	0	6,947				
Exchange water transferred to KCWA	0	0	0	0	0	829	0	0	0	0	0	0	829				
Agency total (excludes water transferred to KCWA)	0	0	2,845	1,535	2,130	437	0	0	0	0	0	0	6,947				
Rag Gulch Water District	0	0	0	0	0	0	482	0	0	0	0	0	482				
Transfer to Westlands Water District	0	0	0	0	0	0	0	2,450	0	0	0	0	2,450				
Exchange water transferred to KCWA	0	0	0	0	0	0	393	0	0	0	0	0	393				
Agency total (excludes water transferred to KCWA and Westlands Water District)	0	0	0	0	0	0	482	0	0	0	0	0	482				

a) These columns include amounts of entitlement deferred or otherwise not delivered, regardless whether contractor received remuneration.
b) These amounts reflect 1991 carryover entitlement and/or Article 12(d) M & I water delivered in 1992.
c) General wheeling refers to non-SWP water conveyed by SWP under special agreements.

C-059945

C-059945

TABLE 6-2

Total Amounts of Water Delivered in 1992, by Month (Page 4 of 6)

(Acre-feet)

Contracting Agency and Type of Service	Month												1992 Total Deliveries	1992 Contract Entitlement	1992 Entitlement Not Delivered	Net Cumulative Entitlement Not Delivered through (a	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.				1991	1992(b
San Joaquin Valley Area (continued)																	
CVP water conveyed (continued)																	
Cross Valley Canal contracts (continued)																	
Tulare County	0	0	485	260	358	224	0	0	0	0	0	0	1,327				
Kern-Tulare Water District	0	0	1,440	5,301	1,523	0	303	0	126	74	0	0	8,767				
Exchange water transferred to KCWA	0	0	0	0	0	0	246	0	389	598	0	0	1,233				
Agency total (excludes water transferred to KCWA)	0	0	1,440	5,301	1,523	0	303	0	126	74	0	0	8,767				
Hills Valley Irrigation District	0	0	0	0	226	610	0	0	0	0	0	0	836				
Tri-Valley Water District	0	0	0	0	77	208	0	0	0	0	0	0	285				
Subtotal	0	0	7,889	8,786	6,647	2,863	785	0	126	74	0	0	27,170				
U.S. Bureau of Reclamation																	
Federal wheeling (U.S. Fish & Wildlife Service) (c	0	0	0	0	0	0	0	0	0	2,026	3,215	789	6,030				
Decision 1485 water	0	0	0	0	0	0	0	0	0	0	0	0	0				
Subtotal	0	0	0	0	0	0	0	0	0	2,026	3,215	789	6,030				
Westlands Water District																	
Water transferred from Rag Gulch Water District	0	0	0	0	0	0	0	2,450	0	0	0	0	2,450				
Agency total	0	0	0	0	0	0	0	2,450	0	0	0	0	2,450				
Recreation/fish and wildlife water (U.S. Bureau of Reclamation, San Luis)	31	39	22	41	20	10	37	23	32	21	81	24	381				
Non-SWP	39	48	7,923	8,837	6,680	2,886	837	2,487	174	2,138	3,309	827	36,185				
Area subtotal (CVP water)	39	48	7,923	8,837	6,680	2,886	837	2,487	174	2,138	3,309	827	36,185				
Area summary																	
SWP	904	2,796	4,434	34,540	64,264	138,217	149,094	75,664	15,830	12,369	5,872	3,849	507,833	1,342,300	843,112	2,341,764	3,182,118
Non-SWP	(2,556)	5,520	38,264	16,921	6,230	17,295	9,528	36,726	5,933	6,354	3,502	988	144,705				
Total	(1,652)	8,316	42,698	51,461	70,494	155,512	158,662	112,390	21,763	18,723	9,374	4,837	652,538	1,342,300	843,112	2,341,764	3,182,118
Central Coastal Area																	
San Luis Obispo County Flood Control and Water Conservation District Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	25,000	25,000	127,000	152,000
Santa Barbara County Flood Control and Water Conservation District Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	45,486	45,486	228,870	274,356
SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	70,486	70,486	355,870	426,356
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0				
Area Total	0	0	0	0	0	0	0	0	0	0	0	0	0	70,486	70,486	355,870	426,356

a) These columns include amounts of entitlement deferred or otherwise not delivered, regardless whether contractor received remuneration.
b) These amounts reflect 1991 carryover entitlement and/or Article 12(d) M & I water delivered in 1992.
c) General wheeling refers to non-SWP water conveyed under special agreements.

C-059946

C-059946

TABLE 6-2

Total Amounts of Water Delivered in 1992, by Month (Page 5 of 6)

(Acre-feet)

Contracting Agency and Type of Service	Month: Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	1992 Total Deliveries	1992 Contract Entitlement	1992 Entitlement Not Delivered	Net Cumulative Entitlement Not Delivered through (a: 1991	1992(b
Southern California Area																	
Antelope Valley-East Kern Water Agency																	
Entitlement water	0	0	0	1,817	3,221	4,077	4,509	4,573	3,917	3,021	2,095	811	28,041	138,400	110,359	579,955	688,090
Carryover entitlement water	0	666	1,302	256	0	0	0	0	0	0	0	0	2,224				
Entitlement transferred from Mojave Water Agency	47	33	51	83	141	161	201	173	160	127	43	90	1,310				
Local water in	(756)	0	0	0	0	0	0	0	0	0	0	0	(756)				
Local water out	946	162	0	0	0	0	0	0	0	0	0	0	1,108				
Agency total	237	861	1,353	2,156	3,362	4,238	4,710	4,746	4,077	3,148	2,138	901	31,927				
Castaic Lake Water Agency																	
Entitlement water	0	0	0	1,007	1,483	1,716	1,879	2,165	1,032	1,132	1,340	222	11,976	54,200	36,337 (d	278,279	311,780
Carryover entitlement water	865	900	882	189	0	0	0	0	0	0	0	0	2,836				
Agency total	865	900	882	1,196	1,483	1,716	1,879	2,165	1,032	1,132	1,340	222	14,812				
Coachella Valley Water District																	
Entitlement water	0	0	0	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,187	10,427	23,100	12,673	21,370	34,043
Crestline-Lake Arrowhead Water Agency																	
Entitlement water	44	0	0	0	0	0	0	0	0	29	81	110	264	5,800	5,536	41,838	47,374
Local entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0				
Regulated delivery of local supply	76	82	91	52	126	121	125	147	134	99	0	0	1,053				
Agency total	120	82	91	52	126	121	125	147	134	128	81	110	1,317				
Desert Water Agency																	
Entitlement water	0	0	0	1,905	1,905	1,905	1,905	1,905	1,905	1,905	1,905	1,957	17,197	38,100	20,903	34,670	55,573
Littlerock Creek Irrigation District																	
Entitlement water	3	0	0	0	0	3	0	0	0	114	87	44	251	2,300	2,049	17,182	19,231
Metropolitan Water District of Southern California																	
Entitlement water	0	0	0	49,732	77,976	88,694	65,441	80,609	77,335	79,797	55,694	50,145	625,423	2,011,500	1,382,014(e	11,826,960	13,208,974
Carryover entitlement water	28,831	27,848	19,798	4,350	0	0	0	0	0	0	0	0	80,827				
Entitlement water transferred to																	
San Gabriel Valley Municipal Water District	0	0	0	0	0	0	0	0	0	0	1,061	3,002	4,063				
1992 Drought Water Bank water	0	0	0	0	0	0	0	0	5,000	5,000	0	0	10,000				
Agency total (excludes transferred entitlement)	28,831	27,848	19,798	54,082	77,976	88,694	65,441	80,609	82,335	84,797	55,694	50,145	716,250				
Mojave Water Agency																	
Entitlement water	2,000	0	30	0	2,750	647	0	12	0	605	2,914	418	9,376	50,800	40,114 (e	548,545	588,659
Entitlement water transferred to AntelopeValley-East Kern Water Agency	47	33	51	83	141	161	201	173	160	127	43	90	1,310				
Agency total (excludes transferred water)	2,000	0	30	0	2,750	647	0	12	0	605	2,914	418	9,376				
Palmdale Water District																	
Entitlement water	0	0	0	5	409	458	1,049	1,419	643	32	19	1	4,035	17,300	13,265	189,186	202,451
San Bernardino Valley Municipal Water District																	
Entitlement water	45	138	3	3	6	5	7	6	396	1,280	697	772	3,358	102,600	99,242	1,140,225	1,239,467
Local water in	0	0	(149)	(423)	(904)	(366)	0	0	0	0	0	0	(1,842)				
Local water out	0	0	0	0	0	0	0	446	1,309	0	0	0	1,755				
Agency total	45	138	(146)	(420)	(898)	(361)	7	452	1,705	1,280	697	772	3,271				
San Gabriel Valley Municipal Water District																	
Entitlement water	0	0	840	1,302	2,017	1,103	1,228	1,079	339	0	0	0	7,908	28,800	20,892	250,292	271,184
Entitlement water transferred from MWD	0	0	0	0	0	0	0	0	0	0	1,061	3,002	4,063				
Agency total	0	0	840	1,302	2,017	1,103	1,228	1,079	339	0	1,061	3,002	11,971				
San Gorgonio Pass Water Agency																	
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	17,300	17,300	148,600	165,900
Ventura County Flood Control District																	
Entitlement water	0	0	0	0	0	0	0	0	0	0	0	0	0	20,000	20,000	102,176	122,176

a) These columns include amounts of entitlement deferred or otherwise not delivered, regardless whether contractor received remuneration.
b) These amounts reflect 1991 carryover entitlement and/or Article 12(d) M & I water delivered in 1992.
c) General wheeling refers to non-SWP water conveyed under special agreements.
d) This amount includes entitlement delivered in San Joaquin Valley area.
e) This amount reflects deduction of transferred entitlement to another agency.

C-059947

C-059947

TABLE 6-2

Total Amounts of Water Delivered in 1992, by Month (Page 6 of 6)

(Acre-feet)

Contracting Agency and Type of Service	Month: Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	1992 Total Deliveries	1992 Contract Entitlement	1992 Entitlement Not Delivered	Net Cumulative Entitlement Not Delivered through (a: 1991	1992(b
Southern California Area (continued)																	
Los Angeles Department of Water and Power																	
Local water in	0	0	(16)	0	0	0	0	0	0	0	0	0	(16)				
Local water out	0	0	16	0	0	0	0	0	0	0	0	0	16				
Agency total	0	0	0	0	0	0	0	0	0	0	0	0	0				
Recreation/fish and wildlife water	51	35	36	37	155	222	235	259	588	178	140	59	1,995				
SWP	31,886	29,620	22,942	61,841	91,218	100,146	77,609	93,355	87,470	89,375	67,231	58,818	811,511	2,510,200	1,780,684	15,179,278	16,954,902
Non-SWP	266	244	(58)	(371)	(778)	(245)	125	593	6,443	5,099	0	0	11,318				
Area total	32,152	29,864	22,884	61,470	90,440	99,901	77,734	93,948	93,913	94,474	67,231	58,818	822,829	2,510,200	1,780,684	15,179,278	16,954,902
All Agencies																	
Total 1992 entitlement water	5,936	10,034	12,219	99,574	166,996	260,467	250,979	194,705	117,491	110,572	80,321	66,139	1,375,433				
Total 1991 carryover entitlement water	32,872	31,811	22,804	4,795	0	0	0	0	0	0	0	0	92,282				
Total 1992 Article 12(d) M & I water	357	657	1,915	136	0	0	0	0	0	0	0	419	3,484				
Subtotal (entitlement water delivered)	39,165	42,502	36,938	104,505	166,996	260,467	250,979	194,705	117,491	110,572	80,321	66,558	1,471,199				
Unscheduled water	111	313	690	42	0	0	0	0	0	0	0	0	1,156				
Total loan water from SWP	2,330	1,298	1,702	995	493	2,941	218	455	284	515	1,540	2,178	14,949				
Total payback for loan water	(5,352)	(4,379)	(1,149)	(2,238)	(6,895)	(5,087)	(4,311)	(2,455)	(284)	(515)	(1,540)	(2,178)	(36,383)				
Recreation/fish and wildlife water	94	89	69	97	190	260	305	309	650	204	248	90	2,605				
Subtotal (SWP water)	42,277	39,823	38,250	97,472	160,784	258,581	247,191	193,014	118,141	110,776	80,569	66,648	1,453,526				
Vallejo permit water	551	442	0	1,875	1,938	0	0	136	1,736	1,937	1,720	1,177	11,512				
Regulated delivery of local supply	1,840	1,105	2,080	11,462	143,076	110,571	118,273	105,975	37,444	39,073	32,573	25,071	628,543				
Total local water in	(756)	0	(165)	(423)	(904)	(366)	0	0	0	0	0	0	(2,614)				
Total local water out	946	162	16	0	0	0	0	446	1,309	0	0	0	2,879				
1991 Drought Water Bank water	291	935	6,379	9	0	0	0	0	0	0	0	0	7,614				
1992 Drought Water Bank water	0	0	0	0	0	3,903	0	28,180	9,719	12,805	4,381	4,513	63,501				
General wheeling (c	2,393	2,489	18,576	6,769	0	0	0	0	0	154	0	0	30,381				
Kern County Water Agency exchange water with Cross Valley Canal contractors	0	0	0	0	0	829	639	0	389	598	0	0	2,455				
Conveying CVP water, annual contract	8	9	12	10	13	13	15	14	16	17	13	14	154				
Conveying CVP water, Cross Valley Canal	0	0	7,889	8,786	6,647	2,863	785	2,450	126	74	0	0	29,620				
Conveying CVP water, Decision 1485	0	0	0	0	0	0	0	0	0	0	0	0	0				
Conveying CVP water, U.S. Fish and Wildlife Service	0	0	0	0	0	0	0	0	0	2,026	3,215	789	6,030				
Conveying CVP water, recreation/fish and wildlife water	31	39	22	41	20	10	37	23	32	21	81	24	381				
Subtotal (other water)	5,304	5,181	34,809	28,529	150,790	117,823	119,749	137,224	50,771	56,705	41,983	31,588	780,456				
Grand Total	41,652	45,004	73,059	131,930	311,574	376,404	366,940	330,238	168,912	167,481	122,552	98,236	2,233,982	4,138,816	2,820,554	18,553,653	21,359,268

a) These columns include amounts of entitlement deferred orotherwise not delivered, regardless whether contractor received remuneration.
b) These amounts reflect 1991 carryover entitlement and/or Article 12(d) M & I water delivered in 1992.
c) General wheeling refers to non-SWP water conveyed by SWP under special agreements.
d) This amount includes entitlement delivered in San Joaquin Valley area.
e) This amount reflects deduction of transferred entitlement to another agency.

C-059948

C-059948

TABLE 6-3

Total Amounts of Annual Water Entitlements and Water Conveyed, by Type, 1962 through 1992

(Acre-feet)

	Annual Entitlements According to Long-Term Water Supply Contracts							Water Conveyed								
								Deliveries								
Year	Upper Feather River Area (1)	North Bay Area (2)	South Bay Area (3)	San Joaquin Valley Area (4)	Central Coastal Area (5)	Southern California Area (6)	Total (7)	1992 Entitlement Water (8)	Surplus and Unscheduled Water (a (9)	Other Water (b (10)	Feather River Diversions (c (11)	Recreation Water (12)	Subtotal (13)	Initial Fill Water (14)	Operational Losses and Storage Changes (d (15)	Total (16)
1962	0	0	0	0	0	0	0	0	0	18,289		0	18,289	9	272	18,570
1963	0	0	0	0	0	0	0	0	0	22,456		0	22,456	71	185	22,712
1964	0	0	0	0	0	0	0	0	0	32,507		0	32,507	171	152	32,830
1965	0	0	0	0	0	0	0	0	0	44,105		0	44,105	93	729	44,927
1966	0	0	0	0	0	0	0	0	0	67,928		0	67,928	0	1,746	69,674
1967	0	0	11,538	0	0	0	11,538	11,538	0	53,605		0	65,143	8,328	4,212	77,683
1968	550	0	109,900	81,050	0	0	191,500	171,709	121,534	14,777	866,926	0	1,174,946	498,926	117,906	1,791,778
1969	620	0	98,700	168,075	0	0	267,395	193,020	72,397	18,829	794,374	0	1,078,620	510,614	72,196	1,661,430
1970	700	0	114,200	207,700	0	0	322,600	233,993	133,024	38,080	759,759	0	1,164,856	23,947	2,435	1,191,238
1971	890	0	116,200	258,500	0	0	375,590	357,340	296,019	44,119	778,362	8	1,475,848	7,853	5,812	1,489,513
1972	970	0	118,300	420,766	0	201,723	741,759	611,801	423,964	66,638	817,398	6,489	1,926,290	100,274	53,062	2,079,626
1973	1,100	0	120,400	392,352	0	472,400	986,252	694,388	296,416	42,511	800,743	1,155	1,835,213	204,638	53,798	2,093,649
1974	1,230	0	122,400	470,350	0	588,220	1,182,200	874,077	417,676	46,224	911,613	2,118	2,251,708	237,554	10,657	2,499,919
1975	1,610	0	124,500	556,509	0	704,250	1,386,869	1,223,990	622,902	63,793	862,218	3,377	2,776,280	103,352	(94,606)	2,785,026
1976	1,990	0	126,500	555,117	0	824,780	1,508,387	1,373,002	580,110	115,217	946,440	1,745	3,016,514	61,122	(681,025)	2,396,611
1977	2,420	0	128,600	594,100	0	942,201	1,667,321	574,155	0	389,065	581,994	1,111	1,546,325	0	(131,151)	1,415,174
1978	1,850	0	130,700	647,262	0	1,038,222	1,818,034	1,452,699	16,914	121,225	786,517	1,691	2,379,046	64,443	717,370	3,160,859
1979	2,130	0	132,700	715,385	0	1,177,873	2,028,088	1,659,896	648,389	187,630	882,549	1,766	3,380,230	12,302	(83,430)	3,309,102
1980	1,810	500	134,800	770,800	1,946	1,304,914	2,214,770	1,529,749	404,557	46,459	875,045	2,131	2,857,941	0	(26,606)	2,831,335
1981	1,940	650	137,000	830,700	2,813	1,419,365	2,392,468	1,909,562	908,428	279,161	838,557	4,688	3,940,396	0	(802,263)	3,138,133
1982	1,970	800	139,200	889,200	5,626	1,537,749	2,574,545	1,750,024	215,873	154,882	776,330	4,646	2,901,755	0	480,752	3,382,507
1983	2,000	950	141,400	880,648	8,439	1,668,557	2,701,994	1,184,869	13,019	181,453	602,905	7,849	1,990,095	0	(90,997)	1,899,098
1984	3,630	1,100	143,600	991,911	12,698	1,731,398	2,884,337	1,588,619	262,917	381,024	832,332	7,040	3,071,932	0	(140,182)	2,931,750
1985	3,760	1,250	145,800	1,031,749	21,138	1,852,149	3,055,846	1,995,453	307,672	404,842	870,008	4,033	3,582,008	0	92,885	3,674,893
1986	4,190	1,400	148,100	1,139,200	28,210	1,971,190	3,292,290	1,995,636	(e 36,620	(f 193,606	791,737	3,865	3,021,464	0	284,380	3,305,844
1987	4,620	1,550	150,300	1,201,200	35,204	2,091,241	3,484,115	2,130,086	(g 114,907	377,592	831,947	7,672	3,462,204	0	(390,413)	3,071,791
1988	5,060	15,471	152,500	1,258,800	43,722	2,212,782	3,688,335	2,385,122	(h 0	516,481	794,834	4,889	3,701,326	0	(92,850)	3,608,476
1989	5,500	24,615	156,700	1,303,100	56,342	2,411,933	3,958,190	2,853,747	(i 0	487,567	809,250	8,135	4,158,699	0	447,917	4,606,616
1990	6,040	28,190	160,900	1,355,000	70,486	2,487,900	4,108,516	2,582,151	(j 90	457,316	851,247	9,262	3,900,066	0	(528,869)	3,371,197
1991	11,880	29,590	166,400	1,355,000	70,486	2,497,500	4,130,856	549,116	(k 3,521	551,048	565,395	4,912	1,673,992	0	167,435	1,841,427
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	1,471,199	(l 1,156	145,044	613,978	2,605	2,233,982	0	(63,541)	2,170,441
Total	**80,380**	**138,076**	**3,403,238**	**19,416,774**	**427,596**	**31,646,547**	**55,112,611**	**33,356,941**	**5,898,105**	**5,563,473**	**19,842,458**	**91,187**	**64,752,164**	**1,833,697**	**(612,032)**	**65,973,829**

a) Values include amounts of deliveries to short-term contractors (Mustang Water District, 1970-72; Tracy Golf and Country Club, 1974, 1979, and 1980; and Green Valley Water District, 1974, 1975, 1978, 1979, 1980, and 1985; Granite Construction Company, 1980).
b) Includes amounts of SWP and non-SWP water conveyed for SWP and non-SWP contractors.
c) Includes amounts of water diverted under various water rights agreements.
d) Amounts reflect net effect of (1) operational losses from SWP transportation facilities; (2) changes in reservoir storage south of the Delta; (3) storable local inflows to SWP reservoirs; (4) side inflow to San Luis Canal; and (5) inflow into California Aqueduct from Kern River Intertie.
e) Includes 37,170 acre-feet of entitlement water carried over from 1985.
f) Includes 12,270 acre-feet of surplus water carried over from 1985.
g) Includes 639 acre-feet of 1988 entitlement water delivered during 1987 and 16,171 acre-feet of entitlement water recaptured from ground water storage.
h) Includes 67,581 acre-feet of 1987 entitlement water delivered in 1988 and 8,749 acre-feet recaptured from ground water storage.
i) Includes 149,880 acre-feet of 1988 entitlement water delivered in 1989 and 89 acre-feet of 1990 entitlement water delivered during 1989.
j) Includes 128,546 acre-feet of 1989 water delivered in 1990.
k) Includes 27,075 acre-feet of 1990 entitlement water and 148 acre-feet of 1992 entitlement water delivered in 1991.
l) Includes 92,282 acre-feet of 1991 entitlement water delivered in 1992; 3,484 acre-feet of make-up water; and 72,000 acre-feet recaptured from ground water storage (including 57,171 acre-feet of Ground Water Demonstration Program water).

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7. Designing and Constructing Facilities

The State Water Project is being built in stages to match the Department of Water Resources' need for facilities to meet its contractual obligations.

Construction of the project's initial facilities began in 1957 with the relocation of the Western Pacific Railroad yards and Highway 70 near Oroville. In 1962 the first water deliveries were made from the partially completed South Bay Aqueduct, and work was started on the Oroville Dam and joint-use San Luis facilities.

In 1963 work began on the Governor Edmund G. Brown California Aqueduct; by 1968 SWP was able to deliver water to long-term contractors in the San Joaquin Valley. By 1973 the initial facilities were completed; and SWP was able to deliver water to Lake Perris, its southernmost point. Since the 1970s, design and construction activities have centered on:

- Building power plants and pumping units that were deferred initially
- Enlarging or extending aqueduct reaches
- Providing facilities to ensure water quality in Suisun Marsh

In the 1990s design and construction activities will center around completing authorized facilities to deliver water to San Luis Obispo and Santa Barbara Counties.

This chapter includes information about the Department's design and construction activities from July 1992 through June 1993. The chapter also includes information about purchases of land and rights-of-way, activities that must be completed before the Department can begin constructing facilities.

Design and Construction Activities

Designs for about 70 projects were in process or completed between July 1992 and June 1993. A list of those projects, along with expected completion dates, if applicable, may be found in Table 7-1 at the end of this chapter.[1]

Eighty-eight construction projects were in progress or completed during the same period. A list of those projects, including cost,

[1]Information included in Table 7-1 and Table 7-2 is organized geographically according to construction divisions. Within each division, facilities at which design or construction activities occurred are listed alphabetically. Descriptions of activities taking place at each facility are listed chronologically according to date work began.

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date notice to begin work was given to the contractor, and date work was operationally complete and recommended for acceptance, may be found in Table 7-2 also located at the end of this chapter. Costs of contracts included in Table 7-2 represent actual costs of completed work or estimated costs of construction in progress.

The following information about the most significant design and construction projects is arranged geographically according to construction divisions (except for miscellaneous activities, which are listed last). Within each construction division, names of facilities where projects occurred are arranged alphabetically.

Oroville Division

Design and construction work in the Oroville Division involved the Oroville Complex communication system and Thermalito Powerplant.

Oroville Complex Communication System

Installation of the fiber-optic cable for the fiber-optic communication system network is being performed through two primary contracts and a completion contract. The completion contract was awarded in June 1993 and is scheduled for completion in November 1993.

The communication system serves to operate all major portions of the Oroville-Thermalito complex.

Thermalito Powerplant

Work under a contract for replacing 13.8 kV motor unit breakers began in October 1991 and was completed in July 1992. This work is part of the ongoing plant maintenance and replacement program.

North San Joaquin Division

Design and construction activities in the North San Joaquin Division involved enlargement of Harvey O. Banks Delta Pumping Plant and John E. Skinner Delta Fish Protective Facility, rock barriers at Old River and Middle River, South Bay Aqueduct, South Bay Pumping Plant, and various miscellaneous projects.

Banks Pumping Plant

The second-phase enlargement of Banks Pumping Plant, which included furnishing and installing four vertical centrifugal pumps, motors, discharge valves, transformers, and appurtenant electrical and mechanical equipment, was completed during this reporting period. Punch list work and closeout of the contracts remain. With completion of the enlargement, the plant has a pumping capacity of 10,300 cubic feet per second.

A construction contract for furnishing 480-volt switchgear equipment was awarded in March 1993. This contract is one of several contracts that will enhance the operational capabilities of the plant's peripheral electrical systems.

Skinner Fish Facility

Construction of additional facilities reported as completed during the previous period was extended because of added work. The additional work involves furnishing additional flowmeters and is scheduled for completion in January 1994.

Rock Barriers at Old River and Middle River

The annual temporary barriers at Old River and Middle River were constructed and removed as required under various agree-

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ments. The purposes of this activity are to alternately (1) increase and stabilize water levels associated with agricultural water diversions during the irrigation season, and (2) increase fall flows in the lower San Joaquin River to help migrating salmon and steelhead trout survive.

South Bay Aqueduct

A contract to furnish and install fiber-optic cables along the aqueduct to upgrade the communication and control system was awarded in April 1993. The contract is scheduled for completion in May 1994.

South Bay Pumping Plant

One contract to furnish spare pumps and another to furnish spare motors were awarded in October 1992. The pumps contract is scheduled for completion in October 1993. The motors are expected to be shipped in April 1994 with an expected completion date for this contract of May 1994. The new pumps and motors will allow removal of existing units for major repairs and maintenance.

Miscellaneous Projects

Construction work for modifications to the Delta Operations and Maintenance Center administration building, warehouse, and carpenter shop was performed during this reporting period. The construction included structural work to make facilities accessible to persons with disabilities.

Miscellaneous design activities included modifications to the fish protective facilities at Hood and to Cordelia Forebay spillway as part of the Suisun Marsh program. Preliminary designs for installing rock barriers at Chadbourne and Goodyear Sloughs were also completed. Construction of the Cordelia Forebay spillway modifications is scheduled to begin in late 1993. The temporary rock barriers may be constructed in 1994 depending on permit acquisition.

San Luis Division

Construction work consisted of (1) furnishing replacement pump impellers for Dos Amigos Pumping Plant, completed in June 1993; (2) replacing the roof at William R. Gianelli Pumping-Generating Plant, scheduled for completion in March 1994; and (3) repairing stone slope protection at B.F. Sisk San Luis Dam, which was completed in December 1992.

Coastal Branch

A contract to repair the concrete lining and seal the embankment along the Coastal Aqueduct at mile 12.85 was let in October 1992 and completed in December 1992. A contract to modify the heating, ventilating, and air conditioning systems at Las Perillas and Badger Hill Pumping Plants was awarded in June 1993 and is scheduled for completion in March 1994.

In September 1992 final design began for the Coastal Branch Phase II facilities. During 1992 design work for 22 contracts was in progress. The first contract for pipeline reach number 1, Devil's Den to Cholame Valley, was advertised for construction bids on September 10, 1993.

Contract administration pertaining to the Coastal Branch Phase II facilities will be under the jurisdiction of the Coastal Project Headquarters in San Luis Obispo. This addition to the Construction Office organization will open for business on July 1, 1993.

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South San Joaquin Division

Projects in the San Joaquin Division involved the Buena Vista, Ira J. Chrisman Wind Gap, Oso, and John R. Teerink Wheeler Ridge Pumping Plants; La Hacienda Extraction Facility; and San Joaquin Operations and Maintenance Center.

Buena Vista, Chrisman, and Teerink Pumping Plants

Work let through two contracts for furnishing and replacing pump impellers, scheduled to be completed in late 1992, was actually completed in July 1993 because of unexpected construction delays.

Construction contracts to furnish and replace stator coils for the three plants were awarded in October 1992 and are scheduled for completion in July and August 1993.

La Hacienda Water Extraction Facility

A construction contract let in December 1990 for rehabilitating wells was completed in April 1993.

Construction contracts for rehabilitating well pumps and motors and constructing an additional conveyance facility were completed in April 1993, after being delayed by difficulties in obtaining environmental permits.

San Joaquin Operations and Maintenance Center

Three construction contracts were awarded between January 1992 and March 1993 for (1) replacing the roof of the administration and training center, (2) modifying the civil maintenance shop and warehouse, and (3) furnishing and installing above-ground fuel storage tanks. The third contract also included similar installations at Lost Hills Operations and Maintenance Subcenter and A.D. Edmonston Pumping Plant. The first contract was completed in October 1992; the other two are scheduled for completion in September and October 1993.

Tehachapi Division

Division activities included rewinding several pumping unit motors at Edmonston Pumping Plant. The work was completed during this reporting period. A contract to furnish stator coils was awarded in April 1993.

Mojave Division

Activities in the Mojave Division involved Alamo Powerplant, the California Aqueduct, Mojave Siphon Powerplant, and Pearblossom Pumping Plant and the Pearblossom Operations and Maintenance Subcenter.

Alamo Powerplant

Based on an analysis of data gathered in 1988 and 1991, the Department's consultants recommended that a new shaft be installed and an existing bearing be stiffened as a possible solution to a shaft vibration problem.

Manufacturing and shop testing of the new generator shaft and new lower generator guide bearing bracket were completed in May 1993. The new shaft assembly arrived at the job site for installation in early June with anticipated completion in August 1993.

California Aqueduct

Modification of existing check structures from Alamo Powerplant to Mojave Siphon continued during this period.

A contract for enlarging Mojave Siphon was let in March 1992 with a completion date scheduled for February 1995. This work will

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provide three new 12-foot diameter pipelines to supply the generating units at Mojave Siphon Powerplant.

Mojave Siphon Powerplant

Construction of the initial Mojave Siphon Powerplant structure and fabrication of a gantry crane were started in fall 1990 and completed in summer 1993. Construction of the plant's final phase is scheduled for completion in 1995.

Manufacturing the three vertical Francis turbines, generators, and governor for the new Mojave Siphon Powerplant is well under way at various overseas manufacturing facilities.

Pearblossom Pumping Plant and Subcenter

Completion contract work associated with furnishing and installing appurtenant equipment and other related work for completing the enlargement of Pearblossom Pumping Plant was performed during this reporting period. This work is scheduled for completion in October 1993. Enlargement of the plant, which includes adding three pumping units now and provisions for two additional units in the future, began in October 1990. The plant is scheduled to be in full operation at the end of 1993.

Work on the completion contract for the new discharge line, which involved connecting the discharge line to the manifold at the plant outlet, was completed in November 1992.

Contract work for expanding the Pearblossom Subcenter warehouse was completed in May 1993.

Santa Ana Division

Activities in the Santa Ana Division involved designing a replacement San Bernardino Tunnel intake, enlarging Devil Canyon Powerplant, placing post-tensioned reinforcement associated with repairs to the Santa Ana Pipeline at various locations, and beginning construction of the Devil Canyon Second Afterbay.

San Bernardino Tunnel Intake

Design work continues for completing contract drawings to replace the existing San Bernardino Tunnel Intake with a more efficient structure. Construction of the new facility is scheduled to begin in November 1994 and to be completed by June 1996.

Devil Canyon Powerplant and Second Afterbay

Work for enlarging Devil Canyon Powerplant was completed. The work involved completing the expansion of the plant structure; constructing a second penstock; and installing two turbines, governors and valves, bypass equipment, generators, switch gear, switchboards, 115 kV power circuit breakers, and a penstock butterfly valve.

The two new generating units (numbers 3 and 4) were operational in early fall 1992. Final performance and efficiency testing was completed in early 1993. Analysis of the test data is currently in progress. The new generating units are scheduled to begin commercial operation in 1994.

Work was started in November 1992 for the construction of an 800-acre-foot capacity second afterbay adjacent to Devil Canyon Powerplant to improve downstream water delivery capabilities. Construction is scheduled for completion in late 1994.

Santa Ana Pipeline

Repairs to a section of the Santa Ana Pipeline located between Day Street and

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Ellsworth Street were completed in April 1993. Construction of two vaults to house a new control valve at North Park Boulevard and a removable bulkhead at Sugarloaf Mountain began in June 1993.

West Branch

Construction work for Vista del Lago Visitors Center and Vaquero Recreational Facility at Pyramid Lake was started in mid-1991 and completed in June 1993.

Miscellaneous Construction Activities

Miscellaneous construction activities during this reporting period include making repairs and modifications to existing facilities and installing acoustic flow meters at various pumping plants and power plants. See "Miscellaneous Activities" in Table 7-2 for additional information.

Land and Right-of-Way Activities

In fiscal year 1992–93, the Department spent $14.8 million in excess of credits for earlier sales of surplus property and return of condemnation deposits to acquire land and easement rights. Twenty-three parcels (approximately 3,200 acres) were acquired during this fiscal year. Easement rights over three parcels (12.06 acres) were also acquired. No excess land was sold during this fiscal year.

The total net amount spent to acquire rights-of-way and mitigation lands for SWP through June 30, 1993, was $210 million. The Department also monitored 57 leases, which resulted in a revenue of $546,000 during the 1992–93 fiscal year.

The Department's land and right-of-way program for fiscal year 1992–93 included actions involving the Coastal Branch Phase II, Los Banos Grandes, Mojave and Santa Ana Divisions of the California Aqueduct, North Delta, South Bay, South Delta, West Delta, and Suisun Marsh Facilities. Information about those activities follows.

Coastal Branch Phase II

The Department recently began acquiring rights-of-way for construction reaches 1 and 2. As of June 30, 1993, pipeline and access road easement (12.06 acres) had been obtained over three parcels for $3,350. One 10-acre parcel was acquired in fee for $2,500. Four parcels were condemned at the May 1993 meeting of the California Water Commission because the Department was unable to reach a settlement with the owners of the parcels before the construction contract advertisement date. The condemned parcels are located at the Devil's Den Pumping Plant site and in the right-of-way for the pipeline and access roads within construction reach 1.

The Department acquired rights to enter 38 parcels to conduct geological, archeological, and environmental studies necessary for design studies and regulatory permits. To date, over 600 temporary entry permits have been obtained for this project.

Los Banos Grandes

The Department completed acquisition of Los Banos Grandes mitigation lands at Orestimba Creek adjacent to Interstate 5. In fiscal year 1992–93, 10 parcels equivalent to 1,693 acres were purchased for $9,137,400. The Department now owns 1,733 acres at a cost of $10.1 million.

The Department acquired rights to enter 80 parcels to conduct geological, archeological, and environmental studies necessary for design studies and regulatory permits.

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Mojave Division

Two parcels of land were acquired at the request of the Division of Operations and Maintenance. The parcels are adjacent to the California Aqueduct, near Palmdale, and will be used in conjunction with aqueduct stabilization activities. The two parcels total 5.2 acres and were acquired at a cost of $111,000.

North Delta

A 103-acre parcel was purchased on Twitchell Island at a cost of $220,716. The Department now owns almost 85 percent of the island.

The Department purchased a 488-acre parcel in the Cosumnes River area at a cost of $1,492,800. This parcel will be used as a borrow/mitigation site for the North Delta Program and other Department activities.

Fifty-nine permits to install seepage monitoring wells along the Mokelumne River were obtained for the North Delta Program. The permits allow the Department to monitor the sites for 10 years.

Six permits were obtained to drill exploratory holes to gauge soil stability as part of the Delta Seismic Stability Program.

Santa Ana Division-Devil Canyon Second Afterbay

An agreement was reached during pretrial negotiations for condemnation of one remaining parcel of land needed for this project. A sum of $1,315,000 was paid for the 31.74-acre parcel located at the afterbay site.

South Bay

The Department obtained temporary entry permits to conduct San Joaquin kit fox studies in 70 parcels along the alignment for installation of the South Bay Aqueduct fiber-optic cable. The studies are part of the regulatory permit process. The Department initiated court action to obtain entry to two other parcels to which the landowners had denied access. However, an agreement was ultimately reached with the landowners.

South Delta

Five temporary entry permits were obtained to construct the Georgiana Slough temporary rock barriers. Two permits were renewed, one for the Middle River seasonal tide barrier and the other for the Old River temporary rock closure. Three renewals were obtained for the Grant Line drought barrier.

Eight temporary entry permits were obtained at various sites in the south and north Delta area to determine if material dredged from Clifton Court Forebay could be disposed on the back side of existing levees.

Suisun Marsh Facilities

Two temporary entry permits were obtained for construction of a temporary rock barrier at the confluence of Chadbourne and Wells Sloughs. In addition, two permits were obtained for access rights needed for construction and maintenance of the Goodyear Slough temporary rock barrier.

West Delta

The Department purchased seven parcels of land on Sherman Island for the West Delta Program. The total cost was $2,585,780 for a total of 871 acres. Further negotiations to purchase additional parcels from willing sellers continue.

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TABLE 7-1

Design Activities, July 1992 through June 1993, by Division

Construction Division and Facility	*Construction Contract*	*Date Design Began*	*Design Completion Date*
North San Joaquin Division			
Harvey O. Banks Delta Pumping Plant	Replace 480 V switchgear and install station transformer	February 1992	September 1992
	Repair main plant access road slide	May 1993	January 1994
	Furnish seat rings for 54-inch valve	December 1992	May 1993
Chadbourne Slough	Construct rock barrier	December 1992	April 1993
Control System Replacement	Install remote terminal unit	February 1992	July 1992
Cordelia Forebay	Modify spillway	December 1992	April 1993
Delta Operations and Maintenance Center	Modify administration building	December 1991	September 1992
Georgiana Slough	Construct floating dock system	July 1992	September 1992
	Construct rock barrier	July 1992	November 1992
Goodyear Slough	Construct rock barrier	December 1992	April 1993
Hood	Construct fish protection facilities	July 1992	May 1993
Intake Channel Road	Repave road	April 1993	May 1993
Middle River	Reconstruct tidal barrier VI	October 1992	January 1993
Morrow Island distribution system	Remove M-Line ditch sediment	December 1992	March 1993
Old River at Delta Mendota Canal	Construct rock barrier	November 1992	January 1993
Old River at head	Construct rock barrier, spring 1993	November 1992	January 1993
South Bay Aqueduct communication system	Install fiber-optic cable	December 1990	January 1993
South Bay Pumping Plant	Furnish 5 kV switchgear	July 1992	June 1993
Tuolumne River	Reroute river course	May 1993	May 1993
San Luis Division			
Delta and San Luis Operations and Maintenance Centers, Coalinga Operations and Maintenance Subcenter	Furnish above-ground fuel storage tanks	January 1993	July 1993
Control system replacement	Install remote terminal unit	February 1992	July 1992
Secondary operating road	Seal-coat roads	April 1993	May 1993
William R. Gianelli Pumping-Generating Plant	Replace roofing	April 1992	February 1993
	Install remote terminal unit	September 1992	April 1993
Coastal Branch Phase II			
Pipeline Reaches			
Devil's Den to Cholame Valley	Construct pipeline reach number 1	September 1992	May 1993
Cholame Valley to Shedd Canyon	Construct pipeline reach number 2	September 1992	June 1993
Shedd Canyon to Salinas River	Construct pipeline reach number 3	January 1993	November 1993
Salinas River to San Luis Obispo Powerplant	Construct pipeline reach number 4	June 1993	April 1994
City of San Luis Obispo	Modify Cuesta Tunnel	September 1992	December 1993
Devil's Den, Bluestone, Polonio Pass, and Casmalia Pumping Plants	Furnish pumping units	November 1992	May 1993
Devil's Den, Bluestone, Polonio Pass, Casmalia Pumping Plants and San Luis Obispo Powerplant	Furnish and install bridge cranes	March 1993	September 1993
Devil's Den to Casmalia	Furnish power circuit breakers	November 1992	January 1994
	Furnish power transformers	February 1993	February 1994
	Furnish switchgear for pumping plants	January 1993	January 1994
Devil's Den to Phase II terminus	Furnish standby engine/generators	March 1993	October 1994
Devil's Den to Polonio Pass	Construct three pumping plants—initial contract	November 1992	July 1993
Devil's Den to Vandenberg AFB	Furnish energy dissipator valves	September 1992	May 1993
	Furnish shutoff valves	September 1992	August 1993
	Furnish butterfly and control valves	December 1992	May 1993
	Furnish fiber-optic cable	January 1993	April 1993
	Furnish control systems	March 1993	July 1994
	Furnish and install flowmeters	April 1993	July 1994
Polonio Pass	Construct tank 1	September 1992	August 1993
San Luis Obispo Powerplant	Furnish bypass valve	September 1992	May 1993
	Furnish turbine governor and controls	February 1993	August 1994
	Furnish switchboards and switchgear	January 1993	July 1994

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TABLE 7-1

Design Activities, July 1992 through June 1993, by Division (Continued)

Construction Division and Facility	*Construction Contract*	*Date Design Began*	*Design Completion Date*
South San Joaquin Division			
Coastal Branch Phase I	Repair leak at milepost 12.85	June 1992	August 1992
Control system replacement	Install remote terminal unit	November 1991	September 1992
A.D. Edmonston Pumping Plant	Furnish motor stator coils 80,000 HP units	October 1991	December 1992
	Furnish specifications for replacement of the 15 kV circuit breaker	January 1992	January 1993
	Modify units W2, W4, W6, and W8	October 1992	March 1993
A.D. Edmonston Pumping Plant, San Joaquin and Lost Hills Operations and Maintenance Centers	Furnish above-ground fuel storage tanks	May 1991	August 1992
Kern Water Bank	Rehabilitate pumps and motors, Kern Fan Element, stage 1	July 1991	August 1993
	Construct conveyance facility, Kern Fan Element, stage 1	July 1991	August 1993
La Hacienda Water Extraction Facility	Complete conveyance system	March 1992	July 1992
	Expand facilities	July 1992	October 1992
Las Perillas and Badger Hill Pumping Plants	Modify HVAC	March 1992	October 1992
Lost Hills Operations and Maintenance Subcenter, San Joaquin, Pearblossom, and Southern California Operations and Maintenance Centers, A. D. Edmonston Pumping Plant, Oso Pumping Plant maintenance yard, Cedar Springs Dam maintenance station	Remove underground storage tanks	December 1992	July 1993
Pearblossom and Southern California Operations and Maintenance Centers	Furnish fuel storage tanks	September 1992	March 1993
John R. Teerink Wheeler Ridge Pumping Plant	Furnish two sets of stator coils (small units)	August 1991	November 1992
Mojave Division			
Mojave Siphon Powerplant	Execute completion contract	July 1989	October 1992
	Furnish and install flow meters	July 1992	May 1993
Pearblossom Operations and Maintenance Subcenter, Southern California Operations and Maintenance Center, Oso Pumping Plant maintenance yard, and Cedar Springs Dam maintenance station	Furnish above-ground fuel storage tanks	September 1992	March 1993
Pearblossom Pumping Plant	Install remote terminal unit	September 1992	April 1993
Santa Ana Division			
San Bernardino Tunnel	Construct intake structure	May 1991	January 1994
Santa Ana Valley Pipeline	Modify North Park Boulevard and Sugarloaf Mountain pipelines	August 1992	March 1993
West Branch			
Gorman Creek Quail Canal	Modify channel	June 1993	June 1993
Southern California Operations and Maintenance Center	Replace administration and civil maintenance building roof	May 1992	February 1993
Miscellaneous Activities			
Department of Water Resources Data Center	Modify 7th floor, Resources Building	July 1990	September 1994
Water Operations Center	Construct new building	July 1986	Project on hold

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TABLE 7-2

Construction Activities, July 1992 through June 1993, by Division

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Ending Date*	*Contract Costs (Thousands of dollars)*
Oroville Division				
Oroville Complex	Complete installation of fiber-optic cable, Phase II (93-13)	June 1993	November 1993	138
Thermalito Powerplant	Furnish 13.8 kV breakers (91-22)	October 1991	July 1992	350
North San Joaquin Division				
Harvey O. Banks Delta Pumping Plant	Install four centrifugal pumps (87-18)	September 1987	July 1992	7,600
	Install pump discharge valves (88-25)	September 1988	July 1992	4,900
	Execute completion contract (89-09)	August 1989	June 1992	8,550
	Furnish 480-volt switchgear (92-32)	March 1993	March 1994	339
Miscellaneous Activities	Reconstruct tidal barrier V, Middle River (92-03)	March 1992	October 1992	41
	Replace rock barrier, Old River at Delta-Mendota Canal, San Joaquin Division (92-06)	April 1992	October 1992	173
	Replace rock barrier, spring 1992, Old River at San Joaquin River (92-07)	April 1992	July 1992	114
	Replace civil maintenance warehouse and carpenter shop roof (92-13)	August 1992	November 1992	35
	Install temporary closure, fall, Old River at head (92-20)	August 1992	January 1993	31
	Apply seal coat, Clifton Court Forebay (92-23)	October 1992	November 1992	28
	Furnish floating dock system (92-26)	November 1992	April 1993	28
	Modify administration building, Delta Operations and Maintenance Center (92-31)	January 1993	June 1993	154
	Reconstruct tidal barrier VI, Middle River (92-02)	May 1993	September 1993	30
	Construct rock barrier, Old River at Delta Mendota Canal (93-04)	May 1993	November 1993	190
John E. Skinner Delta Fish Protective Facility	Construct new holding tank building and make improvements, Phase II (90-35)	December 1990	January 1994	4,537
	Modify control and vehicle storage buildings, Phase III (92-01)	May 1992	December 1993	315
South Bay Aqueduct	Install communication system (93-05)	April 1993	May 1994	2,500
South Bay Pumping Plant	Furnish motors (92-19)	October 1992	October 1993	2,000
	Furnish pumps (92-18)	October 1992	October 1993	1,400
San Luis Joint Use Facilities				
William R. Gianelli Pumping-Generating Plant	Replace roofing (93-06)	June 1993	March 1994	180
Miscellaneous	Strengthen stone slope protection, B.F. Sisk San Luis Dam (92-22)	October 1992	December 1992	152
Coastal Branch				
Miscellaneous	Repair seepage, mile 12.85 (92-25)	November 1992	November 1992	30
South San Joaquin Division				
Buena Vista Pumping Plant	Furnish stator coils, 17,000 HP and 8,500 HP units (92-21)	October 1992	August 1993	427
Ira J. Chrisman Wind Gap and Oso Pumping Plants	Replace pump impellers (88-14)	July 1988	July 1993	3,897
Ira J. Chrisman Wind Gap Pumping Plant	Furnish motor stator coils, 44,000 HP units (92-12)	October 1992	July 1994	873
Miscellaneous Activities	Civil maintenance shop and warehouse, San Joaquin Operations and Maintenance Center (92-28)	February 1992	April 1993	450
	Replace administration and training center roof, Operations and Maintenance Center (92-10)	August 1992	October 1992	170

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TABLE 7-2

Construction Activities, July 1992 through June 1993, by Division (Continued)

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Ending Date*	*Contract Costs (Thousands of dollars)*
Miscellaneous Activities (continued)	Complete conveyance system, La Hacienda water extraction facility (92-24)	October 1992	April 1993	372
	Expand facilities conveyance system, La Hacienda water extraction facility (92-27)	November 1992	April 1993	350
	Furnish above-ground fuel storage tanks (92-29)	March 1993	September 1993	360
John R. Teerink Wheeler Ridge and Buena Vista Pumping Plants	Replace pump impellers (88-13)	July 1988	July 1993	6,380
John R. Teerink Wheeler Ridge Pumping Plant	Furnish stator coils, 20,000 HP units (92-17)	October 1992	July 1993	240
Tehachapi Division				
A. D. Edmonston Pumping Plant	Rewind stator, units 6 and 8 (90-07)	March 1990	March 1993	1,120
	Rewind stator, unit 1 (90-36)	October 1990	January 1993	483
	Furnish motor stator coils, 80,000 HP units (93-01)	April 1993	September 1994	845
Mojave Division				
Alamo Powerplant (a	Work on turbine (80-16)	October 1980	September 1993	2,800
	Work on generator (83-14)	August 1983	September 1993	299
	Furnish acoustic flow meter (84-07)	April 1984	September 1993	108
East Branch Enlargement				
Canals and siphons	Construct third barrel, Antelope Siphon (90-44)	March 1991	August 1992	4,650
	Construct second pipeline, Mojave Siphon (91-33)	March 1992	February 1995	51,000
Miscellaneous	Expand warehouse, Pearblossom Operations and Maintenance Subcenter (92-14)	August 1992	May 1993	614
Mojave Siphon Powerplant	Manufacture turbines, generators, and governors (89-13)	August 1989	December 1994	14,482
	Execute initial contract (90-22)	October 1990	March 1994	22,600
	Construct 75-ton gantry crane (90-38)	December 1990	October 1992	794
	Furnish butterfly valves (91-15)	August 1991	September 1993	3,151
	Furnish control switchboards (91-31)	March 1992	November 1993	769
	Furnish switchgear, motor control center, station service substation, transformer, and load bank (91-34)	April 1992	December 1993	773
	Furnish power transformer (92-15)	December 1992	March 1994	451
	Complete Mojave Siphon Powerplant (92-30)	February 1993	September 1995	6,800
Pearblossom Pumping Plant Enlargement, Phase II	Install vertical centrifugal pumps (87-04)	May 1987	October 1993	2,800
	Install motors (87-48)	June 1988	October 1993	9,600
	Install pump discharge valve units (88-18)	July 1988	December 1992	1,523
	Initial contract (88-17)	August 1988	May 1992	22,410
	Install switchgear (88-30)	September 1988	September 1990	946
	Install bridge cranes (88-37)	September 1988	March 1992	574
	Install power transformer (89-33)	October 1989	May 1993	758
	Execute completion contract (89-36)	November 1989	August 1993	10,830
	Complete third discharge line (90-02)	March 1990	November 1992	6,400
Santa Ana Division				
East Branch Enlargement				
Devil Canyon Powerplant Enlargement	Install bypass equipment, sleeve valve (87-05)	July 1987	January 1993	391
	Install turbines, governors, and valves (87-15)	July 1987	May 1992	10,200
	Install generators (88-47)	May 1989	July 1992	9,500
	Install switchboards (89-04)	June 1989	February 1992	560
	Install power transformers (89-32)	October 1989	August 1992	1,890
	Install penstock butterfly shutoff valve (89-46)	December 1989	April 1992	1,032

a) Final completion dates cannot be determined until turbine/generator shaft bearing and vibration problems are resolved.

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TABLE 7-2

Construction Activities, July 1992 through June 1993, by Division (Continued)

Construction Division and Facility	*Construction Contract (Specification Number)*	*Starting Date*	*Ending Date*	*Contract Costs (Thousands of dollars)*
Devil Canyon Powerplant Enlargement (continued)	Execute completion contract (90-20)	August 1990	May 1993	13,400
	Install butterfly valves (91-15)	August 1991	December 1993	3,151
	Construct Devil Canyon Second Afterbay (92-16)	November 1992	November 1994	49,100
West Branch	Construct Vista del Lago Visitors Center (91-16)	July 1991	June 1993	3,400
	Construct Vaquero Recreational Facility (91-04)	September 1991	April 1993	2,370
Miscellaneous Activities	Furnish multiplant acoustic flow meters: Oroville, Delta, San Luis, San Joaquin, and Southern Field Divisions (89-28)	July 1989	December 1993	5,176
	Repair electrical power apparatus, Oroville, Delta, and San Luis Field Divisions (89-31)	August 1989	November 1992	2,894
	Replace pump impeller: Banks and Dos Amigos Pumping Plants (89-35)	October 1989	June 1993	7,285
	Make machining and mechanical repairs, Southern and San Joaquin Field Divisions (89-29)	October 1989	February 1993	119
	Excavate and repair pipe, Santa Ana Valley Pipeline, Day Street to Ellsworth Street (91-36)	December 1991	December 1992	4,650
	Modify site and install remote terminal unit, Southern Field Division (92-04)	May 1992	June 1993	510
	Furnish fiber-optic cable, Phase II, Oroville Division (91-29; 93-13)	June 1993	November 1993	125
	Modify HVAC, Las Perillas and Badger Hill Pumping Plants (93-07)	June 1993	March 1994	7,126
	Modify Santa Ana Valley Pipeline, North Park Boulevard to Sugarloaf Mountain	June 1993	February 1994	4,680

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8. Ensuring Safety of Facilities

The Department of Water Resources, through the Division of Operations and Maintenance, monitors the performance of State Water Project facilities to ensure that they are safe and reliable.

Operations and Maintenance staff continually collects and evaluates data relating to the performance of each facility. The Division of Safety of Dams inspects and evaluates SWP dams[1] at least once a year to ensure each dam is safe. The inspections include, among other things, reviewing instrumentation data of each dam. Also, engineers from that division evaluate future modifications to existing dams and the design and construction of new dams which are subject to Division of Safety of Dams approval.

Although Department staff continually inspects and maintains SWP dams, aqueducts, and other facilities, the Department is also required to contract periodically with independent consultants to review the safety of most SWP dams and power facilities.

This chapter includes information about the Department's inspection and maintenance activities as well as information about the activities of independent consultants and federal agencies.

[1]The federal/state joint-use facilities at San Luis, O'Neill, Little Panoche, and Los Banos are inspected and evaluated separately by the Division of Operations and Maintenance and USBR.

Inspection and Maintenance

Between July 1, 1992, and June 30, 1993, Department personnel inspected and performed routine and scheduled maintenance on all SWP facilities. Inspection findings for 1992 were consolidated in an annual inspection report published by the Division of Operations and Maintenance.

Inspection of Facilities

The Division of Operations and Maintenance performed the following tasks related to individual facilities. Information about those tasks is arranged alphabetically according to name of facility.

Bethany Dam

In October 1990 members of an independent consulting board and Department personnel noted cracking along the crests of Bethany Dam One and Bethany Dam Two. This cracking suggested that the abutment common to both dams had been exposed to differential displacements. To closely monitor those displacements, in late 1991 the Department installed several settlement monuments and slope indicators at the common abutment to supplement those already

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in place. Since then, the instruments have been monitored by Department engineers to determine possible remedial procedures. This evaluation continues.

Grizzly Valley Dam

In September 1992 the Division of Design and Construction conducted a field investigation of Grizzly Valley Dam to determine the extent of deterioration due to weathering of the rockfill shell zones, especially in the downstream face of the dam. The rockfill shell is partially composed of andesite, which has weathered extensively since the dam's construction. The Division of Design and Construction concluded that weathering of the rockfill does not extend to a depth that would affect the safety of the structure. The Division of Safety of Dams concurred with this finding. No further investigation will be performed.

In 1992, during an independent consulting board's periodic review of the dam, concern arose that the outlet conduit was acting as a barrier to seepage exiting the downstream shell of the dam. As a result, the board recommended that the Department consider installing an additional piezometer in the dam near the outlet to monitor water levels at the toe of the dam. The Division of Design and Construction performed a study and concluded that adding the piezometer was unnecessary. The Divisions of Operations and Maintenance and Safety of Dams agreed.

Oroville Dam

The Division of Design and Construction evaluated (Memorandum Report, October 1992) all the hydraulic instrumentation tubing and the horizontal measuring devices at Oroville Dam. As a result, the Division of Design and Construction, in concurrence with the Division of Operations and Maintenance, proposed that readings of the horizontal movement devices be discontinued because those devices have outlived their useful life and no longer provide meaningful data. The two divisions have also proposed that designated hydraulic instrumentation tubing at the dam be filled with grout to prevent potential seepage. The Division of Safety of Dams has reviewed these proposals.

On a routine inspection of the Oroville Dam Spillway structure in June 1992, Department personnel found that a prestressed anchor in one of the radial gate trunnions had failed, and another anchor in a trunnion of a second gate appeared defective. Department engineers studied the problem and concluded that because of the redundancy of the trunnion's design, safety of the gates was not impaired. Additional maintenance and increased monitoring programs for the radial gate anchors have been implemented by the Department.

Patterson Dam

Dewatering Patterson Reservoir for inspection and cleaning the reservoir lining was completed in November 1992 after postponement of several months due to environmental concerns. The inspection identified a need for minor maintenance, which was performed immediately.

San Bernardino Tunnel Intake Tower

The seismic stability of the San Bernardino Tunnel intake tower was evaluated at the recommendation of the 1989 Federal Energy Regulatory Commission consulting team. As a result, the Department concluded that the

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tower would be severely distressed during a large earthquake. The Department is proceeding with design drawings to replace the structure. Construction of a new intake tower is scheduled to begin in June 1994 and to be completed by June 1996. Geologic exploration at the new intake tower site as well as environmental assessments began in early 1993. The geologic exploration report is due for completion in July 1993. Environmental assessment work is due for completion in December 1993.

B. F. Sisk San Luis Dam

In mid-1992 the Division of Operations and Maintenance requested that the Division of Design and Construction's Design Office investigate the dam's instrumentation and test its riprap construction methods. Operations and Maintenance staff initiated these actions to determine (1) the reliability of the piezometer readings, which had been erratic; (2) the origin of the seepage in the piezometer vault; and (3) the cause of displacement of the dam's upstream riprap.

In mid-1993 the Design Office completed those studies and published its findings in a report entitled "Performance Evaluation of B.F. Sisk San Luis Dam." The Design Office concluded that hydraulic piezometer systems had failed, and seepage had resulted from broken hydraulic piezometer tubing behind the vault walls. The Design Office also found that upstream slope riprap was distressed due to wave action in San Luis Reservoir. No deep-seated movement of the dam was evident. The dam was deemed safe for continued full use.

In addition to performing these studies, the Design Office hired a consultant to independently evaluate the dam. The consultant confirmed the Design Office's conclusions. Corrective actions recommended by the Design Office and the consultant are now being implemented.

Department personnel continue to monitor cracks discovered in the dam in 1986. No new cracks have been observed.

Maintenance of Facilities

Facilities are monitored throughout the year and repairs and modifications are performed to ensure the safe, reliable delivery of water.

Information about those activities, including those involving a section of the California Aqueduct affected by the Arroyo Pasajero watershed, follows.

Arroyo Pasajero Improvements

The Arroyo Pasajero drains approximately 530 square miles west of the California Aqueduct near Coalinga in Fresno County. During periods of heavy rainfall, the Arroyo Pasajero watershed carries a heavy sediment load, which has been deposited in an alluvial fan covering the Pleasant Valley and extending into the San Joaquin Valley.

Because the California Aqueduct intercepts Arroyo Pasajero's alluvial fan, a retention basin along the aqueduct was designed taking drainage and sediment into account. However, by observing the effects of floods in 1969, the Department discovered that the amount of both the watershed runoff and sediment load was greater than estimated in the original design.

The Department has since developed short-term and long-term actions designed to minimize damage. Information on the Department's activities follows.

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Short-Term Actions

Since 1969 the Department and U.S. Bureau of Reclamation, the agency responsible for designing the section of aqueduct affected by Arroyo Pasajero, have been working to minimize the damage that could occur during heavy flooding. In 1980 a significant amount of asbestos was discovered in runoff from Arroyo Pasajero. The Department has adopted operating procedures to minimize runoff entering the aqueduct.

The Department uses existing facilities to control flood waters at Arroyo Pasajero, mitigate damage to the aqueduct and surrounding lands, and minimize the amount of airborne asbestos and the amount of waterborne asbestos entering the aqueduct.

To minimize airborne asbestos, the Department plants crops on lands owned by USBR and managed by the Department. Waterborne asbestos is not considered a significant hazard because moistened fibers are not easily airborne and subject to inhalation. Waterborne asbestos impacts downstream public water treatment systems that must comply with federal safe drinking water standards. These standards restrict the allowable amounts of asbestos in drinking water. The cost of treatment increases as the fiber content increases.

A draft environmental impact report (EIR) for an interim standard operating procedure (ISOP), published by the Department in June 1993, identifies the preferred alternative for operating the aqueduct and related facilities at Arroyo Pasajero. This alternative enumerates, in order of priority, the designated path of flood waters at the existing retention basin adjacent to the aqueduct.

1. Flood waters would be impounded in the existing basin north of Gale Avenue.
2. If the water level continues to rise in the existing basin, flood waters would be directed south of Gale Avenue to provide a 500 percent increase in westside ponding capacity.
3. If the water level in those basins continues rising, the evacuation culvert would be opened, allowing flood waters to flow east of the aqueduct.
4. If the water level increases further, the inlet gates that allow flow into the aqueduct would be opened.

Public comments on the draft EIR are currently being addressed, and a final draft of the EIR for ISOP is scheduled for completion in summer 1994. Once approved, the ISOP will govern operations at Arroyo Pasajero, including provisions for protecting the aqueduct from a 100-year-storm flood until a permanent solution can be identified.

Long-Term Actions

At the request of SWP contractors, all studies performed by the Department to pursue an independent solution of the Arroyo Pasajero drainage problem have been suspended until the U.S. Army Corps of Engineers completes its examination of the entire watershed. In the meantime, the Department will continue to rely on existing facilities to protect the aqueduct.

The Corps completed the Arroyo Pasajero Reconnaissance Report for flood control in November 1992. This report has been certified in Washington, D.C., which constitutes approval to proceed with the feasibility study. The objective of the feasibility study is to further evaluate flood control alternatives for Arroyo Pasajero and arrive at the preferred plan. Alternatives for the reconnaissance report will be evaluated in greater detail as will other potentially viable flood control solu-

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tions. The feasibility study will take the chosen alternative to a preliminary design level with a fully developed concept. The study is scheduled for completion in September 1997.

After signing the initial project management plan and the federal cost sharing agreement, the Department and the Corps started the joint feasibility study in January 1994. The study will run through 1997 with a projected cost of $4.66 million. The Department, as local sponsor, is committed to 50 percent of the total study cost; further, the Department will supply one-half of its commitment as in-kind services within the various study tasks. The Department and USBR have concurred that the feasibility study is consistent with the intent of the existing Agreement for Operation of Joint Use Facilities governing the San Luis Unit of the SWP. Therefore, USBR has indicted its intent to share in the Department's study cost pursuant to the Joint-Use Agreement.

Repairs and Modifications

Table 8-1 includes information, arranged chronologically, about significant maintenance activities at SWP pumping plants and power plants.

The table includes information about incidents resulting in outages exceeding 120 hours and may be found at the end of this chapter.

Independent Reviews

The Department periodically employs consultants to independently review the safety and to assess the conditions of SWP dams, power facilities, and other SWP facilities.

In preparing their reports, consultants review reports and information prepared by Department staff and make physical inspections of facilities. Consultants are selected based on their geotechnical, structural, and civil engineering expertise and their knowledge of and expertise in inspecting dams. The Department then prepares action plans based on consultants' recommendations.

Consultants perform the following reviews for the Department.

1. To comply with FERC regulations, consultants review FERC-licensed dams and power generation facilities owned by the Department. These reviews, which may be conducted by one or more consultants, are conducted every five years.

- The Department and the United States Bureau of Reclamation jointly retained a board of two consultants to review the adequacy of the design and construction of seismic remedial measures for O'Neill Dam. This dam was determined to be founded on liquefiable soils along certain reaches of the dam. Remediation consisted of removing and replacing portions of the foundations along the downstream toe of the dam and constructing stabilization berms. The final report of this board, dated July 14, 1992, concludes that the design deficiencies and liquefaction issues were satisfactorily remediated.

2. To comply with the *Water Code*, consultants are required to review the safety of a dam when it undergoes a major modification or the certificate of approval is issued or renewed. The Department retained a board of three consultants to review the adequacy of the design and construction of Devil Canyon Second Afterbay. This consulting board makes independent findings about conditions that may affect the safety of the dam and reservoir, and determines that the dam is safe to impound water. Since February 1990, thirteen consulting board meetings and inspections have been conducted. The final meeting

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is expected to follow the end of construction, currently scheduled for December 1994.

3. To comply with the California *Water Code* pertaining to supervision of dams and reservoirs, an independent review board of consultants evaluates the safety and operational performance of all Department-owned dams. Facilities must be evaluated every 5 years.

- In May 1993 Cedar Springs and Perris Dams were reviewed and found to be safe for continued use.

In addition to these reviews, the Department retained an independent consultant to review the conclusions and recommendations of the Department's report "Performance Evaluation of B.F. Sisk San Luis Dam." The consultant concluded that the dam is safe for continued operation based on review of design, construction and performance data, site inspection and results and analysis of recent investigations.

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TABLE 8-1

Outages for Maintenance and Repair of Facilities in 1992, by Month

Month	*Facility*	*Description*
January 1992	Harvey O. Banks Delta Pumping Plant	Unit 8 out of service from January 1 to January 31 to install insulation on cooling water piping. Unit 9 out of service from January 28 to February 4 to install insulation on cooling water piping.
	Buena Vista Pumping Plant	Unit 3 out of service from January 1 to September 14 to repair and test scroll case and replace impeller. Unit 9 out of service from January 16 to August 17 for annual preventive maintenance and to replace impeller.
	Del Valle Pumping Plant	Unit 1 out of service from January 10 to February 7 to repair rusted piping on discharge side of pump.
	A. D. Edmonston Pumping Plant	Unit 3 out of service from January 1 to October 26 to repair impeller. Unit 2 out of service from January 8 to January 24 for annual relay preventive maintenance.
	William R. Gianelli Pumping-Generating Plant	Unit 7 out of service from January 20 to February 11 for annual preventive maintenance.
	Edward Hyatt Powerplant	Unit 2 out of service from January 2 to March 24 for annual preventive maintenance. Unit 1 out of service from January 15 to March 16 to replace upstream seats on all three discharge valves and perform annual preventive maintenance.
	Las Perillas Pumping Plant	Unit 6 out of service from January 24 to March 23 to rebuild trash racks.
	Oso Pumping Plant	Unit 7 out of service from January 1 to December 16 to replace impeller and the upstream and downstream seats on the discharge valve.
	Pearblossom Pumping Plant	Unit 6 out of service from January 13 to March 6 for annual preventive maintenance.
	South Bay Pumping Plant	Unit 3 out of service from January 1 to January 16 for annual preventive maintenance.
February 1992	Harvey O. Banks Delta Pumping Plant	Unit 5 out of service from February 27 to March 3 to inspect piezometer ring.
	Devil Canyon Powerplant	Unit 2 out of service from February 3 to March 5 for annual electrical and mechanical preventive maintenance. Unit 1 out of service from February 10 to March 30 to disconnect all alarms and reconnect to new alarm panel.
	Las Perillas Pumping Plant	Unit 2 out of service from February 4 to February 11 for annual preventive maintenance. Unit 3 out of service from February 14 to March 10 for annual electrical and mechanical preventive maintenance.
	Oso Pumping Plant	Unit 2 out of service from February 18 to March 5 to repair piezometer ring leaks.
	John R. Teerink Wheeler Ridge Pumping Plant	Unit 3 out of service from February 21 to April 27
March 1992	Harvey O. Banks Delta Pumping Plant	Unit 5 out of service from March 9 to the end of the year for complete disassembly for annual preventive maintenance and to replace the impeller.
	Del Valle Pumping Plant	Unit 4 out of service from March 31 to April 21 to replace blown capacitor.
	A. D. Edmonston Pumping Plant	Unit 4 out of service March 17 to March 20 to repair an oil leak. Unit 10 out of service from March 26 to March 31 to replace trash rack anodes.
	Las Perillas Pumping Plant	Unit 5 out of service from March 24 to May 22 to rebuild the trash racks.
	Pearblossom Pumping Plant	Unit 3 out of service from March 9 to March 23 for annual preventive maintenance and to replace disxcharge valve "O" ring.
	Thermalito Powerplant	Unit 1 out of service from March 16 to April 1 for annual preventive maintenance.

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TABLE 8-1

Outages for Maintenance and Repair of Facilities in 1992, by Month (Continued)

Month	*Facility*	*Description*
April 1992	Harvey O. Banks Delta Pumping Plant	Unit 8 out of service from April 8 to April 14 to rewire switch gear control circuits. Unit 9 out of service from April 13 to April 16 to rewire switch gear control circuits.
	Ira J. Chrisman Wind Gap Pumping Plant	Unit 2 out of service from April 14 to May 3 to repair air release line.
	Dos Amigos Pumping Plant	Unit 3 out of service from April 5 to April 13 to check plumbing of unit and measure the air gap in the rotor. Unit 4 out of service from April 8 to April 13 for annual relay preventive maintenance. Unit 5 out of service from April 14 to April 17 for annual preventive maintenance of the unit's relay.
	John R. Teerink Wheeler Ridge Pumping Plant	Unit 1 out of service from April 27 to the end of the year to refurbish scroll case and install new impeller.
	Thermalito Powerplant	Unit 2 out of service from April 2 to April 16 for annual preventive maintenance. Unit 3 out of service from April 20 to May 4 for annual preventive maintenance.
	William E. Warne Powerplant	Unit 1 out of service from April 13 to April 29 for annual preventive maintenance.
May 1992	Harvey O. Banks Delta Pumping Plant	Unit 1 out of service from May 15 to May 22 for annual preventive maintenance and to paint pump alcove. Unit 4 out of service from May 20 to May 27 to paint pump alcove.
	Buena Vista Pumping Plant	Unit 6 out of service from May 13 to May 29 for annual relay preventive maintenance.
	Ira J. Chrisman Wind Gap Pumping Plant	Unit 8 out of service from May 3 to May 27 to replace pump bearing.
	Del Valle Pumping Plant	Unit 3 out of service from May 30 to year's end to machine pump shaft and install new mechanical seals.
	Dos Amigos Pumping Plant	Unit 2 out of service from May 11 to May 14 for balance testing.
	A.D. Edmonston Pumping Plant	Unit 5 out of service from May 8 to May 11 to repair solenoid switch.
	Pearblossom Pumping Plant	Units 4, 5, and 6 out of service from May 12 to June 19 to drill 40 foot piling holes for new surge chamber on penstock.
	Thermalito Powerplant	Unit 4 out of service from May 5 to May 22 for annual preventive maintenance.
	William E. Warne Powerplant	Unit 2 out of service from May 4 to August 1 for annual preventive maintenance.
June 1992	Buena Vista Pumping Plant	Unit 7 out of service from June 1 to June 12 for annual relay preventive maintenance. Unit 8 out of service from June 24 to July 2 for annual relay preventive maintenance.
	Ira J. Chrisman Wind Gap Pumping Plant	Unit 3 out of service from June 15 to June 19 to repair leak in bypass line.
	South Bay Pumping Plant	Unit 1 out of service from June 19 to December 15 for repairs.
	William E. Warne Powerplant	Unit 2 out of service from June 1 to June 12 to calibrate relays.
July 1992	Dos Amigos Pumping Plant	Unit 5 out of service from July 30 to November 19 to repair burned field straps.
	Pearblossom Pumping Plant	Unit 4 out of service from July 6 to July 29 for annual preventive maintenance.
	William E. Warne Powerplant	Unit 1 out of service from July 27 to July 29 to repair cracked insulator bushing.
August 1992	Harvey O. Banks Delta Pumping Plant	Unit 10 out of service from August 10 to November 16 for motor efficiency testing; uncoupled. Unit 11 out of service from August 10 to August 18 to modify cooling water supply lines.
	Buena Vista Pumping Plant	Unit 10 out of service from August 3 to August 19 for annual maintenance. Unit 5 out of service from August 26 to September 11 for annual relay preventive maintenance.

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TABLE 8-1

Outages for Maintenance and Repair of Facilities in 1992, by Month (Continued)

Month	*Facility*	*Description*
August 1992 (continued)	Ira J. Chrisman Wind Gap Pumping Plant	Unit 7 out of service from August 3 to August 7 to replace backfill and recirculation valves. Units 1,2, and 3 out of service from August 24 to August 28 to replace backfill and recirculation valves. Unit 8 out of service from August 3 to August 21 to replace "O" rings in discharge valve.
	William E. Warne Powerplant	Unit 1 out of service from August 8 to August 18 for annual relay preventive maintenance.
September 1992	Harvey O. Banks Delta Pumping Plant	Unit 7 out of service from September 26 to October 9 to repair leak in thrust bearing oil return line.
	Buena Vista Pumping Plant	Unit 1 out of service from September 14 to September 25 for annual relay preventive maintenance.
	William R. Gianelli Pumping-Generating Plant	Unit 5 out of service from September 2 to November 24 to overhaul roller headgates on discharge line. Unit 6 out of service from September 2 to year's end for annual maintenance; major overhaul.
	South Bay Pumping Plant	Unit 3 out of service from September 22 to September 28 for annual inspection and maintenance.
October 1992	Harvey O. Banks Delta Pumping Plant	Unit 3 out of service from October 6 to October 13 to repair leaks in packing box and balance lines.
	Ira J. Chrisman Wind Gap Pumping Plant	Unit 2 out of service from October 10 to year's end to replace stator winding.
	Edward Hyatt Powerplant	Unit 6 out of service from October 1 to October 30 for annual preventive maintenance.
	South Bay Pumping Plant	Unit 5 out of service from October 8 to October 30 to remove and replace the motor. Unit 2 out of service from October 15 to year's end to remove and repair motor.
	Thermalito Powerplant	Unit 1 out of service from October 5 to December 17 for annual preventive maintenance.
November 1992	Badger Hill Pumping Plant	Unit 5 out of service from November 3 to November 23 for annual preventive maintenance.
	Harvey O. Banks Delta Pumping Plant	Unit 4 out of service from November 11 to November 17 to test new remote telemetering unit.
	Ira J. Chrisman Wind Gap Pumping Plant	Unit 4 out of service from November 17 to December 2 for annual preventive maintenance. Unit 7 out of service from November 23 to December 22 to remove, repair, and recoat balance line.
	A.D. Edmonston Pumping Plant	Unit 14 out of service from November 7 to November 13 to repair an oil leak.
	Edward Hyatt Powerplant	Unit 4 out of service from November 2 to December 21 for annual preventive maintenance.
	Oso Pumping Plant	Unit 8 out of service from November 5 to November 7 for annual preventive maintenance.
	John R. Teerink Wheeler Ridge Pumping Plant	Units 6, 7, 8, and 9 out of service from November 3 to November 23 for annual electrical maintenance.
December 1992	Devil Canyon Powerplant	Unit 4 out of service from December 14 to December 21 to waterproof the generator breaker.
	Dos Amigos Pumping Plant	Unit 3 out of service from December 14 to year's end for biennial maintenance.
	Thermalito Powerplant	Unit 2 out of service from December 21 to year's end for annual preventive maintenance.

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9. Generating, Buying, and Selling Power

To deliver water to its 29 long-term water service contractors, the State Water Project requires a dependable and economical source of electric power. To obtain that power, the Department of Water Resources has operated SWP as an independent, interconnected utility since 1983; that is, SWP produces power from its own facilities and buys and sells power on the open market.

For the names and locations of SWP facilities as well as facilities from which the Department purchases power, see Figure 9-1 at the end of this chapter.

Through an extensive computerized network, SWP controls the timing of its pumping load. That control system allows the Department to minimize the cost of power it purchases by maximizing pumping during off-peak periods when power costs are lower—usually at night—and to sell power to other utilities during on-peak periods when power costs are high—usually during the day. By taking advantage of this flexibility in timing its pumping load, SWP is able to reduce the cost of power needed to deliver water.

Information about the total energy used by SWP, including energy produced at its own facilities and energy purchased as well as information about energy sold by SWP on the open market, is included in this chapter.

Total Energy Used

In 1992 the total amount of energy used at the 19 SWP pumping and power plants was 4.27 billion kWh. Table 9-1 includes information about the amount of energy used each month at SWP's pumping and power plants to operate SWP. That table as well as others referenced in this chapter are found at the end of the chapter.

According to terms and conditions of various water conveyance contracts and exchange agreements, some water belonging to the Central Valley Project is pumped through the SWP Harvey O. Banks Delta Pumping Plant and through the CVP-SWP joint-use facilities at Dos Amigos Pumping Plant and William R. Gianelli Pumping-Generating Plant. The U.S. Bureau of Reclamation furnishes the energy for pumping this water.

Energy Produced at SWP Facilities

A large amount of SWP energy is produced by the Hyatt-Thermalito power complex, located in Oroville, California. In 1992, 868 million kilowatt-hours (kWh) of energy was generated at Hyatt-Thermalito. That amount was approximately 7 percent more than the amount generated in 1991. However, due to the continued drought and lower-

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than-normal rainfall in the Feather River watershed during calendar year 1992, the output of Hyatt-Thermalito was substantially less than the average annual output of 2.20 billion kWh.

Energy generated at SWP recovery plants—Alamo, Devil Canyon, William R. Gianelli, and William E. Warne—totaled about 805 million kWh in 1992, about 12 percent more than the amount generated in 1991. In 1992 the SWP share of energy generated at Reid Gardner Unit 4 totaled 1.07 billion kWh.

Table 9-2 includes information about energy produced at SWP's facilities.

Energy Purchased

The State Water Project purchases electrical capacity and energy from other utilities through long-term contracts and short-term purchases. Table 9-2 includes the names of those utilities.

In 1992 the Department purchased 1.03 billion kWh of energy at a cost of $34.48 million. Additionally, associated costs for transmission and dispatching services totaled $12.19 million. See Table 9-3 for amounts of power, transmission, and other services purchased in 1992 and cost of purchases. Other SWP power costs, including those for debt service at Pine Flat Powerplant, totaled $8.53 million.

Information about energy obtained through long-term contracts and short-term purchases follows.

Long-Term Contracts

Long-term SWP hydroelectric power supplies are obtained through contracts with the Kings River Conservation District, Los Angeles Department of Water and Power, and Metropolitan Water District of Southern California.

According to terms of the KRCD contract, the Department receives the total output of the 165-megawatt (MW) Pine Flat Powerplant. The plant provided 92 million kWh to SWP in 1992.

Through a cooperative development agreement with LADWP, the Department receives energy in amounts based on the amount of water scheduled through the West Branch. In 1992, 359 million kWh was provided to the Department.

As part of the MWD contract, the Department received 174 million kWh of energy in 1992 from five small hydroelectric power plants on the MWD system.

The Department also has two agreements with the Southern California Edison Company for the purchase and/or exchange of power. According to terms of the 1979 Power Contract between the Department and SCE (in effect since April 1983), part of the output of the Hyatt-Thermalito complex and all output of Alamo and Devil Canyon power plants are delivered to SCE.

Generally, the energy is delivered to SCE during on-peak periods and is returned to the Department during off-peak periods. Additional energy is delivered to the Department during off-peak periods for payment of capacity made available to SCE. According to terms of the 1981 Capacity Exchange Agreement, which has been in effect since April 1987, the Department delivers energy to SCE each year during on-peak periods and, in return, receives a greater amount of off-peak energy as well as transmission considerations. Those two exchange agreements resulted in a net of about 2.66 billion kWh to SWP in 1992.

The Department also has two other contracts for purchasing energy. One contract is with PacifiCorp, from which the Department purchased 624 million kWh in 1992; the other contract is with TERA Power Corporation for

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purchasing energy produced at Bethany Wind Park near the South Bay Pumping Plant. About 60 wind turbines were operational at the end of 1992, providing about 3.5 million kWh of wind-generated energy during the year.

The net gain to SWP during 1992 from its long-term contracts was 3.90 billion kWh (see Table 9-2). Table 19-1, "Power Contracts, by Title and Date Signed," includes additional information about those contracts and agreements.

Short-Term Purchases

Existing resources and long-term power and transmission contracts ensure that SWP has enough power to meet long-term needs. Periodically, when SWP power requirements exceed resources during daily operations, short-term purchases are made to meet the difference.

In 1992 SWP purchased short-term energy from 11 utilities. The total amount of short-term energy purchased was 142 million kWh. See "Purchases" in Table 9-2.

Power Sold

When generation from SWP power resources exceeds requirements, the Department sells this excess power on the market. Currently, the Department has contracts with approximately 30 utilities for the short-term purchase, sale or exchange of power. Through these contracts, the Department sells excess capacity and energy at market rates.

In determining the most advantageous time to sell power, the Department considers projected SWP operations and changes in the power market as well as energy losses and transmission and dispatching costs.

Total energy sold to 15 utilities in 1992 was 2.55 billion kWh, which resulted in revenues of $62.67 million. The Department also received $13.47 million in revenues for capacity payments or transmission sales from the following utilities:

- Los Angeles Department of Water and Power (capacity foregone)
- Modesto Irrigation District (capacity)
- Nevada Power Company (capacity)
- Northern California Power Agency (transmission)
- City of Santa Clara (transmission)
- Southern California Edison (transmission payments)
- Turlock Irrigation District (capacity)
- City of Vernon (capacity)

Information about the amount of energy sold and the revenue received may be found in Table 9-4.

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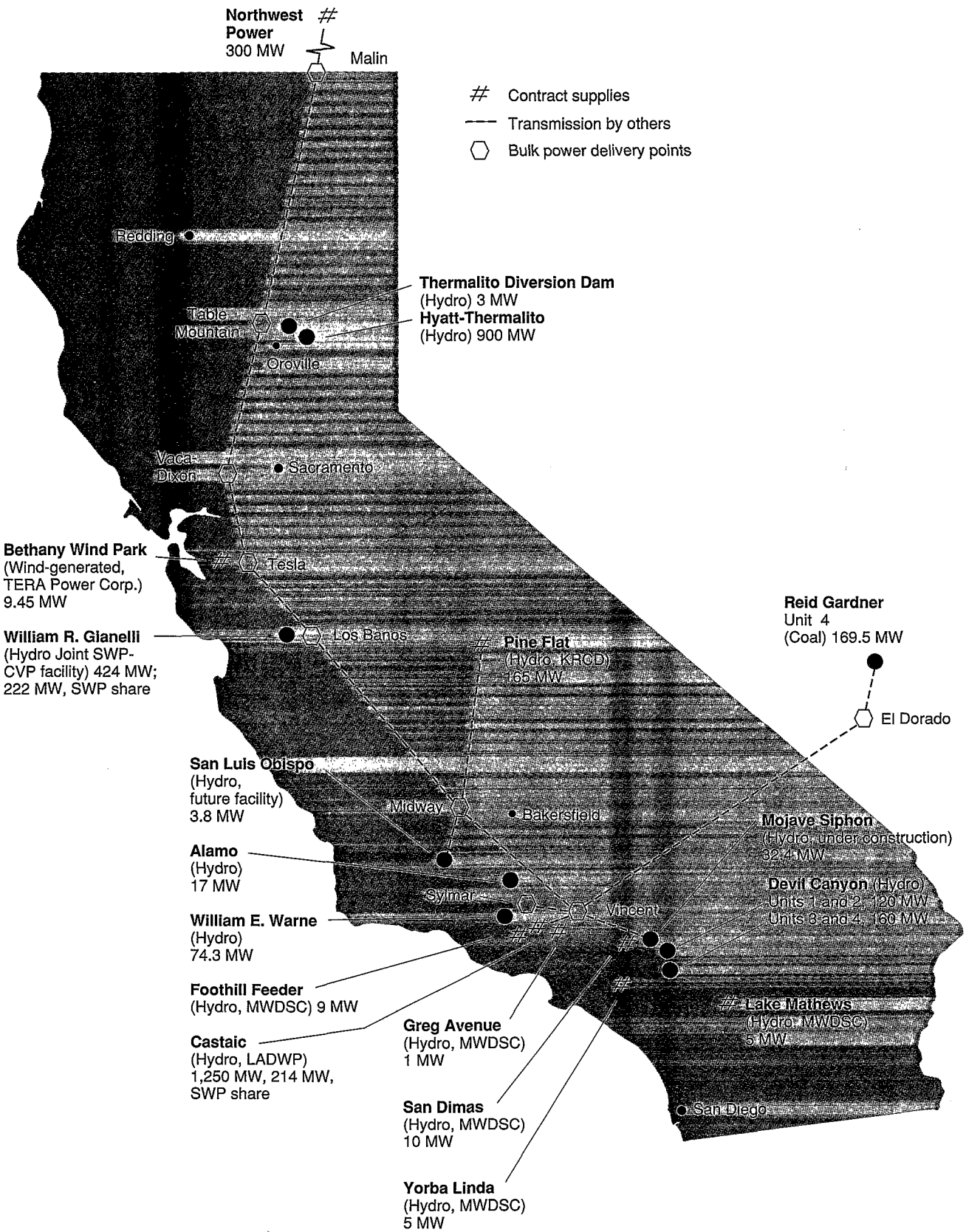

Fig. 9-1. Names, locations, and generating capacity of primary power facilities

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TABLE 9-1

Amounts of Energy Used at Pumping Plants and Power Plants in 1992, by Month

(Millions of kilowatt-hours)

Pumping Plants and Power Plants	*Month*												*Total*
	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*	
Alamo Powerplant (station service)	0.06	0.07	0.05	0.04	0.00	0.01	0.02	0.03	0.03	0.02	0.03	0.05	0.41
Badger Hill Pumping Plant	0.02	0.09	0.79	1.71	3.47	3.71	3.70	2.05	1.37	0.97	0.11	0.06	18.05
Barker Slough Pumping Plant	0.47	0.38	0.47	0.59	0.81	0.60	0.44	0.47	0.45	0.43	0.36	0.31	5.78
Buena Vista Pumping Plant	15.06	3.77	3.48	12.35	30.41	29.29	23.30	22.80	22.26	21.57	14.99	16.75	216.03
Ira J. Chrisman Wind Gap Pumping Plant	38.79	9.11	7.18	25.92	68.91	62.60	48.03	48.92	54.58	53.39	38.54	43.22	499.19
Cordelia Pumping Plant	0.72	0.58	0.60	0.81	1.11	0.57	0.72	0.83	0.47	0.51	0.44	0.35	7.71
Del Valle Pumping Plant	0.01	0.03	0.08	0.30	0.18	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.66
Devil Canyon Powerplant (station service)	0.00	0.00	0.00	0.08	0.00	0.00	0.06	0.17	0.13	0.11	0.00	0.00	0.55
Dos Amigos Pumping Plant (SWP share)	7.43	2.13	4.37	12.17	21.66	30.19	28.74	21.58	13.79	13.12	8.78	9.37	173.33
A. D. Edmonston Pumping Plant	135.31	31.00	23.69	88.79	239.97	214.32	164.15	167.61	189.18	186.34	134.30	151.39	1,726.05
William R. Gianelli Pumping-Generating Plant (SWP share)	38.27	54.68	107.93	16.04	0.13	0.10	0.08	5.60	12.04	1.00	2.44	20.66	258.97
Harvey O. Banks Delta Pumping Plant	56.00	60.36	114.48	21.46	13.37	16.88	7.21	27.02	43.86	7.81	18.35	48.85	435.65
Hyatt-Thermalito Pumping-Generating (pumpback and station service)	0.36	4.15	57.23	11.83	9.86	33.86	16.21	0.14	0.28	0.02	0.04	0.27	134.25
Las Perillas Pumping Plant	0.03	0.05	0.30	0.65	1.33	1.42	1.37	0.78	0.52	0.37	0.06	0.04	6.92
North Bay Interim Pumping Plant	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Oso Pumping Plant	12.90	3.18	0.53	5.84	12.36	13.29	8.64	5.63	10.26	11.63	9.19	13.41	106.86
Pearblossom Pumping Plant	8.73	2.08	5.50	10.89	38.31	27.14	23.97	32.38	27.96	24.35	16.28	11.72	229.31
South Bay Pumping Plant	5.71	3.32	3.18	8.66	7.90	7.85	6.72	12.59	6.93	5.68	8.70	7.52	84.76
Wheeler Ridge Pumping Plant	16.95	4.13	3.27	11.96	31.33	28.86	21.88	21.99	24.39	23.97	16.89	19.25	224.87
William E. Warne Powerplant (station service)	0.04	0.10	0.14	0.06	0.01	0.00	0.06	0.12	0.01	0.05	0.05	0.00	0.64
Subtotal	336.89	179.21	333.27	230.15	481.12	470.69	355.31	370.72	408.52	351.35	269.56	343.23	4,130.02
Scheduled high voltage transmission line losses	13.44	7.43	11.88	6.83	9.91	9.61	15.25	18.29	10.84	4.90	15.85	18.63	142.86
Total Energy Required	**350.33**	**186.64**	**345.15**	**236.98**	**491.03**	**480.30**	**370.56**	**389.01**	**419.36**	**356.25**	**285.41**	**361.86**	**4,272.88**

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TABLE 9-2

Sources and Amounts of Energy Generated and Purchased in 1992, by Month

(Millions of kilowatt-hours)

Sources of Energy	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
	Month												
SWP Energy Sources													
Alamo Powerplant	0.87	0.22	0.51	1.31	4.01	3.25	2.79	3.10	2.91	2.68	2.18	1.11	24.94
Bottle Rock Powerplant (required for station service)	(0.12)	(0.11)	(0.12)	(0.10)	(0.08)	(0.07)	(0.07)	(0.06)	(0.07)	(0.09)	(0.11)	(0.12)	(1.12)
Devil Canyon Powerplant	10.17	8.33	11.05	20.05	56.74	48.56	41.89	53.37	51.28	42.47	22.85	28.42	395.18
Reid Gardner Unit 4	118.97	91.49	33.98	(1.44)	58.94	98.71	106.91	122.96	112.66	114.78	105.84	105.23	1,069.03
William R. Gianelli Pumping-Generating Plant (SWP share)	0.26	0.43	0.00	17.60	30.74	39.83	36.91	17.34	0.32	9.73	2.39	1.27	156.82
Hyatt-Thermalito Pumping-Generating Plant	32.07	19.51	55.58	21.10	143.54	119.62	138.68	112.21	90.79	51.85	35.66	47.00	867.61
William E. Warne Powerplant	26.88	6.26	1.99	12.05	26.69	29.25	18.92	11.06	22.27	24.33	19.56	28.92	228.18
Energy Sources from Short-Term Agreements													
Bonneville Power Administration, power exchange	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.50	(13.22)	(25.08)	(26.02)	0.00	(33.82)
Northern California Power Agency, power exchange	0.00	0.00	0.00	0.00	0.53	2.07	0.00	0.00	0.00	0.00	0.00	0.00	2.60
Energy Sources from Long-Term Agreements (a													
Castaic Powerplant	34.51	16.73	3.87	25.11	41.67	46.35	30.66	14.45	34.25	37.21	29.88	44.76	359.45
Metropolitan Water District of Southern California hydroelectric plants	9.27	7.44	8.77	13.48	20.04	19.80	16.75	18.02	18.17	17.97	10.89	13.58	174.18
PacifiCorp	61.25	45.63	46.37	48.08	47.40	55.20	44.88	45.60	52.90	58.30	60.83	57.06	623.50
Pine Flat Powerplant	(0.25)	(0.17)	0.25	14.24	21.91	48.75	8.61	(0.21)	(0.20)	(0.22)	(0.23)	(0.25)	92.23
Power exchange delivered to PG&E	0.00	0.00	0.00	0.00	0.00	0.00	(2.39)	(25.52)	(16.68)	(0.88)	0.00	0.00	(45.47)
Power exchange received from PG&E	7.28	11.20	5.04	3.29	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	29.81
Power exchange delivered to SCE	(61.63)	(53.84)	(73.55)	(82.92)	(173.21)	(167.65)	(162.00)	(156.40)	(146.52)	(113.53)	(64.12)	(75.12)	(1,330.49)
Power exchange received from SCE	231.64	146.01	266.33	209.10	337.60	298.62	445.26	492.19	434.36	403.60	429.51	293.07	3,987.29
TERA Power Corporation	(0.01)	0.00	0.05	0.19	0.54	0.64	0.73	0.78	0.38	0.12	0.03	0.04	3.49
Power system deviations account transactions	0.91	1.47	1.30	1.41	0.71	(0.52)	1.76	(2.07)	(2.47)	(1.55)	(3.33)	(2.78)	(5.16)
Purchases (a													
Bonneville Power Administration	0.00	0.00	0.00	0.00	0.00	13.09	0.00	0.00	0.00	0.00	0.00	0.00	13.09
British Columbia Power Export Corporation	1.61	0.00	2.38	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.30
Eugene Water and Electric Board	0.00	0.17	2.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.92
Montana Power Company	0.00	0.60	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.78
Portland General Electric Company	4.78	4.30	7.43	4.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.78
Puget Sound Power and Light Company	0.00	7.75	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.35
Salt River Agricultural Improvement and Power District	1.07	10.82	37.70	17.00	6.50	0.47	0.00	0.00	0.00	0.00	0.00	4.95	78.51
Seattle City Light	0.00	2.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.20
Southern California Edison Company	0.00	0.00	0.00	1.41	0.00	0.00	0.20	0.81	0.00	0.00	0.00	0.00	2.42
Washington Water Power Company	0.00	0.00	3.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.95
Western Area Power Administration, Lower Colorado	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.66
Subtotal	479.53	326.44	420.41	325.23	624.58	655.97	733.49	738.13	641.13	621.69	625.81	547.80	6,740.21
Less Sales	(129.22)	(139.78)	(75.25)	(88.26)	(133.52)	(175.66)	(362.90)	(349.14)	(221.76)	(265.44)	(340.39)	(185.93)	(2,467.25)
Total Energy Provided to SWP	**350.31**	**186.66**	**345.16**	**236.97**	**491.06**	**480.31**	**370.59**	**388.99**	**419.37**	**356.25**	**285.42**	**361.87**	**4,272.96**

a) Amounts show actual energy available for SWP use and include transmission losses, return energy provided for by specific contracts, and other necessary adjustments.

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TABLE 9-3

Amounts of Power, Transmission, and Other Services Purchased in 1992 and Costs of Purchases, by Area

Name of Supplier	*Type of Service Purchased*	*Energy (kwh)(a*	*Energy Cost (Dollars)*	*Transmission Cost (Dollars)*	*Total Cost (Dollars)*
Power and Transmission Purchases					
Northwest Area					
Bonneville Power Administration	Nonfirm energy	13,094,000	$162,828		$162,828
British Columbia Power Export Corporation	Nonfirm energy	4,297,000	102,310		102,310
Eugene Water and Electric Board	Nonfirm energy	2,915,000	61,230		61,230
Montana Power Company	Nonfirm energy	1,775,000	37,744		37,744
PacifiCorp	Firm and nonfirm energy	623,497,000	23,574,002		23,574,002
Portland General Electric Company	Nonfirm energy	20,774,000	453,678		453,678
Puget Sound Power and Light Company	Nonfirm energy	11,350,000	255,650		255,650
Seattle City Light	Nonfirm energy	2,200,000	46,200		46,200
Washington Water Power Company	Nonfirm energy	3,950,000	82,490		82,490
Northern California Area					
Pacific Gas & Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company	EHV transmission			$1,500,000	$1,500,000
Kings River Conservation District	Hydroelectric energy	95,432,832	$725,290		725,290
Pacific Gas & Electric Company	Transmission and capacity			6,086,881	6,086,881
TERA Power Corporation	Wind energy	3,508,083	278,217		278,217
Southern California Area					
Los Angeles Department of Water and Power	Transmission			$208,692	$208,692
Metropolitan Water District of Southern California	Hydroelectric energy	162,399,000	7,098,460		7,098,460
Southern California Edison Company	Nonfirm energy; transmission	2,420,000	52,698	2,817,213	2,869,911
Southwest Area					
Nevada Power Company	Nonfirm energy; transmission	2,000	$44	$1,575,096	$1,575,140
Salt River Agricultural Improvement and Power District	Nonfirm energy	78,515,000	1,537,304		1,537,304
Western Area Power Administration, Lower Colorado	Nonfirm energy	660,000	12,540		12,540
Subtotal		1,026,788,915	$34,480,685	$12,187,882	$46,668,567
Other Purchases					
Kings River Conservation District	Pine Flat operations and maintenance				$2,155,257
	Pine Flat debt service				4,576,206
Los Angeles Department of Water and Power	Hydro power plant scheduling				1,150
Nevada Power Company	Reid Gardner no. 4 operations and maintenance				1,492,089
Pacific Gas & Electric Company	Midway-Wheeler Ridge and Bottle Rock transmission				284,897
	Pine Flat ownership and Lakeville Line operations and maintenance				
	Federal Energy Regulatory Commission filing fees				23,930
Subtotal					$8,533,529
Total					**$55,202,096**

a) Amounts reflect energy for which SWP was billed.

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TABLE 9-4

Total Amounts of Energy Sold in 1992 and Revenue from Sales, by Area

Name of Purchaser	*Amount of Energy Sold (kWh)*	*Revenue from Energy Sales (Dollars)*	*Revenue from Capacity and Transmission Sales (Dollars)*	*Total Power Sales (Dollars)*
Pacific Northwest Area				
Bonneville Power Administration	117,294,000	$2,405,246		$2,405,246
Portland General Electric Company	110,030,000	2,557,992		2,557,992
Northern California Area				
Hetch Hetchy Water and Power	123,575,000	$2,697,685		$2,697,685
Modesto Irrigation District	349,834,000	9,855,773	$1,242,000	11,097,773
Northern California Power Agency	35,811,000	904,035	336,457	1,240,492
Pacific Gas & Electric Company	289,718,000	6,294,975		6,294,975
Sacramento Municipal Utility District	947,253,000	22,324,053		22,324,053
City of Santa Clara			85,886	85,886
Turlock Irrigation District	141,432,000	3,975,596	2,776,800	6,752,396
Southern California Area				
City of Anaheim	3,530,000	$60,300		$60,300
Los Angeles Department of Water and Power			$663,600	663,600
Metropolitan Water District of Southern California	22,621,000	449,898		449,898
City of Riverside	4,582,000	151,866		151,866
Southern California Edison Company	42,734,000	603,806	900,000	1,503,806
City of Vernon (a	148,294,000	4,429,243	5,957,042	10,386,285
Southwest Area				
Nevada Power Company (b (c	212,674,000	$5,936,963	$1,512,988	$7,449,951
Salt River Agricultural Improvement and Power District	900,000	18,000		18,000
Total	**2,550,282,000**	**$62,665,431**	**$13,474,773**	**$76,140,204**

a) Includes $16,187 for dispatching and administration.
b) Includes 83,040,000 kWh upgrade energy from Reid Gardner.
c) Does not include $13,822 interest payment for peaking capacity adjustment.

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10. Reviewing Environmental Regulations

Before 1960 the effects on the environment of constructing facilities to store and deliver water—damming rivers and building reservoirs, for example—were not emphasized as much as they are today. Water was often viewed as the means to growth and prosperity for all Californians.

In the late 1960s, however, perceptions began to change. Today, water is viewed as a common resource to be shared by all users—fish, plants, and wildlife as well as recreationists and naturalists. And increasingly, along with other natural resources, water is viewed as part of an ecosystem that deserves to be protected.

As a result of this new awareness, state and federal legislators enacted laws to protect the environment. Some of the most comprehensive legislation includes:

- National Environmental Policy Act (Title 42, *United States Code* sections 4321-4370 [1970])
- Federal Endangered Species Act (Title 16, *United States Code* sections 1531-1544 [1973])
- Section 404 of the Federal Water Pollution Control Act or Clean Water Act (Title 33, *United States Code* Section 1344 [1977])
- California Environmental Quality Act (*Public Resources Code* sections 21000-21177 [1970])
- California State Endangered Species Act (*Fish and Game Code* sections 2050-2098 [1984])

The Public Trust Doctrine, which is based on case law, requires that public trust uses of water be considered when rights to divert water from navigable waterways are at issue. Recent decisions, such as the landmark decision *National Audubon Society* v. *Superior Court of Alpine County* (1983) 33 Cal.3d 419,189 *Cal. Rptr.* 346, have expanded the traditional public trust uses to be considered to include environmental concerns such as protection of fish and wildlife, scientific study, scenic enjoyment, recreation, and related open-space uses.

When the Department of Water Resources plans and implements programs related to the State Water Project, it takes into account the appropriate environmental laws and doctrines, particularly those previously listed.

A basic understanding of those laws and doctrines will facilitate an understanding of the Department's complex environmental management activities. Therefore, information about those laws is included in this chap-

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ter. The information is organized in two categories, "Legislation" and "Public Trust Doctrine."

Legislation

Information about the National Environmental Policy Act, California Environmental Quality Act, Federal Endangered Species Act, California Endangered Species Act, and Section 404 of the Federal Water Pollution Control Act or Clean Water Act is included in this section.

Environmental Policy Acts

The National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) compel governmental agencies to document and consider environmental consequences of their actions in their decision-making process. NEPA states that it is the goal of the federal government to use all practicable means consistent with other considerations of national policy to protect and enhance the quality of the environment. All federal agencies must prepare an environmental impact statement (EIS) for actions significantly affecting environmental quality.

California's Environmental Quality Act is patterned after the National Environmental Policy Act. According to CEQA, agencies are required to (1) disclose, through an environmental impact report (EIR), the significant effects proposed projects would have on the environment; and (2) search for ways to reduce or avoid environmental damage.

NEPA does not generally require federal agencies to adopt mitigation measures or alternatives provided in the EIS. CEQA, on the other hand, does impose substantive duties on all California governmental agencies approving projects with significant environmental impacts to adopt feasible alternatives or mitigation measures that substantially lessen these impacts, unless there are overriding reasons why they cannot. When a project is subject to both CEQA and NEPA, both laws encourage the agencies to cooperate in planning the project and prepare joint environmental documents.

Through the environmental review process, citizens have an opportunity to learn about those significant effects and, if the project is approved, the reasons for approving the project.[1]

The procedures involved in the environmental review process require agencies to:

1. Provide a description of the proposed project
2. Identify the lead and cooperating agencies involved in the project
3. Determine the scope of study with public and governmental agency participation
4. Prepare and distribute a draft EIS or EIR
5. Respond to comments received on the draft
6. Prepare the final EIS or EIR
7. Make findings and adopt mitigation measures to avoid significant effects, if applicable
8. Adopt a monitoring plan to ensure mitigation measures are viable

[1]The California Environmental Quality Act applies only to projects directly undertaken, funded, or approved by state or local agencies. The National Environmental Policy Act applies to projects directly undertaken, funded, or approved by federal agencies. The Department conducts many projects in cooperation with federal agencies. In those cases both CEQA and NEPA must be followed.

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9. If the project is approved, prepare and file applications for permits required to implement the project

The Department follows these procedures when it considers the environmental impacts that could result from certain decisions it makes concerning SWP.

The scoping phase of the environmental review process is particularly important. Occurring early in the review process, the scoping phase provides the public and governmental agencies an opportunity to identify the issues and topics to be considered when preparing the report.

Those issues and topics are essential to the agencies preparing an EIR because they depend on the information received to:

- Identify and evaluate responsible alternatives
- Identify potential environmental and socioeconomic impacts of the project

Consequently, members of the public have the opportunity to raise issues during the scoping phase and not just after the draft environmental document is prepared. In addition, the scoping phase helps agencies to determine data and information still needed, develop a work schedule, and allocate resources for preparing and distributing the draft environmental document for public review and comment.

Endangered Species Acts

In planning and operating SWP, the Department must consider the effects its actions will have on organisms—plants, birds, reptiles, fish, and mammals—listed as threatened or endangered according to the Federal Endangered Species Act and the California Endangered Species Act. An endangered species is one in danger of extinction in all or a significant portion of its range; a threatened species is one likely to become endangered.

The acts are designed to protect threatened and endangered species by:

1. Listing endangered and threatened species
2. Ensuring federal and state agencies adopt measures to protect the species during the design, construction, and operation of the project
3. Prohibiting the taking of endangered species

One important aspect of the acts is preserving habitat critical to the survival of the threatened or endangered species.

Federal Water Pollution Control Act

Section 404 of the Federal Water Pollution Control Act (or Clean Water Act) requires that a permit be obtained from the U.S. Army Corps of Engineers for any activity that results in disposal of dredged material or placement of fill material in the waters of the United States.

Section 404 has been broadly interpreted by the federal courts to include its application to structures or fills introduced into waters of the United States. This includes wetlands as well as all interstate waters and waters within a state that may be used for interstate or foreign commerce.

Public Trust Doctrine

According to the Public Trust Doctrine, the state holds navigable waters and their underlying lands in trust to protect public interests. The interests historically protected

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were commerce, navigation, and fisheries. In recent cases, such as the 1983 California Supreme Court case of *National Audubon Society* v. *Superior Court of Alpine County* , the doctrine has been expanded to protect the public's stake in recreation, fish and wildlife habitats, scenic values, and environmental preservation.

In the *Audubon* case, the Supreme Court held that:

- Water rights licenses are subject to the public trust doctrine.
- When issuing water rights permits, the state must consider public trust values.
- The state has a continuing duty to supervise and reconsider existing water permits and licenses, if necessary, to take public trust uses into account.

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11. Preserving the Delta

Perhaps no area in California's water history has been the subject of more investigations or generated more controversy than has the Sacramento-San Joaquin Delta, 738,000 acres of land interlaced with hundreds of miles of waterways. Natural runoff and flood flows from the Sacramento, San Joaquin, Mokelumne, and Cosumnes Rivers flow into the Delta, which receives runoff from 40 percent of the state's land area.

With its concentrated water supply, the Delta supports hundreds of species of fish, wildlife, and plants. As part of an interconnected estuary system that includes Suisun Marsh and San Francisco Bay, the Delta serves as a passageway to and from the Pacific Ocean for migrating fish. It provides refuge for migrating waterfowl and numerous other species. Because of the miles of waterways and diverse wildlife, the Delta is a popular destination for outdoor recreationists. The rich soil and available water sustain many agricultural crops and farms. The Delta also serves as part of a large system designed to export water from the northern part of the state to at least 20 million Californians in the western and southern parts.

The Delta's channels have been used by the Central Valley Project since 1951 and the State Water Project since late 1967. The channels transport winter flows as well as water from upstream reservoirs to the Delta's southern boundary, where pumps lift the water into the Delta Mendota Canal and California Aqueduct for distribution south and west.

The SWP also exports water from Barker Slough in the northern Delta into the North Bay Aqueduct. In 1992 SWP diverted about 1,503,000 acre-feet of water from the Delta at Harvey O. Banks Delta Pumping Plant, including 34,816 acre-feet pumped for the U.S. Bureau of Reclamation. The CVP diverted about 1,314,000 acre-feet through the Tracy Pumping Plant and the Contra Costa Pumping Plant (see Figure 11-1).

Over the past 40 years, various federal and state agencies, including the Department of Water Resources, have participated in developing and implementing several programs designed to preserve the Delta as a unique environmental resource. Many of those programs involve:

- Defining water rights
- Determining the levels of salinity needed to protect fish and wildlife habitation
- Devising methods to control flooding, protect fish and wildlife, and provide for recreational activities

In addition to the Department, several other agencies are active in managing Delta resources. Federal agencies long active in

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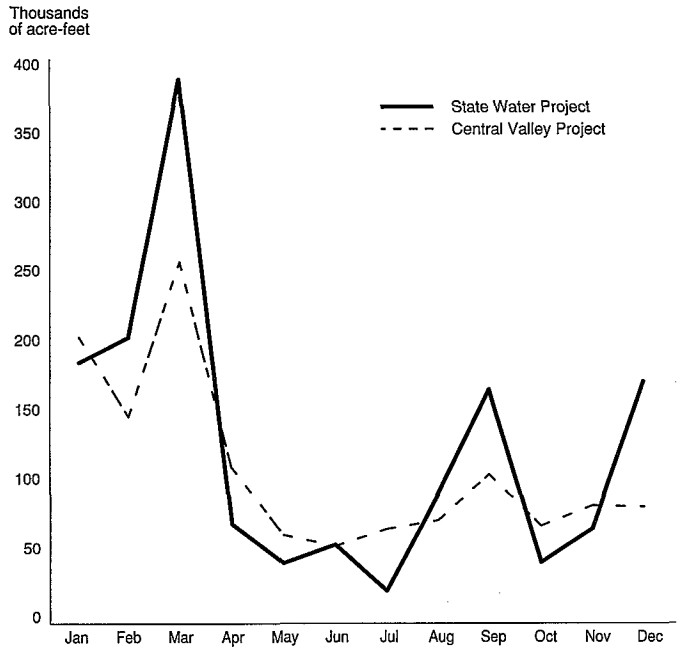

Fig. 11-1. Amount of water diverted from the Sacramento-San Joaquin Delta by State Water Project and Central Valley Project in 1992, by month

water management include the U.S. Army Corps of Engineers and U. S. Bureau of Reclamation. Agencies that are becoming increasingly active in Delta issues include the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and U.S. Environmental Protection Agency. State agencies that manage Delta resources include the State Water Resources Control Board and the California Department of Fish and Game.

Information about the responsibilities and activities of these agencies is included in this chapter, arranged according to the headings "Federal Agencies" and "State Agencies." Information about the Department's activities may be found in Chapter 13, "Managing Delta Resources."

Federal Agencies

The following sections provide information about the activities and responsibilities of federal agencies involved in Delta resource management.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers has been actively involved in Delta flood control and navigation projects since 1877, completing four major flood control projects and eight navigation improvement projects. In addition, the Corps works closely with the Department in planning conservation and protection activities in the Delta.

Flood Control and Navigation Projects

Most of the Delta land exists below the surrounding water level, and many islands are below sea level. Consequently, high levees are needed to hold back Delta waters. Also, silt settling in Delta channels reduces the channels' capacity to carry water, thus increasing the danger of flooding when rivers rise.

The Corps is responsible for some flood control projects in the Delta, including building levees along the Sacramento River and adjoining sloughs, Mormon Slough, Calaveras River, and the Lower San Joaquin River and its tributaries.

In addition to its historical leadership role in Delta flood control, the Corps regulates structures or work affecting navigable waters of the United States according to Section 10 of the Rivers and Harbors Act (Title 33, *United States Code*, Section 403 [1899]) and discharges of dredged or fill material in waters of the United States (which includes wetlands) according to Section 404 of the Federal Water Pollution Control Act or Clean Water Act.

Departmental Coordination

The Corps has been active in Delta planning activities since 1962, when it initiated an investigation of the Sacramento-San Joaquin Delta.

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Intermittent work on this study, done in close cooperation with the Department, eventually led to the release in October 1982 of a draft feasibility report and draft environmental impact statement for the Sacramento-San Joaquin Delta.

1982 Study

The 1982 study listed project alternatives for providing additional flood protection, controlling tidal salinity intrusion, enhancing recreational opportunities, and preserving scenic values.

Changes since 1982 require that the study be revised to reflect present conditions. In August 1991 the Corps, the Reclamation Board, and the Department signed a feasibility cost-sharing agreement (FCSA) for a special study of the Sacramento-San Joaquin Delta.

1991 Special Study

As with the 1982 study, the FCSA special study provides for investigating solutions for Delta flood protection, salinity intrusion, recreation, and preservation of scenic values. In accordance with the Water Resources Development Act of 1986 and the federal policy of incurring no net loss of wetlands, additional considerations in the 1991 study include environmental and wildlife habitat restoration measures. Also, the study will consider the Department's water management plans for water supply and flood control when developing alternatives for a comprehensive Delta plan.

The special study is divided into two phases. Phase one began in September 1991 and was completed in March 1993. The phase one report, called the Initial Report, describes problems, their possible solutions, and opportunities to improve and/or provide flood protection, fish and wildlife habitat, water quality, recreation, and navigation.

The Initial Report includes a plan that identifies existing and future land uses in years 2000, 2020, and 2040. In addition, the report includes a discussion on developing a comprehensive plan, primarily for flood control, navigation, and environmental restoration.

The comprehensive plan, called the Regional Planning Report, will become the focus of phase two of the study. Potential Corps involvement in plans and projects in the Delta will be identified within this report. Phase two planning studies will be coordinated with the Delta Protection Commission and Governor Pete Wilson's Bay-Delta Oversight Council, as well as with public agencies and interest groups. The Corps is proceeding with a reconnaissance-level study of three Delta islands and tracts where early flood protection and environmental restoration may be feasible.

An executive committee is providing overall management and policy direction, while a study management team is overseeing and coordinating the execution of the study. The study could lead to authorization of a federal flood control project in the Delta, which would incorporate as many as possible of the Department's Delta planning programs.

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation manages the operation of the Central Valley Project and shares with the Department responsibilities for meeting water quality and flow objectives in the Delta.

Central Valley Project

The Central Valley Project, originally recommended as a state component in California's water plan and constructed by the federal government during the Great Depression,

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delivers about 8 million acre-feet of water a year to contractors in the Sacramento and San Joaquin Valleys and Contra Costa and Santa Clara Counties.

Coordinated Operations Agreement

Because the Department and USBR share responsibilities in the Delta, the Department closely coordinates SWP operation with USBR according to the Coordinated Operations Agreement, signed in 1986. That agreement replaced a system of year-to-year agreements regarding the responsibilities of the Department and USBR in the Delta.

In the agreement USBR agreed to share responsibility for sustaining flows in the Delta during dry periods. The agreement is significant in that the federal government agreed to accept most of the state's water quality requirements for the Delta with certain restrictions as to authority for determination. Acceptance by the federal government meant that SWP would not have to supply all water necessary to meet water quality and flow requirements in the Delta.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service, an agency within the Department of the Interior, has the mission to "conserve, protect and enhance fish, wildlife and their habitats for the continuing benefits of the American people." Among the responsibilities of USFWS is administration of the federal Endangered Species Act to provide protection for terrestrial and aquatic plants and animals including non-anadromous fish. The USFWS also works with federal, state, and local agencies and interests in matters regarding wetland protection.

Within California USFWS is responsible for biological opinions and critical habitat and recovery plans for such threatened and endangered species as the Delta smelt, bald eagle, and elderberry longhorn beetle. Because the biological opinions issued by USFWS—especially those related to Delta smelt—can significantly affect SWP and CVP operations, the Department and USBR are currently preparing a biological assessment upon which the next biological opinion on Delta smelt will be based. The Department also works with USFWS to minimize and provide mitigation for environmental impacts related to SWP operations.

National Marine Fisheries Service

The National Marine Fisheries Service has primary responsibility for the conservation, management, and development of living marine resources and for the protection of certain marine mammals and endangered species under numerous federal laws. As an agency within the U.S. Department of Commerce, NMFS has responsibilities to the commercial and marine recreational fishing industries and to the general public. NMFS also administers the federal Endangered Species Act with respect to marine or anadromous species such as the winter-run salmon. The mission of NMFS is to "achieve a continued optimum utilization of living marine resources for the benefit of the nation."

The NMFS issues biological opinions, critical habitat designations, and recovery plans on winter-run Chinook and other anadromous salmonids in California and ensures that conditions specified in these opinions are met by the responsible agencies, including the Department.

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The U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency was created to oversee implementation of the federal Clean Water Act, which was approved by Congress in the 1960s to protect the chemical, physical, and biological character of the waters of the United States. The act is broad and complex and includes the National Pollution Discharge Elimination System to reduce toxic and other problems associated with discharge of wastes to the nation's waters.

The USEPA is becoming increasingly active in issues and activities that affect the operation of SWP.

State Agencies

This section includes information on the State Water Resources Control Board and the California Department of Fish and Game.

State Water Resources Control Board

The State Water Resources Control Board established by the California Legislature in 1945, is charged with overseeing water rights and water quality for California.

Composition and Duties

The Board consists of five members appointed by the governor for 4-year terms. Appointments must be approved by the senate. The governor also appoints the Board's chairperson.

Among its many responsibilities, the Board:

- Issues permits for the use of all water except ground water and riparian water
- Distributes state and federal loans and grants for constructing sewage facilities
- Adopts water quality plans, regulations, and policies
- Sets water quality standards for the Delta

In implementing its mandate to set Delta water quality standards, the Board issued *Water Right Decision 1485: Sacramento-San Joaquin Delta and Suisun Marsh* in 1978. In that decision the Board focused on SWP and CVP water right permits and operations.

Basically, the Board required the two water projects to maintain water quality in the Delta at levels that would have existed without the two projects. However, after Decision 1485 was adopted, various water users as well as the federal government challenged it in court.

In 1986 Judge John Racanelli, writing for the state court of appeal, cited *National Audubon Society* v. *Superior Court of Alpine County* (public trust doctrine) in ordering the Board to rethink protections for the San Francisco Bay and Delta. In its decision the court broadly interpreted the authority of the Board to establish and enforce water quality objectives that ensure reasonable protection of beneficial uses of Delta water as well as protection for San Francisco Bay. The court also ordered the Board to consider the effects of all upstream water uses, not just those of the two water projects.

To ensure implementation of the court's ruling, which was allowed to stand by the California Supreme Court, the Board convened the Bay-Delta hearings in July 1987.

Bay-Delta Hearings

The Bay-Delta proceedings, an extensive multiphase hearing process conducted by the Board, are designed to result in new water quality and flow objectives for the Bay-Delta estuary. The proceedings are significant in California's water history because the

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Board's decisions will profoundly affect all water users, including fish and wildlife.

The proceedings are organized into four phases: the evidentiary phase, the water quality phase, the scoping phase, and the water rights phase.

Evidentiary Phase

During the first six months of the hearings, which began in 1987, the Board completed the evidentiary phase. The Board received and reviewed more than 40,000 pages of exhibits from more than 600 speakers representing over 60 separate organizations.

Water Quality Phase

In November 1988 the Board began the water quality phase of the proceedings. During this phase in 1991, the Board adopted two reports, *Water Quality Control Plan for Salinity* and *Pollutant Policy Document.*

Scoping Phase

To receive testimony on planning activities, development of facilities, negotiated settlements, flow objectives, and legislative action, the Board conducted the first scoping phase workshops in March and April 1991.

Many workshops were held with Board staff members through winter 1991 to develop a range of six alternative measures for protecting the uses of Bay-Delta waters.

Those alternatives included curtailments of SWP exports from the Delta, operational restrictions of the Delta Cross Channel gates, and modifications of flow and objectives.

In succeeding months during the scoping phase, Board staff members held additional workshops to analyze the impact of the six alternatives on the water supply and environment. The Department provided the water supply impact analysis by conducting over 30 system-wide operational studies.

The Department has been extensively involved in the scoping phase workshops and has continued to participate in work groups organized during earlier phases of the proceedings to investigate:

- Water-year classification for the Sacramento and San Joaquin River basins
- Agricultural economics
- Delta agriculture
- Agricultural and urban water conservation
- Waste water reclamation

Several work groups have completed their studies and have submitted findings to the Board. Concurrent with the workshops previously described, Board staff initiated a water availability and use study to determine the effects of water use upstream of the estuary on Bay-Delta flows and salinity.

The focus of the study is those water right holders with direct diversion rights greater than 100 cfs or total claimed storage rights exceeding 100,000 acre-feet. A technical advisory committee was formed to allow public participation in the study.

Water Rights Phase

In April 1992, in conjunction with his new water policy, Governor Pete Wilson directed the Board to develop interim Delta standards for protection of fish and wildlife. Those interim standards, which were to be developed by the end of 1992, were to be applied to the construction and operation of the Department's south Delta facilities, which are designed to improve the environment in the Delta and SWP water supply capability through:

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1. Constructing flow control structures
2. Improving the hydraulic capacity of channels, Old River near the SWP export facilities
3. Maximizing the full pumping capability of Banks Pumping Plant

The Board immediately reacted to the governor's directive by suspending the scoping phase of the Bay-Delta hearings and issuing a water rights hearing notice in which a California Environmental Quality Act-exempt process was specified.

The Board began 15 days of formal water rights hearings in June 1992. In December 1992 the Board issued a draft of its findings—draft Decision 1630—which proposed interim water quality and flow and export standards. The Board circulated the draft for review and comment. However, on April 1, 1993, Governor Pete Wilson wrote a letter requesting that the Board not adopt interim standards for the Bay-Delta and, instead, begin work on establishing permanent standards. Governor Wilson stated that recent actions taken to protect Sacramento River winter-run Chinook salmon and Delta smelt had effectively set interim standards under the authority of the Endangered Species Act, making the Board's efforts moot.

The Board subsequently announced that it would not consider adopting Decision 1630 as an interim measure but that it would continue to prepare an environmental impact report (EIR) for establishing long-term standards which would replace Decision 1485. The Board is currently revisiting interim Bay-Delta standards in a series of workshops to lead to water rights hearings in January 1994.

Department of Fish and Game

In addition to advising the State Water Resources Control Board on all matters affecting fish and wildlife, the Department of Fish and Game administers the California Endangered Species Act (*Fish and Game Code* sections 2050-2068 [1984]).

Additions to Endangered Species Act

Biologists from DFG review the status of each listed species at least every 5 years and recommend steps to be taken to increase its population. A species or subspecies is listed as *endangered* or *threatened* by vote of the California Fish and Game Commission after considering scientific merits of petition by citizens or state officials.

Actions for Protection

Once a species is listed, DFG (1) monitors its habitat and population trends; (2) recommends to other agencies, including the Department of Water Resources, actions for protecting the species; and (3) develops management plans for protected habitats.

DFG also maintains a statewide inventory of California's rare species and natural communities.

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12. Protecting Fish, Plants, and Wildlife

The Department of Water Resources has developed several programs to eliminate, minimize, or offset adverse environmental impacts while operating and maintaining the State Water Project. Those programs are conducted in addition to the environmental documentation and mitigation activities required for proposed facilities.

The Department's programs include:

- Examining impacts of water transfers
- Minimizing environmental impacts along the California Aqueduct right-of-way
- Minimizing impacts of water operations on Delta smelt and Chinook salmon
- Reducing losses of fish at Harvey O. Banks Delta Pumping Plant
- Funding other programs to increase fish populations, such as restoring gravel beds and eradicating weeds
- Identifying and protecting threatened and endangered plants and animals in Suisun Marsh and maintaining the marsh's brackish water habitat

Water Transfers

California has adopted a statewide policy of encouraging both short-term and long-term water transfers. Transfers that may affect fish and wildlife must be approved by the State Water Resources Control Board.

In 1993 the Department completed a generic environmental impact report on water transfers, including transfers made under drought water bank programs. Specific transfers, however, may require additional environmental documentation.

In 1990, for example, the Department contracted for several one-time water purchases from Yuba County Water Agency. The transfers, needed because of the drought, were deemed short-term actions, and only limited analyses were made of their impacts on fish and wildlife. However, the Department is including annual transfers from YCWA as a possible means of meeting future water demands. Consequently, the Department must assess the effects of those transfers on fish and wildlife.

Scope and Purpose of Study

As part of its responsibilities for approving certain transfers from the Yuba River, the State Water Resources Control Board mandated that the Department conduct a 4-year study to examine the environmental effects on the Feather River and Lake Oroville of purchasing water from Yuba County

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Water Agency over an extended period of time.

The techniques used to examine effects are based on in-stream flow incremental methodology, a system developed by the U.S. Fish and Wildlife Service to help determine fish-flow needs.

Methodology

At selected transections of the Feather River, the depth, water surface elevation, velocity, and gravel composition are measured at several flow rates. The data are entered into a computer and used to develop fish habitat indices. Divers determine fish habitat preferences in the river relative to the measured physical and flow parameters by direct observation of the fish. A combination of physical and biological measures is then used to determine habitat available at different flows and life stages. The field data have been collected and Department biologists are using computer models to convert the data into habitat indices. The Department will present results of the study to the State Water Resources Control Board in 1994.

A daily temperature model is also being developed for the Feather River. The Department and the University of California at Davis are cooperating in model development and verification.

Mitigation Along the Aqueduct

To minimize environmental impacts along the California Aqueduct right-of-way, the Department adopted a program through which environmental specialists from districts and the Environmental Services Office work with field division staff to determine if operation and maintenance procedures affect streambeds, wetlands, and threatened or endangered species. When necessary, maintenance activities are modified to comply with environmental regulations.

The Department modifies all activities possible to minimize impacts; however, some activities that may affect listed endangered species cannot be changed. In those situations the Department works with the U.S. Fish and Wildlife Service and California Department of Fish and Game to obtain an incidental take permit as mandated by the Federal Endangered Species Act (Title 16, *United States Code*, Sections 1531-1544 [1973]). An incidental take permit contains conditions, limitations, and mitigation measures to follow when developing a project if take of a legally protected species is incidental to, but not the purpose of, the project or activity. In 1992, for example, the Department obtained an emergency permit to correct bank slippage problems along the aqueduct near Banks Pumping Plant. Bank stabilization work will be completed in 1993 and will result in some mitigation land being dedicated and maintained as wildlife habitat.

Because of the length of the California Aqueduct, the process of obtaining permits initially focused on the Department's San Joaquin Field Division, followed by the Delta and San Luis Field Divisions. Those divisions are located in the San Joaquin Valley. A habitat conservation plan, a necessary part of the incidental take permit process, is being developed for the San Joaquin Field Division by an independent consulting firm with technical support from Department engineers and biologists. The habitat conservation plan will provide for lands to be dedicated as wildlife habitat to compensate for habitat lost through SWP activities.

The permit process for the San Joaquin Field Division is expected to be completed in 1994, followed by San Luis and Delta Field Divisions in 1995. A similar process may be

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used to obtain permits for the Southern Field Division although not as many endangered species are listed along the southern right-of-way as are listed in the San Joaquin Valley.

Threatened and Endangered Fish

Impacts on fish have always been an important consideration in planning and operating the State Water Project. The Feather River Fish Hatchery and John E. Skinner Fish Protective Facilities were included as original facilities to offset or minimize SWP impacts on fish. Through the Department's water rights permit, the State Water Resources Control Board regulates flows and pumping to balance fish protection with other beneficial uses. In addition, the Department contracted with the California Department of Fish and Game to study the life history of fish using the Delta and San Francisco Bay, determine the impact of project operation on key species, and offset fish losses at Banks Pumping Plant.

More than 100 species of native and introduced fish live in the Sacramento-San Joaquin estuary. In recent years studies and mitigation efforts began focusing on Delta smelt and winter-run Chinook salmon. This change started in 1989 when the California Department of Fish and Game and the National Marine Fisheries Service listed the winter Chinook as *endangered* and *threatened*, respectively, pursuant to the state and federal endangered species acts.

Petitions to List

In 1990 the California Fish and Game Commission received a petition to list the Delta smelt as *endangered*, but at that time the Commission decided not to list the smelt. On April 5, 1993, however, the U.S. Fish and Wildlife Service listed it as *threatened*. The Commission reconsidered its original decision and listed the Delta smelt as *threatened* in late 1993.

Petitions to list two additional fish species, the longfin smelt and the Sacramento splittail, have been submitted to the USFWS. Both species spend much of their life cycle in the Delta near intakes to the state and federal pumping plants. A decision of whether or not to list these species is expected in 1994 or early 1995.

Biological Opinions

During 1992 and 1993 concerns about the protection of listed fish species have been the major factors controlling project operations in the Delta. Project operations control arises from the required formal consultation process and resulting biological opinion. The opinion determines if project operations will jeopardize the continued existence of the listed species. If a jeopardy opinion is reached, it will include a reasonable and prudent alternative that may be necessary to remove the jeopardy. The opinion will also include an incidental take permit and specific take limits. Thus far the Department has had three opinions to protect winter Chinook and Delta smelt. Their issue date and description follow.

- *February 14, 1992.* A 1-year opinion issued by NMFS on winter Chinook.
- *February 12, 1993.* A long-term opinion issued by NMFS on winter Chinook.
- *May 26, 1993.* A 1-year opinion issued by the USFWS on Delta smelt.

Department and U.S. Bureau of Reclamation staff are currently preparing a biological assessment that will form the basis for the next biological opinion on Delta smelt. The goal is to have a long-term opinion. The short time-frame available to complete the consul-

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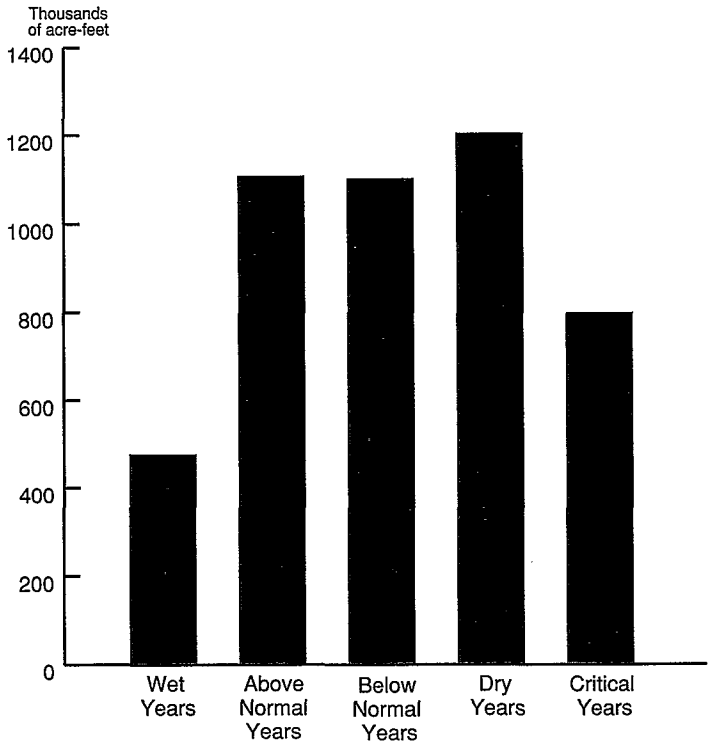

Fig. 12-1. Average annual reductions in SWP/CVP delivery capability due to Delta smelt and winter-run salmon criteria and Decision 1485 requirements

tation, however, may result in another 1-year opinion.

Figure 12-1 illustrates opinion alternatives and their impacts on project operations. Figure 12-1 also includes Decision 1485 requirements. As this figure shows, measures to protect listed fish species severely restrict project operations in the Delta.

Project operations control will change as we learn more about the environmental requirements of the listed species and take additional measures that will lead to their recovery. Recovery teams have been appointed by the USFWS and the NMFS to study the environmental requirements of the Delta smelt and winter-run Chinook. The teams will make recommendations for project and nonproject recovery measures. The process will be slow and the Department expects threatened and endangered fish concerns to continue.

Population Assessment

The following is a brief update of the population status of the Delta smelt and winter Chinook.

Delta Smelt

The Delta smelt is predominantly an annual fish spawning mostly in April and May. In 1993 the Delta smelt spawned earlier and over a wider geographic area than has been observed in recent years. As a result, large numbers of smelt were salvaged at Banks Pumping Plant in May.

Figure 12-2 shows the results of the annual fall midwater trawl survey that indexes the abundance of Delta smelt as the fish approach maturity. The 1992 fall index was 157, the lowest of the period from 1989 through 1993. Similar indices were observed in the mid-1980s.[1]

The 1993 summer tow-net index, which measures the abundance of Delta smelt at an earlier life stage, was 8.1. This is the highest index since 1982 and is much higher than the average of 2.4 observed from 1983 through 1992. For comparison, from 1959 through 1982 the summer index averaged 19.5. See Figure 12-3.

Winter Chinook

During the past 3 years, the estimated number of adult winter Chinook passing Red Bluff Diversion Dam fluctuated considerably but continued to be at levels much lower than the tens of thousands of spawners observed in the early 1970s. In 1991 the estimate was 191 spawners—the lowest number recorded. In 1992 there was significant improvement,

[1]The Delta smelt abundance index is used to compare relative abundance on a year-to-year basis. The index is related to smelt population density; it does not represent the number of individual fish in the system.

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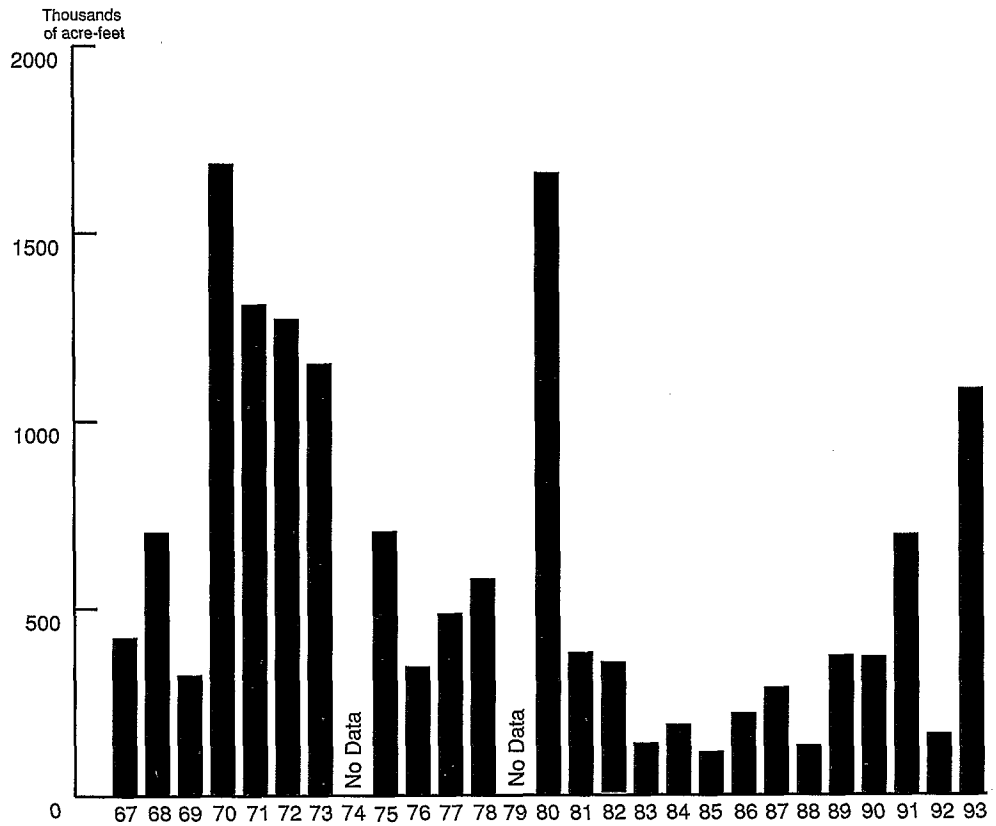

Fig. 12-2. Delta smelt fall midwater trawl abundance indices, 1967 through 1993

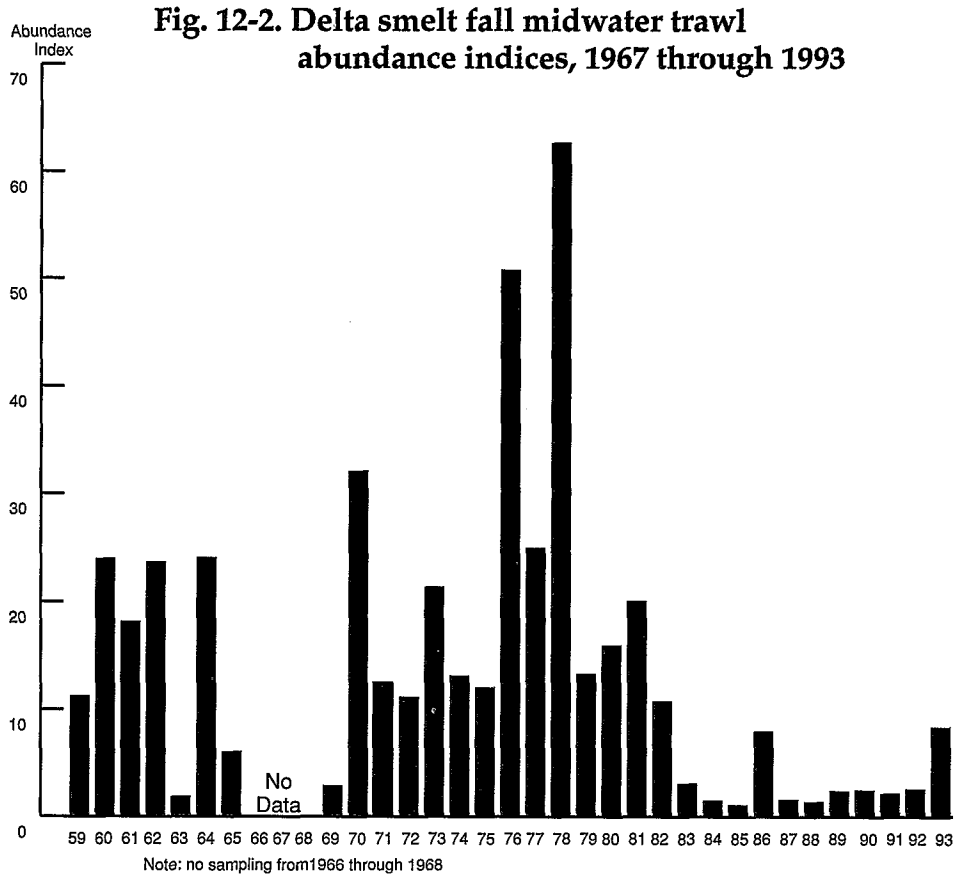

Fig. 12-3. Delta smelt summer tow-net indices, 1959 through 1993

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1,180 spawners; in 1993 the preliminary estimate is about 340 spawners.

Spawning estimates form the basis for calculating the number of winter-run juveniles produced each year. Juvenile production, in turn, is used to calculate the one percent take[2] the National Marine Fisheries Service allows at the state and federal pumps. For example, it was calculated that the 1,180 spawners in 1992 produced 270,000 juvenile out-migrants (smolts); thus, the combined state and federal allowable take was 2,700 during the 1992–93 out-migration period. During this period, the final calculated take was 1,894, considerably less than the allowable 2,700. This reduction was due to a voluntary pumping curtailment in February 1993 to limit daily take.

Reduction of Losses at Banks Pumping Plant Complex

Banks Pumping Plant is located in the southern portion of the Sacramento-San Joaquin Delta. Water flows through Delta channels into Clifton Court Forebay and from there to Banks in an open canal. Fish losses at Banks occur primarily in Clifton Court Forebay through the lower screens upstream of the plant's large pumps. Consequently, the Department developed programs to minimize losses in those locations.

Clifton Court Forebay

The Department of Fish and Game estimates that predatory fish—mostly subadult striped bass—account for the majority of fish losses in the forebay. Procedures are available to calculate losses of salmon smolts, juvenile steelhead trout, and young striped bass. The Department and DFG estimate predation losses caused by subadult striped bass to be 75 percent for Chinook salmon and steelhead. For young striped bass, depending on their size, the loss rate due to predation varies from 0 to 100 percent. The predation rates are based on experiments conducted with hatchery fish and are described in the 1986 agreement between the Department and DFG to mitigate direct losses of fish at Banks Pumping Plant. The procedures listed in the agreement for Chinook salmon were adopted by the NMFS in its February 1993 biological opinion.

Over the years there has been considerable interest in refining the estimated loss rates and finding ways to reduce the number of predators. In March 1992, under a limited predator removal program, about 2,000 striped bass, from 1 to 2 years old, were removed from the forebay. In the fall of 1992, the program expanded considerably, and about 20,000 striped bass were captured in seines and hauled to Delta release sites.

The Department and DFG tentatively plan a major predator removal project for fall and early winter 1994. The general procedure is to estimate the number of striped bass in the forebay, which has been about 150,000 to 200,000 in recent months, and then have several crews with special nets capture the subadult predators.

The captured fish will be counted and transferred to trucks for release into the estuary, probably in San Pablo Bay. After removal, the population in the forebay will be reassessed. Effectiveness of the removal program will be evaluated by another predation rate study. Although there is general agreement that such a project would provide use-

[2]Take is a calculated value derived from fish actually observed at the facilities and adjusted to take into account sampling duration, screen efficiency, prescreening losses—such as predation—and losses in handling and hauling.

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ful information, concerns need to be resolved before it can be implemented. For example, striped bass anglers are concerned that the 1- and 2-year-old striped bass may be killed during the capture and transport process. Project operators are concerned that the reduction in predators may result in increased numbers of winter-run-size Chinook being salvaged and that, without adjusting the formula for calculating losses, the Department will reach its take limit sooner.

Banks Pumping Plant

In 1986 the Department and DFG signed an agreement to offset direct fish losses at the intake of Banks Pumping Plant. The intent was to offset fish losses with projects encouraging natural production and improving survival of fish not reared in hatcheries. The agreement is based on the Department's and DFG's preference for natural production of Chinook salmon, striped bass, and steelhead rainbow trout. Chinook salmon improvement projects are being implemented mainly in the San Joaquin River tributaries. The San Joaquin system was selected because most of the naturally produced salmon smolts salvaged at the Department's Delta facilities originate in San Joaquin River tributaries and these populations have declined to low levels in recent years.

The 1986 agreement resulted in the implementation of several projects to offset calculated losses through direct replacement or improved survival. In addition, there have been projects that helped improve survival of targeted fish but whose benefits could not be completely described. Examples of such projects include (1) gravel restoration in the Merced and upper Sacramento Rivers, (2) conjunctive use of ground water, which leaves natural stream flow in the channel, (3) release of striped bass yearlings grown in hatcheries, and (4) funding for DFG wardens in the Delta to reduce illegal harvest by poachers.

A project setback occurred in 1992 when DFG decided that planting yearling striped bass in the Sacramento-San Joaquin estuary might adversely impact juvenile winter Chinook. As a result, more than two million bass intended for mitigation were planted in the California Aqueduct and project reservoirs. Since the fish were not used for mitigation in the estuary, the 1986 agreement between DFG and the Department could not be used for funding these purchases. After considerable negotiations between the Department and DFG, the two departments agreed to share equally the cost of rearing and planting fish. The fish production and rearing was performed according to contracts between the Department and several growers. The last claims under those contracts are due for payment in August 1993.

The DFG decision not to allow hatchery reared bass to be planted in the estuary left the Department with few options to mitigate the annual loss of approximately 600,000 bass yearlings. In July 1993 a potential alternative replacement strategy was demonstrated when about 30,000 yearling bass grown from fish collected at the Skinner Fish Protective Facilities were released into San Pablo Bay. These fish had a unique life history: they came from the salvage and were transferred to floating net pens anchored in a Suisun Marsh channel. Growth of the pen-reared fish was exceptional. The fish averaged one and one-half to two pounds at release. Hatchery fish of about the same age average about one eighth of a pound. Plans are to grow 200,000 salvaged fish in 1993–94 for release in the Sacramento-San Joaquin estuary. The Department of Fish and Game is consulting with NMFS to determine if a plant of this magnitude would adversely affect winter Chinook.

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If the fish can be planted in the estuary, the 1986 agreement will cover project costs, and the Department will receive credit. If the fish cannot be planted in the estuary, costs would be paid by an anglers' organization.

In 1993 and 1994, the 1986 agreement will provide for (1) continued funding of gravel restoration projects in San Joaquin tributaries, (2) increased law enforcement at Deer and Mill Creeks to limit illegal catches of adult spring Chinook, and (3) possible installation of a hydroacoustic barrier to reduce the losses of Chinook through Georgiana Slough in the Delta.

Identification of Protected Species in Suisun Marsh

To protect threatened or endangered plants and animals listed since the Plan of Protection for Suisun Marsh was adopted in 1984, the State Water Resources Control Board requested that the Department and the California Department of Fish and Game complete a biological assessment of the effects of the plan. Consequently, extensive field surveys of Suisun Marsh and the southern shore of Suisun Bay are being conducted to locate and identify rare, threatened, and endangered plant and animal species. To date, several plant and animal species of concern have been identified including California Delta smelt, Mason's lilaeopsis, winter-run Chinook salmon, and salt marsh harvest mouse.

The information obtained through that assessment, which began in 1990 and will be completed in early 1994, will be used to determine the effects on threatened and endangered species of water quality standards proposed for Suisun Marsh in the Suisun Marsh Preservation Agreement (see Chapter 11, "Preserving the Delta," for information about the Suisun Marsh Preservation Agreement).

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13. Managing Delta Resources

To effectively manage water in the Sacramento-San Joaquin Delta, the Department of Water Resources has developed water management programs for three distinct areas of the Delta: the north Delta, south Delta, and west Delta. See Figure 13-1 at the end of this chapter for boundaries of these programs.

Work on the Department's Delta water management programs continues under the guidelines contained in Governor Pete Wilson's April 22,1992, water policy. As part of his policy to "restore" the Delta, the governor directed that near-term solutions be implemented and long-term solutions be investigated and recommended.

In keeping with the governor's policy, the Department reviewed its Delta water management programs, which are designed to provide interim solutions for improving conditions in the Delta. Long-term solutions will be investigated and recommended by the 22-member Bay-Delta Oversight Council appointed by Governor Wilson as part of his water policy.

Interim North Delta Program

The Interim North Delta Program evolved from the former North Delta Program to be consistent with Governor Wilson's water policy. The five objectives of the Interim North Delta Program are to:

1. Alleviate flooding in the north Delta, including the towns of Thornton and Walnut Grove
2. Reduce reverse flow in the lower San Joaquin River
3. Improve water quality
4. Reduce impacts (from water supply projects) on fisheries
5. Increase flexibility of the State Water Project for water transfers and improve reliability of its water supply

The program is also designed to improve navigation and enhance wildlife habitat and recreational opportunities.

Implementation

The Interim North Delta Program will be implemented in phases. The first phase, which includes preparing the environmental analysis and documentation, is in progress. Other actions considered for the first phase include implementing a fish screen demonstration project to benefit fisheries.

Interim alternatives under consideration include (1) increasing the hydraulic capacity of the Mokelumne River channels by dredging, improving levees, and creating levee setbacks; and (2) enlarging the Delta Cross Channel Gate structure. After interim

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actions are completed, the Department will monitor the project to determine its effectiveness.

Alternatives for future phases will be included in evaluations considered by the Bay-Delta Oversight Council. Those alternatives include (1) constructing partial tidal gate structures in the Sacramento River and Steamboat Slough and seasonal barriers in Threemile Slough and Georgiana Slough and (2) constructing a new channel to connect the Sacramento River with the central Delta.

Water Policy Review

The Interim North Delta Program is being reviewed in the context of the governor's water policy. The Department is examining the program in terms of both a long-term and interim solution to restoring the Delta. In addition, the Department is continuing to coordinate activities with appropriate federal, state, and local agencies and to conduct technical studies.[1]

Interim South Delta Program

The Interim South Delta Program evolved from the former South Delta Program to be consistent with Governor Wilson's water policy. This policy calls for facilities in the south Delta that can be constructed quickly to improve Delta water conditions during the period prior to the implementation of a long-term solution. The long-term solution is to be developed by the Bay-Delta Oversight Council.

The Interim South Delta Program is designed to improve water levels and circulation in south Delta channels for local agricultural diversions as well as improve south Delta hydraulic conditions. Improved hydraulic conditions will permit increased water diversions into Clifton Court Forebay and enable Harvey O. Banks Delta Pumping Plant to operate more frequently at full pumping capacity.

Proposals

The environmental review process, currently in progress, includes proposals by the Department and the U.S. Bureau of Reclamation for:

- Constructing up to four control structures in south Delta channels to improve local water levels and circulation
- Enlarging some existing south Delta channels to improve conveyance and circulation
- Constructing an additional intake to Clifton Court Forebay north of the existing intake
- Obtaining a permit from the U.S. Army Corps of Engineers to increase diversions into Clifton Court Forebay, thereby allowing Banks Pumping Plant to pump up to the maximum design capacity of about 10,300 cubic feet per second

The proposal for increasing diversions into Clifton Court Forebay provides the Department with important benefits: (1) increased operational flexibility and capacity to bank water south of the Delta and reduce fish losses, and (2) improved reliability of the water supply. In addition, the alternative allows the Department and USBR to meet the obligations of a pending contract with South Delta Water Agency for improved conditions for local agricultural diversions. Also, im-

[1]The U.S. Army Corps of Engineers is the lead federal agency for the North Delta Program according to its regulatory permit authority (Rivers and Harbors Act and Section 404 of the Federal Water Pollution Control Act [Clean Water Act]).

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proved flow patterns should help salmon migrations in the San Joaquin River.

Losses of wildlife habitat due to the Interim South Delta Program will be mitigated by adopting a wildlife management plan at Sherman Island or Twitchell Island, or both, and at other locations as appropriate. The Department and USBR signed an agreement with the Department of Fish and Game to define the area of negotiations concerning fishery mitigations.

Environmental Review Process

The draft environmental impact report/environmental impact statement (EIR/EIS) for the South Delta Program was released in June 1990. Two public hearings were held in California, one on September 19, 1990, in Sacramento, and the other on September 20, 1990, in Tracy. The public review period was extended and ended September 30, 1991.

The review period was extended to allow concurrent review of environmental documents for the South Delta Program with the draft environmental documents on the North Delta and Los Banos Grandes programs. Those documents were released in late 1990. The Department received comments from 15 public agencies and 60 individuals.

When the final EIR/EIS is completed, a notice of determination will be filed. State and federal regulatory agencies may then act on permits required to construct and operate the proposed facilities.

The key permit required will be issued by the U.S. Army Corps of Engineers according to Section 404 of the Federal Water Pollution Control Act (Clean Water Act) for dredging operations and Section 10 of the River and Harbors Act for navigation. Approval for the permit must be coordinated with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the Environmental Protection Agency.

West Delta Program

The objective of the West Delta Program is to implement a land-use management program to effectively control subsidence and soil erosion on Sherman Island and Twitchell Island as well as provide habitat for wildlife and waterfowl.

The Department of Water Resources and the Department of Fish and Game have jointly developed the wildlife management plan for the two islands. That plan is also designed to benefit species of wildlife that occupy wetland, upland, and riparian habitats and provide recreational opportunities for hunting and viewing. In addition, property acquired and habitat developed through the Department's efforts will be available to use as mitigation for impacts associated with the Department's ongoing Delta water management programs.

As a result of implementing the wildlife management plan, subsidence would be significantly reduced through minimizing oxidation and erosion of the peat soils on the islands. Minimizing oxidation and erosion would be accomplished by replacing present agricultural cultivation practices with land-use management practices designed to stabilize the soil. Those practices range from minimizing tillage to establishing wetland habitats.

Altering land-use practices could result in the following benefits:

- Up to 13,600 acres of managed wildlife and waterfowl habitat
- Increased flood control
- Additional protection of water quality in the Delta
- Increased reliability of the SWP water supply

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- Additional recreational opportunities in the Delta

Establishing wetland and wildlife habitats on the two islands is consistent with national and state policies designed to enhance and expand wetlands.

Special Flood Control Program

As a result of the Delta Flood Protection Act passed by the California Legislature in March 1988, $12 million is to be appropriated each year until January 1, 1999, for developing two programs designed to prevent flooding in the Delta: the Delta Levee Maintenance Subventions Program and the Special Flood Control Program.

Information about the Department's participation in the Special Flood Control Program follows.

Protection of Towns and Western Delta Islands

The Special Flood Control Program includes a mandate for protecting the towns of Walnut Grove and Thornton and the eight islands of the western Delta—Bethel, Bradford, Holland, Hotchkiss, Jersey, Sherman, Twitchell, and Webb.

Those eight islands require protection because they (1) support urban areas, including public facilities; (2) provide large areas of diverse, valuable habitat; and (3) are critical to the protection of water quality in the Delta. Because fresh and salt waters mix nearby, flooding any of those islands would allow saline water to intrude further into the Delta.

In July 1989 the legislature approved the flood control plan for Thornton and Walnut Grove. Immediate improvements for levees were recommended as well as several long-term improvements to levees, channels, and facilities. Implementation of the plan for protecting Thornton began in 1990.

Since 1990 a financial study of local cost-sharing possibilities has been completed and a cost-sharing agreement signed between the Department and Reclamation District 348, where Thornton is located. The final design of the interim facilities identified in the flood control plan was completed in September 1992. The design was specifically crafted to protect as much of the existing on-levee habitat as possible. Unavoidable loss of habitat will be mitigated by developing replacement habitat on nearby property owned by the Department.

Construction of the Thornton project was scheduled to begin in spring 1993. However, funding reductions imposed as a result of the state's ongoing financial crisis delayed the project. With full funding of the Special Projects Program in fiscal year 1993–94, work will begin in July 1994.

Implementation

A long-term plan, *Actions and Priorities, Delta Flood Protection Act, Eight Western Delta Islands*, was approved in May 1990 by the California Water Commission as the second step in implementing the flood control program.

That long-term plan will be used by the Department to determine how to best use appropriations to protect the eight western Delta islands. Those protections include:

- Rehabilitating threatened levees
- Documenting levee encroachments on Bethel Island and Hotchkiss Tract
- Investigating subsidence
- Coordinating efforts for rehabilitating levees through the use of imported dredged material

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- Verifying elevations in the Delta through the use of Global Positioning System equipment, which is used in conjunction with U.S. Navy navigational satellites
- Upgrading levees to the standards included in Bulletin 192-82, *Delta Levees Investigation*, published by the Department in December 1982

Levee Rehabilitation

Rehabilitating the threatened levee sites will provide short-term protection for the western Delta until long-term improvements can be made.

To date, more than $4 million has been spent at locations on Hotchkiss and Webb Tracts and Sherman, Twitchell, Bethel, and Bradford Islands. The costs of rehabilitation are divided between the state and the local agencies; those agencies may pay up to 25 percent of the costs. The actual amounts to be paid were determined in an ability-to-pay study completed in May 1992 for each island.

Encroachment Documentation

Structures encroaching on levees conceal seepage, boils, rodents' burrows, cracks, and other causes of levee failures. In addition, those structures restrict access to sections of the levees needing improvements or repairs. In August 1989 the Department documented 130 encroachments on Bethel Island and Hotchkiss Tract.

The first phase encroachment study was completed in March 1990. This phase covered landside levee encroachments and resulted in a report documenting the location and extent of each encroachment. The second phase covers waterside encroachments. Fieldwork for the second-phase work is done. Two reports covering Bethel and Hotchkiss, respectively, will be published in late 1993.

Subsidence Investigations

Subsidence of peat soils is an important concern throughout the Delta. As the ground surface on an island subsides, the geometry of the levee changes; the levee is then less likely to withstand the pressure of the water. Flooding is likely to occur if the levees are not returned to their original geometry and elevation.

The legislature recognized that problem with flooding and, with the Delta Flood Protection Act, requested the Department to monitor subsidence and study its causes. Accordingly, the Department has contributed $380,000 to the U.S. Geological Survey to help fund an investigation of subsidence in the Delta.

After reviewing preliminary data provided by USGS, the Department concluded that:

- Land management practices substantially influence subsidence rates
- Permanent shallow flooding can stop the microbial subsidence processes
- Cultivation practices, which help to raise soil temperature and lower the water table, dramatically increase oxidation of the peat soils
- Conversion of highly organic peat soils to a carbon dioxide gas and the subsequent discharge from the peat appears to be the primary cause of subsidence

Studies designed to quantify rates of subsidence, with a focus on the underlying physical and chemical processes that lead to surface subsidence, continue along with identification of land management practices to help minimize subsidence.

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Upland Relocation of Dredged Material

As local sources of fill material are depleted, new economical sources must be located. The Department, in coordination with the U.S. Army Corps of Engineers, Reclamation District 341, Reclamation District 1601, and the Central Valley Regional Water Quality Control Board, implemented two pilot projects to demonstrate the viability of relocating material from the San Francisco Bay area.

The first project, on Sherman Island, Reclamation District 341, consisted of utilizing approximately 1,600 cubic yards of sediment dredged from Suisun Slough as part of constructing a 2,500-cubic-yard experimental berm. The berm was built on the toe of a levee reach along the San Joaquin River. As a condition of allowing the import of dredged sediment from the San Francisco Bay area to Sherman Island for levee rehabilitation, the Central Valley Regional Water Quality Control Board required an extensive program of soil and water testing and monitoring in the berm's vicinity by the Department. The testing program began in late 1990, immediately after construction of the berm was completed. The program continued for 2 years and ended in late 1992 with the approval of the Board. No soil or water quality problems were encountered.

The second project is on Twitchell Island, Reclamation District 1601. That project consisted of transporting approximately 50,000 cubic yards of sediment to Twitchell Island. The sediment, which was dredged from Suisun Slough, was transported from the Corps storage site on Simmons Island. This material was used as part of a major rehabilitation of the San Joaquin River levee on Twitchell Island. The dredged sediment was utilized on Twitchell Island with the permission of the Central Valley Regional Water Quality Control Board. The Board required, as a condition for its approval, that a water quality monitoring program be undertaken on Twitchell Island. This program was implemented in late 1992. As of June 30, 1993, no adverse salinity impacts have been measured as part of our ongoing electrical conductivity monitoring.

Elevation Verification

In 1987 the Department obtained Global Positioning System equipment, which is used in conjunction with U.S. Navy navigational satellites to establish precise horizontal and vertical positions. Field surveys of the Delta were made with this equipment in 1989. The data are being used to verify elevations in the Delta and to ensure that improved levees will be high enough so overtopping will not occur during high-water conditions.

The National Geodetic Survey will eventually publish data obtained from those surveys. In the meantime the Department published an interim report—*Use of the Global Positioning System to Establish a Common Vertical Datum in the Sacramento-San Joaquin Delta, California,* August 1991— on the surveys, including elevations verified through data from the surveys.

Levee Upgrades

The Department is upgrading the levees according to standards contained in Bulletin 192-82, *Delta Levees Investigation*. According to those standards, the agricultural levees must be raised to provide 1.5 feet of freeboard for a 300-year flood and widened to increase both land and waterside stability.

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To encourage upgrading of levees to the standards contained in Bulletin 192-82, the Department is using available special project funds when other sources of funds are not available.

To augment its flood control actions, the Department is developing long-term plans to provide higher levels of protection for all eight islands. The preparation of those plans was approved by the California Water Commission in May 1990. The programs resulting from those plans will be funded by yearly appropriations as provided for in the Delta Flood Protection Act. The long-term levee improvement program for Twitchell Island will be completed in 1993.

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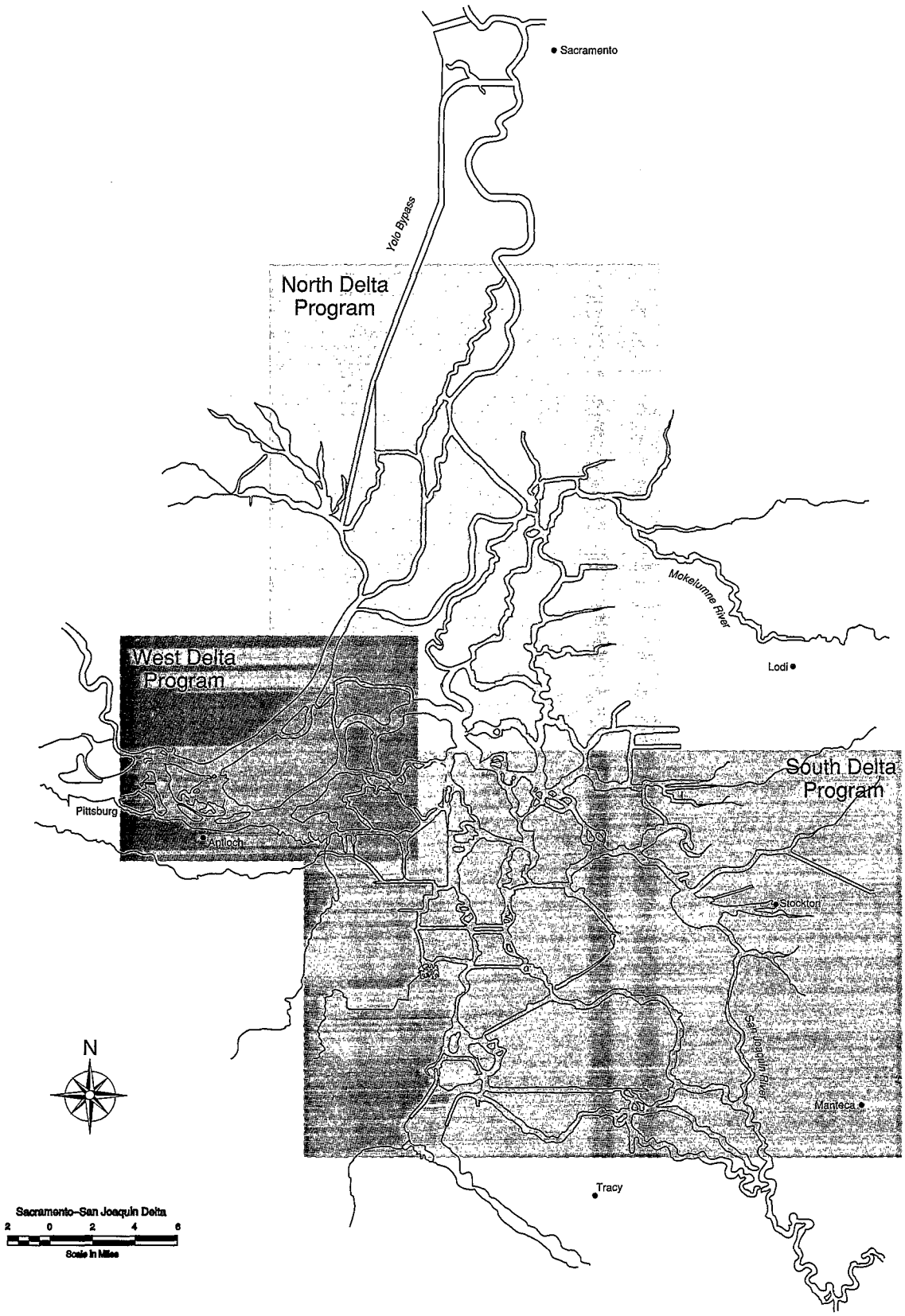

Fig. 13-1. Boundaries of north, west, and south Delta water management programs

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14. Monitoring Water Quality

Approximately 20 million Californians depend on the State Water Project for all or part of the water they use for domestic purposes every day. In addition SWP supplies water for agriculture, industry, power generation, recreation, and fish and wildlife. The quality of water supplied by SWP for those beneficial uses is safeguarded through an extensive water quality monitoring program.

Water quality objectives for existing or potential sources of drinking water are set by the State Water Resources Control Board and Department of Health Services. Additional contractual water quality objectives at points of delivery are set by Article 19 of the long-term SWP water supply contracts. Water quality in the Delta and Suisun Marsh is protected according to the State Water Resources Control Board's Water Right Decision 1485 (1978).

The Department of Water Resources monitors water quality through an automated network of continually operating recorders and laboratory analyses of field samples collected at weekly, quarterly, monthly, or annual intervals. The Department also conducts special studies to investigate water quality at potential problem sites or as a result of unique events.

In 1992 the Department issued Water Resources Engineering Memorandum No. 60, which established a policy for developing a program to assure that water quality related data produced by the Department from field and laboratory investigations meet established standards and can be scientifically corroborated.

Information about the Department's monitoring activities follows.

Delta Activities

The Department conducts extensive monitoring activities designed to protect beneficial uses of water in the Delta and Suisun Marsh as required by the State Water Resources Control Board's Decision 1485. The decision establishes water quality standards and operational constraints concerning water flow volumes, salinity levels, and export quantities. Locations of monitoring sites are shown in Figure 14-1 at the end of this chapter.

Water quality related constraints on SWP operations in the Delta are determined ac-

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cording to water year classifications, which are determined by criteria included in Decision 1485. Each water year classification is based on the Sacramento River Index—the Department's annual May 1 estimate of unimpaired runoff to streams in the Sacramento River Basin. Standards set by Decision 1485 differ for each type of water year classification. (See Chapter 4, "Collecting and Storing Water," for additional information about runoff and water year classifications.)

The Department's May 1, 1992, estimate of Sacramento River Basin unimpaired runoff resulted in a 1991–92 water year classification of *critical* for fish and wildlife, agricultural, and municipal and industrial uses. Since the last *wet* water year (1985–86), all six water years have been classified as *critical* except water year 1989–90, which was classified as *dry*.

Throughout the recent drought, the Department met most Decision 1485 water quality and flow standards through (1) releases from reservoirs, (2) operation of the Delta Cross Channel gates, and (3) reductions in Delta exports. Those operational decisions were based on real-time monitoring data and long-range modeling activities.

Decision 1485 Standards

Decision 1485 sets standards for the amount of outflow and water exported from the Delta, and for water quality within the Delta and Suisun Marsh. The decision also specifies requirements for monitoring hydrodynamic and biotic conditions throughout the Delta.

Outflow and Export Standards

Water quality in the Delta is influenced by ocean tides, freshwater outflow from the Sacramento and San Joaquin Rivers, local agricultural and municipal discharges, and water exported from the Delta.

The Delta Outflow Index (DOI) is a calculated approximation of the amount of seaward freshwater outflow passing Chipps Island near Pittsburg, beyond the confluence of the Sacramento and San Joaquin Rivers.

The Delta outflow and export standards are important because they help to ensure:

- Protection of water quality in the Delta
- Preservation of Suisun Marsh
- Survival of striped bass, salmon, and other important aquatic estuarine species

During May, June, and July, water exports from the Delta through Harvey O. Banks Delta Pumping Plant are limited by Decision 1485 export and outflow standards. All Decision 1485 export and Delta outflow standards were met during 1992, the last year of the recent drought. Additionally, April export limits set as a condition of the Central Valley Project and SWP incidental take permit for the endangered winter-run salmon, under the federal Endangered Species Act, were also met.

Water Supply Conditions

The average daily DOI for 1992 averaged only 6,760 cubic feet per second (cfs), slightly greater than the 1991 value of 5,900 cfs. By contrast, in the *critical* and *dry* years of 1988 and 1989, the daily outflows averaged 8,621 cfs and 11,507 cfs, respectively. In wet years such as 1984 and 1986, the DOI averaged over 20,000 cfs daily.

During the 1991–92 water year, a dry winter followed a fall season of only average rainfall. However, a series of storms in February and March reduced dry conditions with

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statewide monthly precipitation averaging 160 percent and 125 percent of normal, respectively. But statewide distribution of rain was uneven. Under El Niño influence, the heaviest precipitation occurred in Southern California. The county of Los Angeles experienced one of the worst storms on record with precipitation at 256 percent of normal. However, seasonal precipitation in the Sacramento River Basin and northern Sierra Nevada increased to only 75 percent of average during the same storm period.

Storm runoff in February and March produced about 25 percent of the total yearly Delta outflow volume and resulted in 54 of the year's 66 days of average Delta outflow over 10,000 cfs. The highest mean monthly (22,318 cfs) and mean daily (42,479 cfs) DOI during 1992 occurred in February.

Conditions similar to those of early winter, with less-than-normal rainfall, returned in April and May; late spring and early summer months were exceptionally hot and dry. Delta outflow dropped to a mean monthly flow under 4,000 cfs in five of the six remaining 1992 water year months. The lowest mean monthly and mean daily DOI—2,503 cfs and 1,736 cfs, respectively—occurred in August 1992. The May 1 Sacramento River Index was only 9.4 million acre-feet (50 percent of average). The 1991–92 water year was classified as *critical*.

Water Quality Standards

Water quality in the Delta depends primarily on a balance between freshwater downstream flows and saltwater tidal incursions. During periods of lower-than-normal river flow, water is released from SWP and CVP reservoirs (Shasta, Oroville, and Folsom) to meet Delta standards through balancing Delta outflow and pumping needs.

In 1992 the only Decision 1485-mandated water quality standard not met was the agricultural standard at Emmaton on the Sacramento River. A discussion of the events leading to water quality problems at Emmaton along with the Department's attempts to solve the problems and meet Decision 1485-mandated standards follows.

Standards at Emmaton and the Contra Costa Canal Intake at Pumping Plant No. 1

The 14-day mean agricultural standard at Emmaton, which has an upper electrical conductivity (specific conductance) limit of 2.78 millimhos (mmhos) as a measure of salinity, was not met for 71 days between May 26 and August 15, 1992. Factors contributing to this event include (1) restrictions on water releases from Keswick Dam, (2) low upstream reservoir storage, (3) high water consumption in the Delta, and (4) actual tides much higher than predicted.

In mid-May 1992, water releases from Keswick Dam to the upper Sacramento River were restricted to benefit fall- and winter-run salmon, and these restrictions resulted in extremely low flows on the Sacramento River. Outflows were further reduced by high water consumption in the Delta due to above-normal temperatures and dry conditions in May. These low flows resulted in increased salt water incursion into the Delta, which was worsened by May tides that were approximately one-half foot higher than predicted.

By the first of June, efforts to meet the agricultural standard at Emmaton were complicated by concerns about also meeting municipal and industrial standards for chloride levels at the Contra Costa Canal Intake at Pumping Plant No. 1 at Rock Slough. To reduce salinity at Emmaton, the Cross Channel gates had been closed on May 15. To assist

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in meeting the chloride standard at the Contra Costa Canal Intake, the gates were opened briefly from May 22–26 and from May 29–June 1. However, chloride levels continued to increase.

The problem of meeting standards both at Emmaton and the Contra Costa Canal Intake was made more difficult by existing constraints on water releases by CVP and SWP, including constraints on water releases from Keswick Dam. Meeting the standards without increasing releases from Keswick Dam would have required that releases from Folsom Lake and Lake Oroville be increased significantly. However, increasing releases from these reservoirs was constrained by other factors, including the need to (1) meet future cold-water requirements for fall-run salmon; (2) sustain adequate storage in Folsom Lake to supply delivery commitments to local cities and water districts; (3) meet the steady-state flow release objective of 3,250 cfs through Keswick Dam (measured at Wilkins Slough) that was established by the National Marine Fisheries Service as a condition of the incidental take permit for winter-run salmon; and (4) maintain minimum delivery commitments south of the Delta.

In recognition of the constraints on SWP and CVP in meeting standards both at Emmaton and the Contra Costa Canal Intake at Pumping Plant No. 1, the State Water Resources Control Board allowed the municipal and industrial standard at the canal intake to take precedence over the Emmaton agricultural standard. Beginning June 8, the Delta Cross Channel gates were opened to provide maximum dilution of water in the inner Delta to meet the Contra Costa Canal Intake standard of mean daily chloride ion content at or under 250 milligrams per liter (mg/l). The gates remained opened for the duration of 1992. Although the Emmaton standard was not met, the 250 mg/l Contra Costa Canal Intake standard was met through the end of 1992.

Relaxation of Additional Decision 1485 Standards at Contra Costa Canal Intake at Pumping Plant No. 1

In addition to the mean daily chloride standard of 250 mg/l, Decision 1485 requires that chlorides not exceed 150 mg/l at the Contra Costa Canal Intake for at least 155 days during a *critical* water year. However, because of adverse water supply conditions in the sixth year of the statewide drought, SWP and CVP experienced difficulties in meeting the 150 mg/l standard in 1992. By November, an additional 32 days of chloride levels below 150 mg/l were required to comply with Decision 1485.

To solve this problem, the Department and USBR petitioned the State Water Resources Control Board to relax or substitute a standard under provision of Order 92-02, which had been issued on March 19, 1992. Order 92-02 recognized that drought-related water supply conditions had affected the Department's and USBR's ability to comply with Decision 1485 standards and allowed the Board to reserve judgment when considering the reasonableness of compliance with the standards. Therefore, the Department and USBR requested that the Board consider the reasonableness of requiring compliance with the Decision 1485 standard for maintaining the chloride ion content at or below 150 mg/l at the Contra Costa Canal Intake.

On November 20, 1992, the Board held a public hearing and, as a result of testimony, waived the chloride standard conditioned on implementation of alternative compliance measures more appropriate to the prevailing drought conditions. The new measures were contained within State Water Resources Con-

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trol Board Order 92-08, which restricted the Department and USBR to a combined daily export total of 2,500 cfs at Banks and Tracy Pumping Plants whenever the Jersey Point EC was greater than or equal to 0.8 millimhos per centimeter (mmhos/cm). A more stringent export restriction would have compromised Contra Costa water quality through the buildup of agricultural drainage in the interior Delta. The 2,500 cfs pumping restriction was to remain in place until the Jersey Point EC dropped below 0.8 mmhos/cm.

Order 92-08 became effective on November 29, 1992, and all its provisions were met. Water exports remained below 2,500 cfs through December 14, when combined pumping restrictions were discontinued. However, the Department of Fish and Game set a pumping limit of 4,000 cfs at Banks Pumping Plant for the duration of a 5-day study of predator-prey relationships in Clifton Court Forebay which began on December 13, 1992. By December 17, pumping restrictions associated with Order 92-08 were lifted as the predator-prey study ended, and the Jersey Point EC dropped to less than the 0.8 mmhos/cm limit. Pumping at levels above 4,000 cfs resumed for the remaining 1992 calendar year; Contra Costa Canal Intake chloride fell to less than 150 mg/l by December 26.

Decision 1485 Biotic Community Surveys

The biotic communities of the Delta are regularly monitored by the Department to identify changes potentially related to SWP operations and to assess the effectiveness of the State Water Resources Control Board's Delta Water Quality Control Plan in preserving Delta and Suisun Marsh water quality. Decision 1485 requires that a monitoring report on water quality and biotic conditions be submitted annually to the Board. Biotic communities reported include phytoplankton, aquatic higher plants, and benthos. The Decision 1485 compliance monitoring was incorporated into the Interagency Ecological Studies Program beginning in 1990.

Phytoplankton Distribution and Productivity

Phytoplankton are small plants with limited powers of locomotion that are the base of the food chain for much of the Delta's aquatic biota. Chlorophyll *a*, the predominant algal pigment, is used to identify the amount of phytoplankton at a determined location. The ratio of chlorophyll *a* to the sum of chlorophyll *a* and phaeophytin, one of its breakdown products, provides an indication of the portion of the community that is actively growing. Generally, communities with chlorophyll ratios at 70 percent or more are considered actively growing.

Chlorophyll concentration was low throughout most of the Sacramento-San Joaquin Delta in 1992 compared with concentrations in previous years. The northern Delta, however, maintained its usual low of less than 5.0 micrograms per liter (µg/l). During 1992, excluding May, chlorophyll concentration was also less than 5 µg/l for the western Delta and the lower San Joaquin River. Chlorophyll concentration higher than 5 µg/l in May was associated with populations of *Melosira granulata* and *Thalassiosira* spp. These populations were healthy but not thriving since percentage chlorophyll values were less than 70. The higher values of chlorophyll concentration in May for the western Delta were relatively low compared with those of previous years, when it often reached 10 to 30 µg/l. In contrast, the chlorophyll concentration for the lower San Joaquin River was one of the

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highest on record and was close to those concentrations measured between 1981 and 1988 (25-40 µg/l).

Chlorophyll concentration for the southern Delta in 1992 was consistently above 10 µg/l and peaked at 200 µg/l in July. This concentration is high when compared with concentrations in the 1980s (10-50 µg/l) and is similar to those in the 1970s (100-300 µg/l). Chlorophyll concentrations were higher during the latter years of the 1987–92 drought. The phytoplankton were actively growing throughout 1992 with chlorophyll values of about 70 percent or more. Higher chlorophyll values for June through August were associated with populations of *Cyclotella* spp.

Average chlorophyll concentrations in Suisun and San Pablo Bays—4 µg/l and 7µg/l, respectively—were low in 1992 compared with those of previous years. In contrast, chlorophyll concentrations reached between 20 µg/l and 50 µg/l in Suisun Bay prior to 1987 and between 8 µg/l and 14 µg/l in San Pablo Bay during the early 1980s. Low chlorophyll concentrations in Suisun Bay since 1987 were probably due to filter feeding by the introduced clam, *Potamocorbula amurensis,* which became abundant during the drought years of 1987–92. Low chlorophyll values of 30–60 percent support the presence of relatively high quantities of chlorophyll breakdown products from grazing by the clam.

Aquatic Higher Plant Community Surveys

The Department has performed biannual surveys of aquatic higher plants since 1989. Those surveys are used to document any long-term and seasonal changes in the Delta's aquatic vegetation. Their results have consistently indicated no obvious correlation between water quality variables and the occurrence of aquatic vegetation, either annually or seasonally. The same plant species have been consistently seen or collected at the same locations during the seven surveys performed to date. However, the presence of several of the submerged aquatic species varied seasonally while emergent species biomass increased over time at several locations. The dominant emergent species continued to be the common tule (*Scripus acutis*); the dominant submerged species were anachoris (*Egeria densa*) and milfoil (*Myriophyllum spicatum*). The overall apparent stability of the aquatic vegetation was the basis for the decision to reduce the surveys to one per year and to discontinue, in 1991, the aerial photography of each sampling site that was part of the program.

The Department usually assists the California Department of Food and Agriculture in its annual search for the aquatic weed *Hydrilla verticillata.* This statewide program was designed to detect the spread of the fast-growing aquatic plant that could quickly clog waterways and pumps. Budget cuts at the Department of Food and Agriculture eliminated this intensive survey in 1992. However, no hydrilla was seen or collected during the Department's own aquatic community survey.

Benthic Community Survey

The Department works with other agencies to survey and document biological and hydrological conditions in the Delta, including those animals, the benthos, living on the bottom of the channels and bays. The information gained through benthic surveys is used by the Department to identify the many factors influencing community dynamics, including potential impacts from SWP operations.

Through compliance monitoring activities in 1992, the Department documented that the overall dominance of introduced benthic

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(bottom-dwelling) species persisted throughout 1992. Since 1987 at least one introduced benthic organism has been among the top four numerically dominant organisms at each of the five benthic monitoring sites, which are located in Suisun Bay and the western and central Delta.

The newly introduced species *Hemileucon hinumensis, Potamocorbula amurensis,* and *Gammarus diaberi* along with the established exotic *Corbicula fluminea* appear to have established dominance in portions of the estuary. The established benthic communities of the Delta and Suisun Bay continue to be altered by the multi-year drought and the introduction of exotic species.

Rock Barrier Installations

During 1992 three temporary rock barriers were installed in the south Delta on Middle and Old Rivers under several agreements or management programs. The barriers were used to enhance water quality, improve water circulation, control water levels during the agricultural irrigation season, and increase the survival of migrating salmon. Two barriers were installed as part of an experimental program for long-range south Delta planning proposals.

Old River Barrier

As part of a February 1969 joint agreement between the Department, U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, and Department of Fish and Game, the Department installs a temporary rock barrier at the head of Old River during years when flows are forecast to be low in the fall. The barrier helps alleviate the dissolved oxygen depression (less than 5 mg/l) that can occur in the Stockton Ship Channel when flows are low and water temperatures are high or when dredging occurs. The improved dissolved oxygen levels help salmon survive their upstream migration.

Flows in the San Joaquin River in 1992 were lowest since the 1976–77 drought and contributed to the lowest measurement of dissolved oxygen levels in the Stockton Ship Channel since the beginning of the 1987–92 drought.

To increase net downstream flows and force more water down the San Joaquin River, a temporary closure was completed at the head of Old River on September 11, 1992. Even with the barrier in place, exceptionally low dissolved oxygen levels (3.0 mg/l or less) continued to be recorded in the Rough and Ready Island area from late September through mid-October.

Recovery to levels greater than 5.0 mg/l finally occurred at the end of November as San Joaquin River flow increased, water temperatures dropped, and dredging ceased. A water exchange agreement between DFG and irrigation districts on the Stanislaus and Merced Rivers contributed to increased San Joaquin River flow. The exchange provided water releases of up to 2,000 cfs into the San Joaquin River from October 17 through 21, 1992. Although the barrier was scheduled for removal in November, through a request from DFG, it remained in place until December 2, 1992.

Middle River Barrier

A rock barrier was placed in Middle River near Victoria Canal on April 10, 1992, for the agricultural irrigation season and removed on September 28, 1992, as specified in an October 1986 agreement with the Department, South Delta Water Agency, and U.S. Bureau of Reclamation. The barrier helped to (1) increase and stabilize water levels for more consistent diversions of agricultural water and (2) improve circulation and flush the

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shallow sloughs and river reaches in the south Delta.

South Delta Barriers

The South Delta Water Management Program draft environmental impact report was released to the public in 1990. The program was designed to resolve local south Delta water supply issues within the larger context of the Department's water banking program. The program includes proposals to construct up to four barriers in the south Delta to improve local water levels and circulation patterns and meet other South Delta Water Management Program objectives. Under the proposed South Delta contract discussed in Chapter 5, a 5-year test program will precede construction of the permanent barriers. In 1992, two of the test barriers were constructed during spring 1992: one on Old River at its confluence with the San Joaquin River and the other on Old River east of the Delta Mendota Canal intake at Tracy Pumping Plant.

The barrier near the San Joaquin River confluence was completed April 23, 1992; however, its height was increased at the end of April to prevent water overtopping. To provide navigation continuity, boat portage facilities were completed May 1, 1992. The barrier aids spring migrating salmon in their journey along the San Joaquin River to the Pacific Ocean. The barrier increases net downstream flows in the lower San Joaquin River. These increased flows reduce the number of salmon that swim into South Delta channels where they get lost, become victims of predators, or get caught at the intakes of Banks or Tracy Pumping Plants, the barrier helps salmon survive their upstream migration.

Construction of the barrier near the Delta Mendota Canal intake at Tracy Pumping Plant began on April 15, 1992, and was completed on May 1, 1992. Boat portage facilities were completed May 9, 1992. This barrier provides benefits similar to those of the Middle River barrier described previously.

Georgiana Slough Barrier

Georgiana Slough branches off the Sacramento River just below the Delta Cross Channel gates. A rock barrier was proposed at the head of the slough to improve the survival of downstream migrating winter-run salmon smolts. The barrier would direct the fish into the Sacramento River, thereby preventing entry into Georgiana slough and losses of fish in the inner Delta channels. An initial barrier study was performed and a negative declaration was released August 31, 1992. The proposed installation was set for the middle of January 1993 to permit operation from February through April. However, the construction contract was terminated when the Department and other regulatory agencies were unable to concur on the possible effects of the barrier on water quality, recreational boating, and fisheries.

Activities Outside the Delta

Activities conducted outside the Delta include monitoring water quality standards, developing a program for data quality assurance and data quality control, conducting temperature studies at Lake Oroville, protecting water quality in Suisun Marsh, and developing and implementing a program for improving drainage in the San Joaquin Valley.

Water Quality Monitoring

The Department monitors water quality at 30 SWP stations, most of which are located outside the Delta. (This program is separate from the Delta Water Quality Compliance Pro-

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gram previously discussed.) Twenty stations are located south of the Delta at reservoirs, power plants, and check structures of the North Bay, South Bay, Coastal Branch, and main canal of the California Aqueduct. Other monitoring activities are conducted at state reservoirs north of the Delta: Lake Oroville, Antelope Lake, and Frenchman Lake.

Delta exports are normally the sole source of water for SWP facilities and reservoirs south of the Delta. Most Delta water is exported south during the winter when the greatest freshwater outflow occurs; as a result, reservoirs south of the Delta are usually supplied with the highest quality water. San Luis Reservoir, the only SWP conservation storage facility between the Delta and Southern California, is usually filled by May 1.

Other sources of water for SWP in 1992 included infrequent, localized storm inflow and ground water pumped into the California Aqueduct as part of a drought relief program.

Water samples at most stations are analyzed monthly to determine total levels of dissolved solids and concentrations of nutrients, chloride, sulfate, sodium, trace metals, and other constituents. Those levels are compared with water quality objectives included in Article 19, "Water Quality," of the long-term water supply contracts and state drinking water standards.[1] Herbicides, pesticides, and organic substances are monitored less frequently.

Data Quality Assurance and Data Quality Control

Each year the Department invests about $20 million and about 150 person-years of effort in the collection of water quality related data. Since most of the water quality assessment activities are oriented toward State Water Project planning and operations, it is particularly important to protect this investment of time and money through adequate quality assurance and quality control.

Water Resources Engineering Memorandum No. 60, issued in 1992, established the Department policy for developing a program to assure that data produced by the Department are of established high quality and are quantifiable. This policy recognizes that environmentally, economically, and politically sensitive data generated by the Department must meet high quality standards and must be scientifically defensible.

Since implementation, a quality assurance officer has been designated, and a quality assurance plan for the water data collection activities is nearing completion. In addition, project-specific quality assurance plans are being produced for individual water quality monitoring programs within the Department. An important feature of these plans is establishing data quality objectives. Those objectives specify the level of data quality to be achieved for project data to be usable for a desired purpose.

A number of guidance documents have been completed or are currently under development. Those documents include (1) guidelines for preparing quality assurance project plans, (2) a sampling manual for water-related monitoring activities, (3) quality assurance guidelines for analytical laboratories, (4) a laboratory quality assurance/quality control manual for the Department's Bryte Chemical Laboratory, and (5) a quality assurance manual for management of computerized data collected through Department programs.

Training courses in quality assurance and quality control have been developed and

[1]For information about SWP water quality, see Bulletin 132, Appendix E, *Water Operations in the Sacramento-San Joaquin Delta* and the monthly publication, *State Water Project Operations Data*.

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are being conducted for departmental staff engaged in water quality monitoring and assessment activities.

These training courses, along with adequate standardization of methodologies and planning for quality, will greatly enhance the probability of staff collecting the correct kind and amount of high-quality data on the first try. The quality assurance program should result in overall program savings, in addition to greatly strengthening the Department's ability to defend its data.

Temperature Studies

In 1992 the Department completed its third year conducting special studies at Lake Oroville to help meet the required water temperatures at the Feather River Fish Hatchery. Those studies include (1) plotting lake temperature profiles, (2) associating power generation with water temperature in the Feather River below Oroville Dam, and (3) configuring shutter installation and removal at the power plant intake structure. The Department also investigated opening the two river release valves beneath the dam for access to cooler water levels. One of the valves was successfully tested in 1992 after minor modifications were performed. The other valve will be tested in 1993.

Temperature Control

At the beginning of 1992, storage in Lake Oroville was 36 percent of its maximum capacity, an improvement from 1991 when Lake Oroville storage fell to 26 percent of maximum capacity. In 1992 the water surface elevation in the lake remained between 20 and 50 feet above 1991 levels through the middle of August. From the beginning of September through the beginning of December, the water surface levels remained below those of 1991 during the same period. However, at the end of the year the lake's elevation was about 10 feet higher than the 1991 end-of-the-year level. Lake Oroville storage at the end of 1992 was 40 percent of its maximum capacity.

As a result of low lake elevations during 1992, the colder water layer dropped below the intake structure for the Edward Hyatt Powerplant. Consequently, the potential existed for lake water released through the power plant to enter the Feather River Fish Hatchery at temperatures higher than those specified in a 1983 operations agreement between the Department and the Department of Fish and Game. However, by altering power plant generation patterns; modifying the control shutters of the power plant intake to reach deeper, cooler water; and installing a water chiller at the water supply intake of the hatcheries incubation trays, the Department was able to maintain the required temperatures. The water chiller, which was installed in October 1992, helped maintain a temperature of approximately 51 degrees Fahrenheit in the hatchery's incubator trays during the period of fall-run salmon spawning, October 1 through November 30.

Protection of Suisun Marsh

Suisun Marsh, 59,000 acres of tidal and managed brackish water wetlands and 30,000 acres of bays and sloughs, is the largest contiguous estuarine marsh in the United States. Situated in southern Solano County, west of the Sacramento-San Joaquin Delta and north of Suisun Bay, the marsh encompasses more than 10 percent of California's remaining natural wetlands. In addition, the marsh is the resting and feeding ground for waterfowl migrating on the Pacific Flyway.

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Since the early 1970s, the Department, California legislature, State Water Resources Control Board, U.S. Bureau of Reclamation, and other agencies have acted to preserve Suisun Marsh as a unique environmental resource. As part of its responsibility for protecting Suisun Marsh, the Water Resources Control Board included water quality standards for Suisun Marsh in Decision 1485, which applies to the operation of the State Water Project and Central Valley Project.

Decision 1485 Standards

Water quality standards issued by the State Water Resources Control Board in Decision 1485 were designed to provide an optimum brackish-water habitat for plants and waterfowl and to preserve the Suisun Marsh as a brackish water tidal marsh.

Through Decision 1485, the Board required the Department and USBR to develop and fully implement a plan in cooperation with other agencies to ensure that standards in Decision 1485 were met. In 1984 the Department published *Plan of Protection for the Suisun Marsh*, which included the environmental impact report prepared in cooperation with the Department of Fish and Game, Suisun Resource Conservation District, and USBR. Contributions were also provided by the U.S. Fish and Wildlife Service. The plan contained a proposal for implementing methods to:

- Monitor water quality
- Develop management plans for wetlands
- Install, in phases, physical facilities to improve the water quality of the inner marsh
- Provide mitigation for construction impacts associated with physical facilities

The EIR included information about actions identified in the plan as well as about effects of each action. According to the plan, the Department and USBR would prepare supplemental environmental documentation if new significant impacts were identified while planning subsequent actions.

A six-phase plan to protect the marsh was suggested. Components of the first two phases of the plan have been completed. Those phases include (1) developing the Morrow Island and Roaring River Slough Distribution Systems and creating the Goodyear Slough Outfall (phase one); and (2) constructing the Suisun Marsh Salinity Control Gates (phase two). Components still to be completed include constructing the Boynton-Cordelia Ditch (phase three) and the Cordelia-Goodyear Ditch and the Goodyear Slough culverts or an alternative facility (phase four); developing the Grizzly Island Distribution System (phase five); and constructing the Potrero Hills Ditch (phase six).

At USBR's request, however, the State Water Resources Control Board reset the time for complying with the condition to protect Suisun Marsh from a one-time completion date of October 1, 1984, to a staged implementation plan to be completed by October 1, 1997. The revised schedule was specified in a letter issued on December 5, 1985, and specific revisions were made to Table II of Decision 1485.

Options for compliance times and locations were also part of the revision. The State Water Resources Control Board provided the Department and USBR with the option to select from a set of alternate times and locations for compliance. The Department and USBR were to inform the Board of their choice, which would depend on the effectiveness of

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existing salinity control facilities and operations.

Preservation Agreement Standards

In 1986 federal legislation (Public Law 99-546) authorized funds to USBR for protecting Suisun Marsh. In March 1987 the Department, USBR, DFG, and the Suisun Resource Conservation District signed the Suisun Marsh Preservation Agreement.

The agreement ensures that salinity levels in Suisun Marsh channel water will be maintained as prescribed to mitigate adverse effects on the marsh from SWP and CVP operations and from other upstream diversions. An important feature of the agreement is the Suisun Marsh Salinity Control Gates facility, which became operational November 22, 1989. The Department and USBR evaluated the effectiveness of the control gate facility during the 1989 control season to determine if the facility could help ensure acceptable salinity levels required by the revised Decision 1485 and the Preservation Agreement.

As in Decision 1485, the agreement included specific salinity compliance standards for marsh channels. However, unlike Decision 1485, the times for compliance are linked to the date when the Suisun Marsh Salinity Control Gates were considered operational. The agreement also includes provisions to allow for higher salinity levels during periods when water supplies are low. Compliance options under Decision 1485, as revised, are not linked to completion of facilities.

Article 8 of the Preservation Agreement contains more explicit requirements than does Decision 1485 for linking the times and locations of future compliance standards to the construction of specific salinity control facilities. The implementation of the next Preservation Agreement compliance standard is scheduled to begin October 1, 1994, five full construction seasons after the Suisun Marsh Salinity Control Gate facility became operational. Before that date, however, Decision 1485 standards control project operations in the marsh. In a petition dated August 30, 1988, the Department, USBR, DFG, and Suisun Resource Conservation District requested that the State Water Resources Control Board adopt the Suisun Marsh Preservation Agreement standards for SWP and CVP operations. The Board did not act on the petition and questioned whether the Department's plans for a flow augmentation into the marsh would make a change to Decision 1485 standards unnecessary.

Because threatened and endangered fish species were identified in the marsh, the Board requested an updated biological assessment to determine the impacts of adopting the Preservation Agreement standards. A study plan for a biological assessment was sent to the Board March 2, 1992. As of June 30, 1993, the Department, DFG, and USBR have completed about 40 percent of the field surveys needed to complete the study.

Five-Year Review of Standards

Article 4 of the Preservation Agreement provides for a review every 5 years of the objectives specified in the agreement. The review will include an evaluation of the effectiveness of the facilities constructed pursuant to the agreement. The required review is in progress and will be completed in 1994. Topics for review include:

- Examination of field data to evaluate the appropriateness of the existing standards and to recommend revisions when necessary
- Examination of field data to establish a relationship among channel water

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salinity, soil water salinity, and plant salinity tolerance for waterfowl food plants in the managed wetlands and for threatened and endangered plants in the tidal wetlands
- Recommendations, based on findings, to improve marsh wildlife habitat

In addition, during the 5-year review, issues that have become relevant since the signing of the Preservation Agreement will be studied.

Compliance

During 1992 the salinity standards specified in Table II of Decision 1485 were in effect at two locations in Montezuma Slough (Beldons Landing and National Steel) and two locations in the Sacramento River (at Montezuma Slough and Mallard Slough). Those salinity standards were met during 1992. Starting in October 1993, salinity standards will become effective at two additional locations: Chadbourne Slough and Cordelia Slough at Ibis.

Salinity Control Project

Tests of the salinity control facilities conducted in 1988 and 1989 indicated that additional control measures were needed to meet water salinity standards in the western channels of Suisun Marsh.

Consequently, to prevent duplication of activities and expedite planning and environmental review, the planning and environmental review activities for the third and fourth phases contained in *Plan of Protection for the Suisun Marsh* were combined in a single project, the Western Suisun Marsh Salinity Control Project.

To ensure standards were met, the Department developed both interim and long-range actions.

Interim Measures

When planning for the combined project began in June 1990, the Department and USBR recognized that they could not complete the project under the Decision 1485 time schedule. Consequently, the Department and USBR began a test to determine whether an interim measure could be used to control salinity in the northwestern region of the marsh. The test increased Green Valley Creek flows by diverting North Bay Aqueduct water to Cordelia Forebay and then releasing it to Green Valley Creek.

If increasing Green Valley Creek flows can be used as an interim measure, the Department and USBR will be able to:

- Obtain information needed for the Western Suisun Marsh Salinity Control Project planning and environmental review documents
- Meet northwestern marsh standards in conjunction with the operation of the Suisun Marsh Salinity Control Gates and within the times set in Decision 1485.

In the event of a critically dry 1993–94 water year, the Department will propose that an estimated 50 cubic feet per second of water be added to Green Valley Creek during January, February, and March, and 30 cubic feet per second be added during April and May to maintain channel water of the northwestern marsh within Decision 1485 standards.

Long-Term Measures

To implement the third and fourth phases in *Plan of Protection for the Suisun Marsh*, the Department, USBR, and staff members of the Suisun Marsh Technical Advisory Committee used the alternatives in the plan as a starting

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point to identify actions for analysis in the environmental review.

A public scoping meeting was held December 13, 1990, on alternative actions to meet future salinity standards. Monthly meetings of the Suisun Marsh Technical Advisory Committee and Western Suisun Marsh Salinity Control Project planning workshops were held to obtain comments from agency representatives.

In August 1991 the Department and USBR published a jointly-prepared scoping report. The scoping report includes information about the plan of protection and alternative actions proposed by agencies and the public during the scoping phase. It also contains study plans for an environmental impact analysis and an engineering feasibility analysis conducted to determine the likelihood of meeting the State Water Resources Control Board water salinity standards in the Suisun Marsh channels.

The scoping report identified more than 100 combinations of actions for consideration. Alternatives to meet future Board standards for the western marsh during selected critically dry periods such as water years 1989, 1990, and 1991 will be included in the draft environmental impact statement/environmental impact report (EIS/EIR) for the Western Suisun Marsh Salinity Control Project.

The determination of whether actions will meet standards will be made by examining results from a mathematical model of salinity levels in Suisun Bay, Suisun Marsh, and the Delta. If an alternative action appears to meet standards, a study will be conducted and its environmental and socioeconomic impacts analyzed.

The Western Suisun Marsh Salinity Control Project EIR and EIS are being prepared according to the guidelines for the California Environmental Quality Act and the National Environmental Policy Act. The work for preparing the reports is grouped into the following five tasks:

1. Evaluation of the existing system
2. Engineering design and analysis
3. Engineering feasibility/environmental impact analysis flow and water quality modeling
4. Environmental and socioeconomic impact analyses
5. Environmental documentation for the joint EIR/EIS, including permits

The draft EIR/EIS is scheduled for distribution in 1995.

San Joaquin Valley Drainage Program

Agricultural drainage, especially drainage on the west side of the San Joaquin Valley, presents two basic problems for farmland irrigated with water supplied by SWP and the Central Valley Project. Those problems involve:

- Salt buildup and waterlogging of irrigated lands due to a high ground water table—conditions that adversely affect crops and productivity
- Toxic or potentially toxic trace elements in the shallow ground water, which when drained and discharged to streams, ponds, or wetlands, can adversely affect fish and wildlife

To solve or mitigate the effects of those problems, the Department continues to work with federal and state agencies. For example, the Department has entered into a memorandum of understanding with the U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, U.S. Geological Survey, Department of Fish and Game, U.S. Soil Conservation Service, State Water Resources Control Board, and Department of Food and Agriculture to

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implement the recommended plan of the San Joaquin Valley Drainage Program.

For 2 years those agencies have jointly funded a full-time coordinator to provide a lead role in the implementation program and establish liaison with public interest groups, technical groups, and local agricultural and water interests in areas where the drainage problem exists. A coordinator has been selected and will assume appropriate duties in August 1993.

Also, as part of the interagency program the Department continues its drainage-related activities: collecting data, reducing drainage, treating drainage, and constructing evaporation ponds.

Data Collection

The Department has continued its cooperative studies with USGS on the occurrence, movement, and settlement of selenium in drainage-problem areas. Monitoring continued on a network of 20-foot-deep wells installed in the Tulare Lake Basin to study the horizontal movement of selenium. Monitoring well clusters (well depths ranging from 20 to 200 feet) installed to investigate the vertical movement of selenium also continued.

USGS will interpret data collected from the study and publish the final report when the study ends in 1994. A draft of a report for work conducted in 1991 is being reviewed by USGS.

In addition, the Buena Vista Water Storage District is conducting a comprehensive study of ground water to determine the source and cause of shallow, rising ground water tables. The district is also investigating corrective measures.

Drainage Reduction

The Department continued its demonstration and education programs to promote the practice of improved irrigation and drainage management techniques. Specifically, those programs included:

- Jointly funding a water conservation coordinator to help eight irrigation districts improve water management practices
- Conducting a field study of four irrigation systems to compare water application, crop yield, and drainage water reduction
- Conducting field demonstrations of furrow irrigation systems to compare uniformity of distribution, efficiency of irrigation, rate of water application, and amount of drainage water reduced
- Studying the quantity/quality relationship of drainage water production
- Testing the effectiveness of tiered-block water pricing at the water district level
- Using saline irrigation water to test the results of an experimental agroforestry project on the long-term maintenance of favorable salt and water balance
- Funding six short courses (one-day and two-day duration) in the technological aspects of irrigation and drainage management for field employees, growers, and water district managers

Drainage Treatment

The Department has continued operating the multiagency drainage treatment research and demonstration facility near Tranquillity in Fresno County. One of the principal programs, a pilot project for using bacteria to remove selenium from drainage water, is cooperatively funded by the Department and USBR and conducted by California

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State University's Fresno Foundation. In addition, Westlands Water District is also a participant and provides land and project-related services.

The program is designed to (1) evaluate the effectiveness of the selenium removal process, (2) generate data to optimize reactor design, and (3) investigate sludge treatment and disposal options. So far, the Foundation has conducted small-scale studies of the treatment process in the laboratory and has started the pilot-scale operation and evaluation.

Evaporation Ponds

The final report on the cumulative impacts of evaporation ponds on wildlife in the San Joaquin Valley has been completed and submitted to the Central Valley Regional Water Quality Control Board. Environmental impact reports for specific sites have been submitted by evaporation pond operators to the Regional Board, which is expected to issue waste discharge requirements in August 1993.

The Department continues its effort to develop acceptable criteria for designing, constructing, operating, and managing evaporation ponds to minimize impacts on wildlife and ground water. The Department also initiated a study with the University of California at Los Angeles to examine the development of alternative habitats to minimize or offset the adverse impacts of evaporation ponds on wildlife. In addition, the Department-funded U.S. Fish and Wildlife Service studies to assess the effectiveness of evaporation ponds have been completed. A final report is being prepared in two parts and is due for completion in spring and summer 1994.

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Station Number and Name

C3	Sacramento River at Greens Landing
C7	San Joaquin River at Mossdale Bridge
C9	West Canal at mouth of intake to Clifton Court Forebay
C10	San Joaquin River near Vernalis
D4	Sacramento River above Point Sacramento
D6	Suisun Bay off Bulls Head Point near Martinez
D7	Grizzly Bay at Dolphin near Suisun Slough
D8	Suisun Bay off Middle Point near Nichols
D9	Honker Bay near Nichols
D10	Sacramento River at Chipps Island
D11	Sherman Lake near Antioch
D12	San Joaquin River at Antioch Ship Channel
D14A	Big Break near Oakley
D15	San Joaquin River at Jersey Point
D16	San Joaquin River at Twitchell Island
D19	Franks Tract near Russo's Landing
D22	Sacramento River at Emmaton
D24	Sacramento River below Rio Vista Bridge
D26	San Joaquin River at Potato Point
D28A	Old River opposite Ranch Del Rio
D41	San Pablo Bay near Pinole Point
MD7A	Little Potato Slough at Buckley Cove
MD10	Disappointment Slough at Bishop Cut
P8	Middle River at Buckley Cove
P10A	Middle River at Union Point
P12	Old River at Tracy Road Bridge

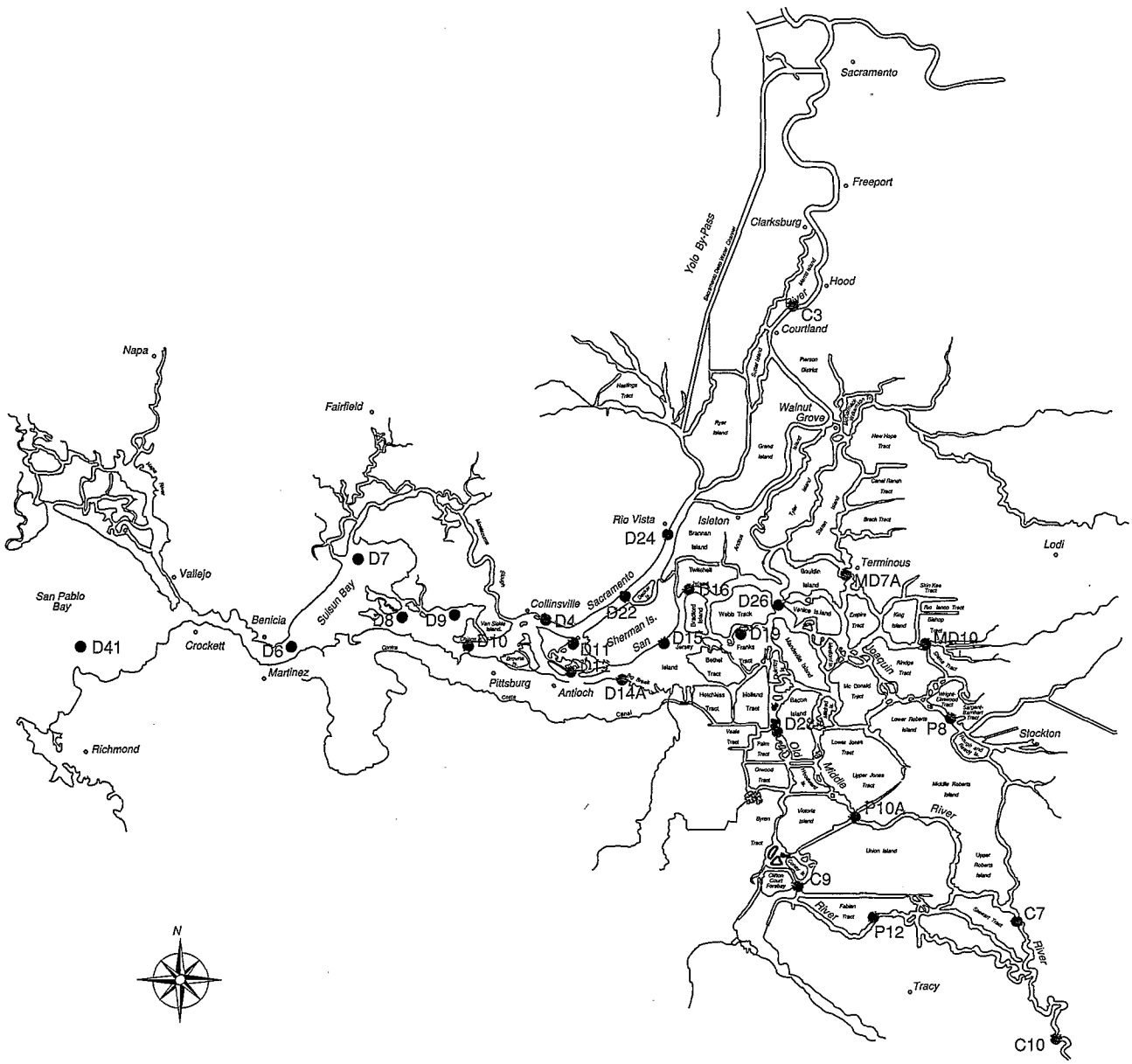

Fig. 14-1. Water quality monitoring sites in the Sacramento-San Joaquin Delta

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Meeting Future Water Needs

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15. Increasing Storage and Delivery Capabilities

To meet the water deliveries specified in water service contracts, the Department of Water Resources intends to construct additional storage and delivery facilities. In planning and developing those facilities, however, the Department often faces two significant challenges: (1) finding technically suitable sites; and (2) satisfying many complex environmental procedures, laws, and regulations.

Nevertheless, meeting contractual water delivery amounts is a priority with the Department, and several projects designed to increase State Water Project delivery capability and yield are either under investigation or construction. Specifically, those projects are designed to:

- Deliver water to municipal and industrial contractors in Santa Barbara and San Luis Obispo Counties (Coastal Branch, Phase II, of the California Aqueduct)
- Provide off-stream storage south of the Delta (Los Banos Grandes facilities and Kern Water Bank)
- Provide an additional water supply north of the Delta in the Cottonwood Creek and Red Bank Creek basins (Red Bank Project)

Information about constructing those facilities, including information about the environmental aspects of the projects, follows.

Coastal Branch Delivery Facilities

The Coastal Branch of the California Aqueduct, to be constructed in two phases, was designed to deliver water for agricultural use to contractors in northwestern Kern County (Phase I) and for municipal and industrial use to Santa Barbara County Flood Control and Water Conservation District and San Luis Obispo County Flood Control and Water Conservation District (Phase II).

The first phase, completed in the late 1960s, includes two pumping plants and a 14.8-mile coastal stub canal extending from Avenal Gap to the vicinity of Devil's Den in northwestern Kern County. Berrenda Mesa Water District and Castaic Lake Water Agency receive water through the Phase I facilities.

Once constructed, Phase II facilities will consist of (1) 102 miles of buried pipe, which will extend from the existing terminus near Devil's Den to the site of Tank 5 on Vanden-

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berg Air Force Base, 12 miles south of the Santa Maria River; (2) four pumping plants; (3) one power plant; and (4) five water-tank facilities. The project will transport about 47,300 acre-feet per year of municipal and industrial water to San Luis Obispo and Santa Barbara Counties.

In October 1986 Santa Barbara County Flood Control and Water Conservation District and San Luis Obispo County Flood Control and Water Conservation District requested that the Department conduct the advance planning and environmental studies needed to complete Coastal Branch Phase II.

Assessments

While conducting advance planning studies, the Department examined many routes for the pipeline. Based on topographic restrictions, design limitations, cost, and environmental impacts, the Department selected the best overall route. The selected route was then studied in greater detail to determine the best alignment within that route.

The detailed studies for the selected route included geological, archeological, wildlife, botanical, and wetlands surveys. Also, five workshops were held with property owners along the route to inform them of the project and to discover their concerns. All information gained through studies and workshops was used in selecting the best practicable alignment to minimize impacts.

That information, which included appropriate mitigation measures, was also used to prepare an environmental impact report for the project. The final EIR was released in May 1991, and the notice of determination and summary of findings was issued in July 1992. With mitigation, the project will result in no long-term significant impacts. All significant impacts are short-term and associated with construction (traffic, noise, and air quality).

Santa Barbara County FC & WCD and San Luis Obispo County FC & WCD were notified, as required in paragraph 45(d) of the water supply contracts, that the Department would start final design on Phase II in June 1992. The two districts notified the Department of their requests for entitlement water. San Luis Obispo County FC & WCD requested 4,830 acre-feet per year; Santa Barbara County FC & WCD requested 42,486 acre-feet per year.

The Department agreed to honor requests for adjustments in entitlement requests through June 1, 1993, provided that adjustments were due to circumstances beyond the districts' control. As of June 30, 1993, the Department was preparing the final design, acquiring rights-of-way, and obtaining permits necessary to construct the project.

Construction

This section includes a description of construction activities as well as information about costs.

Description

Constructing the second phase of the Coastal Branch requires laying 102 miles of buried pipe from the existing terminus near Devil's Den to the site of Tank 5 on Vandenberg Air Force Base. Other facilities to be constructed include Devil's Den, Bluestone, Polonio Pass, and Casmalia Pumping Plants; San Luis Obispo Powerplant; and five water-storage facilities.

San Luis Obispo Powerplant is designed to dissipate excess water pressure in the pipe-

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line and generate approximately 4 megawatts of power. The five tank facilities will be used to provide hydraulic stability and control in operating the project.

A regional water treatment plant owned and operated by the local water purveyors will be constructed at the Tank Site 1 at Polonio Pass.

Costs

The estimated cost of the project (in 1992 dollars for delivering 47,300 acre-feet per year) is about $373,000,000, which includes costs for mitigation and rights-of-way. The unit cost of the water at the turnouts is estimated to vary from about $480 to $650 per acre-foot, depending on the repayment reach and the amount of water subscribed. Costs for treating the water and constructing local facilities to transport water to areas of use are not included.

Construction began in late 1993 and will be divided into about 30 construction contracts. Construction is scheduled to be completed in late 1996.

Los Banos Grandes

A key component of the Department's efforts to meet California's growing water needs is through water banking. Water banking moves water from the Delta during periods of high flows in the winter into storage facilities located south of the Delta for release later during dry periods.

Water banking south of the Delta offers considerable benefits to SWP users and others. Water banking will help to:

- Improve the reliability of SWP's water supply
- Reduce demands for water exported through the Delta in the summer
- Benefit Delta fisheries by providing the Department with the option of pumping in the Delta when impacts on fisheries are least significant

The Department has designed the Los Banos Grandes facilities to be a primary south-of-the-Delta water bank. Once constructed, the facilities will help to reduce the frequency and magnitude of projected water shortages by increasing the dependability of the existing water supplies available to SWP contractors. Improving the reliability of SWP supplies will reduce the likelihood of long-term water shortages that could otherwise occur more frequently as demand increases.

In addition to improving the reliability of SWP's water supply, Los Banos Grandes can benefit Delta fisheries. The Department will gain flexibility in operating existing and planned delivery systems and be able to shift pumping in the Delta to months when the effects of diversions on fisheries are least significant.

Investigations, Studies, and Design

A feasibility report and draft environmental impact report for the proposed Los Banos Grandes project were completed in December 1990. The final environmental impact report and statement were scheduled to be completed in 1993, and construction of facilities was to begin in mid-1995. However, since the 1990 reports were released, new constraints to Delta exports have affected the feasibility of the proposed project. Measures have been enacted by the U.S. Fish and Wildlife Service and National Marine Fisheries Service to protect the Delta smelt and winter-run Chinook salmon—two Delta fish species listed under the federal Endangered Species

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Act. In addition, new flow and water quality standards for the Delta are under development by the State Water Resources Control Board and the federal Environmental Protection Agency. These actions significantly reduced the amounts of Delta flows that are anticipated to be available for diversion and storage in the proposed Los Banos Grandes facilities.

In 1992, Governor Pete Wilson established the Bay-Delta Oversight Council and directed the group to identify and complete the environmental documentation for a long-term solution for the Delta. The Department will reassess the feasibility of Los Banos Grandes facilities once a Delta solution is identified. The facilities will be resized based on an evaluation of the availability of water for export in the Delta with new flow and water quality standards and a Delta solution in place.

In the meantime, limited studies focus on evaluating mitigation techniques for potential project impacts and completing environmental documentation. These studies include (1) completing delineations of wetlands for alternative reservoir sites and mitigation areas, (2) continued investigations under the Sycamore Pilot Program, and (3) testing potential mitigation measures for impacts to the San Joaquin kit fox.

Project Design

The planned location for the Los Banos Grandes facilities is in Merced County on Los Banos Creek, 5 miles upstream from the existing Los Banos Detention Dam and Reservoir and 6 miles west of the California Aqueduct. The facilities would consist of three saddle dams, the main dam and reservoir, and two pumping-generating plants. The reservoir is planned to be linked to the California Aqueduct through the existing Los Banos Reservoir.

The project is designed to store exports from the Sacramento-San Joaquin Delta during intermittent periods of high flow. Those flows, pumped at Harvey O. Banks Delta Pumping Plant, are planned to be conveyed through the California Aqueduct to Mile 79.5, where the first pumping-generating plant would lift the water into the existing Los Banos Reservoir.

That water would then be lifted into the proposed Los Banos Grandes Reservoir by a second pumping-generating plant. When water is withdrawn from storage for use downstream, the generating ability of the two plants would allow recovery of some energy used to lift the water into storage.

Pumping would be maximized during off-peak hours when energy rates are lowest; generating would be maximized during on-peak hours when the value of energy is highest.

Engineering Viability

To construct the main dam and three saddle dams, the Department is planning a standard earth-fill design. However, the Department is also investigating the use of roller-compacted concrete for the main dam and saddle dams. Roller-compacted concrete dams (lean concrete), built with earth-fill construction techniques, are often less costly than conventionally placed concrete and earth-fill dams.

Because the project will generate electrical power, the environmental effects of such generation will be examined through the provisions of the Federal Power Act and the requirements of the Federal Energy Regulatory Commission.

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Environmental Viability

The Department is proceeding with studies necessary to complete the environmental documentation for obtaining required permits. After the feasibility of Los Banos Grandes is reestablished, the Department will resume working with the U.S. Army Corps of Engineers as the lead federal agency (through Section 404 of the Clean Water Act) and prepare a draft environmental impact report and statement (EIR/EIS) to satisfy requirements of both the National Environmental Policy Act and the California Environmental Quality Act.

Since 1984 the Department has conducted environmental studies to identify significant impacts to resources in the project area and identify ways to avoid or compensate for those impacts. After the studies are completed, the Department will formulate a plan designed to avoid or compensate for significant environmental impacts of Los Banos Grandes. Mitigation measures will also be developed to compensate for all cumulative impacts of the project.

Costs and Financing

The state will finance the capital costs of Los Banos Grandes by selling water revenue bonds, which will be repaid out of the revenue collected from the sale of water to SWP contractors. A contract amendment must then be negotiated with the SWP contractors to provide a mechanism for repaying the bonds. This mechanism could take the form of an amendment to the existing long-term water supply contracts or an external agreement.

The Department and SWP contractors are working together to examine the financial, contractual, and operational issues associated with the possibility that not all SWP contractors will participate in Los Banos Grandes. If some contractors do not participate in the project, it will be necessary to develop arrangements to allow all SWP contractors to receive the water supply benefits they are entitled to—based on the SWP facilities they have invested in.

Kern Water Bank

The Kern Water Bank is defined as any opportunity to recharge SWP water in Kern County. The purpose of the Kern Water Bank is to store surplus water from the Delta during wet years for extraction during dry years. During wet years the Department would convey surplus water directly to recharging ponds or to local water districts for use in lieu of their pumping from ground water storage. In dry years water is planned to be extracted from storage. In some cases the extracted water would be directly conveyed to the California Aqueduct to supplement SWP water supply. In other cases it would be pumped and used by local districts in exchange for an equivalent amount of their SWP entitlement water. Their entitlement would then be added to the amount of SWP water available for delivery to other SWP contractors.

As a result of the endangered species issues in the Delta and subsequent restrictions on diversions from the Delta to downstream facilities, the water supply for new facilities downstream of Banks Pumping Plant has become uncertain. Consequently, design and planning activities for Kern Water Bank facilities, along with completion of a monitoring well network, have been discontinued.

The program emphasis is now directed toward (1) completing the Habitat Conservation Plan for the Kern Fan Element, which is a component of the Kern Water Bank Pro-

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gram; (2) maintaining the Kern Fan Element and existing facilities; (3) monitoring ground water levels and water quality; (4) coordinating with local planning efforts; and (5) reevaluating the Kern Fan Element and addressing water supply uncertainties. Until the Kern Water Bank program has been reassessed and a new implementation program formulated and approved, all other planning efforts will be discontinued.

Elements

The proposed Kern Water Bank program consists of eight separate projects or elements. One element, the Kern Fan Element, would be owned by the Department. The other seven elements, referred to as local elements, would be owned by various water districts in Kern County.

Kern Fan Element

The Kern Fan Element is located on both sides of the Kern River, just southwest of Bakersfield, and is planned to be built in two stages. Planned storage capacity of the first stage is about 350,000 acre-feet, with an expected average annual SWP water supply benefit of about 44,000 acre-feet per year and an average annual dry period (AADP) supply benefit of about 50,000 acre-feet per year.

The second stage is expected to increase the storage capacity to about 1 million acre-feet with an expected AADP water supply benefit of about 140,000 acre-feet per year and a corresponding increase in the average annual SWP water supply.

Local Elements

The seven proposed local elements of the Kern Water Bank could add about 2 million acre-feet of ground water storage and increase the AADP water supply of the Kern Water Bank by about 280,000 acre-feet per year. The local elements are planned in cooperation with the Department and are in various stages of the planning process. A feasibility investigation is nearly complete for one local element, and prefeasibility investigations are nearly complete for the remaining six. Also, a master plan for evaluating and implementing the local elements has been completed. Information about those studies and the master plan follows.

Feasibility Studies

As of the end of the 1992–93 fiscal year, prefeasibility studies were completed for local elements sponsored by the Kern Delta Water District, Improvement District Number 4, Buena Vista Water Storage District/ West Kern Water Storage District, Cawelo Water District, and Rosedale Rio-Bravo Water Storage District. The Department is analyzing *Components of Feasibility Study of Semitropic Local Element of Kern Water Bank*, a feasibility report prepared for the Semitropic Water Storage District by Bookman-Edmonston Engineering, Inc.

A draft prefeasibility study for the element sponsored by the North Kern Water Storage District began in mid-1991 and should be completed in 1993.

Master Plan

A master plan was prepared by a Kern County working group to ensure that:

- Criteria and procedures are set to ensure local elements are implemented in an orderly manner
- All local elements are assessed on an equitable basis

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Once a local element is judged by Kern County Water Agency to meet the criteria contained in the master plan, the feasibility of the element can be determined. Once the project's feasibility has been determined, documents required by the California Environmental Quality Act (CEQA) can be prepared; and negotiations for implementing the local element can begin between the project's sponsor and the Department.

Environmental Documentation

The purchase by the Department of the Kern Fan Element land and subsequent planning activities for the Kern Water Bank program have been based on a final environmental impact report released in December 1986.

Environmental Impact Report

A supplemental environmental impact report (EIR) for the Kern Fan Element was prepared according to CEQA guidelines and distributed for review December 31, 1990. Efforts to finalize the EIR depend on resolution of issues related to protection of the Delta smelt and the winter-run salmon. Once these issues and their impacts on the Kern Fan Element are resolved, a schedule for completing the EIR will be established.

Habitat Conservation Plan

The Department is required to prepare a habitat conservation plan for the Kern Fan Element because maintenance of the Kern Fan Element lands and construction and operation of some facilities could destroy some habitat and result in the take of threatened and endangered species. In the habitat conservation plan, the Department will document threatened and endangered species both known to be on the property and expected to move onto the property.

The plan will include a listing of mitigation requirements for the project, including those designed to minimize the disturbance of listed species and those to compensate for disturbances by setting aside preserves for the listed species.

Threatened and endangered animal species found on or adjacent to the Kern Fan Element include the San Joaquin kit fox, Swainson's hawk, Tipton kangaroo rat, San Joaquin antelope squirrel, and blunt-nosed leopard lizard. Threatened and endangered plant species include the slough thistle, recurved larkspur, Hoover's eriastrum, and San Joaquin woolly threads.

The plan will provide a basis to apply for permits from the Department of Fish and Game and the U.S. Fish and Wildlife Service to construct, operate, and maintain existing and planned facilities necessary to complete the Kern Fan Element.

The regulatory agencies also required that significant existing and planned activities by other entities on Kern Fan Element property as well as related activities on neighboring lands be included in the permit. Those include (1) constructing additional recharge facilities by the Kern County Water Agency; and (2) constructing, operating, and maintaining oil and gas wells and related facilities by ARCO Oil and Gas Company and their leases as well as the activities of other utility easement holders.

In addition, recharge facilities belonging to the City of Bakersfield, Buena Vista Water Storage District, and West Kern Water Storage District are adjacent to the Kern Fan Element and used interchangeably. Conse-

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quently, those entities will be included in the permit.

Red Bank Project

Cottonwood Creek in Shasta County and Tehama County, the largest uncontrolled tributary of the Sacramento River, is a primary cause of flooding locally and along the upper Sacramento River. The U.S. Army Corps of Engineers selected the Cottonwood Creek drainage basin in 1964 as the most suitable for constructing facilities to provide flood protection as well as an additional water supply.

Since then, both the Corps and the Department have conducted studies to determine the feasibility of constructing those facilities. The facilities recommended by the Department for construction are much smaller and are located higher in the watershed than those originally proposed by the Corps. The most promising facility investigated is the Red Bank Project.

Early Studies

In its early studies, the Department determined Cottonwood Creek to be a good potential source of water but only a fair site for a reservoir. The Red Bank Creek basin, however, was found to be a good site for a reservoir but not for a potential source of water. Consequently, the Department developed a plan to incorporate the strengths and weaknesses of each location, resulting in a site that is a good source of water as well as a good site for a reservoir.

Project Description

As defined in a 1993 final report published by the Department, the Red Bank Project would consist of:

- A combination diversion and storage dam and reservoir at the Dippingvat site on the South Fork of Cottonwood Creek
- A storage dam and reservoir at the Schoenfield site in the adjacent Red Bank Creek basin
- A conveyance system for connecting the two reservoirs

Dippingvat Dam would be about 251 feet high with a reservoir capacity of 104,000 acre-feet. The Schoenfield Dam would be about 300 feet high with 250,000 acre-feet of storage capacity.

Cost and Benefits

In conducting the study, the Department determined that the cost of constructing the dams and reservoirs would be $209 million (1992 dollars) and that the project would provide the following benefits:

- Approximately 47,000 acre-feet per year of additional water to the SWP system
- An annual flood control benefit of about $2.4 million for the Cottonwood Creek basin
- A warm-water fishery and other recreational facilities (approximately 113,000 recreation-days per year)

The Department also determined that the project could provide significant benefits to the anadromous fisheries in lower Cottonwood Creek through an improved water supply. To facilitate the upstream migration of salmon, gates at the Red Bluff Diversion Dam could be open longer because 47,000 acre-feet of substitutionary water—in trade for existing Sacramento River water—could be supplied to the Tehama-Colusa and Corning canals by a diversion from Red Bank Creek.

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Project Viability

During initial studies in the 1980s, the Red Bank Project was thought to be a viable addition to SWP supplies. However, recent studies identified increased costs, potential onsite environmental concerns such as sensitive plants and wetlands, and serious problems associated with endangered species in the Delta. Those issues have made this project infeasible. Project feasibility could be restored if solutions to those concerns are found. Until then, further study of the Red Bank Project will be minimal.

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16. Augmenting the Water Supply

To meet State Water Project contractors' increasing need for water, the Department of Water Resources investigated and implemented several water management plans. The plans have evolved from the traditional conserving of existing supply through storage to:

- Entering into programs with various water agencies in which the Department finances facilities in exchange for water through conjunctive use
- Developing programs to transfer water, either through statewide programs such as the Drought Water Bank or through transfers between SWP long-term contractors or other agencies, including the Central Valley Project
- Testing weather modification programs

This chapter includes information about programs the Department conducted or participated in from July 1, 1992, to June 30, 1993.

Conjunctive Use of Water

As a water management tool, conjunctive use of surface water and ground water provides two important benefits.

1. Conjunctive use is a "win-win" situation for agencies involved. Agencies work together for their own benefit as well as to benefit each other by making the most efficient use of water supplies available.
2. Conjunctive use offers a relatively low-cost method to store water in times of above-average supplies for use during dry periods. Conjunctive use is a way of stretching the water supply, both locally and statewide. For example, agencies with subsurface storage space can capture flood flows at times when surface storage is limited.

The Department has actively promoted conjunctive use as a water management tool since the 1960s. Currently, the Department is working on the Stanislaus and Calaveras river basins conjunctive-use program. In 1992 the Department expanded its conjunctive-use program to include investigating the potential for conjunctive use of surface water and ground water in the Sacramento Valley.

Stanislaus and Calaveras River Basins

In 1986 two water districts in San Joaquin County, Stockton East Water District and Central San Joaquin Water Conservation Dis-

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trict, presented a proposal to the Department for releasing CVP water from the New Melones Dam in exchange for financing diversion and conveyance facilities.

Specifically, according to the proposal, the districts would release downstream in the Stanislaus River as much as 155,000 acre-feet of the districts' contracted water (106,000 acre-feet of interim water and 49,000 acre-feet of firm water) from CVP in years of critical shortages in exchange for SWP financing facilities in the Stanislaus and Calaveras river basins. The agencies would revert to ground water use during critically dry years.

Participants

In 1988, in response to the proposal, the Department, U.S. Bureau of Reclamation, and local water agencies agreed to investigate the future demands for water in the study area and the most efficient means of meeting those demands.

The Department and USBR prepared a work plan for that investigation, and a memorandum of understanding was signed by the Department; Department of Fish and Game; USBR; Stockton East Water District; Central San Joaquin Water Conservation District; Calaveras County; Calaveras County Water District; Tuolumne County; Tuolumne Regional Water District; Stanislaus County; San Joaquin County; Lathrop County Water District; South Delta Water Agency; and Cities of Escalon, Ripon, Manteca, and Stockton.

Oakdale Irrigation District and South San Joaquin Irrigation District, two irrigation districts with water rights to Stanislaus River water, decided not to sign the memorandum of understanding but instead to monitor and contribute information to the study when necessary.

Alternatives to Meet Demands

As part of the study process, alternatives to meet estimated water demands are being identified. As part of selecting an alternative to meet those needs, the Department is reviewing all alternatives to determine the one that best:

- Meets the future in-basin and out-of-basin water needs of all involved agencies and counties
- Improves in-stream flows for the Stanislaus, Calaveras, and San Joaquin Rivers
- Improves water quality in the channels of the southern Delta
- Increases CVP and SWP water supplies in the Delta
- Assists in meeting outflow requirements in the Delta

However, Stockton East Water District and Central San Joaquin Water Conservation District decided that they could not wait for completion of the joint study and began constructing a portion of the diversion and conveyance facilities necessary to import CVP water to their service areas.

In 1991 a 3.5-mile diversion tunnel and 8 miles of canal were financed and constructed by the two districts. Construction of the diversion tunnel and canal will enable the two districts to divert 155,000 acre-feet of interim and firm water supplies from the Stanislaus River into Farmington Reservoir, a U.S. Army Corps of Engineers flood control reservoir, via Shirley Creek.

The tunnel and canal conveyance facilities were completed in the summer of 1993. However, due to the passing of the Central Valley Project Improvement Act, the 1993 in-stream flow requirements for the Stanislaus

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River increased by 200,000 acre-feet. This increase left no water for Stockton East Water District and Central San Joaquin Water Conservation District to divert. Future CVPIA requirements for the Stanislaus River have not been determined.

Environmental Documentation

In addition to identifying alternatives, the Department is coordinating with USBR in preparing a combined draft environmental impact report and environmental impact statement. Issues to be examined in the environmental documentation were identified in the scoping report, which was published in 1991. The nine issues identified in the report are:

1. Conjunctive use of Stockton East Water and Central San Joaquin Water Conservation District's 155,000 acre-feet of interim and firm water supply
2. County-of-origin water needs and protection
3. Fishery flows in the Stanislaus River
4. Ground water levels in the eastern San Joaquin County's ground water basin
5. Improved water quality at Vernalis on the San Joaquin River for the South Delta area
6. Protection of existing water rights
7. Return of interim out-of-basin contracted water to in-basin users when needed
8. Recreational needs in the Stanislaus River
9. Source of water supply to cities in the study area

Currently, in addition to conducting environmental studies, planners are focusing on developing surface water and ground water models to be used in evaluating the various alternatives. Water flow requirements for fish in the Stanislaus River are also being evaluated by the Department of Fish and Game and the U.S. Fish and Wildlife Service.

Sacramento Valley

The Department continues its investigation, begun in 1992, of the potential for conjunctive use of surface and ground water in the Sacramento Valley. The water obtained through conjunctive use projects in the Sacramento Valley will be used to augment SWP water supply.

The Department adopted the following three-part approach to its conjunctive use investigation:

1. Conduct prefeasibility investigations and develop demonstration programs to allow incremental expansion as conditions permit
2. Evaluate water supply and hydrogeologic conditions, existing facilities, legal and institutional relationships, and existing operations
3. Work with local agencies to establish cooperative relationships needed to effectively resolve legal and institutional concerns

Prefeasibility Studies/Demonstration Projects

The Department completed a cooperative prefeasibility investigation in eastern Yolo County for a proposed ground water recharge project. The project would recharge ground water basins during wet years for extraction during dry years. This operation would add about 30,000 acre-feet to SWP for delivery in

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dry years. The Department expects to pursue the development of a 3- to 5-year demonstration program to test this project.

The Department has begun prefeasibility investigations in the basins of the American and Bear Rivers in Sutter, Placer, and northern Sacramento Counties. Additional studies are under way in Butte County. These studies focus on designing small projects that would evolve into demonstration programs to determine actual operational characteristics and provide reliable estimates of the amount of "new" water that can be developed. The demonstration programs will allow incremental evaluation of acceptable project impacts.

Resource Inventory

To identify areas most suitable for conjunctive-use projects, the Department is conducting an ongoing survey of the hydrogeologic and infrastructure features of the Sacramento Valley. In 1992–93 the Department completed the compilation and review of historical data of ground water levels for the valley; the Department has published this information in a series of county-specific reports.

The Department has identified seven regions in the Sacramento Valley that may be suitable for conjunctive-use programs. To select the local areas within those regions most suitable for project development, the Department is compiling information about (1) area water quality, (2) existing locations and distribution of surface and ground water use, (3) facility operations, and (4) other characteristics needed for project evaluation.

Local Agency Concerns

The Department is working with local agencies to effectively address the concerns arising from additional use of ground water and water transfers. Many local agencies are in the process of developing ground water management programs pursuant to recently adopted authorizing legislation.

Water Transfers

Prior to 1991, most water transfers in California were negotiated by the Department on a limited basis. State Water Project facilities were used to transfer water (1) for SWP long-term contractors and (2) to other agencies in California—most notably to CVP contractors. During the last few years, however, as the drought continued, California implemented a statewide policy of transferring water.

In 1991 California began its first large-scale water transfer program when Governor Pete Wilson established the 1991 Drought Water Bank. Based on the successful 1991 bank and the continuing drought, he established a 1992 water bank in March 1992. Both programs were administered by the Department; SWP facilities were used, when necessary, to transfer the water.

A final environmental impact report (EIR) for future state drought water banks is expected to be issued in the summer of 1993. The EIR provides the framework for future water bank operations and water transfers under specified drought conditions.

Drought Water Banks

The 1991 and 1992 Drought Water Banks were successful in arranging water transfers to meet agricultural, urban, and fish and wildlife critical needs on a short-term basis. This section includes summary information about the 1991 and 1992 water banks.

Table 16-1 includes the water purchased and allocated by the 1991 and 1992 water banks.

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1991 Drought Water Bank

As of June 30, 1993, three 1991 contracts to provide water to the bank remained in dispute. Final accounting of the 1991 water bank and adjustments to the 1991 melded water purchase rate will be computed pending resolution of the contracts.

1992 Drought Water Bank

A total of 158,768 acre-feet of 1992 bank water was allocated to meet critical water needs throughout the state. Those allocations included 49,720 acre-feet for SWP long-term contractors (Kern County Water Agency, Tulare Lake Basin Water Storage District, and Metropolitan Water District of Southern California). Table 16-2 provides information about purchases from the 1992 water bank.

A fiscal report on the 1992 water bank is being prepared for transmittal to all purchasers of bank water.

Short-Term Water Purchases

Because of the success of the 1991 and 1992 Drought Water Banks, increasing interest is being expressed in water transfers as a water management tool for alleviating short-term shortages as well as for augmenting long-term supplies. The Department continues to explore possibilities of purchasing water via short-term transfers. In June 1993 the Department began drafting a work plan and time line to complete the environmental documentation required for SWP short-term water purchases outside the scope of a drought water bank program.

State Water Project Transfers

The Department, through the State Water Project Analysis Office, negotiates tempo-

TABLE 16-1

Water Purchases and Allocations under the 1991 and 1992 Drought Water Banks

(Acre-feet)

Feature	*1991* (a	*1992*
Purchases		
Fallowing	414,743	0
Ground water	258,590	161,541
Reservoirs	147,332	31,705
Subtotal	820,665	193,246
Delta water quality requirements, conveyance losses, and technical corrections	(165,137)	(34,479)
Net supply available	655,528	158,768
Allocations		
Urban	307,373	39,000
Agricultural	82,597	95,250
Wildlife Refuges	0	24,518
State Water Project (for carryover storage)	265,558	0
Total allocations	655,528	158,768

a) Excludes bank-associated purchases of 41,375 acre-feet for the Department of Fish and Game.

TABLE 16-2

Total Amount of Water Purchased from the 1992 Drought Water Bank

(Acre-feet)

Agency	*Water Purchases*
Broadview Water District	255
City and County of San Francisco	19,000
Contra Costa Water District	10,000
Del Puerto Water District	300
Department of Fish and Game	24,518
Foothill Water District	900
Hospital Water District	200
Kern County Water Agency	8,170
Metropolitan Water District of Southern California	10,000
Orestimba Water District	75
Panoche Water and Drainage District	2,000
Quinto Water District	100
Solado Water District	300
Sunflower Water District	400
Tulare Lake Basin Water Storage District	31,550
Westlands Water District	51,000
Total	**158,768**

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rary transfers of water for SWP long-term contractors as well as for other agencies. Those transfers are usually in the form of (1) water loans or entitlement water transfers between long-term SWP contractors, and (2) transfers of nonproject water between non-SWP and SWP agencies. All temporary water transfers have to be approved by the State Water Resources Control Board in accordance with sections 1725 through 1728 of the California *Water Code*.

Chapters 5 and 6 contain information on water transfers during 1992 and contracts on water transfers written between July 1, 1992, and June 30, 1993.

Weather Modification

To increase the inflow to Lake Oroville from the Feather River basin, the primary source of SWP water, the Department is evaluating the effectiveness of cloud seeding.

Encouraged by the successful completion of a 1985 contract to study the feasibility of cloud seeding, the Department funded a prototype project carried out in a remote area of the Middle Fork Feather River near Johnsville. The project, which began in 1988, consists of 10 liquid propane dispensers fitted with spray nozzles on 10-foot towers and is powered by solar energy. A solenoid controlling the release of liquid propane can be activated by Department personnel in Sacramento. As liquid propane evaporates it lowers temperatures in the selected cloud to 100 degrees below zero Fahrenheit. This operation immediately creates billions of tiny ice crystals. If cloud conditions are right these crystals will grow to snowflakes, thereby increasing the snowpack.

Historically, cloud-seeding programs have used silver iodide or dry ice dropped from airplanes to chill the air and condense moisture, which falls as snow. If the program using liquid propane is successful, the Department plans to design a larger cloud-seeding program to be conducted in the Feather River watershed. Information about the testing and operation of the program follows.

Field Tests

A single dispenser was installed in March 1989 to evaluate the functional capabilities of the equipment's control system and provide information on the effectiveness of propane for increasing precipitation. Testing the equipment continued throughout the winter of 1989–90. During that time, work began on preparing the environmental documentation required by the U.S. Forest Service to allow the installation of the nine additional dispensers. The documents were completed September 12, 1990.

On October 29, 1990, the California Sportsfishing Alliance filed an appeal of the decision by the U.S. Forest Service to issue the land use permit for the installation of dispensers. Consequently, the Forest Service issued a limited permit that authorized the installation but not the operation of the 10 propane dispensers.

The 10 liquid dispensers were installed during winter 1990–91. Even though the dispensers could not be operated because of the appeal by the California Sportsfishing Alliance, the Department gained valuable information about the practicality of the design. During summer 1991, the entire dispenser was redesigned in preparation for the 1991–92 winter season.

Results of field tests indicated that the equipment would function as intended and could be reliably controlled from headquarters. Consequently, the Department decided in spring 1991 that the program could be fully implemented.

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Implementation

Randomized seeding of winter storms began in November 1991 after the U. S. Forest Service approved the Department's supplement to the environmental documentation. A total of 258 hours of seeding has been completed through June 1993.

It is estimated that 1,200 hours of seeding will be needed to reach statistical significance to properly evaluate the program. Evaluation will be based on the analysis of information received from 11 remotely operated rain-snow gauges installed in the target area and from detailed physical studies which attempt to directly document the effects of seeding.

Environmental monitoring of the watershed will be conducted during the implementation phase to evaluate the effects of cloud seeding.

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17. Assisting Local Water Supply Projects

The Department of Water Resources participates in two programs to provide financial assistance to local agencies for constructing water supply projects.

Through the first program, the Davis-Grunsky Act, public agencies are awarded loans or grants at a fixed rate of interest and for a fixed repayment period. Through the second program, the State Water Project finances local water supply projects designed to augment SWP's water supply, either directly or indirectly.

Davis-Grunsky Act

Public agencies have been awarded loans and grants through the Davis-Grunsky Act since 1959. The act, jointly administered by the Department and the California Water Commission, was designed as complementary legislation to the Burns-Porter Act, which was enacted to help finance construction of SWP.

Of the original $1.75 billion made available through the Burns-Porter Act, $130 million was reserved specifically for distribution through provisions of the Davis-Grunsky Act. Monies are paid from the California Water Resources Development Fund and the California Water Fund. Loans are repaid to the California Water Resources Development Fund.

Basic Provisions

The broad objective of the Davis-Grunsky Act is to advance the development, control, and conservation of water resources in California. To meet that objective, the act is designed to:

- Provide loans to public agencies for preparing feasibility reports and constructing local water projects if those agencies are unable to obtain financing on reasonable terms from other sources
- Through grants, encourage development of the recreational aspects of local water projects as well as habitat for fish and wildlife
- Enable California to participate as a partner in the development, construction, or operation of certain water projects when participation is necessary for optimum development of the resource

Public agencies, including cities, counties, districts, or other political subdivisions of the state, may participate in the program. Types of assistance available include:

- Loans for constructing local water projects, acquiring sites for reservoirs for proposed water projects, and preparing feasibility reports on proposed

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projects for which loans have been requested

- Grants for paying part of the construction cost of dams and reservoirs properly allocated to providing for recreation or enhancing fish and wildlife, and construction of initial water supply and sanitary facilities needed for public recreational use of reservoirs
- State participation as a partner in a project larger than one the local agency proposes to construct on its own

Before 1967 loans were made at the current market interest rate. In 1967, to be more equitable to low-income agencies the program was designed to assist, the legislature fixed the interest rate at 2.5 percent. The maximum loan repayment period was set at 50 years. At the Department's discretion, however, some agencies were given an initial 10-year deferment with the accumulated interest amortized over the repayment period.

Through 1992 approximately $127 million of the allocated $130 million had been disbursed or contracted for loans, grants, and administrative costs. The remaining $3 million has been allocated for a grant to Littlerock Creek Irrigation District and Palmdale Water District to rehabilitate Littlerock Dam.

Current Activities

The following actions involve funds from the Davis-Grunsky Act. They are listed alphabetically according to the name of the agency to which the loan or grant was given.

Home Gardens County Water District

Home Gardens County Water District, San Bernardino County, has received its entire loan entitlement. The district has received an extension to complete the final project component, which will fulfill water quality standards imposed by the county. The project audit should occur during last quarter 1994.

Palmdale Water District and Littlerock Creek Irrigation District

Palmdale Water District and Littlerock Creek Irrigation District, Los Angeles County, have signed a contract with the Department for a $3 million grant to rehabilitate Littlerock Dam.

Strathmore Public Utility District

Strathmore Public Utility District, Tulare County, has received 90 percent of its $1,860,000 loan to upgrade its drinking water system to meet safe drinking water standards. The district will receive the remaining $186,000 after the final site inspection and audit required by the Davis-Grunsky Act have been completed.

State Water Project Funds

Local water supply projects designed to augment SWP water supply may be financed with SWP funds, if available, providing certain administrative guidelines are met. The project must be eligible to be included as part of SWP, and financing by SWP must not exceed the actual cost of construction.

Should construction costs of the local project exceed available SWP funds, local participation in financing the construction will be required. In addition, the local project will not become a unit of SWP until an agreement has been signed by all participants.

The three basic assumptions of projects financed by SWP are that:

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1. Appropriate water supply contracts would be amended.
2. Yield developed by a local project as a unit of SWP would become part of SWP's yield, whether for the life of the project or for an interim period.
3. The local project would not adversely affect the costs of water deliveries to non-participating SWP contractors.

The Department conducts a feasibility study of local projects when information contained in conceptual and reconnaissance reports (1) supports the project, and (2) SWP water contractors agree that the project is advantageous. Projects must be structurally, economically, financially, and contractually feasible as well as environmentally acceptable before they can be added as SWP units.

At this time no local projects are being considered by the Department. The enlargement of the Lake Cachuma reservoir located in Santa Barbara County was recently under consideration, but is no longer.

The project was removed from consideration because of (1) the development of the Coastal Branch of the California Aqueduct for delivery of SWP water to southern Santa Barbara County, and (2) the uncertainties about the availability of water rights for an enlarged Lake Cachuma. The U.S. Bureau of Reclamation, the owner of Lake Cachuma and Bradbury Dam, is completing the Environmental Impact Statement and proceeding with a project designed only to ensure the safety of the dam.

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18. Forecasting Power Requirements and Resources

Ensuring that the State Water Project has an adequate supply of electric power involves:

- Forecasting power requirements
- Obtaining power resources by constructing facilities and by transferring, exchanging, and purchasing power
- Arranging for power transmission services

This chapter includes information about forecasting power requirements. Information about obtaining power resources; transferring, exchanging, and purchasing power; and arranging for transmission services may be found in Chapter 19, "Securing Power Resources."

Power Requirements

The Department of Water Resources forecast of electric power is based primarily on State Water Project pumping power requirements to deliver short-term and long-term water delivery requests from SWP water contractors. Requirements are based on the amount of energy to be used to deliver (1) entitlement water requested by water contractors, including losses in reservoirs and aqueducts; (2) recreation water; and (3) water to replace storage in reservoirs south of the Delta.

Each year after reviewing the water contractors' water delivery requests and the construction schedule for future facilities, the Department determines SWP short-term and long-term power requirements through 2035.

Short-term power requirements based on the actual water supply and reservoir storage levels are determined for the current and two ensuing years of operation. Long-term operational studies for the remaining years are based on median-year water supply conditions and optimal reservoir storage levels.

Actual SWP electrical power requirements may vary significantly from the amounts forecast due to the amount of water available and delivered in a given year. For example, dry conditions in Northern California could result in a reduction of the amount of water available for delivery. If full deliveries cannot be made, less power will be used than was originally forecast. Power requirements could also decrease during a wet year because of the availability of water in the San Joaquin Valley or Southern California.

Conversely, power requirements could exceed the amount originally forecast if actu-

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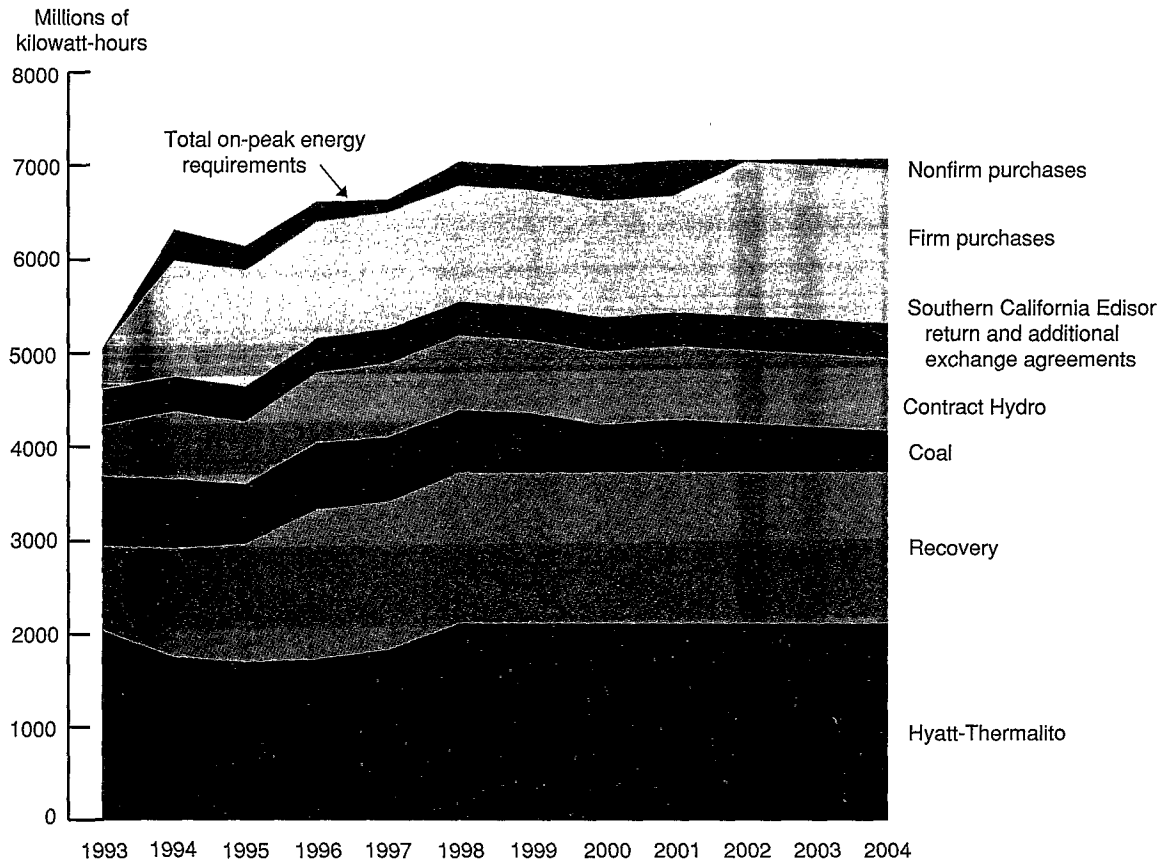

Fig. 18-1. Estimated on-peak energy requirements and resources, 1993 through 2004

al water deliveries are greater than the amounts estimated. For example, if deliveries of deferred entitlement water are made, or if additional pumping is needed to refill reservoirs south of the Delta after a dry year, more power will be used than was forecast.

Although the Department forecasts power requirements until 2035, it pays particular attention to forecasts through 2004, the year significant power contracts expire. Therefore, information on forecasts for 1993 through 2004 is included in this publication.

Energy Requirements Forecast for 1993

The forecast for energy requirements in 1993 was based on water supply projections made by the Department for the year. When making the forecast, the Department assumed that 1993 water supplies would be sufficient to meet entitlement deliveries of 3.0 million acre-feet.

That amount of water represents approval of full deliveries of contractors' needs in 1993.

Forecast for 1994 through 2004

For 1994 through 2004, the energy requirement forecast was based on hydrology sufficient to meet the water contractors' full entitlement of up to 4.2 million acre-feet.

Total SWP energy requirements for 1994 are projected to be about 14,522 million kilowatt-hours (kWh). The requirements in-

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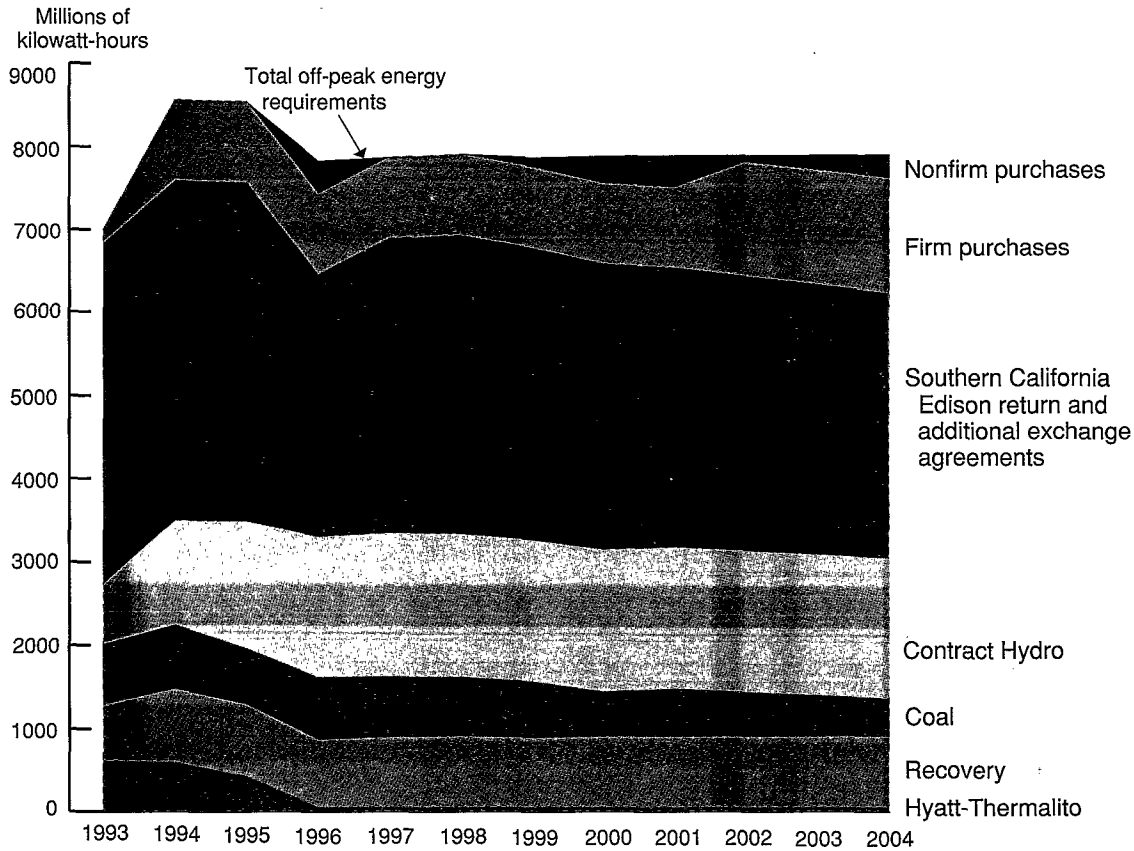

Fig. 18-2. Estimated off-peak energy requirements and resources, 1993 through 2004

crease to 14,830 million kWh in 1999 and further increase to about 14,936 million in 2004.

Transmission losses, included in the forecast, are about 594 million kWh in 1994; 622 million in 1999; and 627 million in 2004. See Table 18-1 at the end of this chapter. Table 18-1 also includes a forecast of energy to be delivered to Southern California Edison Company as well as the amount of firm energy to be sold to other utilities. See "Sales" in Chapter 20.

Capacity Requirements

In addition to forecasting energy requirements, the Department also forecasts capacity requirements, which are the rates of delivery or demands for energy during a given period.

Basis of Forecast

The SWP is operated to minimize pumping requirements during hours when power costs are highest. Thus, the highest power requirements or demands for SWP capacity occur during nights, weekends, and holidays (off-peak periods) when power costs are lowest.

Forecast for 1994 and 1999

The Department forecast of the peak demands or the highest on-peak and off-peak

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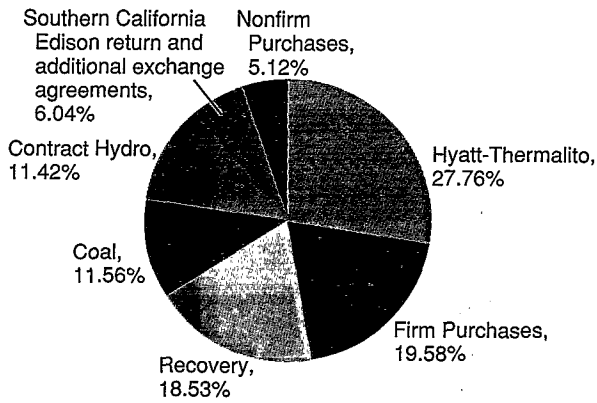

Fig. 18-3. Estimated on-peak energy resource mix for 1994

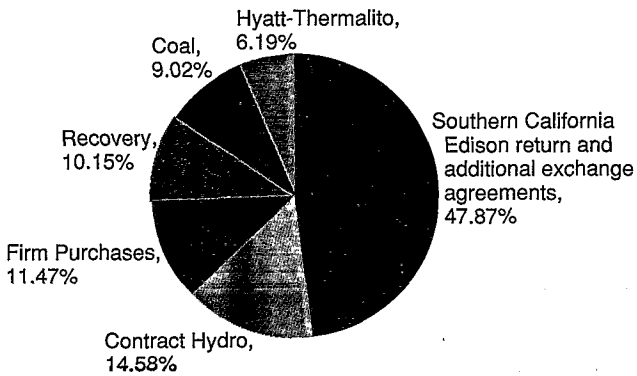

Fig. 18-4. Estimated off-peak energy resource mix for 1994

capacity requirements for 1994 and 1999 is included in Table 18-2 at the end of this chapter.

Resources

The Department uses a variety of power resources to meet estimated SWP power requirements, including power generated at its own facilities as well as resources received through transfers, purchases, and exchanges. With the exception of the nonfirm purchases and a portion of the firm power purchases (post-1995), the Department either owns or has contracted for the majority of its long-term power resources.

The Department also uses a different combination of resources to meet its on-peak and off-peak energy requirements. Because the Department has the flexibility to regulate SWP pumping loads on an hourly basis, maximum SWP pumping is scheduled during the off-peak hours (10 p.m. to 8 a.m., Monday through Saturday and all day on Sunday and holidays).

By scheduling as much off-peak pumping as possible, the Department utilizes neighboring utilities' inexpensive surplus generation. Conversely, the Department maximizes hydroelectric generation during the on-peak hours.

In forecasting resources to meet pumping loads, the Department determines the amount of on-peak and off-peak energy expected from each resource from 1993 through 2004.

Years 1993 through 2004

The amounts of on-peak and off-peak energy the Department expects from each resource type during 1993 through 2004 are illustrated in Figures 18-1 and 18-2.

The effect of maximizing hydroelectric generation during on-peak hours is also indicated by a comparison of the Hyatt-Thermalito and recovery generation components included in Figures 18-1 and 18-2.

Specific information about on-peak and off-peak requirements follows.

On-Peak

The SWP annual on-peak energy requirement is expected to increase from 6,297 million kWh in 1994 to about 7,053 million kWh in 2004 (see Figure 18-1). As indicated in Figure 18-3, hydroelectric generation will pro-

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vide the greatest amount of on-peak energy. The combined hydroelectric energy generated from Hyatt-Thermalito and the four aqueduct recovery plants will provide about 46 percent of energy requirements forecast during on-peak periods.

Increases in on-peak energy consumption will be met with firm and nonfirm purchases. Firm system purchases (energy guaranteed by the seller except in emergency situations) are expected to supply energy during the on-peak periods in the short-term (1994 and 1995). For the long-term, firm system purchases are expected to supply equal amounts during on-peak and off-peak periods.

Off-Peak

During off-peak periods, the annual energy requirement remains fairly constant at about 7,900 million kWh with the exception of 1994 and 1995, years when the short-term planning model is used (see Figure 18-2). That constant level of energy consumption indicates that SWP is operating at full capacity during off-peak periods.

Diversity power exchanges with Southern California Edison Company provide a large portion of the off-peak resources. In 1994 those exchanges will provide about 4,100 million kWh or 48 percent of the total off-peak energy used by SWP; that amount will decrease to 3,200 million kWh in 2004. Power purchases along with generation from Hyatt-Thermalito, contract hydro, coal, and the recovery plants will provide the remaining off-peak resources. See Figure 18-4.

Year 1999 On-Peak

In 1999 the annual SWP on-peak energy requirement is expected to be about 6,980 million kWh (see Figure 18-1). As indicated in Figure 18-5, hydroelectric generation is expected to supply the largest amount of energy during this period.

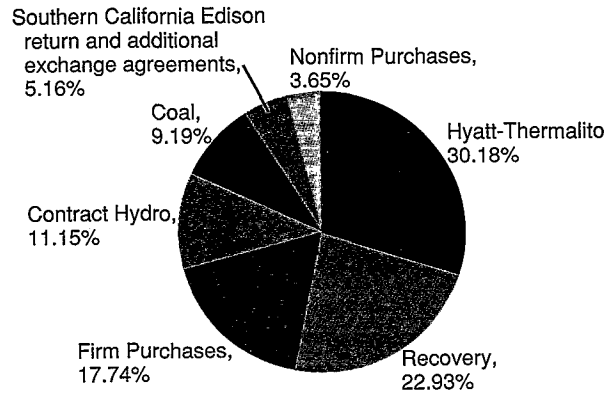

Fig. 18-5. Estimated on-peak energy resource mix for 1999

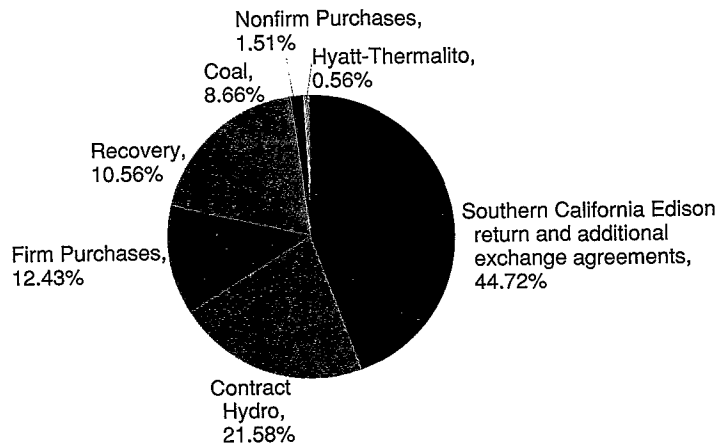

Fig. 18-6. Estimated off-peak energy resource mix for 1999

Hyatt-Thermalito will provide about 30 percent or 2,105 million kWh, and recovery generation will provide about 23 percent or 1,600 million kWh.

Year 1999 Off-Peak

The annual off-peak energy requirement for 1999 is about 7,850 million kWh (see Figure 18-2). As indicated in Figure

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18-6, power contracts with Southern California Edison Company provide about 45 percent of SWP off-peak energy. In 1999 those exchanges will provide about 3,509 million kWh.

Table 18-3 includes an itemized listing of the amount of energy each resource is expected to produce during 1999. The table may be found at the end of this chapter.

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TABLE 18-1

Total Energy Requirements for 1994, 1999, and 2004

(Millions of kilowatt-hours)

Type of Requirement	*1994*	*1999*	*2004*
Pumping Plants			
North Bay Aqueduct Plants			
Barker Slough	8.3	9.6	10.4
Cordelia	11.6	12.6	14.3
South Bay Aqueduct Plants			
Del Valle	0.0	1.6	1.6
South Bay	138.7	162.9	162.9
California Aqueduct Plants			
Harvey O. Banks Delta	1,148.3	1,214.9	1,223.6
Buena Vista	601.3	643.0	648.3
Ira J. Chrisman Wind Gap	1,494.9	1,562.1	1,576.0
Dos Amigos	509.7	528.2	530.2
A. D. Edmonston	5,294.9	5,526.1	5,575.8
William R. Gianelli	277.7	294.6	296.8
John R. Teerink Wheeler Ridge	701.3	734.9	741.4
East Branch Plants, California Aqueduct			
Pearblossom	715.9	797.9	793.0
West Branch Plants, California Aqueduct			
Oso	345.0	331.3	336.1
Coastal Branch Plants, California Aqueduct			
Badger Hill	19.6	40.9	39.4
Casmalia	0.0	(a	(a
Bluestone	0.0	50.4	50.4
Devil's Den	0.0	50.4	50.4
Las Perillas	7.9	16.0	15.5
Polonio Pass	0.0	50.4	50.4
Subtotal (b	11,275.1	12,027.8	12,116.5
Transmission losses (c	593.5	622.1	626.5
Total	11,868.6	12,649.9	12,743.0
Other			
Energy obligations to Southern California Edison Company (d	2,386.2	2,179.7	2,192.6
Firm contracts sales	266.8	0.0	0.0
Grand Total	**14,521.6**	**14,829.6**	**14,935.6**

a) Future facility; data are not available.
b) Energy requirements are based on energy used to deliver SWP contractors' requested entitlement water, recreation water, reservoir and aqueduct losses, and replacement of reservoir storage south of the Delta. Energy requirements for 1994 are based on delivering 100 percent of entitlement requests.
c) Transmission losses are determined by contractual arrangements with utilities.
d) Energy obligations are based on existing power contract and capacity exchange agreement with Southern California Edison Company.

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TABLE 18-2

Total Amounts of On-Peak and Off-Peak Electrical Capacity Requirements Projected for 1994 and 1999

(Thousands of kilowatts)

	1994		*1999*	
Type of Requirement	*On-Peak*	*Off-Peak*	*On-Peak*	*Off-Peak*
Pumping Plants				
North Bay Aqueduct Plants				
Barker Slough	2	2	1	1
Cordelia	2	2	2	2
South Bay Aqueduct Plants				
Del Valle	0	0	(a	(a
South Bay	21	21	12	12
California Aqueduct Plants				
Harvey O. Banks Delta	111	215	213	250
Buena Vista	64	89	63	94
Ira J. Chrisman Wind Gap	170	205	172	223
Dos Amigos	59	96	39	60
A. D. Edmonston	613	675	585	760
William R. Gianelli	1	1	51	203
John R. Teerink Wheeler Ridge	79	97	78	105
East Branch Plants, California Aqueduct				
Pearblossom	82	82	76	150
West Branch Plants, California Aqueduct				
Oso	42	42	41	41
Coastal Branch Plants, California Aqueduct				
Badger Hill	3	3	3	3
Bluestone	0	0	6	6
Casmalia	0	0	(b	(b
Devil's Den	0	0	6	6
Las Perillas	1	1	1	1
Polonio Pass	0	0	6	6
Total Capacity Needed to Pump Entitlement Water	**1,250**	**1,531**	**1,355**	**1,923**
Other				
Firm contract sales	75	40	0	0
Transmission losses	67	80	66	96
Reserve margin (10 percent of pumping, firm sales, and losses)	205	205	128	128
Capacity to Southern California Edison Company	700	475	710	485
Total Capacity Requirements	**2,297**	**2,331**	**2,259**	**2,632**

a) Amount is smaller than one thousand kilowatts.
b) Future facility; data are not available.

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TABLE 18-3

Estimates of Total Amounts of On-Peak and Off-Peak Energy Produced in 1999, by Type of Resource

(Millions of kilowatt-hours)

Type of Resource	*On-Peak*	*Off-Peak*	*Annual*
Hydro			
Hyatt-Thermalito	2,105.2	43.8	2,149.0
Recovery			
Alamo	50.8	63.3	114.1
Devil Canyon	885.6	330.0	1,215.5
William R. Gianelli	220.2	7.3	227.5
Mojave Siphon	42.3	61.2	103.6
San Luis Obispo	19.6	19.9	39.5
Thermalito Diversion Dam	11.5	11.5	23.0
William E. Warne	369.8	357.6	727.4
Subtotal	1,599.8	850.7	2,450.5
Coal			
Reid Gardner	641.2	679.4	1,320.6
Contract Hydro			
Castaic	568.0	568.0	1,136.0
Metropolitan Water District of Southern California small hydro	0.0	251.1	251.1
Metropolitan Water District of Southern California Colorado River Aqueduct	0.0	664.0	664.0
Pine Flat	210.0	210.0	420.0
Subtotal	778.0	1,693.1	2,471.1
Power Contract			
Alamo additional	0.0	36.4	36.4
Alamo return	0.0	114.1	114.1
Devil Canyon additional	0.0	434.1	434.1
Devil Canyon return	0.0	793.4	793.4
Hyatt additional	0.0	1,177.7	1,177.7
Hyatt return	0.0	859.6	859.6
Subtotal	0.0	3,415.3	3,415.3
Capacity exchange agreement	360.0	93.8	453.7
Firm system purchase	800.0	800.0	1,600.0
Nonfirm purchases	254.3	118.4	372.7
PacifiCorp	438.0	175.2	613.2
TERA Power Corporation	3.2	3.2	6.3
Subtotal	1,855.5	1,190.5	3,045.9
Total	**6,979.7**	**7,872.8**	**14,852.5**

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19. Securing Power Resources

To ensure that the State Water Project has sufficient power to meet its contractual obligations for delivering water, the Department of Water Resources developed a comprehensive power resources program.

The goals of the program are to:

- Obtain reliable, environmentally benign, and competitively priced power supplies and transmission services sufficient for operating SWP
- Develop and manage power resources to minimize the cost of water deliveries to SWP contractors
- Minimize impacts on SWP when major contractual power arrangements expire in 2004
- Operate as an independent, interconnected utility and, therefore, meet responsibilities and criteria of the Western System Coordinating Council and conform with regulations of the California Energy Commission and the Federal Energy Regulatory Commission

To achieve those goals, the Department constructed its own power facilities and has contracted for long-term power resources from the following agencies:

Los Angeles Department of Water and Power (Castaic Powerplant)
Southern California Edison Company
Metropolitan Water District of Southern California
Kings River Conservation District (Pine Flat Powerplant)
TERA Power Corporation (Bethany Wind Park)
PacifiCorp

In addition, the Department has arranged for transmission service between SWP power resources and pumping loads and interconnected utilities. Information about obtaining power supplies and transmission services is included in this chapter.

Facilities

The Department owns—jointly or solely—several power facilities, including hydroelectric, coal, and geothermal. For locations of the facilities, see Figure 9-1.

Hydroelectric

Information about SWP hydroelectric facilities is organized into two sections, "Current Facilities" and "Proposed Facilities."

Current Facilities

Economical hydroelectric generation provides the largest share of SWP power re-

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sources. The combined 900-megawatt (MW) Edward Hyatt Pumping-Generating Plant and Thermalito Pumping-Generating Plant (Hyatt-Thermalito) generate about 2.2 billion kilowatt hours (kWh) in a median water year, while the 3 MW Thermalito Diversion Dam Powerplant adds another 24 million kWh a year.

Generation at existing SWP aqueduct recovery plants, William R. Gianelli, Alamo, Devil Canyon, and William E. Warne, varies with the amount of water conveyed. The 593 MW of combined generation capacity at those four plants generates about one-sixth of the total energy used by SWP. (William R. Gianelli Pumping-Generating Plant is a joint SWP [222 MW] and U.S. Bureau of Reclamation [202 MW] facility.)

Proposed Facilities

To meet future SWP power requirements, the Department also considers and evaluates new power resources. When considering or evaluating those resources, the Department reviews its on-peak and off-peak power requirements and analyzes the type of resource and its cost.

A new potential power resource may be included or deferred based on the following seven factors:

1. Capability for meeting anticipated power requirements for pumping
2. Availability of transmission access
3. Anticipated water deliveries to contractors
4. Cost of the resource
5. Availability and cost of financing
6. Environmental impacts and costs of mitigation
7. Operating characteristics

Potential power resources being considered by the Department include (1) a second unit at Alamo Powerplant, (2) a third unit at William E. Warne Powerplant, (3) additional capacity at Hyatt-Thermalito, and (4) off-stream pumped-storage power facilities associated with the proposed Los Banos Grandes Reservoir.

Currently, to accommodate future increases in water deliveries, one power plant, Devil Canyon, has been enlarged; another plant, Mojave Siphon, is being constructed; and a third plant, San Luis Obispo, is in the design stage.

Devil Canyon Powerplant

Devil Canyon Powerplant was enlarged to accommodate units 3 and 4, which increased the plant's nameplate rating by 160 MW. Commercial operation is scheduled to begin in late 1994 when construction of a second afterbay has been completed. Construction of the second afterbay began in 1992.

Mojave Siphon Powerplant

Mojave Siphon Powerplant is under construction on the East Branch of the California Aqueduct. This hydroelectric power plant, with a nameplate rating of 32.4 MW, will be located upstream of Silverwood Lake. The power plant is scheduled to begin commercial operation in 1995.

San Luis Obispo Powerplant

San Luis Obispo Powerplant, a 3.8 MW power recovery facility, will be constructed during the second phase of the Coastal Branch of the California Aqueduct. The power plant is scheduled to be operational in 1996.

Coal

Reid Gardner, a coal-fired power plant near Las Vegas, Nevada, consists of four units. The Department owns 67.8 percent of Unit 4

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(169.5 MW) while Nevada Power Company owns the remainder of Unit 4 as well as all of units 1, 2, and 3.

The Department has received energy from Unit 4 since July 1983. According to the Reid Gardner Unit 4 Participation Agreement, the Department receives up to 226 MW from Unit 4 subject to NPC's limited right to interrupt the Department's energy deliveries during on-peak hours. Whenever NPC interrupts the Department's generation, the Department receives payment based on NPC's combustion turbine costs.

The turbine at Reid Gardner was upgraded in June 1990 to use the excess boiler capacity of Unit 4. The upgrade increased the plant's generation capacity by approximately 15 MW. The Department and NPC shared the cost of the upgrade in proportion to their ownership.

The Department will allow NPC to use its share of the Unit 4 upgraded capacity and related energy through August 31, 1998. Starting September 1, 1998, the Department will have available for its use the entire amount of the upgraded capacity and related energy for the remaining term of the participation agreement. Also, beginning in 1998, NPC has the option each year to buy up to 6 percent of the Department's ownership. The utility is required to give the Department a 5-year notice to exercise each year's option (1993 notice for 1998 option).

Geothermal

The Department developed two geothermal power plants, Bottle Rock and South Geysers. The Department constructed and operated Bottle Rock Powerplant until 1990 and began construction of South Geysers Powerplant in the early 1980s. In addition, the Department leases from the federal government the mineral rights to the Binkley Ranch Club located north of Bottle Rock.

Bottle Rock Powerplant

Bottle Rock Powerplant, in the Geysers area of Lake County, is owned and was operated and maintained by the Department from February 1985 to December 1990. At that time, Bottle Rock was taken out of operation. Because lower-cost energy was available, the Department determined that drilling for new steam needed to keep the plant operational was uneconomical. The Department is exploring the possible lease or sale of this plant.

South Geysers Powerplant

The Department planned another geothermal facility, South Geysers Powerplant, in Sonoma County. Three steam wells originally drilled on the property provided the basis for the Department's decision to construct the plant. However, subsequent drilling for steam wells resulted in an insufficient supply of steam to support a 55 MW power plant.

In 1985 the Department deferred the completion of South Geysers due to the reduced short-term need for additional power resources and the questionable steam supply. On May 4, 1990, Bechtel Power Corporation purchased the major components of the plant (steam turbine generator, condenser, and associated items) for $5.5 million. The Department is exploring the possibility of leasing or selling the steam field and site for alternative uses.

Binkley Mineral Rights

The Department leases from the federal government the mineral rights to the Binkley Ranch Club located north of the Francisco leasehold and Bottle Rock Powerplant and has obtained the necessary permits to con-

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struct a well pad on the leasehold. The lease is considered a supplemental source of steam for Bottle Rock if the economics of operating geothermal facilities improve.

Joint Development, Exchanges, and Purchases

Through joint development, exchanges, and purchases the Department obtains a significant amount of capacity and energy for State Water Project operations from other utilities throughout California, the Pacific Northwest, and the Pacific Southwest.

Negotiations continue with various utilities in the Pacific Northwest to develop long-term arrangements for purchases, sales, and exchanges to take advantage of the Department's 300 MW transmission capacity on the extra-high voltage (EHV) Pacific Northwest Intertie. See Table 19-1 at the end of this chapter.

To reduce SWP power costs, the Department will continue to use the EHV intertie and to negotiate with utilities in California, the Pacific Northwest and the Pacific Southwest for purchases and sales of power. See "Transmission Services" in this chapter for additional information.

Joint Development

In 1966 the Department entered into a contract with the Los Angeles Department of Water and Power to jointly develop Castaic Powerplant on the West Branch of the California Aqueduct. LADWP constructed and operates Castaic Powerplant.

The Department's weekly share of capacity and energy at the Sylmar Substation is based on weekly water schedules through the West Branch.

Exchanges

A significant amount of energy used by SWP is provided according to exchange agreements arranged with various utilities, including the Metropolitan Water District of Southern California, Southern California Edison Company, and other utilities.

Metropolitan Water District of Southern California

The Department contracts for the energy output of five hydroelectric plants owned and operated by the Metropolitan Water District of Southern California. The total capacity of those plants is 30 MW.

According to the terms of the 1979 Power Contract, SCE receives energy from Lake Mathews, Foothill Feeder, San Dimas, and Yorba Linda Powerplants. In return the Department receives off-peak energy from SCE averaging 107 percent of the total energy that is provided to SCE from those four plants.

According to a 1983 agreement with the Los Angeles Department of Water and Power, all the energy from the fifth plant (Greg Avenue) is provided to LADWP. The utility returns 98.8 percent of this energy to the Department during off-peak periods.

Southern California Edison

The major portion of the energy used by SWP is provided according to the 1979 Power Contract and the 1981 Capacity Exchange Agreement (CEA) with SCE. Services began in April 1983 under the Power Contract and in April 1987 under the CEA.

According to terms of the Power Contract, the Department provides the following to SCE:

- Up to 350 MW of capacity and approximately 40 percent of the energy from Hyatt-Thermalito

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- Up to 120 MW of capacity and all the energy generated by Devil Canyon Powerplant units 1 and 2
- Up to 15 MW of capacity and all the energy generated by Alamo Powerplant

In return, the Department receives off-peak energy from SCE equal to the total amount of energy SCE receives from Hyatt-Thermalito, Devil Canyon Powerplant, and Alamo Powerplant plus an additional amount of energy as payment for the capacity.

The amount of additional energy is determined annually based on the capacity-energy exchange formula defined in the 1979 Power Contract. That formula is used to determine the value of capacity in dollars and converts the dollar value to an equivalent amount of off-peak energy.

According to terms of the Capacity Exchange Agreement, the Department each year must provide 412.5 million kWh of energy to SCE during on-peak periods at a maximum delivery rate of 225 MW. Southern California Edison returns, during mid-peak and off-peak periods, approximately 110 percent of the energy provided by the Department.

In addition, SCE waives 75 percent of its charges to the Department for specified firm transmission service provided to SWP pumping and generating facilities. Southern California Edison also makes an annual payment of $900,000 to the Department. In 1992 the saving to the Department from SCE waiving 75 percent of its firm transmission charges was $7,372,299.

Other Utilities

Through interchange agreements the Department exchanges economy energy with utilities throughout the western United States. Under those agreements, the Department can sell, buy, or exchange economy energy on a short-term basis. Some agreements also provide for the Department to sell, buy, and/or exchange short-term firm capacity and/or firm energy on an hourly, daily, weekly, or monthly basis.

Those agreements permit more efficient use of the Department's generating resources and more efficient scheduling of energy deliveries. The term of those interchange agreements generally is between 20 and 30 years.

Purchases

The Department obtains a significant amount of energy through long-term and short-term purchase agreements with utilities in California, the Northwest, and the Southwest.

Long-Term Purchases

The Department purchases energy from hydroelectric generation developed by others. The output of the 165 MW Pine Flat Powerplant, owned and operated by the Kings River Conservation District, provides the State Water Project about 400 million kWh of energy in median water years.

The Department also purchases wind-generated energy from TERA Power Corporation. The energy is delivered from the Bethany Wind Park to the South Bay Pumping Plant near Tracy. Originally TERA installed 168 wind machines with a capacity of 9.45 MW. However, because of mechanical failures and subsequent litigation involving the developer, investors, and manufacturers, many machines are out of service. As of June 1993, approximately 60 units generate about 3.35 MW.

The Department also signed an agreement with PacifiCorp of Portland, Oregon, for the purchase of 100 MW of firm capacity

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and associated energy. That agreement, effective June 1, 1991, will continue through 2004.

Short-Term Purchases

The Department has contracted with Pacific Gas and Electric Company, Southern California Edison Company, and Bonneville Power Administration (a federal agency designed to market energy) to purchase power when needed. Additionally, according to terms of the 1983 Coordination Agreement between the Department and the Metropolitan Water District of Southern California, the Department may purchase surplus energy from the MWD's Colorado River Aqueduct power resources.

The Coordination Agreement provides for coordinated operation between SWP and MWD's Colorado River Aqueduct system. It also provides for:

- Sales of surplus firm energy to MWD monthly
- Sales of economy energy to MWD
- Purchases of surplus energy from the Colorado River Aqueduct system
- Exchanges of energy between the Department and MWD

The Department also has 25 other agreements for purchasing interruptible economy energy to satisfy unexpected, short-term energy shortages. Table 19-1 includes information about contracts for economy energy sales, purchases, transmission services, and long-term power agreements.

Transmission Services

The Department must arrange adequate transmission service between SWP power resources and pumping loads and interconnected utilities for purchases, sales, and exchanges of power.

Although able to independently acquire strategic generation resources, the Department is primarily dependent on PG&E and SCE transmission systems for transmittal of certain resources to SWP loads.

Under the Comprehensive Agreement between the Department and PG&E, the Department receives 1,355 MW of firm transmission service over the PG&E transmission system between SWP pump loads and power resources in northern and central California. The agreement also allows the Department to request and receive additional firm and interruptible transmission service as its SWP needs dictate.

To interconnect the SWP loads and resources in southern California the Department receives transmission service from SCE over the SCE transmission system pursuant to the SCE-DWR Power Contract and Firm Transmission Service Agreement.

The Department has also arranged for long term transmission service through its 1967 EHV Contract with PG&E, SCE, and the San Diego Gas and Electric Company, which provides 300 MW of entitlement on the Pacific AC Intertie.

Other SWP transmission needs are currently met by contractual arrangements with California utilities (see Table 19-1).

However, the Department's long-term objectives include (1) acquiring its own transmission facilities between resources and loads where feasible and (2) providing additional interconnections to other potential power sources. To improve and expand its transmission services, the Department is developing various alternatives, including:

- Additional transmission capability from the California-Oregon border to the Tracy Substation
- Alternate transmission paths between Department resources and loads to

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achieve a greater degree of operating flexibility
- Additional transmission capability to the Pacific Southwest

In 1992 PG&E upgraded the transmission service for South Bay Pumping Plant, consequently increasing the plant's reliability. Because of the improved reliability, the Department determined that it will no longer be economical or necessary to build a planned transmission line between Harvey O. Banks Delta Pumping Plant and South Bay Pumping Plant.

In addition, the Department continues to work with various public and private utilities in California to add reinforcements and purchase transmission capacity.

Reinforcements

As part of a comprehensive agreement with PG&E, the Department requested that the utility add reinforcements between Los Banos and Midway Substations to reduce the curtailment of firm transmission service between Department resources and loads.

PG&E indicated that reinforcements could be delayed and possibly avoided if the Department would be willing to drop portions of SWP pump load and generation during PG&E transmission system emergencies.

In response the Department worked with PG&E to develop a remedial action system to ensure that dropping portions of pump load and generation would increase service reliability without adversely affecting SWP operation. The remedial action system was constructed and declared operational on July 22, 1993, at a cost to the Department of about $5 million. As of that date, the Department began receiving more reliable transmission service.

Capacity

The Department signed two agreements designed to provide transmission capacity. One agreement involves the original two 500-kilovolt (kV) transmission lines of the Pacific Northwest Intertie; the other involves a new 500 kV transmission line, known as the California Oregon Transmission Project, which was added to the Pacific Northwest Intertie.

Pacific Northwest Intertie

In August 1967 the Department contracted for 300 MW of transmission capacity through 2004 on the EHV Pacific Northwest Intertie from the California-Oregon border to the Table Mountain, Tesla, Los Banos, and Midway Substations.

The Department retains its entire 300 MW share of EHV capacity for access to the Pacific Northwest although 100 MW of this capacity is committed to delivering the long-term purchase of 100 MW from PacifiCorp.

California Oregon Transmission Project

In December 1984 the Department signed a memorandum of understanding with many public and private California utilities. As part of that agreement, the Department has an option (which can be exercised during the 5-year period beginning in January 2005) to purchase 97 MW of transmission capacity on the third 500 kV transmission line that connects California with the Pacific Northwest. The transmission line began operation on March 17, 1993.

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TABLE 19-1

Power Contracts, by Title and Date Signed

Contract Title and Date Signed	*Name of Contractor*	*Purpose*	*Effective Through*
1. West Branch Cooperative Development (9/2/66)	Los Angeles Department of Water and Power	Provides for joint development of Castaic Power Project on California Aqueduct, West Branch	Dec. 31, 2014
2. Extra High Voltage (EHV) Intertie (8/1/67)	Pacific Gas & Electric Company, Southern California Edison Company San Diego Gas and Electric Company	Provides transmission of 300 MW of EHV from Oregon border to specific points in California by SWP and purchase of off-peak energy to extent of purchased transmission capacity	Dec. 31, 2004
3. Fourth Supplemental Resolution, Oroville (9/28/77)	Department of Water Resources (DWR) Resolution	Replaces power sale contract; effective 4/1/83	Repayment of last bonds or Nov. 29, 2017, whichever later
4. District-State Hydroelectric Power Sale Contract (1/9/78)	Metropolitan Water District of Southern California	Provides for purchase of output from five small hydro developments totaling 29.5 MW of capacity; effective 4/1/83	At least to Mar. 31, 2008
5. San Diego Gas and Electric Company EHV Settlement (5/25/78)	San Diego Gas and Electric Company	Establishes extent of SDG&E obligation to supply off-peak energy during the remaining term of EHV contract and resolves disputes concerning Department of Water Resources use of its EHV transmission entitlement	Dec. 31, 2004
6. Reid Gardner Unit 4 Participation (7/11/79)	Nevada Power Company	Establishes joint ownership of an additional unit at an existing coal-fired plant near Las Vegas	July 25, 2013
7. Southern California Edison-Department of Water Resources 1979 (10/11/79)	Southern California Edison Company	Establishes rate of SCE off-peak energy under EHV contract; effective 1/1/83	Dec. 31, 2004
8. Firm Transmission Service Agreement (10/11/79)	Southern California Edison Company	Provides transmission service between El Dorado and Vincent substations for Reid Gardner	July 25, 2013
9. Power Contract (10/11/79)	Southern California Edison Company	Beginning 4/1/83, provides: a. Transmission service in SCE service area b. Rights to purchase up to 300 MW firm capacity and/or spinning reserves c. Rights to purchase off-peak energy d. Exchanges of off-peak energy for 485 MW of DWR on-peak capacity	Dec. 31, 2004
10. Pine Flat (11/6/79)	Kings River Conservation District	Purchases hydroelectric output from Pine Flat Power Plant	Mar. 31, 2034
11. Emergency Service Agreement (7/21/80)	Southern California Edison Company	Establishes emergency service between parties	Dec. 31, 2004
12. Capacity Exchange Agreement (9/17/81)	Southern California Edison Company	Effective 4/2/87, exchanges 225 MW of on-peak capacity from Hyatt-Thermalito for: a. Up to 600 MW of SCE capacity during off-peak periods b. Up to 225 MW of SCE capacity during partial-peak periods c. A 75 percent reduction in transmission service charges for transmission under power contract and firm transmission service agreement d. An annual payment of $900,000 to DWR	Dec. 31, 2004
13. Agreement for Sale of Nonfirm Thermal Energy (3/8/82)	Pacific Power and Light Company	Provides for sale of nonfirm thermal energy to DWR	Dec. 31, 1991 or upon one month notice by either party
14. Power Sale Agreement (5/14/82)	TERA Power Corporation	Provides for sale of energy to Department from wind-powered generation facilities constructed by TERA	May 2, 2002
15. Generation Replacement Agreement (6/14/82)	Southern California Edison Company	Provides energy from DWR resources to replace lost generation of two SCE plants on San Bernardino Valley Municipal Water District System	May 31, 2012

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TABLE 19-1

Power Contracts, by Title and Date Signed (Continued)

Contract Title and Date Signed	*Name of Contractor*	*Purpose*	*Effective Through*
16. Southern California Edison EHV Settlement Agreement Pacific Gas and Electric EHV Settlement Agreement (12/31/82)	Southern California Edison Company/ Pacific Gas and Electric Company	Establishes extent of DWR's ability to exercise its rights to 300 MW of EVH transmission from Pacific Northwest. PG&E agreement also defines rate for EHV off-peak energy purchases	Dec. 31, 2004/ Jan. 1, 2005
17. Interchange Agreement (6/29/83)	San Diego Gas and Electric Company	Exchanges energy between SDG&E and DWR	July 31, 2010
18. Greg Avenue Powerplant Energy Exchange Agreement (8/29/83)	Los Angeles Department of Water and Power	Exchanges DWR entitlement to Greg Avenue Powerplant energy for credit and off-peak energy	Until terminated by either party upon two-year advance written notice
19. Economy Energy Agreement (9/22/83)	Los Angeles Department of Water and Power	Permits sale of economy energy bilaterally	Until terminated by either party
20. Coordination Agreement between Southern California Edison and Department of Water Resources (10/8/83)	Southern California Edison Company	Sells nonfirm energy to SCE; allows short-term exchanges; allows SCE to bank energy at San Luis Reservoir; allows for seasonal capacity and energy exchange	Dec. 31, 2005
21. Energy Interchange Agreement (6/6/84)	Tucson Electric Power Company	Permits sale of economy energy bilaterally	Dec. 31, 2008
22. Energy Interchange Agreement (7/27/84)	City of Glendale	Permits sale of economy energy bilaterally	Dec. 31, 2012
23. Energy Interchange Agreement (7/27/84)	City of Pasadena	Permits sale of economy energy bilaterally	Dec. 31, 2011
24. Energy Interchange Agreement (7/27/84)	City of Riverside	Permits sale of economy energy bilaterally	Dec. 31, 2013
25. Energy Interchange Agreement (7/31/84)	City of Burbank	Permits sale of economy energy bilaterally	Dec. 31, 2013
26. Interconnection Agreement (7/31/84)	Nevada Power Company	Permits sale of economy energy bilaterally	Dec. 31, 2006
27. Energy Interchange Agreement (9/17/84)	City of Anaheim	Permits sale of economy energy bilaterally	Dec. 31, 2013
28. Service Agreement (11/1/84)	Montana Power Company	Permits sale of economy energy bilaterally	Until terminated by either party
29. Economy Energy Agreement (11/6/84)	Salt River Project	Permits sale of economy energy bilaterally	Dec. 31, 2013
30. Energy Interchange Agreement (12/1/84)	Northern California Power Agency	Permits sale of economy energy bilaterally	Dec. 31, 2009
31. Southern California Edison-Department of Water Resources Interruptible Transmission Service Agreement (12/19/84)	Southern California Edison Company	Provides interruptible transmission service between Palo Verde Generating Station and Vincent Substation, between El Dorado and Mead substations, and so forth	Dec. 31, 2004
32. Service Agreement (1/7/85)	Idaho Power Company	Sells nonfirm energy to DWR	Until terminated by either party
33. Energy Interchange Agreement (4/18/85)	El Paso Electric Company	Permits sale of economy energy bilaterally	Dec. 31, 2010
34. Interconnection Agreement (4/18/85)	Portland General Electric Company	Permits sale of economy energy bilaterally	Dec. 31, 2010
35. Energy Interchange Agreement (4/30/85)	Seattle City Light	Permits sale of economy energy bilaterally	Dec. 31, 2015
36. Interconnection Agreement (4/30/85)	Pacific Power and Light Company	Permits sale of economy energy bilaterally	Dec. 31, 2009
37. Power and Energy Interchange Agreement (6/3/85)	Arizona Public Service Company	Permits sale of economy energy bilaterally	Dec. 31, 2010
38. Service Agreement (8/13/85)	Washington Water Power Company	Sells nonfirm energy to DWR	Until terminated by either party
39. Energy Interchange Agreement	City of Santa Clara	Permits sale of economy energy bilaterally	Dec. 31, 2008

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TABLE 19-1

Power Contracts, by Title and Date Signed (Continued)

Contract Title and Date Signed	*Name of Contractor*	*Purpose*	*Effective Through*
40. Service Agreement (9/1/85)	Western Area Power Administration (Sacramento Area Office)	Sells nonfirm energy to Western Area Power Administration	Dec. 31, 2004
41. Bonneville Power Administration (9/5/87)	Bonneville Power Administration	Provides for purchase of surplus BPA energy at Oregon-California border	Dec. 4, 2017
42. Department of Water Resources-Metropolitan Water District Coordination Agreement (2/26/88)	Metropolitan Water District of Southern California	Provides for bilateral energy transactions and exchanges; SWP and MWD Colorado River Aqueduct operations coordination	Sep. 30, 2017
43. Energy Interchange Agreement (4/7/88)	City of Vernon	Permits sale of economy energy bilaterally	Dec. 31, 2013
44. Energy Interchange Agreement (4/12/88)	Eugene Water and Electric Board	Permits sale of economy energy bilaterally	Dec. 31, 2013
45. Capacity/Energy Interchange (9/13/88)	Modesto Irrigation District	Sells capacity and associated energy to MID as available; bilateral sale of economy energy	Dec. 31, 2017
46. Power Sale Agreement (1/17/89)	Turlock Irrigation District	Provides for 1991-1992 sale of firm capacity and associated energy; varying monthly amounts of capacity (8 MW to 44 MW)	Dec. 31, 1994
47. Agreement of Cotenancy in the Castle Rock Junction-Lakeville 230-kV Transmission Line (5/10/89)	Pacific Gas and Electric Company, Northern California Power Agency, and City of Santa Clara	Establishes transmission ownership of Castle Rock Junction-Lakeville 230-kV transmission line	Dec. 31, 2014
49. Castle Rock Junction-Lakeville Transmission Service Agreement (5/10/89)	Northern California Power Agency and City of Santa Clara	Provides transmission service to NCPA and City of Santa Clara	Dec. 31, 2014
49. Interchange Agreement (8/15/89)	Turlock Irrigation District	Permits sale of economy energy bilaterally	Dec. 31, 2013
50. Agreement for Sale of Interruptible Energy (10/1/89)	British Columbia Power Export Corporation	Sells B. C. Hydro surplus interruptible energy to DWR	Dec. 31, 2010 or on one-month notice by either party
51. Power Sale Agreement (11/18/92)	City of Vernon	Sells firm capacity and associated energy, 1993-1994	Dec. 31, 1993
52. Power Sale Agreement (3/31/90)	Modesto Irrigation District	Sells firm capacity and associated energy, 1991-1992	Dec. 31, 1994
53. Capacity/Energy Interchange (11/13/90)	Sacramento Municipal Utility District	Permits bilateral sale of capacity and associated energy, and economy energy	Dec. 31, 2015
54. Power Sale Agreement (12/13/90)	Turlock Irrigation District	Allows 1993-94 sale of firm capacity and associated energy	Dec. 31, 1994
55. Power Purchase Agreement (4/28/91)	Pacific Power and Light Company	System purchase of firm capacity and associated energy (100 MW)	Dec. 31, 2004
56. Power Sale Agreement (12/23/92)	Modesto Irrigation District	Sells capacity and associated energy, 1993-1997 associated energy	Dec. 31, 1997
57. Energy Purchase Agreement (6/14/82)	San Bernardino Valley Municipal Water District	Provides for SBVMWD to pay for energy supplied to SCE under the Generation Replacement Agreement, and gives DWR the option to develop four small hydro plants on the SBVMWD system	May 31, 2012
58. Comprehensive Agreement (4/22/82)	Pacific Gas and Electric Company	Provides 1,355 MW of firm energy transmission service in PG&E service areas effective 4/1/83	Dec. 31, 2004 with option for 10-year extension
59. Power Sale Agreement (4/27/92)	City of Riverside	Permits sale of capacity and associated energy (20 MW, May to October)	Until terminated by either party

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20. Forecasting Power Costs and Sales

Currently, the Department of Water Resources is able to economically meet State Water Project power requirements through a resource mix of SWP's own power resources and energy obtained through contracts and exchanges. (See Table 19-1.

To meet SWP power needs with the most economical power sources available, the Department annually estimates the:

- Amount of energy to be generated by its own resources
- Amount of energy to be purchased
- Cost of producing and purchasing energy listed above, and the costs of pumping, average unit costs, composite resource costs, and net costs

In forecasting the cost of meeting SWP power needs, the Department also includes energy sales. When producing power through its own resources, SWP may have power in excess of its needs and commitments. Consequently, the Department may sell surplus power to other utilities. Payments to the Department may be made in cash or with energy from power exchanges.

This chapter includes information about the costs of energy resources to meet SWP power needs and the sale of surplus power to reduce those costs.

Costs of Energy Resources

Costs for energy resources are based on the actual SWP cost of generation and any costs for power purchases. Power purchase costs occur when energy requirements exceed available SWP resources. To ensure that SWP power needs are met most economically, the Department maximizes its resources by doing most of its pumping in the off-peak period when energy is least expensive and generating energy during the on-peak hours when the value of energy is the highest.

Forecasts of the resources mix and unit rate costs to meet SWP requirements for 1994, 1999, and 2004 are shown in Table 20-1 and 20-2. Energy requirements range from 13.38 billion kilowatt-hours (kWh) in 1994 to 12.74 billion in 2004. The corresponding unit rates range from 29.77 mills per kWh in 1994 to 42.46 mills per kWh in 2004. The increase in the unit rates results from the increased costs of energy resources, which result from an increase in power purchases. In the energy projection the Department assumes that all

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nonfirm and firm system purchases will be met through unspecified sources and that any surplus energy will be sold as nonfirm energy.

Costs of Pumping

The pumping cost of SWP is based on the energy requirements for pumping and the associated transmission losses for (1) delivering entitlement water, recreation water, and water lost in reservoirs and aqueducts and (2) replenishing reservoir storage south of the Delta. Firm capacity and surplus energy in excess of expected SWP requirements are available for sale. The sale of firm capacity and surplus energy helps reduce the cost of pumping.

Table 20-1 is a forecast of energy resources to meet projected requirements.

Average Unit Costs

The current projections in mills per kilowatt-hour of the average unit costs of energy from the various resources may be found in Table 20-2 at the end of the chapter. Those projections include allowances for future escalation of operation and maintenance costs and appropriate allowances for escalation of fuel costs (generally 5 percent per year).

Composite Resource Costs

The composite resource costs listed in Table 20-2 represent the weighted average unit cost of all SWP energy resources including power purchases.

The unit values of potential sales of surplus energy were estimated by escalating the projected 1993 value of 29.6 mills per kWh for on-peak energy sales and 22.2 mills per kWh for off-peak energy sales at rates published in the Wharton Econometric Forecasting Associates long-term forecast of the fourth quarter 1992.

Net Costs

The net cost of SWP energy is the unit cost of the energy actually used for SWP purposes. The net cost of energy is calculated by adding all the energy resource costs and subtracting any power sales revenues. The amounts of unit transmission costs included in Table 20-2 were determined by dividing the total annual expenditures SWP made for power transmission services by the total SWP annual energy requirements. This calculation reflects the 75 percent of the firm transmission service costs waived by Southern California Edison according to the provisions of the 1981 Capacity Exchange Agreement with the Department, which became effective in 1987.

The amounts of effective unit costs included in Table 20-2 represent the average costs for energy used to operate SWP, exclusive of any surplus or unscheduled water service. However, because of allocation adjustments for costs of off-aqueduct power facilities and credits for generation at SWP recovery plants, the amounts of unit costs included in Table 20-2 do not represent actual energy costs reflected in the annual statements of charges distributed to the water contractors.

Sales

Occasionally SWP may have surplus power as a result of reduced water delivery demands or an abundance of SWP hydroelectric generation. The Department has entered into various agreements with several utilities for sale of those surpluses.

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Surpluses are generally marketed for periods ranging from a day to a year. Yearly sales usually involve selling firm power. Information about sales of firm power and sales on a short-term basis—day-to-day or hour-to-hour, for example—follows.

Firm Sales

In 1992 the Department sold energy to the following two cities and seven utilities:

City of Riverside
City of Vernon
Modesto Irrigation District
Nevada Power Company
Northern California Power Agency
Portland General Electric Company
Sacramento Municipal Utility District
Salt River Project
Turlock Irrigation District

The Department extended some contracts to sell surplus firm power to Modesto Irrigation District through 1997, Turlock Irrigation District through 1994, the City of Vernon through 1993, and the City of Riverside indefinitely.

According to the terms of those contracts, the Department will provide the utilities with varying amounts of firm power. Amounts vary monthly and are lower in the winter months than in the summer months, with maximum power to be provided in August.

Short-Term Sales

In addition to selling firm power, the Department may sell power on a day-to-day or hour-to-hour basis according to terms of its interchange agreements and of the Western System Power Pool agreement. These agreements provide the basis for making economy energy transactions, short term capacity energy sales or exchanges, unit commitments, and transmission service purchases.

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TABLE 20-1

Estimated Amounts of Energy Resources for 1994, 1999, and 2004

(Millions of kilowatt-hours)

Energy Resources, Requirements, and Sales	*1994*	*1999*	*2004*
SWP Energy Resources			
Alamo Powerplant	47	114	112
Bottle Rock Powerplant	0	0	0
Castaic Powerplant	1,168	1,136	1,152
Devil Canyon Powerplant	1,074	1,206	1,220
William R. Gianelli Pumping-Generating Plant	199	222	227
Hyatt-Thermalito Powerplants	2,339	2,149	2,149
Mojave Siphon Powerplant	0	102	102
San Luis Obispo Powerplant	0	39	39
Thermalito Diversion Dam Powerplant	26	23	23
William E. Warne Powerplant	689	722	730
Energy Resources from Agreements			
Colorado River Aqueduct energy purchase	345	664	664
Energy purchase	1,229	373	394
Firm system purchases	1,600	1,600	2,400
Metropolitan Water District of Southern California hydroelectric plants	164	251	226
PacifiCorp	613	613	613
Pine Flat Powerplant	289	420	420
Reid Gardner Powerplant	1,500	1,321	901
Southern California Edison exchange (a	2,088	1,689	1,368
TERA Power Corporation	5	6	0
Total Resources	**13,375**	**12,650**	**12,740**
SWP Energy Requirements and Sales			
SWP energy requirements (b	12,011	12,650	12,740
Firm energy sales	1,240	0	0
Surplus economy energy sales	124	0	0

a) Amounts show net energy gained from Southern California Edison Company under the 1979 Power Contract and 1981 Capacity Exchange Agreement. For additional information about these agreements, see "Exchanges" in Chapter 19.

b) Requirements are based upon energy needed to deliver SWP contractors' requested entitlement water, recreation water, reservoir and aqueduct losses, and replacement of reservoir storage south of the Delta. The amounts shown include transmission losses but do not include energy deliveries to SCE pursuant to the 1979 Power Contract and 1981 Capacity Exchange Agreement.

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TABLE 20-2

Estimated Amounts of Unit Costs of Power Resources for 1994, 1999, and 2004

(Mills per kilowatt-hour)

Power Resources	*1994*	*1999*	*2004*
SWP Power Resources			
Alamo Powerplant	39.00	39.00	39.00
Bottle Rock Powerplant.	0.00	0.00	0.00
Castaic Powerplant	25.00	25.00	25.00
Devil Canyon Powerplant	25.00	25.00	25.00
William R. Gianelli Pumping-Generating Plant	25.00	25.00	25.00
Hyatt-Thermalito Powerplants	9.91	10.92	10.92
Mojave Siphon Powerplant	0.00	86.00	86.00
San Luis Obispo Powerplant	—	25.00	25.00
Thermalito Diversion Dam Powerplant	26.96	31.02	31.26
William E. Warne Powerplant	25.00	25.00	25.00
Power Resources from Agreements			
Colorado River Aqueduct energy purchase	23.40	30.80	40.40
Metropolitan Water District of Southern California hydroelectric plants	46.37	53.76	62.32
Pine Flat Powerplant	37.30	31.59	35.26
Reid Gardner Powerplant	64.14	75.13	89.91
Southern California Edison exchange	—	—	—
TERA Power Corporation	70.00	70.00	70.00
Firm system purchases	42.16	53.06	66.74
Energy purchase on-peak	31.20	41.00	53.80
Energy purchase off-peak	23.40	30.80	40.40
Capacity purchases (a	7.00	7.73	8.53
Composite Cost of Resources	27.90	35.50	40.51
Firm energy sales	53.38	—	—
Value of potential on-peak energy sales	31.20	—	—
Value of potential off-peak energy sales	23.40	—	—
Value of potential capacity sales (a	7.00	7.73	8.53
Net Cost of SWP Power	**27.57**	**35.50**	**40.51**
Transmission cost	2.20	2.04	1.95
Effective Unit Cost (b	**29.77**	**37.54**	**42.46**

a) The unit rate is dollars per kilowatt-month.
b) Costs include an allowance for future cost escalation.

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Part V. Financing the State Water Project

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21. Analyzing State Water Project Finances

This chapter includes information about the results of the current financial analysis of the State Water Project for the period 1993 through 2005. The purpose of the financial analysis is to ensure that the SWP financing program will have sufficient funds to meet construction obligations; project operation, maintenance, power, and replacement costs; bond debt service payments; and repayment of California Water Fund monies expended for construction.

The results of the current financial analysis dated June 30, 1993, may be found in Tables 21-1 and 21-2 at the end of this chapter.

Specific substantiated information about each line item included in Table 21-1 is included in Chapter 22, "Analyzing Capital Requirements and Financing." Specific information about each line item contained in Table 21-2 may be found in Chapter 23, "Forecasting Revenues, Expenses, and Future Costs of Water Service."

Capital Requirements and Financing

In conducting the current analysis, the Department projected that future construction and Davis-Grunsky Act Program costs through the year 2005 will total $869 million. Special capital requirements for revenue bond financing of these construction costs are projected at $97 million for a total capital requirement of $966 million. Construction and financing costs for the following significant SWP facilities planned for completion by 2005 are included in this projection:

- Mojave Siphon power generation facilities
- Coastal Branch of the California Aqueduct, Phase II
- Suisun Marsh salinity control facilities
- East Branch Enlargement of the California Aqueduct
- North and south Delta facilities

Most of the financing for these capital requirements will be derived from the projected sale of $739 million of revenue bonds. The remaining $227 million would be financed from current bond proceeds, capital resources revenues, and the transfer of excess revenues not needed for operation costs, debt service or repayment of the California Water Fund.

The financial analysis presented in Table 21-1 does not include amounts for the costs and financing of all facilities needed to develop the remaining yield necessary to meet the total 4.2 million acre-feet contractual commitment to long-term SWP water contractors.

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In addition, Table 21-1 does not include amounts for costs of associated works that are essential for realizing full benefits from SWP but financed and constructed by local interests or state agencies other than the Department of Water Resources. Those facilities include on-shore recreational developments at SWP facilities and local distribution facilities.

Annual Revenues and Expenditures

In conducting the financial analysis of SWP operations, the Department concluded that projected payments by contractors and other revenues will be adequate to pay annual operations, maintenance, power, and replacement costs and to meet all repayment obligations on funds used to finance SWP construction and other authorized costs during the period of 1993 through 2005.

Future Conditions

Future conditions may necessitate changes in the financial analysis. For that reason, the Department reviews basic assumptions and updates the financial analysis annually. Contingencies that could result in a change in the financial analysis include:

1. Alterations in schedules of currently planned construction for future facilities
2. Changes in economic conditions, including changes in interest rates and in SWP contractors' entitlements due to changes in amounts of water needed, conserved, or reclaimed
3. Completion of Delta transfer facilities
4. Development of additional sources of water not foreseen at this time
5. Deviations from the assumptions regarding actual rates of price escalations for future construction from those currently assumed for cost estimates
6. Enlargement of the San Luis Canal
7. Increases in capital costs related to the Kern Water Bank and other additional conservation facilities
8. Outcomes of certain lawsuits now pending before the courts

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TABLE 21-1

Capital Requirements and Financing as of June 30, 1993

(Thousands of dollars)

Line Number	Line Item	Actual 1952-1992	Projected 1993	1994	1995	1996	1997	1998	1999	2000	Projected 2001	2002	2003	2004	2005	Total 1993-2005	Total 1952-2005
	Capital Requirements																
1.	Initial project facilities	2,202,316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,202,316
2.	North Bay Aqueduct, Phase II	89,363	211	1,110	573	6	6	2	0	0	0	0	0	0	0	1,908	91,271
3.	Delta and Suisun Marsh facilities	183,729	10,000	58,939	36,262	14,081	10,120	4,537	4,742	1,617	0	0	0	0	0	140,298	324,027
4.	Final four units at Banks Delta Pumping Plant	47,290	1,162	0	0	0	0	0	0	0	0	0	0	0	0	1,162	48,452
5.	Coastal Branch Aqueduct, Phase II	13,907	36,473	155,992	158,353	47,474	1,376	1,176	1,219	1,266	0	0	0	0	0	403,329	417,236
6.	West Branch Aqueduct	91,596	3,188	8,508	45	32	29	17	3	0	0	0	0	0	0	11,822	103,418
7.	East Branch Enlargement	311,097	43,027	75,221	3,731	0	0	0	0	0	0	0	0	0	0	121,979	433,076
8.	East Branch improvements	90,409	9,410	3,574	11,169	14,305	4,903	26	6	0	0	0	0	0	0	43,393	133,802
9.	Power generation and transmission facilities	648,881	14,251	4,151	678	7	7	8	3	0	0	0	0	0	0	19,105	667,986
10.	Additional conservation facilities	128,701	11,981	7,500	6,581	5,007	5,207	5,415	5,632	5,857	4,645	4,645	4,645	4,645	4,645	76,405	205,106
11.	San Joaquin drainage facilities	43,616	2,149	1,997	2,087	2,170	2,257	2,348	2,441	2,539	0	0	0	0	0	17,988	61,604
12.	Other costs	178,775	3,097	7,757	5,609	5,296	1,694	1,688	1,393	1,379	0	0	0	0	0	27,913	206,688
13.	**Total Project Construction Expenditures**	**4,029,680**	**134,949**	**324,749**	**225,088**	**88,378**	**25,599**	**15,217**	**15,439**	**12,658**	**4,645**	**4,645**	**4,645**	**4,645**	**4,645**	**865,302**	**4,894,982**
14.	Davis-Grunsky Act Program costs	126,542	3,458	0	0	0	0	0	0	0	0	0	0	0	0	3,458	130,000
15.	Special capital requirements under revenue bond financing	392,640	24,003	21,089	33,624	12,822	3,401	1,883	636	0	0	0	0	0	0	97,458	490,098
16.	**Total Capital Requirements**	**4,548,862**	**162,410**	**345,838**	**258,712**	**101,200**	**29,000**	**17,100**	**16,075**	**12,658**	**4,645**	**4,645**	**4,645**	**4,645**	**4,645**	**966,218**	**5,515,080**
17.	Less power facilities capital requirements	1,132,112	47,251	48,922	1,495	7	7	8	3	0	0	0	0	0	0	97,693	1,229,805
18.	**Water facilities capital requirements**	**3,416,750**	**115,159**	**296,916**	**257,217**	**101,193**	**28,993**	**17,092**	**16,072**	**12,658**	**4,645**	**4,645**	**4,645**	**4,645**	**4,645**	**868,525**	**4,285,275**
	Financing of Capital Requirements																
	Power revenue bond proceeds																
19.	Power bonds through Series H	1,161,855	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,161,855
20.	Future power revenue bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.	*Subtotal, power revenue bonds*	1,161,855	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,161,855
	Water Revenue Bond Proceeds																
22.	East Branch Enlargement, current bonds	323,676	0	0	0	0	0	0	0	0	0	0	0	0	0	0	323,676
23.	East Branch Enlargement, future bonds	0	18,300	107,700	0	0	0	0	0	0	0	0	0	0	0	125,600	125,600
24.	Water system facilities, current bonds	451,677	44,022	0	0	0	0	0	0	0	0	0	0	0	0	44,022	495,699
25.	Water system facilities, future bonds	0	41,430	179,170	251,700	96,600	25,300	13,400	5,400	0	0	0	0	0	0	613,000	613,000
26.	*Subtotal, water revenue bonds*	775,353	103,752	286,870	251,700	96,600	25,300	13,400	5,400	0	0	0	0	0	0	783,022	1,558,375
	Other Capital Financing																
27.	Initial project facilities bond proceeds	1,452,446	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,452,446
28.	Davis-Grunsky Act Program bond proceeds	126,542	3,458	0	0	0	0	0	0	0	0	0	0	0	0	3,458	130,000
29.	Application of California Water Fund monies (tideland oil revenues)	506,149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	506,149
30.	Application of capital resources revenues to construction	486,217	51,250	54,719	1,999	0	0	0	0	0	0	0	0	0	0	107,968	594,185
31.	Revenue transfers applied	40,300	3,950	4,249	5,013	4,600	3,700	3,700	10,675	12,658	4,645	4,645	4,645	4,645	4,645	71,770	112,070
32.	*Subtotal, other capital financing*	2,611,654	58,658	58,968	7,012	4,600	3,700	3,700	10,675	12,658	4,645	4,645	4,645	4,645	4,645	183,196	2,794,850
33.	**Total Financing of Capital Requirements**	**4,548,862**	**162,410**	**345,838**	**258,712**	**101,200**	**29,000**	**17,100**	**16,075**	**12,658**	**4,645**	**4,645**	**4,645**	**4,645**	**4,645**	**966,218**	**5,515,080**

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TABLE 21-2

Revenue and Expenses as of June 30, 1993

(Thousands of dollars)

Line Number	Line Item	Actual 1952-1992	Projected 1993	1994	1995	1996	1997	Projected 1998	1999	2000	2001	2002	2003	2004	2005	Total 1993-2005	Total 1952-2005
	Project Revenues																
1.	Capital resources revenues	762,553	869	1,552	0	0	0	0	0	0	0	0	0	0	0	2,421	764,974
	Water Contractor Payments																
2.	Transportation capital	1,886,749	98,632	101,711	111,754	122,550	125,948	126,270	126,329	126,385	126,440	126,439	126,438	126,437	126,436	1,571,769	3,458,518
3.	Transportation minimum	2,008,213	220,513	239,662	238,565	249,338	248,139	246,829	240,666	225,975	226,547	221,485	216,368	210,228	201,045	2,985,360	4,993,573
4.	Transportation variable	880,771	66,563	174,394	210,776	210,317	197,832	202,446	202,850	214,832	215,889	223,406	227,344	231,627	251,432	2,629,708	3,510,479
5.	Delta water charge	802,343	84,237	82,756	82,932	83,057	83,119	83,142	83,165	83,189	83,736	83,756	83,779	83,801	83,815	1,084,484	1,886,827
6.	East Branch Enlargement payments	85,878	20,413	30,665	43,453	42,587	43,456	43,395	43,377	44,345	44,373	44,148	44,169	42,786	42,802	529,969	615,847
7.	Water revenue bond surcharge	66,083	24,550	23,906	33,333	47,784	52,090	54,075	54,061	53,405	53,400	53,227	53,262	54,383	54,389	611,865	677,948
8.	*Subtotal water contractor payments under long-term water supply contracts*	5,730,037	514,908	653,094	720,813	755,633	750,584	756,157	750,448	748,131	750,385	752,461	751,360	749,262	759,919	9,413,155	15,143,192
9.	Revenue bond cover adjustments	0	(22,468)	(25,944)	(28,103)	(34,828)	(39,620)	(41,776)	(42,569)	(42,451)	(42,591)	(42,557)	(42,517)	(42,763)	(42,484)	(490,671)	(490,671)
	Other Revenues																
10.	Federal payments for project operating costs	97,005	8,598	8,720	8,572	8,419	8,433	8,434	8,434	8,434	8,436	8,436	8,436	8,436	8,436	110,224	207,229
11.	Appropriations for operating costs allocated to recreation	16,657	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,657
12.	Local agency payments under Davis-Grunsky Loan repayment contracts	26,770	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	26,000	52,770
13.	Revenue bond proceeds	322,413	0	0	0	0	0	0	0	0	0	0	0	0	0	0	322,413
14.	Interest earnings on operating revenues	452,386	7,625	7,439	6,810	6,920	7,035	7,155	7,285	7,420	7,565	7,720	7,885	8,055	8,240	97,154	549,540
15.	Payments under Oroville-Thermalito power sale contract	249,279	0	0	0	0	0	0	0	0	0	0	0	0	0	0	249,279
16.	Miscellaneous revenues	45,101	52,396	0	0	0	0	0	0	0	0	0	0	0	0	52,396	97,497
17.	*Subtotal other revenues*	1,209,611	70,619	18,159	17,382	17,339	17,468	17,589	17,719	17,854	18,001	18,156	18,321	18,491	18,676	285,774	1,495,385
18.	***Total Operating Revenues***	6,939,648	563,059	645,309	710,092	738,144	728,432	731,970	725,598	723,534	725,795	728,060	727,164	724,990	736,111	9,208,258	16,147,906
19.	**Total Operating Revenues and Capital Resources Revenues**	**7,702,201**	**563,928**	**646,861**	**710,092**	**738,144**	**728,432**	**731,970**	**725,598**	**723,534**	**725,795**	**728,060**	**727,164**	**724,990**	**736,111**	**9,210,679**	**16,912,880**
	Project Expenses																
20.	Project Operation, Maintenance, and Power costs	2,823,715	286,109	392,257	415,451	422,421	408,178	412,814	407,008	404,927	401,579	404,437	403,520	401,815	415,637	5,176,153	7,999,868
21.	Deposits to Replacement Reserves	161,716	14,490	8,540	8,945	8,946	8,945	8,945	8,945	8,945	8,945	8,945	8,945	8,945	8,945	121,426	283,142
22.	Deposits to special reserves under revenue bond financing	512,461	(50,452)	(44,135)	4,461	5,041	9,712	9,428	9,384	9,218	34,596	39,852	39,861	39,326	38,192	144,484	656,945
	Payments of Debt Service																
23.	Principal repayments on bonds sold through June 30, 1993	658,579	71,846	68,334	71,379	74,731	76,695	78,904	82,321	85,710	87,363	87,784	92,495	97,770	101,645	1,410,436 1,076,977	2,545,668 1,735,556
24.	Interest on bonds sold through June 30, 1993	2,840,840	155,966	157,645	154,148	150,431	146,608	142,761	138,829	134,871	130,664	125,749	121,134	115,998	110,515	1,785,319	4,626,159
25.	Future East Branch Enlargement bond principal repayments	0	0	0	810	870	935	1,005	1,080	1,165	1,250	1,345	1,445	1,555	1,670	13,130	13,130
26.	Future East Branch Enlargement bond interest payments	0	0	0	9,375	9,314	9,249	9,179	9,103	9,023	8,935	8,841	8,741	8,632	8,515	98,907	98,907
27.	Future Water Bond principal repayments	0	0	0	2,176	3,949	4,847	5,435	5,806	6,192	6,616	7,070	7,544	8,061	8,617	66,613	66,613
28.	Future Water Bond interest payments	0	0	0	12,847	31,641	38,675	41,291	40,862	40,403	39,914	39,392	38,834	38,243	37,730	399,832	399,832
29.	**Total Principal**	658,579	71,846	68,334	74,365	79,550	82,477	85,344	89,207	93,067	95,229	96,199	101,484	107,386	111,932	1,156,420	1,814,999
30.	**Total Interest**	2,840,840	155,966	157,645	176,370	191,386	194,532	193,231	188,794	184,297	179,513	173,982	168,709	162,873	156,760	2,284,058	5,124,898
31.	*Subtotal Debt Service*	3,499,419	227,812	225,979	250,735	270,936	277,009	278,575	278,001	277,364	274,742	270,181	270,193	270,259	268,692	3,440,478	6,939,897
32.	California Water Fund repayment	161,374	15,083	26,243	25,353	26,550	25,550	14,200	0	0	0	0	0	0	0	132,979	294,353
33.	**Total Operating Expenses and Debt Service**	7,158,685	493,042	608,884	704,945	733,894	729,394	723,962	703,338	700,454	719,862	723,415	722,519	720,345	731,466	9,015,520	16,174,205
34.	Current operating funds	17,000	13,067	(22,792)	134	(350)	(4,662)	4,308	11,585	10,422	1,288	0	0	0	0	13,000	30,000
35.	Revenues required for current construction	40,300	3,950	4,249	5,013	4,600	3,700	3,700	10,675	12,658	4,645	4,645	4,645	4,645	4,645	71,770	112,070
36.	Revenues available for future construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37.	Capital resources revenues used for construction	486,216	53,869	56,520	0	0	0	0	0	0	0	0	0	0	0	110,389	596,605
38.	**Total Project Expenses**	**7,702,201**	**563,928**	**646,861**	**710,092**	**738,144**	**728,432**	**731,970**	**725,598**	**723,534**	**725,795**	**728,060**	**727,164**	**724,990**	**736,111**	**9,210,679**	**16,912,880**

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22. Analyzing Capital Requirements and Financing

This chapter includes information about State Water Project capital requirements and financing. The information is arranged according to line numbers contained in Table 21-1.

This chapter also includes documentary data for information contained in Table 21-1. Those data have been organized into the following two tables:

1. Allocation of capital expenditures, including actual and projected SWP construction expenditures along with a preliminary allocation of such expenditures among various SWP purposes. See Table 22-1.
2. Application of proceeds from revenue bonds; see Table 22-2.

Those tables may be found at the end of this chapter.

Capital Requirements

Lines 1 through 18 in Table 21-1 include amounts of actual and projected SWP capital requirements through the year 2005. Estimates of future capital expenditures include allowances for escalation of costs at 4 percent per year for 1993 and 5 percent per year from 1994 through 2005. Capital expenditures for SWP also include requirements other than those for construction, such as disbursements made as part of the Davis-Grunsky Act Program (Line 14) and special capital requirements under revenue bond financing (Line 15).

The following sections, organized according to line numbers in Table 21-1, contain information about the Department's current assumptions concerning the costs of each facility to be constructed through 2005.

Decisions to begin constructing facilities will be made only after alternatives are examined and final environmental documentation as well as other review processes are completed.

Initial Project Facilities

Initial Project Facilities, Line 1. Facilities included in the initial construction program are those completed before 1974 (see Bulletin 132-74, *Management of the California State Water Project*, Chapter 2). Additional costs after 1973 and estimated costs of remaining work on the initial SWP facilities are not included.

North Bay Aqueduct Phase II

North Bay Aqueduct, Phase II, Line 2. Phase II of the North Bay Aqueduct, which

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connects with existing facilities, consists of pipelines, pumping plants, and a small reservoir necessary to divert water from the western Delta to Napa and Solano counties for urban use. Phase II became operational in May 1988.

Delta and Suisun Marsh Facilities

Delta and Suisun Marsh Facilities, Line 3. The historical amount in Column 1 includes planning costs for general Delta facilities and historical costs associated with the previously planned Peripheral Canal and overland water delivery facilities for the western Delta.

Also included are historical planning costs for Suisun Marsh as well as construction costs for the Suisun Marsh Salinity Control Gates and an access road.

The projected amounts include projected planning costs plus projected costs for constructing the following Delta facilities: three permanent barriers and an additional intake at Clifton Court Forebay. For additional information about planned Delta facilities, see Chapter 13.

The projected amounts also include projected costs for constructing the following Suisun Marsh facilities: Cordelia-Goodyear Ditch, Goodyear Slough culverts, and the Frank Horan Water Delivery System.

Harvey O. Banks Delta Pumping Plant

Final Four Units at Banks Delta Pumping Plant, Line 4. This line includes costs of the final four 1,067 cfs units, which became operational in spring 1992. The future amounts include the projected costs for additional transmission and switchyard facilities for Banks Pumping Plant.

Coastal Branch of California Aqueduct

Coastal Branch Aqueduct, Phase II, Line 5. This line includes the planning costs for phase II of the Coastal Branch of the California Aqueduct. Future expenditures also include a projection of construction costs for this project.

West Branch Aqueduct

West Branch Aqueduct, Line 6. The amounts in Line 6 represent costs for all facilities on the West Branch except William E. Warne Powerplant. William E. Warne Powerplant costs are included in Line 9. Projected costs include approximately $10 million for Gorman Creek channel modifications.

East Branch Enlargement

East Branch Enlargement, Line 7. Line 7 includes amounts of expenditures for first-stage construction of the East Branch Enlargement, including the enlargement share of power plant costs at Mojave Siphon and Devil Canyon. (The remaining power plant costs are included in Line 9.) Estimated East Branch Enlargement costs by facility may be found in Table 22-3. Costs for Alamo Powerplant consist of expenditures for Unit 1 facilities allocated to enlargement. Construction of Unit 2 has been deferred.

All costs in Line 7 are allocated to and repaid by the seven Southern California contractors participating in the East Branch Enlargement.

East Branch Improvements

East Branch Improvements, Line 8. The amounts in Line 8 represent all aqueduct

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costs on the East Branch not allocated to the enlargement project. Those costs include improvements constructed concurrently with the enlargement work. Costs for power plant construction at either Mojave Siphon or Devil Canyon are not included in this line.

Power Generation and Transmission Facilities

Power Generation and Transmission Facilities, Line 9. Estimated capital costs for facilities included in Line 9 may be found in Table 22-4.

For Devil Canyon and Mojave Siphon, amounts do not include East Branch Enlargement share of costs in Line 7 of Table 21-1.

Additional Conservation Facilities

Additional Conservation Facilities, Line 10. The projected amounts in Line 10 represent costs for planning additional conservation facilities. Costs for constructing additional conservation facilities are not included in the financial analysis.

San Joaquin Drainage Facilities

San Joaquin Drainage Facilities, Line 11. Included in Line 11 are amounts of the projected costs of the San Joaquin Valley Drainage Monitoring Program. The four activities in this program are:

1. Monitoring and evaluating drainage
2. Reducing drainage
3. Treating drainage
4. Investigating evaporation ponds

See Chapter 14, "Monitoring Water Quality," for additional information about the drainage program.

TABLE 22-3
Estimated Costs for East Branch Enlargement

Facility	*Dollar Amounts (in millions)*
Aqueduct and siphons	$132.0
Pearblossom Pumping Plant	63.2
Alamo Powerplant	5.0
Mojave Siphon Powerplant	46.4
Devil Canyon Powerplant and Second Afterbay	186.5
Total	**$433.1**

TABLE 22-4
Estimated Capital Costs for Power Generation and Transmission Facilities

Power Plants and Transmission Lines	*Dollar Amounts (in millions)*
Power Plants	
Reid Gardner, Unit 4	$263.6
Bottle Rock	120.9
South Geysers	49.8
Devil Canyon	36.8
William E. Warne	84.5
Alamo	44.3
Mojave Siphon	37.8
Thermalito Diversion Dam	13.7
Subtotal	$650.4
Transmission Lines	
Midway-Wheeler Ridge	$10.7
Geysers-Lakeville	6.9
Total	**$668.0**

The Department assumes that the costs of the drainage program will continue to be financed by appropriations from the California Water Fund. No costs included in Line 11 are charged to SWP water contractors.

Other Costs

Other Costs, Line 12. Amounts for other costs include items such as general design and construction costs, costs of completing operation and maintenance facilities, and costs of other completion activities for the initial facilities of the California Aqueduct. Portions of those costs ultimately will be allocated to aqueduct units described in the preceding paragraphs.

Other items included in the projected costs in Line 12 are costs for (1) completing

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monitoring and control systems and (2) implementing flood protection at Arroyo Pasajero in the San Luis reach of the California Aqueduct.

Total Project Construction Expenditures

Total Project Construction Expenditures, Line 13. The amount in this line is the total of lines 1 through 12.

Davis-Grunsky Act Program Costs

Davis-Grunsky Act Program Costs, Line 14. The Davis-Grunsky Act Program is a financial assistance program designed to provide grants and loans to public agencies for constructing local water projects. Additional information about the program may be found in Chapter 17, "Assisting Local Water Supply Projects."

As of December 31, 1992, the Department had disbursed $125 million (including $9 million for administration) in grants and loans for 114 local agencies throughout the state. Funds for Department projects currently authorized will be disbursed prior to 1994.

Special Capital Requirements

Special Capital Requirements Under Revenue Bond Financing, Line 15. This line includes the amount of special capital requirements at the time revenue bonds are sold. The financial analysis is based on the assumption that proceeds from any future revenue bonds will be used to pay for bond discounts, bond issuance costs, and debt service reserve requirements.

Information about the application of proceeds to these special requirements for actual and assumed revenue bond sales is included in Table 22-2.

Total Capital Requirements

Total Capital Requirements, Line 16. The amount included in this line is the total of lines 13, 14, and 15.

Power Facilities

Power Facilities Capital Requirements, Line 17. The amount in this line represents the total capital requirements for power facilities contained in lines 1 through 12 and that part of Line 15 associated with revenue bonds sold for power facilities.

Water Facilities

Water Facilities Capital Requirements, Line 18. The amount in this line is the total of capital requirements for water facilities contained in lines 1 through 12 and that part of Line 15 associated with revenue bonds sold for water facilities.

Capital Financing

The State Water Project has been constructed with three general types of financing, Burns-Porter, revenue bonds, and capital resources. A general description of those funding sources may be found in this section along with specific information about those sources, arranged according to lines 19 through 33 of Table 21-1.

Burns-Porter Act

Burns-Porter financing is derived from the sale of California Water Resources Development Bonds (general obligation bonds) and the state's Tideland Oil Revenues deposited in the California Water Fund as authorized by the Burns-Porter Act (*Water Code* sections 12930-12944), which was approved by the voters in November 1960.

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The Burns-Porter Act authorized an issue of $1.75 billion of general obligation bonds of the state, which are repaid by revenues received according to the water supply contracts. Of that authorization, $130 million has been reserved specifically for the Davis-Grunsky Act Program.

Proceeds from the sale of general obligation bonds are deposited in the California Water Resources Development Bond Fund-Bond Proceeds Account, from which monies may be expended only for the construction of SWP facilities and for the Davis-Grunsky Act Program. Approximately 40 percent of the expenditures through 1992 for construction and the Davis-Grunsky Act Program were financed with general obligation bonds.

Monies deposited in the California Water Fund are appropriated for purposes outlined in the Burns-Porter Act. Such deposits are derived from a portion of the state's Tideland Oil Revenues according to a continuing authorization. In 1989 legislation was enacted to provide for a schedule to repay the California Water Fund as required by the Burns-Porter Act.

Revenue Bonds

Revenue bond financing is derived from the sale of revenue bonds as authorized by the Central Valley Project Act (California *Water Code* sections 11100—11925). The Department's authority to issue revenue bonds was confirmed by a decision of the California Supreme Court in 1963 (*Warne* v. *Harkness*, 60 Cal. 2d 579).

Proceeds from the sale of revenue bonds are deposited in the Central Valley Water Project Construction Fund, from which money is expended only for purposes specified in the resolution authorizing each bond sale. Those purposes, in addition to paying construction, planning, and right-of-way costs, may include:

1. Funding the Debt Service Reserve Account
2. Paying interest on bonds
3. Paying water system operating expenses during a specified period

As of June 30, 1993, the Department had sold $3.7 billion of revenue bonds. That amount includes $537.83 million of Water System Revenue Bonds, Series L, sold May 19, 1993. Additional issues of revenue bonds are planned to fund future SWP construction.

Capital Resources

Capital resources financing is derived from payments and appropriations (including a portion of Tideland Oil Revenues) authorized by a variety of special contracts, cost-sharing agreements, and legislative actions concerning the SWP, plus accrued interest on these funds.

Capital resources revenues are deposited in the Central Valley Water Project Construction Fund and may be expended for paying:

1. Interest on general obligation bonds
2. Costs of constructing SWP facilities

According to the Department financial management policy, the capital resources revenues are used first to cover any general obligation bond debt service that exceeds available revenues.

Capital Financing Sources

Capital financing sources include power bonds, power revenue bonds, East Branch Enlargement bonds, water system facilities bonds, water revenue bonds, initial project facilities bonds, proceeds from Davis-Grunsky Act, California Water Fund monies, and

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capital resources revenues. Specific information about those sources follows.

Power Bonds Through Series H

Power Bonds Through Series H, Line 19. This line includes the amounts of proceeds applied from power revenue bonds for the Oroville, Devil Canyon, Castaic, Pyramid, Reid Gardner, Bottle Rock, Alamo, South Geysers, and small hydro projects.

Future Power Revenue Bonds

Future Power Revenue Bonds, Line 20. No future power revenue bond sales are projected in the financial analysis.

Power Revenue Bonds

Subtotal, Power Revenue Bonds, Line 21. The amount in this line reflects the total of lines 19 and 20.

East Branch Enlargement Current Bonds

East Branch Enlargement, Current Bonds, Line 22. As of June 30, 1993, the Department had sold $2,178 million of Water System Revenue Bonds, Series A through Series L. The amount of proceeds allocated to the East Branch Enlargement was $293 million for construction expenditures and $48 million for bond discounts, interest costs, and debt service reserves.

East Branch Enlargement Future Bonds

East Branch Enlargement, Future, Line 23. The Department estimates that $126 million in additional bonds will be required to complete construction of the East Branch Enlargement, first stage, and to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Water System Facilities Current Bonds

Water System Facilities, Current Bonds, Line 24. The amount of proceeds from Water System Revenue Bonds, Series A through Series L allocated to SWP projects other than the East Branch Enlargement was $1,837 million. Of that amount approximately $1,269 million was used to refund portions of previously issued Power Facilities Revenue Bonds and Water System Revenue Bonds. Of the remaining $568 million, $431 million was used to pay for construction expenditures and $137 million to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Water System Facilities Future Bonds

Water System Facilities, Future, Line 25. Future water revenue bonds are needed to provide $532 million for construction of SWP water system facilities and $81 million for bond discounts, interest costs, and debt service reserve requirements.

Water Revenue Bonds

Subtotal, Water Revenue Bonds, Line 26. The amount in this line is the total of lines 20 through 25.

Initial Project Facilities Bond Proceeds

Initial Project Facilities Bond Proceeds, Line 27. This line includes amounts of initial financing costs for SWP facilities and for costs of planning certain additional conservation facilities.

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Financing initial facilities from general obligation bonds was completed in mid-1972 and totaled $1,444 million—$1,750 million Burns-Porter Act authorization less $130 million reserved for the Davis-Grunsky Act Program and $176 million "offset" for additional conservation facilities. (The Burns-Porter Act provides that to the extent California Water Fund monies are expended, an equal amount of general obligation bonds are reserved [offset] for financing the construction of additional conservation facilities in certain watersheds.)

In mid-1972 the reservation of offset bonds was effectively limited to $176 million—the total amount of California Water Fund monies expended up to that time. By mid-1972 all general obligation bonds authorized by the Burns-Porter Act had been offset, reserved for the Davis-Grunsky Act Program, or used for SWP construction.

Approximately $8.5 million of the offset bonds was used to finance planning studies of the Middle Fork Eel River Development (see Line 10 of Table 21-1). This financial analysis is not based on the use of any offset bond proceeds to meet capital requirements. If at some time the state constructs an additional conservation facility as specified in *Water Code* Section 12938, the remaining offset bonds could be sold.

Davis-Grunsky Act Proceeds

Davis-Grunsky Act Program Bond Proceeds, Line 28. For simplification the entire $130 million of capital expenditures authorized for the Davis-Grunsky Act Program according to the Burns-Porter Act is indicated as being funded by proceeds from the sale of general obligation bonds. In fact, $28 million from the California Water Fund was used for the program in lieu of bond proceeds prior to 1969.

In making the financial analysis, the Department assumes that all authorized Davis-Grunsky bonds will be sold prior to 1994.

California Water Fund Monies

Application of California Water Fund Monies (Tideland Oil Revenues), Line 29. The Burns-Porter Act provides that any available money in the California Water Fund must be used for construction in lieu of proceeds from the sale of general obligation bonds.

When the Burns-Porter Act became effective in late 1960, approximately $97 million had been accumulated in the fund. That balance plus subsequent appropriations, interest earnings, and other miscellaneous income to the fund through December 31, 1992, was used to finance a total of $506 million of SWP costs.

Capital Resources Revenues

Application of Capital Resources Revenues to Construction, Line 30. This line includes the amount of the application of Capital Resources Revenues for capital expenditures (see description for Line 1, "Capital Resource Revenues," on the first page of the next chapter).

Revenue Transfers

Revenue Transfers Applied, Line 31. This line includes amounts of monies that are assumed to be transferred to the California Water Fund according to provisions of the Burns-Porter Act and subsequently reappropriated to construction (see lines 35 and 36 in Table 21-2). Projected amounts for 1993 through 2005 include funds to finance expenditures for San Joaquin drainage facilities as indicated in Line 11 of Table 21-1.

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Other Capital Financing

Subtotal, Other Capital Financing, Line 32. The amount in this line is the total of lines 27 through 31.

Total Financing

Total Financing of Capital Requirements, Line 33. The amount in this line is the total of lines 21, 26, and 32.

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TABLE 22-1

Allocation of Capital Expenditures

(Thousands of dollars)

Facilities and Construction Divisions	Expenditures Incurred Through 1992	Future Expenditures	Total	Preliminary Allocation Among Project Purposes: Water Supply and Power Generation	Flood Control (a	Recreation and Fish and Wildlife Enhancement	Other (b
Project Construction Expenditures							
Upper Feather River Division	17,712	0	17,712	1,183	0	16,529	0
Oroville Division	563,806	502	564,308	475,040	70,661	18,607	0
North Bay Aqueduct	93,330	1,908	95,238	95,238	0	0	0
Delta Facilities (c	267,774	148,197	415,971	364,712	0	51,259	0
South Bay Aqueduct	76,390	209	76,599	54,963	7,531	14,105	0
California Aqueduct							
North San Joaquin Division	245,305	17,504	262,809	253,873	0	8,936	0
San Luis Division	229,944	643	230,587	218,998	0	11,589	0
South San Joaquin Division	290,849	490	291,339	274,733	0	16,606	0
Tehachapi Division	316,385	159	316,544	298,501	0	18,043	0
Mojave Division	293,577	10,858	304,435	287,082	0	17,353	0
Santa Ana Division	204,320	32,536	236,856	223,355	0	13,501	0
West Branch	522,267	11,820	534,087	503,644	0	30,443	0
Coastal Branch	28,273	403,329	431,602	431,602	0	0	0
Subtotal, California Aqueduct	2,130,920	477,339	2,608,259	2,491,788	0	116,471	0
Small hydroelectric power generating facilities	69,223	19,105	88,328	88,328	0	0	0
Off-aqueduct power generating facilities	441,130	0	441,130	441,130	0	0	0
East Branch Enlargement	311,097	121,979	433,076	433,076	0	0	0
San Joaquin drainage facilities	43,616	17,989	61,605	0	0	0	61,605
Planning and preoperations (c	8,664	76,403	85,067	85,067	0	0	0
Unassigned	6,017	1,672	7,689	7,689	0	0	0
Subtotal, Project Construction Expenditures	4,029,679	865,303	4,894,982	4,538,214	78,192	216,971	61,605
Other Capital Requirements							
Davis-Grunsky Act Program	126,542	3,458	130,000	0	0	0	130,000
Total	**4,156,221**	**868,761**	**5,024,982**	**4,538,214**	**78,192**	**216,971**	**191,605**

a) Reflects the Department's allocation to flood control, regardless of federal payments.
b) Includes costs currently unassigned to other purposes; for example, planning costs of deleted features of project facilities; initial costs of inventoried items; joint costs assigned to federal government; and costs assigned to Davis-Grunsky Act Program.
c) Future expenditures include cost estimates for planning, designing, acquiring land, and constructing north Delta and south Delta facilities.

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TABLE 22-2

Application of Revenue Bond Proceeds

(Millions of dollars)

	Application of Revenue Bond Proceeds						
		Other Capital Requirements					
Bond Series (a	*Construction Expenditures*	*Reimbursement of General Fund*	*Capitalized Interest*	*Capitalized Operating Costs*	*Bond Discount and Financing Costs (b*	*Subtotal*	*Total Principal Amount of Bonds*
Oroville	218.0	2.6	19.9	1.5	3.0	27.0	245.0
Devil Canyon-Castaic	126.4	0.0	10.0	0.7	2.1	12.8	139.2
Pyramid Series A	74.0	0.0	19.2	1.0	1.6	21.8	95.8
Reid Gardner Series B	146.1	0.0	41.9	0.0	12.0	53.9	200.0
Reid Gardner Series C	91.1	0.0	17.9	7.9	8.1	33.9	125.0
Small Hydro-South Geysers Series D	49.6	0.0	19.9	0.0	5.5	25.4	75.0
Bottle Rock Series E	96.9	0.0	22.0	3.7	2.4	28.1	125.0
Alamo-South Geysers Series F	59.1	0.0	14.2	0.0	1.7	15.9	75.0
Reid Gardner Series G	1.6	0.0	0.0	0.0	237.9 (c	237.9	239.5
Power facilities Series H	22.2	0.0	0.0	0.0	184.5 (d	184.5	206.7
East Branch Enlargement Series A	108.3	0.0	12.6	0.0	11.1	23.7	132.0
Water system facilities Series B	97.4	0.0	0.0	0.0	2.6	2.6	100.0
Water system facilities Series C	0.6	0.0	0.0	0.0	8.4 (e	8.4	9.0
Water system facilities Series D	95.9	0.0	2.9	0.0	1.2	4.1	100.0
Water system facilities Series E	0.4	0.0	0.0	0.0	8.6 (f	8.6	9.0
Water system facilities Series F	0.0	0.0	0.0	0.0	160.0 (g	160.0	160.0
Water system facilities Series G	86.8	0.0	4.6	0.0	8.6	13.2	100.0
Water system facilities Series H	85.5	0.0	5.7	0.0	8.8	14.5	100.0
Water system facilities Series I	158.9	0.0	5.8	0.0	15.3	21.1	180.0
Water system facilities Series J	0.0	0.0	0.0	0.0	649.8 (h	649.8	649.8
Water system facilities Series K	88.6	0.0	3.1	0.0	8.3	11.4	100.0
Water system facilities series L	0.0	0.0	0.0	0.0	537.8 (i	537.8	537.8
Subtotal	1,607.4	2.6	199.7	14.8	1,879.3	2,096.4	3,703.8
Future water system facilities bonds	532.0	0.0	25.5	0.0	55.5	81.0	613.0
Future East Branch Enlargement bonds	108.0	0.0	5.0	0.0	13.0	18.0	126.0
Total	**2,247.4**	**2.6**	**230.2**	**14.8**	**1,947.8**	**2,195.4**	**4,442.8**

a) Reflects actual bond issues for all except future water system facilities and future East Branch Enlargement bonds.
b) Bond discount and financing costs include debt service reserves for East Branch Enlargement and water system facilities bonds.
c) Total discount was $2.8 million; remaining amount was used to refund Reid Gardner Series B bonds.
d) Total discount was $2.7 million; remaining amount was used to refund portions of Reid Gardner Series C and Small Hydro-South Geysers Series D bonds.
e) Includes funds applied to water system facilities Series B and C debt service reserves.
f) Includes funds applied to water system facilities Series D and E debt service reserves.
g) Includes $11.0 million for debt service reserves and $9.0 million for discounts; remaining amount was used to refund a portion of Reid Gardner Series G bonds.
h) Includes $26.3 million for debt service reserves and $20.5 million for discounts; remaining amount was used to refund portions of prior issues of Power Facilities Revenue bonds and Water System Revenue bonds.
i) Includes $11.1 million for discounts; remaining amount was used to refund portions of prior issues of Power Facilities Revenue bonds and Water System Revenue bonds.

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23. Forecasting Revenues, Expenses, and Future Costs of Water Service

Information pertaining to State Water Project revenues and expenses and future costs of water service is included in this chapter. The information is arranged according to line numbers of Table 21-2.

Project Revenues

State Water Project revenues consist primarily of SWP contractor payments. Those revenues are deposited in two funds, the Central Valley Water Project Revenue Fund, in which all revenues pledged to revenue bonds are placed, and the California Water Resources Development Bond Fund-Systems Revenue Account, in which all other SWP operating revenues are placed. Use of those funds is limited to paying operating costs and debt service, except that revenues in excess of those costs may be transferred to the California Water Fund.

Capital Resource Revenues

Capital Resources Revenues, Line 1. Seven sources of those revenues include:

1. Federal payments for SWP capital expenditures
2. Appropriations for capital cost allocated to recreation
3. Appropriations for SWP capital expenditures prior to passage of the Burns-Porter Act and according to Senate Bill 261 (1968)
4. Payments from Los Angeles Department of Water and Power for Castaic power development
5. Advances from water contractors for construction of requested works
6. Investment earnings on the Capital Resources Account
7. Investment earnings on unexpended revenue bond proceeds

Historically, appropriations for capital costs allocated to recreation and fish and wildlife enhancement have amounted to $5 million per year, which has been appropriated by the California Legislature from Tideland Oil Revenues. According to legislation enacted in 1989, the amount owed to SWP by the state for costs allocated to recreation is offset against the amount SWP owes to the California Water Fund.

Water Contractors' Payments

Water Contractors' Payments, Lines 2 Through 7. Amounts in those lines reflect amounts of the separate elements of water contractors' payments.

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Figures in Line 4 also include revenues sufficient to cover costs associated with sales of excess power. A detailed explanation of payments identified in lines 2 through 7 may be found in Appendix B. A brief description of the payments follows.

Operations, maintenance, power, and replacement costs are repaid as they are incurred as part of the Transportation Charge; therefore, no interest charges are included. Construction costs included in the Transportation Charge and all construction and annual OMP&R costs included in the Delta Water Charge are to be repaid with interest at the Project Interest Rate.

The Project Interest Rate, as defined in Article 1(r) of the standard provisions for water supply contracts, is the weighted average of the rates paid on securities issued and loans obtained to finance SWP facilities, excluding Oroville Revenue Bonds.

According to the original contract provisions, the basis for determining the Project Interest Rate was the weighted average of rates paid on general obligation bond sales only. In 1969 after Oroville Revenue Bonds were issued, the contract was amended to expand the basis to include rates on all other securities sold and loans obtained thereafter for financing SWP facilities, including revenue bonds (see Bulletin 132-70, *Management of the California State Water Project*, page 28).

However, not all proceeds from the sale of revenue bonds are melded into the calculation of the Project Interest Rate. Only those proceeds applied to construction costs (the only application of general obligation bonds permitted by law) and those consumed by the bond discount (a component of the total interest cost of a revenue bond issue) are included in the calculation (see Table 23-1 at the end of this chapter).

Calculations for determining the Project Interest Rate do not include proceeds from the sale of Power Revenue Bonds for off-aqueduct power facilities, revenue bonds for the East Branch enlargement, or Water Revenue Bonds included as part of the Water Revenue Bond Amendment. Table 23-2 includes basic information about the calculation of the Project Interest Rate. The table may be found at the end of this chapter.

Information about contractors' water charges in Appendix B is based on known conditions and substantiates the Department's determination of 1994 water charges to be billed July 1, 1993. However, information about significant differences between the sum of future charges included in lines 2 through 7 and the substantiation of 1994 charges included in Appendix B follows.

1. Future capital costs in Appendix B are based on the prevailing prices as of December 31, 1992. Those costs presented in the financial analysis include allowances for price escalation.
2. Pre-1993 charges in Appendix B represent charges as they should have been according to currently known conditions. Pre-1993 charges included in Table 21-2 are those actually paid as part of previously determined bills.
3. Charges in Appendix B are unadjusted for past overpayments or underpayments. Charges included in Table 21-2 for 1993 and thereafter have been adjusted for any apparent overpayments or underpayments of pre-1993 charges.
4. Charges in Appendix B for East Branch Enlargement costs include the amounts for debt service and 25 percent cover for the East Branch En-

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largement share of the Series A through Series L bonds. Charges in Table 21-2 also include amounts of the debt service and cover for assumed future bonds.

5. The water bond revenue surcharge in Appendix B applies only to the Series B through Series L bonds. Surcharge values included in Table 21-2 apply to Series B through Series L bonds and to assumed future issues required to finance any SWP construction.

Total Water Contractors' Payments

Subtotal, Water Contractors' Payments, Line 8. The amount in this line is the total of lines 2 through 7.

Revenue Bond Cover Adjustments

Revenue Bond Cover Adjustments, Line 9. The amount in this line represents the credit to contractors resulting from the cover of 25 percent of 1 year's debt service for Off-Aqueduct Power Facility Bonds and Water System Revenue Bonds. Cover is collected as required by the bond resolutions to provide security to the bondholders.

For off-aqueduct facilities, that amount is charged annually to contractors and collected through the minimum OMP&R component of the Transportation Charge. For the East Branch Enlargement facilities, the cover is collected through the capital component of the East Branch Enlargement Transportation Charge. For water system facilities, that amount is collected through the water bond surcharge.

If not needed to meet annual bond service, the cover is credited to the contractors in the following year.

Federal Payments

Federal Payments for Project Operating Costs, Line 10. According to the December 31, 1961, agreement between California and the United States, the Department operates and maintains the San Luis Joint-Use Facilities.

According to the January 12, 1972, supplement to the agreement, the U.S. Bureau of Reclamation paid 45 percent of OM&R costs for those activities. (The percentage does not apply to power costs; USBR and the Department provide their own power to pump their water through the joint facilities.)

The percentage paid by USBR is reviewed every 5 years by USBR and the Department. For calendar years 1981 through 1986, the federal share of operations and maintenance costs was 44.47 percent. The most recent review of the percentage paid by USBR was completed in 1987 and resulted in a federal share of 44.09 percent for calendar years 1987 through 1992. The amounts in Line 10 are based on the assumption that the federal share will continue at 44.09 percent for calendar years 1993 through 2005.

Appropriations for Operating Costs to Recreation

Appropriations for Operating Costs Allocated to Recreation, Line 11. In passing the Davis-Dolwig Act, the California Legislature declared its intent that except for funds provided according to Assembly Bill 12 (1966) the Department budget will include appropriations of monies from the General Fund necessary for enhancement of fish and wildlife and recreation in connection with state water projects.

Annual OMP&R costs allocated to recreation and fish and wildlife enhancement are paid by annual appropriations from the Gen-

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eral Fund. For fiscal years 1983-84 through 1991-92, no funds were appropriated for enhancement of fish and wildlife and recreational purposes. No appropriations are indicated for 1993 through 2005.

According to legislation enacted in 1989, the amount owed to SWP by the state for costs allocated to fish and wildlife and recreational enhancement is offset against the amount SWP owes to the California Water Fund.

Local Agency Payments

Local Agency Payments According to Davis-Grunsky Loan Repayment Contracts, Line 12. More than $51 million has been disbursed as of December 31, 1992. Loan repayments received through December 31, 1992, are indicated in the 1952-1992 entry.

The amounts for future years listed on Line 12 are based on loans currently outstanding. Repayment on any future loans was assumed to be beyond the period covered by the financial analysis.

Revenue Bond Proceeds

Revenue Bond Proceeds, Line 13. The amount in this line includes bond proceeds classified as special reserves according to the description of revenue bond financing in Line 15 of Table 21-1.

Those proceeds, used for capitalized OMP&R costs, revenue bond service, and debt service reserves, are not classified as revenues but are included in this line to simplify the financial presentation.

Interest Earnings

Interest Earnings, Line 14. The amount in this line includes interest earnings on unexpended proceeds from the sale of general obligation bonds, interest on operating reserves, and other short-term investment earnings on SWP revenues.

Oroville-Thermalito Power Sale Contract

Payments According to Oroville-Thermalito Power Sale Contract, Line 15. Before April 1, 1983, all power generation from Edward Hyatt Powerplant and Thermalito Powerplant was sold to three electric utilities, Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company, according to a power sale contract dated November 29, 1967. The 1952-1992 entry includes amounts of final settlement of payments made according to the contract.

Miscellaneous Revenues

Miscellaneous Revenues, Line 16. The amount in this line represents all other operating revenues not included in lines 2 through 15.

Other Revenues

Subtotal, Other Revenues, Line 17. The amount in this line is the total of lines 10 through 16.

Total Operating Revenues

Total Operating Revenues, Line 18. The amount in this line is the total of lines 8, 9, and 17.

Total Operating Revenues and Capital Resources Revenues

Total Operating Revenues and Capital Resources Revenues, Line 19. The amount in this line is the total of lines 1 and 18.

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Project Expenses

Project expenses include the following:

1. Operations, maintenance, and power costs
2. Deposits to replacement reserves
3. Deposits to special reserves (see description of Line 22)
4. Debt service
5. Deposits to operating reserves
6. Repayment of the California Water Fund
7. Application of Capital Resources Revenues to construction (see Line 30 in Table 21-1)

Revenue bond proceeds earmarked for debt service during construction and the first year's operating expenses are deposited in the Central Valley Water Project Construction Fund and disbursed according to resolutions authorizing the issuance of such bonds.

Water contractor revenues associated with power facility operating costs and debt service are deposited in the Central Valley Water Project Revenue Fund for appropriate disbursement. All other operating revenues, deposited in the California Water Revenue Fund-Systems Revenue Account, are disbursed according to the following four priorities of use as specified in the Burns-Porter Act:

1. State Water Project operations, maintenance, power, and replacement costs
2. General obligation bond debt service
3. Repayment of expenditures from the California Water Fund
4. Deposits to a reserve for future SWP construction

Specific information about project expenses, arranged according to lines 20 through 37 in Table 21-2, follows.

Operations, Maintenance, and Power Costs

Project Operations, Maintenance, and Power Costs, Line 20. Historical and projected OM&P costs are included in Table 23-3 at the end of the chapter. Line 20 represents the OM&P portion of the costs included in Table 23-3.

Table 23-3 and Line 20 of Table 21-2 also include amounts of the operations and maintenance costs for the federal share of joint facilities and those OM&P costs allocated to recreation, which are intended to be offset by revenues indicated in lines 10 and 11.

Allowances for cost escalations are included in OM&P costs through 1995. Allowances for additional long-term price escalations in the future are not included in these estimates because changes in OM&P costs do not substantially affect the overall results of the financial analysis. (For the most part, changes in OM&P costs cause direct offsetting changes in operating revenues.)

Power costs make up the major item of annual operating expense for SWP. Descriptions of assumptions regarding future power sources and costs may be found in Chapter 19, "Forecasting Power Requirements and Resources," and Chapter 20, "Forecasting Power Costs and Sales." Line 20 also includes amounts of costs associated with power transactions that result in the sale of power not required for the delivery of water.

Deposits to Replacement Reserves

Deposits to Replacement Reserves, Line 21. This line includes amounts of funds set aside

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TABLE 23-5
Retirement Schedule of Oroville Revenue Bonds 1978 through 1992

Year	*Bonds Retired*	*Cost*
1978	$4,045,000	$3,845,099
1979	9,730,000	8,933,093
1980	1,350,000	1,227,600
1981	2,865,000	1,805,862
1982	15,890,000	9,623,312
1983	18,865,000	16,776,000
1984	7,640,000	6,807,020
1985	10,215,000	9,044,000
1986	7,175,000	6,598,000
1987	8,980,000	8,808,104
1988	3,815,000	3,676,482
1989	30,690,000	30,390,215
1990	7,210,000	7,164,817
1991	8,720,000	8,708,098
1992	10,625,000	10,625,000

as required by contract for replacing existing SWP facilities. As of December 31, 1992, $55.6 million had been spent for replacement costs; the balance of the replacement reserve as of that date was $106.1 million. Replacement reserve amounts are also included in Table 23-3.

Deposits to Special Reserves

Deposits to Special Reserves Under Revenue Bond Financing, Line 22. Line 22 includes amounts for two significant components: special reserves deposits and capital resources revenue carryover from prior years used for construction in the current year. Special reserves deposits are the net of several income and expenditure items. Income items are deposits related to revenue bonds as follows:

- Proceeds set aside to pay bond interest during construction (capitalized interest)
- Proceeds set aside for first year operating costs (capitalized operations and maintenance)
- Water contractors' payments or bond proceeds set aside for debt service reserves
- Water contractors' payments for revenue bond cover requirements

The 1952-1992 entry for Line 22 of Table 21-2 includes amounts of deposits to special reserves for all past bond sales indicated in Tables 21-1 and 21-2. For future revenue bonds, deposits to special reserves are included in the year of assumed sale.

The amount in the 1952-1992 column also includes amounts of advances to the Department's revolving fund for working funds to purchase mobile equipment and to meet day-to-day operating expenses.

The expenditure items are:

- Debt service cover payments returned to water contractors
- Debt service reserve payments returned to water contractors
- Surplus account funds returned to water contractors or applied to meet expenses
- Total capitalized interest paid out
- Total capitalized operations and maintenance paid out

Special reserves, reduced over time as reserved amounts, are used for their respective purposes. The amount indicated each year in Line 22 indicates the change from the previous year. A negative number indicates a withdrawal of special reserves to meet expenses, while a positive number indicates a deposit.

Payments of Debt Service

Payment of Debt Service on Bonds Sold Through June 30, 1993, Lines 23 and 24. The

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amounts in these two lines represent the total amount of principal and interest payments on bonds sold to date. Table 23-4 represents a summary of payments on general obligation bonds (Series A through W water bonds), power revenue bonds by project, and water system revenue bonds. This table may be found at the end of the chapter.

The last bonds, sold on May 19, 1993, were the Series L Water System Revenue Bonds. Proceeds from the Series L bonds were used to provide funds for construction, fund the debt service reserve account, and pay bond discount and interest costs.

Since 1978, the bond trustee has been retiring Oroville Revenue Bonds prior to the fixed maturity date as indicated in Table 23-5. The schedule for service of Oroville Revenue Bonds indicated in Table 23-4 is based on a revised bond maturity schedule that reflects those early bond retirements.

Line 24 also includes over $0.3 million in interest payments to the General Fund for the temporary loan of $46.8 million in 1970. That loan was repaid by proceeds from the sale of Series N Water Bond Anticipation Notes.

Payments on Projected East Branch Enlargement Bonds

Payments on Projected East Branch Enlargement Bonds, Lines 25 and 26. These lines include amounts of the projected annual service amounts for future water revenue bonds included on Line 23 of Table 21-1 for the East Branch Enlargement. Assumptions concerning the service on these future bonds are as follows:

- Interest costs for the water revenue bonds are estimated to average 7.5 percent.
- Bonds are to be repaid within 35 years of sale with maturities commencing in the year following the date of sale and with equal annual bond service for the principal repayment period.

Payments on Projected Revenue Bonds

Payments on Projected Future Water System Revenue Bonds, Lines 27 and 28. These lines include the amounts of the projected annual service for future water revenue bonds included on Line 25 of Table 21-1 for water system facilities. Assumptions concerning the service on these future bonds are the same as those indicated for lines 25 and 26.

Total Payments

Total Payments of Bond Service, Lines 29 and 30. The amounts included in these lines represent the total of interest payments indicated on lines 24, 26, and 28 and the total of principal payments indicated on lines 23, 25, and 27.

Debt Service

Subtotal, Debt Service, Line 31. The amount on this line is the total of lines 29 and 30.

Water Fund Repayment

California Water Fund Repayment, Line 32. The Burns-Porter Act requires that, after operation, maintenance, replacement, and bond service requirements have been satisfied, SWP revenues be transferred to the California Water Fund to reimburse the fund for monies expended for construction of the State Water Resources Development System.

In 1982 and 1983, the Department transferred a total of $70 million toward the repayment of the California Water Fund. The legislature subsequently appropriated all these funds to the state's General Fund. Leg-

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islation enacted in 1989 provided for the orderly, scheduled reimbursement of the remaining balance owed to the California Water Fund over a period of 10 years. A portion of this reimbursement is to be offset by the amounts owed to SWP by the state for costs allocated to recreation and fish and wildlife enhancement.

As of December 31, 1992, reimbursements to the California Water Fund totaled $343 million. Of this total approximately $161 million was direct repayments and $182 million was offsets for recreation and fish and wildlife enhancement expenditures to date.

Repayment of the California Water Fund is expected to be completed in 1998. The projected direct payment schedule is shown in line 32.

Total Operating Expenses and Debt Service

Total Operating Expenses and Debt Service, Line 33. The amount in this line is the total of lines 20, 21, 22, 31, and 32.

Current Operating Funds

Current Operating Funds, Line 34. The amounts indicated in this line represent the funds available for future payment of operation and maintenance costs and debt service and funds provided for drought contingencies.

The amount in Column 1 represents the December 31, 1992, cash balance for these funds in the Systems Revenue Account of the California Water Resources Development Bond Fund.

Amounts in excess of those needed for operating costs and debt service are used for repaying the California Water Fund as indicated in Line 32 or for financing SWP construction expenditures as indicated in lines 35 and 36.

Revenues Required for Current Construction

Revenues Required for Current Construction, Line 35. Revenues not needed for operating costs, debt service, or repayment of the California Water Fund are available for financing SWP capital expenditures.

Line 35 includes the amounts required annually for financing scheduled capital expenditures.

Revenues Available for Future Construction

Revenues Available for Future Construction, Line 36. As indicated in Line 36, some revenues in excess of expenses and repayment of the California Water Fund are available beyond present construction requirements.

Those funds would be available to fund a portion of future SWP facilities. The amount indicated could be transferred to Line 35 if additional facilities scheduled for construction need to be funded.

Capital Resource Revenues Used for Construction

Capital Resources Revenues Used for Construction, Line 37. The amount in this line is the same as the amount in Line 30 of Table 21-1.

Total Expenses

Total Project Expenses. The amount in this line is equal to the sum of lines 33 through 37.

Future Costs of Water Service

Estimates of future water costs are useful to SWP contractors in short-range and

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long-range planning of water needs, operations, and budgets.

Unit water charges included in Table 23-6 represent both unescalated and escalated costs of water according to service areas for years 1994 and 2000. The unit rates in Table 23-6 include costs of existing and future SWP facilities accounted for in Tables 21-1 and Table 21-2.

The unit charges are based on the assumption that in 1994 and 2000, SWP will be able to deliver entire amounts of water requested by contractors. The unit water charges included in Table 23-6 are listed both as unescalated 1992 dollars and as escalated rates reflecting assumed future inflation.

The Department's estimates of future capital expenditures include allowances for escalation of construction costs at 4 percent per year for 1992 and 1993 and at 5 percent per year for 1994 through 2005. The escalation rates for future power sources vary, depending on the source of energy.

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TABLE 23-1

Effect of Revenue Bond Proceeds on Project Interest Rate

(Millions of dollars)

Project	Revenue Bond Proceeds: Applied to Construction Costs	Less Portion of Proceeds Derived from Interest Earnings Prior to Delivery of Bonds	Plus Bond Discount and Financing Costs	Subtotal, Proceeds Included in Calculating Project Interest Rate	Principal Amount of Bonds	Percentage of Total Amount Included in Calculating Project Interest Rate
Devil Canyon-Castaic Project Revenue Bonds	125.3	1.5	1.4	125.2	139.2	90.0
Pyramid Project Revenue Bonds (Series A)	71.2	0.5	1.1	71.8	95.8	75.0
Alamo Project Bond Anticipation Note	16.8	0.1	0.3	17.0	24.4	70.0
Small Hydro Project I Revenue Bonds (Series D)	25.4	0.2	1.5	26.7	37.5	71.0
Alamo Project Revenue Bonds (Series F)	38.9	0.3	0.7	39.3	50.0	79.0
Power Facilities						
Revenue Bonds (Series H)						
Facility						
Pyramid Project	5.0	0.0	0.1	5.1	5.1	100.0
Alamo Project	1.7	0.0	0.0	1.7	1.7	100.0
Small Hydro Project I	25.2 (a	0.2	0.4	25.4	35.6	71.0
Water System Revenue Bonds (Series J)						
Facility						
Pyramid Project	—	—	75.9	75.9	94.5 (b	76.0
Alamo Project	—	—	45.6	45.6	57.1 (b	80.0
Small Hydro Project	—	—	27.5	27.5	38.8 (b	71.0
Water System Revenue Bonds (Series L)						
Facility						
Small Hydro Project	—	—	1.5	1.5	2.1 (b	71.0

a) Amount consists of 71 percent of proceeds deposited in escrow account to refund portion of Series D bonds ($35.1 million) plus deposits to construction account ($0.3 million).

b) Represents amount of principal used to refund portions of prior bond issues.

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TABLE 23-2

Bond Sales and Project Interest Rates, by Date of Sale

Bond Sales	*Date of Sale*	*Dollar-Years (a (Thousands)*	*Interest Cost (Thousands)*	*Interest Cost (b (Percent)*	*Project Interest Rate (c (Percent)*
$ 50,000,000 Bond Anticipation Notes	11/21/63	$26,944	$531	1.971	1.971
$100,000,000 Series A Water Bonds	2/18/64	3,402,000	119,750	3.520	3.508
$ 50,000,000 Series B Water Bonds	5/05/64	1,726,000	60,986	3.533	3.516
$100,000,000 Series C Water Bonds	10/07/64	3,452,000	123,764	3.585	3.544
$100,000,000 Series D Water Bonds	2/16/65	3,497,900	122,403	3.499	3.531
$100,000,000 Series E Water Bonds	11/23/65	3,497,900	130,029	3.717	3.573
$100,000,000 Series F Water Bonds	6/08/66	3,497,900	137,359	3.927	3.638
$100,000,000 Series G Water Bonds	11/22/66	3,497,900	143,788	4.111	3.711
$100,000,000 Series H Water Bonds	3/21/67	3,497,900	129,261	3.695	3.709
$100,000,000 Series J Water Bonds	7/18/67	3,497,900	143,199	4.094	3.754
$100,000,000 Series K Water Bonds	11/14/67	3,497,900	163,887	4.685	3.853
$150,000,000 Revenue Bonds, Oroville Division, Series A	4/03/68	5,228,700	270,289	5.169	
$100,000,000 Series L Water Bonds	7/11/68	3,497,900	166,918	4.772	3.941
$100,000,000 Series M Water Bonds	10/22/68	3,497,900	169,989	4.860	4.021
$ 94,995,000 Revenue Bonds, Oroville Division, Series B	4/01/69	3,423,460	195,902	5.722	
$ 46,761,000 Cumulative 1970 General Fund Borrowing, repaid 7/10/70	—	4,938	346	7.007	
$200,000,000 Series N and P Bond Anticipation Notes	6/16/70	200,000	11,660	5.830	4.030
$100,000,000 Series N Water Bonds	2/02/71	3,447,900	190,292	5.519	4.148
$100,000,000 Series Q Bond Anticipation Notes	3/10/71	100,000	2,349	2.349	4.143
$100,000,000 Series P Water Bonds	4/21/71	3,397,900	193,377	5.691	4.255
$150,000,000 Series Q and R Water Bonds	11/09/71	5,171,850	265,734	5.138	4.342
$ 40,000,000 Series S Water Bonds	3/28/72	1,399,160	76,509	5.468	4.371
$139,165,000 Devil Canyon-Castaic Revenue Bonds (d	8/08/72	4,776,204	258,839	5.419	4.457
$ 10,000,000 Series T Water Bonds	3/20/73	185,265	9,491	5.123	4.459
$ 10,000,000 Series U Water Bonds	1/13/76	158,750	8,731	5.500	4.462
$ 10,000,000 Series V Water Bonds	11/15/77	158,750	7,573	4.770	4.462
$ 95,800,000 Pyramid Hydroelectric Revenue Bonds (d	10/23/79	2,260,072	172,495	7.632	4.584
$150,000,000 Reid Gardner Project, Series A Bond Anticipation Notes	7/1/81	347,906	29,572	8.500	
$ 75,600,000 Bottle Rock Project, Bond Anticipation Notes	12/1/81	264,600	25,137	9.500	
$ 24,400,000 Alamo Project, Bond Anticipation Notes (d	12/1/81	24,266	2,305	9.500	4.589
$200,000,000 Reid Gardner Project, Series B Revenue Bonds	7/07/82	4,623,137	553,793	11.979	
$125,000,000 Reid Gardner Project, Series C Revenue Bonds	11/16/82	2,720,045	255,744	9.402	
$ 37,500,000 Small Hydro Project I, Series D Revenue Bonds (d	11/16/82	837,769	84,587	10.097	4.666
$ 37,500,000 South Geysers Project, Series D Revenue Bonds	11/16/82	930,325	90,021	9.676	
$125,000,000 Bottle Rock Project, Series E Revenue Bonds	4/27/83	2,624,805	225,102	8.576	
$ 50,000,000 Alamo Project, Series F Revenue Bonds (d	4/27/83	1,190,763	100,836	8.468	4.727
$ 25,000,000 South Geysers Project, Series F Revenue Bonds	4/27/83	608,550	52,578	8.640	
$239,505,000 Reid Gardner Project, Series G Revenue Bonds	3/15/85	4,524,136	425,840	9.413	
$206,690,000 Power Facilities, Series H Revenue Bonds (d	6/20/86	4,430,520	347,745	7.849	4.713
$132,000,000 East Branch Enlargement, Series A Water System Revenue Bonds	7/15/86	3,427,165	254,915	7.438	
$100,000,000 Series B Water System Revenue Bonds	5/05/87	2,564,012	194,817	7.598	
$ 9,000,000 Series C Water System Revenue Bonds	12/01/87	324,000	31,995	9.875	
$100,000,000 Series D Water System Revenue Bonds	6/14/88	2,640,510	201,253	7.622	
$ 9,000,000 Series E Water System Revenue Bonds	11/29/88	324,000	31,995	9.875	
$160,030,000 Series F Water System Revenue Bonds	3/15/89	2,779,838	189,261	6.808	
$100,000,000 Series G Water System Revenue Bonds	3/06/90	2,434,175	172,277	7.077	
$100,000,000 Series H Water System Revenue Bonds	1/10/91	2,459,172	168,857	6.866	
$180,000,000 Series I Water System Revenue Bonds	5/14/91	4,366,680	294,090	6.735	
$649,835,000 Series J Water System Revenue Bonds	1/16/92	12,422,222	745,198	5.999	
$100,000,000 Series K Water System Revenue Bonds	5/12/92	2,366,783	147,064	6.214	
$ 9,000,000 Series W Water Bonds	8/19/92	95,250	6,172	6.480	
$537,830,000 Series L Water System Revenue Bonds	5/01/93	11,414,859	640,518	5.611	4.620
Total		**$140,746,481**	**$8,547,123**		
Portion Allocated to Project Interest Rate		**$63,789,878**	**$2,947,404**	**4.620**	**4.620**

a) Amount represents a unit equivalent to one dollar of principal amount outstanding for one year.
b) Amount represents the total interest cost (without regard to premiums received) divided by the total dollar-years, expressed as a percentage.
c) Amount is determined by dividing cumulative interest costs by cumulative dollar-years and expressed as a percentage. Oroville Field Division Power Revenue Bonds for Off-Aqueduct Facilities and Water System Revenue Bonds, which do not affect the Project Interest Rate, are excluded.
d) These revenue bonds and revenue bond anticipation notes were sold at the following net interests costs. The following amounts (representing the sum of proceeds used for construction and the bond discount) were used in the calculations of the Project Interest Rate:

Devil Canyon-Castaic Revenue Bonds:	5.446 percent	$126,893,000
Pyramid Hydroelectric Revenue Bonds:	7.680 percent	$ 75,586,000
Alamo Bond Anticipation Notes:	10.036 percent	$ 18,034,000
Small Hydro Project I, Series D Revenue Bonds:	10.275 percent	$ 28,012,000
Alamo Project, Series F Revenue Bonds:	8.525 percent	$ 40,114,000
Power Facilities, Series H Revenue Bonds:	7.926 percent	$ 42,340,000

TABLE 23-3

Operations, Maintenance, Power, and Replacement Costs, by Facility, Composition, and Purpose

(Thousands of dollars)

Feature	Calendar year 1962-1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006-2035	Total
Project Facility																
Feather River facilities	117,745	(3,853)	(2,932)	(2,674)	(2,584)	(2,435)	(2,412)	(2,413)	(2,407)	(2,457)	(2,453)	(2,452)	(2,451)	(2,445)	(91,559)	(7,782)
North Bay Aqueduct	9,636	1,860	2,020	2,281	2,213	2,215	2,234	2,254	2,290	2,306	2,332	2,351	2,373	2,437	80,229	119,031
Delta facilities	0	96	70	57	32	0	0	0	0	0	0	0	0	0	0	255
Suisun Marsh	4,752	1,004	1,041	987	769	771	772	772	772	1,100	1,100	1,100	1,100	1,100	32,989	50,129
South Bay Aqueduct	95,808	11,037	10,977	9,346	9,843	9,660	9,700	9,734	9,870	9,897	10,003	10,061	10,122	10,322	321,616	547,996
California Aqueduct																
Delta to Edmonston	1,212,791	127,035	170,608	183,882	187,762	182,765	186,152	184,202	189,853	190,041	193,259	195,019	196,728	205,300	6,585,176	10,190,573
Edmonston to Perris	893,300	102,553	157,557	169,686	164,240	153,514	158,546	162,827	165,748	168,257	172,448	174,611	177,106	188,256	6,184,504	9,193,153
West Branch	4,972	(10,897)	(23,641)	(20,881)	(21,648)	(19,944)	(21,474)	(23,850)	(23,016)	(23,109)	(22,805)	(22,663)	(22,506)	(22,206)	(634,826)	(908,494)
Coastal Branch	39,559	4,683	4,701	4,386	8,216	8,569	9,619	9,666	9,785	9,817	9,951	10,021	10,098	10,292	323,895	473,258
Off-aqueduct power generating facilities	486,231	53,595	62,653	62,568	69,477	68,477	65,557	59,556	48,179	46,805	41,541	36,272	29,906	21,431	8,516	1,160,764
Recreation, planning, and CVP negotiations	0	493	494	536	547	547	547	547	547	1,093	1,093	1,093	1,093	1,093	32,794	42,517
Water quality monitoring	110,370	16,192	20,309	17,133	15,312	15,701	15,097	15,098	14,552	8,936	8,936	8,936	8,936	8,936	250,350	534,794
Davis-Grunsky Act program	2,230	292	292	303	262	218	218	218	218	218	218	218	218	218	6,555	11,896
Subtotal	2,977,394	304,090	404,149	427,609	434,441	420,058	424,556	418,611	416,391	412,904	415,623	414,567	412,723	424,734	13,100,240	21,408,090
Payments to/credits from PG&E under Comprehensive Agreement	8,037	(3,491)	(3,352)	(3,213)	(3,074)	(2,935)	(2,797)	(2,658)	(2,519)	(2,380)	(2,241)	(2,102)	(1,963)	(152)	0	(24,840)
Total OMP&R Costs	**2,985,431**	**300,599**	**400,797**	**424,396**	**431,367**	**417,123**	**421,759**	**415,953**	**413,872**	**410,524**	**413,382**	**412,465**	**410,760**	**424,582**	**13,100,240**	**21,383,250**
Composition																
Salaries and expenses of headquarters personnel	487,790	59,260	60,615	61,660	61,160	61,358	61,317	61,317	61,317	56,135	56,135	56,135	56,135	56,135	1,654,368	2,910,837
Salaries and expenses of field personnel	1,008,876	98,560	99,489	92,851	90,903	91,123	90,578	90,577	90,030	90,626	90,630	90,629	90,628	90,628	2,707,818	4,913,946
Pumping power																
Used by pumping plants	1,468,807	161,914	277,220	305,270	320,240	308,602	317,953	316,698	326,968	329,797	337,802	342,044	346,647	368,691	12,111,558	17,640,211
Produced by generation plants	(523,191)	(83,054)	(102,963)	(102,715)	(117,079)	(119,241)	(120,588)	(119,276)	(119,842)	(120,198)	(120,224)	(120,252)	(120,332)	(121,890)	(3,674,188)	(5,685,033)
Payments to/credits from PG&E under Comprehensive Agreement	8,037	(3,491)	(3,352)	(3,213)	(3,074)	(2,935)	(2,797)	(2,658)	(2,519)	(2,380)	(2,241)	(2,102)	(1,963)	(152)	0	(24,840)
Off-aqueduct power generating facilities requirement	486,231	53,595	62,653	62,568	69,477	68,477	65,557	59,556	48,179	46,805	41,541	36,272	29,906	21,431	8,516	1,160,764
Oroville-Thermalito insurance premiums	8,198	803	763	784	794	794	794	794	794	794	794	794	794	794	23,820	42,308
Less portion of costs incurred during construction	(121,033)	(1,478)	(2,168)	(1,754)	0	0	0	0	0	0	0	0	0	0	0	(126,433)
Subtotal	2,823,715	286,109	392,257	415,451	422,421	408,178	412,814	407,008	404,927	401,579	404,437	403,520	401,815	415,637	12,831,892	20,831,760
Deposits to replacement reserves	161,716	14,490	8,540	8,945	8,946	8,945	8,945	8,945	8,945	8,945	8,945	8,945	8,945	8,945	268,348	551,490
Total OMP&R Costs	**2,985,431**	**300,599**	**400,797**	**424,396**	**431,367**	**417,123**	**421,759**	**415,953**	**413,872**	**410,524**	**413,382**	**412,465**	**410,760**	**424,582**	**13,100,240**	**21,383,250**
Project Purpose																
Water supply and power generation	2,826,946	286,920	386,412	410,604	417,840	403,487	407,955	402,020	399,920	397,120	399,803	398,727	396,863	408,829	12,622,278	20,565,724
Payments to/credits from PG&E under Comprehensive Agreement	8,037	(3,491)	(3,352)	(3,213)	(3,074)	(2,935)	(2,797)	(2,658)	(2,519)	(2,380)	(2,241)	(2,102)	(1,963)	(152)	0	(24,840)
Recreation and fish and wildlife enhancement	53,464	7,361	7,899	7,619	7,482	7,483	7,512	7,502	7,381	6,692	6,727	6,747	6,766	6,811	205,028	352,474
Flood control	2,004	214	206	210	233	232	232	232	233	233	234	234	235	235	7,164	12,131
Miscellaneous purposes																
Federal share, San Luis and Delta facilities	91,346	9,128	9,030	8,572	8,419	8,433	8,434	8,434	8,434	8,436	8,436	8,436	8,436	8,436	253,067	455,477
Other (Davis-Grunsky, drainage, City of Los Angeles)	3,634	467	602	604	467	423	423	423	423	423	423	423	423	423	12,703	22,284
Total OMP&R Costs	**2,985,431**	**300,599**	**400,797**	**424,396**	**431,367**	**417,123**	**421,759**	**415,953**	**413,872**	**410,524**	**413,382**	**412,465**	**410,760**	**424,582**	**13,100,240**	**21,383,250**

C-060100

TABLE 23-4

Annual Debt Service on Bonds Sold through June 30, 1993

(Thousands of dollars)

Calendar	Series A through W Water Bonds		Oroville Revenue Bonds (a		Devil Canyon-Castaic Project Revenue Bonds		Pyramid Project Power Facilities Revenue Bonds, Series A and H; Water System Revenue Bonds, Series J		Reid Gardner Project Power Facilities Revenue Bonds, Series B, C, G, and H; Water System Revenue Bonds, Series F and J		South Geysers Project Power Facilities Revenue Bonds, Series D, F, and H; Water System Revenue Bonds, Series D, E, J, and L		Small Hydro Project Power Facilities Revenue Bonds, Series D and H; Water Systems Revenue Bonds, Series J and L		Bottle Rock Project Power Facilities Revenue Bonds, Series E; Water System Revenue Bonds, Series D, E, and J		Alamo Project Power Facilities Revenue Bonds, Series F and H; Water System Revenue Bonds, Series J		East Branch Enlargement Water System Revenue Bonds Series A, D, E, H, I, J, K, and L		Water System Facilities Water System Revenue Bonds Series B, C, D, E, G, H, I, J, K, and L		Grand Total	
Year	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest
1964	0	3,333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,333
1965	0	11,114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,114
1966	0	16,742	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,742
1967	0	26,912	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26,912
1968	0	37,760	0	3,876	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41,636
1969	0	47,461	0	10,448	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57,909
1970	0	53,291	0	13,145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66,436
1971	0	63,035	0	13,145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76,180
1972	0	69,148	1,260	13,112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,260	82,260
1973	1,200	69,348	1,330	13,042	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,530	90,098
1974	3,000	69,533	1,400	12,969	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,400	90,210
1975	5,000	69,366	1,475	12,893	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,475	89,967
1976	7,000	69,408	1,555	12,811	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,555	89,927
1977	10,200	69,323	1,635	12,727	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,835	89,758
1978	12,700	69,312	5,775	12,537	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,475	89,557
1979	13,650	68,690	11,585	12,275	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25,235	88,673
1980	16,050	67,968	3,265	11,739	0	7,708	0	7,900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19,315	95,315
1981	18,050	67,109	4,885	11,444	0	7,708	0	7,292	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22,935	93,553
1982	19,250	66,162	17,920	10,968	0	7,708	0	7,292	0	7,972	0	0	0	0	0	0	0	0	0	0	0	0	37,170	100,102
1983	20,520	65,148	21,110	10,147	900	7,708	0	7,292	0	35,719	0	4,777	0	3,727	0	6,017	0	2,449	0	0	0	0	42,530	142,984
1984	21,785	64,068	10,005	9,013	955	7,647	640	7,292	0	35,719	0	5,647	0	3,727	0	10,315	0	4,198	0	0	0	0	33,385	147,626
1985	22,555	63,932	12,700	8,628	1,010	7,583	675	7,238	9,425	27,209	0	5,647	0	3,727	0	10,315	0	4,198	0	0	0	0	46,365	138,477
1986	23,830	61,742	11,435	7,859	1,070	7,515	715	7,377	3,805	32,882	0	5,516	0	3,537	1,240	10,315	0	4,263	0	4,021	0	0	42,095	145,027
1987	25,495	60,492	11,715	7,188	1,135	7,442	790	7,513	4,860	32,605	0	5,386	0	3,348	1,305	10,253	265	4,329	0	9,651	0	4,952	45,565	153,159
1988	26,770	59,165	6,685	6,664	1,205	7,366	830	7,447	5,065	32,295	580	5,521	345	3,348	1,390	10,849	280	4,314	995	9,875	710	11,037	44,855	157,881
1989	28,145	57,825	33,705	5,513	1,275	7,284	875	7,378	7,820	27,557	709	5,646	365	3,328	1,565	11,592	295	4,298	1,077	10,104	1,148	14,368	76,979	154,893
1990	29,385	56,473	10,385	4,301	1,355	7,198	930	7,305	6,675	29,781	761	5,596	405	3,304	1,677	11,491	320	4,279	1,134	10,048	1,227	19,554	54,254	159,330
1991	30,365	55,070	12,055	3,922	1,435	7,107	980	7,227	7,170	29,302	817	5,540	430	3,276	1,791	11,376	335	4,257	1,197	16,856	2,129	27,568	58,704	171,501
1992	31,745	54,233	14,135	2,985	1,520	7,010	2,395	5,307	8,950	27,188	1,934	4,136	960	2,553	4,575	7,942	1,260	3,086	2,583	22,241	5,107	28,410	75,164	165,091
1993	33,390	52,707	13,755	1,850	1,610	6,907	1,525	5,687	8,820	26,953	901	4,079	660	2,759	3,264	8,386	755	3,300	3,039	22,836	4,577	30,570	72,296	166,034
1994	34,975	51,161	3,885	1,026	1,705	6,799	1,575	5,633	9,490	26,273	1,588	4,072	930	2,735	3,374	8,270	780	3,274	4,587	19,775	5,915	29,126	68,804	158,144
1995	36,110	49,551	4,085	888	1,810	6,684	1,630	5,569	10,175	25,575	1,695	4,005	1000	2,681	3,521	8,133	805	3,242	4,780	19,519	6,218	28,780	71,829	154,627
1996	37,350	47,891	4,300	746	1,920	6,561	1,685	5,496	10,940	24,805	1,808	3,930	1085	2,620	3,682	7,974	845	3,207	4,330	19,246	7,235	28,410	75,180	150,886
1997	37,045	46,248	4,525	599	2,035	6,432	1,760	5,417	11,775	23,959	1,945	3,848	1145	2,552	3,861	7,802	895	3,168	5,248	19,024	6,912	27,987	77,146	147,036
1998	37,125	44,631	4,760	446	2,155	6,295	1,835	5,332	12,570	23,143	2,065	3,759	1230	2,480	4,030	7,613	930	3,124	5,470	18,754	7,185	27,590	79,355	143,167
1999	38,050	43,034	5,005	271	2,285	6,160	1,915	5,238	13,455	22,263	2,216	3,658	1335	2,401	4,240	7,412	985	3,077	5,730	18,481	7,555	27,214	82,771	139,209
2000	39,340	41,386	5,280	286	2,420	6,040	2,000	5,137	14,380	21,309	2,095	3,547	910	2,312	4,470	7,191	1,035	3,025	6,768	18,187	7,442	26,804	86,140	135,224
2001	40,430	39,677	3,385	191	2,565	5,912	2,100	5,027	15,385	20,279	2,205	3,432	970	2,257	4,720	6,950	1,090	2,969	7,141	17,863	7,849	26,434	87,840	130,991
2002	41,570	37,919	0	0	2,720	5,773	2,200	4,910	16,480	19,166	2,325	3,307	1005	2,197	4,990	6,691	1,155	2,908	7,516	17,306	8,274	25,872	88,235	126,049
2003	43,420	36,107	0	0	2,885	5,626	2,310	4,786	17,720	17,962	2,475	3,173	980	2,134	5,285	6,411	1,220	2,843	7,913	16,925	8,737	25,439	92,945	121,406
2004	45,610	34,201	0	0	3,055	5,470	2,430	4,652	19,205	16,443	2,620	3,029	1080	2,073	5,610	6,110	1,295	2,773	7,213	16,517	10,102	24,974	98,220	116,242
2005	46,900	32,211	0	0	3,240	5,305	2,540	4,509	19,930	14,796	2,750	2,873	1135	2,005	5,950	5,784	1,375	2,697	7,611	16,136	10,664	24,415	102,095	110,731
2006	48,190	30,158	0	0	3,435	5,130	2,675	4,359	21,545	13,190	2,920	2,711	1,180	1,938	6,325	5,433	1,450	2,616	8,051	15,731	11,294	23,820	107,065	105,086
2007	49,680	28,041	0	0	3,640	4,945	2,825	4,199	23,255	11,442	3,100	2,536	1,250	1,867	6,730	5,054	1,540	2,529	8,522	15,304	11,968	23,187	112,510	99,104
2008	51,670	25,857	0	0	3,860	4,749	2,980	4,029	25,100	9,549	3,300	2,350	1,265	1,792	7,160	4,650	1,640	2,437	9,020	14,853	12,660	22,515	118,655	92,781
2009	54,010	23,579	0	0	4,090	4,540	3,150	3,847	26,785	7,802	3,490	2,147	1,280	1,714	7,635	4,212	1,745	2,336	9,558	14,350	13,422	21,778	125,165	86,305
2010	55,700	21,208	0	0	4,335	4,319	3,325	3,654	28,575	5,962	3,720	1,934	1,270	1,636	8,135	3,746	1,865	2,229	10,141	13,818	14,239	20,996	131,305	79,502
2011	57,190	18,762	0	0	4,595	4,085	3,505	3,450	30,495	4,000	3,960	1,706	1,270	1,558	8,675	3,246	1,980	2,115	10,755	13,243	15,085	20,159	137,510	72,324
2012	58,530	16,216	0	0	4,875	3,837	3,720	3,205	32,615	2,068	4,235	1,429	1,285	1,469	9,335	2,638	2,135	1,977	11,412	12,627	16,043	19,221	144,185	64,687
2013	60,370	13,676	0	0	5,165	3,574	3,950	2,944	0	0	4,550	1,132	1,850	1,379	10,040	1,985	2,295	1,827	12,099	11,977	17,051	18,223	117,370	56,717
2014	57,900	11,244	0	0	5,475	3,303	4,160	2,703	0	0	4,830	854	1,920	1,266	10,720	1,370	2,450	1,687	12,837	11,278	18,088	17,213	118,380	50,918
2015	53,690	8,838	0	0	5,805	3,015	4,375	2,453	0	0	5,075	564	1,990	1,151	740	727	2,605	1,540	13,616	10,536	19,164	16,149	107,060	44,973
2016	46,130	6,626	0	0	6,150	2,710	4,600	2,190	0	0	2,180	259	2,165	1,031	790	682	2,775	1,383	14,440	9,756	20,310	15,030	99,540	39,667
2017	38,060	4,614	0	0	6,520	2,388	4,835	1,914	0	0	170	128	2,275	902	840	635	2,955	1,217	15,319	8,927	21,526	13,842	92,500	34,567
2018	25,350	2,980	0	0	6,910	2,045	5,080	1,624	0	0	180	118	2,395	765	890	585	3,155	1,039	16,262	8,043	22,793	12,577	83,015	29,776
2019	16,890	1,778	0	0	7,325	1,682	5,335	1,319	0	0	190	107	2,505	621	950	531	3,360	850	17,256	7,103	24,169	11,237	77,980	25,228
2020	17,320	934	0	0	7,765	1,298	5,610	999	0	0	205	96	2,630	471	1,010	474	3,585	649	18,319	6,106	25,601	9,819	82,045	20,846
2021	8,510	301	0	0	8,230	890	5,890	663	0	0	215	84	2,750	313	1,070	414	3,825	433	19,421	5,089	27,114	8,347	77,025	16,534
2022	1,800	48	0	0	8,725	458	6,160	339	0	0	230	72	2,945	162	1,130	355	4,055	223	20,595	4,011	28,670	6,840	74,310	12,508
2023	0	0	0	0	0	0	0	0	0	0	240	59	0	0	1,200	293	0	0	15,821	2,862	34,544	5,232	51,805	8,446
2024	0	0	0	0	0	0	0	0	0	0	576	46	0	0	2,855	227	0	0	17,341	1,973	26,967	2,904	47,739	5,150
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12,891	923	12,664	1056	25,555	1,979
2026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,412	154	4,523	290	6,935	444
Total	1,579,000	2,384,747	244,995	249,654	139,165	283,872	106,510	205,144	422,465	655,168	74,855	118,456	48,195	85,116	156,770	232,449	59,335	106,365	360,420	512,029	506,881	749,939	3,698,591	5,582,938

a) Principal and interest schedule has been adjusted to reflect early redemption of bonds.

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TABLE 23-6

Estimated Unit Water Charges for 1994 and 2000, by Service Area

Service Area and Charge	1994 Unescalated	1994 Escalated	2000 Unescalated	2000 Escalated
Feather River Area				
Capital; Operations, Maintenance, and Replacement (OM&R)	$58	$58	$36	$40
North Bay Area				
Capital; OM&R	196	196	149	160
Power	16	16	16	18
Total	**$212**	**$212**	**$165**	**$178**
South Bay Area				
Capital; OM&R	$76	$76	$65	$75
Power	33	33	41	47
Total	**$109**	**$109**	**$106**	**$122**
Coastal Area				
Capital; OM&R	N/A	N/A	$443	$474
Power	N/A	N/A	89	100
Total	**N/A**	**N/A**	**$532**	**$574**
San Joaquin Area				
Capital; OM&R	$42	$42	$41	$46
Power	15	15	19	21
Total	**$57**	**$57**	**$60**	**$67**
Southern California Area				
Capital; OM&R	$107	$107	$103	$115
Power	99	99	117	132
Total	**$206**	**$206**	**$220**	**$247**

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Legislation and Litigation

State Legislation

No federal legislation enacted during this bulletin reporting period directly requires or prohibits activity by the State Water Project. However, several state laws that affect SWP activities were passed in the 1992–93 fiscal year.

Agricultural Land Retirement Program

Senate Bill 1669 (Chapter 959, Statutes of 1992) establishes the San Joaquin Valley Drainage Relief Program in the Department of Water Resources. This law, which became operative July 1, 1993, authorizes the Department to enter into agreements for purchase and management of retirement land and water. It sets aside up to one-third of the conserved water for environmental purposes and replenishment of ground water resources. The law requires the Department to consider effects of purchases on local economies and coordinate with the Central Valley Project on distribution of water made available under this legislation. The law authorizes retirement land to be returned to irrigated agricultural use if affordable technological solutions to drainage and environmental problems are identified and implemented, and it requires the Department to submit a progress report and program evaluation to the Legislature by June 30, 1998, and every 5 years thereafter.

Sacramento-San Joaquin Delta Studies and Plans

Senate Bill 443 (Chapter 953, Statutes of 1992) requires the Department to submit a report to the legislature, by January 1994, on land use patterns within the Delta and immediately adjacent lands. This legislation requires the Department to conduct at least one hearing on the California Water Plan update within the boundaries of the Delta, and it requires the updated California Water Plan to include discussion of alternatives for protecting current uses and configuration of the Delta. The law requires implementation of these mandates only to the extent funds are appropriated for these purposes in the annual budget act.

Senate Bill 1866 (Chapter 898, Statutes of 1992) creates a 19-member Delta Protection Commission made up of Department and other state and local government officials. It requires the commission to adopt, by July 1, 1994, a comprehensive long-term resource management plan for the Delta, and it re-

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quires all local agency general plans to be consistent with the commission's long-range plan and be subject to commission approval. The law declares that *Water Code* provisions will prevail over this law in any cases of conflict, and it exempts a variety of state and local agency water supply activities and associated mitigation or enhancement activities from the jurisdiction of the commission. To fund the commission, this law imposes a 10 percent surcharge on fines for violations within the Delta of specified *Fish and Game Code* and *Harbors and Navigation Code* sections and deposits those surcharges, up to $250,000 annually, in the Sacramento-San Joaquin Delta Protection Fund, which the law creates. To cover immediate costs, the legislation appropriates $250,000 from the Environmental License Plate Fund to the commission as a loan to be repaid by December 31, 1998. The law requires the commission to submit a progress report to the legislature and governor by January 1, 1995, and every 5 years thereafter.

Water Transfers

Assembly Bill 2897 (Chapter 481, Statutes of 1992) authorizes water suppliers to contract with customers for a time-limited reduction or elimination of water use and also to contract with a state drought water bank or with another water supplier or user for transfer of that water. The law limits such transfers to water made available through conservation or through a contract for reduction or elimination of use, and it declares that transfers under this bill will not impair water rights.

Litigation

During the reporting period covered in this document, the Department was involved in several court cases related to the management of the State Water Project.

Golden Gate Audubon Society v. *State Water Resources Control Board*

On May 31, 1991, several environmental groups filed a suit, *Golden Gate Audubon Society* v. *State Water Resources Control Board*, to set aside the Water Quality Control Plan for the Bay-Delta Estuary adopted earlier that month by the Board. The plan was adopted at the end of the second phase of the Bay-Delta hearings.

In the suit, the groups allege that the plan is defective because it does not include flow objectives and that the California Environmental Quality Act was violated because the Board failed to consider flow alternatives. The Department intervened in support of the Board, and the matter is currently pending in Sacramento County Superior Court.

Kern Property Corporation v. *State of California*

This suit, filed on December 29, 1982, by Kern Property Corporation against the Department and eight other named defendants, involved rights to the use of Kern River water and the operation of the Kern River Intertie.

The Kern Property Corporation alleged that the Department violated the Watershed of Origin statute, *Water Code* Section 11460, by accepting water into the intertie before the needs of the corporation were met.

The intertie is operated according to contracts with federal and state governments and several local agencies and districts. At the time the intertie was built, some districts agreed to indemnify the state against litiga-

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tion regarding operation. A related case, *River West, Inc.* v. *State of California,* was dismissed in 1988. A settlement was reached, and the Department was dismissed without liability; the settlement was approved by the court.

Nevada Power Company and Department of Water Resources v. *Fluor Power Services Inc., et al.*

In this suit, filed in fall 1986 in Nevada's Clark County District Court, the Department and Nevada Power Company sued the general contractor of the Reid Gardner Unit 4 Powerplant (Fluor Power Services), the contractor of the cooling tower (Boecon), and the materials supplier (Las Vegas Building Materials), alleging that they failed to ensure an adequate specification for the concrete mix and to properly supervise the placement of concrete and misrepresented the quality of the aggregate.

After Nevada Power Company demolished the three remaining cells of the old tower, the court granted the defendants' motion to dismiss the case on the ground that Nevada Power Company and the Department had disobeyed the court's previous order regarding demolition. The court also awarded attorney fees to the defendants as an additional sanction.

On appeal by Nevada Power and the Department, the Nevada Supreme Court in 1992 reversed the trial court's dismissal and the attorney fees award. The Court remanded the case to the trial court for an evidentiary hearing on whether the trial court's orders were disobeyed, whether any disobedience was willful, and whether the defendants were prejudiced by demolition.

In 1993 the parties participated in a mediation that resulted in settlement. Defendants paid a total of $3.2 million, with the Department receiving just over $2 million, in exchange for dismissal of the suit. The case is now closed.

South Delta Water Agency v. *United States, et al.*

This case was filed July 9, 1982, in Federal District Court for the Eastern District of California by the South Delta Water Agency against the United States, the Department of the Interior, the U.S. Bureau of Reclamation, and the Department.

This case involves the effects of operations by the Central Valley Project, which is operated by USBR, and the State Water Project on the SDWA's service area and the Department of Interior's designation of the New Melones Reservoir service area.

In its suit the South Delta Water Agency asked for declaratory and injunctive relief, which, if granted, would have restricted certain Delta operations. The United States and the South Delta Water Agency settled the agency's motion for preliminary injunction to prevent the United States from signing contracts for New Melones water. The motion was settled by parties agreeing to a stipulation that any contracts entered into by the United States are subject to any superior rights in the southern Delta that are determined in this litigation.

In October 1986 USBR, the Department, and SDWA signed a framework agreement to settle the lawsuit. The parties agreed to work together to develop mutually acceptable, long-

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term solutions and to stay all actions in the litigation while negotiating a settlement.

In August 1990 a draft contract for settlement of the lawsuit was completed. The proposed settlement contract includes provisions for constructing, operating, and maintaining temporary (and later permanent) rock barriers in south Delta channels to improve water levels and circulation. In addition, according to the contract, USBR will take interim actions to improve the quality and quantity of water that flows into the south Delta from the San Joaquin River.

The SDWA held an election in September 1991 at which the voters approved the signing of the contract.

The Department has proceeded with designing, constructing, and operating the temporary barrier facilities as part of the 5-year testing program included in the proposed contract. The USBR and the Department will share equally the costs associated with the barrier facilities. According to the contract, those costs are limited to $40 million.

United States v. *Nevada Power Company*

This suit was filed December 1, 1987, in the U.S. District Court, District of Nevada, by the U.S. Environmental Protection Agency against the Nevada Power Company over its operation of Reid Gardner Powerplant's generating station units 3 and 4. The Department was not named as a defendant; however, the Department jointly owns Unit 4 with Nevada Power Company.

In the suit, EPA alleged several violations of the Clean Air Act, including failure to meet particulate matter standards and maintain certain files and failure to report information about required emissions.

The case was settled by a consent decree. Nevada Power Company agreed to meet specified emissions and reporting requirements for 1 year and paid a $400,000 fine. The Department will pay for approximately half the fine.

Department of Water Resources v. *Lake County*

In the suit, *Department of Water Resources* v. *Lake County*, filed in October 1987, the Department challenged the validity of Lake County's electricity generating tax ordinance as it applied to the Department's Bottle Rock Powerplant and sought a refund of the $1.7 million, plus interest, paid to Lake County.

In the suit, the Department charged the tax was, in effect, an ad valorem tax on state property and as such was prohibited by California's constitution. Payment of the tax is a prerequisite to challenging the legality of the ordinance in court.

In 1991 a similar ordinance passed by Sonoma County was held by the District Court of Appeal to be plainly designed to substitute for the property tax that could not be imposed on public entities and therefore to conflict with California's constitution on exempting state property from property taxes. The Department filed a friend-of-the-court brief in that case.

In April 1992 the Department and Lake County entered into a stipulated judgment whereby the county reimbursed the $1.7 million plus interest at the statutory rate of nine percent.

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Valley View Farms v. *State of California*

This suit was filed on April 20, 1993, in Kings County Superior Court. The Valley View Farms property borders a portion of the San Luis Canal, a joint-use section of the California Aqueduct. Valley View Farms alleges that the state caused flooding on its property as a consequence of the backup of flood water due to an inadequate drain into the San Luis Canal. The USBR constructed the drain as part of the San Luis Canal. The Department operates and maintains the canal pursuant to the Joint-Use Facilities Operating Agreement with USBR. Valley View Farms is seeking damages for the destruction of trees in its orchard.

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Appendix B

Data and Computations Used in DeterminingWater Charges for 1994

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Appendix B

The Department of Water Resources annually furnishes Statements of Charges to the 29 long-term State Water Project water supply contractors. Article 29(e) of the *Standard Provisions for Water Supply Contracts,* approved August 3, 1962, describes those statements.

> *All such statements shall be accompanied by the latest revised copies of the document amendatory to Article 22 and of Tables B, C, D, E, F, and G of this contract, together with such other data and computations used by the State in determining the amounts of the above charges as the State deems appropriate.*

To comply with Article 29(e), the Department annually performs a comprehensive review and redetermination of all water supply and financial aspects of the SWP for the entire project repayment period. This annual redetermination is performed in accordance with Article 22(f) and Article 28 of the water contracts, which concern the Delta Water Rate and annual Transportation Charges, respectively.

Appendix B includes data used to document the redetermination of water charges to be paid by contractors during calendar year 1994. The information is based on established data about SWP, both known and projected, as of June 30, 1993.

The computational procedures and interrelationships between tabulations in this appendix are outlined in Figure 1 and Figure 2. All tables referenced in Figures 1 and 2 are included in this appendix. Tables listed with a "text" designation may be found in this introductory section of the appendix. Tables listed without the text designation may be found in the section entitled "Tables for Determining 1994 Water Charges," which follows this text.

Appendix B also includes information about payments made by contractors according to provisions contained in Article 21, amended, of the standard provisions for surplus water deliveries from SWP.

Types of Water Charges

Charges to SWP water supply contractors include the costs of facilities for the conservation and development of a water supply and the conveyance of such supply to SWP service areas. These facilities are classified as "Project Conservation Facilities" and "Project Transportation Facilities" in the Standard Provisions for Water Supply Contract. The names of the main facilities in each classification follow.

Project Conservation Facilities

- Antelope Dam and Lake
- Oroville Dam and Lake Oroville
- Oroville power facilities
- Delta facilities
- A portion of the Governor Edmund G. Brown California Aqueduct from the Delta to Dos Amigos Pumping Plant

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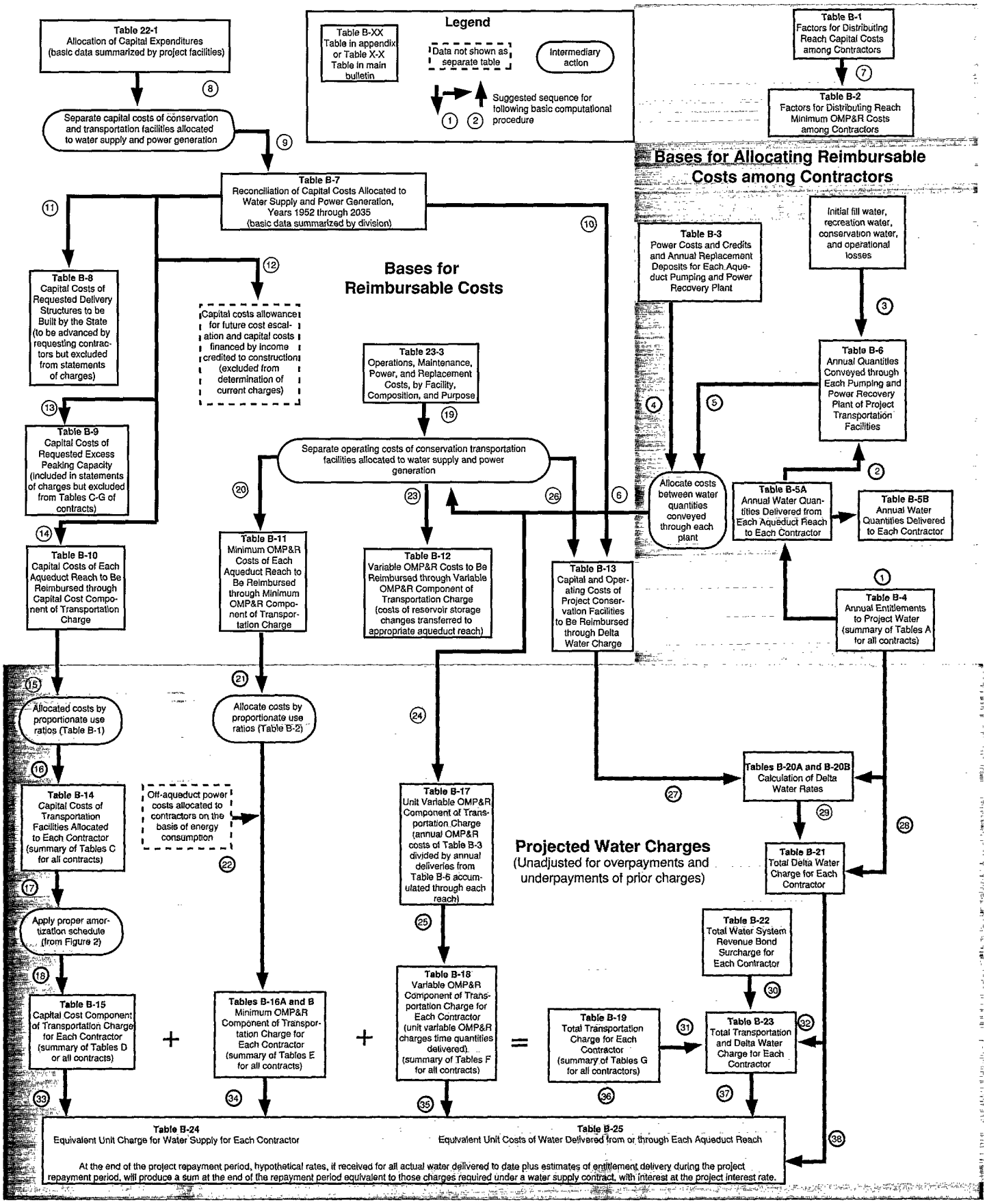

Fig. 1. Relationships of data used to substantiate Statements of Charges

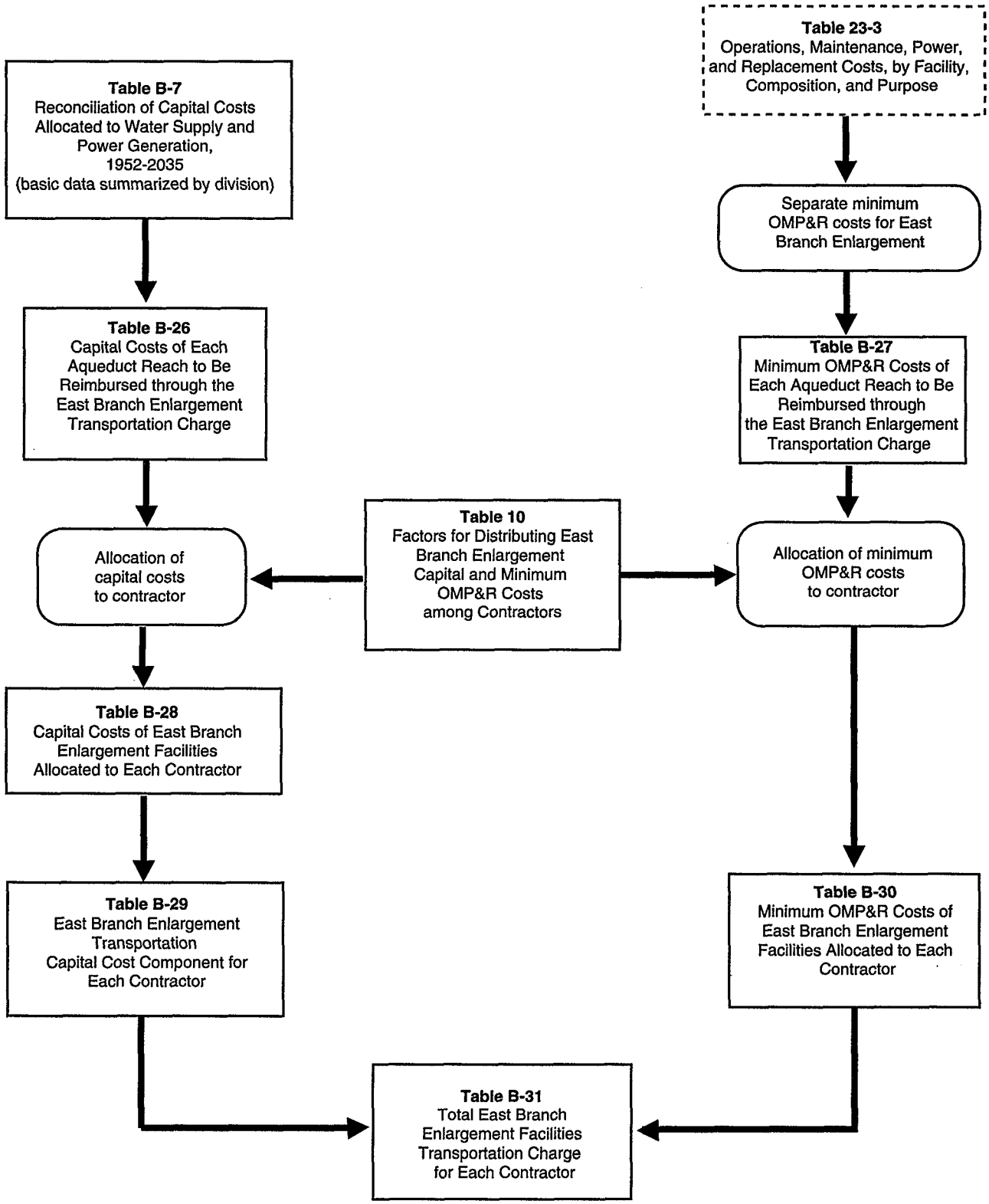

Fig. 2. Relationships of data used to substantiate East Branch Enlargement charges

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- B. F. Sisk San Luis Dam, San Luis Reservoir, and William R. Gianelli Pumping-Generating Plant

Project Transportation Facilities

- Grizzly Valley Pipeline
- North Bay Aqueduct
- South Bay Aqueduct, including Del Valle Dam and Lake Del Valle
- Remainder of the California Aqueduct from the Delta to Dos Amigos Pumping Plant and all facilities south, including dams and lakes in Southern California
- Off-Aqueduct Power Facilities (Reid Gardner Unit No. 4, Bottle Rock Powerplant, and South Geysers Powerplant)

The standard provisions provide for a Delta Water Charge and a Transportation Charge for project water.

The Delta Water Charge is a unit charge applied to each acre-foot of SWP water the contractors are entitled to receive according to their contracts. The unit charge, if applied to each acre-foot of all such entitlements for the remainder of the project repayment period, is calculated to result in repayment of all outstanding reimbursable costs of the Project Conservation Facilities, with appropriate interest, by the end of the repayment period (2035).

The Transportation Charge is for use of facilities to transport water to the vicinity of each contractor's turnout. Generally, the annual charge represents each contractor's proportionate share of the reimbursable capital costs and operating costs of the Project Transportation Facilities.

Each contractor's allocated share of those reimbursable capital costs is amortized for repayment to the state; and certain variations are allowed in the amortization methods. Essentially, the contractors' shares of reimbursable operating costs are repaid in the year such costs are incurred by the state.

The East Branch Enlargement Transportation Charge is paid by the seven Southern California contractors participating in the enlargement. San Bernardino Valley Municipal Water District advanced funds to pay the district's allocated capital costs for the East Branch Enlargement. The remaining six contractors will pay an allocated share of the debt service on revenue bonds sold to finance the enlargement. Each contractor also will pay an allocated share of the minimum operation, maintenance, power and replacement (OMP&R) costs of the East Branch Enlargement.

Composition and Timing of Water Charges

As shown in Table 1, the Delta Water Charge and the Transportation Charge consist of the following three components:

1. Conservation and transportation capital cost components, which will result in a return to the state of all reimbursable capital costs;
2. Conservation and transportation minimum OMP&R components, which are designed to return to the state all reimbursable operating costs that do not depend on or vary with quantities of water actually delivered to the contractors; and
3. A transportation variable OMP&R component, which will return to the state all reimbursable operating costs that depend on, and vary with, quantities of water actually delivered to the contractors.

The formula for computing the Delta Water Rate, Article 22(f) of the Standard Provisions for Water Supply Contract was designed to ensure that all adjustments for prior overpayments or underpayments of the Delta Water Charge are accounted for in a redetermination of the rate. Since the redeter-

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TABLE 1

Composition of Delta Water Charge and Transportation Charge

Delta Water Charge

Capital Cost Component

1. Planning, design, right-of-way, and construction costs of conservation facilities
2. Operations and maintenance costs for newly constructed conservation facilities prior to initial operation
3. Activation costs for newly constructed conservation facilities
4. Power costs allocated to initial filling of San Luis Reservoir
5. Capitalized O&M costs (major repair work and so forth) for conservation facilities
6. Program costs (portion) to mitigate impacts on current Delta fishery population due to SWP pumping prior to 1986 (Department of Water Resources – Department of Fish and Game agreement)

Minimum OMP&R Component

1. Direct O&M costs of conservation facilities
   a. Headquarters and field divisions (portion)
   b. Insurance and Federal Energy Regulatory Commission costs (portion)
2. General O&M costs allocated to conservation facilities
   a. Contractor Accounting Office (portion)
   b. Financial and contract administration (portion)
   c. Water rights
   d. Power planning for SWP facilities (portion)
3. Replacement deposits for SWP control centers (portion)
4. Credits for a portion of Hyatt-Thermalito power generation
5. Power costs and credits related to pumping water to San Luis Reservoir for project operations (storage changes)
6. Value of power used and generated by William R. Gianelli Pumping-Generating Plant
7. Program costs (portion) to offset annual fish losses resulting from pumping at Harvey O. Banks Delta Pumping Plant (Department of Water Resources – Department of Fish and Game agreement)

Transportation Charge

Capital Cost Component

1. Planning, design, right-of-way, and construction costs of transportation facilities
2. O&M costs for newly constructed transportation facilities prior to initial operation
3. Activation costs for newly constructed transportation facilities
4. Power costs allocated to initial filling of Southern California reservoirs
5. Capitalized O&M costs (major repair work and so forth) for transportation facilities
6. Program costs (portion) to mitigate impacts on current Delta fishery population due to SWP pumping prior to 1986 (Department of Water Resources – Department of Fish and Game agreement)

Minimum OMP&R Component

1. Direct O&M costs of transportation facilities
   a. Headquarters and field divisions (portion)
   b. Insurance and FERC costs (portion)
2. General O&M costs related to transportation facilities
   a. Contractor Accounting Office (portion)
   b. Financial and contract administration (portion)
   c. Power planning for SWP facilities (portion)
3. Power costs and credits related to pumping water to Southern California reservoirs for project operations (storage changes)
4. Power costs for pumping water to replenish losses from transportation facilities
5. Other power costs
   a. Station service at transportation facility power and pumping plants
   b. Transmission service costs related to "backbone" transmission facilities
6. Replacement deposits for SWP control centers (portion)
7. Off-aqueduct power facility costs–bond service, bond cover costs (25 percent of bond service), bond reserves, transmission costs to provide service to "backbone," fuel costs taxes, and O&M–less power sales allocated to off-aqueduct power facilities
8. Program costs (portion) to offset annual fish losses resulting from pumping at Harvey O. Banks Delta Pumping Plant (Department of Water Resources – Department of Fish and Game agreement)

Variable OMP&R Component

1. Power purchase costs
   a. Capacity
   b. Energy
   c. Pine Flat bond service, O&M, and transmission costs allocated to aqueduct pumping plants
2. Alamo, Devil Canyon, William E. Warne, and Castaic power generation credited at the power plant reach and charged to aqueduct pumping plants
3. Hyatt-Thermalito and Thermalito Diversion Dam power plant generation charged to aqueduct pumping plants (credits for this generation are reflected in the Delta Water Rate)
4. Replacement deposits for equipment at pumping plants and power plants
5. Credits from sale of excess SWP system power
6. Program costs (portion) to offset annual fish losses resulting from pumping at Harvey O. Banks Delta Pumping Plant (Department of Water Resources – Department of Fish and Game agreement)

Note: Excludes costs recovered under the East Branch Enlargement Transportation Charge

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mined rate applies to all future entitlements, such adjustments are amortized during the remainder of the project repayment period. This appendix includes a redetermination of the Delta Water Rate for 1994.

Article 28 of the standard provisions stipulates that transportation charges be redetermined each year. The tables in Appendix B include the numerical data used in this redetermination. Transportation charges for prior years through 1992 included in those tables do not equal the amounts actually paid by contractors.

As provided under the Water System Revenue Bond Amendment to the water supply contracts, differences between actual payments and amounts computed in this redetermination are accumulated with interest and amortized during the remaining years of the contract repayment period. All computations for adjustments are included in the attachments accompanying each contractor's statement of charges and are reflected in revised copies of Table C through Table G of the contract, which are also furnished to each long-term water supply contractor in the annual Statement of Charges.

These redeterminations exclude four charges associated with water service other than the Delta Water Charge and the Transportation Charge. The excluded charges (and the manner in which such excluded charges are treated in this appendix) are:

1. Advances of funds pursuant to Article 24(d) of the standard provisions for excess capacity constructed by the state at the request of contractors;
2. Advances of funds pursuant to Article 10(d) of the standard provisions for delivery structures (turnouts) constructed by the state at the request of contractors. Partial information concerning actual and projected capital costs of such delivery structures is included in this appendix. Statements concerning these costs and data are furnished to the appropriate contractors at various times and are not part of the annual statements;
3. Payments for sale and service of surplus water to entities other than contractors, pursuant to Article 21 of the standard provisions, are also excluded. Those payments are generally based on the unit rates shown in Table B-25. Net revenues resulting from noncontractor service are applied as indicated on page 24 of Bulletin 132-71; and
4. Payments under the Devil Canyon-Castaic contract for costs of the Devil Canyon-Castaic facilities allocable to power generation. Charges billed as a result of the contract are billed separately from those billed as a result of the water supply contract. Information about the treatment of such charges in relation to redetermined transportation charges is included in special attachments to the bills of the six participating contractors.

The time and method of payment for corresponding components of the Delta Water Charge and the Transportation Charge are as follows:

1. The capital cost components of the Delta Water Charge and the Transportation Charge are paid in two semiannual installments, due January 1 and July 1 of each year, based on statements furnished by the state about July 1 of the preceding year;
2. The minimum OMP&R components of the Delta Water Charge and the Transportation Charge are paid in 12 equal installments, due the first of each month and based on statements furnished by the state about July 1 of the preceding year; and
3. The variable OMP&R component of the Transportation Charge is paid in varying monthly amounts and is due the fifteenth day of the second month following actual water delivery. The

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charges are projected based on a unit charge per acre-foot established about July 1 of the preceding year. Those unit charges may be revised during the year to reflect current power costs and revenues. The unit charges are applied to actual monthly delivery quantities as determined by the state on or before the fifteenth day of the month following actual delivery.

Bases for Allocating Reimbursable Costs among Contractors

This section describes the procedures for allocating reimbursable costs of Project Transportation Facilities among contractors (see upper right portion of Figure 1). Those costs do not include annual costs of Off-Aqueduct Power Facilities, which are explained in the section "Project Water Charges."

Capital and Minimum OMP&R Costs

Figure 3 includes information about the repayment reaches that form the basis for allocating reimbursable costs of the Project Transportation Facilities among contractors.

Allocations of reimbursable capital costs and minimum OMP&R costs of each reach are based on the proportionate maximum use of that reach by respective contractors under planned conditions of full development.

Information about the derivation of ratios that represent the proportionate maximum use of each aqueduct reach by the respective contractors was first reported in Bulletin 132-70. The ratios in Bulletin 132-70 were subsequently revised for: (1) the North Bay Aqueduct (2) the South Bay Aqueduct (3) the California Aqueduct from the Delta to the Coastal Branch and (4) the Coastal Branch.

All the revisions reported in previous bulletins regarding the derivation of ratios that represent the proportionate maximum use of each aqueduct reach by the respective contractors are reported in Table B-1 and B-2 of Bulletin 132-91.

Table B-1 presents the reach ratios currently applicable to reimbursable capital costs.

Table B-2 presents corresponding ratios for reimbursable minimum OMP&R costs. Requested excess capacity is omitted when deriving ratios applicable to capital costs because the capital costs for the excess capacity are paid on an incremental-cost basis and not a proportionate-use basis. However, requested excess capacity is accounted for in the ratios applicable to minimum OMP&R costs.

Variable OMP&R Costs

Article 26(a) includes provisions to ensure that the variable OMP&R component of the Transportation Charge will result in a return to the state of those costs that depend on and vary with the amount of SWP water deliveries. (The minimum OMP&R component results in a return of those operating costs that do not vary with deliveries.) Under Article 26(a) all such costs for a reach for a given year will be allocated among contractors in proportion to the actual annual use of that reach by the respective contractors.

Table B-3 summarizes the total variable OMP&R costs for each SWP pumping and power plant. Those variable costs consist of:

- Costs of capacity and energy used exclusive of associated power transmission and station service charges (transmission and station service costs are classified as minimum OMP&R costs);
- Credits for capacity and energy produced at aqueduct power recovery plants (treated as negative costs); and
- Annual payments to sinking fund reserves to finance periodic replacement of major plant machinery components having economic lives shorter than

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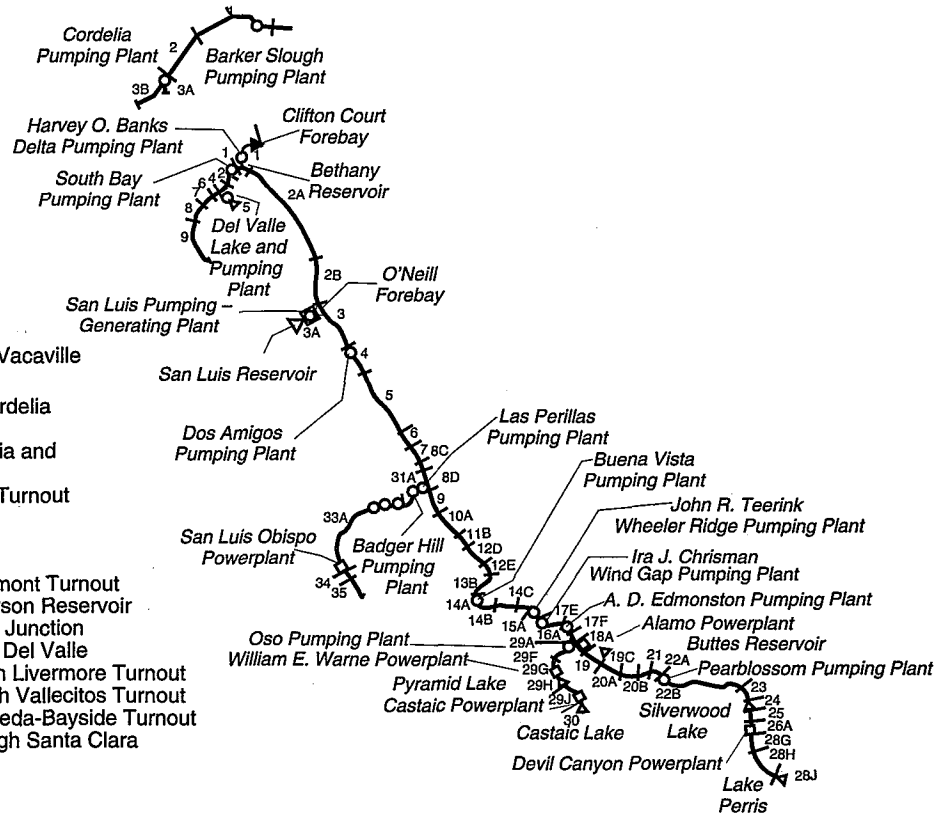

North Bay Aqueduct

1 Barker Slough through Fairfield/Vacaville Turnout
2 Fairfield/Vacaville Turnout to Cordelia Forebay
3A Cordelia Forebay through Benicia and Vallejo Turnouts
3B Cordelia Forebay through NapaTurnout Reservoir

South Bay Aqueduct

1 Bethany Reservoir through Altamont Turnout
2 Altamont Turnout through Patterson Reservoir
4 Patterson Reservoir to Del Valle Junction
5 Del Valle Junction through Lake Del Valle
6 Del Valle Junction through South Livermore Turnout
7 South Livermore Turnout through Vallecitos Turnout
8 Vallecitos Turnout through Alameda-Bayside Turnout
9 Alameda-Bayside Turnout through Santa Clara Terminal Facilities

California Aqueduct

North San Joaquin Division

1 Delta through Bethany Reservoir
2A Bethany Reservoir to Orestimba Creek
2B Orestimba Creek to O'Neill Forebay

San Luis Division

3A San Luis Dam, Reservoir and Pumping-Generating Plant
3 O'Neill Forebay to Dos Amigos Pumping Plant
4 Dos Amigos Pumping Plant to Panoche Creek
5 Panoche Creek to Five Points
6 Five Points to Arroyo Pasajero
7 Arroyo Pasajero to Kettleman City

South San Joaquin Division

8C Kettleman City through Milham Avenue
8D Milham Avenue through Avenal Gap
9 Avenal Gap through Twisselman Road
10A Twisselman Road through Lost Hills
11B Lost Hills to 7th Standard Road
12D 7th Standard Road through Elk Hills Road
12E Elk Hills Road through Tupman Road
13B Tupman Road to Buena Vista Pumping Plant
14A Buena Vista Pumping Plant through Santiago Creek
14B Santiago Creek through Old River Road
14C Old River Road to John R. Teerink Wheeler Ridge Pumping Plant
15A John R. Teerink Wheeler Ridge Pumping Plant to Ira J. Chrisman Wind Gap Pumping Plant
16A Ira J. Chrisman Wind Gap Pumping Plant to A. D. Edmonston Pumping Plant

Tehachapi Division

17E A. D. Edmonston Pumping Plant to Carley V. Porter Tunnel
17F Carley V. Porter Tunnel to Junction, West Branch, California Aqueduct

California Aqueduct (continued)

Mojave Division

18A Junction, West Branch, California Aqueduct through Alamo Powerplant
19 Alamo Powerplant to Fairmont
19C Buttes Junction through Buttes Reservoir
20A Fairmont through 70th Street West
20B 70th Street West to Palmdale
21 Palmdale to Littlerock Creek
22A Littlerock Creek to Pearblossom Pumping Plant
22B Pearblossom Pumping Plant to West Fork Mojave River
23 West Fork Mojave River to Silverwood Lake
24 Cedar Springs Dam and Silverwood Lake

Santa Ana Division

25 Silverwood Lake to South Portal, San Bernardino Tunnel
26A South Portal, San Bernardino Tunnel through Devil Canyon Powerplant
28G Devil Canyon Powerplant to Barton Road
28H Barton Road to Lake Perris
28J Perris Dam and Lake Perris

West Branch, California Aqueduct

29A Junction, West Branch, California Aqueduct through Oso Pumping Plant
29F Oso Pumping Plant through Quail Embankment
29G Quail Embankment through William E. Warne Powerplant
29H Pyramid Dam and Lake
29J Pyramid Lake through Castaic Powerplant
30 Castaic Dam and Lake

Coastal Branch, California Aqueduct

31A Avenal Gap to Devil's Den Pumping Plant
33A Devil's Den Pumping Plant through San Luis Obispo Powerplant
34 San Luis Obispo Powerplant to Arroyo Grande
35 Arroyo Grande through Santa Maria Terminus

Fig. 3. Repayment reaches and descriptions

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the project repayment period. Sinking fund payments for years 1962 through 1979 were based on a schedule determined in 1970. Sinking fund payments for years 1980 through 2035 are based on revised replacement schedules. Those schedules were updated in 1986 and 1991. The Department plans to update the replacement deposit schedules periodically.

Table B-3 excludes plant capacity and energy costs associated with surplus and unscheduled water service after May 1, 1973. Prior to that date, surplus water service was charged the same unit variable OMP&R component as entitlement water service. An amendment to the long-term water supply contracts in 1973 significantly changed the rate structure for surplus water service. Capacity and energy costs for pumping surplus and unscheduled water have been allocated directly to those water contractors receiving surplus and unscheduled water service. A contract amendment in 1991 again revised the rate structure to provide for payment of costs through a melded power rate. These revisions to surplus and unscheduled water charges are effective from the date of the amendments and are not applied to past charges.

Water Conveyance

The water conveyance quantities that form the basis for allocating costs are presented in Tables B-4, B-5A, B-5B, and B-6.

Table B-4 presents the schedules of annual entitlements as set forth in Table A and Article 6(a) of each water supply contract.

Table B-5A shows amounts of actual and projected entitlement water quantities delivered from each aqueduct reach to each contractor. Projected deliveries for years 1994 through 2035 are based on contractors' requests for future water deliveries. The quantities included in Table B-5A also include nonproject water delivered to contractors and surplus water deliveries prior to May 1, 1973.

Table B-5B presents a summary of actual and projected annual entitlement water quantities delivered or to be delivered to each contractor. The quantities also include amounts of nonproject water and surplus water delivered prior to May 1, 1973.

Table B-6 summarizes the annual entitlement water quantities conveyed or to be conveyed through each aqueduct pumping plant or power plant for each of the following functions:

- *Deliveries—Water supply.* Water made available to contractors at down-aqueduct delivery structures, including certain hypothetical quantities to facilitate cost allocations, for those years when deliveries are made from net annual storage withdrawals.

  The net annual amounts of storage withdrawals are hypothetically added to the actual amounts conveyed from the Delta to the reservoirs since deliveries made from storage withdrawals bear the same variable OMP&R costs per acre-foot as they would if the deliveries were actually conveyed from the Delta in that year.

  The hypothetical increases in the deliveries made from reservoir storage withdrawals are offset by equal credits to the minimum OMP&R costs of the respective reservoirs. Thus, the variable OMP&R components per acre-foot (Table B-17) may be applied to the total annual quantities delivered either from aqueduct reservoir storage or from the Delta.
- *Initial Fill Water.* Water required for initial filling of down-aqueduct reaches and reservoirs or for repayment of preconsolidation water used during construction.
- *Deliveries—Recreation.* Water delivered to down-aqueduct recreation developments or used for fish and wildlife mitigation or enhancement.

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- *Operational Losses.* Water lost through evaporation and seepage from all down-aqueduct reaches.
- *Reservoir Storage Changes.* Water placed in down-aqueduct reservoir storage after initial filling of the reservoirs, including projected net annual storage accretions (positive values) and withdrawals (negative values) for all down-aqueduct reservoirs of the Project Transportation Facilities.

Those variable OMP&R costs (Table B-12) that are allocable to storage accretions are assigned to the minimum OMP&R costs of the respective reservoirs. With one exception, "Reservoir Storage Changes" also includes SWP water placed into Southern California ground water storage during the period from 1978 through 1982 (as positive amounts); and water withdrawn from storage and delivered to contractors in 1979, 1982, 1987, 1988, and 1989 (as negative amounts). The exception is Banks Pumping Plant, where ground water additions and withdrawals are included in "Conservation Water."

Table B-6 also summarizes the following two amounts under the heading "Conservation Water" (Column 25):

1. Net annual water amounts stored and projected to be stored in San Luis Reservoir, and
2. Water lost and projected to be lost through evaporation and seepage from San Luis Reservoir and from the water conservation portion of the California Aqueduct.

"Conservation Water" includes initial fill water, operational losses, and net annual storage changes associated with San Luis Reservoir and the portion of the California Aqueduct that is allocated to conservation. The same allocation procedure outlined above for Transportation Facilities also applies to Conservation Facilities, except that the hypothetical cost increases are added to the variable OMP&R cost to be reimbursed through the Transportation Charge and deducted from the minimum OMP&R costs to be reimbursed through the Delta Water Charge.

San Luis Reservoir is operated to conserve water for future delivery to downstream contractors. To account for costs associated with reservoir storage, those power and replacement costs of Banks Pumping Plant (a joint Transportation-Conservation Facility) that are allocated to the conveyance of annual conservation water quantities are transferred to the capital costs of San Luis Reservoir (during initial fill) or to the minimum OMP&R costs of San Luis Reservoir (subsequent to initial fill).

In years of net storage withdrawal from San Luis Reservoir, a portion of the minimum OMP&R cost of the reservoir is transferred to the variable OMP&R cost of Banks Pumping Plant. That transfer is equal to the variable OMP&R cost per acre-foot of delivery through Banks Pumping Plant for that year, multiplied by the acre-feet of deliveries derived from San Luis Reservoir storage for that year. Table B-6 also includes amounts of nonproject water and surplus water delivered prior to May 1, 1973.

Bases for Reimbursable Costs

This section describes the methods used to derive the costs allocated by the procedures outlined in the preceding section. A diagram of the cost derivation process is shown in the upper-left quadrant of Figure 1.

First, the capital and minimum OMP&R costs of all SWP facilities are allocated among the various project purposes according to the allocation percentages in Table 2. Those percentages may be subject to revision in the future.

The redeterminations in this appendix involve only the costs that are allocated to water supply and power generation.

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TABLE 2
Cost Allocation Factors
(Percentages)

Project Facilities	*Water Supply and Power Generation*		*All Other Purposes (Nonreimbursable)*	
	Capital Costs	*Minimum OMP&R Costs*	*Capital Costs*	*Minimum OMP&R Costs*
Project Conservation Facilities				
Frenchman Dam and Lake	21.5	0.0	78.5	100.0
Antelope Dam and Lake	0.0	0.0	100.0	100.0
Grizzly Valley Dam and Lake Davis	1.0	1.8	99.0	98.2
Oroville Division (a	97.1	99.5	2.9	0.5
California Aqueduct, Delta to Dos Amigos Pumping Plant	96.6	96.7	3.4	3.3
Delta Facilities	86.0	86.0	14.0	14.0
Transportation Facilities				
Grizzly Valley Pipeline	100.0	100.0	0.0	0.0
North Bay Aqueduct	100.0	100.0	0.0	0.0
South Bay Aqueduct:				
Del Valle Dam and Lake Del Valle	25.2	22.0	74.8 (b	78.0 (c
Remainder of South Bay Aqueduct	100.0	100.0	0.0	0.0
California Aqueduct:				
Delta to Dos Amigos Pumping Plant	96.6	96.7	3.4	3.3
Dos Amigos Pumping Plant to termini (excluding Coastal Branch)	94.3	96.9	5.7	3.1
Coastal Branch	100.0	100.0	0.0	0.0

a) Percentages indicated are applicable to the remaining costs of the division after excluding costs allocated to flood control that are reimbursed by the federal government (22 percent of capital costs) and excluding specific power costs of Edward Hyatt and Thermalito Powerplants and switchyards.
b) Percentage indicated consists of 48.0 percent of costs allocated to recreation and 26.8 percent to flood control.
c) Percentage indicated consists of 44.9 percent of costs allocated to recreation and 33.1 percent to flood control.

Capital Costs

Capital costs used in the redeterminations in this appendix reflect prices prevailing on December 31, 1992; future cost escalation will be reflected in subsequent bulletins.

Table B-7 presents a reconciliation of estimated total capital costs of each Project Conservation Facility and each Project Transportation Facility. This table shows the relationship of Project Conservation and Transportation costs allocated to contractors (Tables B-8, B-9, B-10, and B-13) to the total SWP capital costs projected by the Department.

Table B-8 shows costs incurred and projected to be incurred by the state in connection with each contractor's turnouts. Costs incurred by the state for both state-constructed and contractor-constructed delivery structures are paid directly by the contractors for which the structures are built. (The state incurs design review and construction inspection costs in connection with contractor-constructed turnouts.)

Table B-9 lists costs and payments for excess capacity built into SWP Transportation Facilities according to amendments to contracts with the Metropolitan Water District of Southern California, San Gabriel Valley Municipal Water District, and Antelope Valley-East Kern Water Agency as follows:

1. Additional costs incurred by the state for requested excess capacity;
2. Advances by water contractors of funds for such costs; and
3. Credits for advances in excess of costs, which were applied to respective con-

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tractors' installments of the capital cost component of the Transportation Charge in 1981.

Under Amendment 2 of MWDSC's contract, 809 cfs of excess capacity originally was constructed in reaches of the West Branch at MWDSC's request. That capacity was reclassified as basic capacity of SWP transportation facilities under Amendment 7. MWDSC paid $16.3 million as a prepayment of the capital cost component of the Transportation Charge in lieu of advancing funds for the original requested capacity.

Amendment 5 to MWDSC's contract requires that additional costs for modifications to the Santa Ana Valley Pipeline (required for enlargement of Lake Perris) will be allocated to MWDSC and returned to the state through payments of the Transportation Charge. The additional costs to be repaid through MWDSC's capital cost component for the aqueduct reach from Devil Canyon Powerplant to Barton Road total about $6.7 million (see Bulletin 132-72, page 98).

Table B-10 presents the actual and projected annual capital costs of each aqueduct reach that will eventually be returned to the state, with interest, through contractors' payments of the capital cost component under the Transportation Charge and of debt service under the Devil Canyon-Castaic contracts.

Annual Operating Costs

Annual operating costs allocable to water supply and power generation are returned to the state through the minimum and variable OMP&R components of Delta Water and Transportation Charges and through a portion of the revenues from energy sales. All reimbursable operating costs of conservation facilities are included in the minimum OMP&R component of the Delta Water Charge.

Transportation and Devil Canyon-Castaic Contract Costs

Table B-11 shows the amounts of the actual and projected costs to be reimbursed through payments of (1) the minimum OMP&R component of the Transportation Charge, and (2) allocated operating costs under the Devil Canyon-Castaic contract. The table includes the following seven types of operating costs incurred annually which do not vary with water quantities delivered to the contractors:

1. All direct labor charges for field operation and maintenance personnel, including associated indirect costs;
2. A distributed share of general operating costs that cannot be identified solely with one facility or aqueduct reach;
3. Electric power transmission and station service costs allocable to aqueduct pumping and power recovery plants;
4. All costs for equipment, materials, and supplies and for replacement of electronic control systems;
5. Portions of the power and replacement costs of all up-aqueduct pumping and power plants that are allocable to the annual conveyance of water (1) lost to evaporation and seepage from respective aqueduct reaches, or (2) placed into storage in respective reservoirs of the Project Transportation Facilities (after initial fill);
6. Credits, which offset those costs in (5) above, for deliveries drawn from reservoir storage; and
7. Escalation of projected operating costs at zero percent per year for 1993, five percent for 1994, and four percent for 1995.

Table B-12 shows the portions of variable OMP&R costs in Table B-3 that are allocable

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to the water supply delivery quantities included in Table B-6 and reimbursed through payments of the variable OMP&R component of the Transportation Charge.

The following five adjustments are made to the Table B-3 costs to derive the Table B-12 costs:

1. A portion of the variable OMP&R costs of each plant is allocated to recreation. The allocation to recreation is in proportion to the quantity of water conveyed through each plant each year for delivery to on-shore recreational developments.
2. That portion of variable plant costs attributable to the initial fill of aqueduct reaches is allocated to the joint capital costs of respective down-aqueduct reaches and reservoirs.
3. That portion of costs attributable to evaporation and seepage is allocated to the joint minimum OMP&R costs of respective down-aqueduct reaches and reservoirs.
4. Adjustments are made for additions or withdrawals from storage in aqueduct reservoirs. In years when water is added to storage in aqueduct reservoirs, the cost of conveying this water into storage is charged to the minimum OMP&R costs of the corresponding reservoir. The unit cost is equal to the variable OMP&R unit rate for the year the water is conveyed into storage. In years when storage in aqueduct reservoirs is decreased for the purpose of making deliveries, a credit is applied to the minimum OMP&R costs of the reservoir from which the storage is released. This credit is equal to the number of acre-feet of storage reduction times the variable OMP&R unit rate for the year storage is released.
5. That portion of costs attributable to pumping water to replace evaporation and seepage losses and for additions or withdrawals from storage in San Luis Reservoir is charged to the minimum OMP&R component of the Delta Water Rate.

The remaining costs are allocated to Transportation water supply and repaid by the contractors.

Conservation Capital and Operating Costs

Table B-13 is a summary of actual and projected capital and operating costs of the initial Project Conservation Facilities. These costs are reimbursed through payments by contractors under (1) the Delta Water Charge; (2) Oroville power sales; and (3) Gianelli Generating Plant credits. Table B-13 also shows credits applied to the reimbursable capital costs of the Project Conservation Facilities according to negotiated settlements concerning incurred planning costs for the period from 1952 through 1978.

Project Water Charges

This section describes the redetermination of past and projected components of the Transportation Charge for annual revision of Tables C through G of each water supply contract. This section also describes the derivation of the unit Delta Water Rates and the Water System Revenue Bond Surcharge.

A summary of equivalent unit charges for each acre-foot of entitlement water service is also included for each contractor and each aqueduct reach. A diagram of all calculations may be found in the lower half of Figure 1.

Transportation Charges

The accumulation of allocated costs of each aqueduct reach to each contractor is the basis for the Transportation Charge components.

Table B-14 summarizes each contractor's share of the capital costs of aqueduct reaches

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TABLE 3

Criteria for Amortizing Capital Costs of Transportation Facilities

Contractor	*Year of Initial Payment (a*
Alameda County Flood Control and Water Conservation District, Zone 7	1963(b
Alameda County Water District	1963
Antelope Valley-East Kern Water Agency	1963
Castaic Lake Water Agency	1964
City of Yuba City	(c
Coachella Valley Water District	1964
County of Butte	(c
County of Kings	1968
Crestline-Lake Arrowhead Water Agency	1964
Desert Water Agency	1963(d
Dudley Ridge Water District	1968(e
Empire West Side Irrigation District	1968(e
Kern County Water Agency	
Agricultural Use	1968 (e
Municipal and Industrial Use	1965
Littlerock Creek Irrigation District	1964
Mojave Water Agency	1964
Napa County Flood Control and Water Conservation District	1966
Oak Flat Water District	1968 (e
Palmdale Water District	1964
Plumas County Flood Control and Water Conservation District	1970
San Bernardino Valley Municipal Water District	1963
San Gabriel Valley Municipal Water District	1963 (d
San Gorgonio Pass Water Agency	1963 (d
San Luis Obispo County Flood Control and Water Conservation District	1964(f
Santa Barbara County Flood Control and Water Conservation District	1964 (f
Santa Clara Valley Water District	1963
Solano County Water Agency	1973
The Metropolitan Water District of Southern California	1963
Tulare Lake Basin Water Storage District	1968(e
Ventura County Flood Control District	1964

a) Allocated capital costs of Transportation Facilities amortized in equal annual installments unless otherwise noted.
b) Principal payments on each annual capital cost prior to 1971 delayed until calendar year 1972, except payments for 1963.
c) Payments for Delta Water Charge only.
d) Payment deferred for 1963 and added to 1964 payment with accrued interest.
e) Under Article 45 of the contracts for supply of agricultural water, capital costs of Transportation Facilities allocated to agricultural water supply are amortized by using an equivalent unit rate per acre-foot applied to the annual entitlements (Table B-4) through the project repayment period.
f) All principal and interest payments for costs of Coastal Stub deferred until 1976.

presented in Table B-10. Those amounts are determined by applying proportionate-use ratios set forth in Table B-1 to the costs in Table B-10. The resulting allocated costs are set forth in Table C of the respective water supply contracts.

Prepayments of the capital cost component, required under Metropolitan Water District of Southern California's Amendment 7, are included as negative capital costs in Table B-14 and Table C of MWDSC's Statement of Charges for 1994. Solano County Water Agency, Empire West Side Irrigation District, and Castaic Lake Water Agency also prepaid capital costs (see Table B-14 footnotes).

Both Table B-14 and Table C of the six contracts for project water service below Devil Canyon Powerplant and Castaic Powerplant include the capital costs reimbursable under the Devil Canyon-Castaic contract.

Table B-15 summarizes the capital cost components of the Transportation Charge for each contractor for each year of the project repayment period, based on the amortization schedules included in Table 3 and determined at the current Project Interest Rate of 4.620 percent per annum.

Those estimated components, subsequently adjusted for prior overpayments or underpayments, are included in Table D of the water supply contracts. Costs of excess capacity are billed separately and are not included in Table B-15. Table B-15 includes the debt service payments due from the six contractors down-aqueduct from Devil Canyon Powerplant and Castaic Powerplant according to terms of the Devil Canyon-Castaic contract.

Table B-16A summarizes the minimum OMP&R components of the Transportation Charge for each year of the project repayment

period. Those estimated components, subsequently adjusted for prior overpayments or underpayments, are included in Table E of the respective contracts.

The total amounts included in Table B-16A are determined by applying the proportionate-use ratios in Table B-2 to the reach costs in Table B-11. Table B-16A excludes charges for Off-Aqueduct Power Facilities, which are included separately in Table B-16B. Both Table B-16A and Table E for the six contractors down-aqueduct from Devil Canyon Powerplant and Castaic Powerplant include the portion of operating costs payable under the Devil Canyon-Castaic contract.

As part of operating agreements with the Department, Kern County Water Agency is billed for any additional operating costs caused by early installation of units in Las Perillas and Badger Hill Pumping Plants by Berrenda Mesa Water Storage District (see Bulletin 132-71, page 7). Under those agreements, minimum OMP&R costs of Reach 31A are assigned directly to KCWA, with the remaining reach costs allocated by application of the proportionate-use ratios (see Table 4).

Table B16-B summarizes the annual charges for Off-Aqueduct Power Facilities allocated to each water contractor, adjusted for prior overpayments or underpayments of charges. Those charges are to repay all Off-Aqueduct Power costs, including bond service, deposits for reserves, operation and maintenance costs, fuel costs, taxes, and insurance.

The General Bond Resolution, adopted October 1, 1979, requires that sufficient revenues be collected each year to repay all of those costs. In addition, an amount totaling 25 percent of the annual bond service is collected each year to ensure that sufficient funds are available to cover all annual costs. Any revenues collected and not needed during the

TABLE 4

Minimum OMP&R Costs of Reach 31A Charged to Kern County Water Agency 1969 through 1996

Year	*Direct Charge*	*Year*	*Direct Charge*
1969	$46,510	1983	$89,891
1970	46,302	1984	106,720
1971	140,072	1985	158,854
1972	95,016	1986	136,616
1973	72,452	1987	125,673
1974	100,688	1988	130,900
1975	127,456	1989	128,594
1976	138,501	1990	136,444
1977	120,749	1991	158,792
1978	157,638	1992	185,664
1979	121,207	1993	324,303
1980	150,715	1994	312,071
1981	74,759	1995	300,172
1982	82,694	1996	276,958
Total			**$4,046,411**

TABLE 5

Off-Aqueduct Power Facility Charges and Credits Related to Deliveries of Purchased Water for 1992

Facility	*Amount*
Charges	
Reid Gardner Powerplant	$92,004,355
Bottle Rock Powerplant	16,769,417
South Geysers Powerplant	7,586,525
Subtotal	116,360,297
Credits	
Off-aqueduct power sales	6,173,731
Excise tax refund	2,437,394
Transmission cost refund	1,540,558
Miscellaneous water	
Napa County Flood Control and Water Conservation District	22,048
Solano County Water Agency	28,647
Dudley Ridge Water District	14,383
Kern County Water Agency	(34,452)
Tulare Lake Basin Water Storage District	330,631
Metropolitan Water District of Southern California	1,016,714
Westlands Water District	329,047
City and County of San Francisco	1,041,493
Department of Fish and Game	33,850
Total	**$103,426,253**

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TABLE 6

Amounts of Projected Charges for Off-Aqueduct Power Facilities

Year	Total Annual Cost	25 Percent Bond Service
1993	$124,439,568	$13,101,205
1994	128,988,478	13,267,196
1995	128,947,733	13,276,047
1996	135,901,729	13,285,046
1997	134,966,121	13,297,924
1998	132,031,463	13,294,943
1999	126,110,707	13,310,936
2000	114,420,652	13,248,260
2001	113,018,130	13,242,691
2002	107,739,475	13,239,694
2003	102,556,196	13,256,773
2004	96,178,111	13,254,491
2005	86,535,232	13,020,850
2006	84,425,977	13,031,332
2007	79,043,354	13,029,342
2008	72,760,838	13,027,174
2009	67,346,328	13,017,807
2010	59,655,038	13,017,683
2011	56,717,950	13,020,400
2012	50,743,778	13,080,101
2013	13,990,981	4,426,888
2014	23,261,390	4,443,478
2015	9,926,390	1,776,478
2016	4,890,015	978,003
2017	2,217,265	443,453
2018	2,216,515	443,303
2019	2,223,765	444,753
2020	2,232,015	446,403
2021	2,228,390	445,678
2022	2,233,796	446,759
2023	2,240,297	448,060
2024	4,630,122	926,025

TABLE 7

Energy Required to Pump Entitlement Water

Pumping Plant	kWh per Acre-Foot(a At Plant	Cumulative from Delta
Barker Slough	223	223
Cordelia-Benicia	434	657
Cordelia-Vallejo	178	401
Cordelia-Napa	563	786
Harvey O. Banks Delta	296	296
South Bay (including Del Valle)	869	1,165
Dos Amigos	138	434
Las Perillas	77	511
Badger Hill	200	711
Buena Vista	242	676
John R. Teerink Wheeler Ridge	295	971
Ira J. Chrisman Wind Gap	639	1,610
A. D. Edmonston	2,236	3,846
Pearblossom	703	4,549
Oso	280	4,126

a) Includes transmission losses.

year are refunded to the contractors in the next year.

Table 5 is a summary of Off-Aqueduct Power Facility charges and credits related to deliveries for 1992.

Table 6 shows project charges for Off-Aqueduct Power Facilities and an amount equal to 25 percent of annual bond service for 1993 and each year thereafter.

The annual charges for Off-Aqueduct Power Facilities are allocated among contractors in proportion to the electrical energy required to pump entitlement water for the year. The initial allocation for the Statements of Charges is based on estimates of energy to pump requested entitlement water deliveries.

An interim adjustment in the allocation of Off-Aqueduct Power costs may be made in May of each year based on updated cost estimates and April revisions in water delivery schedules for annual entitlement. An additional adjustment is made the following year based on actual entitlement water deliveries and actual costs for the year.

The energy required to pump each contractor's entitlement water is calculated using the kilowatt-hour per acre-foot factors for the pumping plants upstream from the delivery turnouts. The factors are listed in Table 7. The amounts include transmission losses.

Table B-17 presents a summary of actual and projected total variable OMP&R costs for each acre-foot of water conveyed through each aqueduct pumping plant and power plant for each year of the project repayment period. Those data are derived according to the following procedure specified in Article 26(a) of the Standard Provisions for calculating the variable OMP&R component of the Transportation Charge:

An annual charge per acre-foot of projected water deliveries to all contractors served from or through each reach is determined so the projected variable OMP&R costs to be incurred for each reach will be returned to the state.

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The total annual variable OMP&R component for any contractor for a given reach is obtained by multiplying the unit charge associated with that reach by the quantity of water actually delivered from or through the reach to the contractor.

The data summarized in Table B-17 are derived by dividing the costs shown in Table B-3 by the quantities of water shown in Table B-6. However, certain costs included in Table B-3 for extra peaking service, which would otherwise constitute variable OMP&R costs, are assigned directly to contractors requesting this type of service (see Bulletin 132-71, page 21, and Water Service Contractors Council Memo No. 593, July 10, 1970). Those costs are excluded from the unit charges shown in Table B-17. Peaking charges based on additional capacity ceased in 1983. Since 1984, costs are based on market energy rates. The amounts of extra peaking charges for additional power costs are listed in Tables 8 and 9.

The unit rates shown in Table B-17 constitute the rates for the pumping plants and power plants listed. The cumulative rates constitute the total rates, cumulative from the Sacramento-San Joaquin Delta, and are applicable to deliveries from or downstream of the pumping plants and power plants. Extra peaking service costs are excluded.

Table B-18 shows the variable OMP&R components of the Transportation Charge for each contractor for each year of the project repayment period. Table B-18 is developed from the costs per acre-foot included in Table B-17 and the delivery quantities for each contractor from each reach as indicated in Table B-5A, plus any costs for extra peaking service. Those estimated components, subsequently adjusted for prior overpayments or underpayments, are included in Table F of the respective water supply contracts.

Table B-19 summarizes the annual Transportation Charges for each contractor (the sums of the corresponding amounts included in Tables B-15, B-16A, B-16B, and B-18). Those estimated payments, subsequently adjusted for prior overpayments or underpayments, are set forth in Table G of the respective water supply contracts.

Both Table B-19 and Table G for the six contractors down-aqueduct from Devil Canyon Powerplant and Castaic Powerplant include amounts of debt service and operating cost payments due according to provisions of the Devil Canyon-Castaic contract.

Delta Water Charges

Table B-20A presents the calculation of the Delta Water Rate for the initial Conservation Facilities applicable in 1994 according to the amended Articles 22(e) and 22(g) of all 29 contracts. The Delta Water Rate was calculated at a Project Interest Rate of 4.620 percent based on Conservation Facility costs shown in Table B-13. That Delta Water Rate is used to compute future Delta Water Charges shown in Table B-21.

Table B-20B shows each component of the 1994 Delta Water Rate from Table B-20A.

Table B-21 summarizes the annual Delta Water Charge for each contractor. The projected charges in Table B-21 are developed by multiplying the total rate per acre-foot, as shown in Table B-20A, by the amount of entitlement water for each contractor as shown in Table B-4.

Water System Revenue Bond Surcharge

Table B-22 summarizes the Water System Revenue Bond Surcharge to the Delta Water Charge and the Transportation capital cost component of each contractor. The surcharge shown in Table B-22 includes the financing costs of WSRB Series B through L. This surcharge is levied according to an amendment to the water supply contracts for repaying Water System Revenue Bond financing costs. All long-term water supply contractors have signed that amendment.

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TABLE 8

Extra Peaking Charges for Additional Power Capacity, by Pumping Plant

(Dollars)

Year	Cordelia	South Bay	Harvey O. Banks Delta	Dos Amigos	Las Perillas and Badger Hill	Buena Vista	John R. Teerink Wheeler Ridge	Ira J. Chrisman	A.D. Edmonston	Total
1972	0	0	0	10,589	24,700	0	0	0	0	35,289
1973	0	0	0	0	6,016	0	0	0	0	6,016
1974	0	0	0	0	7,140	0	0	0	0	7,140
1975	0	0	0	494	6,397	0	0	0	0	6,891
1976	0	0	0	0	1,981	0	0	0	0	1,981
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	45,145	3,680	0	0	0	0	48,825
1979	0	0	0	0	3,306	0	0	0	0	3,306
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	12,123	0	0	0	0	0	12,123
1982	0	0	0	89,339	0	0	0	0	0	89,339
1983	0	48	0	10,804	369	0	0	0	0	11,221
1984	0	2,874	809	90,091	18,490	22,450	7,123	9,052	0	150,889
1985	0	2,029	98	18,563	1,957	2,424	958	2,082	48,767	76,878
1986	0	0	13	2,219	0	0	0	0	4,613	6,845
1987	0	831	95	19,220	2,980	2,272	689	754	19,019	45,860
1988	990	1,223	72	49,843	4,784	6,172	1,797	2,193	44,523	111,597
1984	4,940	96	239	49,502	4,967	5,983	1,914	2,448	6,525	76,614
1990	64	445	0	26,701	0	85	0	305	1,048	28,648
Total	5,994	7,546	1,326	424,633	86,767	39,386	12,481	16,834	124,495	719,462

TABLE 9

Extra Peaking Charges for Additional Power Capacity, by Contractor

(Dollars)

Year	Napa County FC &WCD	Solano County Water Agency	Alameda FC &WCD, Zone 7	Alameda County Water Agency	Santa Clara Valley Water District	Dudley Ridge Water District	Empire West Side Irrigation District	Kern County Water Agency	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Antelope Valley East Kern Water Agency	Castaic Lake Water Agency	Littlerock Creek Irrigation District	Palmdale Water District	San Gabriel Valley Municipal Water District	Total
1972	0	0	0	0	0	0	0	35,279	0	0	10	0	0	0	0	0	35,289
1973	0	0	0	0	0	0	0	6,016	0	0	0	0	0	0	0	0	6,016
1974	0	0	0	0	0	0	0	7,140	0	0	0	0	0	0	0	0	7,140
1975	0	0	0	0	0	0	0	6,891	0	0	0	0	0	0	0	0	6,891
1976	0	0	0	0	0	0	0	1,981	0	0	0	0	0	0	0	0	1,981
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	2,035	0	44,484	42	0	0	2,264	0	0	0	0	48,825
1979	0	0	0	0	0	0	0	2,821	0	0	0	0	485	0	0	0	3,306
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	11,948	0	0	0	0	0	175	0	0	12,123
1982	0	0	0	0	0	2,173	0	80,945	0	0	0	4,671	1,128	0	0	422	89,339
1983	0	0	0	0	48	9,448	0	0	1,356	0	0	0	369	0	0	0	11,221
1984	0	0	0	0	2,874	0	0	144,019	281	809	0	0	2,906	0	0	0	150,889
1985	0	0	0	2,029	0	0	64	25,664	0	98	0	48,767	256	0	0	0	76,878
1986	0	0	0	0	0	0	0	0	0	13	2,219	4,613	0	0	0	0	6,845
1987	0	0	230	0	601	313	84	24,135	0	95	0	18,206	1,383	813	0	0	45,860
1988	891	99	662	561	0	1,853	1,404	58,538	0	72	2,368	44,523	626	0	0	0	111,597
1989	3,477	1,463	96	0	0	14	403	55,074	0	239	8,280	0	1,043	1,035	5,490	0	76,614
1990	64	0	445	0	0	0	0	27,091	0	0	0	0	0	77	971	0	28,648
Total	4,432	1,562	1,433	2,590	3,523	15,836	1,955	532,026	1,679	1,326	12,877	123,044	8,196	2,100	6,461	422	719,462

Note: FC & WCD = Flood control and water conservation district

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Total Water Charges

Table B-23 summarizes the total annual charges to each contractor (the sum of the Transportation Charge in Table B-19, the Delta Water Charge in Table B-21, and the Water System Revenue Bond Surcharge in Table B-22). The charges do not reflect past payments by contractors and are unadjusted for prior overpayments or underpayments. The total Transportation Charge and Delta Water Charge for each contractor is listed in Tables B-19 and B-21, respectively.

Equivalent Total Water Charges

Table B-24 presents the Transportation Charge and Delta Water Charge in terms of the equivalent unit charge for each acre-foot of entitlement water now projected for delivery to the respective contractors.

These equivalent charges would provide the same principal sum at the end of the project's repayment period as annual payments to be made as part of the Delta Water Charge and Transportation Charge, plus interest at the Project Interest Rate, if applied to each acre-foot of entitlement water delivered to date; all surplus water delivered prior to May 1, 1973; and all entitlement water now projected to be delivered during the remainder of the project repayment period (Table B-5B).

The equivalent unit Delta Water Charges included in Table B-24 are greater than those in Table B-20A because current projections of entitlement water service are less for most contractors than the amounts shown in Table A.

Equivalent Water Costs by Reach

Table B-25 presents a summary of the equivalent unit Transportation cost of conveying entitlement water through respective aqueduct reaches of the project Transportation Facilities.

Those unit costs provide the basis of charges assessed (1) for extra service (such as for delivery of entitlements down-aqueduct from a contractor's turnout); and (2) for wheeling service to entities other than the long-term water supply contractors. An explanation of wheeling services in the California Aqueduct may be found at the end of this appendix.

The cumulative unit conveyance costs indicated for reaches in Table B-25 do not necessarily equal the equivalent unit Transportation Charges to contractors served from such reaches. The unit charges in Table B-24 account for the rate of water demand buildup and cost allocation factors of the individual contractors; however the unit costs included in Table B-25 reflect the effect of melding the respective buildups and allocation criteria of all contractors whose entitlements are conveyed through a given reach. Table B-25 also includes surplus water prior to May 1, 1973.

East Branch Enlargement Facility Charges

Table B-26 reflects the Department's projection of annual capital costs of the East Branch Enlargement facilities for each aqueduct reach. Those projections will be redetermined in future bulletins to include:

1. A reallocation of costs of constructing the present East Branch facilities between Alamo Powerplant and Silverwood Lake;
2. A reallocation of costs of Silverwood Lake to reflect additional use as a result of East Branch Enlargement operation;
3. Reallocation of costs of San Bernardino Tunnel to reflect redistribution of flow capacities necessary for the East Branch Enlargement facilities; and
4. Actual construction costs of the enlargement.

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These costs will be recovered with interest from the seven Southern California water contractors participating in the enlargement, according to their amended water supply contracts (see Table 10).

Table B-27 lists the projected minimum OMP&R costs for each reach of the enlargement to be repaid by the seven contractors participating in the East Branch Enlargement.

Currently, this table includes only the amounts of estimated incremental minimum OMP&R costs attributable to the East Branch Enlargement. According to Article 49 (e)(1), the contractors participating in the East Branch Enlargement will also share in the remaining minimum OMP&R costs of the affected reaches according to a formula to be developed by the Department in consultation with the affected contractors. Once the formula is developed, subsequent versions of this table will reflect the transfer of a share of the minimum OMP&R costs now included in Table B-11.

Table B-28 shows each participating contractor's share of the estimated capital costs of the East Branch Enlargement.

Table B-29 shows the amounts of the annual capital cost components of the East Branch Enlargement Transportation Charge for each participating contractor. This component consists of each contractor's allocated share of debt service on bonds sold to finance the enlargement.

Table B-30 shows the minimum OMP&R components of the East Branch Enlargement Transportation Charge for each participating contractor for each year of the project repayment period.

Table B-31 shows the annual East Branch Enlargement Transportation charges for each participating contractor (the sums of the corresponding amounts included in Table B-29 and B-30).

Surplus and Other Water Services

Table B-32 shows the quantities of surplus and unscheduled water delivered to long-term contractors from May 1, 1973, through December 31, 1992. Surplus and unscheduled water has been delivered from 1968 through 1992, except during the drought years of 1977, 1988, and 1989.

Table B-33 shows the costs for power that have been incurred by the state at each pumping plant associated with surplus and unscheduled water deliveries included in Table B-32.

Table B-34 shows the actual charges to each contractor for delivery of the surplus and unscheduled water quantities included in Table B-32. The method of determining those charges is described in Bulletin 132-77, page 117.

Wheeling Services in the California Aqueduct

When SWP has additional capability to move nonproject water through the California Aqueduct, services can include pumping, transporting (wheeling), and, if needed temporarily, storing in San Luis Reservoir for delivery at a later time. For example, through separate annual agreements, SWP has provided wheeling to temporary federal water contractors, with the federal Central Valley Project providing the water and electrical power required for making these deliveries. Nine San Joaquin Valley districts signed 20-year agreements during 1975 and 1976. Those agreements provide for wheeling federal CVP water through SWP facilities to the Cross Valley Canal in Kern County. Additional agreements provide for temporary storage, generally in cases when water cannot be wheeled directly to the user on a demand basis.

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TABLE 10

Determination of Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities among Participating Contractors

Reach Number	*Description*
18A	Junction, West Branch, California Aqueduct, through Alamo Powerplant
19	Alamo Powerplant to Fairmont
20A	Fairmont through 70th Street West
20B	70th Street West to Palmdale
21	Palmdale to Littlerock Creek
22A	Littlerock Creek to Pearblossom Pumping Plant
22B	Pearblossom Pumping Plant to West Fork Mojave River
23B	West Fork Mojave River to Silverwood Lake (excluding Mojave Siphon Powerplant facilities)
23C	Mojave Siphon Powerplant facilities
24	Cedar Springs Dam and Silverwood Lake
25	Silverwood Lake to South Portal, San Bernardino Tunnel
26A	South Portal, San Bernardino Tunnel through Devil Canyon Powerplant
26B	Devil Canyon Powerplant Bypass

Share of Enlargement Capacity (cfs)

Reach Number	*Antelope Valley-East Kern Water Agency*	*Coachella Valley Water District*	*Desert Water Agency*	*Mojave Water Agency*	*Palmdale Water District*	*San Bernardino Valley Municipal Water District*	*Metropolitan Water District of Southern California*	*Total*
18A		151	13	136	6		1,200	1,506
19		151	13	136	6		1,200	1,506
20A	35	151	13	136	6		1,200	1,541
20B	35	151	13	136	6		1,200	1,541
21	35	151	13	136			1,200	1,535
22A	35	151	13	136			1,200	1,535
22B		151	13	136			1,200	1,500
23B		184	67	212			1,200	1,663
23C		184	67				1,200	1,451
24		190	78				1,200	1,468
25		193	83			63	1,200	1,539
26A		193	83			63	1,200	1,539
26B							300	300

Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities (flow ratios)

Reach Number	*Antelope Valley-East Kern Water Agency*	*Coachella Valley Water District*	*Desert Water Agency*	*Mojave Water Agency*	*Palmdale Water District*	*San Bernardino Valley Municipal Water District*	*Metropolitan Water District of Southern California*	*Total*
18A	0.00000000	0.10026560	0.00863214	0.09030544	0.00398406	0.00000000	0.79681276	1.00000000
19	0.00000000	0.10026560	0.00863214	0.09030544	0.00398406	0.00000000	0.79681276	1.00000000
20A	0.02271252	0.09798832	0.00843608	0.08825438	0.00389358	0.00000000	0.77871512	1.00000000
20B	0.02271252	0.09798832	0.00843608	0.08825438	0.00389358	0.00000000	0.77871512	1.00000000
21	0.02280130	0.09837134	0.00846906	0.08859935	0.00000000	0.00000000	0.78175895	1.00000000
22A	0.02280130	0.09837134	0.00846906	0.08859935	0.00000000	0.00000000	0.78175895	1.00000000
22B	0.00000000	0.10066667	0.00866667	0.09066667	0.00000000	0.00000000	0.79999999	1.00000000
23B	0.00000000	0.11064342	0.04028863	0.12748046	0.00000000	0.00000000	0.72158749	1.00000000
23C	0.00000000	0.12680910	0.04617505	0.00000000	0.00000000	0.00000000	0.82701585	1.00000000
24	0.00000000	0.12942779	0.05313351	0.00000000	0.00000000	0.00000000	0.81743870	1.00000000
25	0.00000000	0.12540611	0.05393112	0.00000000	0.00000000	0.04093567	0.77972710	1.00000000
26A	0.00000000	0.12540611	0.05393112	0.00000000	0.00000000	0.04093567	0.77972710	1.00000000
26B	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	1.00000000	1.00000000

For the most part, rates for wheeling and storing water are developed from information included in Appendix B. Wheeling rates are calculated from Appendix B tables used in developing contractors' charges for the year the water is wheeled. Wheeling rates for 1993 were developed from Appendix B tables in Bulletin 132-92.

Annual wheeling rates are developed from four sources:

1. *Table B-25.* Capital and minimum OMP&R equivalent unit transportation costs of water for the aqueduct reaches used.
2. *Table B-20B.* That portion of the Delta Water Rate associated with capital and minimum costs of California Aqueduct reaches 1, 2A, 2B, and 3. For SWP purposes, a portion of costs for these reaches is allocated to SWP contractors as part of the Delta Water Rate. Those costs are added to wheeling rates because they reflect the total costs of constructing and maintaining these reaches, irrespective of the SWP repayment system.
3. *Variable replacement costs.* The Department charges a fixed rate for every acre-foot of water going through SWP pumping plants to provide funds for eventual replacement of equipment.
4. *Fish agreement costs.* On December 30, 1986, the Department of Water Resources and the Department of Fish and Game entered into an agreement to provide a means to offset specific fish losses at Banks Pumping Plant. Specific fish losses are calculated each year; those calculations are used to develop payment amounts for a fund to pay fishery program costs. Those costs are then recalculated on an acre-foot basis by the Department of Water Resources and are allocated to water users based on acre-feet of pumped water. Wheeling charges are based on estimates of the maximum number of fish likely to be lost each year due to pumping from the Delta.

The SWP operates under Delta export limitations as a condition of water right permits and DFG agreements. When deliveries from the California Aqueduct are requested during key summer months, some Cross Valley Canal contractors or contractors with annual wheeling agreements may be allowed to use SWP's share of water stored in San Luis Reservoir.

Advance deliveries are made from SWP water stored in San Luis Reservoir provided that the U. S. Bureau of Reclamation agrees to replace the water later in the year. The San Luis Reservoir use charge is equal to the San Luis Reservoir portion of the Delta Water Rate as indicated in Table B-20B plus the estimated value of the net energy costs to replace water in the San Luis Reservoir.

Surplus and Unscheduled Water Administrative Charges

The costs associated with administering the surplus and unscheduled water programs are divided into the five following categories. The costs are updated annually, and both programs are administered separately.

Category 1, Setup Costs. Activities include setting up the initial surplus or unscheduled water program, receiving and verifying surplus water requests, preparing annual surplus or unscheduled water contracts, and determining availability of surplus water.

Category 2, Determination of Costs. Activities include either preparing letters notifying all surplus water contractors or verbally notifying all unscheduled water contractors of the maximum charge for water each month

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and determining final delivery amounts and charges.

Category 3, Schedule Revision Costs. This cost is applicable only to the surplus water program. Activities include analyzing revised operation studies and preparing revised delivery schedules.

Category 4, Delivery Billing Costs. Activities include analyzing delivery data from Division of Operations and Maintenance field divisions, updating data summaries, and preparing monthly bills. The multiple scheduling each month for unscheduled water is included in the delivery billing costs.

Category 5, Computer Program Development Costs. Activities include developing computer programs to allocate available surplus water or unscheduled water among contractors and determining the power charge for pumping surplus or unscheduled water. Those costs are not incurred annually.

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Tables for Determining Water Charges

Tables B-1 through B-34

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TABLE B-1

Factors for Distributing Reach Capital Costs among Contractors

Reach No.	Reach Description	North Bay Area: Napa County FC&WCD	North Bay Area: Solano County Water Agency	South Bay Area: Alameda County FC&WCD, Zone 7	South Bay Area: Alameda County Water District	South Bay Area: Santa Clara Valley Water District	South Bay Area: Future Contractor	Total
	North Bay Aqueduct							
1	Barker Slough thru Fairfield/Vacaville Turnout	0.29667896	0.70332104					1.00000000
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.38414552	0.61585448					1.00000000
3A	Cordelia Forebay thru Benicia and Vallejo Turnouts		1.00000000					1.00000000
3B	Cordelia Forebay thru Napa Turnout Reservoir	1.00000000						1.00000000
	South Bay Aqueduct							
1	Bethany Reservoir thru Altamont Turnout			0.22599612	0.20663021	0.49237700	0.07499667	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.22599658	0.20663059	0.49237783	0.07499500	1.00000000
4	Patterson Reservoir to Del Valle Junction			0.19504795	0.21450017	0.51113249	0.07931939	1.00000000
5	Del Valle Junction thru Lake Del Valle			0.14436367	0.12972254	0.33715573	0.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				0.25176680	0.60218448	0.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355		1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	California Aqueduct							
1	Delta thru Bethany Reservoir			0.00954737	0.00872917	0.02080118	0.00342507	n/a

Reach No.	Reach Description	Central Coastal Area: San Luis Obispo County FC&WCD	Central Coastal Area: Santa Barbara County FC&WCD	Southern California Area: Antelope Valley-East Kern Water Agency	Southern California Area: Castaic Lake Water Agency	Southern California Area: Coachella Valley Water District	Southern California Area: Crestline-Lake Arrowhead Water Agency	Southern California Area: Desert Water Agency
	California Aqueduct							
1	Delta thru Bethany Reservoir	0.00533010	0.00983337	0.02939084	0.01285827	0.00528315	0.00133612	0.00871300
2A	Bethany Reservoir to Orestimba Creek	0.00557213	0.01027988	0.03072531	0.01343201	0.00552068	0.00139620	0.00910474
2B	Orestimba Creek to O'Neill Forebay	0.00557824	0.01029119	0.03075915	0.01345351	0.00552831	0.00139814	0.00911733
3	O"Neill Forebay to Dos Amigos Pumping Plant	0.00557719	0.01028923	0.03075332	0.01345294	0.00552772	0.00139798	0.00911637
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557607	0.01028717	0.03074719	0.01345233	0.00552710	0.00139784	0.00911536
5	Panoche Creek to Five Points	0.00557467	0.01028462	0.03073954	0.01345157	0.00552633	0.00139763	0.00911409
6	Five Points to Arroyo Pasajero	0.00557257	0.01028074	0.03072799	0.01345042	0.00552517	0.00139733	0.00911216
7	Arroyo Pasajero to Kettleman City	0.00557189	0.01027949	0.03072428	0.01345006	0.00552480	0.00139723	0.00911154
8C	Kettleman City thru Milham Avenue	0.00557103	0.01027792	0.03071961	0.01344960	0.00552432	0.00139712	0.00911076
8D	Milham Avenue thru Avenal Gap	0.00568611	0.01049020	0.03135418	0.01373353	0.00563986	0.00142632	0.00930130
9	Avenal Gap thru Twisselman Road			0.03426625	0.01356094	0.00616886	0.00156011	0.01017373
10A	Twisselman Road thru Lost Hills			0.03481391	0.01377767	0.00626946	0.00158556	0.01033963
11B	Lost Hills to 7th Standard Road			0.03835043	0.01517717	0.00691699	0.00174933	0.01140749
12D	7th Standard Road thru Elk Hills Road			0.04031661	0.01595523	0.00727790	0.00184059	0.01200265
12E	Elk Hills Road thru Tupman Road			0.04037074	0.01597665	0.00728878	0.00184332	0.01202059
13B	Tupman Road to Buena Vista Pumping Plant			0.04379882	0.01733322	0.00791595	0.00200194	0.01305492
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04599268	0.01820137	0.00831952	0.00210399	0.01372049
14B	Santiago Creek thru Old River Road			0.04682530	0.01853084	0.00847388	0.00214303	0.01397505
14C	Old River Road to Teerink Pumping Plant			0.04825217	0.01909545	0.00873768	0.00220973	0.01441013
15A	Teerink Pumping Plant to Chrisman Pumping Plant			0.04905609	0.01941356	0.00888679	0.00224744	0.01465600
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.05089794	0.02014241	0.00922722	0.00233351	0.01521742
17E	Edmonston Pumping Plant to Porter Tunnel			0.05329388	0.02109050	0.00967107	0.00244575	0.01594937
17F	Porter Tunnel to Junction, West Branch Calif. Aqueduct			0.05340725	0.02113537	0.00969176	0.00245098	0.01598349
18A	Junction, West Branch Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043
19	Alamo Powerplant to Fairmont			0.13237766		0.02399451	0.00606811	0.03957141
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847931		0.02576425	0.00651573	0.04249001
20B	70th Street West to Palmdale			0.02276024		0.02702917	0.00683555	0.04457607
21	Palmdale to Littlerock Creek			0.02318952		0.02754716	0.00696651	0.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608043
22B	Pearblossom Pumping Plant to West Fork Mojave River					0.02827552	0.00715074	0.04663153
23	West Fork Mojave River to Silverwood Lake					0.00324449	0.00818122	0.00535117
24	Cedar Springs Dam and Silverwood Lake					0.01024605	0.01251569	0.01690478
25	Silverwood Lake to South Portal San Bernardino Tunnel							
26A	So. Portal San Bernardino Tunnel thru Devil Canyon Pwp.							
28G	Devil Canyon Powerplant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch Calif. Aqueduct thru Oso P.P.				0.03544337			
29F	Oso Pumping Plant thru Quail Embankment				0.03544339			
29G	Quail Embankment thru Warne Powerplant				0.03544339			
29H	Pyramid Dam and Lake				0.02817144			
29J	Pyramid Lake thru Castaic Powerplant				0.03544338			
30	Castaic Dam and Lake				0.02927284			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560301	0.19482503		0.07364766			
33A	Devil's Den Pumping Plant thru San Luis Obispo Pwp.	0.35150791	0.64849209					
34	San Luis Obispo Powerplant to Arroyo Grande	0.24688802	0.75311198					
35	Arroyo Grande thru Santa Maria Terminus	0.18022521	0.81977479					

TABLE B-1

Factors for Distributing Reach Capital Costs among Contractors

Reach No.	San Joaquin Valley Area							
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency: Municipal and Industrial	Kern County Water Agency: Agricultural	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
California Aqueduct								
1	0.01707770	0.00088678	0.00254693	0.02741768	0.30629913	0.00090695	0.00167121	0.03504975
2A	0.01781031	0.00092482	0.00266258	0.02864263	0.31945188	0.00094747	0.00174288	0.03655331
2B	0.01785838	0.00092731	0.00266550	0.02868743	0.32030556	0.00094896		0.03665201
3	0.01786337	0.00092757	0.00266499	0.02868589	0.32039254	0.00094892		0.03666225
4	0.01786863	0.00092785	0.00266446	0.02868428	0.32048398	0.00094886		0.03667303
5	0.01787517	0.00092819	0.00266380	0.02868227	0.32059816	0.00094879		0.03668649
6	0.01788508	0.00092870	0.00266279	0.02867923	0.32077093	0.00094868		0.03670685
7	0.01788826	0.00092887	0.00266246	0.02867825	0.32082633	0.00094864		0.03671338
8C	0.01789228	0.00092909	0.00266205	0.02867702	0.32089625	0.00094859		0.03672162
8D	0.01828779		0.00271703	0.02928147	0.32798200			0.01820857
9				0.03204523	0.32739538			
10A				0.03257442	0.31658608			
11B				0.03597398	0.24684668			
12D				0.03787171	0.20804762			
12E				0.03793198	0.20695175			
13B				0.01458796	0.16600071			
14A				0.00620338	0.13319181			
14B				0.00632023	0.11741558			
14C				0.00651962	0.09039633			
15A				0.00663252	0.07516317			
16A				0.00688973	0.04028829			
17E				0.00212516				
31A			0.05046240		0.57546190			

Reach No.	Southern California Area (continued)								Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Municipal Water District	San Gabriel Valley Municipal Water District	San Gorgonio Pass Water Agency	Metropolitan Water District of Southern California	Ventura County Flood Control District	
1	0.00049180	0.01101147	0.00369131	0.02362857	0.00650354	0.00398392	0.43929350	0.00429212	1.00000000
2A	0.00051413	0.01151136	0.00385891	0.02469101	0.00679699	0.00416304	0.45921072	0.00448701	1.00000000
2B	0.00051469	0.01152409	0.00386317	0.02472511	0.00680570	0.00416880	0.45973548	0.00449194	1.00000000
3	0.00051461	0.01152193	0.00386244	0.02472246	0.00680478	0.00416835	0.45965407	0.00449108	1.00000000
4	0.00051451	0.01151965	0.00386167	0.02471968	0.00680380	0.00416787	0.45956848	0.00449019	1.00000000
5	0.00051440	0.01151681	0.00386070	0.02471620	0.00680259	0.00416730	0.45946161	0.00448907	1.00000000
6	0.00051419	0.01151251	0.00385926	0.02471095	0.00680076	0.00416640	0.45929991	0.00448738	1.00000000
7	0.00051413	0.01151113	0.00385879	0.02470927	0.00680016	0.00416612	0.45924807	0.00448685	1.00000000
8C	0.00051405	0.01150938	0.00385821	0.02470716	0.00679941	0.00416576	0.45918261	0.00448616	1.00000000
8D	0.00052466	0.01174718	0.00393793	0.02522383	0.00694100	0.00425288	0.46868533	0.00457883	1.00000000
9	0.00057339	0.01283841	0.00430367	0.02758959	0.00758975	0.00465175	0.51227887	0.00500407	1.00000000
10A	0.00058254	0.01304366	0.00437246	0.02803943	0.00771262	0.00472760	0.52049091	0.00508405	1.00000000
11B	0.00064171	0.01436906	0.00481665	0.03093503	0.00850448	0.00521581	0.57349473	0.00560046	1.00000000
12D	0.00067463	0.01510596	0.00506361	0.03254889	0.00894541	0.00548790	0.60297374	0.00588755	1.00000000
12E	0.00067553	0.01512626	0.00507040	0.03259749	0.00895830	0.00549608	0.60379667	0.00589546	1.00000000
13B	0.00073290	0.01641098	0.00550099	0.03540212	0.00972547	0.00596896	0.65516902	0.00639604	1.00000000
14A	0.00076961	0.01723325	0.00577656	0.03720681	0.01021819	0.00627322	0.68807273	0.00671639	1.00000000
14B	0.00078354	0.01754538	0.00588113	0.03789703	0.01040613	0.00638960	0.70057530	0.00683798	1.00000000
14C	0.00080743	0.01808019	0.00606036	0.03907670	0.01072763	0.00658850	0.72199174	0.00704634	1.00000000
15A	0.00082089	0.01838154	0.00616135	0.03974336	0.01090913	0.00670088	0.73406357	0.00716371	1.00000000
16A	0.00085171	0.01907194	0.00639271	0.04126559	0.01132404	0.00695754	0.76170731	0.00743264	1.00000000
17E	0.00089182	0.01997003	0.00669365	0.04325018	0.01186455	0.00729213	0.79767940	0.00778251	1.00000000
17F	0.00089372	0.02001251	0.00670788	0.04334270	0.01188988	0.00730773	0.79937767	0.00779906	1.00000000
18A	0.00221525	0.04960424	0.01662680	0.10730448	0.02944860	0.01809192	0.57469530		1.00000000
19	0.00221522	0.04960300	0.01662640	0.10730707	0.02944876	0.01809230	0.57469556		1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161798	0.01942666	0.61700971		1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316986	0.02038045	0.64729087		1.00000000
21	0.00254199	0.05692053		0.12319480	0.03380324	0.02077093	0.65963498		1.00000000
22A		0.05773082		0.12495766	0.03428605	0.02106816	0.66905054		1.00000000
22B		0.05842136		0.12645207	0.03469614	0.02132008	0.67705256		1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614		1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404		1.00000000
25				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
28G				0.05126137			0.94873863		1.00000000
28H							1.00000000		1.00000000
28J							1.00000000		1.00000000
29A							0.95147783	0.01307880	1.00000000
29F							0.95147785	0.01307876	1.00000000
29G							0.95147785	0.01307876	1.00000000
29H							0.96278381	0.00904475	1.00000000
29J							0.95147787	0.01307875	1.00000000
30							0.96212388	0.00860328	1.00000000
31A									1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

TABLE B-2

Factors for Distributing Reach Minimum OMP&R Costs among Contractors

Reach No.	Reach Description	North Bay Area: Napa County FC&WCD	North Bay Area: Solano County Water Agency	South Bay Area: Alameda County FC&WCD, Zone 7	South Bay Area: Alameda County Water District	South Bay Area: Santa Clara Valley Water District	South Bay Area: Future Contractor	Total
	North Bay Aqueduct							
1	Barker Slough thru Fairfield/Vacaville Turnout	0.27960541	0.72039459					1.00000000
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.38414552	0.61585448					1.00000000
3A	Cordelia Forebay thru Benicia and Vallejo Turnouts		1.00000000					1.00000000
3B	Cordelia Forebay thru Napa Turnout Reservoir	1.00000000						1.00000000
	South Bay Aqueduct							
1	Bethany Reservoir thru Altamont Turnout			0.22599612	0.20663021	0.492377	0.07499667	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.22599658	0.20663059	0.49237783	0.07499500	1.00000000
4	Patterson Reservoir to Del Valle Junction			0.19504795	0.21450017	0.51113249	0.07931939	1.00000000
5	Del Valle Junction thru Lake Del Valle			0.14436367	0.12972254	0.33715573	0.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				0.25176680	0.60218448	0.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355		1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	California Aqueduct							
1	Delta thru Bethany Reservoir			0.00954737	0.00872917	0.02080118	0.00342507	n/a

Reach No.	Reach Description	Central Coastal Area: San Luis Obispo County FC&WCD	Central Coastal Area: Santa Barbara County FC&WCD	Southern California Area: Antelope Valley-East Kern Water Agency	Southern California Area: Castaic Lake Water Agency	Southern California Area: Coachella Valley Water District	Southern California Area: Crestline-Lake Arrowhead Water Agency	Southern California Area: Desert Water Agency
	California Aqueduct							
1	Delta thru Bethany Reservoir	0.00533010	0.00983337	0.02939084	0.01285827	0.00528315	0.00133612	0.00871300
2A	Bethany Reservoir to Orestimba Creek	0.00557213	0.01027988	0.03072531	0.01343201	0.00552068	0.00139620	0.00910474
2B	Orestimba Creek to O'Neill Forebay	0.00557824	0.01029119	0.03075915	0.01345351	0.00552831	0.00139814	0.00911733
3	O"Neill Forebay to Dos Amigos Pumping Plant	0.00557719	0.01028923	0.03075332	0.01345294	0.00552772	0.00139798	0.00911637
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557607	0.01028717	0.03074719	0.01345233	0.00552710	0.00139784	0.00911536
5	Panoche Creek to Five Points	0.00557467	0.01028462	0.03073954	0.01345157	0.00552633	0.00139763	0.00911409
6	Five Points to Arroyo Pasajero	0.00557257	0.01028074	0.03072799	0.01345042	0.00552517	0.00139733	0.00911216
7	Arroyo Pasajero to Kettleman City	0.00557189	0.01027949	0.03072428	0.01345006	0.00552480	0.00139723	0.00911154
8C	Kettleman City thru Milham Avenue	0.00551596	0.01017632	0.03041581	0.01329997	0.00546583	0.00138232	0.00901430
8D	Milham Avenue thru Avenal Gap	0.00562824	0.01038343	0.03103491	0.01357628	0.00557838	0.00141078	0.00919992
9	Avenal Gap thru Twisselman Road			0.03387464	0.01340600	0.00609344	0.00154104	0.01004936
10A	Twisselman Road thru Lost Hills			0.03440598	0.01361627	0.00619088	0.00156569	0.01021004
11B	Lost Hills to 7th Standard Road			0.03783014	0.01497132	0.00681674	0.00172398	0.01124216
12D	7th Standard Road thru Elk Hills Road			0.03972579	0.01572148	0.00716403	0.00181179	0.01181489
12E	Elk Hills Road thru Tupman Road			0.03977669	0.01574162	0.00717426	0.00181437	0.01183175
13B	Tupman Road to Buena Vista Pumping Plant			0.04307711	0.01704769	0.00777681	0.00196675	0.01282547
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04517714	0.01787870	0.00816225	0.00206423	0.01346114
14B	Santiago Creek thru Old River Road			0.04596983	0.01819238	0.00830887	0.00210130	0.01370294
14C	Old River Road to Teerink Pumping Plant			0.04732690	0.01872938	0.00855917	0.00216459	0.01411577
15A	Teerink Pumping Plant to Chrisman Pumping Plant			0.04808935	0.01903108	0.00870025	0.00220027	0.01434839
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.04983435	0.01972161	0.00902198	0.00228161	0.01487897
17E	Edmonston Pumping Plant to Porter Tunnel			0.05209597	0.02061656	0.00943985	0.00238729	0.01556809
17F	Porter Tunnel to Junction, West Branch Calif. Aqueduct			0.05220390	0.02065927	0.00945949	0.00239225	0.01560048
18A	Junction, West Branch Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043
19	Alamo Powerplant to Fairmont			0.13237766		0.02399451	0.00606811	0.03957141
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847931		0.02576425	0.00651573	0.04249001
20B	70th Street West to Palmdale			0.02276024		0.02702917	0.00683555	0.04457607
21	Palmdale to Littlerock Creek			0.02318952		0.02754716	0.00696651	0.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608043
22B	Pearblossom Pumping Plant to West Fork Mojave River					0.02827552	0.00715074	0.04663153
23	West Fork Mojave River to Silverwood Lake					0.00324449	0.00818122	0.00535117
24	Cedar Springs Dam and Silverwood Lake					0.01024605	0.01251569	0.01690478
25	Silverwood Lake to South Portal San Bernardino Tunnel							
26A	So. Portal San Bernardino Tunnel thru Devil Canyon Pwp.							
28G	Devil Canyon Powerplant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch Calif. Aqueduct thru Oso P.P.			0.00302472	0.03533617			
29F	Oso Pumping Plant thru Quail Embankment			0.00302551	0.03533615			
29G	Quail Embankment thru Warne Powerplant				0.03544339			
29H	Pyramid Dam and Lake				0.02817144			
29J	Pyramid Lake thru Castaic Powerplant				0.03544338			
30	Castaic Dam and Lake				0.02927284			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560301	0.19482503		0.07364766			
33A	Devil's Den Pumping Plant thru San Luis Obispo Pwp.	0.35150791	0.64849209					
34	San Luis Obispo Powerplant to Arroyo Grande	0.24688802	0.75311198					
35	Arroyo Grande thru Santa Maria Terminus	0.18022521	0.81977479					

TABLE B-2

Factors for Distributing Reach Minimum OMP&R Costs among Contractors

Reach No.	San Joaquin Valley Area							
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency: Municipal and Industrial	Kern County Water Agency: Agricultural	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
California Aqueduct								
1	0.01707770	0.00088678	0.00254693	0.02741768	0.30629913	0.00090695	0.00167121	0.03504975
2A	0.01781031	0.00092482	0.00266258	0.02864263	0.31945188	0.00094747	0.00174288	0.03655331
2B	0.01785838	0.00092731	0.00266550	0.02868743	0.32030556	0.00094896		0.03665201
3	0.01786337	0.00092757	0.00266499	0.02868589	0.32039254	0.00094892		0.03666225
4	0.01786863	0.00092785	0.00266446	0.02868428	0.32048398	0.00094886		0.03667303
5	0.01787517	0.00092819	0.00266380	0.02868227	0.32059816	0.00094879		0.03668649
6	0.01788508	0.00092870	0.00266279	0.02867923	0.32077093	0.00094868		0.03670685
7	0.01788826	0.00092887	0.00266246	0.02867825	0.32082633	0.00094864		0.03671338
8C	0.01764479	0.00091624	0.00263575	0.02836054	0.31647868	0.00093812		0.03621361
8D	0.01802770		0.00268939	0.02894888	0.32333939			0.01794960
9				0.03163713	0.32219659			
10A				0.03214916	0.31143611			
11B				0.03543138	0.24223373			
12D				0.03725540	0.20386623			
12E				0.03731203	0.20277371			
13B				0.01432141	0.16226809			
14A				0.00608155	0.12998083			
14B				0.00619239	0.11450333			
14C				0.00638131	0.08804967			
15A				0.00648796	0.07316084			
16A				0.00673069	0.03915469			
17E				0.00207245				
31A			0.05046240		0.57546190			

Reach No.	Southern California Area (continued)								Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Municipal Water District	San Gabriel Valley Municipal Water District	San Gorgonio Pass Water Agency	Metropolitan Water District of Southern California	Ventura County Flood Control District	
1	0.00049180	0.01101147	0.00369131	0.02362857	0.00650354	0.00398392	0.43929350	0.00429212	1.00000000
2A	0.00051413	0.01151136	0.00385891	0.02469101	0.00679699	0.00416304	0.45921072	0.00448701	1.00000000
2B	0.00051469	0.01152409	0.00386317	0.02472511	0.00680570	0.00416880	0.45973548	0.00449194	1.00000000
3	0.00051461	0.01152193	0.00386244	0.02472246	0.00680478	0.00416835	0.45965407	0.00449108	1.00000000
4	0.00051451	0.01151965	0.00386167	0.02471968	0.0068038	0.00416787	0.45956848	0.00449019	1.00000000
5	0.00051440	0.01151681	0.00386070	0.02471620	0.00680259	0.00416730	0.45946161	0.00448907	1.00000000
6	0.00051419	0.01151251	0.00385926	0.02471095	0.00680076	0.00416640	0.45929991	0.00448738	1.00000000
7	0.00051413	0.01151113	0.00385879	0.02470927	0.00680016	0.00416612	0.45924807	0.00448685	1.00000000
8C	0.00050897	0.01139543	0.00382005	0.02444566	0.00672913	0.00412167	0.46607904	0.00444181	1.00000000
8D	0.00051932	0.01162742	0.00389782	0.02494901	0.00686714	0.00420655	0.47563362	0.00453222	1.00000000
9	0.00056683	0.01269152	0.00425448	0.02725243	0.00749914	0.00459491	0.51939559	0.00494690	1.00000000
10A	0.00057571	0.01289064	0.00432121	0.02768814	0.00761823	0.00466838	0.52763907	0.00502449	1.00000000
11B	0.00063300	0.01417390	0.00475129	0.03048687	0.00838406	0.00514026	0.58065667	0.00552450	1.00000000
12D	0.00066474	0.01488434	0.00498939	0.03203990	0.00880866	0.00540209	0.61004998	0.00580129	1.00000000
12E	0.00066559	0.01490343	0.00499577	0.03208558	0.00882077	0.00540978	0.61088592	0.00580873	1.00000000
13B	0.00072082	0.01614026	0.00541032	0.03478013	0.00955838	0.00586410	0.66195198	0.00629068	1.00000000
14A	0.00075596	0.01692733	0.00567410	0.03650376	0.01002933	0.00615469	0.69455166	0.00659733	1.00000000
14B	0.00076922	0.01722449	0.00577366	0.03715939	0.01020799	0.00626523	0.70691589	0.00671309	1.00000000
14C	0.00079194	0.01773312	0.00594412	0.03827874	0.01051330	0.00645397	0.72804676	0.00691126	1.00000000
15A	0.00080471	0.01801891	0.00603990	0.03890949	0.01068518	0.00656030	0.73994080	0.00702257	1.00000000
16A	0.00083391	0.01867297	0.00625909	0.04034814	0.01107764	0.00680287	0.76710412	0.00727736	1.00000000
17E	0.00087177	0.01952067	0.00654315	0.04221660	0.01158699	0.00711787	0.80235512	0.00760762	1.00000000
17F	0.00087358	0.01956112	0.00655671	0.04230442	0.01161106	0.00713268	0.80402166	0.00762338	1.00000000
18A	0.00221525	0.04960424	0.01662680	0.10730448	0.02944860	0.01809192	0.57469530		1.00000000
19	0.00221522	0.04960300	0.01662640	0.10730707	0.02944876	0.01809230	0.57469556		1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161798	0.01942666	0.61700971		1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316986	0.02038045	0.64729087		1.00000000
21	0.00254199	0.05692053		0.12319480	0.03380324	0.02077093	0.65963498		1.00000000
22A		0.05773082		0.12495766	0.03428605	0.02106816	0.66905054		1.00000000
22B		0.05842136		0.12645207	0.03469614	0.02132008	0.67705256		1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614		1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404		1.00000000
25				0.11825184	0.03722720	0.01993915	0.82458181		1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
28G				0.05126137			0.94873863		1.00000000
28H							1.00000000		1.00000000
28J							1.00000000		1.00000000
29A							0.94859988	0.01303923	1.00000000
29F							0.94859915	0.01303919	1.00000000
29G							0.95147785	0.01307876	1.00000000
29H							0.96278381	0.00904475	1.00000000
29J							0.95147787	0.01307875	1.00000000
30							0.96212388	0.00860328	1.00000000
31A									1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

TABLE B-3

Power Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant

(Dollars)

	North Bay Aqueduct			South Bay Aqueduct	California Aqueduct					
	Reach 1	Reach 3A	Reach 3B	Reach 1(b	Reach 1	Reach 4	Reach 14A	Reach 15A	Reach 16A	Reach 17E
Calendar Year	Barker Slough Pumping Plant (1)	Cordelia Pumping Plant Solano (2)	Cordelia Pumping Plant Napa (a (3)	South Bay & Del Valle Pumping Plants (4)	Banks Pumping Plant (5)	Dos Amigos Pumping Plant (6)	Buena Vista Pumping Plant (7)	Teerink Pumping Plant (8)	Chrisman Pumping Plant (9)	Edmonston Pumping Plant (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	38,130	0	0	0	0	0	0
1963	0	0	0	58,871	0	0	0	0	0	0
1964	0	0	0	75,239	0	0	0	0	0	0
1965	0	0	0	146,297	0	0	0	0	0	0
1966	0	0	0	198,643	0	0	0	0	0	0
1967	0	0	0	229,629	26,982	0	0	0	0	0
1968	0	0	7,128	342,761	1,324,777	239,505	0	0	0	0
1969	0	0	8,557	279,751	855,304	143,403	0	0	0	0
1970	0	0	13,666	448,383	368,508	217,820	2,940	0	0	0
1971	0	0	10,626	422,057	597,946	229,306	156,540	23,021	18,577	29,067
1972	0	0	14,430	623,564	1,110,833	575,291	348,668	187,825	385,935	1,263,087
1973	0	0	14,453	485,534	918,234	493,776	511,904	514,487	883,725	3,139,297
1974	0	0	17,508	510,873	997,269	560,461	556,968	595,585	1,048,196	3,700,573
1975	0	0	14,801	382,106	1,353,916	561,089	650,781	707,038	1,394,918	4,853,538
1976	0	0	20,867	589,007	916,728	596,426	701,061	687,677	1,414,902	4,917,776
1977	0	0	22,640	541,803	653,304	191,906	170,689	173,496	337,890	1,130,422
1978	0	0	21,670	568,381	3,871,011	723,989	1,009,556	968,744	1,782,668	6,281,786
1979	0	0	16,240	622,517	3,431,278	1,019,021	848,639	830,839	1,666,505	5,741,609
1980	0	0	19,936	523,445	2,267,876	1,097,085	1,007,198	997,877	2,018,282	6,671,880
1981	0	0	23,859	630,690	2,553,431	1,984,530	1,392,248	1,390,323	3,001,888	9,863,443
1982	0	0	12,080	410,901	3,829,918	1,468,821	1,342,384	1,393,867	2,801,427	9,792,760
1983	0	0	2,333	82,872	1,374,743	412,432	431,809	421,741	764,599	2,310,080
1984	0	0	4,854	282,748	1,834,751	949,018	801,848	747,345	1,412,330	4,379,455
1985	0	0	10,211	454,973	3,271,195	1,702,552	1,565,835	1,600,549	3,250,144	10,857,355
1986	0	0	15,455	845,875	7,844,381	2,718,997	2,573,965	2,632,451	5,465,227	18,526,707
1987	0	0	27,222	912,939	6,408,975	2,608,546	2,288,359	2,320,323	4,583,116	15,035,581
1988	17,867	38,092	23,987	914,733	7,135,965	2,700,388	2,646,118	2,679,795	5,329,296	17,534,056
1989	26,414	112,762	6,673	1,133,875	11,924,124	4,112,517	4,085,791	4,178,369	8,757,938	29,100,259
1990	59,310	154,833	43,103	1,911,452	11,066,681	4,860,219	6,021,136	6,382,340	14,358,165	50,406,663
1991	24,875	97,002	2,090	566,952	3,317,167	1,000,961	891,349	859,261	2,126,894	7,495,024
1992	25,228	85,408	11,633	364,496	6,163,195	1,629,578	1,881,882	2,148,741	3,863,401	10,869,049
1993	52,081	40,961	33,599	984,573	10,875,397	5,011,588	5,390,809	6,230,679	12,609,342	43,365,344
1994	140,194	111,138	91,615	2,528,217	23,677,608	10,502,524	11,680,408	13,599,109	28,250,368	98,774,488
1995	277,898	133,447	114,888	2,993,516	29,508,509	12,233,880	13,737,600	16,015,622	33,366,522	116,863,186
1996	210,366	139,958	134,423	4,132,873	34,898,616	14,590,932	16,103,741	18,797,922	39,339,329	138,139,914
1997	207,150	139,247	136,992	3,973,771	35,399,289	14,220,215	15,634,088	18,255,836	38,187,546	134,063,792
1998	214,570	140,058	146,598	4,014,218	35,745,510	14,518,509	16,450,910	18,799,272	39,194,188	137,315,645
1999	222,238	143,568	156,226	4,059,443	32,571,239	14,303,415	16,627,922	19,001,779	39,625,036	138,840,536
2000	235,764	150,250	170,899	4,193,387	33,931,515	14,718,091	17,168,120	19,621,187	40,943,305	143,507,128
2001	239,855	150,925	179,840	4,212,216	33,945,975	14,833,458	17,339,827	19,825,124	41,381,802	145,067,165
2002	248,751	154,732	191,544	4,318,473	34,752,745	15,179,145	17,765,611	20,313,108	42,420,351	148,743,328
2003	255,312	156,722	202,547	4,373,994	35,214,598	15,358,930	17,986,664	20,566,242	42,959,048	150,650,073
2004	262,283	158,908	213,816	4,435,003	35,579,236	15,561,868	18,239,066	20,856,168	43,576,231	152,835,785
2005	284,165	174,052	228,886	4,563,904	36,954,402	16,188,965	19,161,462	21,943,132	45,908,647	161,124,733
2006	287,341	174,290	235,779	4,570,123	37,013,123	16,204,052	19,177,457	21,960,712	45,945,661	161,255,172
2007	293,291	175,918	246,088	4,612,825	37,397,026	16,332,955	19,330,981	22,135,410	46,316,663	162,566,947
2008	300,162	177,720	258,448	4,660,077	37,822,853	16,492,529	19,530,873	22,365,366	46,806,519	164,301,820
2009	305,955	179,148	268,778	4,697,501	37,987,725	16,583,225	19,626,157	22,470,505	47,027,647	165,080,131
2010	322,905	187,672	287,877	4,877,331	39,644,239	17,459,206	20,865,236	23,928,640	50,155,340	176,193,567
2011	324,540	186,219	296,516	4,839,572	39,496,519	17,159,011	20,397,752	23,369,664	48,950,892	171,904,291
2012	331,615	188,223	308,960	4,891,658	39,854,990	17,407,875	20,748,364	23,781,928	49,834,753	175,044,651
2013	339,120	190,121	323,774	4,940,993	40,223,444	17,564,304	20,939,058	23,999,905	50,298,506	176,685,572
2014	347,510	192,363	339,365	4,999,242	40,706,956	17,784,641	21,227,641	24,334,815	51,013,733	179,221,704
2015	352,168	193,368	350,133	4,977,978	40,526,899	17,666,585	21,055,593	24,131,286	50,576,369	177,666,806
2016	356,999	193,880	362,511	4,991,164	40,641,701	17,746,053	21,173,697	24,271,387	50,877,621	178,738,461
2017	374,386	200,956	387,929	5,173,348	42,044,017	18,352,628	21,929,830	25,139,789	52,727,094	185,287,212
2018	378,428	200,890	400,108	5,171,645	42,015,877	18,340,131	21,910,456	25,116,703	52,677,429	185,110,232
2019	383,463	201,214	413,332	5,179,974	42,094,114	18,392,179	21,988,337	25,209,127	52,876,078	185,817,330
2020	381,316	197,933	419,839	5,095,524	41,447,997	18,052,402	21,533,369	24,679,316	51,743,051	181,797,086
2021	383,760	198,780	423,760	5,117,340	41,654,812	18,190,271	21,740,123	24,924,851	52,271,321	183,676,692
2022	384,531	199,180	424,611	5,127,621	41,741,103	18,220,092	21,774,841	24,964,329	52,354,836	183,971,891
2023	384,463	199,145	424,536	5,126,709	41,731,357	18,218,896	21,774,294	24,963,949	52,354,180	183,969,711
2024	384,477	199,153	424,552	5,126,905	41,721,489	18,220,134	21,776,157	24,966,087	52,358,980	183,986,606
2025	384,823	199,331	424,934	5,131,517	41,777,746	18,264,956	21,847,707	25,052,018	52,544,354	184,647,337
2026	382,960	198,367	422,876	5,106,672	41,628,784	18,155,163	21,696,399	24,874,817	52,164,706	183,299,328
2027	382,999	198,387	422,919	5,107,191	41,616,483	18,160,117	21,704,229	24,884,177	52,184,988	183,371,461
2028	383,166	198,473	423,103	5,109,415	41,591,391	18,163,347	21,706,244	24,885,856	52,188,326	183,382,803
2029	383,231	198,507	423,176	5,110,294	41,674,936	18,169,836	21,716,148	24,897,758	52,213,787	183,473,459
2030	382,988	198,381	422,907	5,107,046	41,511,444	18,158,359	21,701,670	24,881,124	52,178,232	183,347,414
2031	383,661	198,729	423,650	5,116,019	41,673,415	18,194,337	21,749,722	24,937,052	52,297,854	183,771,831
2032	383,661	198,729	423,650	5,116,019	41,673,415	18,194,337	21,749,722	24,937,052	52,297,854	183,771,831
2033	383,962	198,886	423,983	5,120,040	41,710,133	18,220,429	21,788,934	24,983,733	52,398,505	184,129,980
2034	383,070	198,423	422,998	5,108,143	41,598,550	18,146,370	21,678,091	24,852,071	52,115,121	183,121,830
2035	384,604	199,218	424,692	5,128,595	42,595,263	18,266,962	21,856,536	25,063,669	52,570,006	184,739,683
Total	13,839,876	8,103,667	13,643,679	214,821,566	1,723,290,932	744,500,539	872,869,514	997,229,970	2,086,748,144	7,316,523,423

a) Power costs for years 1968 through 1987 are for an interim facility. b) Costs of Del Valle and South Bay Pumping Plants are combined to simplify cost allocations.

TABLE B-3

Power Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant

(Dollars)

	California Aqueduct (continued)									
	Reach 18A	Reach 22B	Reach 23	Reach 26A	Reach 29A	Reach 29G	Reach 29J	Reach 31A	Reach 33A	
Calendar Year	Alamo Powerplant (11)	Pearblossom Pumping Plant (12)	Mojave Siphon Powerplant (13)	Devil Canyon Powerplant (14)	Oso Pumping Plant (15)	Warne Powerplant (16)	Castaic Powerplant (17)	Las Perillas and Badger Hill Pumping Plants (18)	Devil's Den, Bluestone, and Polonio PPs and San Luis Obispo Pwp. (19)	Grand Total (20)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	38,130
1963	0	0	0	0	0	0	0	0	0	58,871
1964	0	0	0	0	0	0	0	0	0	75,239
1965	0	0	0	0	0	0	0	0	0	146,297
1966	0	0	0	0	0	0	0	0	0	198,643
1967	0	0	0	0	0	0	0	6,517	0	263,128
1968	0	0	0	0	0	0	0	120,278	0	2,034,449
1969	0	0	0	0	0	0	0	79,620	0	1,366,635
1970	0	0	0	0	0	0	0	137,449	0	1,188,766
1971	0	64,807	0	0	1,696	0	0	171,389	0	1,725,032
1972	0	103,584	0	(3,112)	180,005	0	(385,696)	240,651	0	4,645,065
1973	0	615,309	0	(931,697)	274,450	0	(1,193,216)	128,730	0	5,854,986
1974	0	595,646	0	(939,072)	322,440	0	(1,823,397)	129,345	0	6,272,395
1975	0	616,327	0	(1,101,445)	457,487	0	-2835302	101,109	0	7,156,363
1976	0	914,440	0	(1,520,412)	314,669	0	(2,512,021)	151,211	0	7,192,331
1977	0	318,880	0	(1,216,060)	53,119	0	(1,701,284)	85,538	0	762,343
1978	0	1,801,373	0	(3,298,247)	251,373	0	(2,361,377)	197,217	0	11,818,144
1979	0	1,813,744	0	(3,335,069)	157,934	0	(2,749,296)	209,088	0	10,273,049
1980	0	1,866,161	0	(3,508,195)	170,688	0	(2,721,871)	182,996	0	10,593,358
1981	0	2,187,538	0	(3,769,972)	514,832	0	(3,248,819)	186,954	0	16,710,945
1982	0	1,686,620	0	(3,172,286)	625,731	(973,898)	(3,476,126)	182,343	0	15,924,542
1983	0	385,049	0	(5,776,899)	234,998	(1,373,756)	(4,112,979)	18,778	0	(4,824,200)
1984	0	673,007	0	(7,751,311)	435,350	(2,269,583)	1,601,424)	116,056	0	3,217,292
1985	0	1,249,530	0	(10,518,533)	1,048,791	(8,489,604)	(19,846,283)	154,762	0	(13,688,523)
1986	(1,066,189)	2,618,876	0	(12,055,463)	1,388,243	(6,276,296)	(11,466,466)	318,097	0	14,083,860
1987	(1,015,186)	1,893,233	0	(10,586,823)	1,390,585	(6,703,320)	(11,630,565)	270,952	0	7,803,937
1988	(767,246)	2,426,127	0	(14,655,710)	1,490,282	(7,385,651)	(12,678,838)	235,508	0	7,684,769
1989	(778,167)	4,408,609	0	(19,092,290)	2,141,623	(8,720,204)	(14,653,369)	322,766	0	27,067,690
1990	(845,641)	6,878,176	0	(21,336,948)	3,061,070	(11,692,826)	(19,863,014)	486,602	0	51,951,321
1991	(443,010)	769,758	0	(7,844,946)	551,608	(6,718,456)	(11,582,917)	(110,793)	0	(8,997,181)
1992	(54,898)	2,104,344	0	(8,845,930)	1,840,400	(4,336,554)	(8,057,801)	176,004	0	9,868,176
1993	(1,049,046)	6,660,769	0	(23,149,960)	2,991,135	(11,543,307)	(21,216,350)	183,333	0	37,470,947
1994	(1,774,098)	13,385,430	0	(26,514,458)	6,895,848	(17,121,872)	(29,833,600)	483,928	0	134,876,847
1995	(1,770,373)	17,621,268	0	(29,943,181)	7,359,565	(15,607,216)	(27,351,100)	564,017	0	176,118,048
1996	(4,259,119)	20,365,764	(8,260,214)	(30,418,156)	8,720,931	(17,350,116)	(28,030,450)	854,405	1,168,872	209,279,991
1997	(4,114,585)	18,679,066	(8,058,802)	(29,508,231)	8,894,501	(18,383,616)	(29,861,100)	985,840	2,024,622	200,875,621
1998	(4,251,085)	19,438,547	(8,705,350)	(29,734,456)	8,960,964	(18,357,291)	(29,804,800)	1,368,151	2,714,974	208,169,132
1999	(4,374,052)	20,051,823	(8,735,278)	(29,807,356)	8,815,142	(17,959,366)	(28,994,300)	1,383,565	2,756,623	208,688,203
2000	(4,292,932)	20,199,399	(8,244,820)	(30,155,381)	9,217,853	(18,172,141)	(29,428,850)	1,377,582	2,879,971	218,020,327
2001	(4,371,712)	20,612,057	(8,694,428)	(30,062,231)	9,241,158	(18,148,566)	(29,379,100)	1,383,767	2,897,308	220,654,440
2002	(4,375,300)	21,137,546	(8,690,386)	(30,087,731)	9,461,058	(18,153,641)	(29,381,150)	1,418,674	2,995,159	228,412,017
2003	(4,377,250)	21,411,301	(8,673,874)	(30,136,156)	9,574,615	(18,153,241)	(29,381,200)	1,436,914	3,046,288	232,471,527
2004	(4,385,518)	21,740,071	(8,734,418)	(30,168,931)	9,699,313	(18,153,216)	(29,381,200)	1,456,956	3,102,469	236,893,890
2005	(4,588,825)	23,075,897	(9,125,460)	(31,007,856)	10,002,209	(18,214,316)	(29,499,850)	1,457,640	3,221,173	251,852,960
2006	(4,581,259)	23,073,177	(9,072,226)	(31,035,781)	10,017,765	(18,215,566)	(29,508,050)	1,459,627	3,226,900	252,188,297
2007	(4,569,442)	23,231,386	(9,035,676)	(31,002,456)	10,105,457	(18,215,566)	(29,503,450)	1,473,264	3,266,221	255,157,842
2008	(4,575,487)	23,493,884	(9,065,002)	(30,998,231)	10,202,464	(18,215,316)	(29,503,350)	1,488,356	3,309,736	258,853,421
2009	(4,537,267)	23,518,104	(8,986,828)	(30,922,756)	10,279,318	(18,216,941)	(29,503,600)	1,500,308	3,344,200	260,701,310
2010	(4,762,765)	25,473,365	(8,878,726)	(31,625,481)	10,654,832	(18,226,391)	(29,521,300)	1,557,743	3,509,800	282,103,090
2011	(4,606,843)	24,353,811	(8,267,954)	(31,605,606)	10,564,695	(18,204,091)	(29,485,000)	1,545,684	3,475,030	274,694,702
2012	(4,679,032)	25,000,313	(8,603,010)	(31,651,431)	10,678,125	(18,217,616)	(29,503,900)	1,562,320	3,522,994	280,501,780
2013	(4,675,405)	25,216,985	(8,596,302)	(31,616,906)	10,779,439	(18,217,616)	(29,503,900)	1,578,076	3,568,426	284,037,594
2014	(4,701,418)	25,639,524	(8,739,922)	(31,663,606)	10,906,226	(18,227,166)	(29,523,650)	1,596,680	3,622,066	289,076,704
2015	(4,619,284)	25,262,172	(8,646,096)	(31,684,456)	10,871,550	(18,240,766)	(29,548,700)	1,589,888	3,602,485	286,083,978
2016	(4,668,268)	25,587,032	(8,787,910)	(31,678,481)	10,870,075	(18,203,291)	(29,470,100)	1,594,100	3,614,629	288,211,260
2017	(4,664,524)	26,498,325	(8,765,550)	(31,698,331)	11,259,981	(18,222,816)	(29,513,100)	1,652,287	3,782,398	301,945,859
2018	(4,666,708)	26,478,640	(8,762,024)	(31,698,181)	11,246,668	(18,210,641)	(29,486,850)	1,651,743	3,780,829	301,655,375
2019	(4,688,821)	26,662,476	(8,844,068)	(31,774,656)	11,257,882	(18,198,541)	(29,470,900)	1,654,403	3,788,500	302,941,423
2020	(4,652,083)	25,875,837	(8,924,736)	(31,675,706)	11,101,292	(18,222,766)	(29,515,950)	1,627,431	3,710,731	294,671,883
2021	(4,708,750)	26,338,904	(9,243,194)	(31,707,406)	11,141,492	(18,218,116)	(29,503,800)	1,634,399	3,730,822	298,046,061
2022	(4,694,671)	26,361,202	(9,178,350)	(31,648,531)	11,166,015	(18,221,091)	(29,512,750)	1,637,683	3,740,290	298,812,832
2023	(4,709,218)	26,374,127	(9,185,660)	(31,716,106)	11,160,858	(18,216,816)	(29,503,950)	1,637,392	3,739,450	298,727,317
2024	(4,711,402)	26,386,441	(9,195,722)	(31,749,781)	11,157,911	(18,213,091)	(29,495,150)	1,637,454	3,739,630	298,720,830
2025	(4,715,302)	26,536,303	(9,122,880)	(31,811,881)	11,178,058	(18,227,166)	(29,523,700)	1,638,926	3,7438,78	299,970,959
2026	(4,705,474)	26,301,488	(9,031,204)	(31,808,406)	11,113,071	(18,209,591)	(29,486,350)	1,630,992	3,720,997	297,455,595
2027	(4,700,677)	26,287,857	(9,030,602)	(31,799,756)	11,127,193	(18,226,091)	(29,521,450)	1,631,158	3,721,474	297,522,057
2028	(4,699,897)	26,318,386	(9,069,474)	(31,735,256)	11,115,831	(18,204,216)	(29,478,300)	1,631,868	3,723,523	297,634,589
2029	(4,704,811)	26,317,709	(9,140,682)	(31,850,731)	11,127,020	(18,215,116)	(29,503,350)	1,632,148	3,724,333	297,647,652
2030	(4,725,715)	26,291,886	(9,190,218)	(31,762,031)	11,122,718	(18,220,291)	(29,509,900)	1,631,111	3,721,342	297,248,467
2031	(4,705,435)	26,375,713	(9,291,784)	(31,763,506)	11,138,936	(18,217,491)	(29,503,900)	1,633,977	3,729,607	298,142,387
2032	(4,705,435)	26,375,713	(9,291,784)	(31,763,506)	11,138,936	(18,217,491)	(29,503,900)	1,633,977	3,729,607	298,142,387
2033	(4,716,901)	26,454,367	(9,311,392)	(31,750,231)	11,150,441	(18,221,716)	(29,512,750)	1,635,261	3,733,309	298,818,973
2034	(4,687,300)	26,213,433	(9,208,020)	(31,708,306)	11,125,972	(18,222,166)	(29,512,700)	1,631,462	3,722,353	296,979,395
2035	(4,748,647)	26,747,897	(8,974,444)	(31,661,006)	11,106,053	(18,134,091)	(29,345,950)	1,637,994	3,741,187	301,598,221
Total	(193,242,473)	1,051,416,533	(355,364,470)	(1,470,523,009)	454,607,940	(836,697,683)	(1,393,821,963)	66,701,651	135,894,206	11,450,542,042

TABLE B-4

Annual Entitlements to Project Water

(Acre-feet)

	North Bay Area			South Bay Area (a				Central Coastal Area		
Calendar Year	Napa County FC&WCD (b (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	507	5,248	5,783	11,538	0	0	0
1968	0	0	0	6,900	15,000	88,000	109,900	0	0	0
1969	0	0	0	8,200	15,500	75,000	98,700	0	0	0
1970	0	0	0	10,000	16,200	88,000	114,200	0	0	0
1971	0	0	0	11,200	17,000	88,000	116,200	0	0	0
1972	0	0	0	12,400	17,900	88,000	118,300	0	0	0
1973	0	0	0	13,600	18,800	88,000	120,400	0	0	0
1974	0	0	0	14,800	19,600	88,000	122,400	0	0	0
1975	0	0	0	16,000	20,500	88,000	124,500	0	0	0
1976	0	0	0	17,200	21,300	88,000	126,500	0	0	0
1977	0	0	0	18,400	22,200	88,000	128,600	0	0	0
1978	0	0	0	19,600	23,100	88,000	130,700	0	0	0
1979	0	0	0	20,800	23,900	88,000	132,700	0	0	0
1980	0	500	500	22,000	24,800	88,000	134,800	1,000	946	1,946
1981	0	650	650	23,000	26,000	88,000	137,000	1,000	1,813	2,813
1982	0	800	800	24,000	27,200	88,000	139,200	2,000	3,626	5,626
1983	0	950	950	25,000	28,400	88,000	141,400	3,000	5,439	8,439
1984	0	1,100	1,100	26,000	29,600	88,000	143,600	4,500	8,198	12,698
1985	0	1,250	1,250	27,000	30,800	88,000	145,800	7,500	13,638	21,138
1986	0	1,400	1,400	28,000	32,100	88,000	148,100	10,000	18,210	28,210
1987	0	1,550	1,550	29,000	33,300	88,000	150,300	12,500	22,704	35,204
1988	5,745	9,726	15,471	30,000	34,500	88,000	152,500	15,500	28,222	43,722
1989	6,195	18,420	24,615	31,000	35,700	90,000	156,700	20,000	36,342	56,342
1990	6,940	21,250	28,190	32,000	36,900	92,000	160,900	25,000	45,486	70,486
1991	7,290	22,300	29,590	34,000	38,400	94,000	166,400	25,000	45,486	70,486
1992	7,840	24,170	32,010	36,000	39,900	96,000	171,900	25,000	45,486	70,486
1993	8,490	26,130	34,620	38,000	41,400	98,000	177,400	25,000	45,486	70,486
1994	9,135	28,080	37,215	40,000	42,000	100,000	182,000	25,000	45,486	70,486
1995	9,780	34,250	44,030	42,000	42,000	100,000	184,000	25,000	45,486	70,486
1996	10,425	37,800	48,225	44,000	42,000	100,000	186,000	25,000	45,486	70,486
1997	11,065	38,250	49,315	46,000	42,000	100,000	188,000	25,000	45,486	70,486
1998	11,710	38,710	50,420	46,000	42,000	100,000	188,000	25,000	45,486	70,486
1999	12,330	39,170	51,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2000	13,050	39,620	52,670	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2001	13,665	40,080	53,745	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2002	14,185	40,540	54,725	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2003	14,800	41,000	55,800	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2004	15,400	41,450	56,850	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2005	16,000	41,500	57,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2006	16,450	41,550	58,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2007	17,000	41,600	58,600	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2008	17,650	41,650	59,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2009	18,200	41,700	59,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2010	18,750	41,750	60,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2011	19,400	41,800	61,200	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2012	19,950	41,850	61,800	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2013	20,600	41,900	62,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2014	21,250	41,950	63,200	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2015	21,900	42,000	63,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2016	22,500	42,000	64,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2017	23,100	42,000	65,100	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2018	23,700	42,000	65,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2019	24,300	42,000	66,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2020	24,900	42,000	66,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2021	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2022	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2023	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2024	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2025	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2026	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2027	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2028	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2029	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2030	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2031	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2032	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2033	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2034	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2035	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
Total	878,695	1,848,396	2,727,091	2,494,607	2,459,248	6,510,783	11,464,638	1,227,000	2,231,494	3,458,494

a) Entitlements for the South Bay area were supplied by nonproject water from June 1962 through November 1967. Actual delivery quantities of project water are shown for 1967.
b) District's Table A quantities exclude amounts from 1968 through 1987 that are assumed to be supplied by non-SWP water.

TABLE B-4

Annual Entitlements to Project Water

(Acre-feet)

	San Joaquin Valley Area								
			Kern County Water Agency						
Calendar Year	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	Total (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	14,300	1,000	0	46,600	46,600	900	2,300	12,250	77,350
1969	14,325	3,000	0	95,700	95,700	1,200	2,500	46,350	163,075
1970	15,700	3,000	28,700	116,400	145,100	1,300	2,600	34,300	202,000
1971	17,900	3,000	35,700	154,600	190,300	1,300	2,800	36,500	251,800
1972	20,000	3,000	39,200	231,500	270,700	1,400	5,366	112,600	413,066
1973	22,000	3,000	43,500	267,000	310,500	1,500	3,100	43,552	383,652
1974	33,390	3,000	48,000	299,000	347,000	1,500	3,471	72,289	460,650
1975	40,555	3,000	52,700	358,120	410,820	1,600	3,576	86,258	545,809
1976	30,921	3,000	56,100	386,050	442,150	1,600	4,039	61,707	543,417
1977	30,400	3,000	60,600	423,000	483,600	1,700	3,700	59,000	581,400
1978	32,500	0	64,100	470,200	534,300	1,900	3,900	63,300	635,900
1979	38,544	3,000	67,600	516,300	583,900	2,000	4,000	71,241	702,685
1980	41,000	3,000	71,100	563,400	634,500	2,200	5,700	71,700	758,100
1981	41,000	3,000	74,800	616,600	691,400	2,300	4,300	76,000	818,000
1982	41,000	3,000	79,600	665,700	745,300	2,500	4,500	80,200	876,500
1983	42,900	3,000	83,500	721,600	805,100	2,800	4,600	9,548	867,948
1984	45,100	3,000	103,600	757,000	860,600	3,100	4,800	62,611	979,211
1985	47,200	3,000	108,900	806,100	915,000	3,400	4,900	45,549	1,019,049
1986	49,300	3,000	113,400	854,800	968,200	3,700	5,100	97,200	1,126,500
1987	51,400	3,000	119,100	904,400	1,023,500	4,000	5,200	101,400	1,188,500
1988	53,500	3,000	123,900	950,700	1,074,600	4,000	5,400	105,600	1,246,100
1989	55,600	3,000	128,200	984,100	1,112,300	4,000	5,600	109,900	1,290,400
1990	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1991	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1992	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1993	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1994	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1995	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1996	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1997	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1998	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1999	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2000	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2001	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2002	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2003	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2004	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2005	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2006	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2007	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2008	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2009	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2010	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2011	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2012	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2013	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2014	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2015	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2016	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2017	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2018	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2019	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2020	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2021	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2022	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2023	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2024	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2025	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2026	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2027	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2028	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2029	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2030	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2031	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2032	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2033	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2034	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
2035	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
Total	3,432,735	199,000	7,693,900	58,053,670	65,747,570	233,900	353,652	6,910,055	76,876,912

TABLE B-4

Annual Entitlements to Project Water

(Acre-feet)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	*Castaic Lake Water Agency (21)*	*Coachella Valley Water District (22)*	*Crestline-Lake Arrowhead Water Agency (23)*	*Desert Water Agency (24)*	*Littlerock Creek Irrigation District (25)*	*Mojave Water Agency (26)*	*Palmdale Water District (27)*	*San Bernardino Valley Municipal Water District (28)*	*San Gabriel Valley Municipal Water District (29)*
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	3,700	0	0	0	0	0	0	0	0
1969	0	5,000	0	0	0	0	0	0	0	0
1970	0	5,700	0	0	0	0	0	0	0	0
1971	0	6,700	0	0	0	0	0	0	0	0
1972	20,000	8,936	5,200	526	8,000	170	8,400	1,620	1,677	122
1973	25,000	12,400	5,800	870	9,000	290	10,700	2,940	48,000	11,500
1974	30,000	15,400	6,400	1,160	10,000	400	13,100	4,260	50,000	12,300
1975	35,000	18,200	7,000	1,450	11,000	520	15,400	5,580	52,500	13,100
1976	44,000	21,200	7,600	1,740	12,000	640	17,800	6,900	55,000	14,000
1977	50,000	24,100	8,421	2,030	13,000	730	20,200	8,220	57,500	14,800
1978	57,000	24,762	9,242	2,320	14,000	920	0	9,340	60,000	15,700
1979	63,000	28,000	10,063	2,610	15,000	1,040	24,900	10,260	62,500	16,600
1980	69,200	30,400	10,884	2,900	17,000	1,150	27,200	11,180	65,500	17,400
1981	75,000	32,800	12,105	3,190	19,000	1,270	23,100	11,700	68,500	18,300
1982	81,300	34,800	13,326	3,480	21,000	1,380	22,843	12,320	71,500	19,100
1983	87,700	37,300	14,547	3,770	23,000	1,500	34,300	12,940	74,500	19,900
1984	35,000	39,600	15,768	4,060	25,000	1,610	36,700	13,560	78,000	20,700
1985	40,000	41,800	16,989	4,350	27,000	1,730	39,000	14,180	81,500	21,800
1986	42,000	43,600	18,210	4,640	29,000	1,840	41,400	14,800	85,000	23,200
1987	44,000	45,600	19,431	4,930	31,500	1,960	43,700	15,420	89,000	24,600
1988	46,000	48,000	20,652	5,220	34,000	2,070	46,000	16,040	93,000	26,000
1989	125,700	50,100	21,873	5,510	36,500	2,190	48,500	16,660	97,000	27,400
1990	132,100	52,000	23,100	5,800	38,100	2,300	50,800	17,300	101,500	28,800
1991	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1992	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1993	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1994	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1995	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1996	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1997	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1998	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1999	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2000	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2001	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2002	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2003	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2004	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2005	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2006	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2007	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2008	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2009	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2010	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2011	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2012	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2013	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2014	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2015	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2016	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2017	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2018	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2019	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2020	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2021	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2022	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2023	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2024	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2025	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2026	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2027	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2028	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2029	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2030	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2031	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2032	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2033	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2034	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
2035	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
Total	7,330,000	3,069,098	1,286,111	321,556	2,107,600	127,210	2,810,043	983,720	5,909,177	1,641,322

TABLE B-4

Annual Entitlements to Project Water

(Acre-feet)

	Southern California Area				Feather River Area					
Calendar Year	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)	South Bay Area Future Contractor (38)	Grand Total (39)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	11,538
1968	0	0	0	3,700	0	300	250	550	0	191,500
1969	0	0	0	5,000	0	350	270	620	0	267,395
1970	0	0	0	5,700	0	400	300	700	0	322,600
1971	0	0	0	6,700	0	450	440	890	0	375,590
1972	0	154,772	0	209,423	0	500	470	970	0	741,759
1973	0	354,600	0	481,100	0	600	500	1,100	0	986,252
1974	0	454,900	0	597,920	0	700	530	1,230	0	1,182,200
1975	0	555,200	0	714,950	0	1,050	560	1,610	0	1,386,869
1976	0	655,600	0	836,480	0	1,400	590	1,990	0	1,508,387
1977	0	755,900	0	954,901	0	1,800	620	2,420	0	1,667,321
1978	0	856,300	0	1,049,584	0	1,200	650	1,850	0	1,818,034
1979	0	956,600	0	1,190,573	0	1,450	680	2,130	0	2,028,088
1980	6,800	1,057,000	1,000	1,317,614	0	1,100	710	1,810	0	2,214,770
1981	7,800	1,157,300	2,000	1,432,065	0	1,200	740	1,940	0	2,392,468
1982	8,800	1,257,600	3,000	1,550,449	0	1,200	770	1,970	0	2,574,545
1983	9,800	1,358,000	4,000	1,681,257	0	1,200	800	2,000	0	2,701,994
1984	10,800	1,458,300	5,000	1,744,098	1,600	1,200	830	3,630	0	2,884,337
1985	11,800	1,558,700	6,000	1,864,849	1,700	1,200	860	3,760	0	3,055,846
1986	12,900	1,659,300	8,000	1,983,890	2,100	1,200	890	4,190	0	3,292,290
1987	14,000	1,759,800	10,000	2,103,941	2,500	1,200	920	4,620	0	3,484,115
1988	15,100	1,860,400	13,000	2,225,482	2,900	1,200	960	5,060	0	3,688,335
1989	16,200	1,961,000	16,000	2,424,633	3,300	1,200	1,000	5,500	0	3,958,190
1990	17,300	2,011,500	20,000	2,500,600	3,800	1,200	1,040	6,040	0	4,108,516
1991	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,080	11,880	0	4,130,856
1992	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,120	11,920	0	4,138,816
1993	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,160	11,960	0	4,146,966
1994	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,200	12,000	0	4,154,201
1995	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,250	12,050	0	4,163,066
1996	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,300	12,100	0	4,169,311
1997	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,350	12,150	0	4,172,451
1998	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,400	12,200	0	4,173,606
1999	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,450	12,250	0	4,174,736
2000	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,510	12,310	0	4,175,966
2001	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,570	38,670	0	4,203,401
2002	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,630	38,730	0	4,204,441
2003	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,690	38,790	0	4,205,576
2004	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,750	38,850	0	4,206,686
2005	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,810	38,910	0	4,207,396
2006	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,880	38,980	0	4,207,966
2007	17,300	2,011,500	20,000	2,510,200	9,600	27,500	1,950	39,050	0	4,208,636
2008	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,020	39,120	0	4,209,406
2009	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,090	39,190	0	4,210,076
2010	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,160	39,260	0	4,210,746
2011	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,240	39,340	0	4,211,526
2012	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,320	39,420	0	4,212,206
2013	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,410	39,510	0	4,212,996
2014	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,500	39,600	0	4,213,786
2015	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,600	39,700	0	4,214,586
2016	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,215,286
2017	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,215,886
2018	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,216,486
2019	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,086
2020	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,686
2021	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2022	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2023	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2024	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2025	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2026	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2027	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2028	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2029	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2030	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2031	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2032	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2033	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2034	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
2035	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
Total	909,800	112,360,272	988,000	139,843,909	449,900	997,800	112,820	1,560,520	0	235,931,564

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-feet)

		North Bay Aqueduct				South Bay Aqueduct					
		Reach 1	Reach 3A	Reach 3B		Reach 1		Reach 2	Reach 4	Reach 5	
Calendar Year	Grizzly Valley Pipeline PC FC&WCD (1)	SCWA (2)	SCWA (3)	NC FC&WCD (a (4)	Total (5)	ACWD (6)	AC FC&WCD (7)	AC FC&WCD (8)	AC FC&WCD (9)	ACWD (10)	AC FC&WCD (11)
1962	0	0	0	0	0	8,412	141	353	0	0	0
1963	0	0	0	0	0	10,914	814	917	0	0	0
1964	0	0	0	0	0	19,238	248	1,425	0	0	0
1965	0	0	0	0	0	15,280	637	1,830	138	0	0
1966	0	0	0	0	0	0	2,475	2,537	499	0	0
1967	0	0	0	0	0	0	1,527	2,391	862	0	0
1968	0	0	0	1,214	1,214	0	1,608	3,799	721	0	5
1969	0	0	0	2,687	2,687	0	1,165	3,459	1,851	0	160
1970	70	0	0	3,618	3,618	0	1,345	4,558	3,182	0	164
1971	64	0	0	2,521	2,521	0	546	1,908	2,403	0	160
1972	505	0	0	3,647	3,647	0	1,066	4,605	2,041	1,489	2,777
1973	679	0	0	3,792	3,792	0	430	1,123	1,193	0	229
1974	648	0	0	4,870	4,870	0	177	0	975	0	162
1975	405	0	0	6,840	6,840	0	137	1,783	1,864	0	120
1976	382	0	0	7,122	7,122	0	265	7,204	3,384	0	817
1977	303	0	0	8,226	8,226	0	210	4,491	2,213	0	524
1978	278	0	0	6,034	6,034	0	422	2,426	3,754	0	2,034
1979	329	0	0	6,561	6,561	0	197	4,283	5,567	0	3,937
1980	295	0	0	6,707	6,707	0	77	3,883	6,686	1,508	0
1981	355	0	0	9,001	9,001	0	1,250	4,648	5,273	5,752	1,157
1982	305	0	0	1,213	1,213	0	473	3,043	4,406	0	630
1983	262	0	0	2,287	2,287	0	179	2,712	1,714	0	50
1984	272	0	0	2,923	2,923	0	165	4,219	2,219	0	55
1985	254	0	0	4,039	4,039	0	213	5,199	2,060	0	63
1986	317	1,400	0	3,519	4,919	0	200	6,052	2,062	0	212
1987	452	1,550	0	7,693	9,243	0	218	7,538	2,372	0	285
1988	523	1	9,725	5,392	15,118	0	222	8,302	4,681	0	189
1989	486	10	17,246	3,819	21,075	0	222	8,051	6,562	0	418
1990	574	3,275	15,856	6,940	26,071	0	256	8,160	8,347	0	593
1991	420	3,117	3,855	1,380	8,352	0	162	3,676	3,269	0	359
1992	485	4,003	7,930	4,238	16,171	0	217	5,177	2,188	0	154
1993	812	6,717	11,574	5,943	24,234	0	294	5,663	7,516	0	1,706
1994	1,200	11,150	16,930	9,135	37,215	0	413	8,624	10,777	0	2,805
1995	1,250	16,900	17,340	9,780	44,020	0	413	9,178	10,918	0	2,858
1996	1,304	20,050	17,750	10,425	48,225	0	413	9,409	11,403	0	3,318
1997	1,352	20,100	18,150	11,065	49,315	0	413	9,636	12,131	0	3,522
1998	1,400	20,533	18,182	11,710	50,425	0	828	7,800	6,711	0	2,610
1999	1,469	20,772	18,393	12,330	51,495	0	828	7,800	6,711	0	2,610
2000	1,522	21,012	18,608	13,050	52,670	0	828	7,800	6,711	0	2,610
2001	1,577	21,012	18,608	13,665	53,285	0	828	7,800	6,711	0	2,610
2002	1,632	21,012	18,608	14,185	53,805	0	828	7,800	6,711	0	2,610
2003	1,690	21,012	18,608	14,800	54,420	0	828	7,800	6,711	0	2,610
2004	1,766	21,012	18,608	15,400	55,020	0	828	7,800	6,711	0	2,610
2005	1,827	22,012	19,488	16,000	57,500	0	828	7,800	6,711	0	2,610
2006	1,890	22,012	19,488	16,450	57,950	0	828	7,800	6,711	0	2,610
2007	1,954	22,012	19,488	17,000	58,500	0	828	7,800	6,711	0	2,610
2008	2,020	22,012	19,488	17,650	59,150	0	828	7,800	6,711	0	2,610
2009	2,112	22,012	19,488	18,200	59,700	0	828	7,800	6,711	0	2,610
2010	2,183	22,144	19,606	18,750	60,500	0	828	7,800	6,711	0	2,610
2011	2,256	22,144	19,606	19,400	61,150	0	828	7,800	6,711	0	2,610
2012	2,332	22,144	19,606	19,950	61,700	0	828	7,800	6,711	0	2,610
2013	2,410	22,144	19,606	20,600	62,350	0	828	7,800	6,711	0	2,610
2014	2,449	22,144	19,606	21,250	63,000	0	828	7,800	6,711	0	2,610
2015	2,515	22,276	19,724	21,900	63,900	0	828	7,800	6,711	0	2,610
2016	2,580	22,276	19,724	22,500	64,500	0	828	7,800	6,711	0	2,610
2017	2,642	22,276	19,724	23,100	65,100	0	828	7,800	6,711	0	2,610
2018	2,700	22,276	19,724	23,700	65,700	0	828	7,800	6,711	0	2,610
2019	2,700	22,276	19,724	24,300	66,300	0	828	7,800	6,711	0	2,610
2020	2,700	22,276	19,724	24,900	66,900	0	828	7,800	6,711	0	2,610
2021	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2022	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2023	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2024	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2025	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2026	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2027	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2028	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2029	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2030	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2031	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2032	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2033	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2034	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
2035	2,700	22,276	19,724	25,000	67,000	0	828	7,800	6,711	0	2,610
Total	103,407	923,214	875,645	958,421	2,757,280	53,844	50,674	458,662	390,249	8,749	128,643

a) For 1968 through 1987, deliveries are nonproject water pumped through an interim facility.

C-060147

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-feet)

	South Bay Aqueduct (continued) (b					California Aqueduct						
						North San Joaquin Division			San Luis Division			
	Reach 6	Reach 7	Reach 8	Reach 9		Reach 2A			Reach 3	Reach 4		
Calendar Year	AC FC&WCD (12)	ACWD (13)	ACWD (14)	SCVWD (15)	Total (16)	OFWD (c (17)	TLBWSD (18)	SCVWD (19)	DRWD (20)	KCWA (ag) (21)	DRWD (22)	TLBWSD (23)
1962	0	0	0	0	8,906	0	0	0	0	0	0	0
1963	0	0	0	0	12,645	0	0	0	0	0	0	0
1964	0	0	0	0	20,911	0	0	0	0	0	0	0
1965	0	1,127	0	15,014	34,026	0	0	0	0	0	0	0
1966	0	14,864	0	34,538	54,913	0	0	0	0	0	0	0
1967	0	12,882	0	39,101	56,763	0	0	0	0	0	0	0
1968	0	24,817	0	70,105	101,055	3,084	0	0	0	0	0	0
1969	0	813	0	62,264	69,712	3,016	0	0	0	0	0	0
1970	0	0	0	80,311	89,560	5,911	0	0	0	0	0	0
1971	0	5,961	0	87,606	98,584	7,212	0	0	0	0	0	0
1972	0	26,182	0	100,266	138,426	8,166	0	0	0	0	0	0
1973	0	2,521	0	88,582	94,078	3,214	0	0	0	0	0	0
1974	0	0	4	88,000	89,318	3,471	0	0	0	0	0	0
1975	714	393	593	88,000	93,604	3,576	0	0	0	0	0	0
1976	5,461	13,774	7,526	88,000	126,431	4,112	0	0	0	0	0	0
1977	5,206	11,284	7,556	76,220	107,704	1,472	0	0	0	0	0	0
1978	2,348	854	5,009	95,727	112,574	3,906	0	0	0	0	0	0
1979	5,341	3,430	7,444	91,991	122,190	6,149	0	0	0	0	0	0
1980	6,144	2,824	6,702	88,000	115,824	5,700	0	0	0	0	0	0
1981	7,262	7,595	8,570	88,000	129,507	4,300	0	0	0	0	0	0
1982	4,571	1,776	4,540	87,261	106,700	3,838	0	0	0	0	0	0
1983	111	0	3,157	86,733	94,656	3,822	0	0	0	0	0	0
1984	126	0	3,338	88,000	98,122	5,700	0	0	0	0	0	0
1985	7,537	11,203	7,813	88,000	122,088	5,433	0	0	0	0	0	0
1986	2,083	5,311	7,068	88,000	110,988	5,107	0	0	0	0	0	0
1987	12,993	15,488	9,902	88,000	136,796	5,625	0	0	0	0	0	0
1988	12,436	24,259	9,205	87,961	147,255	4,412	0	0	0	0	0	0
1989	10,974	17,340	8,702	90,000	142,269	6,091	300	0	602	12,647	1,898	0
1990	15,678	22,149	9,554	91,800	156,537	2,922	0	200	0	0	0	1,500
1991	1,945	9,155	3,493	28,200	50,259	141	0	0	0	0	0	0
1992	6,933	12,621	6,532	42,839	76,661	2,239	0	0	0	0	0	0
1993	11,421	11,742	17,238	68,600	124,180	3,990	0	0	0	0	0	0
1994	17,381	8,952	33,048	100,000	182,000	5,700	0	0	0	0	0	0
1995	18,633	8,952	33,048	100,000	184,000	5,700	0	0	0	0	0	0
1996	19,457	8,952	33,048	100,000	186,000	5,700	0	0	0	0	0	0
1997	20,298	8,952	33,048	100,000	188,000	5,700	0	0	0	0	0	0
1998	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
1999	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2000	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2001	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2002	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2003	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2004	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2005	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2006	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2007	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2008	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2009	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2010	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2011	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2012	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2013	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2014	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2015	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2016	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2017	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2018	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2019	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2020	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2021	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2022	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2023	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2024	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2025	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2026	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2027	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2028	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2029	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2030	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2031	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2032	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2033	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2034	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
2035	28,051	11,011	30,989	100,000	188,000	5,700	0	0	0	0	0	0
Total	1,260,991	714,591	1,443,720	6,417,119	10,927,242	352,009	300	200	602	12,647	1,898	1,500

b) From June 1962 through November 1967, deliveries were supplied by nonproject water.
c) Includes 425 AF of 1988 advance entitlement and 141 AF of 1992 advance entitlement.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-feet)

	California Aqueduct (continued)											
	San Luis Division (continued)				South San Joaquin Division							
	Reach 5		Reach 6	Reach 7	Reach 8C			Reach 8D				
Calendar Year	KCWA (Ag) (24)	DRWD (25)	KCWA (Ag) (26)	KCWA (Ag) (27)	DRWD (28)	TLBWSD (29)	EWSID (30)	CK (31)	KCWA (Ag) (32)	DRWD (33)	CK (34)	TLBWSD (35)
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	25,100	1,978	900	0	26,360	0	0
1969	0	0	0	0	0	7,081	56	100	0	31,375	0	0
1970	0	0	0	0	0	0	3,942	0	0	40,407	0	3,408
1971	0	0	0	0	0	80,906	5,990	3,700	0	41,053	0	41,579
1972	0	0	0	0	0	144,843	5,795	1,400	0	42,443	0	113,550
1973	0	0	0	0	0	26,317	3,000	1,500	1,500	22,057	0	24,147
1974	0	0	0	0	0	32,603	3,000	1,500	0	33,390	0	39,686
1975	0	0	0	0	0	41,536	3,000	1,600	0	40,555	0	44,722
1976	0	0	0	0	0	26,595	3,000	1,600	0	41,421	0	32,216
1977	0	0	0	0	0	12,984	738	1,530	0	11,153	0	5,097
1978	0	0	0	0	0	3,934	454	2,070	0	51,747	0	8,119
1979	0	0	0	0	0	74,758	1,739	2,000	0	38,544	0	80,363
1980	0	0	0	0	0	35,140	894	2,200	0	41,000	0	34,104
1981	0	0	0	0	0	50,888	5,859	2,300	0	41,000	0	32,550
1982	0	0	0	0	0	4,405	361	1,536	0	41,000	214	14,146
1983	0	0	0	0	0	1,001	0	3,550	0	42,900	0	5
1984	0	0	0	0	0	3,677	0	3,100	0	45,100	0	2,066
1985	0	0	0	0	0	68,638	5,197	3,400	0	46,251	0	41,153
1986	0	0	0	0	0	40,017	1,170	3,700	0	50,249	0	39,338
1987	0	0	0	0	0	30,359	2,525	4,000	0	46,288	0	62,725
1988	0	0	0	0	0	47,831	3,775	4,000	0	47,994	0	48,035
1989	18,831	0	8,260	5,262	2,391	63,703	3,000	4,000	0	52,158	0	63,947
1990	0	0	0	0	0	23,504	1,279	2,000	161	36,296	0	32,066
1991	0	0	0	0	0	1,697	221	0	0	927	0	483
1992	0	10,823	0	0	280	15,982	1,354	1,806	0	12,667	0	30,746
1993	0	0	0	0	0	33,180	2,100	2,800	0	40,390	0	49,770
1994	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
1995	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
1996	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
1997	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
1998	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
1999	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2000	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2001	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2002	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2003	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2004	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2005	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2006	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2007	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2008	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2009	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2010	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2011	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2012	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2013	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2014	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2015	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2016	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2017	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2018	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2019	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2020	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2021	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2022	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2023	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2024	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2025	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2026	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2027	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2028	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2029	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2030	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2031	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2032	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2033	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2034	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
2035	0	0	0	0	0	47,400	3,000	4,000	0	57,700	0	71,100
Total	18,831	10,823	8,260	5,262	2,671	2,887,479	186,427	224,292	1,661	3,388,125	214	3,830,221

C-060149

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-feet)

	California Aqueduct (continued)									
	South San Joaquin Division									
	Reach 9			Reach 10A			Reach 11B		Reach 12E	
Calendar Year	KCWA (M&I) (36)	KCWA (Ag) (37)	TLBWSD (38)	KCWA (M&I) (39)	KCWA (Ag) (40)	TLBWSD (41)	KCWA (M&I) (42)	KCWA (Ag) (43)	KCWA (M&I) (44)	KCWA (Ag) (45)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	30,951	0	0	0	0	0	24,776	0	0
1969	0	24,489	0	0	0	2,842	0	64,682	0	0
1970	0	46,114	1,855	0	158	4,315	0	72,279	0	9,279
1971	0	58,356	0	0	9,973	0	0	63,773	0	28,056
1972	0	75,464	0	0	5,876	0	0	72,358	0	62,342
1973	0	54,583	0	0	22,948	0	0	67,544	0	13,082
1974	0	63,814	0	10,019	22,719	0	0	87,476	2,651	4,248
1975	0	50,021	0	2,791	72,121	0	0	85,675	0	10,787
1976	0	53,465	0	74	50,444	0	0	85,067	37,519	20,555
1977	0	24,668	0	201	34,451	0	3,981	29,603	20,280	1,737
1978	0	72,231	0	0	161,889	0	0	88,753	47,133	15,011
1979	0	74,524	0	285	153,245	0	484	108,379	50,740	61,567
1980	0	79,946	0	3,780	131,836	0	3,112	103,207	32,039	22,252
1981	0	76,508	0	341	133,500	0	494	104,395	59,917	58,470
1982	0	76,877	0	4,700	164,832	0	798	99,081	36,139	75,587
1983	2,217	84,573	0	0	146,493	0	2,069	94,117	0	10,950
1984	4,100	85,732	0	6,910	150,302	0	2,349	124,819	63,941	39,929
1985	0	67,696	0	6,495	153,473	0	10,666	118,646	69,839	84,117
1986	0	79,943	0	5,065	198,099	0	8,673	124,836	62,109	51,540
1987	0	97,732	0	900	226,521	0	13,074	111,877	95,297	86,223
1988	1,100	83,858	0	8,229	213,795	0	13,509	114,031	86,390	123,249
1989	0	91,134	0	21,038	251,979	0	9,986	127,058	83,965	146,544
1990	0	83,108	0	25,189	47,472	0	9,319	104,107	82,164	38,973
1991	13,683	601	0	1,142	6,820	0	6,099	118	8,842	303
1992	28	40,183	0	3,685	71,603	0	7,419	35,093	41,160	51,898
1993	0	68,752	0	1,393	180,062	0	10,504	93,167	79,452	186,112
1994	0	98,220	0	2,000	283,334	0	15,000	133,096	113,500	233,720
1995	0	98,220	0	2,000	283,334	0	15,000	133,096	113,500	233,720
1996	0	98,220	0	2,000	283,334	0	15,000	133,096	113,500	233,720
1997	0	98,220	0	2,000	283,334	0	15,000	133,096	113,500	233,720
1998	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
1999	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2000	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2001	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2002	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2003	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2004	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2005	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2006	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2007	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2008	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2009	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2010	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2011	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2012	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2013	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2014	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2015	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2016	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2017	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2018	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2019	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2020	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2021	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2022	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2023	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2024	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2025	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2026	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2027	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2028	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2029	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2030	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2031	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2032	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2033	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2034	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
2035	0	91,200	0	2,600	245,053	0	20,000	129,059	113,400	173,588
Total	21,128	5,503,803	1,855	209,037	13,055,961	7,157	922,536	7,641,543	5,722,777	8,734,035

C-060150

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-feet)

	California Aqueduct (continued)							
	South San Joaquin Division (continued)							
	Reach 13B		Reach 14A		Reach 14B		Reach 14C	
Calendar Year	KCWA (M&I) (46)	KCWA (Ag) (47)	KCWA (M&I) (48)	KCWA (Ag) (49)	KCWA (M&I) (50)	KCWA (Ag) (51)	KCWA (M&I) (52)	KCWA (Ag) (53)
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	4,891	0	0	0	3	0	0
1971	0	0	0	23,844	0	49,929	0	24,187
1972	0	17,388	0	26,621	0	77,034	0	35,016
1973	0	9,297	0	15,328	0	47,040	0	19,043
1974	8,038	4,246	0	7,794	0	32,356	0	12,601
1975	8,538	7,059	0	10,306	0	27,736	0	12,783
1976	5,626	8,855	0	268	0	35,296	0	9,005
1977	0	5,024	0	8,299	0	13,539	0	3,757
1978	21,773	7,601	0	34,029	0	72,351	0	24,542
1979	5,663	17,766	3,012	27,356	0	59,413	0	22,372
1980	0	22,515	4,312	16,876	0	40,513	0	19,953
1981	7,844	14,037	4,511	13,007	8	42,753	7	18,729
1982	0	25,553	5,373	22,602	184	57,739	0	26,479
1983	0	3,491	1,168	20,302	0	57,922	0	26,613
1984	12,117	26,178	137	35,369	10	79,179	2	34,996
1985	0	67,711	206	33,103	0	72,855	0	31,758
1986	0	66,551	180	26,384	0	70,864	0	34,566
1987	5,609	40,374	610	30,098	9	67,710	9	31,019
1988	9,298	47,167	604	32,796	4	75,983	0	37,166
1989	5,504	57,114	721	29,292	7	82,201	5	37,800
1990	7,645	20,423	673	26,800	13	81,076	9	34,174
1991	0	0	768	0	0	0	0	0
1992	789	17,449	673	16,238	464	41,143	0	18,084
1993	0	29,891	561	13,440	0	35,910	0	18,830
1994	0	48,750	800	19,200	0	51,300	0	26,900
1995	0	48,750	800	19,200	0	51,300	0	26,900
1996	0	48,750	800	19,200	0	51,300	0	26,900
1997	0	48,750	800	19,200	0	51,300	0	26,900
1998	0	35,500	800	35,075	0	80,000	0	44,000
1999	0	35,500	800	35,075	0	80,000	0	44,000
2000	0	35,500	800	35,075	0	80,000	0	44,000
2001	0	35,500	800	35,075	0	80,000	0	44,000
2002	0	35,500	800	35,075	0	80,000	0	44,000
2003	0	35,500	800	35,075	0	80,000	0	44,000
2004	0	35,500	800	35,075	0	80,000	0	44,000
2005	0	35,500	800	35,075	0	80,000	0	44,000
2006	0	35,500	800	35,075	0	80,000	0	44,000
2007	0	35,500	800	35,075	0	80,000	0	44,000
2008	0	35,500	800	35,075	0	80,000	0	44,000
2009	0	35,500	800	35,075	0	80,000	0	44,000
2010	0	35,500	800	35,075	0	80,000	0	44,000
2011	0	35,500	800	35,075	0	80,000	0	44,000
2012	0	35,500	800	35,075	0	80,000	0	44,000
2013	0	35,500	800	35,075	0	80,000	0	44,000
2014	0	35,500	800	35,075	0	80,000	0	44,000
2015	0	35,500	800	35,075	0	80,000	0	44,000
2016	0	35,500	800	35,075	0	80,000	0	44,000
2017	0	35,500	800	35,075	0	80,000	0	44,000
2018	0	35,500	800	35,075	0	80,000	0	44,000
2019	0	35,500	800	35,075	0	80,000	0	44,000
2020	0	35,500	800	35,075	0	80,000	0	44,000
2021	0	35,500	800	35,075	0	80,000	0	44,000
2022	0	35,500	800	35,075	0	80,000	0	44,000
2023	0	35,500	800	35,075	0	80,000	0	44,000
2024	0	35,500	800	35,075	0	80,000	0	44,000
2025	0	35,500	800	35,075	0	80,000	0	44,000
2026	0	35,500	800	35,075	0	80,000	0	44,000
2027	0	35,500	800	35,075	0	80,000	0	44,000
2028	0	35,500	800	35,075	0	80,000	0	44,000
2029	0	35,500	800	35,075	0	80,000	0	44,000
2030	0	35,500	800	35,075	0	80,000	0	44,000
2031	0	35,500	800	35,075	0	80,000	0	44,000
2032	0	35,500	800	35,075	0	80,000	0	44,000
2033	0	35,500	800	35,075	0	80,000	0	44,000
2034	0	35,500	800	35,075	0	80,000	0	44,000
2035	0	35,500	800	35,075	0	80,000	0	44,000
Total	98,444	2,064,581	57,109	1,879,802	699	4,465,745	32	2,313,073

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-feet)

	California Aqueduct (continued)									
	South San Joaquin Division (continued)					Mojave Division				
	Reach 15A		Reach 16A			Reach 18A	Reach 19	Reach 20A		
Calendar Year	KCWA (M&I) (54)	KCWA (Ag) (55)	KCWA (M&I) (56)	KCWA (Ag) (57)	AVEKWA (58)	AVEKWA (59)	AVEKWA (60)	PWD (61)	MWA (62)	AVEKWA (63)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0
1971	0	3,552	0	0	0	0	0	0	0	0
1972	0	6,064	0	4,768	0	0	0	0	0	0
1973	0	19,916	0	1,961	0	0	0	0	0	0
1974	0	18,000	3,000	1,564	0	0	1,223	0	0	0
1975	0	35,420	3,200	9,867	0	0	7,622	0	0	420
1976	0	39,551	3,500	11,667	0	3,808	23,063	0	0	471
1977	0	6,158	3,420	685	0	1,231	8,927	0	0	773
1978	0	31,148	7,989	1,655	0	1,321	36,333	0	0	5,549
1979	0	38,602	2,813	15,808	0	2,098	49,910	0	0	7,555
1980	0	37,817	2,700	16,145	0	2,610	61,534	0	0	7,605
1981	0	39,033	2,636	18,156	0	2,340	65,690	0	0	10,333
1982	0	47,782	1,289	17,209	0	1,669	41,127	0	0	7,313
1983	0	37,426	1,400	17,907	0	43	26,377	0	0	6,253
1984	0	49,848	1,338	24,202	0	90	22,462	0	0	9,558
1985	0	44,078	1,309	16,820	0	8	23,440	1,510	0	11,613
1986	0	42,461	1,213	15,559	0	8	16,898	3,041	0	13,808
1987	0	34,748	1,665	10,170	0	0	15,958	2,389	0	15,493
1988	2	41,992	1,913	8,999	0	0	13,471	366	0	17,117
1989	2	43,239	2,668	8,649	0	0	18,007	381	0	23,481
1990	6	36,347	2,819	8,608	0	0	17,281	282	0	25,843
1991	0	0	2,588	343	2,000	0	728	84	1,391	4,282
1992	0	24,243	2,087	8,275	0	0	7,238	185	1,310	18,518
1993	0	24,150	2,310	7,546	0	89	11,888	0	0	21,279
1994	0	34,500	3,300	10,780	0	144	17,210	0	0	32,639
1995	0	34,500	3,300	10,780	0	144	17,540	0	0	36,934
1996	0	34,500	3,300	10,780	0	144	17,970	0	0	39,359
1997	0	34,500	3,300	10,780	0	144	18,400	0	0	41,779
1998	0	45,075	2,200	17,850	0	144	18,850	0	0	44,219
1999	0	45,075	2,200	17,850	0	144	25,976	0	0	44,574
2000	0	45,075	2,200	17,850	0	120	29,733	0	0	50,997
2001	0	45,075	2,200	17,850	0	120	29,733	0	0	50,997
2002	0	45,075	2,200	17,850	0	120	29,733	0	0	50,997
2003	0	45,075	2,200	17,850	0	120	29,733	0	0	50,997
2004	0	45,075	2,200	17,850	0	120	29,733	0	0	50,997
2005	0	45,075	2,200	17,850	0	144	35,934	0	0	61,619
2006	0	45,075	2,200	17,850	0	144	35,934	0	0	61,619
2007	0	45,075	2,200	17,850	0	144	35,934	0	0	61,619
2008	0	45,075	2,200	17,850	0	144	35,934	0	0	61,619
2009	0	45,075	2,200	17,850	0	144	35,934	0	0	61,619
2010	0	45,075	2,200	17,850	0	168	42,132	0	0	72,244
2011	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2012	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2013	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2014	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2015	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2016	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2017	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2018	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2019	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2020	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2021	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2022	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2023	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2024	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2025	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2026	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2027	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2028	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2029	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2030	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2031	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2032	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2033	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2034	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
2035	0	45,075	2,200	17,850	0	168	42,873	0	0	73,519
Total	10	2,552,425	148,657	947,983	2,000	21,867	2,027,415	0	2,701	2,920,067

C-060152

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-feet)

	California Aqueduct (continued)									
	Mojave Division (continued)									
	Reach 20B		Reach 21		Reach 22A	Reach 22B				
Calendar Year	PWD (64)	AVEKWA (65)	LCID (66)	PWD (67)	AVEKWA (68)	MWDSC (d (69)	CVWD (d (70)	AVEKWA (e (71)	DWA (d (72)	MWA (73)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	338	0	0	0	0	0	0	55
1973	0	0	290	0	0	(14,800)	5,800	0	9,000	0
1974	0	0	400	0	0	(16,400)	6,400	0	10,000	0
1975	0	0	520	0	0	(18,000)	7,000	0	11,000	0
1976	0	416	589	0	0	(19,600)	7,600	0	12,000	0
1977	0	271	111	0	0	0	0	0	0	22
1978	0	934	208	0	0	(25,384)	10,084	0	15,300	0
1979	0	930	133	0	0	(25,063)	10,063	0	15,000	4,000
1980	0	655	191	0	3	(27,884)	10,884	0	17,000	4,000
1981	0	966	1,270	0	46	(31,105)	12,105	0	19,000	4,000
1982	0	8	0	0	174	(34,326)	13,326	0	21,000	10,500
1983	0	20	38	0	268	(37,547)	14,547	0	23,000	0
1984	0	2	1	0	550	(40,768)	15,768	0	25,000	0
1985	32	217	0	16	1,786	(43,989)	16,989	0	27,000	0
1986	45	0	163	10	1,735	(47,210)	18,210	0	29,000	0
1987	1,624	151	1,080	1,366	2,278	(50,931)	19,431	214	31,500	17
1988	1,261	281	419	143	3,210	(54,652)	20,652	0	34,000	9
1989	7,848	112	971	780	3,591	(58,373)	21,873	89	36,500	0
1990	8,292	84	1,747	34	3,988	(61,200)	23,100	10	38,100	0
1991	3,830	131	522	0	2,427	(18,360)	6,930	0	11,430	0
1992	3,850	650	251	0	3,859	(27,624)	10,427	0	17,197	42
1993	10,010	678	1,610	0	3,798	(21,420)	8,085	0	13,335	0
1994	15,060	1,175	2,300	0	5,635	0	0	0	0	0
1995	15,560	1,415	2,300	0	5,875	0	0	0	0	0
1996	17,280	1,700	2,300	0	6,135	0	0	0	0	0
1997	17,300	2,025	2,300	0	6,400	0	0	0	0	0
1998	17,300	2,355	2,300	0	6,660	0	0	0	0	0
1999	17,300	6,560	2,300	0	6,700	0	0	0	0	0
2000	17,300	7,510	2,300	0	7,640	0	0	0	0	0
2001	17,300	7,510	2,300	0	7,640	0	0	0	0	0
2002	17,300	7,510	2,300	0	7,640	0	0	0	0	0
2003	17,300	7,510	2,300	0	7,640	0	0	0	0	0
2004	17,300	7,510	2,300	0	7,640	0	0	0	0	0
2005	17,300	9,072	2,300	0	9,231	0	0	0	0	0
2006	17,300	9,072	2,300	0	9,231	0	0	0	0	0
2007	17,300	9,072	2,300	0	9,231	0	0	0	0	0
2008	17,300	9,072	2,300	0	9,231	0	0	0	0	0
2009	17,300	9,072	2,300	0	9,231	0	0	0	0	0
2010	17,300	10,634	2,300	0	10,822	0	0	0	0	0
2011	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2012	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2013	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2014	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2015	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2016	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2017	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2018	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2019	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2020	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2021	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2022	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2023	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2024	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2025	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2026	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2027	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2028	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2029	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2030	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2031	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2032	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2033	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2034	17,300	10,824	2,300	0	11,016	0	0	0	0	0
2035	17,300	10,824	2,300	0	11,016	0	0	0	0	0
TotalL	759,392	385,880	107,452	2,349	435,695	(674,636)	259,274	313	415,362	22,645

d) In accordance with the Exchange Agreement between the noted agencies, MWDSC assumed responsibility for payment of variable OMP&R costs on the exchange water in reaches beyond Reach 22B, and Desert Water Agency and Coachella Valley Water District for such costs from the Delta through Reach 22B.The adjustment in deliveries in Reach 22B complies with provisions for the repayment of costs under the agreement. In 1993 and after, the exchange takes place in Reach 26A.

e) 1988 advance entitlement.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-feet)

	California Aqueduct (continued)									
	Mojave Division (continued)			Santa Ana Division						
	Reach 23	Reach 24		Reach 26A						Reach 28G
Calendar Year	MWA (74)	CLAWA (75)	MWA (76)	MWDSC (f (77)	SBVMWD (g (78)	SGVMWD (79)	SGPWA (80)	CVWD (f (81)	DWA (f (82)	MWDSC (83)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0
1972	0	464	0	0	1,275	0	0	0	0	0
1973	0	389	0	444	32,426	0	0	0	0	18,942
1974	14	627	0	84,981	16,605	612	0	0	0	0
1975	0	825	0	169,960	13,865	5,450	0	0	0	0
1976	0	1,002	0	215,312	12,273	6,071	0	0	0	0
1977	58	1,109	0	64,823	24,833	8,996	0	0	0	0
1978	0	1,209	0	297,708	4,055	7,771	0	0	0	0
1979	0	1,260	0	260,903	18	290	0	0	0	0
1980	0	1,239	0	300,345	0	1,085	0	0	0	0
1981	0	1,485	0	395,678	16,021	3,619	0	0	0	0
1982	0	1,238	0	214,566	8,409	12,599	0	0	0	0
1983	0	911	0	175,288	5,994	734	0	0	0	0
1984	0	1,128	0	122,311	5,556	7,656	0	0	0	0
1985	0	1,422	0	147,599	7,390	5,028	0	0	0	0
1986	0	1,506	0	215,265	6,421	9,454	0	0	0	0
1987	0	1,849	0	175,012	8,751	10,630	0	0	0	0
1988	0	2,006	0	247,101	12,637	8,948	0	0	0	0
1989	200	2,170	0	326,217	20,782	12,839	0	0	0	0
1990	0	1,827	0	399,387	18,831	16,649	0	0	0	0
1991	0	852	2,032	107,182	3,661	5,399	0	0	0	0
1992	0	264	9,334	215,522	3,358	7,908	0	0	0	0
1993	0	1,950	25,200	433,109	22,400	16,800	0	8,085	13,335	0
1994	0	2,650	36,000	546,900	35,000	18,000	0	23,100	38,100	0
1995	0	2,900	50,800	521,900	38,000	18,000	3,000	23,100	38,100	0
1996	0	3,100	50,800	496,900	41,000	18,000	7,200	23,100	38,100	0
1997	0	3,300	50,800	471,900	44,000	18,000	7,200	23,100	38,100	0
1998	0	2,600	50,800	471,900	51,004	18,000	5,570	23,100	38,100	0
1999	0	2,600	50,800	471,900	55,000	18,000	5,570	23,100	38,100	0
2000	0	3,000	50,800	471,900	60,000	20,000	6,350	23,100	38,100	0
2001	0	3,000	50,800	471,900	60,000	20,000	6,350	23,100	38,100	0
2002	0	3,000	50,800	471,900	60,000	20,000	6,350	23,100	38,100	0
2003	0	3,000	50,800	471,900	60,000	20,000	6,350	23,100	38,100	0
2004	0	3,000	50,800	471,900	60,000	20,000	6,350	23,100	38,100	0
2005	0	3,825	50,800	471,900	90,000	21,300	8,450	23,100	38,100	0
2006	0	3,825	50,800	471,900	90,000	21,300	8,450	23,100	38,100	0
2007	0	3,825	50,800	471,900	90,000	21,300	8,450	23,100	38,100	0
2008	0	3,825	50,800	471,900	90,000	21,300	8,450	23,100	38,100	0
2009	0	3,825	50,800	471,900	90,000	21,300	8,450	23,100	38,100	0
2010	0	4,750	50,800	471,900	102,600	22,500	10,550	23,100	38,100	0
2011	0	4,750	50,800	471,900	102,600	22,500	10,550	23,100	38,100	0
2012	0	4,750	50,800	471,900	102,600	22,500	10,550	23,100	38,100	0
2013	0	4,750	50,800	471,900	102,600	22,500	10,550	23,100	38,100	0
2014	0	4,750	50,800	471,900	102,600	22,500	10,550	23,100	38,100	0
2015	0	5,300	50,800	471,900	102,600	23,800	13,550	23,100	38,100	0
2016	0	5,300	50,800	471,900	102,600	23,800	13,550	23,100	38,100	0
2017	0	5,300	50,800	471,900	102,600	23,800	13,550	23,100	38,100	0
2018	0	5,300	50,800	471,900	102,600	23,800	13,550	23,100	38,100	0
2019	0	5,300	50,800	471,900	102,600	23,800	13,550	23,100	38,100	0
2020	0	5,700	50,800	471,900	102,600	25,000	16,650	23,100	38,100	0
2021	0	5,700	50,800	471,900	102,600	25,000	17,300	23,100	38,100	0
2022	0	5,700	50,800	471,900	102,600	25,000	17,300	23,100	38,100	0
2023	0	5,700	50,800	471,900	102,600	25,000	17,300	23,100	38,100	0
2024	0	5,700	50,800	471,900	102,600	25,000	17,300	23,100	38,100	0
2025	0	5,800	50,800	471,900	102,600	26,300	17,300	23,100	38,100	0
2026	0	5,800	50,800	471,900	102,600	26,300	17,300	23,100	38,100	0
2027	0	5,800	50,800	471,900	102,600	26,300	17,300	23,100	38,100	0
2028	0	5,800	50,800	471,900	102,600	26,300	17,300	23,100	38,100	0
2029	0	5,800	50,800	471,900	102,600	26,300	17,300	23,100	38,100	0
2030	0	5,800	50,800	471,900	102,600	27,500	17,300	23,100	38,100	0
2031	0	5,800	50,800	471,900	102,600	27,500	17,300	23,100	38,100	0
2032	0	5,800	50,800	471,900	102,600	27,500	17,300	23,100	38,100	0
2033	0	5,800	50,800	471,900	102,600	27,500	17,300	23,100	38,100	0
2034	0	5,800	50,800	471,900	102,600	27,500	17,300	23,100	38,100	0
2035	0	5,800	50,800	471,900	102,600	28,800	17,300	23,100	38,100	0
Total	272	220,557	2,155,366	24,538,513	3,927,165	1,117,338	499,190	978,285	1,613,535	18,942

f) In accordance with the Exchange Agreement between the noted agencies, MWDSC assumed responsibility for payment of variable OMP&R costs on the exchange water in reaches beyond Reach 22B, and Desert Water Agency and Coachella Valley Water District for such costs from the Delta through Reach 22B.The adjustment in deliveries in Reach 22B complies with provisions for the repayment of costs under the agreement. In 1993 and after the exchange takes place in Reach 26A.

g) Includes 1,650 AF recaptured from ground water storage in 1982, 10,000 AF in 1987, and 8,749 AF in 1988. This water was stored under the Department's Ground Water Demonstration Program.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-feet)

	California Aqueduct (continued)							
	Santa Ana Division (continued)		West Branch					
	Reach 28H	Reach 28J	Reach 29F	Reach 29H	Reach 30			
Calendar Year	MWDSC (84)	MWDSC (85)	AVEKWA (86)	VCFCD (87)	MWDSC (h (88)	VCFCD (89)	CLWA (90)	SBCFC&WCD (91)
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	53	0	71,938	0	0	0
1973	0	0	20	0	155,297	0	0	0
1974	0	0	36	0	209,136	0	0	0
1975	0	251	26	0	374,280	0	0	0
1976	55	2,000	24	0	420,684	0	0	0
1977	43	2,442	0	0	122,447	0	0	0
1978	48	64,054	0	0	171,139	0	0	0
1979	1,290	94,353	0	0	145,591	0	7	0
1980	3,013	91,532	0	0	164,721	0	1,210	0
1981	4,365	149,405	0	0	277,503	0	5,761	0
1982	3,961	155,629	0	0	351,362	0	9,516	0
1983	6,645	41,616	0	0	157,519	0	9,476	0
1984	106,781	5,270	0	0	260,624	0	11,477	0
1985	182,781	6,538	0	0	390,696	0	12,401	0
1986	131,439	30,071	0	0	379,275	0	13,928	0
1987	144,743	26,315	0	0	417,285	0	16,167	0
1988	199,641	22,209	0	0	488,265	0	18,904	0
1989	247,430	51,462	0	0	589,962	0	21,719	0
1990	257,796	36,060	0	4,836	764,380	0	22,139	0
1991	38,832	5,958	0	988	257,835	0	3,846	1,240
1992	84,841	11,723	0	0	422,849	0	14,812	0
1993	283,034	0	3	3,500	713,327	0	22,157	0
1994	396,900	34,800	0	5,000	1,032,900	0	32,287	0
1995	396,900	34,800	0	5,000	1,057,900	0	34,904	0
1996	396,900	34,800	0	5,000	1,082,900	0	37,532	0
1997	396,900	34,800	0	5,000	1,107,900	0	40,400	0
1998	396,900	34,800	0	5,000	1,107,900	15,000	40,401	0
1999	396,900	34,800	0	5,000	1,107,900	15,000	40,401	0
2000	396,900	34,800	0	5,000	1,107,900	15,000	48,796	0
2001	396,900	34,800	0	5,000	1,107,900	15,000	48,796	0
2002	396,900	34,800	0	5,000	1,107,900	15,000	48,796	0
2003	396,900	34,800	0	5,000	1,107,900	15,000	48,796	0
2004	396,900	34,800	0	5,000	1,107,900	15,000	48,796	0
2005	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2006	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2007	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2008	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2009	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2010	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2011	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2012	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2013	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2014	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2015	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2016	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2017	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2018	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2019	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2020	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2021	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2022	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2023	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2024	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2025	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2026	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2027	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2028	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2029	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2030	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2031	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2032	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2033	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2034	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
2035	396,900	34,800	0	5,000	1,107,900	15,000	54,200	0
Total	18,366,538	2,258,488	162	219,324	53,687,915	570,000	2,333,625	1,240

h) Deliveries exclude 6,171 AF of 1982 exchange water.

TABLE B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-feet)

	California Aqueduct (continued)							
	Coastal Branch							
	Reach 31A		Reach 33A	Reach 34	Reach 35			
Calendar Year	KCWA (Ag) (92)	CLWA (93)	SLOCFC&WCD (94)	SLOCFC&WCD (95)	SLOCFC&WCD (96)	SBCFC&WCD (97)	Total (98)	Grand Total (99)
1962	0	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	0	56,763
1968	71,657	7,382	0	0	0	0	192,188	294,457
1969	52,094	9,970	0	0	0	0	195,705	268,104
1970	71,910	11,739	0	0	0	0	276,211	369,459
1971	98,481	12,490	0	0	0	0	553,081	654,250
1972	107,850	13,905	0	0	0	0	895,006	1,037,584
1973	69,227	9,418	0	0	0	0	638,930	737,479
1974	68,474	9,700	0	0	0	0	783,984	878,820
1975	74,516	10,700	0	0	0	0	1,129,728	1,230,577
1976	78,358	11,700	0	0	0	0	1,245,662	1,379,597
1977	35,504	5,075	0	0	0	0	465,442	581,675
1978	81,242	11,362	0	0	0	0	1,339,268	1,458,154
1979	104,017	19,138	0	0	0	0	1,537,075	1,666,155
1980	97,497	13,882	0	0	0	0	1,407,163	1,529,989
1981	97,054	12,700	0	0	0	0	1,779,479	1,918,342
1982	83,076	12,700	0	0	0	0	1,641,571	1,749,789
1983	87,859	12,659	0	0	0	0	1,089,626	1,186,831
1984	119,098	12,741	0	0	0	0	1,486,406	1,587,723
1985	110,124	12,099	0	0	0	0	1,863,544	1,989,925
1986	118,298	13,301	0	0	0	0	1,882,290	1,998,514
1987	116,259	11,821	0	0	0	0	1,974,569	2,121,060
1988	109,435	11,534	0	0	0	0	2,213,089	2,375,985
1989	102,156	14,645	0	0	0	0	2,686,838	2,850,668
1990	103,362	6,440	0	0	0	0	2,398,121	2,581,303
1991	780	716	0	0	0	0	489,492	548,523
1992	73,758	5,887	0	0	0	0	1,342,570	1,435,887
1993	55,300	8,890	0	0	0	0	2,540,752	2,689,978
1994	79,000	12,700	0	0	0	0	3,630,800	3,851,215
1995	79,000	12,700	0	0	0	0	3,660,072	3,889,342
1996	79,000	12,700	2,346	1,534	150	38,700	3,717,950	3,953,479
1997	79,000	12,700	4,688	3,040	300	46,478	3,739,254	3,977,921
1998	118,000	12,700	10,000	5,000	10,000	45,486	3,778,389	4,018,214
1999	118,000	12,700	10,000	5,000	10,000	45,486	3,794,111	4,035,075
2000	118,000	5,404	10,000	5,000	10,000	45,486	3,815,436	4,057,628
2001	118,000	5,404	10,000	5,000	10,000	45,486	3,815,436	4,058,298
2002	118,000	5,404	10,000	5,000	10,000	45,486	3,815,436	4,058,873
2003	118,000	5,404	10,000	5,000	10,000	45,486	3,815,436	4,059,546
2004	118,000	5,404	10,000	5,000	10,000	45,486	3,815,436	4,060,222
2005	118,000	0	10,000	5,000	10,000	45,486	3,869,661	4,116,988
2006	118,000	0	10,000	5,000	10,000	45,486	3,869,661	4,117,501
2007	118,000	0	10,000	5,000	10,000	45,486	3,869,661	4,118,115
2008	118,000	0	10,000	5,000	10,000	45,486	3,869,661	4,118,831
2009	118,000	0	10,000	5,000	10,000	45,486	3,869,661	4,119,473
2010	118,000	0	10,000	5,000	10,000	45,486	3,906,486	4,157,169
2011	118,000	0	10,000	5,000	10,000	45,486	3,908,886	4,160,292
2012	118,000	0	10,000	5,000	10,000	45,486	3,908,886	4,160,918
2013	118,000	0	10,000	5,000	10,000	45,486	3,908,886	4,161,646
2014	118,000	0	10,000	5,000	10,000	45,486	3,908,886	4,162,335
2015	118,000	0	10,000	5,000	10,000	45,486	3,913,736	4,168,151
2016	118,000	0	10,000	5,000	10,000	45,486	3,913,736	4,168,816
2017	118,000	0	10,000	5,000	10,000	45,486	3,913,736	4,169,478
2018	118,000	0	10,000	5,000	10,000	45,486	3,913,736	4,170,136
2019	118,000	0	10,000	5,000	10,000	45,486	3,913,736	4,170,736
2020	118,000	0	10,000	5,000	10,000	45,486	3,918,436	4,176,036
2021	118,000	0	10,000	5,000	10,000	45,486	3,919,086	4,176,786
2022	118,000	0	10,000	5,000	10,000	45,486	3,919,086	4,176,786
2023	118,000	0	10,000	5,000	10,000	45,486	3,919,086	4,176,786
2024	118,000	0	10,000	5,000	10,000	45,486	3,919,086	4,176,786
2025	118,000	0	10,000	5,000	10,000	45,486	3,920,486	4,178,186
2026	118,000	0	10,000	5,000	10,000	45,486	3,920,486	4,178,186
2027	118,000	0	10,000	5,000	10,000	45,486	3,920,486	4,178,186
2028	118,000	0	10,000	5,000	10,000	45,486	3,920,486	4,178,186
2029	118,000	0	10,000	5,000	10,000	45,486	3,920,486	4,178,186
2030	118,000	0	10,000	5,000	10,000	45,486	3,921,686	4,179,386
2031	118,000	0	10,000	5,000	10,000	45,486	3,921,686	4,179,386
2032	118,000	0	10,000	5,000	10,000	45,486	3,921,686	4,179,386
2033	118,000	0	10,000	5,000	10,000	45,486	3,921,686	4,179,386
2034	118,000	0	10,000	5,000	10,000	45,486	3,921,686	4,179,386
2035	118,000	0	10,000	5,000	10,000	45,486	3,922,986	4,180,686
Total	6,987,386	385,814	387,034	194,574	380,450	1,813,646	196,633,187	210,421,116

C—060156

C-060156

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-feet)

	North Bay Area			South Bay Area (b				Central Coastal Area		
Calendar Year	Napa County FC&WCD (a (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1962	0	0	0	494	8,412	0	8,906	0	0	0
1963	0	0	0	1,731	10,914	0	12,645	0	0	0
1964	0	0	0	1,673	19,238	0	20,911	0	0	0
1965	0	0	0	2,605	16,407	15,014	34,026	0	0	0
1966	0	0	0	5,511	14,864	34,538	54,913	0	0	0
1967	0	0	0	4,780	12,882	39,101	56,763	0	0	0
1968	1,214	0	1,214	6,133	24,817	70,105	101,055	0	0	0
1969	2,687	0	2,687	6,635	813	62,264	69,712	0	0	0
1970	3,618	0	3,618	9,249	0	80,311	89,560	0	0	0
1971	2,521	0	2,521	5,017	5,961	87,606	98,584	0	0	0
1972	3,647	0	3,647	10,489	27,671	100,266	138,426	0	0	0
1973	3,792	0	3,792	2,975	2,521	88,582	94,078	0	0	0
1974	4,870	0	4,870	1,314	4	88,000	89,318	0	0	0
1975	6,840	0	6,840	4,618	986	88,000	93,604	0	0	0
1976	7,122	0	7,122	17,131	21,300	88,000	126,431	0	0	0
1977	8,226	0	8,226	12,644	18,840	76,220	107,704	0	0	0
1978	6,034	0	6,034	10,984	5,863	95,727	112,574	0	0	0
1979	6,561	0	6,561	19,325	10,874	91,991	122,190	0	0	0
1980	6,707	0	6,707	16,790	11,034	88,000	115,824	0	0	0
1981	9,001	0	9,001	19,590	21,917	88,000	129,507	0	0	0
1982	1,213	0	1,213	13,123	6,316	87,261	106,700	0	0	0
1983	2,287	0	2,287	4,766	3,157	86,733	94,656	0	0	0
1984	2,923	0	2,923	6,784	3,338	88,000	98,122	0	0	0
1985	4,039	0	4,039	15,072	19,016	88,000	122,088	0	0	0
1986	3,519	1,400	4,919	10,609	12,379	88,000	110,988	0	0	0
1987	7,693	1,550	9,243	23,406	25,390	88,000	136,796	0	0	0
1988	5,392	9,726	15,118	25,830	33,464	87,961	147,255	0	0	0
1989	3,819	17,256	21,075	26,227	26,042	90,000	142,269	0	0	0
1990	6,940	19,131	26,071	33,034	31,703	92,000	156,737	0	0	0
1991	1,380	6,972	8,352	9,411	12,648	28,200	50,259	0	1,240	1,240
1992	4,238	11,933	16,171	14,669	19,153	42,839	76,661	0	0	0
1993	5,943	18,291	24,234	26,600	28,980	68,600	124,180	0	0	0
1994	9,135	28,080	37,215	40,000	42,000	100,000	182,000	0	0	0
1995	9,780	34,240	44,020	42,000	42,000	100,000	184,000	0	0	0
1996	10,425	37,800	48,225	44,000	42,000	100,000	186,000	4,030	38,700	42,730
1997	11,065	38,250	49,315	46,000	42,000	100,000	188,000	8,028	46,478	54,506
1998	11,710	38,715	50,425	46,000	42,000	100,000	188,000	25,000	45,486	70,486
1999	12,330	39,165	51,495	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2000	13,050	39,620	52,670	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2001	13,665	39,620	53,285	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2002	14,185	39,620	53,805	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2003	14,800	39,620	54,420	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2004	15,400	39,620	55,020	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2005	16,000	41,500	57,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2006	16,450	41,500	57,950	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2007	17,000	41,500	58,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2008	17,650	41,500	59,150	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2009	18,200	41,500	59,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2010	18,750	41,750	60,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2011	19,400	41,750	61,150	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2012	19,950	41,750	61,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2013	20,600	41,750	62,350	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2014	21,250	41,750	63,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2015	21,900	42,000	63,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2016	22,500	42,000	64,500	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2017	23,100	42,000	65,100	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2018	23,700	42,000	65,700	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2019	24,300	42,000	66,300	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2020	24,900	42,000	66,900	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2021	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2022	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2023	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2024	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2025	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2026	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2027	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2028	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2029	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2030	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2031	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2032	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2033	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2034	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2035	25,000	42,000	67,000	46,000	42,000	100,000	188,000	25,000	45,486	70,486
Total	958,421	1,798,859	2,757,280	2,289,219	2,220,904	6,417,319	10,927,442	962,058	1,814,886	2,776,944

a) From 1968 through 1987, deliveries are nonproject water pumped through an interim facility.
b) From June 1962 through November 1967, deliveries were supplied by nonproject water.

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-feet)

	San Joaquin Valley Area								
			Kern County Water Agency					Tulare Lake Basin Water Storage District	
Calendar Year	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	Total (15)	County of Kings (16)	Oak Flat Water District (17)	(18)	Total (19)
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	26,360	1,978	0	127,384	127,384	900	3,084	25,100	184,806
1969	31,375	56	0	141,265	141,265	100	3,016	9,923	185,735
1970	40,407	3,942	0	204,634	204,634	0	5,911	9,578	264,472
1971	41,053	5,990	0	360,151	360,151	3,700	7,212	122,485	540,591
1972	42,443	5,795	0	490,781	490,781	1,400	8,166	258,393	806,978
1973	22,057	3,000	0	341,469	341,469	1,500	3,214	50,464	421,704
1974	33,390	3,000	23,708	323,292	347,000	1,500	3,471	72,289	460,650
1975	40,555	3,000	14,529	396,291	410,820	1,600	3,576	86,258	545,809
1976	41,421	3,000	46,719	392,531	439,250	1,600	4,112	58,811	548,194
1977	11,153	738	27,882	163,425	191,307	1,530	1,472	18,081	224,281
1978	51,747	454	76,895	590,452	667,347	2,070	3,906	12,053	737,577
1979	38,544	1,739	62,997	683,049	746,046	2,000	6,149	155,121	949,599
1980	41,000	894	45,943	588,557	634,500	2,200	5,700	69,244	753,538
1981	41,000	5,859	75,758	615,642	691,400	2,300	4,300	83,438	828,297
1982	41,000	361	48,483	696,817	745,300	1,750	3,838	18,551	810,800
1983	42,900	0	6,854	587,653	594,507	3,550	3,822	1,006	645,785
1984	45,100	0	90,904	769,652	860,556	3,100	5,700	5,743	920,199
1985	46,251	5,197	88,515	800,381	888,896	3,400	5,433	109,791	1,058,968
1986	50,249	1,170	77,240	829,101	906,341	3,700	5,107	79,355	1,045,922
1987	46,288	2,525	117,173	852,731	969,904	4,000	5,625	93,084	1,121,426
1988	47,994	3,775	121,049	888,471	1,009,520	4,000	4,412	95,866	1,165,567
1989	57,049	3,000	123,896	1,022,166	1,146,062	4,000	6,091	127,950	1,344,152
1990	36,296	1,279	127,837	584,611	712,448	2,000	2,922	57,070	812,015
1991	927	221	33,122	8,965	42,087	0	141	2,180	45,556
1992	23,770	1,354	56,305	397,967	454,272	1,806	2,239	46,728	530,169
1993	40,390	2,100	94,220	713,160	807,380	2,800	3,990	82,950	939,610
1994	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1995	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1996	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1997	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
1998	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
1999	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2000	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2001	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2002	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2003	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2004	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2005	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2006	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2007	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2008	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2009	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2010	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2011	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2012	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2013	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2014	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2015	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2016	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2017	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2018	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2019	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2020	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2021	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2022	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2023	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2024	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2025	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2026	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2027	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2028	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2029	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2030	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2031	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2032	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2033	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2034	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
2035	57,700	3,000	139,000	1,014,400	1,153,400	4,000	5,700	118,500	1,342,300
Total	3,404,119	186,427	7,184,829	56,188,598	63,373,427	224,506	352,009	6,728,512	74,269,000

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-feet)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	*Castaic Lake Water Agency (c (21)*	*Coachella Valley Water District (22)*	*Crestline-Lake Arrowhead Water Agency (23)*	*Desert Water Agency (24)*	*Littlerock Creek Irrigation District (25)*	*Mojave Water Agency (26)*	*Palmdale Water District (27)*	*San Bernardino Valley Municipal Water District (28)*	*San Gabriel Valley Municipal Water District (29)*
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	7,382	0	0	0	0	0	0	0	0
1969	0	9,970	0	0	0	0	0	0	0	0
1970	0	11,739	0	0	0	0	0	0	0	0
1971	0	12,490	0	0	0	0	0	0	0	0
1972	53	13,905	0	464	0	338	55	0	1,275	0
1973	20	9,418	5,800	389	9,000	290	0	0	32,426	0
1974	1,259	9,700	6,400	627	10,000	400	14	0	16,605	612
1975	8,068	10,700	7,000	825	11,000	520	0	0	13,865	5,450
1976	27,782	11,700	7,600	1,002	12,000	589	0	0	12,273	6,071
1977	11,202	5,075	0	1,109	0	111	80	0	24,833	8,996
1978	44,137	11,362	10,084	1,209	15,300	208	0	0	4,055	7,771
1979	60,493	19,145	10,063	1,260	15,000	133	4,000	0	18	290
1980	72,407	15,092	10,884	1,239	17,000	191	4,000	0	0	1,085
1981	79,375	18,461	12,105	1,485	19,000	1,270	4,000	0	16,021	3,619
1982	50,291	22,216	13,326	1,238	21,000	0	10,500	0	8,409	12,599
1983	32,961	22,135	14,547	911	23,000	38	0	0	5,994	734
1984	32,662	24,218	15,768	1,128	25,000	1	0	0	5,556	7,656
1985	37,064	24,500	16,989	1,422	27,000	0	0	1,558	7,390	5,028
1986	32,449	27,229	18,210	1,506	29,000	163	0	3,096	6,421	9,454
1987	34,094	27,988	19,431	1,849	31,500	1,080	17	5,379	8,751	10,630
1988	34,079	30,438	20,652	2,006	34,000	419	9	1,770	12,637	8,948
1989	45,280	36,364	21,873	2,170	36,500	971	200	9,009	20,782	12,839
1990	47,206	28,579	23,100	1,827	38,100	1,747	0	8,608	18,831	16,649
1991	9,568	4,562	6,930	852	11,430	522	3,423	3,914	3,661	5,399
1992	30,265	20,699	10,427	264	17,197	251	10,686	4,035	3,358	7,908
1993	37,735	31,047	16,170	1,950	26,670	1,610	25,200	10,010	22,400	16,800
1994	56,803	44,987	23,100	2,650	38,100	2,300	36,000	15,060	35,000	18,000
1995	61,908	47,604	23,100	2,900	38,100	2,300	50,800	15,560	38,000	18,000
1996	65,308	50,232	23,100	3,100	38,100	2,300	50,800	17,280	41,000	18,000
1997	68,748	53,100	23,100	3,300	38,100	2,300	50,800	17,300	44,000	18,000
1998	72,228	53,101	23,100	2,600	38,100	2,300	50,800	17,300	51,004	18,000
1999	83,954	53,101	23,100	2,600	38,100	2,300	50,800	17,300	55,000	18,000
2000	96,000	54,200	23,100	3,000	38,100	2,300	50,800	17,300	60,000	20,000
2001	96,000	54,200	23,100	3,000	38,100	2,300	50,800	17,300	60,000	20,000
2002	96,000	54,200	23,100	3,000	38,100	2,300	50,800	17,300	60,000	20,000
2003	96,000	54,200	23,100	3,000	38,100	2,300	50,800	17,300	60,000	20,000
2004	96,000	54,200	23,100	3,000	38,100	2,300	50,800	17,300	60,000	20,000
2005	116,000	54,200	23,100	3,825	38,100	2,300	50,800	17,300	90,000	21,300
2006	116,000	54,200	23,100	3,825	38,100	2,300	50,800	17,300	90,000	21,300
2007	116,000	54,200	23,100	3,825	38,100	2,300	50,800	17,300	90,000	21,300
2008	116,000	54,200	23,100	3,825	38,100	2,300	50,800	17,300	90,000	21,300
2009	116,000	54,200	23,100	3,825	38,100	2,300	50,800	17,300	90,000	21,300
2010	136,000	54,200	23,100	4,750	38,100	2,300	50,800	17,300	102,600	22,500
2011	138,400	54,200	23,100	4,750	38,100	2,300	50,800	17,300	102,600	22,500
2012	138,400	54,200	23,100	4,750	38,100	2,300	50,800	17,300	102,600	22,500
2013	138,400	54,200	23,100	4,750	38,100	2,300	50,800	17,300	102,600	22,500
2014	138,400	54,200	23,100	4,750	38,100	2,300	50,800	17,300	102,600	22,500
2015	138,400	54,200	23,100	5,300	38,100	2,300	50,800	17,300	102,600	23,800
2016	138,400	54,200	23,100	5,300	38,100	2,300	50,800	17,300	102,600	23,800
2017	138,400	54,200	23,100	5,300	38,100	2,300	50,800	17,300	102,600	23,800
2018	138,400	54,200	23,100	5,300	38,100	2,300	50,800	17,300	102,600	23,800
2019	138,400	54,200	23,100	5,300	38,100	2,300	50,800	17,300	102,600	23,800
2020	138,400	54,200	23,100	5,700	38,100	2,300	50,800	17,300	102,600	25,000
2021	138,400	54,200	23,100	5,700	38,100	2,300	50,800	17,300	102,600	25,000
2022	138,400	54,200	23,100	5,700	38,100	2,300	50,800	17,300	102,600	25,000
2023	138,400	54,200	23,100	5,700	38,100	2,300	50,800	17,300	102,600	25,000
2024	138,400	54,200	23,100	5,700	38,100	2,300	50,800	17,300	102,600	25,000
2025	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	26,300
2026	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	26,300
2027	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	26,300
2028	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	26,300
2029	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	26,300
2030	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	27,500
2031	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	27,500
2032	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	27,500
2033	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	27,500
2034	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	27,500
2035	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
Total	5,793,399	2,719,439	1,237,559	220,557	2,028,897	107,452	2,180,984	769,979	3,927,165	1,117,338

c) Devil's Den Water District merged with Castaic Lake Water Agency effective January 1, 1992.

TABLE B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-feet)

	Southern California Area (continued)				Feather River Area					
Calendar Year	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)	South Bay Area Future Contractor (38)	Grand Total (39)
1962	0	0	0	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	0	0	0	56,763
1968	0	0	0	7,382	0	0	0	0	0	294,457
1969	0	0	0	9,970	0	0	0	0	0	268,104
1970	0	0	0	11,739	0	0	70	70	0	369,459
1971	0	0	0	12,490	0	192	64	256	0	654,442
1972	0	71,938	0	88,028	0	186	505	691	0	1,037,770
1973	0	159,883	0	217,226	0	53	679	732	0	737,532
1974	0	277,717	0	323,334	0	127	648	775	0	878,947
1975	0	526,491	0	583,919	0	253	405	658	0	1,230,830
1976	0	618,451	0	697,468	0	527	382	909	0	1,380,124
1977	0	189,755	0	241,161	0	706	303	1,009	0	582,381
1978	0	507,565	0	601,691	0	579	278	857	0	1,458,733
1979	0	477,074	0	587,476	0	302	329	631	0	1,666,457
1980	0	531,727	0	653,625	0	267	295	562	0	1,530,256
1981	0	795,846	0	951,182	0	221	355	576	0	1,918,563
1982	0	691,192	0	830,771	0	334	305	639	0	1,750,123
1983	0	343,521	0	443,841	0	325	262	587	0	1,187,156
1984	0	454,218	0	566,207	108	177	272	557	0	1,588,008
1985	0	683,625	0	804,576	62	308	254	624	0	1,990,295
1986	0	708,840	0	836,368	328	313	317	958	0	1,999,155
1987	0	712,424	0	853,143	88	459	452	999	0	2,121,607
1988	0	902,564	0	1,047,522	303	385	523	1,211	0	2,376,673
1989	0	1,156,698	0	1,342,686	403	300	486	1,189	0	2,851,371
1990	0	1,396,423	4,836	1,585,906	494	380	574	1,448	0	2,582,177
1991	0	391,447	988	442,696	118	328	420	866	0	548,969
1992	0	707,311	0	812,401	1,100	543	485	2,128	0	1,437,530
1993	0	1,408,050	3,500	1,601,142	1,890	774	812	3,476	0	2,692,642
1994	0	2,011,500	5,000	2,288,500	2,700	1,132	1,200	5,032	0	3,855,047
1995	3,000	2,011,500	5,000	2,317,772	2,900	1,158	1,250	5,308	0	3,893,400
1996	7,200	2,011,500	5,000	2,332,920	3,200	1,187	1,304	5,691	0	3,957,866
1997	7,200	2,011,500	5,000	2,342,448	3,700	1,200	1,352	6,252	0	3,982,821
1998	5,570	2,011,500	20,000	2,365,603	3,700	1,200	1,400	6,300	0	4,023,114
1999	5,570	2,011,500	20,000	2,381,325	3,700	1,200	1,469	6,369	0	4,039,975
2000	6,350	2,011,500	20,000	2,402,650	5,500	1,200	1,522	8,222	0	4,064,328
2001	6,350	2,011,500	20,000	2,402,650	5,500	27,500	1,577	34,577	0	4,091,298
2002	6,350	2,011,500	20,000	2,402,650	5,500	27,500	1,632	34,632	0	4,091,873
2003	6,350	2,011,500	20,000	2,402,650	5,500	27,500	1,690	34,690	0	4,092,546
2004	6,350	2,011,500	20,000	2,402,650	5,500	27,500	1,766	34,766	0	4,093,222
2005	8,450	2,011,500	20,000	2,456,875	7,500	27,500	1,827	36,827	0	4,151,988
2006	8,450	2,011,500	20,000	2,456,875	7,500	27,500	1,890	36,890	0	4,152,501
2007	8,450	2,011,500	20,000	2,456,875	7,500	27,500	1,954	36,954	0	4,153,115
2008	8,450	2,011,500	20,000	2,456,875	7,500	27,500	2,020	37,020	0	4,153,831
2009	8,450	2,011,500	20,000	2,456,875	7,500	27,500	2,112	37,112	0	4,154,473
2010	10,550	2,011,500	20,000	2,493,700	9,600	27,500	2,183	39,283	0	4,194,269
2011	10,550	2,011,500	20,000	2,496,100	9,600	27,500	2,256	39,356	0	4,197,392
2012	10,550	2,011,500	20,000	2,496,100	9,600	27,500	2,332	39,432	0	4,198,018
2013	10,550	2,011,500	20,000	2,496,100	9,600	27,500	2,410	39,510	0	4,198,746
2014	10,550	2,011,500	20,000	2,496,100	9,600	27,500	2,449	39,549	0	4,199,435
2015	13,550	2,011,500	20,000	2,500,950	9,600	27,500	2,515	39,615	0	4,205,251
2016	13,550	2,011,500	20,000	2,500,950	9,600	27,500	2,580	39,680	0	4,205,916
2017	13,550	2,011,500	20,000	2,500,950	9,600	27,500	2,642	39,742	0	4,206,578
2018	13,550	2,011,500	20,000	2,500,950	9,600	27,500	2,700	39,800	0	4,207,236
2019	13,550	2,011,500	20,000	2,500,950	9,600	27,500	2,700	39,800	0	4,207,836
2020	16,650	2,011,500	20,000	2,505,650	9,600	27,500	2,700	39,800	0	4,213,136
2021	17,300	2,011,500	20,000	2,506,300	9,600	27,500	2,700	39,800	0	4,213,886
2022	17,300	2,011,500	20,000	2,506,300	9,600	27,500	2,700	39,800	0	4,213,886
2023	17,300	2,011,500	20,000	2,506,300	9,600	27,500	2,700	39,800	0	4,213,886
2024	17,300	2,011,500	20,000	2,506,300	9,600	27,500	2,700	39,800	0	4,213,886
2025	17,300	2,011,500	20,000	2,507,700	9,600	27,500	2,700	39,800	0	4,215,286
2026	17,300	2,011,500	20,000	2,507,700	9,600	27,500	2,700	39,800	0	4,215,286
2027	17,300	2,011,500	20,000	2,507,700	9,600	27,500	2,700	39,800	0	4,215,286
2028	17,300	2,011,500	20,000	2,507,700	9,600	27,500	2,700	39,800	0	4,215,286
2029	17,300	2,011,500	20,000	2,507,700	9,600	27,500	2,700	39,800	0	4,215,286
2030	17,300	2,011,500	20,000	2,508,900	9,600	27,500	2,700	39,800	0	4,216,486
2031	17,300	2,011,500	20,000	2,508,900	9,600	27,500	2,700	39,800	0	4,216,486
2032	17,300	2,011,500	20,000	2,508,900	9,600	27,500	2,700	39,800	0	4,216,486
2033	17,300	2,011,500	20,000	2,508,900	9,600	27,500	2,700	39,800	0	4,216,486
2034	17,300	2,011,500	20,000	2,508,900	9,600	27,500	2,700	39,800	0	4,216,486
2035	17,300	2,011,500	20,000	2,510,200	9,600	27,500	2,700	39,800	0	4,217,786
Total	499,190	98,195,760	789,324	119,587,043	339,394	978,816	103,407	1,421,617	0	211,739,326

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-feet)

	North Bay Aqueduct											
	Barker Slough Pumping Plant				Cordelia Pumping Plant Solano County Water Agency				Cordelia Pumping Plant Napa County FC&WCD			
Calendar Year	Initial Fill Water (1)	Operational Losses (2)	Water Supply Delivery (3)	Total (4)	Initial Fill Water (5)	Operational Losses (6)	Water Supply Delivery (7)	Total (8)	Initial Fill Water (9)	Operational Losses (10)	Water Supply Delivery (a (11)	Total (12)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	24	(10)	1,214	1,228
1969	0	0	0	0	0	0	0	0	0	2	2,687	2,689
1970	0	0	0	0	0	0	0	0	0	18	3,618	3,636
1971	0	0	0	0	0	0	0	0	0	4	2,521	2,525
1972	0	0	0	0	0	0	0	0	0	(10)	3,647	3,637
1973	0	0	0	0	0	0	0	0	0	1	3,792	3,793
1974	0	0	0	0	0	0	0	0	0	10	4,870	4,880
1975	0	0	0	0	0	0	0	0	0	10	6,840	6,850
1976	0	0	0	0	0	0	0	0	0	4	7,122	7,126
1977	0	0	0	0	0	0	0	0	0	2	8,226	8,228
1978	0	0	0	0	0	0	0	0	0	(6)	6,034	6,028
1979	0	0	0	0	0	0	0	0	0	1	6,561	6,562
1980	0	0	0	0	0	0	0	0	0	(3)	6,707	6,704
1981	0	0	0	0	0	0	0	0	0	8	9,001	9,009
1982	0	0	0	0	0	0	0	0	0	(8)	1,213	1,205
1983	0	0	0	0	0	0	0	0	0	(12)	2,287	2,275
1984	0	0	0	0	0	0	0	0	0	(15)	2,923	2,908
1985	0	0	0	0	0	0	0	0	0	13	4,039	4,052
1986	0	0	0	0	0	0	0	0	0	(4)	3,515	3,511
1987	0	0	0	0	0	0	0	0	0	0	7,693	7,693
1988	0	273	15,118	15,391	0	(6)	9,725	9,719	0	(4)	5,392	5,388
1989	0	758	23,451	24,209	0	0	17,246	17,246	0	(4)	6,195	6,191
1990	0	637	26,071	26,708	0	0	15,856	15,856	0	3	6,940	6,943
1991	0	661	8,352	9,013	0	124	3,855	3,979	0	192	1,380	1,572
1992	0	1,646	17,051	18,697	0	0	8,506	8,506	0	3	4,354	4,357
1993	0	51	24,234	24,285	0	5	11,574	11,579	0	5	5,943	5,948
1994	0	51	37,215	37,266	0	5	16,930	16,935	0	5	9,135	9,140
1995	0	51	44,020	44,071	0	5	17,340	17,345	0	5	9,780	9,785
1996	0	51	48,225	48,276	0	5	17,750	17,755	0	5	10,425	10,430
1997	0	51	49,315	49,366	0	5	18,150	18,155	0	5	11,065	11,070
1998	0	51	50,425	50,476	0	5	18,182	18,187	0	5	11,710	11,715
1999	0	51	51,495	51,546	0	5	18,393	18,398	0	5	12,330	12,335
2000	0	51	52,670	52,721	0	5	18,608	18,613	0	5	13,050	13,055
2001	0	51	53,285	53,336	0	5	18,608	18,613	0	5	13,665	13,670
2002	0	51	53,805	53,856	0	5	18,608	18,613	0	5	14,185	14,190
2003	0	51	54,420	54,471	0	5	18,608	18,613	0	5	14,800	14,805
2004	0	51	55,020	55,071	0	5	18,608	18,613	0	5	15,400	15,405
2005	0	51	57,500	57,551	0	5	19,488	19,493	0	5	16,000	16,005
2006	0	51	57,950	58,001	0	5	19,488	19,493	0	5	16,450	16,455
2007	0	51	58,500	58,551	0	5	19,488	19,493	0	5	17,000	17,005
2008	0	51	59,150	59,201	0	5	19,488	19,493	0	5	17,650	17,655
2009	0	51	59,700	59,751	0	5	19,488	19,493	0	5	18,200	18,205
2010	0	51	60,500	60,551	0	5	19,606	19,611	0	5	18,750	18,755
2011	0	51	61,150	61,201	0	5	19,606	19,611	0	5	19,400	19,405
2012	0	51	61,700	61,751	0	5	19,606	19,611	0	5	19,950	19,955
2013	0	51	62,350	62,401	0	5	19,606	19,611	0	5	20,600	20,605
2014	0	51	63,000	63,051	0	5	19,606	19,611	0	5	21,250	21,255
2015	0	51	63,900	63,951	0	5	19,724	19,729	0	5	21,900	21,905
2016	0	51	64,500	64,551	0	5	19,724	19,729	0	5	22,500	22,505
2017	0	51	65,100	65,151	0	5	19,724	19,729	0	5	23,100	23,105
2018	0	51	65,700	65,751	0	5	19,724	19,729	0	5	23,700	23,705
2019	0	51	66,300	66,351	0	5	19,724	19,729	0	5	24,300	24,305
2020	0	51	66,900	66,951	0	5	19,724	19,729	0	5	24,900	24,905
2021	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2022	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2023	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2024	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2025	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2026	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2027	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2028	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2029	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2030	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2031	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2032	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2033	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2034	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005
2035	0	51	67,000	67,051	0	5	19,724	19,729	0	5	25,000	25,005

a) From 1968 through 1987, deliveries are nonproject water pumped through an interim facility.

C—060161

C-060161

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-feet)

	South Bay Aqueduct						California Aqueduct							
	South Bay Pumping Plant						North San Joaquin Division							
							Banks Pumping Plant							
							Transportation Water							
				Deliveries						Deliveries				
Calendar Year	Initial Fill Water (13)	Operational Losses (14)	Reservoir Storage Changes (15)	Water Supply (b (16)	Recreation (17)	Total (18)	Initial Fill Water (19)	Operational Losses (20)	Reservoir Storage Changes (21)	Water Supply (22)	Recreation (23)	Total (24)	Conservation Water (25)	Total (26)
1961	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	9	272	0	8,906	0	9,187	0	0	0	0	0	0	0	0
1963	71	185	0	12,645	0	12,901	0	0	0	0	0	0	0	0
1964	171	152	0	20,911	0	21,234	0	0	0	0	0	0	0	0
1965	93	729	0	34,026	0	34,848	0	0	0	0	0	0	0	0
1966	0	1,746	0	54,913	0	56,659	0	0	0	0	0	0	0	0
1967	0	1,677	0	56,763	0	58,440	5,746	1,183	0	11,538	0	18,467	2,957	21,424
1968	0	1,847	0	101,055	0	102,902	11,079	74,464	0	293,243	0	378,786	531,275	910,061
1969	3,449	2,668	0	69,712	0	75,829	7,336	44,287	0	265,417	0	317,040	531,185	848,225
1970	16,279	1,086	(5,355)	89,560	0	101,570	23,947	20,767	(5,355)	365,771	0	405,130	(12,995)	392,135
1971	0	1,815	8,854	98,584	0	109,253	23,207	(10,754)	8,854	651,665	8	672,980	7,708	680,688
1972	0	3,557	2,273	138,426	0	144,256	145,066	9,057	(4,285)	1,033,432	6,489	1,189,759	48,300	1,238,059
1973	0	(33)	(1,510)	94,078	0	92,535	214,941	(4,951)	2,902	733,008	1,155	947,055	55,846	1,002,901
1974	0	1,287	(10,056)	89,318	0	80,549	247,894	(11,526)	(32,510)	873,302	2,118	1,079,278	54,683	1,133,961
1975	0	320	8,550	93,604	0	102,474	110,149	(8,092)	16,101	1,223,332	3,377	1,344,867	(102,625)	1,242,242
1976	0	2,431	1,391	126,431	141	130,394	67,834	5,443	(244,124)	1,372,093	1,745	1,202,991	(442,348)	760,643
1977	0	2,866	2,685	107,704	112	113,367	0	39,897	(157,543)	573,146	1,111	456,611	(13,507)	443,104
1978	0	2,165	(11,249)	112,574	126	103,616	67,457	(36,898)	35,129	1,451,842	1,177	1,518,707	752,075	2,270,782
1979	0	2,401	1,069	122,190	89	125,749	17,397	60,958	(32,307)	1,659,265	1,398	1,706,711	(112,053)	1,594,658
1980	0	1,758	(6,563)	115,824	123	111,142	3,159	58,484	(275,538)	1,529,187	2,131	1,317,423	186,601	1,504,024
1981	0	2,627	13,742	129,507	121	145,997	46,060	85,350	40,536	1,908,986	4,974	2,085,906	(931,878)	1,154,028
1982	0	2,344	(23,928)	107,439	129	85,984	5,979	61,556	99,897	1,743,145	4,646	1,915,223	347,983	2,263,206
1983	0	2,151	(22,886)	94,656	132	74,053	6,071	47,022	(310,477)	1,184,282	7,853	934,751	835,771	1,770,522
1984	0	2,088	8,442	98,122	158	108,810	38,649	97,143	(108,548)	1,587,936	5,874	1,621,054	21,875	1,642,929
1985	0	2,817	(1,607)	122,088	152	123,450	0	110,469	137,783	1,985,632	5,452	2,239,336	(110,569)	2,128,767
1986	0	2,217	319	110,988	130	113,654	0	82,958	37,865	1,993,278	3,865	2,117,966	205,399	2,323,365
1987	0	2,625	(584)	136,796	137	138,974	0	89,721	(19,167)	2,118,867	7,672	2,197,093	(458,725)	1,738,368
1988	0	2,884	724	147,255	142	151,005	0	134,229	(339,023)	2,360,044	4,889	2,160,139	(301,121)	1,859,018
1989	0	2,673	3,296	142,269	152	148,390	0	170,723	317,292	2,829,107	8,135	3,325,257	409,832	3,735,089
1990	0	894	1,041	156,537	168	158,640	0	136,842	(423,258)	2,554,658	9,262	2,277,504	(368,904)	1,908,600
1991	0	2,637	(4,532)	50,259	150	48,514	0	108,791	283,937	539,751	4,912	937,391	215,999	1,153,390
1992	0	2,710	927	77,134	147	80,918	0	130,405	(259,804)	1,452,183	2,605	1,325,389	(127,977)	1,197,412
1993	0	3,230	(2,116)	124,180	281	125,575	0	101,313	7,117	2,664,932	5,747	2,779,109	(10,687)	2,768,422
1994	0	3,230	(1,380)	182,000	400	184,250	0	101,487	(34,104)	3,812,800	8,210	3,888,393	41,574	3,929,967
1995	0	3,230	(1,470)	184,000	400	186,160	0	101,487	(48,514)	3,844,072	8,210	3,905,255	113,471	4,018,726
1996	0	3,285	0	186,000	400	189,685	0	107,135	(1,722)	3,897,610	8,210	4,011,233	(34,672)	3,976,561
1997	0	3,359	0	188,000	400	191,759	0	106,847	13,995	3,927,254	8,210	4,056,306	(71,337)	3,984,969
1998	0	3,340	0	188,000	400	191,740	0	107,698	24,926	3,966,389	8,210	4,107,223	20,364	4,127,587
1999	0	3,340	0	188,000	400	191,740	0	108,076	9,169	3,982,111	8,210	4,107,566	(16,709)	4,090,857
2000	0	3,340	0	188,000	400	191,740	0	108,127	(16,935)	4,003,436	8,210	4,102,838	36,966	4,139,804
2001	0	3,340	0	188,000	400	191,740	0	108,127	(1,139)	4,003,436	8,210	4,118,634	4,568	4,123,202
2002	0	3,340	0	188,000	400	191,740	0	108,135	1	4,003,436	8,210	4,119,782	5,414	4,125,196
2003	0	3,340	0	188,000	400	191,740	0	108,142	349	4,003,436	8,210	4,120,137	11,168	4,131,305
2004	0	3,340	0	188,000	400	191,740	0	108,114	2,196	4,003,436	8,210	4,121,956	(1,959)	4,119,997
2005	0	3,340	0	188,000	400	191,740	0	108,114	4,105	4,057,661	8,210	4,178,090	(7,613)	4,170,477
2006	0	3,340	0	188,000	400	191,740	0	108,097	2,733	4,057,661	8,210	4,176,701	(4,778)	4,171,923
2007	0	3,340	0	188,000	400	191,740	0	108,097	1	4,057,661	8,210	4,173,969	5,415	4,179,384
2008	0	3,340	0	188,000	400	191,740	0	108,096	1,400	4,057,661	8,210	4,175,367	12,231	4,187,598
2009	0	3,340	0	188,000	400	191,740	0	108,037	(6,528)	4,057,661	8,210	4,167,380	6,299	4,173,679
2010	0	3,340	0	188,000	400	191,740	0	108,033	28,304	4,094,486	8,210	4,239,033	(31,184)	4,207,849
2011	0	3,340	0	188,000	400	191,740	0	107,996	(17,744)	4,096,886	8,210	4,195,348	28,436	4,223,784
2012	0	3,340	0	188,000	400	191,740	0	108,038	1,495	4,096,886	8,210	4,214,629	4,751	4,219,380
2013	0	3,340	0	188,000	400	191,740	0	108,029	2	4,096,886	8,210	4,213,127	5,414	4,218,541
2014	0	3,340	0	188,000	400	191,740	0	108,016	6,892	4,096,886	8,210	4,220,004	2,952	4,222,956
2015	0	3,340	0	188,000	400	191,740	0	107,967	(9,504)	4,101,736	8,210	4,208,409	12,548	4,220,957
2016	0	3,340	0	188,000	400	191,740	0	107,950	(766)	4,101,736	8,210	4,217,130	5,415	4,222,545
2017	0	3,340	0	188,000	400	191,740	0	107,954	623	4,101,736	8,210	4,218,523	5,416	4,223,939
2018	0	3,340	0	188,000	400	191,740	0	107,951	(997)	4,101,736	8,210	4,216,900	5,415	4,222,315
2019	0	3,340	0	188,000	400	191,740	0	107,949	4,727	4,101,736	8,210	4,222,622	1,275	4,223,897
2020	0	3,340	0	188,000	400	191,740	0	107,932	(14,368)	4,106,436	8,210	4,208,210	15,484	4,223,694
2021	0	3,340	0	188,000	400	191,740	0	107,878	562	4,107,086	8,210	4,223,736	4,326	4,228,062
2022	0	3,340	0	188,000	400	191,740	0	107,888	(421)	4,107,086	8,210	4,222,763	6,135	4,228,898
2023	0	3,340	0	188,000	400	191,740	0	107,888	1	4,107,086	8,210	4,223,185	5,414	4,228,599
2024	0	3,340	0	188,000	400	191,740	0	107,885	143	4,107,086	8,210	4,223,324	4,046	4,227,370
2025	0	3,340	0	188,000	400	191,740	0	107,923	5,691	4,108,486	8,210	4,230,310	(660)	4,229,650
2026	0	3,340	0	188,000	400	191,740	0	107,893	(843)	4,108,486	8,210	4,223,746	10,321	4,234,067
2027	0	3,340	0	188,000	400	191,740	0	107,906	(96)	4,108,486	8,210	4,224,506	7,791	4,232,297
2028	0	3,340	0	188,000	400	191,740	0	107,909	(1,043)	4,108,486	8,210	4,223,562	4,187	4,227,749
2029	0	3,340	0	188,000	400	191,740	0	107,916	(177)	4,108,486	8,210	4,224,435	11,638	4,236,073
2030	0	3,340	0	188,000	400	191,740	0	107,872	(1,502)	4,109,686	8,210	4,224,266	(3,234)	4,221,032
2031	0	3,340	0	188,000	400	191,740	0	107,857	0	4,109,686	8,210	4,225,753	5,414	4,231,167
2032	0	3,340	0	188,000	400	191,740	0	107,857	0	4,109,686	8,210	4,225,753	5,414	4,231,167
2033	0	3,340	0	188,000	400	191,740	0	107,863	3,017	4,109,686	8,210	4,228,776	3,036	4,231,812
2034	0	3,340	0	188,000	400	191,740	0	107,829	(5,182)	4,109,686	8,210	4,220,543	9,023	4,229,566
2035	0	3,340	0	188,000	400	191,740	0	108,097	5,959	4,110,986	8,210	4,233,252	87,060	4,320,312

b) From June 1962 through November 1967, deliveries were supplied by nonproject water.

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-feet)

	California Aqueduct (continued)											
	San Luis Division						South San Joaquin Division					
	Dos Amigos Pumping Plant						Buena Vista Pumping Plant					
				Deliveries						Deliveries		
Calendar Year	Initial Fill Water (27)	Operational Losses (28)	Reservoir Storage Changes (29)	Water Supply (30)	Recreation (31)	Total (32)	Initial Fill Water (33)	Operational Losses (34)	Reservoir Storage Changes (35)	Water Supply (36)	Recreation (37)	Total (38)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	11,079	25,126	0	189,104	0	225,309	0	0	0	0	0	0
1969	3,887	9,922	0	192,689	0	206,498	0	0	0	0	0	0
1970	7,668	1,901	0	270,300	0	279,869	4,779	1,012	0	3	0	5,794
1971	23,207	(12,030)	0	545,869	0	557,046	7,853	8,399	0	101,512	0	117,764
1972	145,066	(6,635)	(6,558)	886,840	6,481	1,025,194	100,274	20,044	(6,558)	223,626	6,481	343,867
1973	214,941	(6,778)	1,329	635,716	1,147	846,355	204,638	35,695	1,329	311,096	1,147	553,905
1974	247,894	(16,765)	(15,295)	780,513	2,108	998,455	237,554	19,672	(15,295)	388,949	2,108	632,988
1975	110,149	(12,144)	(693)	1,126,152	3,358	1,226,822	103,352	26,342	(693)	672,531	3,358	804,890
1976	67,834	(456)	(152,171)	1,241,550	1,581	1,158,338	61,122	29,428	(152,171)	785,055	1,581	725,015
1977	0	26,359	(116,219)	463,970	737	374,847	0	25,173	(116,219)	271,944	560	181,458
1978	67,457	1,905	79,308	1,335,362	680	1,484,712	65,027	17,751	121,904	762,043	674	967,399
1979	17,397	33,884	(51,299)	1,530,926	685	1,531,593	12,302	46,157	(51,299)	737,714	502	745,376
1980	3,159	34,391	(272,825)	1,407,663	1,514	1,173,902	0	49,025	(134,009)	778,059	1,262	694,337
1981	46,060	36,962	23,359	1,775,179	4,348	1,885,908	0	38,942	23,359	1,077,322	4,112	1,143,735
1982	5,979	57,146	116,086	1,631,868	4,205	1,815,284	0	29,059	117,174	990,863	4,045	1,141,141
1983	6,071	63,583	(101,155)	1,085,804	7,475	1,061,778	0	40,205	(101,155)	593,920	7,291	540,261
1984	38,649	109,263	(112,744)	1,484,114	5,391	1,524,673	0	38,487	(114,984)	781,955	5,244	710,702
1985	0	86,772	138,898	1,858,111	4,936	2,088,717	0	42,838	139,689	992,606	4,804	1,179,937
1986	0	49,378	37,546	1,877,183	3,426	1,967,533	0	45,343	37,546	1,014,294	3,285	1,100,468
1987	0	63,289	(23,086)	1,976,446	7,121	2,023,770	0	28,829	(22,959)	1,017,361	6,937	1,030,168
1988	0	72,680	(25,372)	2,208,377	4,490	2,260,175	0	38,804	(25,372)	1,235,447	4,360	1,253,239
1989	0	90,090	(61,544)	2,679,845	7,652	2,716,043	0	29,594	(61,544)	1,532,625	7,490	1,508,165
1990	0	115,074	(14,836)	2,394,999	8,922	2,504,159	0	46,865	(14,836)	1,769,991	8,879	1,810,899
1991	0	92,224	107,302	489,351	4,638	693,515	0	39,274	107,302	453,703	4,593	604,872
1992	0	144,992	(104,358)	1,372,810	2,079	1,415,523	0	26,207	(47,346)	921,254	1,995	902,110
1993	0	63,022	31,233	2,536,762	4,987	2,636,004	0	41,300	31,233	1,694,999	4,910	1,772,442
1994	0	63,196	(10,724)	3,625,100	7,120	3,684,692	0	41,300	(10,724)	2,422,580	7,010	2,460,166
1995	0	63,196	(25,044)	3,654,372	7,120	3,699,644	0	41,300	(25,044)	2,451,852	7,010	2,475,118
1996	0	62,416	(1,722)	3,705,910	7,120	3,773,724	0	40,520	(1,722)	2,467,000	7,010	2,512,808
1997	0	62,905	13,995	3,733,554	7,120	3,817,574	0	41,009	13,995	2,476,528	7,010	2,538,542
1998	0	63,305	24,926	3,772,689	7,120	3,868,040	0	41,409	24,926	2,577,903	7,010	2,651,248
1999	0	63,365	9,169	3,788,411	7,120	3,868,065	0	41,469	9,169	2,593,625	7,010	2,651,273
2000	0	63,492	(16,935)	3,809,736	7,120	3,863,413	0	41,596	(16,935)	2,622,246	7,010	2,653,917
2001	0	63,479	(1,139)	3,809,736	7,120	3,879,196	0	41,583	(1,139)	2,622,246	7,010	2,669,700
2002	0	63,494	1	3,809,736	7,120	3,880,351	0	41,598	1	2,622,246	7,010	2,670,855
2003	0	63,496	349	3,809,736	7,120	3,880,701	0	41,600	349	2,622,246	7,010	2,671,205
2004	0	63,488	2,196	3,809,736	7,120	3,882,540	0	41,592	2,196	2,622,246	7,010	2,673,044
2005	0	63,479	4,105	3,863,961	7,120	3,938,665	0	41,583	4,105	2,681,875	7,010	2,734,573
2006	0	63,493	2,733	3,863,961	7,120	3,937,307	0	41,597	2,733	2,681,875	7,010	2,733,215
2007	0	63,492	1	3,863,961	7,120	3,934,574	0	41,596	1	2,681,875	7,010	2,730,482
2008	0	63,492	1,400	3,863,961	7,120	3,935,973	0	41,596	1,400	2,681,875	7,010	2,731,881
2009	0	63,403	(6,528)	3,863,961	7,120	3,927,956	0	41,507	(6,528)	2,681,875	7,010	2,723,864
2010	0	63,556	28,304	3,900,786	7,120	3,999,766	0	41,660	28,304	2,718,700	7,010	2,795,674
2011	0	63,529	(17,744)	3,903,186	7,120	3,956,091	0	41,633	(17,744)	2,721,100	7,010	2,751,999
2012	0	63,569	1,495	3,903,186	7,120	3,975,370	0	41,673	1,495	2,721,100	7,010	2,771,278
2013	0	63,560	2	3,903,186	7,120	3,973,868	0	41,664	2	2,721,100	7,010	2,769,776
2014	0	63,538	6,892	3,903,186	7,120	3,980,736	0	41,642	6,892	2,721,100	7,010	2,776,644
2015	0	63,516	(9,504)	3,908,036	7,120	3,969,168	0	41,620	(9,504)	2,725,950	7,010	2,765,076
2016	0	63,510	(766)	3,908,036	7,120	3,977,900	0	41,614	(766)	2,725,950	7,010	2,773,808
2017	0	63,517	623	3,908,036	7,120	3,979,296	0	41,621	623	2,725,950	7,010	2,775,204
2018	0	63,518	(997)	3,908,036	7,120	3,977,677	0	41,622	(997)	2,725,950	7,010	2,773,585
2019	0	63,515	4,727	3,908,036	7,120	3,983,398	0	41,619	4,727	2,725,950	7,010	2,779,306
2020	0	63,458	(14,368)	3,912,736	7,120	3,968,946	0	41,562	(14,368)	2,730,650	7,010	2,764,854
2021	0	63,466	562	3,913,386	7,120	3,984,534	0	41,570	562	2,731,300	7,010	2,780,442
2022	0	63,474	(421)	3,913,386	7,120	3,983,559	0	41,578	(421)	2,731,300	7,010	2,779,467
2023	0	63,474	1	3,913,386	7,120	3,983,981	0	41,578	1	2,731,300	7,010	2,779,889
2024	0	63,471	143	3,913,386	7,120	3,984,120	0	41,575	143	2,731,300	7,010	2,780,028
2025	0	63,485	5,691	3,914,786	7,120	3,991,082	0	41,589	5,691	2,732,700	7,010	2,786,990
2026	0	63,489	(843)	3,914,786	7,120	3,984,552	0	41,593	(843)	2,732,700	7,010	2,780,460
2027	0	63,495	(96)	3,914,786	7,120	3,985,305	0	41,599	(96)	2,732,700	7,010	2,781,213
2028	0	63,494	(1,043)	3,914,786	7,120	3,984,357	0	41,598	(1,043)	2,732,700	7,010	2,780,265
2029	0	63,464	(177)	3,914,786	7,120	3,985,193	0	41,568	(177)	2,732,700	7,010	2,781,101
2030	0	63,436	(1,502)	3,915,986	7,120	3,985,040	0	41,540	(1,502)	2,733,900	7,010	2,780,948
2031	0	63,421	0	3,915,986	7,120	3,986,527	0	41,525	0	2,733,900	7,010	2,782,435
2032	0	63,421	0	3,915,986	7,120	3,986,527	0	41,525	0	2,733,900	7,010	2,782,435
2033	0	63,427	3,017	3,915,986	7,120	3,989,550	0	41,531	3,017	2,733,900	7,010	2,785,458
2034	0	63,395	(5,182)	3,915,986	7,120	3,981,319	0	41,499	(5,182)	2,733,900	7,010	2,777,227
2035	0	63,469	5,959	3,917,286	7,120	3,993,834	0	41,573	5,959	2,735,200	7,010	2,789,742

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-feet)

	California Aqueduct (continued)											
	South San Joaquin Division (continued)											
	Teerink Pumping Plant						Chrisman Pumping Plant					
				Deliveries						Deliveries		
Calendar Year	Initial Fill Water (39)	Operational Losses (40)	Reservoir Storage Changes (41)	Water Supply (42)	Recreation (43)	Total (44)	Initial Fill Water (45)	Operational Losses (46)	Reservoir Storage Changes (47)	Water Supply (48)	Recreation (49)	Total (50)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	198	2	0	0	0	200	0	0	0	0	0	0
1971	7,533	(112)	0	3,552	0	10,973	7,366	(159)	0	0	0	7,207
1972	100,274	12,765	(6,558)	84,955	6,481	197,917	100,274	13,160	(6,558)	78,891	6,481	192,248
1973	204,638	21,543	1,329	229,685	1,147	458,342	204,638	32,414	1,329	209,769	1,147	449,297
1974	237,554	11,843	(15,295)	336,198	2,108	572,408	237,554	17,655	(15,295)	318,198	2,108	560,220
1975	103,352	19,763	(693)	621,706	3,358	747,486	103,352	25,326	(693)	586,286	3,358	717,629
1976	61,122	18,552	(152,171)	740,486	1,581	669,570	61,122	21,468	(152,171)	700,935	1,581	632,935
1977	0	16,415	(116,219)	246,349	560	147,105	0	15,698	(116,219)	240,191	560	140,230
1978	65,027	28,820	121,904	631,121	674	847,546	65,027	26,705	121,904	599,973	674	814,283
1979	12,302	50,663	(51,299)	625,561	502	637,729	12,302	50,580	(51,299)	586,959	502	599,044
1980	0	48,825	(134,009)	696,405	1,262	612,483	0	58,085	(134,009)	658,588	1,262	583,926
1981	0	51,600	23,359	998,307	4,112	1,077,378	0	48,844	23,359	959,274	4,112	1,035,589
1982	0	44,353	117,332	878,486	4,045	1,044,216	0	33,541	117,277	830,704	4,045	985,567
1983	0	43,961	(101,155)	487,915	7,291	438,012	0	34,698	(101,155)	450,489	7,291	391,323
1984	0	45,999	(115,088)	632,262	5,244	568,417	0	33,132	(115,092)	582,414	5,244	505,698
1985	0	50,106	139,973	854,684	4,804	1,049,567	0	54,831	139,954	810,606	4,804	1,010,195
1986	0	47,369	37,546	882,300	3,285	970,500	0	50,047	37,546	839,839	3,285	930,717
1987	0	46,445	(23,255)	887,905	6,937	918,032	0	31,888	23,318	853,157	6,937	915,300
1988	0	53,815	(25,372)	1,088,894	4,360	1,121,697	0	39,775	(25,372)	1,046,900	4,360	1,065,663
1989	0	49,088	(61,544)	1,382,599	7,490	1,377,633	0	42,307	(61,544)	1,339,358	7,490	1,327,611
1990	0	66,868	(14,836)	1,627,246	8,879	1,688,157	0	56,663	(14,836)	1,590,893	8,879	1,641,599
1991	0	40,564	107,302	447,935	4,593	600,394	0	34,016	107,302	446,443	4,593	592,354
1992	0	30,110	(47,567)	843,952	1,995	828,490	0	32,821	(47,621)	819,658	1,995	806,853
1993	0	37,670	31,233	1,626,258	4,910	1,700,071	0	37,420	31,233	1,602,108	4,910	1,675,671
1994	0	37,670	(10,724)	2,324,380	7,010	2,358,336	0	37,420	(10,724)	2,289,880	7,010	2,323,586
1995	0	37,670	(25,044)	2,353,652	7,010	2,373,288	0	37,420	(25,044)	2,319,152	7,010	2,338,538
1996	0	36,890	(1,722)	2,368,800	7,010	2,410,978	0	36,640	(1,722)	2,334,300	7,010	2,376,228
1997	0	37,379	13,995	2,378,328	7,010	2,436,712	0	37,129	13,995	2,343,828	7,010	2,401,962
1998	0	37,779	24,926	2,418,028	7,010	2,487,743	0	37,529	24,926	2,372,953	7,010	2,442,418
1999	0	37,839	9,169	2,433,750	7,010	2,487,768	0	37,589	9,169	2,388,675	7,010	2,442,443
2000	0	37,966	(16,935)	2,462,371	7,010	2,490,412	0	37,716	(16,935)	2,417,296	7,010	2,445,087
2001	0	37,953	(1,139)	2,462,371	7,010	2,506,195	0	37,703	(1,139)	2,417,296	7,010	2,460,870
2002	0	37,968	1	2,462,371	7,010	2,507,350	0	37,718	1	2,417,296	7,010	2,462,025
2003	0	37,970	349	2,462,371	7,010	2,507,700	0	37,720	349	2,417,296	7,010	2,462,375
2004	0	37,962	2,196	2,462,371	7,010	2,509,539	0	37,712	2,196	2,417,296	7,010	2,464,214
2005	0	37,953	4,105	2,522,000	7,010	2,571,068	0	37,703	4,105	2,476,925	7,010	2,525,743
2006	0	37,967	2,733	2,522,000	7,010	2,569,710	0	37,717	2,733	2,476,925	7,010	2,524,385
2007	0	37,966	1	2,522,000	7,010	2,566,977	0	37,716	1	2,476,925	7,010	2,521,652
2008	0	37,966	1,400	2,522,000	7,010	2,568,376	0	37,716	1,400	2,476,925	7,010	2,523,051
2009	0	37,877	(6,528)	2,522,000	7,010	2,560,359	0	37,627	(6,528)	2,476,925	7,010	2,515,034
2010	0	38,030	28,304	2,558,825	7,010	2,632,169	0	37,780	28,304	2,513,750	7,010	2,586,844
2011	0	38,003	(17,744)	2,561,225	7,010	2,588,494	0	37,753	(17,744)	2,516,150	7,010	2,543,169
2012	0	38,043	1,495	2,561,225	7,010	2,607,773	0	37,793	1,495	2,516,150	7,010	2,562,448
2013	0	38,034	2	2,561,225	7,010	2,606,271	0	37,784	2	2,516,150	7,010	2,560,946
2014	0	38,012	6,892	2,561,225	7,010	2,613,139	0	37,762	6,892	2,516,150	7,010	2,567,814
2015	0	37,990	(9,504)	2,566,075	7,010	2,601,571	0	37,740	(9,504)	2,521,000	7,010	2,556,246
2016	0	37,984	(766)	2,566,075	7,010	2,610,303	0	37,734	(766)	2,521,000	7,010	2,564,978
2017	0	37,991	623	2,566,075	7,010	2,611,699	0	37,741	623	2,521,000	7,010	2,566,374
2018	0	37,992	(997)	2,566,075	7,010	2,610,080	0	37,742	(997)	2,521,000	7,010	2,564,755
2019	0	37,989	4,727	2,566,075	7,010	2,615,801	0	37,739	4,727	2,521,000	7,010	2,570,476
2020	0	37,932	(14,368)	2,570,775	7,010	2,601,349	0	37,682	(14,368)	2,525,700	7,010	2,556,024
2021	0	37,940	562	2,571,425	7,010	2,616,937	0	37,690	562	2,526,350	7,010	2,571,612
2022	0	37,948	(421)	2,571,425	7,010	2,615,962	0	37,698	(421)	2,526,350	7,010	2,570,637
2023	0	37,948	1	2,571,425	7,010	2,616,384	0	37,698	1	2,526,350	7,010	2,571,059
2024	0	37,945	143	2,571,425	7,010	2,616,523	0	37,695	143	2,526,350	7,010	2,571,198
2025	0	37,959	5,691	2,572,825	7,010	2,623,485	0	37,709	5,691	2,527,750	7,010	2,578,160
2026	0	37,963	(843)	2,572,825	7,010	2,616,955	0	37,713	(843)	2,527,750	7,010	2,571,630
2027	0	37,969	(96)	2,572,825	7,010	2,617,708	0	37,719	(96)	2,527,750	7,010	2,572,383
2028	0	37,968	(1,043)	2,572,825	7,010	2,616,760	0	37,718	(1,043)	2,527,750	7,010	2,571,435
2029	0	37,938	(177)	2,572,825	7,010	2,617,596	0	37,688	(177)	2,527,750	7,010	2,572,271
2030	0	37,910	(1,502)	2,574,025	7,010	2,617,443	0	37,660	(1,502)	2,528,950	7,010	2,572,118
2031	0	37,895	0	2,574,025	7,010	2,618,930	0	37,645	0	2,528,950	7,010	2,573,605
2032	0	37,895	0	2,574,025	7,010	2,618,930	0	37,645	0	2,528,950	7,010	2,573,605
2033	0	37,901	3,017	2,574,025	7,010	2,621,953	0	37,651	3,017	2,528,950	7,010	2,576,628
2034	0	37,869	(5,182)	2,574,025	7,010	2,613,722	0	37,619	(5,182)	2,528,950	7,010	2,568,397
2035	0	37,943	5,959	2,575,325	7,010	2,626,237	0	37,693	5,959	2,530,250	7,010	2,580,912

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-feet)

	California Aqueduct (continued)											
	Tehachapi Division						Mojave Division					
	Edmonston Pumping Plant						Alamo Powerplant					
				Deliveries						Deliveries		
Calendar Year	Initial Fill Water (51)	Operational Losses (52)	Reservoir Storage Changes (53)	Water Supply (54)	Recreation (55)	Total (56)	Initial Fill Water (57)	Operational Losses (58)	Reservoir Storage Changes (59)	Water Supply (60)	Recreation (61)	Total (62)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	5,446	8	0	0	0	5,454	0	0	0	0	0	0
1972	100,274	16,067	(6,558)	74,123	6,481	190,387	0	0	0	0	0	0
1973	204,638	34,051	1,329	207,808	1,147	448,973	0	0	0	0	0	0
1974	237,554	18,181	(15,295)	313,634	2,108	556,182	0	0	0	0	0	0
1975	103,352	20,183	(693)	573,219	3,358	699,419	0	0	0	0	0	0
1976	61,122	21,096	(152,171)	685,768	1,581	617,396	0	0	0	0	0	0
1977	0	18,424	(116,219)	236,086	560	138,851	0	0	0	0	0	0
1978	65,027	20,887	121,904	590,329	674	798,821	0	0	0	0	0	0
1979	12,302	46,332	(51,299)	568,338	502	576,175	0	0	0	0	0	0
1980	0	52,967	(134,009)	639,743	1,262	559,963	0	0	0	0	0	0
1981	0	40,602	23,359	938,482	4,112	1,006,555	0	0	0	0	0	0
1982	0	37,244	117,296	812,206	4,045	970,791	0	0	0	0	0	0
1983	0	40,690	(101,155)	431,182	7,291	378,008	0	0	0	0	0	0
1984	0	42,112	(115,214)	556,830	5,244	488,972	0	0	0	0	0	0
1985	0	45,265	139,988	792,477	4,804	982,534	0	0	0	0	0	0
1986	0	38,514	37,546	823,067	3,285	902,412	0	14,898	12,258	429,864	1,508	458,528
1987	0	28,213	(23,258)	841,322	6,937	853,214	0	11,365	(13,727)	407,870	1,239	406,747
1988	0	42,017	(25,372)	1,035,988	4,360	1,056,993	0	21,696	5,568	528,819	971	557,054
1989	0	32,270	(61,544)	1,328,041	7,490	1,306,257	0	4,686	(20,826)	716,360	1,407	701,627
1990	0	42,198	(14,836)	1,579,466	8,879	1,615,707	0	8,898	(6,089)	788,111	1,388	792,308
1991	0	33,999	107,302	441,220	4,593	587,114	0	17,908	35,455	177,311	394	231,068
1992	0	21,484	(47,640)	809,296	1,995	785,135	0	12,684	(4,901)	371,635	423	379,841
1993	0	35,870	31,233	1,592,252	4,910	1,664,265	0	20,820	(13,654)	853,265	1,141	861,572
1994	0	35,870	(10,724)	2,275,800	7,010	2,307,956	0	20,820	(3,585)	1,205,613	1,630	1,224,478
1995	0	35,870	(25,044)	2,305,072	7,010	2,322,908	0	20,820	(12,009)	1,207,268	1,630	1,217,709
1996	0	35,090	(1,722)	2,320,220	7,010	2,360,598	0	20,852	(386)	1,194,788	1,630	1,216,884
1997	0	35,579	13,995	2,329,748	7,010	2,386,332	0	20,928	(30,144)	1,176,448	1,630	1,168,862
1998	0	35,979	24,926	2,352,903	7,010	2,420,818	0	20,822	(1,294)	1,184,602	1,630	1,205,760
1999	0	36,039	9,169	2,368,625	7,010	2,420,843	0	20,846	17,550	1,200,324	1,630	1,240,350
2000	0	36,166	(16,935)	2,397,246	7,010	2,423,487	0	20,954	(18,670)	1,220,550	1,630	1,224,464
2001	0	36,153	(1,139)	2,397,246	7,010	2,439,270	0	20,954	(765)	1,220,550	1,630	1,242,369
2002	0	36,168	1	2,397,246	7,010	2,440,425	0	20,965	0	1,220,550	1,630	1,243,145
2003	0	36,170	349	2,397,246	7,010	2,440,775	0	20,965	349	1,220,550	1,630	1,243,494
2004	0	36,162	2,196	2,397,246	7,010	2,442,614	0	20,957	2,196	1,220,550	1,630	1,245,333
2005	0	36,153	4,105	2,456,875	7,010	2,504,143	0	20,942	4,467	1,274,775	1,630	1,301,814
2006	0	36,167	2,733	2,456,875	7,010	2,502,785	0	20,957	2,733	1,274,775	1,630	1,300,095
2007	0	36,166	1	2,456,875	7,010	2,500,052	0	20,956	1	1,274,775	1,630	1,297,362
2008	0	36,166	1,400	2,456,875	7,010	2,501,451	0	20,958	1,400	1,274,775	1,630	1,298,763
2009	0	36,077	(6,528)	2,456,875	7,010	2,493,434	0	20,869	(6,528)	1,274,775	1,630	1,290,746
2010	0	36,230	28,304	2,493,700	7,010	2,565,244	0	21,024	27,554	1,311,600	1,630	1,361,808
2011	0	36,203	(17,744)	2,496,100	7,010	2,521,569	0	21,017	(16,996)	1,314,000	1,630	1,319,651
2012	0	36,243	1,495	2,496,100	7,010	2,540,848	0	21,021	1,495	1,314,000	1,630	1,338,146
2013	0	36,234	2	2,496,100	7,010	2,539,346	0	21,012	2	1,314,000	1,630	1,336,644
2014	0	36,212	6,892	2,496,100	7,010	2,546,214	0	20,985	6,059	1,314,000	1,630	1,342,674
2015	0	36,190	(9,504)	2,500,950	7,010	2,534,646	0	20,963	(11,398)	1,318,850	1,630	1,330,045
2016	0	36,184	(766)	2,500,950	7,010	2,543,378	0	20,956	697	1,318,850	1,630	1,342,133
2017	0	36,191	623	2,500,950	7,010	2,544,774	0	20,957	249	1,318,850	1,630	1,341,686
2018	0	36,192	(997)	2,500,950	7,010	2,543,155	0	20,958	(249)	1,318,850	1,630	1,341,189
2019	0	36,189	4,727	2,500,950	7,010	2,548,876	0	20,962	6,129	1,318,850	1,630	1,347,571
2020	0	36,132	(14,368)	2,505,650	7,010	2,534,424	0	20,913	(14,885)	1,323,550	1,630	1,331,208
2021	0	36,140	562	2,506,300	7,010	2,550,012	0	20,928	562	1,324,200	1,630	1,347,320
2022	0	36,148	(421)	2,506,300	7,010	2,549,037	0	20,924	(795)	1,324,200	1,630	1,345,959
2023	0	36,148	1	2,506,300	7,010	2,549,459	0	20,924	1	1,324,200	1,630	1,346,755
2024	0	36,145	143	2,506,300	7,010	2,549,598	0	20,923	516	1,324,200	1,630	1,347,269
2025	0	36,159	5,691	2,507,700	7,010	2,556,560	0	20,945	4,843	1,325,600	1,630	1,353,018
2026	0	36,163	(843)	2,507,700	7,010	2,550,030	0	20,950	(94)	1,325,600	1,630	1,348,086
2027	0	36,169	(96)	2,507,700	7,010	2,550,783	0	20,955	(844)	1,325,600	1,630	1,347,341
2028	0	36,168	(1,043)	2,507,700	7,010	2,549,835	0	20,944	46	1,325,600	1,630	1,348,220
2029	0	36,138	(177)	2,507,700	7,010	2,550,671	0	20,916	(162)	1,325,600	1,630	1,347,984
2030	0	36,110	(1,502)	2,508,900	7,010	2,550,518	0	20,887	(1,758)	1,326,800	1,630	1,347,559
2031	0	36,095	0	2,508,900	7,010	2,552,005	0	20,872	0	1,326,800	1,630	1,349,302
2032	0	36,095	0	2,508,900	7,010	2,552,005	0	20,872	0	1,326,800	1,630	1,349,302
2033	0	36,101	3,017	2,508,900	7,010	2,555,028	0	20,879	2,643	1,326,800	1,630	1,351,952
2034	0	36,069	(5,182)	2,508,900	7,010	2,546,797	0	20,850	(5,556)	1,326,800	1,630	1,343,724
2035	0	36,143	5,959	2,510,200	7,010	2,559,312	0	20,964	12,616	1,328,100	1,630	1,363,310

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-feet)

	California Aqueduct (continued)											
	Mojave Division (continued)											
	Pearblossom Pumping Plant						Mojave Siphon Powerplant					
				Deliveries						Deliveries		
Calendar Year	Initial Fill Water (63)	Operational Losses (64)	Reservoir Storage Changes (65)	Water Supply (66)	Recreation (67)	Total (68)	Initial Fill Water (69)	Operational Losses (70)	Reservoir Storage Changes (71)	Water Supply (72)	Recreation (73)	Total (74)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	21	0	0	0	0	21	0	0	0	0	0	0
1972	35,243	5,282	(153)	1,794	0	42,166	0	0	0	0	0	0
1973	80,177	21,522	(2,700)	52,201	72	151,272	0	0	0	0	0	0
1974	76,694	10,847	(11,149)	102,839	44	179,275	0	0	0	0	0	0
1975	10,000	2,364	(8,397)	190,351	70	194,388	0	0	0	0	0	0
1976	4,168	7,040	(16,055)	236,713	152	232,018	0	0	0	0	0	0
1977	0	11,398	(17,534)	102,326	580	96,770	0	0	0	0	0	0
1978	19,922	5,696	69,130	374,845	498	470,091	0	0	0	0	0	0
1979	12,302	6,836	(32,518)	362,114	502	349,236	0	0	0	0	0	0
1980	0	16,200	6,159	401,214	781	424,354	0	0	0	0	0	0
1981	0	4,992	(36,278)	574,573	933	544,220	0	0	0	0	0	0
1982	0	5,251	55,232	401,037	1,919	463,439	0	0	0	0	0	0
1983	0	11,745	(26,847)	231,188	1,180	217,266	0	0	0	0	0	0
1984	0	18,228	23,230	252,066	1,494	295,018	0	0	0	0	0	0
1985	0	25,292	(2,815)	350,758	1,076	374,311	0	0	0	0	0	0
1986	0	31,039	12,258	394,156	1,508	438,961	0	0	0	0	0	0
1987	0	27,319	(14,928)	367,531	1,239	381,161	0	0	0	0	0	0
1988	0	32,209	5,568	492,551	971	531,299	0	0	0	0	0	0
1989	0	31,500	(20,826)	661,189	1,407	673,270	0	0	0	0	0	0
1990	0	32,672	(6,089)	730,560	1,388	758,531	0	0	0	0	0	0
1991	0	15,209	35,455	163,916	394	214,974	0	0	0	0	0	0
1992	0	13,501	(5,656)	335,774	423	344,042	0	0	0	0	0	0
1993	0	15,470	(13,654)	803,913	1,001	806,730	0	0	0	0	0	0
1994	0	15,470	(3,585)	1,131,450	1,430	1,144,765	0	0	0	0	0	0
1995	0	15,470	(12,009)	1,127,500	1,430	1,132,391	0	0	0	0	0	0
1996	0	15,502	(386)	1,109,900	1,430	1,126,446	0	12,032	(386)	1,109,900	1,430	1,122,976
1997	0	15,578	(30,144)	1,088,100	1,430	1,074,964	0	12,108	(30,144)	1,088,100	1,430	1,071,494
1998	0	15,472	(1,294)	1,092,774	1,430	1,108,382	0	12,002	(1,294)	1,092,774	1,430	1,104,912
1999	0	15,496	17,550	1,096,770	1,430	1,131,246	0	12,026	17,550	1,096,770	1,430	1,127,776
2000	0	15,604	(18,670)	1,104,950	1,430	1,103,314	0	12,134	(18,670)	1,104,950	1,430	1,099,844
2001	0	15,604	(765)	1,104,950	1,430	1,121,219	0	12,134	(765)	1,104,950	1,430	1,117,749
2002	0	15,615	0	1,104,950	1,430	1,121,995	0	12,145	0	1,104,950	1,430	1,118,525
2003	0	15,615	349	1,104,950	1,430	1,122,344	0	12,145	349	1,104,950	1,430	1,118,874
2004	0	15,607	2,196	1,104,950	1,430	1,124,183	0	12,137	2,196	1,104,950	1,430	1,120,713
2005	0	15,592	4,467	1,139,175	1,430	1,160,664	0	12,122	4,467	1,139,175	1,430	1,157,194
2006	0	15,607	2,733	1,139,175	1,430	1,158,945	0	12,137	2,733	1,139,175	1,430	1,155,475
2007	0	15,606	1	1,139,175	1,430	1,156,212	0	12,136	1	1,139,175	1,430	1,152,742
2008	0	15,608	1,400	1,139,175	1,430	1,157,613	0	12,138	1,400	1,139,175	1,430	1,154,143
2009	0	15,519	(6,528)	1,139,175	1,430	1,149,596	0	12,049	(6,528)	1,139,175	1,430	1,146,126
2010	0	15,674	27,554	1,156,000	1,430	1,200,658	0	12,204	27,554	1,156,000	1,430	1,197,188
2011	0	15,667	(16,996)	1,156,000	1,430	1,156,101	0	12,197	(16,996)	1,156,000	1,430	1,152,631
2012	0	15,671	1,495	1,156,000	1,430	1,174,596	0	12,201	1,495	1,156,000	1,430	1,171,126
2013	0	15,662	2	1,156,000	1,430	1,173,094	0	12,192	2	1,156,000	1,430	1,169,624
2014	0	15,635	6,059	1,156,000	1,430	1,179,124	0	12,165	6,059	1,156,000	1,430	1,175,654
2015	0	15,613	(11,398)	1,160,850	1,430	1,166,495	0	12,143	(11,398)	1,160,850	1,430	1,163,025
2016	0	15,606	697	1,160,850	1,430	1,178,583	0	12,136	697	1,160,850	1,430	1,175,113
2017	0	15,607	249	1,160,850	1,430	1,178,136	0	12,137	249	1,160,850	1,430	1,174,666
2018	0	15,608	(249)	1,160,850	1,430	1,177,639	0	12,138	(249)	1,160,850	1,430	1,174,169
2019	0	15,612	6,129	1,160,850	1,430	1,184,021	0	12,142	6,129	1,160,850	1,430	1,180,551
2020	0	15,563	(14,885)	1,165,550	1,430	1,167,658	0	12,093	(14,885)	1,165,550	1,430	1,164,188
2021	0	15,578	562	1,166,200	1,430	1,183,770	0	12,108	562	1,166,200	1,430	1,180,300
2022	0	15,574	(795)	1,166,200	1,430	1,182,409	0	12,104	(795)	1,166,200	1,430	1,178,939
2023	0	15,574	1	1,166,200	1,430	1,183,205	0	12,104	1	1,166,200	1,430	1,179,735
2024	0	15,573	516	1,166,200	1,430	1,183,719	0	12,103	516	1,166,200	1,430	1,180,249
2025	0	15,595	4,843	1,167,600	1,430	1,189,468	0	12,125	4,843	1,167,600	1,430	1,185,998
2026	0	15,600	(94)	1,167,600	1,430	1,184,536	0	12,130	(94)	1,167,600	1,430	1,181,066
2027	0	15,605	(844)	1,167,600	1,430	1,183,791	0	12,135	(844)	1,167,600	1,430	1,180,321
2028	0	15,594	46	1,167,600	1,430	1,184,670	0	12,124	46	1,167,600	1,430	1,181,200
2029	0	15,566	(162)	1,167,600	1,430	1,184,434	0	12,096	(162)	1,167,600	1,430	1,180,964
2030	0	15,537	(1,758)	1,168,800	1,430	1,184,009	0	12,067	(1,758)	1,168,800	1,430	1,180,539
2031	0	15,522	0	1,168,800	1,430	1,185,752	0	12,052	0	1,168,800	1,430	1,182,282
2032	0	15,522	0	1,168,800	1,430	1,185,752	0	12,052	0	1,168,800	1,430	1,182,282
2033	0	15,529	2,643	1,168,800	1,430	1,188,402	0	12,059	2,643	1,168,800	1,430	1,184,932
2034	0	15,500	(5,556)	1,168,800	1,430	1,180,174	0	12,030	(5,556)	1,168,800	1,430	1,176,704
2035	0	15,614	12,616	1,170,100	1,430	1,199,760	0	12,144	12,616	1,170,100	1,430	1,196,290

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-feet)

	California Aqueduct (continued)											
	Santa Ana Division						West Branch, California Aqueduct					
	Devil Canyon Powerplant						Oso Pumping Plant					
				Deliveries						Deliveries		
Calendar Year	Initial Fill Water (75)	Operational Losses (76)	Reservoir Storage Changes (77)	Water Supply (78)	Recreation (79)	Total (80)	Initial Fill Water (81)	Operational Losses (82)	Reservoir Storage Changes (83)	Water Supply (84)	Recreation (85)	Total (86)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	2,444	133	0	0	0	2,577
1972	37	0	0	1,275	0	1,312	63,883	6,557	(6,405)	71,991	6,481	142,507
1973	40,848	14,745	0	51,812	0	107,405	124,461	16,995	4,029	155,317	1,075	301,877
1974	74,666	8,367	(4,925)	102,198	0	180,306	160,860	12,702	(4,146)	209,172	2,064	380,652
1975	10,000	1,995	(6,719)	189,526	0	194,802	93,352	23,008	7,704	374,306	3,288	501,658
1976	4,168	5,180	(9,182)	235,711	23	235,900	56,954	15,845	(136,116)	420,708	1,429	358,820
1977	0	8,082	(5,235)	101,137	469	104,453	0	4,407	(98,685)	122,447	(20)	28,149
1978	14,820	3,754	21,686	373,636	481	414,377	45,105	9,061	52,774	171,139	176	278,255
1979	12,302	5,620	(27,107)	356,854	485	348,154	0	25,355	(18,781)	145,598	0	152,172
1980	0	9,468	12,714	395,975	742	418,899	0	24,576	(140,168)	165,931	481	50,820
1981	0	8,401	(23,448)	569,088	807	554,848	0	15,254	59,637	283,264	3,179	361,334
1982	0	6,012	44,469	399,799	1,798	452,078	0	23,824	61,685	360,878	2,126	448,513
1983	0	8,597	5,188	230,277	1,078	245,140	0	23,601	(74,308)	166,995	6,111	122,399
1984	0	12,861	(850)	250,938	1,414	264,363	0	12,461	(138,146)	272,101	3,750	150,166
1985	0	14,325	(8,791)	349,336	956	355,826	0	28,257	142,219	403,097	3,728	577,301
1986	0	9,646	8,339	392,650	1,378	412,013	0	23,816	25,288	393,203	1,777	444,084
1987	0	7,919	(11,331)	365,451	1,118	363,157	0	18,952	(9,490)	433,452	5,698	448,612
1988	0	11,090	2,238	490,536	861	504,725	0	20,461	(30,940)	507,169	3,389	500,079
1989	0	13,116	(5,487)	658,730	1,301	667,660	0	27,914	(40,718)	611,681	6,083	604,960
1990	0	13,439	(4,622)	728,723	1,281	738,821	0	33,666	(8,747)	791,355	7,491	823,765
1991	0	10,836	18,430	161,032	340	190,638	0	16,460	71,847	263,909	4,199	356,415
1992	0	9,007	20	326,354	371	335,752	0	8,812	(42,748)	437,661	1,572	405,297
1993	0	8,400	(2,223)	776,763	875	783,815	0	14,000	45,887	738,987	3,769	802,643
1994	0	8,400	(5,997)	1,092,800	1,250	1,096,453	0	14,000	(6,139)	1,070,187	5,380	1,083,428
1995	0	8,400	(8,091)	1,073,800	1,250	1,075,359	0	14,000	(12,035)	1,097,804	5,380	1,105,149
1996	0	8,448	2,054	1,056,000	1,250	1,067,752	0	14,188	(1,336)	1,125,432	5,380	1,143,664
1997	0	8,423	(6,866)	1,034,000	1,250	1,036,807	0	14,601	44,139	1,153,300	5,380	1,217,420
1998	0	8,420	126	1,039,374	1,250	1,049,170	0	15,107	26,220	1,168,301	5,380	1,215,008
1999	0	8,451	(2,676)	1,043,370	1,250	1,050,395	0	15,143	(8,381)	1,168,301	5,380	1,180,443
2000	0	8,424	(432)	1,051,150	1,250	1,060,392	0	15,162	1,735	1,176,696	5,380	1,198,973
2001	0	8,438	(725)	1,051,150	1,250	1,060,113	0	15,149	(374)	1,176,696	5,380	1,196,851
2002	0	8,446	0	1,051,150	1,250	1,060,846	0	15,153	1	1,176,696	5,380	1,197,230
2003	0	8,446	1,452	1,051,150	1,250	1,062,298	0	15,155	0	1,176,696	5,380	1,197,231
2004	0	8,431	3,008	1,051,150	1,250	1,063,839	0	15,155	0	1,176,696	5,380	1,197,231
2005	0	8,447	659	1,084,550	1,250	1,094,906	0	15,161	(362)	1,182,100	5,380	1,202,279
2006	0	8,454	1,258	1,084,550	1,250	1,095,512	0	15,160	0	1,182,100	5,380	1,202,640
2007	0	8,454	1	1,084,550	1,250	1,094,255	0	15,160	0	1,182,100	5,380	1,202,640
2008	0	8,462	0	1,084,550	1,250	1,094,262	0	15,158	0	1,182,100	5,380	1,202,638
2009	0	8,429	(2,639)	1,084,550	1,250	1,091,590	0	15,158	0	1,182,100	5,380	1,202,638
2010	0	8,430	812	1,100,450	1,250	1,110,942	0	15,156	750	1,182,100	5,380	1,203,386
2011	0	8,435	(2,293)	1,100,450	1,250	1,107,842	0	15,136	(748)	1,182,100	5,380	1,201,868
2012	0	8,431	1,088	1,100,450	1,250	1,111,219	0	15,172	0	1,182,100	5,380	1,202,652
2013	0	8,425	2	1,100,450	1,250	1,110,127	0	15,172	0	1,182,100	5,380	1,202,652
2014	0	8,423	2,523	1,100,450	1,250	1,112,646	0	15,177	833	1,182,100	5,380	1,203,490
2015	0	8,434	(561)	1,104,750	1,250	1,113,873	0	15,177	1,894	1,182,100	5,380	1,204,551
2016	0	8,432	(529)	1,104,750	1,250	1,113,903	0	15,178	(1,463)	1,182,100	5,380	1,201,195
2017	0	8,431	0	1,104,750	1,250	1,114,431	0	15,184	374	1,182,100	5,380	1,203,038
2018	0	8,431	0	1,104,750	1,250	1,114,431	0	15,184	(748)	1,182,100	5,380	1,201,916
2019	0	8,440	2,897	1,104,750	1,250	1,117,337	0	15,177	(1,402)	1,182,100	5,380	1,201,255
2020	0	8,421	(1,968)	1,109,050	1,250	1,116,753	0	15,169	517	1,182,100	5,380	1,203,166
2021	0	8,427	192	1,109,700	1,250	1,119,569	0	15,162	0	1,182,100	5,380	1,202,642
2022	0	8,416	(2,343)	1,109,700	1,250	1,117,023	0	15,174	374	1,182,100	5,380	1,203,028
2023	0	8,417	2	1,109,700	1,250	1,119,369	0	15,174	0	1,182,100	5,380	1,202,654
2024	0	8,422	1,228	1,109,700	1,250	1,120,600	0	15,172	(373)	1,182,100	5,380	1,202,279
2025	0	8,415	855	1,111,000	1,250	1,121,520	0	15,164	848	1,182,100	5,380	1,203,492
2026	0	8,422	249	1,111,000	1,250	1,120,921	0	15,163	(749)	1,182,100	5,380	1,201,894
2027	0	8,423	0	1,111,000	1,250	1,120,673	0	15,164	748	1,182,100	5,380	1,203,392
2028	0	8,422	(1,905)	1,111,000	1,250	1,118,767	0	15,174	(1,089)	1,182,100	5,380	1,201,565
2029	0	8,423	2,773	1,111,000	1,250	1,123,446	0	15,172	(15)	1,182,100	5,380	1,202,637
2030	0	8,445	(964)	1,112,200	1,250	1,120,931	0	15,173	256	1,182,100	5,380	1,202,909
2031	0	8,443	0	1,112,200	1,250	1,121,893	0	15,173	0	1,182,100	5,380	1,202,653
2032	0	8,443	0	1,112,200	1,250	1,121,893	0	15,173	0	1,182,100	5,380	1,202,653
2033	0	8,446	(499)	1,112,200	1,250	1,121,397	0	15,172	374	1,182,100	5,380	1,203,026
2034	0	8,420	(2,221)	1,112,200	1,250	1,119,649	0	15,169	374	1,182,100	5,380	1,203,023
2035	0	8,412	(8,977)	1,113,500	1,250	1,114,185	0	15,129	(6,657)	1,182,100	5,380	1,195,952

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-feet)

	California Aqueduct (continued)											
	West Branch, California Aqueduct (continued)											
	Warne Powerplant						Castaic Powerplant					
				Deliveries						Deliveries		
Calendar Year	Initial Fill Water (87)	Operational Losses (88)	Reservoir Storage Changes (89)	Water Supply (90)	Recreation (91)	Total (92)	Initial Fill Water (93)	Operational Losses (94)	Reservoir Storage Changes (95)	Water Supply (96)	Recreation (97)	Total (98)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	57,364	1,788	(6,162)	71,938	6,481	131,409
1973	0	0	0	0	0	0	37,198	6,430	4,542	155,297	1,075	204,542
1974	0	0	0	0	0	0	82,364	1,772	(950)	209,136	541	292,863
1975	0	0	0	0	0	0	90,460	5,002	(1,534)	374,280	1,563	469,771
1976	0	0	0	0	0	0	55,990	(7,695)	(132,036)	420,684	1,429	338,372
1977	0	0	0	0	0	0	0	(1,485)	(102,532)	122,447	(20)	18,410
1978	0	0	0	0	0	0	45,105	(2,264)	129,523	171,139	176	343,679
1979	0	0	0	0	0	0	0	(2,339)	(20,400)	145,598	0	122,859
1980	0	0	0	0	0	0	0	991	(118,026)	165,931	481	49,377
1981	0	0	0	0	0	0	0	(44,416)	47,244	283,264	2,704	288,796
1982	0	24,468	61,169	360,878	2,126	448,641	0	(60,135)	59,069	360,878	1,187	360,999
1983	0	20,780	(74,308)	166,995	6,111	119,578	0	(33,418)	(46,904)	166,995	2,618	89,291
1984	0	13,572	(139,219)	275,212	2,208	151,773	0	(29,618)	(139,545)	275,212	2,201	108,250
1985	0	29,286	141,492	403,097	874	574,749	0	(4,622)	135,007	403,097	844	534,326
1986	0	23,008	25,288	393,203	1,777	443,276	0	(5,440)	25,120	393,203	1,777	414,660
1987	0	22,871	(9,464)	433,452	5,698	452,557	0	1,467	(6,069)	433,452	2,734	431,584
1988	0	23,253	(31,545)	507,169	3,389	502,266	0	12,650	(28,590)	507,169	1,359	492,588
1989	0	27,131	(40,718)	611,681	6,083	604,177	0	634	(40,214)	611,681	3,161	575,262
1990	0	34,208	(8,747)	791,355	7,491	824,307	0	(14,012)	(15,110)	786,519	3,419	760,816
1991	0	16,908	71,847	263,909	4,199	356,863	0	(871)	91,055	262,921	2,283	355,388
1992	0	9,429	(41,922)	437,661	1,572	406,740	0	(818)	(58,862)	437,661	1,543	379,524
1993	0	12,090	45,887	738,984	3,769	800,730	0	6,000	51,887	735,484	1,634	795,005
1994	0	12,090	(6,139)	1,070,187	5,380	1,081,518	0	6,000	(139)	1,065,187	2,330	1,073,378
1995	0	12,090	(12,035)	1,097,804	5,380	1,103,239	0	6,000	(6,035)	1,092,804	2,330	1,095,099
1996	0	12,278	(1,336)	1,125,432	5,380	1,141,754	0	5,990	(6,238)	1,120,432	2,330	1,122,514
1997	0	12,691	44,139	1,153,300	5,380	1,215,510	0	6,406	44,139	1,148,300	2,330	1,201,175
1998	0	13,197	26,220	1,168,301	5,380	1,213,098	0	6,912	26,220	1,163,301	2,330	1,198,763
1999	0	13,233	(8,381)	1,168,301	5,380	1,178,533	0	6,948	(8,381)	1,163,301	2,330	1,164,198
2000	0	13,252	1,735	1,176,696	5,380	1,197,063	0	6,967	1,735	1,171,696	2,330	1,182,728
2001	0	13,239	(374)	1,176,696	5,380	1,194,941	0	6,954	(374)	1,171,696	2,330	1,180,606
2002	0	13,243	1	1,176,696	5,380	1,195,320	0	6,958	1	1,171,696	2,330	1,180,985
2003	0	13,245	0	1,176,696	5,380	1,195,321	0	6,960	0	1,171,696	2,330	1,180,986
2004	0	13,245	0	1,176,696	5,380	1,195,321	0	6,960	0	1,171,696	2,330	1,180,986
2005	0	13,251	(362)	1,182,100	5,380	1,200,369	0	6,966	(362)	1,177,100	2,330	1,186,034
2006	0	13,250	0	1,182,100	5,380	1,200,730	0	6,965	0	1,177,100	2,330	1,186,395
2007	0	13,250	0	1,182,100	5,380	1,200,730	0	6,965	0	1,177,100	2,330	1,186,395
2008	0	13,248	0	1,182,100	5,380	1,200,728	0	6,963	0	1,177,100	2,330	1,186,393
2009	0	13,248	0	1,182,100	5,380	1,200,728	0	6,963	0	1,177,100	2,330	1,186,393
2010	0	13,246	750	1,182,100	5,380	1,201,476	0	6,961	750	1,177,100	2,330	1,187,141
2011	0	13,226	(748)	1,182,100	5,380	1,199,958	0	6,941	(748)	1,177,100	2,330	1,185,623
2012	0	13,262	0	1,182,100	5,380	1,200,742	0	6,977	0	1,177,100	2,330	1,186,407
2013	0	13,262	0	1,182,100	5,380	1,200,742	0	6,977	0	1,177,100	2,330	1,186,407
2014	0	13,267	833	1,182,100	5,380	1,201,580	0	6,982	833	1,177,100	2,330	1,187,245
2015	0	13,267	1,894	1,182,100	5,380	1,202,641	0	6,982	1,894	1,177,100	2,330	1,188,306
2016	0	13,268	(1,463)	1,182,100	5,380	1,199,285	0	6,983	(1,463)	1,177,100	2,330	1,184,950
2017	0	13,274	374	1,182,100	5,380	1,201,128	0	6,989	374	1,177,100	2,330	1,186,793
2018	0	13,274	(748)	1,182,100	5,380	1,200,006	0	6,989	(748)	1,177,100	2,330	1,185,671
2019	0	13,267	(1,402)	1,182,100	5,380	1,199,345	0	6,982	(1,402)	1,177,100	2,330	1,185,010
2020	0	13,259	517	1,182,100	5,380	1,201,256	0	6,974	517	1,177,100	2,330	1,186,921
2021	0	13,252	0	1,182,100	5,380	1,200,732	0	6,967	0	1,177,100	2,330	1,186,397
2022	0	13,264	374	1,182,100	5,380	1,201,118	0	6,979	374	1,177,100	2,330	1,186,783
2023	0	13,264	0	1,182,100	5,380	1,200,744	0	6,979	0	1,177,100	2,330	1,186,409
2024	0	13,262	(373)	1,182,100	5,380	1,200,369	0	6,977	(373)	1,177,100	2,330	1,186,034
2025	0	13,254	848	1,182,100	5,380	1,201,582	0	6,969	848	1,177,100	2,330	1,187,247
2026	0	13,253	(749)	1,182,100	5,380	1,199,984	0	6,968	(749)	1,177,100	2,330	1,185,649
2027	0	13,254	748	1,182,100	5,380	1,201,482	0	6,969	748	1,177,100	2,330	1,187,147
2028	0	13,264	(1,089)	1,182,100	5,380	1,199,655	0	6,979	(1,089)	1,177,100	2,330	1,185,320
2029	0	13,262	(15)	1,182,100	5,380	1,200,727	0	6,977	(15)	1,177,100	2,330	1,186,392
2030	0	13,263	256	1,182,100	5,380	1,200,999	0	6,978	256	1,177,100	2,330	1,186,664
2031	0	13,263	0	1,182,100	5,380	1,200,743	0	6,978	0	1,177,100	2,330	1,186,408
2032	0	13,263	0	1,182,100	5,380	1,200,743	0	6,978	0	1,177,100	2,330	1,186,408
2033	0	13,262	374	1,182,100	5,380	1,201,116	0	6,977	374	1,177,100	2,330	1,186,781
2034	0	13,259	374	1,182,100	5,380	1,201,113	0	6,974	374	1,177,100	2,330	1,186,778
2035	0	13,219	(6,657)	1,182,100	5,380	1,194,042	0	6,934	(6,657)	1,177,100	2,330	1,179,707

TABLE B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-feet)

	California Aqueduct (continued)						
	Coastal Branch, California Aqueduct						
	Las Perillas and Badger Hill Pumping Plants				Devil's Den, Bluestone, and Polonio Pass Pumping Plants and San Luis Obispo Powerplant		
Calendar Year	Initial Fill Water (99)	Operational Losses (100)	Water Supply Delivery (101)	Total (102)	Operational Losses (103)	Water Supply Delivery (104)	Total (105)
1961	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0
1968	210	873	79,039	80,122	0	0	0
1969	0	1,042	62,064	63,106	0	0	0
1970	0	638	83,649	84,287	0	0	0
1971	0	3,455	110,971	114,426	0	0	0
1972	0	1,745	121,755	123,500	0	0	0
1973	0	5,479	78,645	84,124	0	0	0
1974	0	7,344	78,174	85,518	0	0	0
1975	0	5,819	85,216	91,035	0	0	0
1976	0	6,562	90,058	96,620	0	0	0
1977	0	5,777	40,579	46,356	0	0	0
1978	0	9,085	92,604	101,689	0	0	0
1979	0	10,896	123,155	134,051	0	0	0
1980	0	9,449	111,379	120,828	0	0	0
1981	0	13,232	109,754	122,986	0	0	0
1982	0	7,984	95,776	103,760	0	0	0
1983	0	5,710	100,518	106,228	0	0	0
1984	0	5,740	126,387	132,127	0	0	0
1985	0	7,563	120,823	128,386	0	0	0
1986	0	8,562	131,599	140,161	0	0	0
1987	0	11,363	128,080	139,443	0	0	0
1988	0	12,831	120,969	133,800	0	0	0
1989	0	11,454	116,801	128,255	0	0	0
1990	0	13,022	109,802	122,824	0	0	0
1991	0	5,802	1,496	7,298	0	0	0
1992	0	7,894	79,645	87,539	0	0	0
1993	0	628	64,190	64,818	0	0	0
1994	0	802	91,700	92,502	0	0	0
1995	0	802	91,700	92,502	0	0	0
1996	0	802	128,090	128,892	212	42,730	42,942
1997	0	802	146,206	147,008	212	54,506	54,718
1998	0	802	201,186	201,988	212	70,486	70,698
1999	0	802	201,186	201,988	212	70,486	70,698
2000	0	802	193,890	194,692	212	70,486	70,698
2001	0	802	193,890	194,692	212	70,486	70,698
2002	0	802	193,890	194,692	212	70,486	70,698
2003	0	802	193,890	194,692	212	70,486	70,698
2004	0	802	193,890	194,692	212	70,486	70,698
2005	0	802	188,486	189,288	212	70,486	70,698
2006	0	802	188,486	189,288	212	70,486	70,698
2007	0	802	188,486	189,288	212	70,486	70,698
2008	0	802	188,486	189,288	212	70,486	70,698
2009	0	802	188,486	189,288	212	70,486	70,698
2010	0	802	188,486	189,288	212	70,486	70,698
2011	0	802	188,486	189,288	212	70,486	70,698
2012	0	802	188,486	189,288	212	70,486	70,698
2013	0	802	188,486	189,288	212	70,486	70,698
2014	0	802	188,486	189,288	212	70,486	70,698
2015	0	802	188,486	189,288	212	70,486	70,698
2016	0	802	188,486	189,288	212	70,486	70,698
2017	0	802	188,486	189,288	212	70,486	70,698
2018	0	802	188,486	189,288	212	70,486	70,698
2019	0	802	188,486	189,288	212	70,486	70,698
2020	0	802	188,486	189,288	212	70,486	70,698
2021	0	802	188,486	189,288	212	70,486	70,698
2022	0	802	188,486	189,288	212	70,486	70,698
2023	0	802	188,486	189,288	212	70,486	70,698
2024	0	802	188,486	189,288	212	70,486	70,698
2025	0	802	188,486	189,288	212	70,486	70,698
2026	0	802	188,486	189,288	212	70,486	70,698
2027	0	802	188,486	189,288	212	70,486	70,698
2028	0	802	188,486	189,288	212	70,486	70,698
2029	0	802	188,486	189,288	212	70,486	70,698
2030	0	802	188,486	189,288	212	70,486	70,698
2031	0	802	188,486	189,288	212	70,486	70,698
2032	0	802	188,486	189,288	212	70,486	70,698
2033	0	802	188,486	189,288	212	70,486	70,698
2034	0	802	188,486	189,288	212	70,486	70,698
2035	0	802	188,486	189,288	212	70,486	70,698

Table B-7 follows.

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C-060170

TABLE B-7

Reconciliation of Capital Costs Allocated to Water Supply and Power Generation

(Thousands of dollars)

Item	Project Costs Allocated to Water Supply and Power Generation							Capital Costs Allocated to Other Purposes (8)	Total State Water Project Capital Cost (9)
	Miscellaneous Income Credited to Construction (a (1)	Allowance for Future Price Escalation (b (2)	Costs of Construction of Delivery Structures (c (3)	Costs of Requested Excess Capacity and Future Enlargement (d (4)	Capital Cost Component of Delta Water Charge (e (f (g (5)	Capital Cost Component of Transportation Water Charge (h (6)	Water Supply and Power Total (7)		
Conservation Facilities									
Upper Feather Division									
Frenchman Dam & Lake	173	0	0	0	603	0	776	2,886	3,662
Grizzly Valley Dam & Lake Davis	29	0	0	0	38	0	67	7,364	7,431
Antelope Dam & Lake	0	0	0	0	0	0	0	5,523	5,523
Abbey Bridge Dam & Reservoir	0	0	0	0	0	0	0	519	519
Dixie Refuge Dam & Reservoir	0	0	0	0	0	0	0	236	236
Total, Upper Feather Division	202	0	0	0	641	0	843	16,528	17,371
Oroville Division									
Multipurpose facilities	2,477	6	180	0	365,969	0	368,632	88,270	456,902
Specific power facilities	408	0	0	0	105,985	0	106,393	1,013	107,406
Total, Oroville Division	2,885	6	180	0	471,954	0	475,025	89,283	564,308
California Aqueduct									
North San Joaquin Division	229	0	0	0	78,181	0	78,410	2,679	81,089
San Luis Division	0	0	0	0	101,115	0	101,115	4,335	105,450
Total, California Aqueduct	229	0	0	0	179,296	0	179,525	7,014	186,539
Delta facilities	34,551	7,623	0	0	322,182	0	364,356	51,529	415,885
Planning and preoperation	2,324	16,742	0	0	145,473	0	164,539	0	164,539
Total, conservation facilities	40,191	24,371	180	0	1,119,546	0	1,184,288	164,354	1,348,642
Transportation Facilities									
Upper Feather Division									
Grizzly Valley Pipeline	0	0	0	0	0	341	341	0	341
North Bay Aqueduct	113	35	685	0	0	94,405	95,238	0	95,238
South Bay Aqueduct	1,609	43	1,553	0	0	51,758	54,963	21,636	76,599
California Aqueduct									
North San Joaquin Division	317	192	25	0	0	174,638	175,172	6,548	181,720
San Luis Division	6,173	191	0	0	0	107,184	113,548	11,589	125,137
South San Joaquin Division	100	163	3,258	2,065	0	269,147	274,733	16,606	291,339
Tehachapi Division	87	69	4	5,229	0	293,112	298,501	18,043	316,544
Mojave Division	15,126	283	625	0	0	359,779	375,813	16,949	392,762
Santa Ana Division	13,559	894	3,317	9,710	0	195,875	223,355	13,501	236,856
West Branch	35,043	3,577	2,901	37	0	462,086	503,644	30,443	534,087
Coastal Branch	214	22,162	100	0	0	409,126	431,602	0	431,602
Total, California Aqueduct	70,619	27,531	10,230	17,041	0	2,270,947	2,396,368	113,679	2,510,047
Total transportation facilities	72,341	27,609	12,468	17,041	0	2,417,451	2,546,910	135,315	2,682,225
East Branch Enlargement	0	615	0	0	0	432,461	433,076	0	433,076
San Joaquin drainage facilities	0	0	0	0	0	0	0	61,605	61,605
Off-aqueduct power generation facilities	0	0	0	0	0	441,130	441,130	0	441,130
Land purchase-Kern Water Bank	0	0	0	0	34,686	0	34,686	0	34,686
Unassigned and Davis-Grunsky	0	0	0	0	0	0	0	137,689	137,689
Subtotal	112,532	52,595	12,648	17,041	1,154,232	3,291,042	4,640,090	498,963	5,139,053
Less: 2006-2035 costs	0	5,744	0	0	17,480	0	23,224	0	23,224
Total through 2005	112,532	46,851	12,648	17,041	1,136,752	3,291,042	4,616,866	498,963	5,115,829

a) Miscellaneous project receipts applied for accounting purposes to reduce the capital costs of the particular facilities.
b) These allowances are included for planning the future financial program but not for determining current water charges. The costs shown in this appendix are based on prices prevailing on December 31, 1992.
c) See Table B-8.
d) See Table B-9.
e) See Table B-13. A portion of these costs will be offset by power generation sales and credits.
f) The planning and preoperation costs of conservation facilities include $56,247,000 of planning costs financed from Systems Revenue and not included in Table 21-1.
g) See Table B-10. Projected costs for Mojave Division include $7,000,000 for small hydro.

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TABLE B-8

State Water Project Capital Costs of Requested Delivery Structures

(Dollars)

Project Service Area and Water Supply Contractor	Calendar Year Capital Costs (a						Total
	1952–1990 (1)	1991 (2)	1992 (3)	1993 (4)	1994 (5)	1995 (6)	(7)
Feather River Area							
County of Butte	104,924	2,588	4,932	13,000	0	0	125,444
Plumas County Flood Control and Water Conservation District	0	0	0	11,000	0	0	11,000
Thermalito Irrigation District (b	43,939	0	0	0	0	0	43,939
Subtotal	148,863	2,588	4,932	24,000	0	0	180,383
North Bay Area							
Napa County Flood Control and Water Conservation District	13,590	0	0	16,000	0	0	29,590
Solano County Water Agency	651,786	983	2,300	1,000	0	0	656,069
Subtotal	665,376	983	2,300	17,000	0	0	685,659
South Bay Area							
Alameda County Flood Control and Water Conservation District, Zone 7	224,357	1,482	2,086	15,000	0	0	242,925
Alameda County Water District	165,169	16,135	37,984	10,000	0	0	229,288
Santa Clara Valley Water District	0	421	3,584	36,000	0	0	40,005
San Francisco Water Department (b	742,707	280,613	16,155	1,000	0	0	1,040,475
Subtotal	1,132,233	298,651	59,809	62,000	0	0	1,552,693
San Joaquin Valley Area							
Castaic Lake Water Agency	77,557	0	0	0	0	0	77,557
Dudley Ridge Water District	289,395	17	0	0	0	0	289,412
Empire West Side Irrigation District	6,358	0	0	0	0	0	6,358
Green Valley Water District (c	5,292	0	0	0	0	0	5,292
Kern County Water Agency	2,709,182	0	0	0	0	0	2,709,182
Oak Flat Water District	13,753	0	0	0	0	0	13,753
Tracy Golf and Country Club (c	1,028	0	0	0	0	0	1,028
Tulare Lake Basin Water Storage District	277,483	0	0	0	0	0	277,483
Veterans Administration Cemetery (b	3,194	148	0	0	0	0	3,342
Subtotal	3,383,242	165	0	0	0	0	3,383,407
Southern California Area							
Antelope Valley-East Kern Water Agency	371,636	2,102	403	1,500	0	0	375,641
Castaic Lake Water Agency	346,978	2,732	2,035	6,000	0	0	357,745
Coachella Valley Water District	14,206	0	0	0	0	0	14,206
Crestline-Lake Arrowhead Water Agency	12,097	0	0	0	0	0	12,097
Desert Water Agency	23,438	0	0	0	0	0	23,438
Littlerock Creek Irrigation District	23,732	0	0	0	0	0	23,732
Mojave Water Agency	70,469	644	43,806	30,000	0	0	144,919
Palmdale Water District	34,173	0	0	0	0	0	34,173
San Bernardino Valley Municipal Water District	792,582	0	0	10,000	0	0	802,582
San Gabriel Valley Municipal Water District	131,052	0	0	0	0	0	131,052
San Gorgonio Pass Water Agency	66,530	0	0	0	0	0	66,530
Metropolitan Water District of Southern California	4,779,958	0	0	0	0	0	4,779,958
Ventura County Flood Control District	79,699	0	0	0	0	0	79,699
Subtotal	6,746,550	5,478	46,244	47,500	0	0	6,845,772
Total	12,076,264	307,865	113,285	150,500	0	0	12,647,914

a) Approximate only, not to be construed as invoice amounts.
b) Not an SWP water supply contractor.
c) Not an SWP water supply contractor but has contracted for water.

C—060172

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TABLE B-9

Capital Costs of Requested Excess Peaking Capacity

Calendar Year	Total Advance Payments and Credits for Excess Capacity (Dollars) (1)	Total Incremental Costs for Excess Capacity (Dollars) (2)	Overpayment (+) or Underpayment (-) (Dollars) (a (3)	Annual Surplus Money Investment Fund Interest Rate (Percentage) (b January–June (4)	July–December (5)	Net Overpayment or Underpayment with Interest (c (6)
			Metropolitan Water District of Southern California			
1965	0	158,000	(158,000)	3.968	4.184	(163,412)
1966	8,056,000	435,800	7,620,200	4.540	5.057	7,701,103
1967	9,094,963	1,878,270	7,216,693	4.815	4.744	15,524,533
1968	1,523,252	2,887,351	(1,364,099)	5.330	5.540	14,959,187
1969	8,310,651	3,059,310	5,251,341	5.946	6.389	21,369,973
1970	3,426,736	2,397,102	1,029,634	7.071	7.125	23,986,083
1971	1,086,045	1,146,648	(60,603)	5.154	5.580	25,238,017
1972	(4,244,807)	487,394	(4,732,201)	4.477	4.977	21,532,965
1973	(15,913,829)	25,041	(15,938,870)	6.023	8.717	6,014,116
1974	0	37,775	(37,775)	9.222	10.351	6,576,393
1975	0	2,085	(2,085)	7.089	6.791	7,038,515
1976	0	0	0	6.048	6.021	7,469,662
1977	0	0	0	5.788	6.182	7,923,403
1978	0	0	0	7.171	8.096	8,539,736
1979	0	0	0	8.979	9.671	9,354,605
1980	0	0	0	11.500	11.500	10,461,314
Total	11,339,011	12,514,776	(1,175,765)	-	-	10,461,314
			San Gabriel Valley Municipal Water District			
1967	0	25,730	(25,730)	4.815	4.744	(26,611)
1968	184,422	44,053	140,369	5.330	5.540	117,587
1969	49,052	38,075	10,977	5.946	6.389	136,751
1970	44,911	17,959	26,952	7.071	7.125	175,186
1971	61,588	5,900	55,688	5.154	5.580	242,927
1972	(20,263)	6,835	(27,098)	4.477	4.977	226,230
1973	(180,465)	0	(180,465)	6.023	8.717	49,198
1974	0	0	0	9.222	10.351	54,130
1975	0	0	0	7.089	6.791	57,952
1976	0	0	0	6.048	6.021	61,501
1977	0	0	0	5.788	6.182	65,237
1978	0	0	0	7.171	8.096	70,312
1979	0	0	0	8.979	9.671	77,021
1980	0	0	0	11.500	11.500	86,133
Total	139,245	138,552	693	-	-	86,133
			Antelope Valley-East Kern Water Agency			
1968	85,495	1,645	83,850	5.330	5.540	86,962
1969	52,625	6,326	46,299	5.946	6.389	140,964
1970	101,648	15,076	86,572	7.071	7.125	243,222
1971	34,062	11,748	22,314	5.154	5.580	279,673
1972	(12,794)	2,018	(14,812)	4.477	4.977	277,552
1973	(205,354)	308	(205,662)	6.023	8.717	77,288
1974	0	96	(96)	9.222	10.351	84,933
1975	0	0	0	7.089	6.791	90,929
1976	0	190	(190)	6.048	6.021	96,300
1977	0	0	0	5.788	6.182	102,150
1978	0	0	0	7.171	8.096	110,096
1979	0	0	0	8.979	9.671	120,601
1980	0	0	0	11.500	11.500	134,869
Total	55,682	37,407	18,275	-	-	134,869

a) Overpayment or underpayment for each calendar year: column (1) minus column (2).
b) Interest rates shown are annual rates. Interest is credited daily at applicable rates on funds deposited in the State's Surplus Money Investment Fund rates on funds deposited in the State's Surplus Money Investment Fund.
c) Amounts shown are end-of-year balances. Interest on overpayments is credited at applicable Surplus Money Investment Fund Interest Rates shown in columns (4) and (5). Interest on underpayments is charged at the 1980 Project Interest Rate of 4.584 percent.

C-060173

TABLE B-9

Capital Costs of Requested Excess Peaking Capacity

(Dollars)

Reach Number	Annual Required Advance of Funds — Incremental Costs and Advance Payments by Calendar Year: 1965 (7)	1966 (8)	1967 (9)	1968 (10)	1969 (11)	1970 (12)	1971 (13)	1972 (14)	1973 (15)	1974 (16)	1975 (17)	1976 (18)	1981 (19)	Reach Total (20)
	Metropolitan Water District of Southern California *Incremental Costs*													
8C		1,000	1,000											2,000
8D		43,500	43,500											87,000
9		27,000	27,000	13,500										67,500
10A		29,700	29,700	14,800										74,200
11B	10,100	18,300	18,300	9,200										55,900
12D	1,800		19,300	25,800	12,900									59,800
12E	1,800		12,400	18,800	10,800									43,800
13B			12,600	37,800	31,600									82,000
14A	2,500	500	11,100	80,216	107,504	124,069	37,519	6,413	381	87				370,289
14B	1,200	1,800		19,100	19,100	12,800								54,000
14C	1,800	900		13,500	13,500	9,000								38,700
15A	700		14,000	66,947	133,357	128,099	54,821	5,327	946	2,076				406,273
16A	700		18,900	137,894	182,000	211,608	133,927	26,203	5,767	6,156				723,155
17E		51,500	444,600	537,247	860,024	998,985	699,281	193,286	17,947	29,456	2,085			3,834,411
17F	109,100	261,600	261,600	261,600	261,600	239,500								1,395,000
25			964,270	1,650,947	1,426,925	673,041	221,100	256,165						5,192,448
28J		304,612	13,706	296,668	65,966	230,169	1,209,586	2,017,134	235,900	4,900				4,378,641
Total	129,700	740,412	1,891,976	3,184,019	3,125,276	2,627,271	2,356,234	2,504,528	260,941	42,675	2,085			16,865,117
	Current Adjustment													
8C through 25	1. Advance payments applied to incremental costs Amendment 2 (d													
	0	8,056,000	9,094,963	1,523,252	8,310,651	3,426,736	1,086,045	(4,244,807)	(14,381,396)				(356,668)	12,514,776
28J	2. Interest credits-Amendment 2 (e													
									(1,532,433)				(10,104,646)	(11,637,079)
	3. Advance payments applied to incremental costs Amendment 5 (f													
	0	1,240,000	1,483,180	2,469,325	(927,035)	1,729,160	3,215,258	2,967,475	1,690,000	(9,488,722)				4,378,641
	4. Interest credits-Amendment 5 (g													
										(2,721,803)				(2,721,803)
	5. Net required advance of funds													
	0	9,296,000	10,578,143	3,992,577	7,383,616	5,155,896	4,301,303	(1,277,332)	(14,233,829)	(12,210,525)			(10,461,314)	2,524,535
	San Gabriel Valley Municipal Water District *Incremental Costs*													
25			25,730	44,053	38,075	17,959	5,900	6,835						138,552
	Total Unadjusted Incremental Costs for Past Payments													
			25,730	44,053	38,075	17,959	5,900	6,835						138,552
	Current Adjustments													
	1. Advance payments applied to incremental costs (d													
			0	184,422	49,052	44,911	61,588	(20,263)	(174,133)				(7,025)	138,552
	2. Interest credit													
									(6,332)				(79,108)	(85,440)
	3. Net required advance of funds												(h	
			0	184,422	49,052	44,911	61,588	(20,263)	(180,465)				(86,133)	53,112
	Antelope Valley-East Kern Water Agency *Incremental Costs*													
29A				1,645	6,326	13,376	10,048	2,018	308	96		190		34,007
29F						1,700	1,700							3,400
	Total Unadjusted Incremental Costs for Past Payments													
				1,645	6,326	15,076	11,748	2,018	308	96		190		37,407
	Current Adjustment													
	1. Advance payments applied to incremental costs (d													
				85,495	52,625	101,648	34,062	(12,794)	(189,120)	0		0	(34,509)	37,407
	2. Interest credit													
									(16,234)				(100,360)	(116,594)
	3. Net required advance of funds												(h	
				85,495	52,625	101,648	34,062	(12,794)	(205,354)	0		0	(134,869)	(79,187)d)

d) Actual payments are shown for 1965 through 1976 with 1981 adjusted to reflect overpayments and underpayments without interest for prior years.
e) Interest for overpayments and underpayments under provisions of Amendment 2 of the contract.
f) Actual payments are shown for 1965 through 1973 with 1974 adjusted to reflect overpayments and underpayments without interest for prior years.
g) Interest for overpayments and underpayments under provisions of Amendment 5 of the contract.
h) Amounts in excess of incremental costs, under the provisions of the contract, reduce the Transportation Charge capital cost component of the agency's Statement of Charges for January 1981.

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	Upper Feather Division (1)	North Bay Aqueduct Reach 1 (2)	Reach 2 (3)	Reach 3A (4)	Reach 3B (5)	Total (6)	South Bay Aqueduct Reach 1 (7)	Reach 2 (8)	Reach 4 (9)	Reach 5 (10)
1952	0	0	0	0	0	0	97	34	30	57
1953	0	0	0	0	0	0	477	166	144	297
1954	0	0	0	0	0	0	1,466	508	437	959
1955	0	0	0	0	0	0	1,944	674	560	1,266
1956	0	0	0	0	0	0	18,789	6,515	5,090	12,545
1957	0	13,290	3,391	0	9,953	26,634	45,090	15,639	12,285	33,218
1958	2	19,202	5,011	0	25,798	50,011	195,985	80,961	7,714	21,930
1959	14	7,517	2,118	0	17,653	27,288	496,140	148,516	24,945	17,118
1960	28	8,797	4,292	0	4,838	17,927	1,130,378	67,351	71,779	68,028
1961	10	1,551	10,318	0	2,526	14,395	3,273,247	180,596	307,885	74,398
1962	32	217	(1,751)	0	414	(1,120)	1,548,884	203,535	695,446	35,102
1963	51	2,510	(1,063)	0	983	2,430	480,716	69,182	2,284,291	206,587
1964	7,791	39,879	12,046	0	21,934	73,859	2,549,118	15,903	181,900	264,410
1965	3,139	72,793	17,900	0	170,361	261,054	807,505	153,454	85,425	447,830
1966	(48)	59,615	12,972	0	438,949	511,536	898,074	149,529	142,096	1,690,200
1967	47	47,257	11,597	0	1,551,023	1,609,877	607,614	50,423	293,304	3,496,284
1968	51,573	70,586	19,560	0	831,158	921,304	965,119	19,543	89,300	2,931,101
1969	234,232	63,650	23,628	0	46,428	133,706	455,173	9,618	3,860	896,727
1970	16,227	59,090	42,733	0	9,415	111,238	52,481	3,380	10,517	154,358
1971	27,204	20,819	31,516	0	8,480	60,815	24,505	4,645	5,035	20,395
1972	9	15,538	12,952	0	10,058	38,548	26,918	825	2,945	26,090
1973	25	18,488	29,018	0	39,878	87,384	24,468	4,010	6,016	12,708
1974	45	67,352	29,978	0	134,332	231,662	17,108	1,192	1,765	65,587
1975	21	62,855	73,112	0	45,091	181,058	57,619	561	1,165	7,291
1976	51	52,419	75,611	218	13,168	141,416	104,242	2,846	8,915	12,701
1977	28	53,274	65,662	2,240	23,138	144,314	176,062	3,625	3,225	16,158
1978	38	61,936	57,158	2,955	28,987	151,036	264,581	4,494	3,668	14,028
1979	23	316,620	91,367	3,953	62,240	474,180	111,106	17,151	8,515	31,725
1980	26	422,804	111,600	19,910	96,125	650,439	368,942	17,708	8,249	38,045
1981	34	430,990	147,295	(10,753)	43,149	610,681	(145,507)	3,589	6,520	12,431
1982	11	934,809	357,720	(7,166)	132,141	1,417,504	(58,468)	17,110	4,427	36,037
1983	19	1,091,091	1,076,627	2,627	517,214	2,687,559	419,518	73,118	34,721	71,033
1984	26	1,875,950	2,317,661	3,282	1,068,350	5,265,243	506,811	36,354	9,609	92,842
1985	29	2,248,491	7,849,886	27,815	3,415,897	13,542,089	29,711	2,168	4,018	26,752
1986	31	16,420,259	10,020,277	1,309,608	1,819,382	29,569,526	86,057	14,745	17,176	14,007
1987	32	11,873,772	7,214,307	1,628,901	1,671,275	22,388,255	130,195	16,285	29,310	33,908
1988	56	3,287,508	1,648,498	1,013,365	686,961	6,636,332	286,930	35,266	51,173	24,056
1989	63	1,061,257	953,749	293,464	377,916	2,686,386	151,298	18,897	39,567	13,336
1990	88	500,117	541,710	234,254	75,517	1,351,598	177,554	28,782	91,558	38,200
1991	77	82,243	20,576	88,467	74,198	265,484	130,031	16,776	27,686	17,049
1992	69	59,231	8,420	84,032	38,223	189,906	120,604	8,143	11,603	24,789
1993	0	159,000	2,000	0	44,910	205,910	5,521	4,743	4,112	4,312
1994	0	807,000	1,000	0	282,184	1,090,184	4,090	4,846	1,849	3,837
1995	0	562,000	1,000	0	1,931	564,931	3,496	4,266	2,242	3,707
1996	0	3,000	1,000	0	1,000	5,000	4,000	4,000	2,000	3,780
1997	0	3,000	1,000	0	1,000	5,000	4,000	2,000	2,000	2,016
1998	0	1,000	0	0	1,000	2,000	3,000	0	1,000	252
1999	0	0	0	0	0	0	1,000	0	0	252
2000	0	0	0	0	0	0	0	0	0	0
Total	341,103	42,958,777	32,903,452	4,697,172	13,845,178	94,404,579	16,563,689	1,523,672	4,607,077	11,019,739

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

	South Bay Aqueduct (continued)					California Aqueduct North San Joaquin Division			
Calendar Year	Reach 6 (11)	Reach 7 (12)	Reach 8 (13)	Reach 9 (14)	Total (15)	Reach 1 (16)	Reach 2A (17)	Reach 2B (18)	Subtotal (19)
1952	8	66	72	132	496	4,012	3,279	1,499	8,790
1953	38	327	336	640	2,425	10,559	8,589	3,964	23,112
1954	123	1,005	1,003	1,954	7,455	13,796	11,163	5,179	30,138
1955	160	1,293	1,149	2,454	9,500	7,370	5,952	2,760	16,082
1956	1,559	11,959	11,043	28,372	95,872	9,880	5,020	2,398	17,298
1957	3,659	28,675	27,385	563,114	729,065	11,953	5,456	2,612	20,021
1958	2,243	17,872	17,385	560,904	904,994	18,585	17,191	7,994	43,770
1959	357	3,200	3,568	149,874	843,718	123,170	100,306	45,510	268,986
1960	1,102	2,944	4,498	359,749	1,705,829	191,408	102,136	48,968	342,512
1961	4,726	18,325	22,765	(1,367)	3,880,575	153,765	195,947	42,843	392,555
1962	17,295	160,939	178,242	209,042	3,048,485	612,258	491,225	168,218	1,271,701
1963	265,414	1,250,386	939,832	129,902	5,626,310	1,993,284	1,525,734	684,095	4,203,113
1964	100,603	1,716,371	2,327,770	2,947,522	10,103,597	4,674,280	2,369,858	700,074	7,744,212
1965	42,345	368,476	637,266	1,921,844	4,464,145	5,877,189	6,873,699	2,975,719	15,726,607
1966	17,663	34,915	140,350	777,887	3,850,714	8,553,362	14,112,820	5,677,099	28,343,281
1967	(41,567)	137,856	147,183	379,764	5,070,861	9,678,607	10,672,113	6,646,739	26,997,459
1968	84,553	2,130	68,057	253,152	4,412,955	6,392,664	891,681	1,303,186	8,587,531
1969	4,279	11,572	162,300	32,000	1,575,529	3,542,767	792,259	443,924	4,778,950
1970	2,487	6,820	20,086	(15,718)	234,411	2,236,607	149,692	115,578	2,501,877
1971	4,350	6,923	17,750	39,084	122,687	98,138	215,512	69,410	383,060
1972	1,084	203	4,800	32,199	95,064	159,608	43,721	7,744	211,073
1973	288	989	7,449	9,693	65,621	105,581	25,496	22,418	153,495
1974	527	6,020	30,628	11,433	134,260	177,700	16,627	45,707	240,034
1975	126	679	1,086	3,464	71,991	239,144	14,680	169,676	423,500
1976	701	3,529	8,362	26,186	167,482	641,860	45,533	65,943	753,336
1977	270	1,310	8,651	24,938	234,239	274,381	20,283	22,568	317,232
1978	231	1,204	1,631	17,123	306,960	801,265	36,221	9,714	847,200
1979	1,367	1,721	2,134	7,322	181,041	1,051,792	59,695	26,106	1,137,593
1980	1,321	1,718	2,182	7,102	445,267	4,173,603	96,760	38,789	4,309,152
1981	308	1,461	1,397	5,070	(114,731)	(503,289)	1,487,444	191,320	1,175,475
1982	670	1,286	1,352	3,701	6,115	665,079	38,356	19,274	722,709
1983	377	5,233	7,446	21,341	632,787	679,002	77,066	250,189	1,006,257
1984	269	1,853	1,667	13,299	662,704	1,557,914	41,349	48,477	1,647,740
1985	376	1,547	2,028	6,158	72,758	666,253	22,058	63,633	751,944
1986	1,121	2,750	3,320	12,270	151,446	401,075	63,935	35,458	500,468
1987	1,555	3,163	3,681	23,116	241,213	816,208	92,997	43,219	952,424
1988	5,743	6,706	7,631	32,978	450,483	2,926,671	(127,570)	(59,896)	2,739,205
1989	3,261	4,517	5,475	16,214	252,565	7,053,636	358,037	174,698	7,586,371
1990	5,983	20,692	37,560	85,345	485,674	13,387,634	113,697	2,396,927	15,898,258
1991	2,994	5,992	8,544	24,228	233,300	13,645,525	130,269	78,429	13,854,223
1992	1,448	2,493	2,999	8,101	180,180	6,048,098	80,157	41,804	6,170,059
1993	1,052	1,874	3,174	5,695	30,483	3,437,480	15,864	4,847	3,458,191
1994	520	1,366	846	2,358	19,712	3,437,330	8,257	2,602	3,448,189
1995	656	57	1,750	2,306	18,480	2,295,042	8,577	2,759	2,306,378
1996	0	1,000	2,000	3,000	19,780	2,276,234	7,998	2,666	2,286,898
1997	0	1,000	2,000	3,000	16,016	9,332	7,998	2,666	19,996
1998	0	0	0	1,000	5,252	8,665	3,999	1,333	13,997
1999	0	0	0	1,000	2,252	3,333	1,333	667	5,333
2000	0	0	0	0	0	0	0	0	0
Total	543,645	3,862,417	4,887,833	8,749,945	51,758,017	110,639,810	41,340,469	22,657,506	174,637,785

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	San Luis Division						South San Joaquin Division		
Calendar Year	Reach 3 (20)	Reach 4 (21)	Reach 5 (22)	Reach 6 (23)	Reach 7 (24)	Subtotal (25)	Reach 8C (26)	Reach 8D (27)	Reach 9 (28)
1952	2,492	3,549	3,987	1,010	1,390	12,428	13	727	1,109
1953	6,999	10,144	10,986	2,834	3,869	34,832	45	2,671	4,185
1954	8,704	12,545	13,693	3,520	4,766	43,228	50	2,719	4,026
1955	4,273	6,055	6,813	1,728	2,325	21,194	19	888	1,100
1956	3,295	5,600	5,857	1,445	3,556	19,753	98	3,850	4,376
1957	3,543	6,115	6,357	1,565	3,998	21,578	234	10,604	13,209
1958	11,927	19,393	22,037	5,509	7,512	66,378	375	19,033	25,073
1959	21,979	37,358	39,689	9,813	19,679	128,518	436	20,578	25,697
1960	207,025	45,419	41,044	12,074	37,633	343,195	1,673	44,565	25,290
1961	184,443	292,639	170,559	38,338	70,068	756,047	3,949	75,726	30,852
1962	495,836	549,984	252,698	22,397	26,967	1,347,882	6,131	159,481	62,375
1963	2,772,189	2,034,351	2,498,712	66,353	30,647	7,402,252	5,861	161,252	81,343
1964	4,348,311	4,932,301	1,053,227	161,422	251,461	10,746,722	4,014	90,622	117,907
1965	3,860,997	5,688,252	2,869,931	1,072,111	667,768	14,159,059	15,049	491,042	564,036
1966	2,312,372	8,527,843	5,765,798	4,230,221	7,708,334	28,544,568	201,274	5,197,322	2,539,278
1967	(44,527)	2,062,305	6,942,522	222,885	6,675,398	15,858,583	212,285	4,982,844	3,363,650
1968	119,884	395,689	973,956	179,917	461,031	2,130,477	64,234	611,192	940,074
1969	(6,065)	126,946	98,492	107,486	160,668	487,527	58,960	116,146	85,130
1970	32,387	(20,243)	105,385	(827,457)	1,215,966	506,038	23,011	106,810	84,116
1971	99,945	230,624	305,227	26,995	341,010	1,003,801	8,813	33,099	23,088
1972	15,990	90,852	17,053	14,621	281,343	419,859	10,818	13,349	16,603
1973	6,753	103,707	41,549	13,810	41,427	207,246	5,145	11,089	13,249
1974	6,618	117,165	55,978	16,199	71,796	267,756	5,434	24,433	16,567
1975	18,921	107,275	23,671	8,797	152,574	311,238	5,424	15,960	12,966
1976	17,485	79,554	13,041	5,138	41,687	156,905	19,931	76,280	62,164
1977	35,707	84,669	9,412	4,028	9,655	143,471	21,096	70,005	97,952
1978	8,539	428,395	7,006	3,536	6,994	454,470	7,584	40,453	17,395
1979	(35,394)	543,225	19,463	9,485	(242,253)	294,526	10,474	6,181	6,227
1980	66,622	3,450,695	191,307	75,209	185,384	3,969,217	2,158	17,492	17,706
1981	29,063	(2,245,599)	(40,600)	(14,268)	855,592	(1,415,812)	1,145	9,667	9,527
1982	95,242	(1,640,670)	14,989	7,561	3,491,470	1,968,592	1,678	4,945	4,208
1983	71,935	19,960	6,781	4,661	1,785,162	1,888,499	7,532	10,483	9,149
1984	31,747	85,682	26,711	12,753	3,053,651	3,210,544	26,489	10,111	6,267
1985	50,691	46,485	11,465	6,027	571,106	685,774	6,891	8,583	6,720
1986	74,019	203,291	50,729	19,256	1,282,827	1,630,122	8,909	25,068	20,549
1987	(6,044)	127,112	42,869	17,460	520,919	702,316	13,124	20,314	57,441
1988	(150,749)	217,731	(408,263)	(138,101)	920,765	441,383	9,938	(119,416)	(61,290)
1989	44,075	628,431	239,638	83,572	598,783	1,594,499	7,091	98,562	282,907
1990	25,174	198,141	71,775	28,199	461,545	784,834	7,887	47,672	2,014,332
1991	4,910,798	257,676	78,630	30,284	493,484	5,770,872	7,077	48,881	37,771
1992	(804,584)	315,984	64,586	24,593	238,867	(160,554)	3,673	28,751	20,699
1993	9,060	29,485	15,699	5,564	8,500	68,308	(55)	5,267	5,681
1994	4,718	14,423	8,117	2,876	4,665	34,799	695	3,726	3,326
1995	4,157	13,368	7,153	3,122	4,658	32,458	323	3,261	3,069
1996	4,231	13,202	7,544	2,829	3,772	31,578	0	2,829	2,829
1997	4,231	13,202	7,544	2,829	3,772	31,578	0	2,829	2,829
1998	2,116	10,373	2,829	943	1,886	18,147	0	1,886	943
1999	705	3,772	943	943	943	7,306	0	943	943
2000	0	0	0	0	0	0	0	0	0
Total	18,987,835	28,284,455	21,774,589	5,592,092	32,545,020	107,183,991	796,985	12,620,775	10,684,643

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued) South San Joaquin Division (continued) Reach 10A (29)	Reach 11B (30)	Reach 12D (31)	Reach 12E (32)	Reach 13B (33)	Reach 14A (34)	Reach 14B (35)	Reach 14C (36)	Reach 15A (37)
1952	695	1,279	1,980	995	1,663	794	212	212	1,911
1953	2,569	4,790	7,480	3,745	6,236	2,599	733	741	7,016
1954	2,821	4,855	7,565	3,792	6,319	2,880	810	817	7,073
1955	1,097	1,557	2,404	1,211	2,025	1,183	325	327	2,253
1956	4,428	6,223	9,233	4,737	8,054	7,026	1,638	1,584	9,939
1957	13,269	18,772	29,082	14,615	24,411	15,651	3,834	3,864	26,871
1958	25,086	48,191	78,564	39,087	61,715	33,726	12,330	11,813	49,499
1959	25,787	67,246	107,781	53,836	86,478	64,824	22,102	21,828	70,838
1960	47,492	66,317	77,936	39,867	63,517	84,363	23,260	22,305	73,305
1961	68,505	46,073	88,274	51,457	28,015	242,753	91,290	65,565	150,205
1962	57,705	56,056	69,189	44,851	49,179	208,180	61,489	47,608	133,653
1963	52,585	91,914	173,985	86,405	67,733	425,626	104,436	77,970	102,072
1964	124,014	333,621	291,013	174,469	86,271	1,093,795	684,005	485,033	571,173
1965	622,257	1,053,029	1,524,848	1,044,851	196,487	3,385,205	1,655,024	1,436,258	476,830
1966	2,800,056	3,709,779	673,429	466,228	418,141	4,916,319	974,862	724,354	1,829,852
1967	3,652,342	4,636,627	1,881,333	1,244,265	1,238,428	2,788,299	525,653	400,183	1,721,304
1968	1,025,969	1,323,302	4,726,074	3,145,775	8,343,706	10,210,266	1,330,361	1,405,117	7,522,015
1969	145,111	229,185	706,272	529,080	3,704,065	15,112,041	1,223,457	1,134,395	9,523,012
1970	74,366	85,151	70,725	72,798	320,797	11,031,255	987,213	738,955	8,836,897
1971	15,595	45,006	43,988	42,624	339,078	2,925,191	193,255	36,514	3,275,227
1972	19,736	32,657	43,939	24,748	81,937	1,388,348	101,784	20,165	1,003,380
1973	14,283	16,448	9,980	16,320	25,090	680,834	19,584	13,469	798,805
1974	22,111	14,951	19,555	32,240	29,582	524,504	30,735	16,333	778,696
1975	15,865	13,479	10,793	13,678	25,827	269,197	25,164	21,048	370,265
1976	76,202	54,217	37,464	59,842	105,332	507,519	59,753	42,776	434,574
1977	75,628	52,919	22,826	54,444	81,293	301,515	49,972	30,152	235,514
1978	48,754	16,469	(2,816)	27,331	43,126	348,674	(653)	1,500	297,817
1979	241	6,906	13,401	14,229	25,411	293,786	9,846	7,856	245,590
1980	18,165	18,813	15,608	27,498	34,190	1,676,267	29,169	23,023	1,719,775
1981	10,290	15,324	28,246	21,872	25,503	(1,074,746)	28,974	34,604	(1,142,519)
1982	4,998	4,720	6,062	5,698	13,728	(765,128)	7,425	28,895	(824,559)
1983	11,779	8,644	13,203	11,327	33,879	405,749	15,572	23,066	101,961
1984	7,532	29,138	93,958	52,372	22,731	59,527	80,334	66,263	64,128
1985	7,985	6,247	4,730	7,000	7,987	(57,058)	8,523	5,030	47,797
1986	22,370	16,817	16,558	25,328	20,512	142,172	26,414	14,214	155,244
1987	18,243	14,663	13,426	21,576	16,354	110,532	22,127	9,496	236,505
1988	(159,576)	(73,942)	(151,345)	(52,073)	(119,730)	151,142	(75,516)	(75,073)	137,062
1989	75,078	68,512	66,261	125,484	79,653	2,802,138	123,916	40,917	2,977,375
1990	35,682	28,380	25,935	44,336	40,201	407,853	42,435	19,769	369,388
1991	37,961	30,234	27,153	46,629	39,151	215,123	46,213	19,205	185,459
1992	21,315	18,209	16,386	27,301	24,526	254,326	27,574	10,363	215,301
1993	6,257	3,104	5,812	4,090	5,084	14,896	4,074	2,968	10,753
1994	3,732	2,011	3,417	1,482	2,241	8,221	2,221	2,271	5,857
1995	3,151	1,883	3,167	1,481	3,188	7,718	2,704	1,561	5,325
1996	3,772	1,886	2,829	1,886	2,829	7,544	1,886	1,886	5,658
1997	3,772	1,886	2,829	1,886	2,829	7,544	2,829	1,886	5,658
1998	1,886	943	943	943	943	6,601	943	943	4,715
1999	943	0	0	0	0	1,886	0	0	1,886
2000	0	0	0	0	0	0	0	0	0
Total	9,169,904	12,234,491	10,921,475	7,683,636	15,725,715	61,248,660	8,590,291	7,000,029	42,838,355

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	South San Joaquin (continued)		Tehachapi Division			Mojave Division			
Calendar Year	Reach 16A (38)	Subtotal (39)	Reach 17E (40)	Reach 17F (41)	Subtotal (42)	Reach 18A (43)	Reach 19 (44)	Reach 19C (45)	Reach 20A (46)
1952	4,440	16,030	9,703	4,072	13,775	4,090	1,520	0	2,561
1953	16,513	59,323	31,337	13,284	44,621	12,610	4,685	0	7,246
1954	16,601	60,328	46,243	20,010	66,253	16,642	6,184	0	9,506
1955	5,223	19,612	25,880	11,362	37,242	5,612	2,086	0	2,529
1956	21,754	82,940	47,487	17,609	65,096	6,038	2,244	0	2,440
1957	62,657	237,073	119,673	49,130	168,803	22,348	8,304	0	9,035
1958	133,083	537,575	164,056	72,091	236,147	37,917	14,166	123	15,391
1959	205,748	773,179	151,389	57,883	209,272	38,620	23,450	1,102	23,605
1960	204,788	774,678	203,222	45,323	248,545	21,356	26,093	5,318	40,523
1961	206,305	1,148,969	387,819	85,558	473,377	35,664	32,281	2,262	34,918
1962	171,396	1,127,293	353,119	82,610	435,729	68,508	266,284	1,841	10,323
1963	481,941	1,913,123	1,191,633	124,757	1,316,390	37,379	435,881	4,137	39,706
1964	1,778,952	5,834,889	1,866,000	775,005	2,641,005	95,693	706,369	8,564	43,342
1965	1,268,176	13,733,092	2,574,824	2,284,869	4,859,693	121,060	716,092	9,156	108,519
1966	2,896,274	27,347,168	5,537,412	9,323,517	14,860,929	366,116	1,644,699	13,373	159,282
1967	3,442,021	30,089,234	26,239,390	12,398,708	38,638,098	1,312,022	903,880	24,103	645,078
1968	7,578,498	48,226,583	33,363,479	7,416,464	40,779,943	136,804	7,109,653	71,388	1,889,601
1969	13,136,056	45,702,910	40,368,425	6,883,206	47,251,631	213,805	2,465,641	7,423	5,939,151
1970	13,890,751	36,322,845	35,446,706	6,786,231	42,232,937	2,211,077	1,210,665	6,217	3,652,478
1971	7,903,937	14,885,415	20,141,395	6,835,303	26,976,698	1,496,843	284,738	6,994	1,074,759
1972	3,025,555	5,783,019	10,002,935	34,791	10,037,726	129,417	409,903	3,620	471,963
1973	1,472,313	3,096,609	3,090,140	36,207	3,126,347	23,931	75,638	2,539	88,416
1974	1,031,843	2,546,984	4,798,348	152,494	4,950,842	28,399	205,581	2,703	138,673
1975	489,545	1,289,211	2,144,178	411,404	2,555,582	44,774	70,652	5,066	68,157
1976	618,049	2,154,103	1,124,357	174,629	1,298,986	121,043	84,593	6,786	59,967
1977	580,209	1,673,525	655,047	31,512	686,559	261,400	133,767	7,521	117,878
1978	582,775	1,428,409	1,900,843	27,956	1,928,799	553,014	57,150	5,872	51,615
1979	542,554	1,182,702	2,099,385	61,381	2,160,766	633,284	339,536	10,831	37,085
1980	3,772,498	7,372,362	17,433,610	6,046	17,439,656	1,141,829	1,073,430	3,604	308,188
1981	(2,526,431)	(4,558,544)	(3,849,053)	6,903	(3,842,150)	1,226,508	845,669	4,498	48,603
1982	(1,881,096)	(3,388,426)	11,315,758	5,317	11,321,075	7,050,992	741,321	3,920	30,521
1983	145,222	797,566	8,827,373	7,322	8,834,695	11,037,158	61,202	2,596	37,390
1984	121,549	640,399	3,222,288	31,701	3,253,989	8,382,266	309,489	3,124	17,504
1985	71,876	132,311	1,910,128	10,029	1,920,157	5,268,796	170,934	3,885	(2,126)
1986	188,772	682,927	1,388,862	33,801	1,422,663	2,093,857	1,636,508	4,261	2,346,877
1987	205,957	759,758	690,433	14,161	704,594	1,352,385	822,305	4,684	(580,396)
1988	253,263	(336,556)	1,399,724	(49,699)	1,350,025	847,759	(88,803)	13,409	(396,726)
1989	5,992,295	12,740,189	594,215	65,909	660,124	383,377	231,915	50,946	1,794,906
1990	560,838	3,644,708	793,004	26,234	819,238	153,400	(392,606)	35,291	(495,897)
1991	597,939	1,338,796	631,963	30,880	662,843	179,223	(113,941)	80,379	(193,026)
1992	298,179	966,603	553,031	25,513	578,544	478,960	223,441	82,368	150,442
1993	15,861	83,792	17,896	2,779	20,675	1,646,894	3,370	0	1,849
1994	9,534	48,734	12,177	1,531	13,708	1,527	3,342	0	2,787
1995	9,414	46,245	10,855	1,123	11,978	974	2,814	0	1,789
1996	9,430	45,264	11,316	943	12,259	943	2,829	0	2,829
1997	9,430	46,207	11,316	943	12,259	943	2,829	0	2,829
1998	7,544	29,233	10,373	0	10,373	943	943	0	943
1999	1,886	8,487	3,772	0	3,772	943	0	0	0
2000	0	0	0	0	0	0	0	0	0
Total	69,631,917	269,146,876	239,073,466	54,438,802	293,512,268	49,305,143	22,778,726	499,904	17,823,033

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	Mojave Division (continued)							Santa Ana Division	
Calendar Year	Reach 20B (47)	Reach 21 (48)	Reach 22A (49)	Reach 22B (50)	Reach 23 (51)	Reach 24 (52)	Subtotal (53)	Reach 25 (54)	Reach 26A (55)
1952	892	5,788	35	2,013	2,074	2,413	21,386	3,334	5,599
1953	3,402	17,846	71	5,752	6,886	7,438	65,936	10,275	17,264
1954	4,548	23,558	369	8,560	7,849	9,820	87,036	13,566	22,790
1955	2,213	7,947	178	2,754	2,725	3,313	29,357	4,575	7,687
1956	2,655	8,542	216	2,905	2,961	3,561	31,562	4,917	8,264
1957	9,826	31,616	800	10,757	10,962	13,177	116,825	18,205	30,586
1958	16,752	53,569	1,397	18,717	18,578	22,627	199,237	31,001	52,019
1959	18,604	56,724	1,844	25,421	20,372	45,646	255,388	39,325	58,137
1960	37,179	43,893	11,029	136,751	17,152	109,816	449,110	65,655	93,700
1961	37,102	21,532	14,517	215,859	9,546	373,473	777,154	26,979	56,734
1962	10,730	8,197	4,186	164,168	4,336	279,421	817,994	9,964	36,235
1963	40,865	26,670	17,081	237,695	7,228	358,503	1,205,145	31,013	112,271
1964	71,116	33,912	22,793	262,996	6,863	244,003	1,495,651	69,669	202,642
1965	343,506	91,095	65,689	827,655	11,836	621,566	2,916,174	279,237	206,356
1966	1,311,628	160,388	178,538	1,746,245	31,078	1,018,628	6,629,975	415,066	364,004
1967	1,718,942	498,257	367,961	3,146,128	62,135	2,331,106	11,009,612	3,184,296	638,539
1968	2,291,691	1,141,929	1,145,768	4,588,850	102,207	2,600,293	21,078,184	8,264,126	1,268,194
1969	5,626,284	2,358,737	1,515,147	7,750,478	260,659	11,131,406	37,268,731	6,807,783	1,768,456
1970	5,304,372	3,232,911	2,081,810	23,451,612	1,240,798	16,885,193	59,277,133	2,169,051	7,229,429
1971	1,091,123	825,070	432,464	16,772,680	1,922,115	5,385,721	29,292,507	1,135,248	9,811,736
1972	635,507	484,772	324,865	3,788,894	48,049	788,479	7,085,469	1,095,740	5,528,987
1973	83,840	63,774	36,179	1,623,274	24,333	4,225,877	6,247,801	136,994	1,810,729
1974	118,639	103,545	54,198	5,699,605	130,567	766,562	7,248,472	68,180	1,922,999
1975	169,294	167,240	19,453	4,793,580	19,467	373,783	5,731,466	166,653	3,787,797
1976	102,909	44,896	24,732	3,103,916	84,188	204,705	3,837,735	475,176	1,494,750
1977	120,160	71,389	49,445	1,654,122	60,112	232,230	2,708,024	76,255	776,085
1978	68,838	32,855	18,183	677,448	36,484	210,198	1,711,657	57,463	131,076
1979	36,225	18,948	10,675	560,506	10,634	103,615	1,761,339	29,960	80,482
1980	284,545	133,526	121,171	2,239,224	64,447	559,963	5,929,927	31,462	181,638
1981	32,194	13,211	6,458	(774,874)	160,853	203,929	1,767,049	5,861	68,934
1982	74,087	10,928	12,990	395,842	434,572	73,079	8,828,252	8,887	139,927
1983	55,818	23,930	9,098	424,785	2,198,900	51,334	13,902,211	4,155	514,813
1984	35,377	845,422	6,052	(38,997)	1,369,400	34,762	10,964,399	3,850	270,448
1985	(278,992)	(523,357)	1,984,973	492,616	973,830	49,530	8,140,089	5,265	91,233
1986	(2,091,411)	(1,449,149)	3,328,869	(1,781,545)	235,603	52,078	4,375,948	9,928	233,350
1987	(1,570,005)	(1,416,235)	67,841	(437,700)	161,570	93,979	(1,501,572)	4,954	270,639
1988	(405,888)	(367,838)	353,978	8,862,995	600,410	198,308	9,617,604	7,387	675,805
1989	1,898,563	2,208,236	541,691	5,152,027	1,579,168	445,234	14,286,063	8,579	190,150
1990	(329,360)	(476,528)	(84,594)	5,702,088	1,568,191	352,226	6,032,211	177,658	186,261
1991	(111,636)	(176,560)	(36,637)	12,586,877	3,949,049	106,186	16,269,914	201,804	283,861
1992	170,048	117,103	50,055	5,413,054	9,252,584	134,116	16,072,171	348,222	(1,000,605)
1993	1,854	24,922	1,211	1,377,637	17,763,954	2,026	20,823,717	1,360,192	4,491
1994	2,118	(21,522)	1,250	12,940	5,750,609	2,505	5,755,556	1,216,311	3,930
1995	1,937	1,475	1,006	12,605	1,237,802	2,514	1,262,916	9,625,063	3,841
1996	1,886	1,886	943	12,259	943	1,886	26,404	13,101,099	3,772
1997	1,886	1,886	943	13,202	943	1,886	27,347	4,472,649	3,772
1998	943	943	0	6,601	0	1,886	13,202	0	3,772
1999	0	0	0	1,886	0	943	3,772	0	943
2000	0	0	0	0	0	0	0	0	0
Total	17,052,806	8,587,879	12,766,921	120,952,863	51,465,022	50,720,943	351,953,240	55,283,032	39,654,522

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	Santa Ana Division (continued)				West Branch				
Calendar Year	Reach 28G (a (56)	Reach 28H (57)	Reach 28J (58)	Subtotal (59)	Reach 29A (60)	Reach 29F (61)	Reach 29G (62)	Reach 29H (63)	Reach 29J (64)
1952	4,785	4,055	3,020	20,793	2,924	136	175	459	553
1953	15,580	11,511	9,476	64,106	9,093	344	237	1,754	1,683
1954	18,015	18,100	12,160	84,631	7,389	1,201	2,229	2,350	4,162
1955	6,052	6,081	4,151	28,546	1,019	585	1,086	1,147	2,029
1956	6,496	6,525	4,480	30,682	490	698	1,297	1,366	2,420
1957	24,044	24,156	16,585	113,576	1,809	2,583	4,792	5,057	8,952
1958	40,844	41,033	28,470	193,367	3,256	4,516	8,714	8,878	15,847
1959	45,746	45,946	44,331	233,485	7,953	9,150	19,414	18,243	35,583
1960	59,102	58,548	118,969	395,974	21,753	14,990	34,447	29,764	69,752
1961	32,226	34,382	674,787	825,108	22,442	12,775	21,559	20,086	39,761
1962	21,383	20,530	47,484	135,596	40,237	28,729	86,938	58,215	108,962
1963	43,884	41,698	1,506,440	1,735,306	91,959	69,162	163,347	110,015	211,592
1964	89,710	45,762	98,569	506,352	150,670	66,420	207,977	143,340	291,404
1965	96,956	76,899	146,095	805,543	361,811	77,914	403,115	127,430	589,638
1966	170,878	308,756	589,107	1,847,811	489,512	203,497	1,233,640	348,918	3,231,797
1967	233,968	283,126	987,832	5,327,761	1,589,715	882,096	1,117,243	891,607	31,088,491
1968	871,337	266,295	780,587	11,450,539	3,899,363	300,921	396,190	1,104,832	36,157,768
1969	1,117,873	1,444,654	756,442	11,895,208	6,592,580	336,480	693,348	1,184,454	9,655,871
1970	1,843,621	1,013,468	2,829,523	15,085,092	7,986,733	6,089,401	2,624,747	3,002,968	8,463,475
1971	16,095,702	6,401,303	12,111,623	45,555,612	4,247,037	3,768,699	1,120,231	8,244,651	5,844,024
1972	1,537,880	11,960,791	21,542,747	41,666,145	1,871,831	426,932	985,512	18,787,722	(23,015,734)
1973	209,664	247,769	3,673,344	6,078,500	775,824	168,064	399,856	9,408,706	1,821,206
1974	162,178	101,638	1,980,991	4,235,986	560,657	168,878	169,717	3,901,261	(3,454,239)
1975	157,365	124,399	1,626,274	5,862,488	353,670	421,176	925,693	664,113	609,891
1976	178,287	118,748	1,497,465	3,764,426	396,809	650,417	1,274,484	706,244	650,209
1977	127,106	89,036	323,091	1,391,573	419,901	3,018,637	2,152,961	196,012	1,135,148
1978	147,112	153,867	347,482	837,000	1,427,190	2,219,135	6,694,615	57,817	149,932
1979	29,723	19,225	225,947	385,337	940,013	2,168,382	19,813,742	597,858	331,313
1980	137,833	154,821	1,077,900	1,583,654	1,276,793	4,108,143	24,537,814	550,337	204,751
1981	28,804	22,647	61,323	187,569	(711,933)	2,699,859	19,806,507	94,795	28,838
1982	13,697	57,386	37,860	257,757	(488,222)	348,325	17,953,359	188,981	40,158
1983	16,051	88,515	(269,781)	353,753	85,883	179,938	7,081,245	215,277	21,801
1984	14,461	12,258	49,544	350,561	71,301	68,930	2,870,253	335,941	17,284
1985	17,008	10,954	49,394	173,854	134,003	24,204	2,124,995	95,971	21,231
1986	31,591	25,059	86,862	386,790	134,675	62,315	274,916	142,077	36,194
1987	17,946	8,651	48,965	351,155	22,418	454,828	719,579	194,455	28,225
1988	42,053	21,254	91,333	837,832	429,443	107,112	1,656,649	204,589	96,463
1989	33,043	15,522	63,294	310,588	246,787	421,082	595,082	263,948	106,060
1990	32,723	16,659	66,121	479,422	185,151	269,904	335,356	829,980	67,079
1991	147,442	20,194	79,047	732,348	191,388	59,885	378,796	1,100,266	67,681
1992	37,603	16,523	73,158	(525,099)	201,638	69,439	377,227	4,478,230	59,078
1993	1,854	1,876	3,185	1,371,598	5,649	1,401	1,928,973	1,025,274	1,239
1994	2,458	2,660	3,285	1,228,644	4,796	1,715	7,864,038	1,980	1,767
1995	2,808	1,880	2,837	9,636,429	4,230	1,591	1,870	2,521	1,392
1996	1,886	1,886	2,829	13,111,472	4,715	1,886	2,829	2,829	1,886
1997	1,886	1,886	2,829	4,483,022	4,715	1,886	2,829	2,829	1,886
1998	0	0	2,829	6,601	3,772	943	1,886	2,829	0
1999	0	0	0	943	943	0	943	0	0
2000	0	0	0	0	0	0	0	0	0
Total	23,968,664	23,448,932	53,520,286	195,875,436	34,081,785	29,995,304	129,072,452	59,358,376	74,854,503

a) Includes excess capacity costs (not shown in Table B-9) allocated to MWDSC in the following years and repaid under Article 24(c) of its contract: 1970 - $362,000; 1971 - $6,198,000; 1972 - $139,000.

TABLE B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)							Total (72)	Grand Total (73)
	West Branch (continued)		Coastal Branch						
	Reach 30 (65)	Subtotal (66)	Reach 31A (67)	Reach 33A (68)	Reach 34 (69)	Reach 35 (70)	Subtotal (71)		
1952	1,408	5,655	0	0	0	0	0	98,857	99,353
1953	4,346	17,457	0	0	0	0	0	309,387	311,812
1954	5,743	23,074	0	0	0	0	0	394,688	402,143
1955	1,943	7,809	0	0	0	0	0	159,842	169,342
1956	2,077	8,348	0	0	0	0	0	255,679	351,551
1957	7,684	30,877	0	0	0	0	0	708,753	1,464,452
1958	13,931	55,142	0	0	0	0	0	1,331,616	2,286,623
1959	44,384	134,727	28,046	49,114	7,441	8,236	92,837	2,096,392	2,967,412
1960	84,703	255,409	34,404	70,450	8,507	14,265	127,626	2,937,049	4,660,833
1961	123,330	239,953	13,801	17,868	1,501	3,931	37,101	4,650,264	8,545,244
1962	348,366	671,447	10,121	7,798	524	1,689	20,132	5,827,774	8,875,171
1963	521,491	1,167,566	20,470	14,299	880	2,943	38,592	18,981,487	24,610,278
1964	1,372,464	2,232,275	315,418	26,963	1,687	5,639	349,707	31,550,813	41,736,060
1965	3,383,950	4,943,858	747,023	36,178	2,118	7,060	792,379	57,936,405	62,664,743
1966	9,364,753	14,872,117	2,258,915	35,864	1,736	5,764	2,302,279	124,748,128	129,110,330
1967	17,618,827	53,187,979	6,310,419	38,331	1,891	6,213	6,356,854	187,465,580	194,146,365
1968	15,736,691	57,595,765	2,707,580	30,784	1,324	4,369	2,744,057	192,593,079	197,978,911
1969	16,228,175	34,690,908	423,797	26,549	907	2,905	454,158	182,530,023	184,473,490
1970	22,330,328	50,497,652	269,194	24,368	851	2,787	297,200	206,720,774	207,082,650
1971	16,890,503	40,115,145	164,446	32,230	1,315	3,804	201,795	158,414,033	158,624,739
1972	3,818,001	2,874,264	131,332	17,601	522	1,660	151,115	68,228,670	68,362,291
1973	13,426,222	25,999,878	182,493	16,154	542	1,758	200,947	45,110,823	45,263,853
1974	2,988,318	4,334,592	190,866	18,799	463	1,405	211,533	24,036,199	24,402,166
1975	1,808,235	4,782,778	64,582	36,012	2,255	6,656	109,505	21,065,768	21,318,838
1976	1,253,067	4,931,230	198,266	68,898	5,088	14,988	287,240	17,183,961	17,492,910
1977	345,023	7,267,682	918,473	81,305	1,834	5,387	1,006,999	15,195,065	15,573,646
1978	763,445	11,312,134	52,994	83,300	1,302	3,852	141,448	18,661,117	19,119,151
1979	282,145	24,133,453	38,182	108,951	1,505	4,433	153,071	31,208,787	31,864,031
1980	2,055,206	32,733,044	189,070	337,328	1,029	3,038	530,465	73,867,477	74,963,209
1981	275,379	22,193,445	19,809	(214,440)	1,254	3,703	(189,674)	15,317,358	15,813,342
1982	338,464	18,381,065	(28,714)	(167,249)	442	1,306	(194,215)	37,896,809	39,320,439
1983	556,120	8,140,264	75,848	9,227	654	1,929	87,658	35,010,903	38,331,268
1984	1,118,950	4,482,659	28,489	6,655	570	1,683	37,397	24,587,688	30,515,661
1985	276,457	2,676,861	31,439	16,374	1,452	4,283	53,548	14,534,538	28,149,414
1986	213,567	863,744	82,589	150,370	13,472	39,752	286,183	10,148,845	39,869,848
1987	162,858	1,582,363	58,550	975,376	87,488	258,147	1,379,561	4,930,599	27,560,099
1988	222,793	2,717,049	181,209	1,053,987	94,543	278,959	1,608,698	18,975,240	26,062,111
1989	164,269	1,797,228	109,369	817,950	73,372	216,493	1,217,184	40,192,246	43,131,260
1990	127,992	1,815,462	138,180	997,688	89,486	264,092	1,489,446	30,963,579	32,800,939
1991	200,055	1,998,071	142,299	1,512,661	117,131	345,428	2,117,519	42,744,586	43,243,447
1992	180,893	5,366,505	110,026	2,856,361	154,723	442,376	3,563,486	32,031,715	32,401,870
1993	12,122	2,974,658	10,354	30,704,171	3,165,855	1,749,040	35,629,420	64,430,359	64,666,752
1994	12,168	7,886,464	6,892	130,816,308	13,364,680	5,776,194	149,964,074	168,380,168	169,490,064
1995	12,470	24,074	6,527	90,031,163	38,568,587	19,154,614	147,760,891	161,081,369	161,664,780
1996	12,259	26,404	6,000	16,053,308	19,830,152	7,720,540	43,610,000	59,150,279	59,175,059
1997	8,487	22,632	6,000	820,308	157,152	193,540	1,177,000	5,820,041	5,841,057
1998	2,829	12,259	4,000	718,308	64,152	189,540	976,000	1,079,812	1,087,064
1999	943	2,829	1,000	718,308	64,152	189,540	973,000	1,005,442	1,007,694
2000	0	0	0	718,308	64,152	189,540	972,000	972,000	972,000
Total	134,723,834	462,086,254	16,259,758	279,774,286	75,958,691	37,133,481	409,126,216	2,263,522,066	2,410,025,765

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	Upper Feather Division (1)	North Bay Aqueduct Reach 1 (2)	Reach 2 (3)	Reach 3A (4)	Reach 3B (5)	Total (6)	South Bay Aqueduct Reach 1 (7)	Reach 2 (8)	Reach 4 (9)	Reach 5 (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	37,396	5,522	0	0
1963	0	0	0	0	0	0	147,719	20,639	0	0
1964	0	0	0	0	0	0	149,750	15,574	19,405	0
1965	0	0	0	0	0	0	259,939	45,718	46,485	0
1966	0	0	0	0	0	0	270,890	23,799	63,921	0
1967	0	0	0	0	0	0	438,050	32,798	108,127	0
1968	0	0	0	0	130	130	410,919	44,277	66,973	706
1969	0	0	0	0	80,875	80,875	487,377	48,339	75,644	706
1970	0	0	0	0	94,872	94,872	381,734	44,852	64,833	71,376
1971	54	0	0	0	45,579	45,579	357,850	25,666	50,344	38,735
1972	40	0	0	0	37,895	37,895	347,941	30,606	56,800	100,106
1973	1	0	0	0	32,993	32,993	386,897	36,172	58,288	28,810
1974	143	0	0	0	46,498	46,498	456,381	57,081	83,120	61,623
1975	1,069	0	0	0	37,707	37,707	624,989	46,111	81,361	36,682
1976	139	0	0	0	60,786	60,786	614,362	47,862	123,838	91,096
1977	892	0	0	0	78,400	78,400	511,065	48,926	104,280	102,083
1978	39	0	0	0	56,318	56,318	671,195	125,224	176,855	50,289
1979	3,235	0	0	0	73,852	73,852	650,826	76,849	212,826	91,380
1980	416	0	0	0	81,770	81,770	1,128,863	212,974	242,118	110,792
1981	3,847	0	0	0	100,786	100,786	882,792	130,138	167,134	204,803
1982	10,956	0	0	0	194,250	194,250	1,170,230	143,563	252,422	118,384
1983	(422)	0	0	0	80,619	80,619	1,267,934	85,177	377,369	153,183
1984	643	0	0	0	139,082	139,082	1,998,462	113,797	340,348	34,457
1985	2,599	0	0	0	259,561	259,561	2,044,693	207,479	427,930	247,387
1986	2,595	0	0	0	229,424	229,424	1,833,732	285,923	305,192	159,112
1987	2,595	0	0	0	309,138	309,138	2,099,166	163,733	400,604	282,455
1988	2,600	0	0	0	329,939	329,939	2,077,745	188,079	301,015	371,094
1989	2,672	488,535	184,014	240,459	385,022	1,298,030	2,165,489	166,072	320,425	494,235
1990	2,687	544,287	242,461	119,389	431,035	1,337,172	2,223,306	256,967	357,965	569,415
1991	2,730	625,076	291,765	177,685	433,568	1,528,094	1,835,307	168,638	106,093	98,649
1992	2,774	505,109	220,526	236,527	306,921	1,269,083	2,755,577	439,577	488,211	507,182
1993	2,912	742,584	235,220	369,340	318,744	1,665,888	6,039,914	705,516	543,818	421,248
1994	3,058	748,642	203,417	347,680	301,043	1,600,782	4,331,395	887,912	538,256	424,838
1995	3,211	781,691	216,381	365,633	311,448	1,675,153	3,024,922	574,449	556,387	479,417
1996	3,211	797,704	223,338	377,705	320,815	1,719,562	3,108,556	398,283	574,867	511,797
1997	3,211	802,708	225,043	379,999	322,856	1,730,606	3,128,940	400,997	579,103	517,935
1998	3,211	803,342	225,129	380,443	323,202	1,732,116	3,131,760	401,113	579,544	517,760
1999	3,211	803,481	225,161	380,587	323,142	1,732,371	3,131,972	401,145	579,411	517,583
2000	3,211	804,022	225,164	380,870	323,289	1,733,345	3,132,440	401,192	579,541	518,246
2001	3,211	805,284	225,493	381,465	323,807	1,736,049	3,137,218	401,781	580,400	519,762
2002	3,211	805,714	225,496	381,690	323,923	1,736,823	3,137,589	401,818	580,503	520,290
2003	3,211	805,938	225,497	381,807	323,983	1,737,225	3,137,782	401,838	580,558	520,567
2004	3,211	806,185	225,499	381,936	324,050	1,737,670	3,137,995	401,860	580,618	520,871
2005	3,211	806,707	225,503	382,208	324,191	1,738,609	3,138,445	401,904	580,744	521,508
2006	3,211	806,732	225,503	382,221	324,198	1,738,654	3,138,467	401,907	580,750	521,539
2007	3,211	806,905	225,504	382,311	324,243	1,738,963	3,138,616	401,921	580,792	521,752
2008	3,211	807,097	225,506	382,411	324,295	1,739,309	3,138,780	401,938	580,838	521,986
2009	3,211	807,248	225,507	382,490	324,336	1,739,581	3,138,912	401,951	580,875	522,173
2010	3,211	807,975	225,511	382,870	324,533	1,740,889	3,139,539	402,014	581,051	523,066
2011	3,211	807,822	225,510	382,790	324,491	1,740,613	3,139,408	402,001	581,014	522,876
2012	3,211	808,033	225,512	382,900	324,548	1,740,993	3,139,589	402,019	581,065	523,136
2013	3,211	808,232	225,513	383,004	324,603	1,741,352	3,139,761	402,036	581,114	523,381
2014	3,211	808,468	225,515	383,127	324,666	1,741,776	3,139,965	402,057	581,171	523,671
2015	3,211	808,383	225,515	383,082	324,644	1,741,624	3,139,890	402,049	581,150	523,565
2016	3,211	808,437	225,516	383,110	324,658	1,741,721	3,139,936	402,054	581,162	523,632
2017	3,211	809,173	225,520	383,495	324,857	1,743,045	3,140,572	402,118	581,342	524,540
2018	3,211	809,166	225,521	383,491	324,855	1,743,033	3,140,566	402,118	581,340	524,532
2019	3,211	809,201	225,521	383,509	324,865	1,743,096	3,140,596	402,120	581,348	524,572
2020	3,211	808,859	225,519	383,330	324,774	1,742,482	3,140,301	402,091	581,266	524,151
2021	3,211	808,947	225,520	383,376	324,798	1,742,641	3,140,377	402,098	581,286	524,260
2022	3,211	808,989	225,520	383,398	324,809	1,742,716	3,140,413	402,102	581,297	524,310
2023	3,211	808,985	225,520	383,396	324,808	1,742,709	3,140,410	402,101	581,296	524,306
2024	3,211	808,986	225,520	383,397	324,808	1,742,711	3,140,411	402,101	581,296	524,307
2025	3,211	809,005	225,520	383,406	324,814	1,742,745	3,140,427	402,103	581,301	524,330
2026	3,211	808,905	225,520	383,354	324,786	1,742,565	3,140,339	402,095	581,276	524,206
2027	3,211	808,907	225,520	383,355	324,786	1,742,568	3,140,340	402,095	581,277	524,209
2028	3,211	808,916	225,520	383,360	324,789	1,742,585	3,140,350	402,095	581,279	524,220
2029	3,211	808,919	225,520	383,361	324,789	1,742,589	3,140,352	402,096	581,279	524,222
2030	3,211	808,906	225,520	383,355	324,786	1,742,567	3,140,340	402,095	581,277	524,208
2031	3,211	808,942	225,520	383,374	324,796	1,742,632	3,140,372	402,097	581,285	524,253
2032	3,211	808,942	225,520	383,374	324,796	1,742,632	3,140,372	402,097	581,285	524,253
2033	3,211	808,958	225,520	383,382	324,801	1,742,661	3,140,386	402,099	581,289	524,273
2034	3,211	808,911	225,520	383,357	324,787	1,742,575	3,140,345	402,095	581,278	524,214
2035	3,211	808,994	225,520	383,400	324,810	1,742,724	3,140,415	402,101	581,296	524,307
Total	179,925	36,732,952	10,610,600	17,160,209	17,832,042	82,335,803	169,608,051	21,579,804	30,349,251	26,249,012

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

	South Bay Aqueduct (continued)					California Aqueduct North San Joaquin Division			
Calendar Year	Reach 6 (11)	Reach 7 (12)	Reach 8 (13)	Reach 9 (14)	Total (15)	Reach 1 (16)	Reach 2A (17)	Reach 2B (18)	Subtotal (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	42,918	0	0	0	0
1963	0	0	0	0	168,358	0	0	0	0
1964	0	0	0	0	184,729	0	0	0	0
1965	2,634	6,490	4,704	12,904	378,874	0	0	0	0
1966	4,707	10,328	9,233	25,519	408,397	0	0	0	0
1967	2,712	7,659	10,812	34,347	634,505	0	0	0	0
1968	3,109	7,960	10,166	40,372	584,482	1,001,998	228,359	103,116	1,333,473
1969	3,944	5,975	8,795	38,566	669,346	933,116	301,596	188,194	1,422,906
1970	2,464	(1,991)	6,870	28,210	598,348	971,602	306,198	151,539	1,429,339
1971	3,116	9,394	9,895	31,068	526,068	1,103,021	254,786	113,694	1,471,501
1972	5,125	10,247	12,054	44,699	607,578	1,107,855	230,906	110,109	1,448,870
1973	4,178	7,500	4,890	43,816	570,551	1,150,864	221,445	100,221	1,472,530
1974	7,812	7,564	5,523	48,054	727,158	1,272,034	231,383	117,156	1,620,573
1975	18,120	14,683	18,325	68,377	908,648	1,434,736	455,110	201,075	2,090,921
1976	10,873	5,557	19,920	49,921	963,429	1,519,801	217,348	453,400	2,190,549
1977	(240)	2,228	8,391	89,579	866,312	1,917,994	292,380	196,564	2,406,938
1978	(1,404)	16,766	(5,313)	104,078	1,137,690	1,860,456	306,503	188,214	2,355,173
1979	1,269	29,294	7,351	106,835	1,176,630	1,848,109	231,339	145,205	2,224,653
1980	3,621	24,270	17,404	110,852	1,850,894	2,365,408	472,660	247,608	3,085,676
1981	4,038	20,110	17,587	98,150	1,524,752	2,651,889	435,443	154,250	3,241,582
1982	2,282	23,145	22,313	204,963	1,937,302	3,228,026	607,940	247,699	4,083,665
1983	(2,017)	49,269	46,270	218,460	2,195,645	4,272,437	810,279	275,534	5,358,250
1984	4,449	44,017	23,563	455,060	3,014,153	4,374,194	810,672	291,623	5,476,489
1985	13,097	74,565	57,920	238,066	3,311,137	5,135,068	811,987	278,258	6,225,313
1986	11,614	31,084	46,864	363,369	3,036,890	5,372,168	996,029	391,570	6,759,767
1987	15,273	25,182	37,949	416,375	3,440,737	5,154,922	999,103	380,646	6,534,671
1988	30,222	41,102	49,184	336,439	3,394,880	5,145,402	848,301	374,644	6,368,347
1989	10,490	48,802	111,755	185,475	3,502,743	5,563,649	854,689	894,849	7,313,187
1990	31,171	69,448	119,321	250,584	3,878,177	6,794,773	1,089,199	905,864	8,789,836
1991	22,497	(12,333)	99,709	271,253	2,589,813	6,969,091	1,134,380	655,014	8,758,485
1992	39,716	325,915	103,705	227,061	4,886,944	9,819,755	1,473,395	789,270	12,082,420
1993	73,782	191,684	87,173	391,853	8,454,988	10,352,651	1,594,990	456,514	12,404,155
1994	244,069	72,726	82,501	415,766	6,997,463	9,072,437	1,662,846	600,171	11,335,454
1995	258,241	63,025	76,644	403,157	5,436,242	9,272,115	1,704,004	618,857	11,594,976
1996	71,859	65,050	79,084	345,602	5,155,098	9,440,610	1,749,416	509,723	11,699,749
1997	72,407	65,553	79,702	348,258	5,192,895	9,499,389	1,763,086	513,712	11,776,187
1998	72,480	65,474	79,487	348,321	5,195,939	9,508,290	1,763,090	513,670	11,785,050
1999	72,491	65,482	79,498	348,370	5,195,952	9,509,228	1,759,273	512,524	11,781,025
2000	72,491	65,482	79,498	348,370	5,197,260	9,511,578	1,760,501	512,898	11,784,977
2001	72,597	65,578	79,613	348,879	5,205,828	9,529,206	1,763,196	513,685	11,806,087
2002	72,597	65,578	79,613	348,879	5,206,867	9,531,070	1,764,199	513,991	11,809,260
2003	72,597	65,578	79,613	348,879	5,207,412	9,532,045	1,764,720	514,151	11,810,916
2004	72,597	65,578	79,613	348,879	5,208,011	9,533,116	1,765,305	514,330	11,812,751
2005	72,597	65,578	79,613	348,879	5,209,268	9,535,376	1,766,485	514,691	11,816,552
2006	72,597	65,578	79,613	348,879	5,209,330	9,535,486	1,766,543	514,708	11,816,737
2007	72,597	65,578	79,613	348,879	5,209,748	9,536,234	1,766,942	514,829	11,818,005
2008	72,597	65,578	79,613	348,879	5,210,209	9,537,065	1,767,381	514,964	11,819,410
2009	72,597	65,578	79,613	348,879	5,210,578	9,537,722	1,767,748	515,077	11,820,547
2010	72,597	65,578	79,613	348,879	5,212,337	9,540,878	1,769,422	515,588	11,825,888
2011	72,597	65,578	79,613	348,879	5,211,966	9,540,213	1,769,052	515,475	11,824,740
2012	72,597	65,578	79,613	348,879	5,212,476	9,541,130	1,769,548	515,627	11,826,305
2013	72,597	65,578	79,613	348,879	5,212,959	9,541,995	1,770,016	515,769	11,827,780
2014	72,597	65,578	79,613	348,879	5,213,531	9,543,018	1,770,563	515,938	11,829,519
2015	72,597	65,578	79,613	348,879	5,213,321	9,542,645	1,770,364	515,876	11,828,885
2016	72,597	65,578	79,613	348,879	5,213,451	9,542,876	1,770,488	515,914	11,829,278
2017	72,597	65,578	79,613	348,879	5,215,239	9,546,074	1,772,209	516,440	11,834,723
2018	72,597	65,578	79,613	348,879	5,215,223	9,546,044	1,772,195	516,436	11,834,675
2019	72,597	65,578	79,613	348,879	5,215,303	9,546,189	1,772,272	516,459	11,834,920
2020	72,597	65,578	79,613	348,879	5,214,476	9,544,707	1,771,473	516,216	11,832,396
2021	72,597	65,578	79,613	348,879	5,214,688	9,545,089	1,771,676	516,278	11,833,043
2022	72,597	65,578	79,613	348,879	5,214,789	9,545,270	1,771,773	516,307	11,833,350
2023	72,597	65,578	79,613	348,879	5,214,780	9,545,253	1,771,765	516,305	11,833,323
2024	72,597	65,578	79,613	348,879	5,214,782	9,545,257	1,771,768	516,306	11,833,331
2025	72,597	65,578	79,613	348,879	5,214,828	9,545,340	1,771,809	516,319	11,833,468
2026	72,597	65,578	79,613	348,879	5,214,583	9,544,901	1,771,571	516,245	11,832,717
2027	72,597	65,578	79,613	348,879	5,214,588	9,544,912	1,771,577	516,247	11,832,736
2028	72,597	65,578	79,613	348,879	5,214,611	9,544,951	1,771,602	516,254	11,832,807
2029	72,597	65,578	79,613	348,879	5,214,616	9,544,966	1,771,604	516,255	11,832,825
2030	72,597	65,578	79,613	348,879	5,214,587	9,544,909	1,771,584	516,249	11,832,742
2031	72,597	65,578	79,613	348,879	5,214,674	9,545,067	1,771,661	516,273	11,833,001
2032	72,597	65,578	79,613	348,879	5,214,674	9,545,067	1,771,661	516,273	11,833,001
2033	72,597	65,578	79,613	348,879	5,214,714	9,545,137	1,771,699	516,284	11,833,120
2034	72,597	65,578	79,613	348,879	5,214,599	9,544,928	1,771,588	516,250	11,832,766
2035	72,597	65,578	79,613	348,879	5,214,786	9,545,284	1,771,715	516,289	11,833,288
Total	3,733,587	3,853,936	4,315,202	19,302,914	278,991,757	493,094,086	90,323,810	30,243,683	613,661,579

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	San Luis Division						South San Joaquin Division		
Calendar Year	Reach 3 (20)	Reach 4 (21)	Reach 5 (22)	Reach 6 (23)	Reach 7 (24)	Subtotal (25)	Reach 8C (26)	Reach 8D (27)	Reach 9 (28)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	120,038	428,308	130,105	44,591	104,033	827,075	0	0	0
1969	90,033	460,907	184,467	35,696	235,322	1,006,425	22,013	134,760	86,103
1970	89,547	484,300	226,002	66,070	192,582	1,058,501	26,207	156,981	128,273
1971	99,917	541,574	175,592	64,193	158,170	1,039,446	32,312	190,753	118,372
1972	116,708	647,979	174,519	73,670	154,783	1,167,659	35,031	187,242	130,396
1973	116,791	611,705	158,145	58,344	153,955	1,098,940	51,150	225,747	127,530
1974	120,309	671,455	150,835	63,905	150,230	1,156,734	34,752	199,127	131,298
1975	133,593	839,285	178,974	81,478	157,586	1,390,916	78,523	250,377	159,006
1976	54,938	883,956	220,832	90,305	174,835	1,424,866	39,348	133,933	123,424
1977	73,331	1,114,465	270,734	98,132	196,311	1,752,973	38,086	121,348	178,078
1978	45,867	898,992	203,261	106,938	203,079	1,458,137	45,552	178,805	129,928
1979	223,973	842,508	144,055	99,670	180,734	1,490,940	69,973	150,679	129,756
1980	243,507	1,176,613	222,942	127,625	281,860	2,052,547	57,726	274,848	185,155
1981	266,803	1,067,040	192,615	90,380	1,612,042	3,228,880	80,130	198,386	144,310
1982	282,217	1,254,529	212,263	115,985	1,452,762	3,317,756	60,239	272,545	236,343
1983	217,414	1,957,156	342,464	132,431	2,156,821	4,806,286	49,882	386,834	225,036
1984	241,184	2,227,658	335,407	163,942	2,111,507	5,079,698	42,186	459,342	301,459
1985	322,373	2,877,575	363,611	177,564	1,607,182	5,348,305	64,900	548,818	254,943
1986	430,680	2,984,802	479,726	253,891	613,806	4,762,905	93,911	504,243	612,629
1987	395,950	3,078,121	430,091	237,304	457,987	4,599,453	115,997	435,797	458,549
1988	398,754	3,047,624	474,797	236,216	653,284	4,810,675	97,902	393,970	431,895
1989	270,234	3,153,027	395,640	329,611	634,918	4,783,430	84,134	391,667	399,579
1990	422,554	4,031,856	523,492	445,761	704,609	6,128,272	111,305	443,088	524,443
1991	261,560	4,526,531	602,063	753,265	804,292	6,947,711	106,162	523,930	500,568
1992	272,982	4,092,335	930,249	444,666	906,209	6,646,441	117,155	526,622	463,601
1993	630,676	3,953,233	974,374	367,109	463,721	6,389,113	311,364	762,661	623,474
1994	689,238	3,923,322	1,248,763	345,901	471,883	6,679,107	309,289	758,723	620,501
1995	705,932	3,757,450	1,137,893	371,937	506,142	6,479,354	213,194	819,807	669,844
1996	697,593	3,818,418	850,341	387,714	527,170	6,281,236	219,632	848,141	693,476
1997	711,486	3,852,436	859,686	392,057	533,091	6,348,756	221,298	854,406	698,574
1998	711,756	3,857,247	859,577	392,153	533,342	6,354,075	221,515	854,731	698,621
1999	707,930	3,855,904	856,655	391,328	532,176	6,343,993	221,517	853,211	697,319
2000	709,232	3,859,055	857,955	391,743	532,701	6,350,686	221,531	853,897	697,959
2001	712,240	3,869,023	860,134	392,727	534,034	6,368,158	221,854	855,207	699,041
2002	713,303	3,871,536	861,184	393,063	534,457	6,373,543	221,865	855,760	699,557
2003	713,855	3,872,846	861,730	393,237	534,676	6,376,344	221,870	856,048	699,826
2004	714,477	3,874,294	862,340	393,431	534,923	6,379,465	221,876	856,369	700,127
2005	715,728	3,877,313	863,570	393,823	535,418	6,385,852	221,889	857,015	700,732
2006	715,788	3,877,458	863,631	393,844	535,442	6,386,163	221,891	857,048	700,762
2007	716,209	3,878,467	864,050	393,978	535,612	6,388,316	221,895	857,267	700,969
2008	716,677	3,879,580	864,511	394,125	535,798	6,390,691	221,900	857,512	701,196
2009	717,063	3,880,473	864,893	394,246	535,952	6,392,627	221,904	857,712	701,384
2010	718,839	3,884,700	866,632	394,802	536,652	6,401,625	221,922	858,627	702,241
2011	718,448	3,883,810	866,264	394,683	536,503	6,399,708	221,917	858,433	702,058
2012	718,973	3,885,039	866,776	394,847	536,710	6,402,345	221,923	858,702	702,312
2013	719,468	3,886,207	867,265	395,003	536,907	6,404,850	221,928	858,959	702,552
2014	720,049	3,887,583	867,836	395,186	537,138	6,407,792	221,934	859,259	702,833
2015	719,838	3,887,083	867,630	395,120	537,053	6,406,724	221,931	859,153	702,732
2016	719,969	3,887,392	867,758	395,160	537,105	6,407,384	221,932	859,219	702,796
2017	721,793	3,891,701	869,561	395,735	537,832	6,416,622	221,951	860,168	703,684
2018	721,779	3,891,661	869,545	395,730	537,825	6,416,540	221,951	860,159	703,676
2019	721,861	3,891,857	869,624	395,756	537,856	6,416,954	221,953	860,201	703,715
2020	721,015	3,889,862	868,793	395,491	537,523	6,412,684	221,944	859,763	703,305
2021	721,229	3,890,374	869,001	395,557	537,607	6,413,768	221,946	859,873	703,409
2022	721,331	3,890,616	869,104	395,590	537,648	6,414,289	221,947	859,928	703,459
2023	721,323	3,890,595	869,094	395,588	537,644	6,414,244	221,947	859,922	703,454
2024	721,326	3,890,601	869,097	395,588	537,645	6,414,257	221,947	859,924	703,455
2025	721,370	3,890,707	869,140	395,601	537,661	6,414,479	221,947	859,946	703,476
2026	721,118	3,890,119	868,892	395,522	537,562	6,413,213	221,944	859,816	703,355
2027	721,124	3,890,131	868,899	395,525	537,565	6,413,244	221,944	859,819	703,357
2028	721,149	3,890,186	868,924	395,532	537,576	6,413,367	221,945	859,833	703,370
2029	721,152	3,890,204	868,928	395,534	537,577	6,413,395	221,945	859,835	703,371
2030	721,132	3,890,132	868,903	395,526	537,566	6,413,259	221,944	859,822	703,360
2031	721,213	3,890,342	868,985	395,552	537,600	6,413,692	221,946	859,864	703,401
2032	721,213	3,890,342	868,985	395,552	537,600	6,413,692	221,946	859,864	703,401
2033	721,254	3,890,434	869,024	395,564	537,617	6,413,893	221,946	859,886	703,420
2034	721,137	3,890,157	868,911	395,528	537,570	6,413,303	221,944	859,826	703,364
2035	721,269	3,890,606	869,062	395,577	537,631	6,414,145	221,946	859,905	703,437
Total	36,050,812	210,780,797	45,716,801	21,254,898	38,948,610	352,751,918	11,261,330	43,956,063	36,167,029

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued) South San Joaquin Division (continued) Reach 10A (29)	Reach 11B (30)	Reach 12D (31)	Reach 12E (32)	Reach 13B (33)	Reach 14A (34)	Reach 14B (35)	Reach 14C (36)	Reach 15A (37)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	83,706	59,077	0	0	0	0	0	0	0
1970	118,046	85,758	94,171	123,374	152,424	0	0	0	0
1971	129,811	80,282	95,075	91,389	167,142	691,791	151,979	111,623	529,723
1972	117,625	84,287	98,647	115,592	146,096	877,535	124,831	101,479	609,058
1973	117,706	92,257	74,238	114,843	221,385	961,855	120,106	99,429	692,748
1974	141,658	98,103	74,914	193,523	141,540	898,272	143,866	115,649	853,098
1975	207,908	124,105	61,799	117,194	108,154	1,156,757	180,614	119,889	988,045
1976	139,134	69,715	33,655	147,908	134,063	1,124,051	177,086	114,133	1,037,799
1977	194,086	108,644	91,547	175,039	137,975	1,397,006	203,837	119,467	1,339,196
1978	168,634	106,702	72,585	170,578	151,120	1,254,043	139,662	132,224	1,265,813
1979	175,107	85,942	56,331	174,147	150,029	1,490,461	201,935	260,981	1,216,126
1980	284,207	120,896	123,120	167,249	164,749	1,988,704	189,132	238,607	1,437,678
1981	200,063	77,045	33,427	113,285	171,793	1,735,435	163,812	161,099	1,793,300
1982	268,306	160,136	144,320	226,910	226,762	1,813,305	197,532	16,221	1,954,952
1983	311,541	137,529	125,805	205,536	219,326	2,436,503	201,712	183,892	2,565,051
1984	397,253	164,516	109,487	188,739	245,950	3,309,790	329,449	204,174	3,214,118
1985	346,406	252,692	206,439	239,944	360,512	3,465,639	237,078	180,032	3,429,538
1986	440,664	267,543	261,501	363,306	350,791	3,775,606	320,849	360,055	3,568,093
1987	502,238	341,697	335,646	476,804	331,080	3,671,636	460,634	239,280	4,033,202
1988	547,030	299,380	230,605	383,278	324,382	3,462,517	408,747	311,720	3,772,090
1989	735,196	271,235	210,526	588,598	380,008	3,502,438	340,120	224,449	3,739,782
1990	659,577	368,286	231,088	487,220	682,460	4,003,449	439,373	211,162	4,362,576
1991	745,038	351,397	296,641	397,098	452,136	4,363,605	428,914	273,375	4,615,106
1992	636,533	352,399	304,052	436,120	440,238	4,832,457	651,094	493,959	4,533,749
1993	657,292	469,928	426,495	670,686	826,102	4,994,657	596,146	467,972	4,895,665
1994	706,857	467,295	425,984	668,415	987,537	4,663,545	583,207	404,473	4,519,842
1995	760,628	504,026	461,415	720,803	947,718	4,898,794	627,839	438,165	4,751,159
1996	713,776	521,437	478,812	745,290	791,165	4,991,884	649,814	453,591	4,833,365
1997	719,156	525,302	482,288	750,859	797,040	5,021,019	654,430	456,699	4,861,770
1998	719,198	525,471	482,129	751,251	797,238	5,025,437	654,615	456,879	4,866,059
1999	717,652	524,572	480,711	750,346	795,981	5,024,860	653,738	456,199	4,866,452
2000	718,340	524,952	481,326	750,742	796,542	5,027,314	654,387	456,673	4,867,890
2001	719,453	525,752	482,086	751,875	797,756	5,036,951	655,397	457,381	4,877,192
2002	720,008	526,058	482,582	752,195	798,208	5,038,906	655,919	457,761	4,878,334
2003	720,296	526,216	482,839	752,360	798,443	5,039,927	656,188	457,959	4,878,929
2004	720,619	526,395	483,127	752,546	798,706	5,041,051	656,490	458,179	4,879,588
2005	721,270	526,754	483,708	752,921	799,235	5,043,395	657,099	458,625	4,880,968
2006	721,302	526,771	483,737	752,938	799,262	5,043,511	657,129	458,647	4,881,035
2007	721,523	526,894	483,934	753,067	799,442	5,044,296	657,338	458,799	4,881,495
2008	721,769	527,028	484,153	753,208	799,642	5,045,162	657,567	458,968	4,882,003
2009	721,971	527,139	484,332	753,324	799,805	5,045,857	657,754	459,106	4,882,403
2010	722,889	527,646	485,153	753,852	800,555	5,049,140	658,614	459,734	4,884,333
2011	722,695	527,538	484,979	753,740	800,395	5,048,452	658,436	459,604	4,883,929
2012	722,966	527,688	485,221	753,896	800,616	5,049,407	658,688	459,787	4,884,489
2013	723,224	527,830	485,452	754,045	800,826	5,050,315	658,930	459,965	4,885,019
2014	723,526	527,997	485,722	754,220	801,074	5,051,384	659,213	460,172	4,885,644
2015	723,417	527,938	485,624	754,157	800,985	5,050,997	659,112	460,098	4,885,417
2016	723,484	527,974	485,685	754,195	801,040	5,051,237	659,174	460,143	4,885,557
2017	724,437	528,499	486,534	754,743	801,816	5,054,590	660,066	460,796	4,887,517
2018	724,429	528,494	486,527	754,739	801,809	5,054,559	660,059	460,791	4,887,500
2019	724,472	528,517	486,565	754,763	801,844	5,054,711	660,097	460,818	4,887,588
2020	724,031	528,276	486,173	754,511	801,486	5,053,159	659,688	460,519	4,886,681
2021	724,143	528,337	486,271	754,574	801,576	5,053,555	659,789	460,595	4,886,914
2022	724,195	528,366	486,320	754,605	801,619	5,053,745	659,841	460,630	4,887,025
2023	724,191	528,364	486,316	754,602	801,615	5,053,728	659,836	460,628	4,887,014
2024	724,192	528,364	486,317	754,603	801,616	5,053,733	659,837	460,628	4,887,016
2025	724,215	528,376	486,337	754,616	801,635	5,053,815	659,857	460,643	4,887,066
2026	724,084	528,305	486,220	754,541	801,528	5,053,359	659,735	460,556	4,886,800
2027	724,087	528,306	486,223	754,542	801,531	5,053,368	659,739	460,557	4,886,806
2028	724,100	528,313	486,234	754,550	801,542	5,053,412	659,750	460,567	4,886,830
2029	724,103	528,314	486,237	754,551	801,544	5,053,425	659,753	460,568	4,886,838
2030	724,090	528,307	486,225	754,544	801,534	5,053,369	659,740	460,558	4,886,804
2031	724,134	528,332	486,264	754,569	801,569	5,053,531	659,782	460,589	4,886,900
2032	724,134	528,332	486,264	754,569	801,569	5,053,531	659,782	460,589	4,886,900
2033	724,154	528,344	486,283	754,580	801,586	5,053,604	659,801	460,603	4,886,943
2034	724,094	528,309	486,228	754,546	801,537	5,053,387	659,744	460,562	4,886,816
2035	724,173	528,354	486,301	754,592	801,601	5,053,743	659,828	460,620	4,887,033
Total	38,690,242	26,695,033	24,072,952	37,895,945	40,625,985	268,610,677	33,946,310	23,960,295	260,982,369

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	South San Joaquin Division (continued)		Tehachapi Division			Mojave Division			
Calendar Year	Reach 16A (38)	Subtotal (39)	Reach 17E (40)	Reach 17F (41)	Subtotal (42)	Reach 18A (43)	Reach 19 (44)	Reach 19C (45)	Reach 20A (46)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	385,659	0	0	0	0	0	0	0
1970	0	885,234	0	0	0	0	0	0	0
1971	10,291	2,400,543	3,471	0	3,471	0	0	0	0
1972	1,106,884	3,734,703	1,424,782	28,127	1,452,909	36,699	135,675	0	130,711
1973	1,243,941	4,142,935	1,777,260	49,949	1,827,209	36,207	146,739	0	161,838
1974	1,343,972	4,369,772	2,298,091	16,259	2,314,350	30,525	90,404	0	115,571
1975	1,537,862	5,090,233	2,403,430	35,193	2,438,623	40,588	122,584	0	137,684
1976	1,727,428	5,001,677	2,776,194	126,653	2,902,847	118,610	201,215	0	182,927
1977	1,961,081	6,065,390	3,845,464	83,936	3,929,400	93,565	226,906	0	180,884
1978	1,922,950	5,738,596	2,954,313	42,637	2,996,950	91,815	200,759	0	215,673
1979	1,798,566	5,960,033	3,539,402	45,997	3,585,399	99,670	307,386	0	261,205
1980	2,231,541	7,463,612	4,749,456	54,806	4,804,262	116,487	446,175	0	290,719
1981	2,747,447	7,619,532	5,469,468	64,911	5,534,379	316,687	585,392	0	325,404
1982	2,992,016	8,569,587	6,403,826	56,774	6,460,600	451,289	644,752	0	279,511
1983	4,324,186	11,372,833	14,189,425	97,374	14,286,799	346,323	568,322	0	371,688
1984	5,072,910	14,039,373	18,425,415	77,216	18,502,631	267,573	563,525	0	413,691
1985	5,688,501	15,275,442	18,160,112	137,928	18,298,040	298,927	475,002	0	450,422
1986	5,770,352	16,689,543	19,232,233	109,885	19,342,118	706,097	349,704	0	346,809
1987	5,518,614	16,921,174	16,699,386	98,175	16,797,561	1,260,356	555,956	0	815,996
1988	5,182,927	15,846,443	17,860,345	138,258	17,998,603	1,237,297	565,930	0	583,804
1989	5,442,633	16,310,365	17,658,095	89,947	17,748,042	1,070,392	301,115	0	380,682
1990	6,395,823	18,919,850	19,560,797	99,455	19,660,252	1,298,531	243,670	0	468,264
1991	5,801,641	18,855,611	19,260,901	130,550	19,391,451	1,433,531	741,016	0	1,022,564
1992	6,631,643	20,419,622	18,270,367	258,943	18,529,310	1,252,225	799,422	0	746,190
1993	7,258,213	22,960,655	20,893,445	361,003	21,254,448	1,693,445	849,830	0	1,044,250
1994	6,814,551	21,930,219	19,739,800	456,185	20,195,985	1,848,683	1,184,529	0	1,217,864
1995	6,975,967	22,789,359	19,985,726	403,823	20,389,549	1,966,754	1,290,157	0	1,276,416
1996	7,098,369	23,038,752	20,109,495	343,691	20,453,186	1,759,296	1,051,254	0	1,052,783
1997	7,134,233	23,177,074	20,174,720	346,109	20,520,829	1,771,039	1,051,777	0	1,055,999
1998	7,139,936	23,193,080	20,185,368	346,347	20,531,715	1,773,125	1,053,452	0	1,057,360
1999	7,139,712	23,182,270	20,187,050	346,405	20,533,455	1,773,666	1,053,772	0	1,057,568
2000	7,143,337	23,194,890	20,191,213	346,557	20,537,770	1,774,809	1,059,304	0	1,061,121
2001	7,158,762	23,238,707	20,229,879	347,079	20,576,958	1,777,499	1,061,334	0	1,062,978
2002	7,161,646	23,248,799	20,233,181	347,199	20,580,380	1,778,403	1,065,701	0	1,065,787
2003	7,163,153	23,254,054	20,234,907	347,263	20,582,170	1,778,877	1,067,982	0	1,067,252
2004	7,164,811	23,259,884	20,236,803	347,334	20,584,137	1,779,395	1,070,491	0	1,068,863
2005	7,168,256	23,271,867	20,240,809	347,479	20,588,288	1,780,489	1,075,688	0	1,072,203
2006	7,168,425	23,272,458	20,241,002	347,487	20,588,489	1,780,541	1,075,949	0	1,072,371
2007	7,169,587	23,276,506	20,242,330	347,535	20,589,865	1,780,903	1,077,711	0	1,073,504
2008	7,170,868	23,280,976	20,243,798	347,589	20,591,387	1,781,305	1,079,647	0	1,074,749
2009	7,171,893	23,284,584	20,244,960	347,631	20,592,591	1,781,627	1,081,217	0	1,075,754
2010	7,176,716	23,301,422	20,250,550	347,835	20,598,385	1,783,152	1,088,541	0	1,080,460
2011	7,175,720	23,297,896	20,249,376	347,793	20,597,169	1,782,836	1,087,053	0	1,079,505
2012	7,177,123	23,302,818	20,250,994	347,852	20,598,846	1,783,277	1,089,162	0	1,080,860
2013	7,178,464	23,307,509	20,252,527	347,910	20,600,437	1,783,695	1,091,193	0	1,082,163
2014	7,180,039	23,313,017	20,254,338	347,976	20,602,314	1,784,191	1,093,571	0	1,083,692
2015	7,179,468	23,311,029	20,253,678	347,953	20,601,631	1,784,014	1,092,760	0	1,083,173
2016	7,179,822	23,312,258	20,254,087	347,968	20,602,055	1,784,124	1,093,282	0	1,083,507
2017	7,184,767	23,329,568	20,259,748	348,178	20,607,926	1,785,676	1,100,781	0	1,088,323
2018	7,184,723	23,329,416	20,259,696	348,176	20,607,872	1,785,661	1,100,707	0	1,088,277
2019	7,184,946	23,330,190	20,259,955	348,186	20,608,141	1,785,732	1,101,044	0	1,088,492
2020	7,182,661	23,322,197	20,257,330	348,088	20,605,418	1,785,014	1,097,563	0	1,086,254
2021	7,183,243	23,324,225	20,258,008	348,112	20,606,120	1,785,198	1,098,435	0	1,086,816
2022	7,183,521	23,325,201	20,258,328	348,125	20,606,453	1,785,284	1,098,871	0	1,087,097
2023	7,183,498	23,325,115	20,258,300	348,123	20,606,423	1,785,275	1,098,819	0	1,087,063
2024	7,183,504	23,325,136	20,258,306	348,123	20,606,429	1,785,276	1,098,826	0	1,087,067
2025	7,183,621	23,325,550	20,258,449	348,128	20,606,577	1,785,318	1,099,026	0	1,087,198
2026	7,182,950	23,323,193	20,257,677	348,101	20,605,778	1,785,107	1,098,002	0	1,086,538
2027	7,182,964	23,323,243	20,257,693	348,101	20,605,794	1,785,113	1,098,027	0	1,086,554
2028	7,183,027	23,323,473	20,257,762	348,105	20,605,867	1,785,131	1,098,125	0	1,086,615
2029	7,183,049	23,323,533	20,257,789	348,105	20,605,894	1,785,138	1,098,151	0	1,086,633
2030	7,182,963	23,323,260	20,257,688	348,101	20,605,789	1,785,110	1,097,994	0	1,086,532
2031	7,183,204	23,324,085	20,257,967	348,111	20,606,078	1,785,185	1,098,390	0	1,086,789
2032	7,183,204	23,324,085	20,257,967	348,111	20,606,078	1,785,185	1,098,390	0	1,086,789
2033	7,183,311	23,324,461	20,258,092	348,114	20,606,206	1,785,221	1,098,551	0	1,086,890
2034	7,182,996	23,323,353	20,257,722	348,103	20,605,825	1,785,120	1,098,073	0	1,086,584
2035	7,183,522	23,325,055	20,258,358	348,124	20,606,482	1,785,290	1,098,883	0	1,087,106
Total	384,387,954	1,231,252,184	1,087,249,104	16,969,291	1,104,218,395	87,388,573	55,033,664	0	54,566,036

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	Mojave Division (continued)							Santa Ana Division	
Calendar Year	Reach 20B (47)	Reach 21 (48)	Reach 22A (49)	Reach 22B (50)	Reach 23 (51)	Reach 24 (52)	Subtotal (53)	Reach 25 (54)	Reach 26A (55)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	120,271	75,768	80,436	1,036,831	51,520	362,153	2,030,064	26	578
1973	148,631	60,641	66,539	1,283,816	65,475	353,262	2,323,148	20,541	679,328
1974	88,200	65,007	77,667	1,477,946	96,340	334,302	2,375,962	24,380	799,400
1975	118,898	135,462	77,825	1,630,554	111,141	419,450	2,794,186	29,337	885,021
1976	151,555	106,314	131,007	1,598,071	107,787	304,638	2,902,124	51,356	1,103,139
1977	112,589	98,757	86,279	1,882,080	71,228	48,359	2,800,647	62,584	1,412,740
1978	120,584	109,271	71,763	2,211,965	72,179	637,401	3,731,410	67,186	1,159,950
1979	194,104	203,078	121,586	2,104,832	76,960	202,566	3,571,387	84,462	1,235,189
1980	237,250	156,794	117,274	2,670,471	147,009	688,605	4,870,784	72,651	1,532,581
1981	292,377	181,234	119,732	3,024,914	134,904	45,405	5,026,049	35,665	1,571,000
1982	334,826	188,582	127,071	3,288,514	302,522	630,941	6,248,008	27,198	1,842,148
1983	329,798	222,001	141,847	3,926,911	223,167	390,062	6,520,119	19,170	1,679,906
1984	330,204	267,078	146,984	4,783,329	59,337	1,106,759	7,938,480	11,319	2,325,292
1985	388,307	799,502	125,775	5,333,323	261,135	811,327	8,943,720	17,764	2,708,035
1986	314,632	241,610	178,439	6,194,476	154,339	513,604	8,999,710	31,012	2,776,649
1987	355,524	296,655	235,098	5,676,123	150,089	729,593	10,075,390	19,362	2,846,642
1988	408,429	331,375	149,350	6,939,564	252,182	966,539	11,434,470	36,505	3,086,876
1989	356,640	207,036	137,182	5,940,347	305,419	1,240,039	9,938,852	30,978	3,172,235
1990	232,987	274,437	48,513	6,863,856	435,434	1,893,854	11,759,546	25,312	3,340,415
1991	606,858	487,923	233,472	7,555,630	248,936	1,577,345	13,907,275	31,725	3,897,206
1992	740,373	554,802	182,458	7,364,748	226,346	736,776	12,603,340	(107,557)	4,002,025
1993	783,921	565,124	689,967	8,501,885	841,923	1,053,535	16,023,880	308,646	5,686,311
1994	1,037,263	712,642	603,455	7,907,225	679,727	1,784,526	16,975,914	294,436	5,561,955
1995	990,000	713,682	390,597	8,285,064	443,345	1,220,987	16,577,002	271,131	5,984,808
1996	756,100	552,960	407,369	8,480,889	454,510	1,411,282	15,926,443	339,614	6,116,532
1997	757,050	554,464	408,342	8,513,517	455,386	(687,110)	13,880,464	126,410	6,151,972
1998	758,248	555,210	408,868	8,522,411	455,796	1,521,633	16,106,103	54,885	6,157,363
1999	758,416	555,260	409,016	8,524,595	456,150	3,736,976	18,325,419	54,892	6,158,027
2000	761,969	557,269	410,590	8,539,359	457,087	(241,651)	14,379,857	54,892	6,159,276
2001	763,392	558,257	411,326	8,556,357	457,611	1,692,548	16,341,302	54,971	6,166,586
2002	766,201	559,842	412,571	8,568,010	458,355	1,707,814	16,382,684	54,971	6,167,576
2003	767,666	560,670	413,221	8,574,093	458,743	1,591,183	16,279,687	54,971	6,168,093
2004	769,277	561,581	413,936	8,580,782	459,170	1,628,888	16,332,383	54,971	6,168,663
2005	772,617	563,470	415,418	8,594,690	460,072	2,169,957	16,904,604	54,971	6,169,865
2006	772,785	563,564	415,490	8,595,379	460,115	1,901,776	16,637,970	54,971	6,169,923
2007	773,918	564,203	415,994	8,600,075	460,414	1,734,885	16,481,607	54,971	6,170,321
2008	775,163	564,908	416,545	8,605,250	460,744	1,904,647	16,662,958	54,971	6,170,761
2009	776,168	565,476	416,991	8,609,417	461,006	1,271,290	16,038,946	54,971	6,171,110
2010	780,874	568,135	419,076	8,628,960	462,264	5,109,593	19,921,055	54,971	6,172,787
2011	779,919	567,595	418,654	8,624,983	462,000	(53,087)	14,749,458	54,971	6,172,436
2012	781,274	568,361	419,257	8,630,615	462,364	1,826,428	16,641,598	54,971	6,172,921
2013	782,577	569,097	419,832	8,636,027	462,709	1,780,124	16,607,417	54,971	6,173,380
2014	784,106	569,963	420,512	8,642,382	463,116	2,235,248	17,076,781	54,971	6,173,924
2015	783,587	569,670	420,284	8,640,187	462,968	394,656	15,231,299	54,971	6,173,725
2016	783,921	569,857	420,429	8,641,583	463,060	1,933,460	16,773,223	54,971	6,173,848
2017	788,737	572,579	422,566	8,661,576	464,334	1,828,480	16,713,052	54,971	6,175,547
2018	788,691	572,552	422,545	8,661,383	464,323	1,762,337	16,646,476	54,971	6,175,532
2019	788,906	572,674	422,641	8,662,275	464,381	2,224,962	17,111,107	54,971	6,175,609
2020	786,668	571,409	421,649	8,653,009	463,790	97,530	14,962,886	54,971	6,174,821
2021	787,230	571,726	421,897	8,655,348	463,943	1,833,526	16,704,119	54,971	6,175,025
2022	787,511	571,888	422,022	8,656,502	464,015	1,990,321	16,863,511	54,971	6,175,121
2023	787,477	571,867	422,007	8,656,370	464,008	1,786,856	16,659,742	54,971	6,175,113
2024	787,481	571,870	422,008	8,656,390	464,010	1,692,821	16,565,749	54,971	6,175,114
2025	787,612	571,943	422,067	8,656,915	464,042	2,314,774	17,188,895	54,971	6,175,158
2026	786,952	571,571	421,776	8,654,189	463,868	1,743,397	16,611,400	54,971	6,174,926
2027	786,968	571,578	421,782	8,654,249	463,871	1,678,448	16,546,590	54,971	6,174,931
2028	787,029	571,617	421,810	8,654,509	463,887	2,042,822	16,911,545	54,971	6,174,951
2029	787,047	571,626	421,816	8,654,583	463,893	1,399,928	16,268,815	54,971	6,174,960
2030	786,946	571,567	421,772	8,654,178	463,870	1,672,794	16,540,763	54,971	6,174,929
2031	787,203	571,713	421,885	8,655,219	463,933	1,775,477	16,645,794	54,971	6,175,013
2032	787,203	571,713	421,885	8,655,219	463,933	1,775,477	16,645,794	54,971	6,175,013
2033	787,304	571,770	421,930	8,655,643	463,961	2,187,675	17,058,945	54,971	6,175,050
2034	786,998	571,597	421,795	8,654,371	463,878	1,339,351	16,207,767	54,971	6,174,939
2035	787,520	571,892	422,026	8,656,539	464,021	4,632,835	19,506,112	54,971	6,175,130
Total	39,960,932	29,739,739	21,071,916	452,260,503	23,988,045	88,402,379	852,411,787	4,019,867	306,095,400

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	Santa Ana Division (continued)				West Branch				
Calendar Year	Reach 28G (56)	Reach 28H (57)	Reach 28J (58)	Subtotal (59)	Reach 29A (60)	Reach 29F (61)	Reach 29G (62)	Reach 29H (63)	Reach 29J (64)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	109	30	0	743	719,255	159,249	199,145	234,196	88,198
1973	136,352	79	0	836,300	779,949	339,363	122,664	264,850	119,743
1974	155,262	34,693	854,637	1,868,372	883,312	158,366	112,458	350,160	(4,525)
1975	110,729	69,082	723,814	1,817,983	1,049,990	176,676	194,724	801,457	75,870
1976	138,575	100,400	635,853	2,029,323	1,220,429	215,588	202,591	624,614	98,268
1977	127,543	92,647	825,880	2,521,394	1,268,813	116,939	218,129	684,679	184
1978	166,919	68,363	835,082	2,297,500	1,174,708	342,479	267,308	415,641	17,764
1979	142,586	92,812	265,525	1,820,574	1,366,942	285,575	284,188	972,584	29,850
1980	158,340	129,897	1,120,131	3,013,600	1,698,257	224,472	455,619	874,259	288,303
1981	160,064	111,730	332,150	2,210,609	1,781,889	123,230	615,069	2,309,710	8,808
1982	207,789	137,018	1,549,321	3,763,474	1,943,555	193,487	713,830	2,250,579	416,726
1983	246,942	125,746	418,671	2,490,435	2,754,851	150,877	892,210	752,380	582,402
1984	240,497	190,925	770,807	3,538,840	3,460,644	80,998	2,356,785	543,275	718,155
1985	451,600	182,242	871,350	4,230,991	3,869,765	295,854	3,049,380	976,380	615,828
1986	439,048	256,526	987,311	4,490,546	3,784,949	457,986	2,897,411	1,488,494	1,029,535
1987	278,094	218,717	1,116,968	4,479,783	3,371,154	211,690	2,898,112	957,498	417,565
1988	272,041	200,865	1,187,037	4,783,324	3,460,511	265,393	3,020,080	889,237	456,934
1989	233,220	277,623	1,138,397	4,852,453	4,000,295	416,154	2,770,600	1,397,587	867,450
1990	437,913	308,095	1,543,812	5,655,547	4,032,767	415,133	3,219,526	3,169,718	750,936
1991	840,841	629,459	1,341,143	6,740,374	3,796,522	416,231	3,554,447	652,070	717,574
1992	423,663	5,380,605	1,111,572	10,810,308	4,172,758	456,083	3,854,629	997,584	902,919
1993	626,954	1,632,005	1,872,295	10,126,211	4,872,935	849,708	2,648,188	2,403,548	655,960
1994	566,172	634,787	1,841,744	8,899,094	4,626,262	832,845	2,553,075	2,451,115	754,973
1995	454,394	676,420	1,669,502	9,056,255	4,775,710	636,792	2,436,320	2,499,535	771,899
1996	468,265	509,217	2,516,362	9,949,990	4,888,842	656,229	2,418,474	3,590,756	693,957
1997	471,850	513,113	1,823,681	9,087,026	4,916,147	652,967	2,430,597	3,139,183	696,851
1998	472,047	513,353	2,345,936	9,543,584	4,920,211	654,493	2,432,881	3,145,868	696,955
1999	472,112	513,425	2,142,389	9,340,845	4,920,613	654,927	2,433,507	3,146,910	697,008
2000	472,112	513,425	2,338,952	9,538,657	4,921,775	660,869	2,435,264	3,167,603	697,008
2001	472,800	514,173	2,321,716	9,530,246	4,929,679	662,375	2,438,258	3,174,164	697,563
2002	472,800	514,173	2,403,974	9,613,494	4,930,602	667,111	2,439,651	3,190,378	697,563
2003	472,800	514,173	2,537,805	9,747,842	4,931,085	669,586	2,440,379	3,198,847	697,563
2004	472,800	514,173	2,684,825	9,895,432	4,931,613	672,306	2,441,179	3,208,163	697,563
2005	472,800	514,173	2,517,326	9,729,135	4,932,728	677,951	2,442,863	3,227,557	697,563
2006	472,800	514,173	2,572,761	9,784,628	4,932,781	678,229	2,442,944	3,228,533	697,563
2007	472,800	514,173	2,471,373	9,683,638	4,933,150	680,136	2,443,505	3,235,057	697,563
2008	472,800	514,173	2,482,738	9,695,443	4,933,559	682,239	2,444,124	3,242,259	697,563
2009	472,800	514,173	2,245,661	9,458,715	4,933,888	683,925	2,444,616	3,248,013	697,563
2010	472,800	514,173	2,610,540	9,825,271	4,935,441	691,835	2,446,967	3,275,105	697,563
2011	472,800	514,173	2,304,480	9,518,860	4,935,118	690,208	2,446,475	3,269,529	697,563
2012	472,800	514,173	2,641,869	9,856,734	4,935,568	692,506	2,447,156	3,277,384	697,563
2013	472,800	514,173	2,546,568	9,761,892	4,935,994	694,706	2,447,802	3,284,923	697,563
2014	472,800	514,173	2,812,340	10,028,208	4,936,501	697,294	2,448,567	3,293,793	697,563
2015	472,800	514,173	2,499,500	9,715,169	4,936,317	696,362	2,448,287	3,290,612	697,563
2016	472,800	514,173	2,504,924	9,720,716	4,936,430	696,941	2,448,460	3,292,523	697,563
2017	472,800	514,173	2,599,648	9,817,139	4,938,011	705,064	2,450,845	3,320,362	697,563
2018	472,800	514,173	2,599,238	9,816,714	4,937,997	704,991	2,450,824	3,320,093	697,563
2019	472,800	514,173	2,907,033	10,124,586	4,938,069	705,353	2,450,932	3,321,349	697,563
2020	472,800	514,173	2,377,113	9,593,878	4,937,338	701,605	2,449,828	3,308,539	697,563
2021	472,800	514,173	2,604,060	9,821,029	4,937,525	702,555	2,450,111	3,311,779	697,563
2022	472,800	514,173	2,342,709	9,559,774	4,937,612	703,015	2,450,245	3,313,366	697,563
2023	472,800	514,173	2,585,766	9,802,823	4,937,605	702,974	2,450,234	3,313,222	697,563
2024	472,800	514,173	2,713,431	9,930,489	4,937,606	702,982	2,450,236	3,313,245	697,563
2025	472,800	514,173	2,675,826	9,892,928	4,937,648	703,177	2,450,295	3,313,930	697,563
2026	472,800	514,173	2,608,029	9,824,899	4,937,434	702,080	2,449,969	3,310,135	697,563
2027	472,800	514,173	2,582,531	9,799,406	4,937,439	702,101	2,449,977	3,310,239	697,563
2028	472,800	514,173	2,386,017	9,602,912	4,937,457	702,203	2,450,007	3,310,563	697,563
2029	472,800	514,173	2,869,100	10,086,004	4,937,464	702,238	2,450,018	3,310,709	697,563
2030	472,800	514,173	2,484,433	9,701,306	4,937,438	702,097	2,449,976	3,310,221	697,563
2031	472,800	514,173	2,585,438	9,802,395	4,937,512	702,494	2,450,094	3,311,574	697,563
2032	472,800	514,173	2,585,438	9,802,395	4,937,512	702,494	2,450,094	3,311,574	697,563
2033	472,800	514,173	2,534,997	9,751,991	4,937,549	702,668	2,450,146	3,312,177	697,563
2034	472,800	514,173	2,352,350	9,569,233	4,937,446	702,149	2,449,990	3,310,398	697,563
2035	472,800	514,173	1,654,034	8,871,108	4,937,619	703,028	2,450,255	3,313,309	697,563
Total	25,920,033	32,109,354	122,385,913	490,530,567	262,188,545	35,389,631	137,352,520	160,035,094	38,277,803

TABLE B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	West Branch (continued)		Coastal Branch						
Calendar Year	Reach 30 (65)	Subtotal (66)	Reach 31A (a (67)	Reach 33A (68)	Reach 34 (69)	Reach 35 (70)	Subtotal (71)	Total (72)	Grand Total (73)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	42,918
1963	0	0	0	0	0	0	0	0	168,358
1964	0	0	0	0	0	0	0	0	184,729
1965	0	0	0	0	0	0	0	0	378,874
1966	0	0	0	0	0	0	0	0	408,397
1967	0	0	0	0	0	0	0	0	634,505
1968	0	0	0	0	0	0	0	2,160,548	2,745,160
1969	0	0	509,728	0	0	0	509,728	3,324,718	4,074,939
1970	0	0	609,988	0	0	0	609,988	3,983,062	4,676,282
1971	0	0	699,052	0	0	0	699,052	5,614,013	6,185,714
1972	420,789	1,820,832	697,576	0	0	0	697,576	12,353,356	12,998,869
1973	621,431	2,248,000	641,626	0	0	0	641,626	14,590,688	15,194,233
1974	723,949	2,223,720	669,279	0	0	0	669,279	16,598,762	17,372,561
1975	841,991	3,140,708	806,429	0	0	0	806,429	19,569,999	20,517,423
1976	(650,944)	1,710,546	840,927	0	0	0	840,927	19,002,859	20,027,213
1977	634,581	2,923,325	872,169	0	0	0	872,169	23,272,236	24,217,840
1978	3,088,954	5,306,854	934,119	0	0	0	934,119	24,818,739	26,012,786
1979	958,068	3,897,207	871,688	0	0	0	871,688	23,421,881	24,675,598
1980	222,549	3,763,459	1,052,335	0	0	0	1,052,335	30,106,275	32,039,355
1981	1,094,200	5,932,906	1,037,207	0	0	0	1,037,207	33,831,144	35,460,529
1982	992,082	6,510,259	1,032,753	0	0	0	1,032,753	39,986,102	42,128,610
1983	3,134,827	8,267,547	1,160,984	0	0	0	1,160,984	54,263,253	56,539,095
1984	727,534	7,887,391	1,432,023	0	0	0	1,432,023	63,894,925	67,048,803
1985	1,775,929	10,583,136	1,858,499	0	0	0	1,858,499	70,763,446	74,336,743
1986	1,342,561	11,000,936	1,721,141	0	0	0	1,721,141	73,766,666	77,035,575
1987	1,401,658	9,257,677	1,696,277	0	0	0	1,696,277	70,361,986	74,114,456
1988	1,441,981	9,534,136	1,979,100	0	0	0	1,979,100	72,755,098	76,482,517
1989	1,494,309	10,946,395	1,781,113	0	0	0	1,781,113	73,673,837	78,477,282
1990	838,794	12,426,874	2,270,286	0	0	0	2,270,286	85,610,463	90,828,499
1991	212,118	9,348,962	2,356,614	0	0	0	2,356,614	86,306,483	90,427,120
1992	2,098,276	12,482,249	2,500,622	0	0	0	2,500,622	96,074,312	102,233,113
1993	2,123,351	13,553,690	4,123,866	0	0	0	4,123,866	106,836,018	116,959,806
1994	1,571,704	12,789,974	3,880,048	0	0	0	3,880,048	102,685,795	111,287,098
1995	1,331,467	12,451,723	3,742,366	0	0	0	3,742,366	103,080,584	110,195,190
1996	1,354,717	13,602,975	3,469,064	1,661,275	643,528	392,647	6,166,514	107,118,845	113,996,716
1997	4,621,574	16,457,319	3,493,501	1,428,066	325,965	315,140	5,562,672	106,810,327	113,737,039
1998	3,527,330	15,377,738	3,496,815	1,414,942	312,617	314,998	5,539,372	108,430,717	115,361,983
1999	1,288,960	13,141,925	3,496,723	1,415,251	312,658	315,030	5,539,662	108,188,594	115,120,128
2000	1,975,944	13,858,463	3,497,921	1,415,850	312,745	315,264	5,541,780	105,187,080	112,120,896
2001	1,836,049	13,738,088	3,503,059	1,418,004	313,210	315,748	5,550,021	107,149,567	114,094,655
2002	1,880,303	13,805,608	3,504,012	1,418,479	313,281	315,933	5,551,705	107,365,473	114,312,374
2003	1,889,890	13,827,350	3,504,509	1,418,729	313,316	316,032	5,552,586	107,430,949	114,378,797
2004	1,900,356	13,851,180	3,505,058	1,419,001	313,357	316,139	5,553,555	107,668,787	114,617,679
2005	1,894,640	13,873,302	3,506,207	1,419,580	313,442	316,363	5,555,592	108,125,192	115,076,280
2006	1,923,657	13,903,707	3,506,262	1,419,608	313,445	316,374	5,555,689	107,945,841	114,897,036
2007	1,930,993	13,920,404	3,506,645	1,419,797	313,475	316,448	5,556,365	107,714,706	114,666,628
2008	1,938,929	13,938,673	3,507,067	1,420,010	313,505	316,530	5,557,112	107,936,650	114,889,379
2009	1,945,395	13,953,400	3,507,407	1,420,181	313,529	316,596	5,557,713	107,099,123	114,052,493
2010	2,039,429	14,086,340	3,509,012	1,420,985	313,649	316,911	5,560,557	111,520,543	118,476,980
2011	1,904,822	13,943,715	3,508,675	1,420,817	313,623	316,844	5,559,959	105,891,505	112,847,295
2012	1,979,607	14,029,784	3,509,141	1,421,051	313,658	316,935	5,560,785	108,219,215	115,175,895
2013	1,988,095	14,049,083	3,509,584	1,421,274	313,690	317,021	5,561,569	108,120,537	115,078,059
2014	2,071,849	14,145,567	3,510,105	1,421,535	313,729	317,123	5,562,492	108,965,690	115,924,208
2015	2,160,684	14,229,825	3,509,915	1,421,437	313,714	317,089	5,562,155	106,886,717	113,844,873
2016	1,868,702	13,940,619	3,510,033	1,421,497	313,724	317,110	5,562,364	108,147,897	115,106,280
2017	2,063,643	14,175,488	3,511,667	1,422,316	313,843	317,429	5,565,255	108,459,773	115,421,268
2018	1,959,795	14,071,263	3,511,650	1,422,305	313,842	317,426	5,565,223	108,288,179	115,249,646
2019	1,899,939	14,013,205	3,511,726	1,422,343	313,847	317,441	5,565,357	109,004,460	115,966,070
2020	2,061,164	14,156,037	3,510,969	1,421,964	313,792	317,293	5,564,018	106,449,514	113,409,683
2021	2,017,435	14,116,968	3,511,163	1,422,063	313,805	317,333	5,564,364	108,383,636	115,344,176
2022	2,054,416	14,156,217	3,511,257	1,422,110	313,813	317,349	5,564,529	108,323,324	115,284,040
2023	2,020,147	14,121,745	3,511,248	1,422,104	313,813	317,347	5,564,512	108,327,927	115,288,627
2024	1,985,984	14,087,616	3,511,250	1,422,104	313,813	317,348	5,564,515	108,327,522	115,288,226
2025	2,097,434	14,200,047	3,511,291	1,422,126	313,815	317,357	5,564,589	109,026,533	115,987,317
2026	1,947,768	14,044,949	3,511,067	1,422,015	313,799	317,313	5,564,194	108,220,343	115,180,702
2027	2,083,706	14,181,025	3,511,072	1,422,019	313,799	317,314	5,564,204	108,266,242	115,226,609
2028	1,918,349	14,016,142	3,511,093	1,422,026	313,801	317,318	5,564,238	108,270,351	115,230,758
2029	2,015,778	14,113,770	3,511,098	1,422,031	313,802	317,318	5,564,249	108,208,485	115,168,901
2030	2,039,893	14,137,188	3,511,071	1,422,015	313,799	317,314	5,564,199	108,118,506	115,078,871
2031	2,018,196	14,117,433	3,511,152	1,422,058	313,805	317,329	5,564,344	108,306,822	115,267,339
2032	2,018,196	14,117,433	3,511,152	1,422,058	313,805	317,329	5,564,344	108,306,822	115,267,339
2033	2,052,821	14,152,924	3,511,188	1,422,076	313,809	317,334	5,564,407	108,705,947	115,666,533
2034	2,050,441	14,147,987	3,511,082	1,422,021	313,801	317,313	5,564,217	107,664,451	114,624,836
2035	1,409,231	13,511,005	3,511,256	1,422,114	313,814	317,350	5,564,534	109,631,729	116,592,450
Total	110,078,420	743,322,013	182,061,982	57,077,237	12,886,277	12,747,830	264,773,326	5,652,921,769	6,014,429,254

a) Includes certain costs to be assigned directly to Kern County Water Agency. Refer to Appendix B text discussion of Table B-16A under "Project Water Charges."

TABLE B-12

Variable OMP&R Costs to Be Reimbursed through Variable OMP&R Component of Transportation Charge (a

(Dollars)

	North Bay Aqueduct				South Bay Aqueduct	California Aqueduct			
	Reach 1	Reach 3A	Reach 3B		Reach 1	Reach 1	Reach 4	Reach 14A	Reach 15A
Calendar Year	Barker Slough Pumping Plant (1)	Cordelia Pumping Plant (Solano) (2)	Cordelia Pumping Plant (Napa) (b (3)	Total (4)	South Bay & Del Valle Pumping Plants (c (5)	Banks Pumping Plant (6)	Dos Amigos Pumping Plant (7)	Buena Vista Pumping Plant (8)	Teerink Pumping Plant (9)
1962	0	0	0	0	36,970	0	0	0	0
1963	0	0	0	0	57,711	0	0	0	0
1964	0	0	0	0	74,134	0	0	0	0
1965	0	0	0	0	142,609	0	0	0	0
1966	0	0	0	0	192,605	0	0	0	0
1967	0	0	0	0	223,117	13,881	0	0	0
1968	0	0	6,989	6,989	336,671	452,630	202,947	0	0
1969	0	0	8,551	8,551	257,579	293,741	135,425	0	0
1970	0	0	13,598	13,598	396,358	346,215	211,198	0	0
1971	0	0	10,609	10,609	381,662	574,015	225,188	138,001	17,664
1972	0	0	14,434	14,434	598,702	927,369	498,482	234,626	89,516
1973	0	0	14,449	14,449	493,490	685,014	379,305	303,105	275,021
1974	0	0	17,473	17,473	565,575	769,839	438,997	344,632	350,558
1975	0	0	14,779	14,779	349,758	1,330,133	514,241	542,726	585,744
1976	0	0	20,856	20,856	571,361	1,456,742	562,537	609,257	600,780
1977	0	0	22,635	22,635	512,996	801,033	211,120	166,598	173,208
1978	0	0	21,692	21,692	586,355	2,215,828	574,813	658,309	578,337
1979	0	0	16,237	16,237	605,136	3,431,968	973,702	760,080	724,534
1980	0	0	19,945	19,945	523,369	1,882,630	1,010,938	853,317	826,802
1981	0	0	23,841	23,841	567,692	3,920,954	1,897,018	1,289,727	1,269,451
1982	0	0	12,159	12,159	531,147	3,060,402	1,360,551	1,196,255	1,208,785
1983	0	0	2,335	2,335	124,260	866,082	372,224	362,477	337,756
1984	0	0	4,866	4,866	274,071	1,726,606	898,131	683,845	604,273
1985	0	0	10,186	10,186	451,019	3,203,309	1,615,438	1,397,512	1,397,110
1986	0	0	15,472	15,472	826,289	7,007,102	2,621,017	2,410,367	2,437,487
1987	0	0	27,222	27,222	895,814	7,311,240	2,531,225	2,240,488	2,223,201
1988	17,867	20,024	23,987	61,878	913,717	7,635,377	2,631,296	2,571,939	2,569,844
1989	26,413	45,485	6,589	78,487	1,084,717	9,806,755	4,017,939	3,980,189	3,990,355
1990	58,623	68,476	43,103	170,202	1,873,401	11,537,257	4,311,785	5,780,222	6,014,887
1991	22,100	33,340	3,301	58,741	438,716	3,186,483	892,865	975,052	1,030,505
1992	21,850	19,889	11,642	53,381	354,595	6,370,481	1,520,118	1,776,250	2,012,734
1993	51,972	40,943	33,571	126,486	973,636	10,438,086	4,808,020	5,131,451	5,931,458
1994	140,002	111,105	91,565	342,672	2,497,343	22,971,690	10,332,668	11,501,957	13,403,305
1995	277,576	133,409	114,829	525,814	2,958,783	28,223,476	12,083,009	13,606,508	15,880,731
1996	210,144	139,919	134,359	484,422	4,052,584	34,130,801	14,295,675	15,754,559	18,401,407
1997	206,936	139,209	136,930	483,075	3,895,874	34,618,819	13,794,961	15,066,516	17,592,585
1998	214,353	140,019	146,535	500,907	3,935,919	34,337,214	14,155,283	15,986,995	18,261,722
1999	222,018	143,529	156,163	521,710	3,980,261	31,617,371	13,967,983	16,197,027	18,504,731
2000	235,536	150,210	170,834	556,580	4,111,593	32,660,761	14,442,477	16,842,465	19,253,165
2001	239,626	150,884	179,774	570,284	4,130,055	32,950,575	14,563,498	17,024,213	19,469,447
2002	248,515	154,690	191,477	594,682	4,234,239	33,726,978	14,902,913	17,442,280	19,948,714
2003	255,073	156,680	202,479	614,232	4,288,677	34,115,260	15,073,701	17,649,570	20,185,442
2004	262,040	158,865	213,747	634,652	4,348,496	34,565,633	15,266,803	17,886,913	20,457,418
2005	283,913	174,007	228,814	686,734	4,474,882	35,951,538	15,880,423	18,789,664	21,521,265
2006	287,088	174,245	235,707	697,040	4,480,980	35,999,395	15,902,197	18,817,233	21,552,983
2007	293,036	175,873	246,016	714,925	4,522,849	36,307,852	16,039,831	18,986,858	21,747,567
2008	299,903	177,674	258,375	735,952	4,569,179	36,649,247	16,190,785	19,173,368	21,961,525
2009	305,694	179,102	268,704	753,500	4,605,873	36,872,344	16,285,487	19,276,579	22,076,563
2010	322,633	187,624	287,800	798,057	4,782,196	38,576,190	17,027,153	20,290,749	23,261,881
2011	324,270	186,172	296,440	806,882	4,745,173	38,143,975	16,852,581	20,037,211	22,963,274
2012	331,341	188,175	308,883	828,399	4,796,243	38,697,949	17,091,787	20,372,685	23,357,427
2013	338,843	190,073	323,695	852,611	4,844,616	39,063,473	17,251,893	20,571,076	23,585,098
2014	347,229	192,314	339,285	878,828	4,901,729	39,491,711	17,438,172	20,803,003	23,851,367
2015	351,887	193,319	350,053	895,259	4,880,879	39,272,780	17,343,757	20,670,862	23,696,314
2016	356,717	193,831	362,430	912,978	4,893,809	39,459,750	17,425,493	20,793,170	23,841,619
2017	374,093	200,905	387,845	962,843	5,072,439	40,827,639	18,023,975	21,540,622	24,700,620
2018	378,134	200,839	400,024	978,997	5,070,769	40,806,085	18,014,435	21,526,278	24,683,650
2019	383,168	201,163	413,247	997,578	5,078,936	40,862,722	18,037,743	21,555,122	24,716,394
2020	381,026	197,883	419,755	998,664	4,996,133	40,151,251	17,729,032	21,151,051	24,248,040
2021	383,468	198,730	423,675	1,005,873	5,017,523	40,462,957	17,865,465	21,355,884	24,491,375
2022	384,239	199,130	424,526	1,007,895	5,027,604	40,515,637	17,888,416	21,379,137	24,516,949
2023	384,171	199,095	424,451	1,007,717	5,026,710	40,532,155	17,896,058	21,393,698	24,534,968
2024	384,185	199,103	424,467	1,007,755	5,026,901	40,523,652	17,891,692	21,385,968	24,525,423
2025	384,530	199,280	424,849	1,008,659	5,031,424	40,580,966	17,915,792	21,422,117	24,568,258
2026	382,669	198,317	422,791	1,003,777	5,007,064	40,383,351	17,832,307	21,315,199	24,444,970
2027	382,708	198,337	422,834	1,003,879	5,007,573	40,390,741	17,834,933	21,319,054	24,449,491
2028	382,875	198,423	423,018	1,004,316	5,009,753	40,388,662	17,832,547	21,311,517	24,439,554
2029	382,940	198,457	423,091	1,004,488	5,010,615	40,390,699	17,835,377	21,315,175	24,443,851
2030	382,697	198,331	422,822	1,003,850	5,007,430	40,399,129	17,835,696	21,320,803	24,451,686
2031	383,369	198,679	423,565	1,005,613	5,016,228	40,476,930	17,872,391	21,370,334	24,509,474
2032	383,369	198,679	423,565	1,005,613	5,016,228	40,476,930	17,872,391	21,370,334	24,509,474
2033	383,670	198,836	423,898	1,006,404	5,020,171	40,501,501	17,882,180	21,381,723	24,522,288
2034	382,779	198,373	422,913	1,004,065	5,008,506	40,364,864	17,823,266	21,296,527	24,421,792
2035	384,311	199,168	424,607	1,008,086	5,028,559	40,377,314	17,845,341	21,306,734	24,428,583
Total	13,821,599	7,800,813	13,641,358	35,263,770	210,628,030	1,669,069,139	728,754,087	853,965,163	975,632,400

a) Includes extra peaking costs assigned directly to contractors. Refer to Appendix B text discussion of Table B-17 under "Project Water Charges."
b) Costs for the period 1968 through 1987 are for an interim facility.
c) The relatively minor costs of Del Valle Pumping Plant have been combined with those of South Bay Pumping Plant to simplify the allocation procedures.

C—060191

C-060191

TABLE B-12

Variable OMP&R Costs to Be Reimbursed through Variable OMP&R Component of Transportation Charge (a

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Reach 16A	Reach 17E	Reach 18A	Reach 22B	Reach 23	Reach 24	Reach 26A	Reach 28J	Reach 29A
	Chrisman Pumping Plant (10)	Edmonston Pumping Plant (11)	Alamo Powerplant (12)	Pearblossom Pumping Plant (13)	Mojave Siphon Powerplant (14)	Silverwood Lake (d (15)	Devil Canyon Powerplant (16)	Lake Perris (d (17)	Oso Pumping Plant (18)
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	165,589	494,616	0	23,387	0	4,216	(3,024)	0	93,212
1973	434,834	1,524,488	0	219,421	0	47,861	(436,769)	0	158,063
1974	589,117	2,058,680	0	315,705	0	98,179	(496,517)	52,549	189,479
1975	1,130,256	3,940,915	0	577,509	0	25,950	(1,033,054)	65,938	349,000
1976	1,222,413	4,235,934	0	869,201	0	122,336	(1,459,978)	104,257	245,397
1977	351,987	1,160,085	0	296,678	0	261,704	(1,115,096)	50,523	18,075
1978	1,034,893	3,636,671	0	1,551,015	0	0	(3,038,194)	0	69,043
1979	1,438,690	4,965,847	0	1,712,620	0	122,803	(3,159,826)	355,442	118,995
1980	1,634,049	5,416,333	0	1,733,275	0	154,695	(3,318,152)	0	36,761
1981	2,726,625	8,975,564	0	2,152,072	0	290,518	(3,678,813)	372,857	443,282
1982	2,416,093	8,325,450	0	1,489,997	0	0	(2,734,735)	0	539,246
1983	610,175	1,812,417	0	346,500	0	381,004	(5,478,333)	0	135,164
1984	1,131,707	3,450,039	0	627,100	0	0	(7,325,752)	(10,364)	237,006
1985	2,781,982	9,262,238	0	1,195,775	0	0	(10,477,628)	(57,093)	874,071
1986	5,011,171	16,995,600	(1,013,756)	2,364,991	0	0	(11,484,996)	0	1,271,720
1987	4,455,625	14,683,449	(1,025,854)	1,830,348	0	127,810	(10,805,393)	56,870	1,325,853
1988	5,147,228	16,895,130	(744,374)	2,386,714	0	0	(14,495,967)	0	1,425,495
1989	8,405,372	28,216,022	(766,443)	4,125,465	0	689,792	(18,532,961)	91,079	2,020,134
1990	13,618,589	48,328,631	(834,580)	6,505,724	0	89,504	(20,909,320)	148,530	2,855,157
1991	2,397,251	8,417,948	(357,644)	1,009,941	0	0	(6,921,017)	0	586,025
1992	3,615,674	10,286,193	(33,343)	2,099,610	0	0	(8,569,403)	0	1,653,978
1993	11,996,855	41,284,868	(1,029,397)	6,572,854	0	416,269	(22,941,679)	0	2,753,914
1994	27,840,568	97,398,295	(1,746,764)	13,229,740	0	0	(26,426,121)	0	6,811,571
1995	33,084,884	115,948,116	(1,754,731)	17,540,211	0	32,319	(29,899,771)	0	7,310,419
1996	38,501,528	135,269,205	(4,173,243)	20,022,503	(8,146,084)	266,266	(30,083,365)	0	8,534,336
1997	36,784,060	129,191,425	(4,035,177)	18,383,528	(7,956,982)	2,436,564	(29,232,931)	523,270	8,426,039
1998	38,056,676	133,382,767	(4,171,483)	19,139,914	(8,598,529)	149,212	(29,456,828)	0	8,616,488
1999	38,573,346	135,211,579	(4,223,465)	19,393,288	(8,474,392)	0	(29,532,068)	206,643	8,661,883
2000	40,165,310	140,847,717	(4,213,753)	19,887,542	(8,143,139)	1,999,242	(29,880,273)	35,072	9,046,585
2001	40,629,911	142,500,194	(4,292,242)	20,298,910	(8,588,920)	4,393	(29,787,503)	59,073	9,082,649
2002	41,649,677	146,111,578	(4,295,776)	20,816,431	(8,584,915)	0	(29,812,732)	0	9,298,789
2003	42,153,348	147,895,286	(4,292,602)	21,058,428	(8,557,380)	126,171	(29,819,900)	0	9,410,391
2004	42,732,192	149,946,276	(4,295,384)	21,352,430	(8,605,239)	94,237	(29,809,089)	0	9,532,949
2005	45,014,737	158,060,064	(4,493,514)	22,648,661	(8,983,365)	0	(30,714,573)	0	9,831,321
2006	45,081,854	158,297,178	(4,492,036)	22,679,581	(8,944,246)	0	(30,725,229)	0	9,846,671
2007	45,495,136	159,759,344	(4,489,888)	22,889,067	(8,929,332)	0	(30,727,494)	0	9,932,865
2008	45,950,811	161,373,952	(4,490,979)	23,119,683	(8,947,438)	0	(30,723,110)	0	10,028,232
2009	46,192,997	162,227,515	(4,458,178)	23,171,366	(8,881,138)	479,557	(30,648,568)	250,659	10,103,773
2010	48,738,148	171,279,574	(4,587,168)	24,525,893	(8,573,263)	0	(31,326,803)	0	10,466,364
2011	48,089,295	168,958,307	(4,527,784)	23,993,654	(8,170,206)	1,881,271	(31,329,303)	227,977	10,384,355
2012	48,934,345	171,961,862	(4,594,602)	24,604,513	(8,491,895)	0	(31,344,692)	0	10,495,648
2013	49,418,686	173,676,552	(4,596,199)	24,849,531	(8,496,170)	0	(31,341,300)	0	10,595,230
2014	49,987,345	175,694,303	(4,601,016)	25,136,702	(8,593,812)	0	(31,316,534)	0	10,712,387
2015	49,653,498	174,505,928	(4,540,818)	24,893,080	(8,545,192)	1,425,854	(31,408,991)	57,854	10,668,921
2016	49,965,783	175,616,801	(4,585,444)	25,190,565	(8,677,291)	0	(31,403,133)	54,723	10,684,037
2017	51,794,868	182,096,349	(4,585,132)	26,109,533	(8,662,453)	0	(31,422,970)	0	11,064,009
2018	51,758,269	181,965,661	(4,588,112)	26,095,549	(8,660,775)	34,102	(31,422,821)	0	11,054,245
2019	51,829,490	182,221,236	(4,588,887)	26,140,698	(8,696,479)	0	(31,416,710)	0	11,065,227
2020	50,827,860	178,665,377	(4,573,304)	25,499,265	(8,821,068)	1,738,776	(31,401,397)	209,094	10,906,922
2021	51,351,312	180,528,128	(4,627,948)	25,947,970	(9,132,773)	0	(31,427,905)	0	10,951,188
2022	51,405,147	180,718,328	(4,610,605)	25,947,595	(9,060,932)	0	(31,374,665)	250,816	10,971,770
2023	51,443,755	180,855,273	(4,630,346)	25,995,056	(9,080,266)	136	(31,442,145)	0	10,970,113
2024	51,423,616	180,783,796	(4,628,240)	25,980,051	(9,080,713)	96,367	(31,440,953)	0	10,967,175
2025	51,516,969	181,118,427	(4,619,749)	26,048,441	(8,981,360)	0	(31,513,482)	0	10,979,368
2026	51,252,463	180,178,101	(4,625,790)	25,917,824	(8,925,611)	46,280	(31,526,878)	0	10,923,124
2027	51,262,414	180,213,624	(4,621,881)	25,909,570	(8,926,816)	113,890	(31,525,279)	0	10,930,317
2028	51,240,957	180,137,148	(4,614,403)	25,896,841	(8,950,424)	0	(31,460,897)	203,100	10,925,683
2029	51,250,187	180,170,295	(4,616,442)	25,878,449	(9,014,528)	396,042	(31,497,875)	0	10,936,869
2030	51,266,859	180,229,272	(4,646,751)	25,915,120	(9,085,147)	107,022	(31,487,320)	102,619	10,930,308
2031	51,390,426	180,667,807	(4,626,964)	25,998,635	(9,185,826)	0	(31,489,073)	0	10,948,575
2032	51,390,426	180,667,807	(4,626,964)	25,998,635	(9,185,826)	0	(31,489,073)	0	10,948,575
2033	51,418,773	180,769,770	(4,627,406)	26,006,910	(9,180,703)	0	(31,475,708)	53,282	10,956,486
2034	51,201,969	179,997,437	(4,608,883)	25,837,393	(9,102,692)	449,554	(31,434,453)	236,490	10,932,469
2035	51,219,638	180,066,101	(4,594,736)	25,886,510	(8,710,625)	0	(31,386,448)	962,841	10,915,599
Total	2,041,255,708	7,161,530,873	(189,420,180)	1,031,841,168	(350,333,945)	14,709,896	(1,452,802,970)	4,664,101	444,158,995

d) These values represent a proportionate allocation of the total variable OMP&R costs of pumping and recovery plants (Table B-3) associated with net annual withdrawals fromstorage for Project Transportation Facilities. The allocation is determined annually by applying the following ratio, calculated from the data shown Table B-6: "Reservoir Storage Changes" (withdrawals, as a positive value) conveyed through each plant, in acre-feet, divided by "Total" annual quantity conveyed through each plant, in acre-feet. The costs so determined are accumulated for all upstream plants for each year, for each respective reservoir.

TABLE B-12

Variable OMP&R Costs to Be Reimbursed through Variable OMP&R Component of Transportation Charge (a

(Dollars)

	California Aqueduct (continued)							
	Reach 29G	Reach 29H	Reach 29J	Reach 30	Reach 31A	Reach 33A		
Calendar Year	Warne Powerplant (19)	Pyramid Lake (d (20)	Castaic Powerplant (21)	Castaic Lake (d (22)	Las Perillas & Badger Hill Pumping Plants (23)	Devil's Den, Bluestone, & Polonio PPs San Luis Obispo Pwp (24)	Total (25)	Grand Total (26)
1962	0	0	0	0	0	0	0	36,970
1963	0	0	0	0	0	0	0	57,711
1964	0	0	0	0	0	0	0	74,134
1965	0	0	0	0	0	0	0	142,609
1966	0	0	0	0	0	0	0	192,605
1967	0	0	0	0	0	0	13,881	236,998
1968	0	0	0	118,676	0	0	774,253	1,117,913
1969	0	0	0	78,350	0	0	507,516	773,646
1970	0	0	0	136,429	0	0	693,842	1,103,798
1971	0	0	0	166,296	0	0	1,121,164	1,513,435
1972	3,578	(193,058)	72,639	237,638	0	0	2,648,786	3,261,922
1973	0	7,344	(1,057,564)	0	120,913	0	2,661,036	3,168,975
1974	0	42,364	(1,540,853)	5,561	118,582	0	3,336,872	3,919,920
1975	0	0	(2,445,397)	10,225	94,848	0	5,689,034	6,053,571
1976	0	60,068	(1,940,099)	1,056,464	141,260	0	7,886,569	8,478,786
1977	0	0	(607,380)	(1,211,050)	71,311	0	628,796	1,164,427
1978	0	1,061,100	(1,542,479)	0	179,925	0	6,979,261	7,587,308
1979	0	0	(2,384,748)	(12,206)	192,126	0	9,240,027	9,861,400
1980	0	456,892	(984,154)	10,716	168,458	0	9,882,560	10,425,874
1981	0	0	(3,201,635)	0	169,178	0	16,626,798	17,218,331
1982	(783,626)	0	(3,463,971)	0	168,390	0	12,782,837	13,326,143
1983	(843,635)	68,779	(4,369,424)	(1,588,849)	17,887	0	(6,969,776)	(6,843,181)
1984	(1,991,601)	0	(1,820,263)	(1,674,550)	113,728	0	(3,350,095)	(3,071,158)
1985	(5,930,176)	0	(16,316,559)	0	147,587	0	(10,906,434)	(10,445,229)
1986	(5,579,301)	0	(11,072,448)	0	298,277	0	11,267,231	12,108,992
1987	(6,304,152)	72,559	(11,562,270)	(35,466)	245,082	0	7,370,615	8,293,651
1988	(6,993,235)	56,622	(12,292,638)	(186,528)	215,561	0	6,822,464	7,798,059
1989	(8,235,085)	14,487	(14,514,469)	134,545	283,590	0	23,726,766	24,889,970
1990	(11,011,065)	0	(20,116,507)	249,533	386,599	0	46,954,946	48,998,549
1991	(4,941,548)	393,316	(9,132,764)	0	36,048	0	(2,427,539)	(1,930,082)
1992	(4,128,674)	0	(8,333,537)	29,743	151,779	0	8,451,603	8,859,579
1993	(10,653,178)	0	(19,675,346)	0	181,557	0	35,215,732	36,315,854
1994	(16,942,487)	0	(29,610,773)	0	479,732	0	129,243,381	132,083,396
1995	(15,529,834)	0	(27,294,254)	1,947	559,127	0	169,792,157	173,276,754
1996	(17,007,293)	0	(27,827,386)	436,188	849,338	1,163,101	200,387,536	204,924,542
1997	(17,442,740)	0	(28,572,780)	0	980,462	2,016,778	192,574,397	196,953,346
1998	(17,679,397)	0	(28,940,681)	0	1,362,719	2,706,833	197,308,905	201,745,731
1999	(17,675,728)	0	(28,767,965)	561,353	1,378,072	2,748,357	198,348,015	202,849,986
2000	(17,862,958)	0	(29,159,891)	0	1,371,907	2,871,335	210,163,564	214,831,737
2001	(17,865,783)	0	(29,152,741)	26,517	1,378,067	2,888,620	211,188,878	215,889,217
2002	(17,870,794)	0	(29,154,671)	0	1,412,830	2,986,178	218,577,480	223,406,401
2003	(17,870,384)	0	(29,154,696)	0	1,430,995	3,037,153	222,440,783	227,343,692
2004	(17,870,360)	0	(29,154,696)	0	1,450,954	3,093,166	226,644,203	231,627,351
2005	(17,931,610)	0	(29,273,235)	28,889	1,451,464	3,211,514	240,993,243	246,154,859
2006	(17,932,941)	0	(29,281,464)	0	1,453,443	3,217,224	241,471,843	246,649,863
2007	(17,932,941)	0	(29,276,864)	0	1,467,022	3,256,427	244,525,450	249,763,224
2008	(17,932,725)	0	(29,276,813)	0	1,482,050	3,299,811	247,858,399	253,163,530
2009	(17,934,325)	0	(29,277,062)	0	1,493,951	3,334,172	250,565,692	255,925,065
2010	(17,932,456)	0	(29,276,532)	0	1,551,143	3,499,275	267,520,148	273,100,401
2011	(17,921,827)	0	(29,258,996)	64,920	1,539,135	3,464,610	265,392,449	270,944,504
2012	(17,934,780)	0	(29,277,021)	0	1,555,701	3,512,430	268,941,357	274,565,999
2013	(17,934,780)	0	(29,277,021)	0	1,571,390	3,557,725	272,495,184	278,192,411
2014	(17,931,667)	0	(29,276,348)	0	1,589,915	3,611,205	276,596,733	282,377,290
2015	(17,929,215)	0	(29,275,542)	0	1,583,152	3,591,682	275,663,924	281,440,062
2016	(17,920,243)	0	(29,243,061)	132,579	1,587,346	3,603,790	276,526,484	282,333,271
2017	(17,934,135)	0	(29,276,812)	0	1,645,286	3,771,056	289,692,455	295,727,737
2018	(17,927,558)	0	(29,259,671)	71,220	1,644,745	3,769,492	289,564,794	295,614,560
2019	(17,915,596)	0	(29,243,890)	133,783	1,647,393	3,777,140	290,125,386	296,201,900
2020	(17,932,174)	0	(29,276,545)	0	1,620,536	3,699,604	284,442,320	290,437,117
2021	(17,935,422)	0	(29,277,164)	0	1,627,474	3,719,634	285,900,175	291,923,571
2022	(17,932,586)	0	(29,276,708)	0	1,630,744	3,729,074	286,698,117	292,733,616
2023	(17,933,963)	0	(29,277,022)	0	1,630,454	3,728,237	286,616,161	292,650,588
2024	(17,930,238)	0	(29,268,268)	35,091	1,630,516	3,728,416	286,623,351	292,658,007
2025	(17,931,637)	0	(29,276,350)	0	1,631,982	3,732,651	287,192,393	293,232,476
2026	(17,926,838)	0	(29,259,683)	70,073	1,624,082	3,709,839	285,432,813	291,443,654
2027	(17,932,072)	0	(29,276,535)	0	1,624,247	3,710,315	285,476,013	291,487,465
2028	(17,921,302)	0	(29,251,365)	101,959	1,624,954	3,712,357	285,616,888	291,630,957
2029	(17,932,315)	0	(29,276,472)	1,404	1,625,233	3,713,165	285,619,114	291,634,217
2030	(17,933,575)	0	(29,276,757)	0	1,624,200	3,710,183	285,463,347	291,474,627
2031	(17,934,642)	0	(29,276,996)	0	1,627,054	3,718,423	286,066,548	292,088,389
2032	(17,934,642)	0	(29,276,996)	0	1,627,054	3,718,423	286,066,548	292,088,389
2033	(17,933,231)	0	(29,276,755)	0	1,628,333	3,722,114	286,349,557	292,376,132
2034	(17,933,719)	0	(29,276,778)	0	1,624,550	3,711,191	285,540,977	291,553,548
2035	(17,851,625)	0	(29,120,076)	626,295	1,631,054	3,729,968	287,332,468	293,369,113
Total	(814,786,236)	2,040,473	(1,372,363,202)	(182,255)	65,452,492	135,482,668	10,948,668,375	11,194,560,175

TABLE B-13

Capital and Operating Costs of Project Conservation Facilities to Be Reimbursed through Delta Water Charge

(Dollars)

Calendar Year	Initial Project Conservation Facilities (Portions of Upper Feather Lakes, Oroville-Thermalito and California Aqueduct Facilities)						Total
				Application of Oroville Power Revenues to:			
	Capital Costs (a (1)	Capital Cost Credits (b (2)	Operating Costs (c (3)	Capital Costs (d (4)	Operating Costs (e (5)	Planning and Pre-operating Costs (a (f (6)	(7)
1952	171,322	0	0	0	0	0	171,322
1953	312,190	0	0	0	0	0	312,190
1954	308,624	0	0	0	0	0	308,624
1955	194,645	0	0	0	0	0	194,645
1956	1,357,077	0	0	0	0	0	1,357,077
1957	6,210,709	0	0	0	0	0	6,210,709
1958	9,510,916	0	0	0	0	0	9,510,916
1959	11,390,586	0	0	0	0	0	11,390,586
1960	14,456,356	(4,850,000)	0	0	0	0	9,606,356
1961	18,682,616	(431,527)	0	0	0	0	18,251,089
1962	9,012,960	(479,280)	0	0	0	0	8,533,680
1963	72,965,728	(478,743)	(14,000)	0	0	0	72,472,985
1964	62,490,522	(751,330)	(14,000)	0	0	107,780	61,832,972
1965	70,913,845	(763,541)	(14,000)	0	0	551,850	70,688,154
1966	125,205,400	(748,649)	(14,000)	0	0	1,081,023	125,523,774
1967	94,296,914	(812,145)	(13,446)	0	0	1,189,212	94,660,535
1968	39,888,442	(431,574)	1,303,821	(951,000)	0	793,399	40,603,088
1969	5,279,786	(259,015)	2,890,772	(11,007,000)	0	601,867	(2,493,590)
1970	4,130,490	(203,733)	4,818,634	(14,650,000)	(1,500,000)	516,659	(6,887,950)
1971	3,877,493	(193,631)	6,026,480	(14,650,000)	(1,500,000)	408,754	(6,030,904)
1972	4,569,024	(196,361)	5,378,401	(14,650,000)	(1,500,000)	287,374	(6,111,562)
1973	3,985,415	(136,997)	6,083,392	(14,650,000)	(1,500,000)	203,384	(6,014,806)
1974	6,659,999	(137,503)	6,873,552	(17,950,000)	(1,500,000)	201,907	(5,852,045)
1975	8,084,449	(234,567)	7,622,422	(14,650,000)	(1,500,000)	146,188	(531,508)
1976	5,870,528	(204,944)	6,956,842	(14,650,000)	(1,500,000)	205,234	(3,322,340)
1977	21,285,846	(150,214)	10,413,891	(14,650,000)	(1,500,000)	857,419	16,256,942
1978	7,713,249	(64,566)	12,750,917	(14,650,000)	(1,500,000)	2,131,286	6,380,886
1979	9,030,800	0	9,435,703	(14,650,000)	(1,500,000)	2,131,884	4,448,387
1980	10,410,356	0	13,029,214	(14,650,000)	(1,500,000)	3,734,312	11,023,882
1981	11,165,837	0	9,996,450	(14,650,000)	(1,500,000)	4,599,246	9,611,533
1982	16,578,762	0	14,933,090	(14,650,000)	(1,500,000)	4,594,682	19,956,534
1983	11,939,936	0	21,673,623	(34,705,000)	(8,735,000)	3,751,993	(6,074,448)
1984	8,972,399	0	22,007,547	(14,650,000)	(10,348,000)	3,743,484	9,725,430
1985	10,276,614	0	23,060,003	(14,650,000)	(8,079,000)	3,675,801	14,283,418
1986	18,390,498	0	25,206,043	(14,650,000)	(9,107,000)	3,104,933	22,944,474
1987	28,637,195	0	22,736,571	(14,650,000)	(9,451,000)	3,542,427	30,815,193
1988	26,358,662	0	24,708,916	(14,650,000)	(8,677,000)	3,734,970	31,475,548
1989	7,079,701	0	25,836,983	(14,650,000)	(8,104,000)	4,264,867	14,427,551
1990	25,532,980	0	34,882,573	(14,650,000)	(8,498,000)	3,338,722	40,606,275
1991	34,535,260	0	31,107,480	(14,650,000)	(9,486,000)	3,688,745	45,195,485
1992	23,690,410	0	32,608,121	(14,650,000)	(8,526,000)	5,397,350	38,519,881
1993	44,765,678	0	44,166,863	(14,650,000)	(8,768,000)	11,980,800	77,495,341
1994	49,444,387	0	48,352,806	(14,650,000)	(8,529,000)	7,319,300	81,937,493
1995	32,276,944	0	49,849,919	(14,650,000)	(8,787,000)	6,146,000	64,835,863
1996	13,374,517	0	46,850,397	(14,650,000)	(8,814,000)	4,496,000	41,256,914
1997	8,313,953	0	46,240,942	(14,650,000)	(8,814,000)	4,496,000	35,586,895
1998	3,754,195	0	47,389,390	(14,650,000)	(8,814,000)	4,496,000	32,175,585
1999	3,735,312	0	47,294,744	(14,650,000)	(8,814,000)	4,496,000	32,062,056
2000	1,669,260	0	47,588,311	(14,650,000)	(8,814,000)	4,496,000	30,289,571
2001	0	0	42,586,456	(14,650,000)	(8,814,000)	3,496,000	22,618,456
2002	0	0	42,798,123	(14,650,000)	(8,814,000)	3,496,000	22,830,123
2003	0	0	42,987,407	(14,650,000)	(8,814,000)	3,496,000	23,019,407
2004	0	0	42,967,926	(14,650,000)	(8,814,000)	3,496,000	22,999,926
2005	0	0	43,144,219	(14,650,000)	(8,814,000)	3,496,000	23,176,219
2006	0	0	43,209,755	(14,650,000)	(8,814,000)	3,496,000	23,241,755
2007	0	0	43,448,784	(14,650,000)	(8,814,000)	3,496,000	23,480,784
2008	0	0	43,623,903	(14,650,000)	(8,814,000)	3,496,000	23,655,903
2009	0	0	43,672,796	(14,650,000)	(8,814,000)	3,496,000	23,704,796
2010	0	0	43,304,423	(14,650,000)	(8,814,000)	3,496,000	23,336,423
2011	0	0	42,707,182	(14,650,000)	(8,814,000)	0	19,243,182
2012	0	0	42,346,449	(14,650,000)	(8,814,000)	0	18,882,449
2013	0	0	42,449,954	(14,650,000)	(8,814,000)	0	18,985,954
2014	0	0	42,522,371	(14,650,000)	(8,814,000)	0	19,058,371
2015	0	0	42,687,329	(14,650,000)	(8,814,000)	0	19,223,329
2016	0	0	42,589,870	(14,650,000)	(8,814,000)	0	19,125,870
2017	0	0	42,940,394	(14,650,000)	(8,814,000)	0	19,476,394
2018	0	0	42,935,868	(14,650,000)	(8,814,000)	0	19,471,868
2019	0	0	42,847,410	(14,650,000)	(8,814,000)	0	19,383,410
2020	0	0	42,891,963	(14,650,000)	(8,814,000)	0	19,427,963
2021	0	0	42,741,835	(14,650,000)	(8,814,000)	0	19,277,835
2022	0	0	42,783,856	(15,427,000)	(8,814,000)	0	18,542,856
2023	0	0	42,765,305	(15,427,000)	(8,814,000)	0	18,524,305
2024	0	0	42,737,005	(15,427,000)	(8,814,000)	0	18,496,005
2025	0	0	42,591,332	(15,427,000)	(8,814,000)	0	18,350,332
2026	0	0	43,992,203	(15,427,000)	(8,814,000)	0	19,751,203
2027	0	0	43,942,817	(15,427,000)	(8,814,000)	0	19,701,817
2028	0	0	43,883,147	(15,427,000)	(8,814,000)	0	19,642,147
2029	0	0	43,975,437	(15,427,000)	(8,814,000)	0	19,734,437
2030	0	0	43,851,839	(15,427,000)	(8,814,000)	0	19,610,839
2031	0	0	44,022,096	(15,427,000)	(8,814,000)	0	19,781,096
2032	0	0	44,022,096	(15,427,000)	(8,814,000)	0	19,781,096
2033	0	0	43,987,543	(15,427,000)	(8,814,000)	0	19,746,543
2034	0	0	44,071,509	(15,427,000)	(8,814,000)	0	19,830,509
2035	0	0	44,806,596	(15,427,000)	(8,814,000)	0	20,565,596
Total	1,008,758,787	(11,528,320)	2,272,842,565	(1,013,091,000)	(487,155,000)	145,472,852	1,915,299,884

a) Reimbursed through the capital cost component of the Delta Water Charge.
b) Negotiated settlements as to the magnitude of SWP planning costs from 1952 through 1978.
c) *Reimbursed through the minimum OMP&R component of the Delta Water Charge. Credits for Gianelli power generation are reflected in these net costs.*
d) Revenues credited through the capital cost component of the Delta Water Charge.
e) Revenue credits through the minimum OMP&R component of the Delta Water Charge.
f) Under amendments of Articles 22(e) and 22(g), planning and pre-operating costs of additional Project Conservation Facilities incurred through the previous year (1992) are reflected in the Delta Water Charge.

TABLE B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

	North Bay Area			South Bay Area				Central Coastal Area		
Calendar Year	Napa County FC&WCD (1)	Solano County Water Agency (a (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1952	0	0	0	83	114	410	607	121	224	345
1953	0	0	0	324	479	1,808	2,611	336	619	955
1954	0	0	0	819	1,305	5,150	7,274	422	779	1,201
1955	0	0	0	976	1,570	6,297	8,843	211	388	599
1956	0	0	0	8,844	14,459	63,816	87,119	227	419	646
1957	15,199	11,435	26,634	21,563	35,239	649,598	706,400	290	535	825
1958	33,420	16,591	50,011	67,764	71,717	733,415	872,896	721	1,329	2,050
1959	20,697	6,591	27,288	154,254	143,731	493,049	791,034	25,853	53,921	79,774
1960	9,097	8,830	17,927	296,491	275,611	1,018,661	1,590,763	37,106	77,940	115,046
1961	6,950	7,445	14,395	853,505	802,675	1,914,709	3,570,889	15,637	31,207	46,844
1962	(195)	(925)	(1,120)	545,122	615,142	1,686,043	2,846,307	19,638	37,213	56,851
1963	1,320	1,110	2,430	657,426	1,281,271	3,243,839	5,182,536	73,102	136,561	209,663
1964	38,392	35,467	73,859	712,650	1,747,783	7,251,800	9,712,233	146,707	273,909	420,616
1965	198,833	62,221	261,054	360,779	606,026	3,414,457	4,381,262	261,448	486,412	747,860
1966	461,619	49,917	511,536	592,714	592,598	2,245,216	3,430,528	598,306	1,107,130	1,705,436
1967	1,569,498	40,379	1,609,877	796,993	803,951	2,401,863	4,002,807	947,498	1,751,608	2,699,106
1968	859,613	61,691	921,304	736,470	696,074	1,997,925	3,430,469	359,885	666,467	1,026,352
1969	74,389	59,317	133,706	269,698	293,274	764,952	1,327,924	84,313	157,235	241,548
1970	43,362	67,876	111,238	58,677	61,200	135,569	255,446	54,660	102,454	157,114
1971	26,764	34,051	60,815	12,086	18,227	84,089	114,402	37,649	71,701	109,350
1972	19,643	18,905	38,548	12,291	12,762	63,612	88,665	24,098	45,421	69,519
1973	56,510	30,874	87,384	10,494	12,137	39,380	62,011	27,479	51,710	79,189
1974	165,830	65,832	231,662	15,721	24,402	73,121	113,244	30,087	56,331	86,418
1975	91,825	89,233	181,058	16,730	15,807	41,394	73,931	25,395	50,761	76,156
1976	57,766	83,650	141,416	34,004	34,663	109,610	178,277	54,576	109,504	164,080
1977	64,167	80,147	144,314	46,229	45,116	133,374	224,719	130,013	243,030	373,043
1978	69,319	81,717	151,036	71,234	66,008	174,897	312,139	43,226	82,011	125,237
1979	191,272	282,908	474,180	45,469	42,942	110,667	199,078	51,321	97,291	148,612
1980	264,433	386,006	650,439	134,522	124,352	304,615	563,489	184,584	342,326	526,910
1981	227,598	383,083	610,681	(33,766)	(29,882)	(65,711)	(129,359)	(73,474)	(133,372)	(206,846)
1982	546,896	870,608	1,417,504	3,166	3,729	13,671	20,566	(46,610)	(85,224)	(131,834)
1983	1,254,499	1,433,060	2,687,559	134,898	127,860	328,433	591,191	27,831	52,480	80,311
1984	2,547,860	2,750,019	5,297,879	152,943	140,928	351,814	645,685	32,691	61,301	93,992
1985	7,142,648	6,443,613	13,586,261	18,267	17,771	49,369	85,407	18,144	35,994	54,138
1986	10,565,976	16,926,654	27,492,630	32,146	31,687	88,364	152,197	84,038	178,419	262,457
1987	7,980,495	12,599,438	20,579,933	51,736	50,231	143,975	245,942	426,372	938,438	1,364,810
1988	2,313,001	4,340,774	6,653,775	115,049	111,254	299,207	525,510	479,625	1,048,927	1,528,552
1989	1,230,016	1,627,239	2,857,255	115,926	110,313	279,774	506,013	406,253	876,819	1,283,072
1990	450,008	919,612	1,369,620	198,696	201,059	567,649	967,404	525,027	1,123,935	1,648,962
1991	106,502	158,982	265,484	171,755	162,128	411,534	745,417	744,306	1,576,343	2,320,649
1992	59,031	130,875	189,906	92,892	86,875	215,984	395,751	1,165,781	2,412,348	3,578,129
1993	92,850	113,060	205,910	36,717	35,149	89,756	161,622	11,909,533	27,420,261	39,329,794
1994	521,988	568,196	1,090,184	35,827	33,436	82,192	151,455	50,342,890	116,924,280	167,267,170
1995	169,049	395,882	564,931	24,734	23,241	57,892	105,867	44,634,119	139,979,760	184,613,879
1996	2,274	2,726	5,000	24,476	23,254	58,625	106,355	11,943,148	35,014,889	46,958,037
1997	2,274	2,726	5,000	2,126	2,823	9,892	14,841	362,962	813,701	1,176,663
1998	1,297	703	2,000	992	944	3,253	5,189	303,099	670,637	973,736
1999	0	0	0	294	269	1,646	2,209	302,669	669,846	972,515
2000	0	0	0	0	0	0	0	302,489	669,511	972,000
Total	39,553,985	51,248,518	90,802,503	7,712,806	9,573,704	32,150,655	49,437,165	127,125,802	336,285,729	463,411,531

a) Costs from Table B-10 allocated to Solano County Water Agency are reduced herein by $2,102,700 in 1986 and $1,823,500 in 1987 under provisions of Amendment No. 10 to its water supply contract.

TABLE B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area									
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (b (12)	Future Contractor San Joaquin Valley (13)	Kern County Water Agency: Municipal and Industrial (14)	Kern County Water Agency: Municipal and Industrial (c (15)	Kern County Water Agency: Agri-cultural (16)	County of Kings (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	Total (20)
1952	389	19	59	938	120	9,127	19	13	784	11,468
1953	1,076	53	161	2,888	344	27,381	56	33	2,158	34,150
1954	1,350	67	200	3,374	416	32,371	70	42	2,719	40,609
1955	676	36	100	1,498	198	14,718	36	22	1,371	18,655
1956	727	33	107	2,703	272	24,257	34	26	1,416	29,575
1957	932	38	139	6,047	495	49,932	38	30	1,707	59,358
1958	2,308	100	345	14,372	1,154	119,049	103	61	4,367	141,859
1959	7,384	363	2,517	26,219	2,597	253,890	372	381	14,757	308,480
1960	12,940	629	3,666	34,053	4,155	352,167	644	498	25,696	434,448
1961	21,849	1,063	3,957	51,406	6,500	538,710	1,087	599	43,376	668,547
1962	49,320	2,410	7,866	94,932	13,836	1,017,145	2,466	1,879	98,141	1,287,995
1963	208,758	10,686	32,171	364,014	55,715	3,934,637	10,933	5,990	425,330	5,048,234
1964	328,285	16,961	64,891	600,151	88,904	6,636,279	17,349	11,942	672,011	8,436,773
1965	538,215	27,481	117,998	1,098,999	152,931	11,999,894	28,115	21,802	1,095,126	15,080,561
1966	1,107,759	52,587	279,171	2,218,832	339,222	24,857,488	53,788	38,891	2,173,090	31,120,828
1967	852,537	39,539	445,560	2,012,745	286,990	23,629,027	40,444	34,775	1,653,428	28,995,045
1968	198,739	9,739	166,266	1,104,133	70,088	11,544,940	9,962	12,237	396,074	13,512,178
1969	94,436	4,794	35,472	616,518	27,216	6,416,146	4,902	7,302	191,574	7,398,360
1970	54,345	2,719	21,684	414,660	15,521	4,145,045	2,783	3,999	109,471	4,770,227
1971	25,462	1,290	12,094	190,552	7,112	1,622,275	1,320	540	51,620	1,912,265
1972	11,589	589	8,354	82,884	3,409	723,623	601	343	23,526	854,918
1973	6,657	336	10,202	39,975	1,976	458,532	341	220	13,449	531,688
1974	9,478	469	11,044	45,421	2,767	483,865	478	326	18,981	572,829
1975	13,328	678	5,245	36,469	3,710	382,745	692	426	27,049	470,342
1976	17,507	837	12,616	53,085	5,621	654,024	856	1,152	34,454	780,152
1977	9,671	437	47,790	36,478	3,753	886,672	445	494	18,496	1,004,236
1978	23,499	(30,407)	6,178	54,218	6,579	575,170	1,208	1,402	47,447	685,294
1979	25,051	1,295	5,665	53,867	6,609	559,748	1,324	1,862	51,294	706,715
1980	144,981	(4,617)	31,161	321,889	38,126	3,211,810	7,682	7,144	297,216	4,055,392
1981	(3,772)	(15,378)	443	(41,966)	(789)	(354,928)	(208)	1,751	(7,927)	(422,774)
1982	47,748	2,475	5,654	78,749	12,535	599,991	2,525	1,178	97,907	848,762
1983	51,543	(35,338)	11,504	108,298	13,609	1,044,760	2,723	1,269	105,582	1,303,950
1984	86,295	4,472	14,291	155,209	22,760	1,619,921	4,568	2,676	176,913	2,087,105
1985	25,453	1,313	5,381	46,706	6,754	477,685	1,343	1,151	52,071	617,857
1986	38,392	(41,062)	9,887	71,888	10,345	797,855	2,013	781	78,312	968,411
1987	29,532	1,514	7,357	57,267	8,190	634,100	1,548	1,526	60,222	801,256
1988	52,534	2,840	16,973	70,640	12,095	905,630	2,904	4,669	110,127	1,178,412
1989	160,392	8,235	29,435	360,618	44,134	3,937,581	8,421	12,412	327,277	4,888,505
1990	288,507	14,936	50,003	544,118	86,182	5,976,509	15,277	22,572	591,201	7,589,305
1991	340,879	17,654	58,021	562,629	89,512	6,233,132	18,056	23,032	698,664	8,041,579
1992	103,195	5,331	20,939	176,162	27,252	1,960,895	5,452	10,248	211,237	2,520,711
1993	60,391	3,130	9,530	98,255	15,837	1,059,289	3,203	5,773	123,840	1,379,248
1994	59,596	3,091	9,236	96,413	15,597	1,036,681	3,161	5,759	122,246	1,351,780
1995	40,042	2,076	6,300	64,975	10,492	722,017	2,123	3,850	82,117	933,992
1996	39,680	2,058	6,219	64,402	10,398	719,835	2,106	3,818	81,381	929,897
1997	966	47	446	2,255	298	26,961	50	30	1,927	32,980
1998	602	31	294	1,336	178	16,467	31	21	1,199	20,159
1999	241	12	88	492	71	5,916	13	8	476	7,317
2000	0	0	0	0	0	0	0	0	0	0
Total	5,191,464	117,661	1,594,680	12,101,766	1,531,786	132,580,964	263,457	256,955	10,410,900	164,049,633

b) Costs from Table B-10 allocated to Empire West Side Irrigation District are reduced herein by $31,588 in 1978; $12,129 in 1980; $15,173 in 1981; $38,004 in 1983; and $43,033 in 1986 in accordance with letters of agreement with the district.

c) Costs related to maximum annual entitlement of 15,000 acre-feet under Amendment No. 18 of the water supply contract with Kern County Water Agency.

TABLE B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (21)	*Castaic Lake Water Agency (d (22)*	*Coachella Valley Water District (23)*	*Crestline-Lake Arrowhead Water Agency (24)*	*Desert Water Agency (25)*	*Littlerock Creek Irrigation District (26)*	*Mojave Water Agency (27)*	*Palmdale Water District (28)*	*San Bernardino Valley Municipal Water District (29)*	*San Gabriel Valley Municipal Water District (30)*
1952	3,157	1,044	850	252	1,405	72	1,695	418	6,079	1,547
1953	10,024	3,326	2,667	800	4,401	221	5,322	1,327	19,058	4,855
1954	12,741	4,194	3,464	1,032	5,714	286	6,911	1,692	24,608	6,289
1955	5,411	1,879	1,376	398	2,266	115	2,753	713	9,227	2,376
1956	9,773	3,588	2,197	615	3,621	192	4,449	1,268	13,136	3,437
1957	26,304	9,255	6,342	1,818	10,462	541	12,769	3,451	40,646	10,536
1958	49,201	17,599	11,582	3,291	19,099	990	23,359	6,416	72,709	18,896
1959	70,246	29,741	15,870	4,614	26,170	1,346	31,757	9,029	98,594	25,519
1960	84,550	38,759	22,068	6,794	36,393	1,548	43,258	10,770	147,170	37,468
1961	126,540	54,258	34,617	12,534	57,086	2,250	63,709	16,436	236,163	57,706
1962	198,556	85,350	43,721	13,859	72,100	3,347	84,710	24,943	253,432	64,329
1963	580,138	255,252	116,797	33,149	192,624	9,829	234,926	73,257	610,278	160,623
1964	1,094,365	501,857	209,460	55,448	345,447	18,442	429,607	137,768	1,026,065	276,115
1965	1,908,076	947,523	385,531	103,756	635,821	32,818	786,986	244,589	1,913,091	512,861
1966	3,960,301	2,150,974	812,657	215,858	1,340,233	69,326	1,664,584	517,268	3,943,586	1,062,420
1967	4,976,539	4,100,533	1,077,423	296,069	1,776,895	88,302	2,182,238	653,250	5,821,682	1,550,237
1968	5,924,471	3,998,943	1,350,742	368,157	2,227,645	107,350	2,738,008	783,940	7,982,824	2,122,941
1969	5,822,708	3,079,427	1,690,259	539,852	2,787,631	121,302	3,256,507	865,454	10,898,186	2,769,647
1970	5,032,961	3,277,780	2,050,790	695,344	3,382,250	106,383	3,872,369	736,777	13,795,811	3,457,106
1971	2,577,508	2,146,955	1,071,521	338,583	1,767,179	48,337	2,087,224	347,057	8,137,052	1,987,119
1972	973,434	283,255	331,757	92,077	547,138	19,134	668,550	134,359	2,691,133	697,957
1973	354,409	914,305	158,582	82,223	261,558	6,304	238,095	46,103	1,760,569	403,583
1974	451,451	280,865	259,176	74,112	427,434	8,143	518,452	59,144	1,617,393	425,927
1975	253,437	246,493	193,631	52,820	319,338	4,954	392,109	33,995	1,533,663	407,917
1976	237,537	255,240	136,750	37,235	225,528	4,245	277,805	31,001	962,276	255,900
1977	199,550	372,505	91,384	25,857	150,713	3,755	183,607	26,835	591,447	155,535
1978	302,110	470,179	78,574	22,228	129,585	5,233	157,814	38,655	428,988	111,769
1979	358,559	938,984	81,968	21,835	135,178	5,978	167,263	44,519	404,284	108,604
1980	1,869,024	1,777,296	424,041	113,270	699,331	32,461	864,671	241,087	2,042,591	548,586
1981	(154,554)	612,146	(46,286)	(8,498)	(76,337)	(2,506)	(101,021)	(19,066)	(137,396)	(41,777)
1982	1,556,906	854,058	297,554	79,174	490,718	26,205	610,610	196,459	1,423,109	388,895
1983	2,072,169	528,630	397,314	117,176	655,246	34,848	805,613	261,082	2,150,527	588,495
1984	1,524,695	296,069	300,229	86,353	495,136	27,380	611,116	189,358	1,568,804	429,492
1985	880,527	156,652	209,015	60,520	344,711	12,560	424,558	104,234	1,085,565	296,700
1986	789,156	105,266	128,589	34,770	212,067	7,825	263,322	86,382	652,921	177,600
1987	307,355	108,503	(31,122)	(5,746)	(51,326)	(2,032)	(67,175)	11,765	(59,438)	(18,464)
1988	230,911	173,003	279,862	77,160	461,545	1,429	570,252	17,756	1,469,030	398,324
1989	1,281,193	446,436	510,843	145,233	842,475	31,461	1,036,717	194,001	2,600,152	705,170
1990	634,650	359,322	250,260	78,328	412,723	7,710	500,920	66,979	1,441,618	388,882
1991	751,723	366,840	480,400	151,614	792,273	10,389	965,791	81,330	2,761,378	753,609
1992	445,455	272,019	259,921	135,169	428,662	6,864	472,798	49,274	2,294,875	627,533
1993	327,765	145,955	156,542	170,366	258,169	5,543	204,702	41,139	3,216,755	881,118
1994	105,678	325,888	37,668	51,879	62,117	1,725	39,556	13,393	1,099,943	300,494
1995	72,178	32,396	17,505	13,563	28,868	1,216	28,042	9,109	1,679,296	450,722
1996	71,630	32,167	13,399	3,414	22,098	1,209	27,861	9,044	2,019,355	540,449
1997	5,048	2,925	1,456	393	2,404	96	2,971	682	676,190	180,825
1998	3,207	1,862	842	234	1,388	58	1,704	424	4,662	1,240
1999	1,082	565	258	71	427	17	515	138	1,459	384
2000	0	0	0	0	0	0	0	0	0	0
Total	48,379,855	31,068,061	13,930,046	4,405,053	22,973,609	875,201	27,400,359	6,405,004	93,030,546	24,297,496

d) Costs from Table B-10 allocated to Castaic Lake Water Agency are reduced herein by $14,088 in 1978 in accordance with a letter of agreement with the district.

TABLE B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

	Southern California Area (continued)				Feather River Area					
Calendar Year	San Gorgonio Pass Water Agency (31)	Metropolitan Water District of Southern California (e (32)	Ventura County Flood Control District (33)	Total (34)	City of Yuba City (35)	County of Butte (36)	Plumas County FC&WCD (37)	Total (38)	South Bay Area Future Contractor (39)	Grand Total (40)
1952	963	69,021	371	86,874	0	0	0	0	59	99,353
1953	3,011	217,635	1,186	273,833	0	0	0	0	263	311,812
1954	3,903	279,966	1,492	352,292	0	0	0	0	767	402,143
1955	1,473	111,618	671	140,276	0	0	0	0	969	169,342
1956	2,123	179,340	1,299	225,038	0	0	0	0	9,173	351,551
1957	6,526	516,047	3,365	648,062	0	0	0	0	23,173	1,464,452
1958	11,701	945,682	6,392	1,186,917	0	0	2	2	32,888	2,286,623
1959	15,817	1,364,307	9,893	1,702,903	0	0	14	14	57,919	2,967,412
1960	23,309	1,914,533	12,799	2,379,419	0	0	28	28	123,202	4,660,833
1961	36,154	3,212,117	18,768	3,928,338	0	0	10	10	316,221	8,545,244
1962	40,012	3,543,478	29,068	4,456,905	0	0	32	32	228,201	8,875,171
1963	99,266	11,185,924	86,806	13,638,869	0	0	51	51	528,495	24,610,278
1964	170,010	18,065,460	164,709	22,494,753	0	0	7,791	7,791	590,035	41,736,060
1965	316,082	33,763,578	307,475	41,858,187	0	0	3,139	3,139	332,680	62,664,743
1966	654,195	74,485,021	681,899	91,558,322	0	0	(48)	(48)	783,728	129,110,330
1967	958,408	130,599,410	1,279,076	155,360,062	0	0	47	47	1,479,421	194,146,365
1968	1,314,842	147,502,292	1,360,688	177,782,843	0	0	51,573	51,573	1,254,192	197,978,911
1969	1,726,890	140,096,647	1,085,028	174,739,538	0	0	234,232	234,232	398,182	184,473,490
1970	2,160,120	161,983,071	1,147,608	201,698,370	0	0	16,227	16,227	74,028	207,082,650
1971	1,237,575	133,903,313	738,824	156,388,247	0	0	27,204	27,204	12,456	158,624,739
1972	434,505	43,931,762	66,878	50,871,939	0	0	9	9	13,183	51,936,781
1973	256,715	39,722,992	290,020	44,495,458	0	0	25	25	8,098	45,263,853
1974	264,348	18,896,593	86,361	23,369,399	0	0	45	45	28,569	24,402,166
1975	253,840	16,732,933	83,976	20,509,106	0	0	21	21	8,224	21,318,838
1976	158,851	13,545,457	84,624	16,212,449	0	0	51	51	16,485	17,492,910
1977	96,516	11,797,207	111,213	13,806,124	0	0	28	28	21,182	15,573,646
1978	69,151	15,781,693	174,876	17,770,855	0	0	38	38	28,876	19,073,475
1979	66,968	27,631,258	343,358	30,308,756	0	0	23	23	26,667	31,864,031
1980	338,118	59,503,595	641,585	69,095,656	0	0	26	26	59,168	74,951,080
1981	(25,264)	15,729,040	224,715	15,953,196	0	0	34	34	(6,763)	15,798,169
1982	239,161	30,675,103	313,661	37,151,613	0	0	11	11	13,817	39,320,439
1983	361,980	25,395,826	190,121	33,559,027	0	0	19	19	70,456	38,292,513
1984	264,066	16,444,121	103,269	22,340,088	0	0	26	26	83,234	30,548,009
1985	182,434	10,020,683	55,538	13,833,697	0	0	29	29	15,669	28,193,058
1986	109,339	6,255,184	34,916	8,857,337	0	0	31	31	16,296	37,749,359
1987	(11,029)	2,507,981	37,040	2,726,312	0	0	32	32	29,963	25,748,248
1988	245,521	12,159,554	56,755	16,141,102	0	0	56	56	49,364	26,076,771
1989	434,074	25,335,418	156,795	33,719,968	0	0	63	63	46,351	43,301,227
1990	239,586	16,653,669	119,788	21,154,435	0	0	88	88	87,283	32,817,097
1991	463,341	24,102,564	120,538	31,801,790	0	0	77	77	67,856	43,242,852
1992	385,377	20,186,252	88,204	25,652,403	0	0	69	69	41,490	32,378,459
1993	542,318	21,202,639	50,564	27,203,575	0	0	0	0	14,964	68,295,113
1994	185,409	14,500,763	118,457	16,842,970	0	0	0	0	14,353	186,717,912
1995	283,105	9,635,623	10,683	12,262,306	0	0	0	0	10,160	198,491,135
1996	340,462	11,399,761	10,626	14,491,475	0	0	0	0	10,171	62,500,935
1997	113,983	3,625,300	870	4,613,143	0	0	0	0	1,571	5,844,198
1998	770	68,733	554	85,678	0	0	0	0	432	1,087,194
1999	239	20,166	171	25,492	0	0	0	0	184	1,007,717
2000	0	0	0	0	0	0	0	0	0	972,000
Total	15,076,264	1,377,400,330	10,513,573	1,675,755,397	0	0	341,103	341,103	7,023,355	2,450,820,687

e) Costs from Table B-10 allocated to MWDSC are reduced herein by $16,425,510 in 1972 under provisions of Amendment No. 7 to its water contract.

TABLE B-15

Capital Cost Component of Transportation Charge for Each Contractor (a(b

(Dollars)

	North Bay Area			South Bay Area				Central Coastal Area		
Calendar Year	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	105,192	105,854	366,552	577,598	0	0	0
1964	0	0	0	123,718	171,212	532,023	826,953	8,922	17,665	26,587
1965	0	0	0	156,271	260,368	901,943	1,318,582	14,706	28,502	43,208
1966	18,096	0	18,096	172,750	291,282	1,076,118	1,540,150	24,019	45,891	69,910
1967	41,644	0	41,644	199,825	321,511	1,190,648	1,711,984	42,370	79,917	122,287
1968	121,705	0	121,705	236,230	362,521	1,313,169	1,911,920	56,709	106,553	163,262
1969	165,555	0	165,555	269,871	398,028	1,415,085	2,082,984	60,482	113,642	174,124
1970	169,349	0	169,349	282,190	412,989	1,454,105	2,149,284	62,500	117,451	179,951
1971	171,561	0	171,561	284,870	416,110	1,461,021	2,162,001	63,838	120,002	183,840
1972	172,926	0	172,926	332,088	417,040	1,465,310	2,214,438	64,873	122,025	186,898
1973	173,928	31,433	205,361	332,715	417,691	1,468,555	2,218,961	65,395	123,037	188,432
1974	176,811	33,008	209,819	333,250	418,310	1,470,564	2,222,124	65,813	123,861	189,674
1975	185,270	36,366	221,636	334,052	419,555	1,474,294	2,227,901	66,320	124,838	191,158
1976	189,954	40,918	230,872	334,905	420,361	1,476,406	2,231,672	173,735	323,206	496,941
1977	192,901	45,185	238,086	336,640	422,130	1,481,997	2,240,767	176,519	328,792	505,311
1978	196,174	49,273	245,447	338,998	424,431	1,488,800	2,252,229	183,151	341,189	524,340
1979	199,710	53,442	253,152	342,632	427,798	1,497,722	2,268,152	185,356	345,373	530,729
1980	209,467	67,873	277,340	344,951	429,989	1,503,367	2,278,307	187,974	350,336	538,310
1981	222,956	87,563	310,519	351,813	436,332	1,518,906	2,307,051	197,390	367,798	565,188
1982	234,566	107,105	341,671	350,091	434,808	1,515,554	2,300,453	193,642	360,994	554,636
1983	262,464	151,515	413,979	350,253	434,998	1,516,251	2,301,502	191,264	356,647	547,911
1984	326,457	224,617	551,074	357,134	441,520	1,533,005	2,331,659	192,684	359,324	552,008
1985	456,425	364,898	821,323	364,936	448,709	1,550,951	2,364,596	194,352	362,451	556,803
1986	820,777	693,592	1,514,369	365,867	449,616	1,553,470	2,368,953	195,277	364,287	559,564
1987	1,362,679	1,561,716	2,924,395	367,516	451,241	1,558,002	2,376,759	199,587	373,438	573,025
1988	1,774,313	2,211,596	3,985,909	370,185	453,832	1,565,428	2,389,445	221,580	421,843	643,423
1989	1,894,334	2,436,838	4,331,172	376,154	459,605	1,580,954	2,416,713	246,467	476,271	722,738
1990	1,958,563	2,521,808	4,480,371	382,208	465,365	1,595,563	2,443,136	267,681	522,057	789,738
1991	1,982,218	2,570,148	4,552,366	392,652	475,934	1,625,402	2,493,988	295,279	581,137	876,416
1992	1,987,856	2,578,564	4,566,420	401,744	484,516	1,647,186	2,533,446	334,679	664,579	999,258
1993	1,991,004	2,585,543	4,576,547	406,698	489,148	1,658,703	2,554,549	396,845	793,219	1,190,064
1994	1,995,993	2,591,619	4,587,612	408,671	491,037	1,663,527	2,563,235	1,036,878	2,266,818	3,303,696
1995	2,024,276	2,622,405	4,646,681	410,612	492,849	1,667,980	2,571,441	3,764,611	8,602,138	12,366,749
1996	2,033,515	2,644,042	4,677,557	411,964	494,119	1,671,144	2,577,227	6,204,010	16,252,483	22,456,493
1997	2,033,641	2,644,192	4,677,833	413,314	495,402	1,674,378	2,583,094	6,862,721	18,183,690	25,046,411
1998	2,033,768	2,644,344	4,678,112	413,432	495,559	1,674,929	2,583,920	6,882,933	18,229,003	25,111,936
1999	2,033,841	2,644,383	4,678,224	413,488	495,612	1,675,112	2,584,212	6,899,985	18,266,731	25,166,716
2000	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,917,196	18,304,822	25,222,018
2001	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,934,594	18,343,330	25,277,924
2002	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,934,594	18,343,330	25,277,924
2003	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,934,594	18,343,330	25,277,924
2004	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,934,594	18,343,330	25,277,924
2005	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,934,594	18,343,330	25,277,924
2006	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,934,594	18,343,330	25,277,924
2007	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,934,594	18,343,330	25,277,924
2008	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,934,594	18,343,330	25,277,924
2009	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,934,594	18,343,330	25,277,924
2010	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,934,594	18,343,330	25,277,924
2011	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,934,594	18,343,330	25,277,924
2012	2,033,841	2,644,383	4,678,224	413,505	495,627	1,675,205	2,584,337	6,934,594	18,343,330	25,277,924
2013	2,033,841	2,644,383	4,678,224	302,374	389,774	1,308,653	2,000,801	6,934,594	18,343,330	25,277,924
2014	2,033,841	2,644,383	4,678,224	267,043	324,415	1,143,182	1,734,640	6,925,672	18,325,665	25,251,337
2015	2,033,841	2,644,383	4,678,224	229,040	235,259	773,262	1,237,561	6,919,888	18,314,828	25,234,716
2016	2,015,744	2,644,383	4,660,127	209,943	204,345	599,088	1,013,376	6,910,575	18,297,440	25,208,015
2017	1,992,197	2,644,383	4,636,580	178,786	174,116	484,557	837,459	6,892,224	18,263,413	25,155,637
2018	1,912,136	2,644,383	4,556,519	137,169	133,106	362,036	632,311	6,877,885	18,236,777	25,114,662
2019	1,868,286	2,644,383	4,512,669	98,954	97,599	260,121	456,674	6,874,112	18,229,688	25,103,800
2020	1,864,491	2,644,383	4,508,874	85,043	82,639	221,100	388,782	6,872,094	18,225,879	25,097,973
2021	1,862,279	2,644,383	4,506,662	82,033	79,517	214,184	375,734	6,870,756	18,223,328	25,094,084
2022	1,860,914	2,644,383	4,505,297	81,417	78,587	209,895	369,899	6,869,721	18,221,305	25,091,026
2023	1,859,912	2,612,951	4,472,863	80,790	77,936	206,650	365,376	6,869,200	18,220,293	25,089,493
2024	1,857,030	2,611,376	4,468,406	80,255	77,317	204,641	362,213	6,868,781	18,219,469	25,088,250
2025	1,848,570	2,608,017	4,456,587	79,453	76,072	200,911	356,436	6,868,274	18,218,492	25,086,766
2026	1,843,886	2,603,466	4,447,352	78,599	75,266	198,800	352,665	6,760,859	18,020,124	24,780,983
2027	1,840,940	2,599,199	4,440,139	76,865	73,498	193,208	343,571	6,758,075	18,014,538	24,772,613
2028	1,837,666	2,595,110	4,432,776	74,506	71,196	186,405	332,107	6,751,443	18,002,141	24,753,584
2029	1,834,130	2,590,942	4,425,072	70,873	67,829	177,483	316,185	6,749,238	17,997,957	24,747,195
2030	1,824,373	2,576,510	4,400,883	68,553	65,639	171,838	306,030	6,746,620	17,992,995	24,739,615
2031	1,810,885	2,556,820	4,367,705	61,691	59,295	156,299	277,285	6,737,204	17,975,532	24,712,736
2032	1,799,275	2,537,279	4,336,554	63,414	60,820	159,651	283,885	6,740,952	17,982,336	24,723,288
2033	1,771,377	2,492,868	4,264,245	63,252	60,629	158,954	282,835	6,743,330	17,986,683	24,730,013
2034	1,707,384	2,419,767	4,127,151	56,371	54,107	142,200	252,678	6,741,910	17,984,006	24,725,916
2035	1,577,416	2,279,486	3,856,902	48,569	46,918	124,254	219,741	6,740,242	17,980,879	24,721,121
Total	99,145,044	128,148,586	227,293,630	20,120,438	24,536,412	83,119,161	127,776,011	283,436,520	746,319,068	1,029,755,588

a) Unadjusted for prior overpayments or underpayments of charges.
b) Determined at the current Project Interest Rate of 4.620 percent per annum.

TABLE B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

	San Joaquin Valley Area									
				Kern County Water Agency						
Calendar Year	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Municipal and Industrial (c (15)	Agri-cultural (16)	County of Kings (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	Total (20)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	2,729	0	0	0	0	0	0	2,729
1965	0	0	6,039	64,393	9,300	0	0	0	0	79,732
1966	0	0	12,058	120,454	17,101	0	0	0	0	149,613
1967	0	0	26,299	233,638	34,405	0	0	0	0	294,342
1968	73,800	2,379	49,027	336,310	49,045	408,901	8,518	4,661	63,039	995,680
1969	73,929	7,137	57,509	392,633	52,620	839,739	9,026	5,066	238,519	1,676,178
1970	81,025	7,137	59,318	424,082	54,008	1,021,376	9,276	5,269	176,509	1,838,000
1971	92,379	7,137	60,424	445,234	54,800	1,356,570	9,418	5,674	187,831	2,219,467
1972	103,217	7,137	61,041	454,954	55,163	2,031,345	9,486	10,874	579,445	3,312,662
1973	113,538	7,137	61,467	459,182	55,337	2,342,847	9,516	6,282	224,121	3,279,427
1974	172,320	7,137	61,988	461,221	55,438	2,623,637	9,534	7,034	372,002	3,770,311
1975	209,298	7,137	62,551	463,538	55,579	3,142,398	9,558	7,247	443,887	4,401,193
1976	159,578	7,137	62,819	465,399	55,768	3,387,476	9,593	8,185	317,547	4,473,502
1977	156,890	7,137	63,462	468,106	56,055	3,711,701	9,637	7,498	303,617	4,784,103
1978	167,727	7,137	65,900	469,967	56,246	4,125,867	9,660	7,903	325,745	5,236,152
1979	198,919	7,137	66,215	472,733	56,582	4,530,381	9,721	8,106	366,609	5,716,403
1980	211,594	7,137	66,504	475,481	56,919	4,943,670	9,789	11,551	368,971	6,151,616
1981	211,594	7,137	68,094	491,901	58,864	5,410,484	10,181	8,714	391,099	6,658,068
1982	211,594	7,137	68,116	489,760	58,823	5,841,322	10,170	9,119	412,713	7,108,754
1983	221,400	7,137	68,405	493,777	59,463	6,331,829	10,299	9,322	49,134	7,250,766
1984	232,754	7,137	68,992	499,301	60,157	6,642,453	10,438	9,727	322,199	7,853,158
1985	243,592	7,137	69,721	507,219	61,318	7,073,291	10,671	9,930	234,397	8,217,276
1986	254,429	7,137	69,995	509,601	61,663	7,500,620	10,739	10,335	500,195	8,924,714
1987	265,267	7,137	70,502	513,288	62,193	7,935,845	10,843	10,538	521,809	9,397,422
1988	276,105	7,137	70,882	516,242	62,616	8,342,114	10,923	10,943	543,422	9,840,384
1989	286,943	7,137	71,762	519,907	63,243	8,635,189	11,073	11,349	565,550	10,172,153
1990	297,780	7,137	73,299	538,738	65,548	8,939,671	11,513	11,551	609,806	10,555,043
1991	297,780	7,137	75,928	567,340	70,078	8,939,671	12,316	11,551	609,806	10,591,607
1992	297,780	7,137	78,999	597,122	74,816	8,939,671	13,272	11,551	609,806	10,630,154
1993	297,780	7,137	80,116	606,516	76,270	8,939,671	13,563	11,551	609,806	10,642,410
1994	297,780	7,137	80,628	611,797	77,121	8,939,671	13,735	11,551	609,806	10,649,226
1995	297,780	7,137	81,128	617,021	77,966	8,939,671	13,906	11,551	609,806	10,655,966
1996	297,780	7,137	81,473	620,572	78,539	8,939,671	14,022	11,551	609,806	10,660,551
1997	297,780	7,137	81,816	624,124	79,113	8,939,671	14,138	11,551	609,806	10,665,136
1998	297,780	7,137	81,841	624,249	79,129	8,939,671	14,141	11,551	609,806	10,665,305
1999	297,780	7,137	81,857	624,324	79,139	8,939,671	14,143	11,551	609,806	10,665,408
2000	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2001	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2002	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2003	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2004	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2005	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2006	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2007	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2008	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2009	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2010	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2011	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2012	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2013	297,780	7,137	81,862	624,352	79,143	8,939,671	14,143	11,551	609,806	10,665,445
2014	297,780	7,137	79,133	624,352	79,143	8,939,671	14,143	11,551	609,806	10,662,716
2015	297,780	7,137	75,823	559,959	69,843	8,939,671	14,143	11,551	609,806	10,585,713
2016	297,780	7,137	69,804	503,899	62,042	8,939,671	14,143	11,551	609,806	10,515,833
2017	297,780	7,137	55,563	390,714	44,738	8,939,671	14,143	11,551	609,806	10,371,103
2018	297,780	7,137	32,835	288,042	30,098	8,939,671	5,625	11,551	609,806	10,222,545
2019	297,780	7,137	24,353	231,720	26,523	8,939,671	5,117	11,551	609,806	10,153,658
2020	297,780	7,137	22,544	200,271	25,135	8,939,671	4,867	11,551	609,806	10,118,762
2021	297,780	7,137	21,438	179,118	24,343	8,939,671	4,725	11,551	609,806	10,095,569
2022	297,780	7,137	20,821	169,398	23,980	8,939,671	4,658	11,551	609,806	10,084,802
2023	297,780	7,137	20,395	165,170	23,806	8,939,671	4,627	11,551	609,806	10,079,943
2024	297,780	7,137	19,874	163,131	23,706	8,939,671	4,610	11,551	609,806	10,077,266
2025	297,780	7,137	19,311	160,814	23,565	8,939,671	4,585	11,551	609,806	10,074,220
2026	297,780	7,137	19,043	158,954	23,375	8,939,671	4,550	11,551	609,806	10,071,867
2027	297,780	7,137	18,400	156,246	23,089	8,939,671	4,506	11,551	609,806	10,068,186
2028	297,780	7,137	15,962	154,385	22,897	8,939,671	4,484	11,551	609,806	10,063,673
2029	297,780	7,137	15,647	151,619	22,562	8,939,671	4,422	11,551	609,806	10,060,195
2030	297,780	7,137	15,358	148,872	22,224	8,939,671	4,354	11,551	609,806	10,056,753
2031	297,780	7,137	13,768	132,452	20,280	8,939,671	3,963	11,551	609,806	10,036,408
2032	297,780	7,137	13,746	134,592	20,320	8,939,671	3,973	11,551	609,806	10,038,576
2033	297,780	7,137	13,457	130,575	19,680	8,939,671	3,844	11,551	609,806	10,033,501
2034	297,780	7,137	12,870	125,051	18,986	8,939,671	3,705	11,551	609,806	10,026,557
2035	297,780	7,137	12,141	117,134	17,825	8,939,671	3,472	11,551	609,806	10,016,517
Total	17,715,772	480,558	4,027,258	30,567,520	3,856,587	509,403,921	687,479	716,673	35,559,436	603,015,204

c) Charges under Amendment No. 18 of the water supply contract with Kern County Water Agency.

TABLE B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (21)	*Castaic Lake Water Agency (22)*	*Coachella Valley Water District (23)*	*Crestline-Lake Arrowhead Water Agency (24)*	*Desert Water Agency (25)*	*Littlerock Creek Irrigation District (26)*	*Mojave Water Agency (27)*	*Palmdale Water District (28)*	*San Bernardino Valley Municipal Water District (29)*	*San Gabriel Valley Municipal Water District (30)*
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,380	0	0	0	0	0	0	0	51,822	0
1964	62,973	27,495	14,452	4,378	37,225	1,145	28,487	8,220	82,953	35,048
1965	118,798	53,095	25,137	7,206	40,837	2,086	50,402	15,247	135,293	35,403
1966	216,130	101,429	44,803	12,499	73,271	3,760	90,547	27,724	232,882	61,564
1967	418,148	211,152	86,258	23,510	141,637	7,296	175,459	54,110	434,047	115,759
1968	672,006	420,323	141,218	38,613	232,278	11,801	286,776	87,433	731,016	194,838
1969	974,218	624,313	210,120	57,393	345,912	17,277	426,444	127,422	1,138,226	303,131
1970	1,271,239	781,397	296,342	84,931	488,112	23,465	592,562	171,570	1,694,152	444,413
1971	1,527,974	948,599	400,954	120,401	660,643	28,891	790,094	209,154	2,397,887	620,763
1972	1,659,455	1,058,117	455,613	137,672	750,788	31,357	896,565	226,857	2,812,965	722,127
1973	1,709,111	1,072,566	472,537	142,369	778,698	32,333	930,668	233,711	2,950,242	757,731
1974	1,727,190	1,119,205	480,626	146,564	792,040	32,655	942,814	236,063	3,040,050	778,318
1975	1,750,218	1,133,532	493,847	150,344	813,844	33,070	969,261	239,080	3,122,555	800,045
1976	1,763,146	1,146,106	503,724	153,039	830,134	33,323	989,262	240,814	3,200,788	820,853
1977	1,775,263	1,159,126	510,700	154,938	841,638	33,539	1,003,433	242,395	3,249,874	833,907
1978	1,785,443	1,178,128	515,361	156,257	849,326	33,731	1,012,799	243,764	3,280,045	841,841
1979	1,800,853	1,202,112	519,369	157,391	855,936	33,998	1,020,850	245,736	3,301,928	847,542
1980	1,819,144	1,250,011	523,551	158,505	862,832	34,303	1,029,382	248,007	3,322,550	853,082
1981	1,914,484	1,340,672	545,181	164,283	898,505	35,958	1,073,489	260,305	3,426,745	881,066
1982	1,906,600	1,371,898	542,820	163,849	894,611	35,831	1,068,336	259,332	3,419,736	878,935
1983	1,986,019	1,415,464	557,999	167,888	919,643	37,167	1,099,484	269,354	3,492,330	898,773
1984	2,091,722	1,442,430	578,266	173,865	953,068	38,945	1,140,579	282,672	3,602,030	928,792
1985	2,169,498	1,457,533	593,581	178,270	978,325	40,342	1,171,752	292,331	3,682,056	950,701
1986	2,214,415	1,465,524	604,243	181,357	995,909	40,982	1,193,410	297,648	3,737,432	965,836
1987	2,254,889	1,470,923	610,838	183,140	1,006,786	41,384	1,206,915	302,079	3,770,918	974,944
1988	2,270,742	1,476,519	609,233	182,844	1,004,138	41,279	1,203,450	302,685	3,767,852	973,992
1989	2,282,724	1,485,496	623,755	186,848	1,028,088	41,353	1,233,040	303,607	3,844,080	994,661
1990	2,349,625	1,508,808	650,430	194,432	1,072,080	42,996	1,287,175	313,737	3,979,854	1,031,483
1991	2,382,986	1,527,696	663,585	198,549	1,093,775	43,401	1,313,506	317,258	4,055,634	1,051,925
1992	2,422,778	1,547,114	689,014	206,575	1,135,713	43,951	1,364,630	321,563	4,201,805	1,091,817
1993	2,446,532	1,561,620	702,875	213,783	1,158,572	44,317	1,389,842	324,191	4,324,181	1,125,280
1994	2,464,146	1,569,464	711,288	222,938	1,172,446	44,615	1,400,843	326,401	4,497,053	1,172,633
1995	2,469,872	1,587,121	713,329	225,749	1,175,812	44,708	1,402,986	327,127	4,556,651	1,188,915
1996	2,473,817	1,588,892	714,285	226,490	1,177,390	44,775	1,404,519	327,625	4,648,430	1,213,548
1997	2,477,768	1,590,666	715,024	226,679	1,178,608	44,842	1,406,055	328,124	4,759,806	1,243,356
1998	2,478,049	1,590,829	715,105	226,701	1,178,742	44,847	1,406,221	328,162	4,797,461	1,253,426
1999	2,478,229	1,590,934	715,153	226,714	1,178,820	44,850	1,406,317	328,186	4,797,723	1,253,495
2000	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2001	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2002	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2003	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2004	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2005	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2006	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2007	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2008	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2009	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2010	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2011	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2012	2,478,291	1,590,966	715,167	226,718	1,178,845	44,851	1,406,346	328,193	4,797,806	1,253,517
2013	2,444,911	1,590,966	715,167	226,718	1,165,455	44,851	1,406,346	328,193	4,745,984	1,240,393
2014	2,415,317	1,563,471	700,715	222,340	1,155,629	43,706	1,377,858	319,974	4,714,853	1,232,199
2015	2,359,493	1,537,871	690,030	219,512	1,138,007	42,765	1,355,944	312,946	4,662,513	1,218,114
2016	2,262,160	1,489,537	670,364	214,219	1,105,574	41,091	1,315,799	300,469	4,564,925	1,191,953
2017	2,060,142	1,379,814	628,910	203,208	1,037,207	37,555	1,230,887	274,083	4,363,759	1,137,758
2018	1,806,285	1,170,643	573,950	188,105	946,566	33,050	1,119,569	240,760	4,066,790	1,058,679
2019	1,504,073	966,653	505,047	169,325	832,932	27,574	979,901	200,771	3,659,580	950,386
2020	1,207,052	809,569	418,826	141,787	690,733	21,387	813,784	156,623	3,103,655	809,104
2021	950,316	642,367	314,213	106,317	518,202	15,960	616,252	119,040	2,399,919	632,754
2022	818,836	532,849	259,554	89,045	428,057	13,494	509,781	101,336	1,984,841	531,390
2023	769,180	518,400	242,631	84,348	400,147	12,518	475,677	94,482	1,847,564	495,786
2024	751,101	471,761	234,542	80,154	386,804	12,197	463,532	92,131	1,757,756	475,199
2025	728,072	457,433	221,321	76,374	365,001	11,781	437,085	89,114	1,675,252	453,472
2026	715,144	444,860	211,443	73,679	348,711	11,529	417,083	87,380	1,597,018	432,664
2027	703,027	431,840	204,468	71,780	337,206	11,312	402,912	85,798	1,547,932	419,611
2028	692,848	412,838	199,806	70,461	329,518	11,120	393,546	84,429	1,517,762	411,677
2029	677,437	388,854	195,798	69,327	322,908	10,854	385,496	82,458	1,495,879	405,975
2030	659,147	340,955	191,617	68,213	316,013	10,549	376,964	80,187	1,475,256	400,435
2031	563,806	250,294	169,986	62,435	280,339	8,893	332,856	67,889	1,371,062	372,451
2032	571,690	219,068	172,347	62,869	284,233	9,021	338,010	68,861	1,378,070	374,582
2033	492,271	175,502	157,169	58,830	259,201	7,684	306,862	58,840	1,305,476	354,745
2034	386,568	148,536	136,901	52,853	225,777	5,906	265,767	45,522	1,195,776	324,725
2035	308,792	133,433	121,586	48,448	200,519	4,509	234,593	35,862	1,115,750	302,816
Total	122,685,035	78,836,381	35,184,178	11,064,645	57,995,906	2,222,942	69,247,356	16,263,351	232,459,902	60,662,532

TABLE B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (39)	Grand Total (40)
	San Gorgonio Pass Water Agency (31)	Metropolitan Water District of Southern California (32)	Ventura County Flood Control District (33)	Total (34)	City of Yuba City (35)	County of Butte (36)	Plumas County FC&WCD (37)	Total (38)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	692,054	0	777,256	0	0	0	0	43,197	1,398,051
1964	21,774	1,262,657	9,394	1,596,201	0	0	0	0	70,156	2,522,626
1965	21,903	2,184,191	17,795	2,707,393	0	0	405	405	100,254	4,249,574
1966	38,026	3,906,499	33,480	4,842,614	0	0	565	565	117,224	6,738,172
1967	71,397	7,706,041	68,264	9,513,078	0	0	563	563	157,203	11,841,101
1968	120,287	14,368,023	133,511	17,438,123	0	0	565	565	232,669	20,863,924
1969	187,358	21,892,236	202,921	26,506,971	0	0	3,196	3,196	296,646	30,905,654
1970	275,448	29,038,681	258,269	35,420,581	0	0	15,144	15,144	316,958	40,089,267
1971	385,637	37,301,569	316,809	45,709,375	0	0	15,972	15,972	320,734	50,782,950
1972	448,767	44,132,087	354,497	53,686,867	0	0	17,360	17,360	321,370	59,912,521
1973	470,931	46,373,082	357,909	56,281,888	0	0	17,360	17,360	322,042	62,513,471
1974	484,027	48,399,384	372,703	58,551,639	0	0	17,362	17,362	322,455	65,283,384
1975	497,511	49,363,315	377,108	59,743,730	0	0	17,364	17,364	323,913	67,126,895
1976	510,460	50,216,876	381,392	60,789,917	0	0	17,365	17,365	324,332	68,564,601
1977	518,563	50,907,840	385,709	61,616,925	0	0	17,368	17,368	325,173	69,727,733
1978	523,486	51,509,626	391,382	62,321,189	0	0	17,369	17,369	326,253	70,922,979
1979	527,014	52,314,663	400,302	63,227,694	0	0	17,371	17,371	327,726	72,341,227
1980	530,430	53,724,156	417,817	64,773,770	0	0	17,372	17,372	329,087	74,365,802
1981	547,678	56,759,483	450,545	68,298,394	0	0	17,374	17,374	332,105	78,488,699
1982	546,389	57,561,834	462,008	69,112,179	0	0	17,375	17,375	331,760	79,766,828
1983	558,589	59,126,596	478,008	71,007,314	0	0	17,376	17,376	332,465	81,871,313
1984	577,054	60,422,058	487,706	72,719,187	0	0	17,377	17,377	336,059	84,360,522
1985	590,524	61,260,886	492,974	73,858,773	0	0	17,378	17,378	340,305	86,176,454
1986	599,830	61,772,049	495,807	74,564,442	0	0	17,380	17,380	341,104	88,290,526
1987	605,438	62,092,861	497,598	75,018,713	0	0	17,381	17,381	341,940	90,649,635
1988	604,869	62,222,223	499,509	75,159,335	0	0	17,383	17,383	343,485	92,379,364
1989	617,609	62,853,180	502,454	75,996,895	0	0	17,386	17,386	346,047	94,003,104
1990	640,275	64,176,140	510,641	77,757,676	0	0	17,389	17,389	348,467	96,391,820
1991	652,869	65,051,549	516,938	78,869,671	0	0	17,394	17,394	353,055	97,754,497
1992	677,396	66,327,400	523,318	80,553,074	0	0	17,398	17,398	356,647	99,656,397
1993	697,946	67,403,843	528,022	81,921,004	0	0	17,401	17,401	358,859	101,260,834
1994	727,091	68,543,299	530,739	83,382,956	0	0	17,401	17,401	359,664	104,863,790
1995	737,137	69,328,996	537,158	84,295,561	0	0	17,401	17,401	360,441	114,914,240
1996	752,610	69,855,613	537,742	84,965,736	0	0	17,401	17,401	360,997	125,715,962
1997	771,387	70,484,354	538,328	85,764,997	0	0	17,401	17,401	361,558	129,116,430
1998	777,735	70,686,239	538,376	86,021,893	0	0	17,401	17,401	361,645	129,440,212
1999	777,778	70,690,105	538,407	86,026,711	0	0	17,401	17,401	361,669	129,500,341
2000	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,557,266
2001	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,613,172
2002	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,613,172
2003	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,613,172
2004	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,613,172
2005	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,613,172
2006	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,613,172
2007	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,613,172
2008	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,613,172
2009	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,613,172
2010	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,613,172
2011	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,613,172
2012	777,792	70,691,252	538,417	86,028,161	0	0	17,401	17,401	361,680	129,613,172
2013	769,625	69,999,198	538,417	85,216,224	0	0	17,401	17,401	318,483	128,174,502
2014	764,561	69,428,595	529,023	84,468,241	0	0	17,401	17,401	291,524	127,104,083
2015	755,889	68,507,061	520,621	83,320,766	0	0	16,996	16,996	261,426	125,335,402
2016	739,765	66,784,753	504,937	81,185,546	0	0	16,836	16,836	244,456	122,844,189
2017	706,394	62,985,211	470,153	76,515,081	0	0	16,838	16,838	204,477	117,737,175
2018	657,505	56,323,229	404,906	68,590,037	0	0	16,836	16,836	129,011	109,261,921
2019	590,434	48,799,016	335,496	59,521,188	0	0	14,205	14,205	65,033	99,827,227
2020	502,344	41,652,571	280,148	50,607,583	0	0	2,257	2,257	44,722	90,768,953
2021	392,154	33,389,683	221,608	40,318,785	0	0	1,429	1,429	40,946	80,433,209
2022	329,025	26,559,165	183,920	32,341,293	0	0	41	41	40,310	72,432,668
2023	306,860	24,318,170	180,508	29,746,271	0	0	41	41	39,638	69,793,625
2024	293,765	22,291,868	165,714	27,476,524	0	0	40	40	39,225	67,511,924
2025	280,280	21,327,937	161,309	26,284,431	0	0	37	37	37,767	66,296,244
2026	267,332	20,474,376	157,025	25,238,244	0	0	36	36	37,348	64,928,495
2027	259,229	19,783,412	152,708	24,411,235	0	0	34	34	36,507	64,072,285
2028	254,305	19,181,626	147,035	23,706,971	0	0	32	32	35,426	63,324,569
2029	250,778	18,376,589	138,114	22,800,467	0	0	30	30	33,953	62,383,097
2030	247,362	16,967,096	120,599	21,254,393	0	0	29	29	32,593	60,790,296
2031	230,114	13,931,769	87,872	17,729,766	0	0	28	28	29,575	57,153,503
2032	231,403	13,129,418	76,409	16,915,981	0	0	26	26	29,920	56,328,230
2033	219,203	11,564,656	60,409	15,020,848	0	0	26	26	29,215	54,360,683
2034	200,738	10,269,194	50,710	13,308,973	0	0	25	25	25,621	52,466,921
2035	187,268	9,430,366	45,443	12,169,385	0	0	23	23	21,375	51,005,064
Total	37,640,852	3,476,372,923	26,678,045	4,227,314,048	0	0	869,959	869,959	17,976,055	6,234,000,495

TABLE B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

	North Bay Area			South Bay Area				Central Coastal Area		
Calendar Year	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	9,699	8,868	0	18,567	0	0	0
1963	0	0	0	38,048	34,788	82,896	155,732	0	0	0
1964	0	0	0	41,148	38,323	91,320	170,791	0	0	0
1965	0	0	0	78,529	75,616	195,792	349,937	0	0	0
1966	0	0	0	79,753	78,779	218,544	377,076	0	0	0
1967	0	0	0	127,896	123,665	335,225	586,786	0	0	0
1968	130	0	130	126,058	120,563	333,506	580,127	11,801	21,769	33,570
1969	80,875	0	80,875	145,410	138,051	372,584	656,045	63,112	116,434	179,546
1970	94,872	0	94,872	128,993	120,246	320,663	569,902	74,187	136,867	211,054
1971	45,579	0	45,579	113,071	108,346	296,004	517,421	74,011	136,541	210,552
1972	37,895	0	37,895	122,407	117,483	334,366	574,256	79,195	146,107	225,302
1973	32,993	0	32,993	122,738	116,785	325,727	565,250	75,714	139,685	215,399
1974	46,498	0	46,498	154,434	146,929	403,081	704,444	76,531	141,190	217,721
1975	37,707	0	37,707	189,176	182,087	513,823	885,086	92,605	170,845	263,450
1976	60,786	0	60,786	203,063	193,436	524,814	921,313	94,933	175,142	270,075
1977	78,400	0	78,400	179,911	169,103	500,192	849,206	102,969	189,966	292,935
1978	56,318	0	56,318	239,301	228,854	647,829	1,115,984	104,061	191,982	296,043
1979	73,852	0	73,852	236,986	232,103	666,744	1,135,833	100,749	185,873	286,622
1980	81,770	0	81,770	389,583	372,191	1,010,846	1,772,620	125,147	230,882	356,029
1981	100,786	0	100,786	316,994	301,893	833,364	1,452,251	138,619	255,733	394,352
1982	194,250	0	194,250	394,390	376,867	1,119,102	1,890,359	142,666	263,202	405,868
1983	80,619	0	80,619	442,016	432,597	1,280,104	2,154,717	171,181	315,811	486,992
1984	106,446	0	106,446	591,136	565,624	1,817,399	2,974,159	200,552	369,995	570,547
1985	215,389	0	215,389	679,106	659,266	1,849,208	3,187,580	246,202	454,211	700,413
1986	203,620	0	203,620	614,521	584,218	1,786,797	2,985,536	233,614	430,990	664,604
1987	293,960	0	293,960	681,768	647,113	1,988,041	3,316,922	229,768	462,478	692,246
1988	312,496	0	312,496	677,891	656,290	1,913,574	3,247,755	258,999	561,345	820,344
1989	421,438	705,723	1,127,161	715,426	708,907	1,894,864	3,319,197	243,263	665,648	908,911
1990	658,339	660,811	1,319,150	781,984	779,874	2,131,684	3,693,542	309,958	676,542	986,500
1991	720,423	807,671	1,528,094	557,644	539,974	1,566,218	2,663,836	321,494	708,887	1,030,381
1992	532,866	736,217	1,269,083	990,089	1,035,870	2,716,165	4,742,124	350,084	755,452	1,105,536
1993	616,734	1,049,154	1,665,888	1,800,938	1,743,686	4,564,051	8,108,675	509,492	939,952	1,449,444
1994	588,509	1,012,273	1,600,782	1,468,112	1,421,193	3,819,394	6,708,699	480,975	887,341	1,368,316
1995	613,135	1,062,018	1,675,153	1,117,404	1,098,095	3,038,093	5,253,592	467,789	863,017	1,330,806
1996	629,651	1,089,911	1,719,562	1,079,169	1,050,392	2,867,561	4,997,122	1,254,607	2,697,471	3,952,078
1997	633,746	1,096,860	1,730,606	1,086,741	1,057,798	2,888,073	5,032,612	1,112,922	2,303,794	3,416,716
1998	634,303	1,097,813	1,732,116	1,087,562	1,058,488	2,889,768	5,035,818	1,105,418	2,285,904	3,391,322
1999	634,295	1,098,076	1,732,371	1,087,576	1,058,504	2,889,845	5,035,925	1,105,446	2,285,981	3,391,427
2000	634,594	1,098,751	1,733,345	1,087,836	1,058,745	2,890,438	5,037,019	1,105,910	2,286,978	3,392,888
2001	635,591	1,100,458	1,736,049	1,089,619	1,060,467	2,895,100	5,045,186	1,107,632	2,290,528	3,398,160
2002	635,828	1,100,995	1,736,823	1,089,825	1,060,658	2,895,572	5,046,055	1,107,999	2,291,322	3,399,321
2003	635,952	1,101,273	1,737,225	1,089,934	1,060,759	2,895,816	5,046,509	1,108,192	2,291,737	3,399,929
2004	636,088	1,101,582	1,737,670	1,090,052	1,060,870	2,896,088	5,047,010	1,108,405	2,292,193	3,400,598
2005	636,377	1,102,232	1,738,609	1,090,302	1,061,101	2,896,658	5,048,061	1,108,852	2,293,149	3,402,001
2006	636,391	1,102,263	1,738,654	1,090,314	1,061,111	2,896,687	5,048,112	1,108,872	2,293,195	3,402,067
2007	636,484	1,102,479	1,738,963	1,090,397	1,061,188	2,896,876	5,048,461	1,109,020	2,293,510	3,402,530
2008	636,591	1,102,718	1,739,309	1,090,489	1,061,274	2,897,084	5,048,847	1,109,185	2,293,862	3,403,047
2009	636,675	1,102,906	1,739,581	1,090,562	1,061,341	2,897,251	5,049,154	1,109,316	2,294,145	3,403,461
2010	637,076	1,103,813	1,740,889	1,090,912	1,061,665	2,898,047	5,050,624	1,109,937	2,295,485	3,405,422
2011	636,991	1,103,622	1,740,613	1,090,838	1,061,598	2,897,879	5,050,315	1,109,805	2,295,202	3,405,007
2012	637,107	1,103,886	1,740,993	1,090,940	1,061,691	2,898,110	5,050,741	1,109,988	2,295,590	3,405,578
2013	637,219	1,104,133	1,741,352	1,091,035	1,061,779	2,898,329	5,051,143	1,110,162	2,295,961	3,406,123
2014	637,349	1,104,427	1,741,776	1,091,149	1,061,885	2,898,589	5,051,623	1,110,364	2,296,394	3,406,758
2015	637,303	1,104,321	1,741,624	1,091,107	1,061,846	2,898,493	5,051,446	1,110,290	2,296,237	3,406,527
2016	637,332	1,104,389	1,741,721	1,091,131	1,061,870	2,898,553	5,051,554	1,110,333	2,296,335	3,406,668
2017	637,738	1,105,307	1,743,045	1,091,488	1,062,199	2,899,361	5,053,048	1,110,970	2,297,696	3,408,666
2018	637,735	1,105,298	1,743,033	1,091,484	1,062,197	2,899,353	5,053,034	1,110,960	2,297,681	3,408,641
2019	637,755	1,105,341	1,743,096	1,091,501	1,062,210	2,899,390	5,053,101	1,110,990	2,297,743	3,408,733
2020	637,567	1,104,915	1,742,482	1,091,336	1,062,058	2,899,016	5,052,410	1,110,697	2,297,114	3,407,811
2021	637,616	1,105,025	1,742,641	1,091,378	1,062,098	2,899,112	5,052,588	1,110,771	2,297,276	3,408,047
2022	637,639	1,105,077	1,742,716	1,091,398	1,062,116	2,899,157	5,052,671	1,110,809	2,297,353	3,408,162
2023	637,637	1,105,072	1,742,709	1,091,396	1,062,114	2,899,155	5,052,665	1,110,806	2,297,345	3,408,151
2024	637,637	1,105,074	1,742,711	1,091,397	1,062,114	2,899,155	5,052,666	1,110,807	2,297,346	3,408,153
2025	637,648	1,105,097	1,742,745	1,091,406	1,062,123	2,899,175	5,052,704	1,110,824	2,297,381	3,408,205
2026	637,592	1,104,973	1,742,565	1,091,357	1,062,078	2,899,066	5,052,501	1,110,736	2,297,197	3,407,933
2027	637,593	1,104,975	1,742,568	1,091,359	1,062,079	2,899,066	5,052,504	1,110,738	2,297,202	3,407,940
2028	637,598	1,104,987	1,742,585	1,091,362	1,062,082	2,899,078	5,052,522	1,110,746	2,297,217	3,407,963
2029	637,599	1,104,990	1,742,589	1,091,363	1,062,084	2,899,081	5,052,528	1,110,749	2,297,222	3,407,971
2030	637,592	1,104,975	1,742,567	1,091,359	1,062,079	2,899,065	5,052,503	1,110,737	2,297,199	3,407,936
2031	637,613	1,105,019	1,742,632	1,091,375	1,062,096	2,899,106	5,052,577	1,110,769	2,297,265	3,408,034
2032	637,613	1,105,019	1,742,632	1,091,375	1,062,096	2,899,106	5,052,577	1,110,769	2,297,265	3,408,034
2033	637,622	1,105,039	1,742,661	1,091,383	1,062,103	2,899,125	5,052,611	1,110,785	2,297,296	3,408,081
2034	637,595	1,104,980	1,742,575	1,091,360	1,062,080	2,899,074	5,052,514	1,110,742	2,297,206	3,407,948
2035	637,641	1,105,083	1,742,724	1,091,398	1,062,115	2,899,156	5,052,669	1,110,809	2,297,356	3,408,165
Total	31,854,658	50,157,021	82,011,679	58,169,588	56,602,834	155,356,628	270,129,050	49,917,540	102,808,220	152,725,760

TABLE B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Kern County Water Agency: Municipal and Industrial (14)	Kern County Water Agency: Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	37,806	1,963	5,639	60,702	678,085	2,007	2,073	77,592	865,867
1969	45,479	2,237	30,159	80,553	1,197,126	2,286	2,086	90,772	1,450,698
1970	46,969	2,292	35,450	96,672	1,381,493	2,345	2,158	93,407	1,660,786
1971	47,997	2,315	35,365	106,654	1,643,161	2,366	2,288	94,874	1,935,020
1972	49,867	2,414	37,845	122,312	1,729,170	2,470	2,254	98,776	2,045,108
1973	50,005	2,386	36,180	125,553	1,719,871	2,439	2,310	98,329	2,037,073
1974	52,816	2,557	36,571	135,661	1,823,063	2,615	2,529	104,610	2,160,422
1975	66,962	3,242	44,250	162,739	2,235,242	3,317	3,191	132,663	2,651,606
1976	66,504	3,327	45,365	159,304	2,215,996	3,404	2,919	133,940	2,630,759
1977	75,670	3,814	49,203	189,781	2,523,621	3,904	3,716	152,989	3,002,698
1978	70,688	3,504	49,725	174,899	2,427,160	3,583	3,644	141,673	2,874,876
1979	68,878	3,437	48,143	173,678	2,378,303	3,514	3,492	138,493	2,817,938
1980	95,903	4,724	59,801	235,749	3,149,510	4,830	4,778	191,591	3,746,886
1981	118,527	5,970	66,238	266,285	3,439,643	6,103	5,191	239,484	4,147,441
1982	135,683	6,791	68,172	315,514	3,896,853	6,943	6,455	273,278	4,709,689
1983	186,114	9,303	81,797	429,194	5,067,126	9,511	8,553	374,607	6,166,205
1984	194,203	9,654	95,835	471,842	5,638,527	9,872	8,724	389,827	6,818,484
1985	213,787	10,587	117,647	515,748	6,344,401	10,827	9,998	428,316	7,651,311
1986	212,367	10,555	111,630	542,231	6,493,294	10,796	10,715	426,251	7,817,839
1987	204,749	10,222	109,793	531,991	6,376,296	10,458	10,357	411,918	7,665,784
1988	204,498	10,250	123,763	520,452	6,431,009	10,484	10,079	412,201	7,722,736
1989	220,278	11,072	116,242	557,951	6,684,764	11,322	10,789	444,625	8,057,043
1990	271,119	13,663	148,113	663,934	8,113,558	13,974	13,256	547,996	9,785,613
1991	286,441	14,383	153,625	685,210	8,466,424	14,710	13,625	577,899	10,212,317
1992	338,389	17,078	167,286	773,298	9,579,410	17,468	18,979	684,467	11,596,375
1993	346,785	17,293	243,461	828,018	11,008,079	17,686	20,081	697,202	13,178,605
1994	333,770	16,620	229,833	800,427	10,573,665	17,001	18,060	670,569	12,659,945
1995	334,084	16,579	223,532	813,242	10,609,827	16,958	18,466	670,048	12,702,736
1996	332,905	16,493	210,738	812,948	10,428,675	16,870	18,826	667,088	12,504,543
1997	335,574	16,625	226,343	818,907	10,388,117	17,004	18,948	672,445	12,493,963
1998	335,830	16,638	226,549	819,458	10,395,913	17,018	18,963	672,964	12,503,333
1999	335,550	16,625	226,504	818,772	10,388,827	17,005	18,958	672,417	12,494,658
2000	335,750	16,636	226,590	819,260	10,394,613	17,016	18,964	672,815	12,501,644
2001	336,455	16,670	226,957	820,890	10,414,392	17,052	18,998	674,238	12,525,652
2002	336,617	16,678	227,031	821,283	10,419,036	17,060	19,003	674,560	12,531,268
2003	336,700	16,682	227,066	821,489	10,421,454	17,063	19,006	674,727	12,534,187
2004	336,794	16,687	227,109	821,716	10,424,142	17,067	19,009	674,911	12,537,435
2005	336,986	16,697	227,195	822,183	10,429,664	17,077	19,015	675,293	12,544,110
2006	336,996	16,697	227,201	822,204	10,429,932	17,077	19,015	675,312	12,544,434
2007	337,060	16,700	227,230	822,359	10,431,789	17,082	19,017	675,443	12,546,680
2008	337,130	16,704	227,262	822,533	10,433,840	17,085	19,018	675,583	12,549,155
2009	337,188	16,706	227,287	822,677	10,435,509	17,087	19,021	675,700	12,551,175
2010	337,460	16,718	227,408	823,332	10,443,275	17,100	19,029	676,235	12,560,557
2011	337,403	16,716	227,381	823,192	10,441,624	17,097	19,027	676,121	12,558,561
2012	337,481	16,722	227,417	823,384	10,443,898	17,101	19,029	676,278	12,561,310
2013	337,557	16,724	227,450	823,567	10,446,058	17,105	19,032	676,428	12,563,921
2014	337,645	16,728	227,489	823,784	10,448,593	17,111	19,034	676,602	12,566,986
2015	337,614	16,726	227,476	823,703	10,447,673	17,108	19,034	676,539	12,565,873
2016	337,631	16,726	227,486	823,749	10,448,243	17,110	19,034	676,578	12,566,557
2017	337,911	16,742	227,608	824,423	10,456,209	17,123	19,042	677,131	12,576,189
2018	337,907	16,742	227,608	824,418	10,456,136	17,123	19,042	677,125	12,576,101
2019	337,919	16,742	227,614	824,451	10,456,496	17,123	19,043	677,149	12,576,537
2020	337,792	16,734	227,554	824,138	10,452,810	17,117	19,038	676,893	12,572,076
2021	337,826	16,736	227,571	824,218	10,453,747	17,118	19,040	676,960	12,573,216
2022	337,839	16,738	227,575	824,255	10,454,198	17,120	19,040	676,991	12,573,756
2023	337,838	16,738	227,576	824,252	10,454,157	17,120	19,040	676,989	12,573,710
2024	337,838	16,738	227,575	824,253	10,454,171	17,120	19,040	676,989	12,573,724
2025	337,845	16,738	227,581	824,270	10,454,362	17,121	19,040	677,002	12,573,959
2026	337,808	16,734	227,563	824,174	10,453,271	17,118	19,040	676,925	12,572,633
2027	337,808	16,735	227,563	824,176	10,453,297	17,118	19,040	676,927	12,572,664
2028	337,811	16,736	227,564	824,188	10,453,404	17,118	19,040	676,936	12,572,797
2029	337,812	16,736	227,564	824,190	10,453,427	17,118	19,040	676,938	12,572,825
2030	337,808	16,735	227,562	824,178	10,453,307	17,118	19,040	676,929	12,572,677
2031	337,821	16,736	227,571	824,214	10,453,683	17,118	19,040	676,953	12,573,136
2032	337,821	16,736	227,571	824,214	10,453,683	17,118	19,040	676,953	12,573,136
2033	337,829	16,737	227,572	824,228	10,453,859	17,119	19,040	676,967	12,573,351
2034	337,810	16,735	227,563	824,181	10,453,346	17,118	19,040	676,932	12,572,725
2035	337,835	16,738	227,575	824,245	10,454,095	17,120	19,040	676,981	12,573,629
Total	17,865,542	886,536	11,647,762	43,451,650	551,407,602	906,756	981,511	35,829,344	662,976,703

TABLE B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	*Castaic Lake Water Agency (21)*	*Coachella Valley Water District (22)*	*Crestline-Lake Arrowhead Water Agency (23)*	*Desert Water Agency (24)*	*Littlerock Creek Irrigation District (25)*	*Mojave Water Agency (26)*	*Palmdale Water District (27)*	*San Bernardino Valley Municipal Water District (28)*	*San Gabriel Valley Municipal Water District (29)*
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	65,073	28,084	11,697	2,958	19,290	1,088	24,380	8,171	52,314	14,399
1969	86,340	70,345	15,522	3,924	25,595	1,444	32,346	10,843	69,418	19,106
1970	107,806	84,580	19,391	4,902	31,979	1,802	40,392	13,540	86,726	23,866
1971	178,822	105,978	32,230	8,152	53,149	2,991	66,998	22,459	144,137	39,636
1972	363,554	202,628	106,741	30,966	176,039	6,603	213,029	48,104	548,122	144,113
1973	404,662	222,767	121,341	34,673	200,118	7,347	243,320	53,976	724,532	190,155
1974	434,864	235,526	130,629	37,060	215,431	7,678	262,736	56,382	786,108	207,020
1975	504,790	289,504	151,033	43,179	249,085	9,082	303,109	65,579	905,424	238,842
1976	559,011	262,418	160,688	44,454	265,002	10,030	325,512	73,253	964,525	256,572
1977	675,631	335,806	184,833	47,750	304,832	11,888	381,208	87,370	1,069,549	289,821
1978	600,343	376,950	187,027	54,153	308,449	10,711	373,191	78,304	1,148,279	300,751
1979	661,123	349,073	196,264	52,212	323,679	12,125	401,467	87,126	1,125,451	302,509
1980	858,071	415,945	253,097	71,923	417,412	15,433	508,394	112,859	1,518,448	401,234
1981	999,530	510,631	284,453	73,380	469,114	18,015	587,002	131,750	1,544,955	419,638
1982	1,140,246	564,678	324,473	90,545	535,122	20,407	656,353	149,554	1,891,140	503,344
1983	1,753,076	822,123	452,537	119,957	746,320	30,792	927,100	226,884	2,387,798	643,556
1984	2,104,263	942,744	548,532	150,143	904,643	36,785	1,111,625	271,006	3,017,585	803,154
1985	2,191,317	1,070,207	590,780	159,378	974,311	39,530	1,203,974	281,441	3,257,662	868,279
1986	2,320,007	1,106,823	620,233	163,090	1,022,887	40,185	1,271,970	296,994	3,325,821	895,081
1987	2,319,582	1,016,240	618,028	164,641	1,019,252	40,983	1,262,836	301,938	3,354,388	901,240
1988	2,318,759	1,048,865	653,014	176,595	1,076,949	40,878	1,329,379	300,494	3,603,615	965,352
1989	2,279,708	1,086,362	613,105	169,608	1,011,139	39,566	1,240,880	293,006	3,490,490	929,938
1990	2,613,349	1,265,738	704,234	200,100	1,161,428	45,154	1,414,900	333,681	4,065,388	1,073,163
1991	2,754,033	1,193,764	771,257	212,536	1,271,959	49,417	1,561,441	361,601	4,389,585	1,161,508
1992	2,835,752	1,592,887	771,234	204,018	1,271,915	50,860	1,579,661	371,163	4,215,908	1,133,841
1993	3,181,851	1,829,267	888,987	241,477	1,466,118	56,978	1,812,372	416,882	5,189,999	1,392,957
1994	3,138,045	1,736,672	880,723	245,448	1,452,494	57,346	1,780,798	416,800	5,237,647	1,394,029
1995	3,218,708	1,736,661	893,720	241,399	1,473,927	58,712	1,821,232	427,057	5,220,199	1,400,223
1996	3,147,904	1,755,638	876,676	239,063	1,445,817	56,399	1,781,896	412,771	5,207,534	1,393,382
1997	3,163,949	1,867,881	859,113	213,803	1,416,834	56,678	1,790,042	414,822	4,738,772	1,300,665
1998	3,166,353	1,837,271	882,504	241,640	1,455,427	56,724	1,791,615	415,151	5,225,874	1,395,018
1999	3,165,729	1,771,505	905,163	269,358	1,492,819	56,713	1,791,532	415,076	5,718,615	1,491,141
2000	3,168,131	1,793,049	865,463	219,840	1,427,318	56,770	1,793,733	415,454	4,838,733	1,319,884
2001	3,174,192	1,792,091	886,958	244,473	1,462,776	56,877	1,797,193	416,248	5,277,643	1,406,188
2002	3,176,098	1,794,529	887,960	244,884	1,464,424	56,923	1,798,934	416,551	5,285,063	1,407,953
2003	3,177,096	1,795,401	887,203	243,541	1,463,183	56,946	1,799,847	416,711	5,261,220	1,403,466
2004	3,178,197	1,796,363	888,078	244,135	1,464,620	56,972	1,800,846	416,880	5,271,919	1,405,737
2005	3,180,472	1,797,555	894,627	251,169	1,475,430	57,020	1,802,925	417,241	5,397,074	1,430,534
2006	3,180,585	1,798,472	891,932	247,826	1,470,979	57,024	1,803,026	417,259	5,337,656	1,418,958
2007	3,181,355	1,799,143	890,563	245,827	1,468,717	57,043	1,803,729	417,379	5,302,157	1,412,164
2008	3,182,197	1,799,882	892,678	248,051	1,472,207	57,064	1,804,499	417,514	5,341,698	1,420,021
2009	3,182,880	1,800,477	886,490	240,203	1,461,995	57,081	1,805,126	417,624	5,202,263	1,392,928
2010	3,186,079	1,805,137	927,231	288,606	1,529,217	57,153	1,808,048	418,129	6,062,765	1,561,340
2011	3,185,419	1,800,799	874,046	223,919	1,441,468	57,138	1,807,448	418,022	4,913,048	1,336,931
2012	3,186,345	1,803,543	893,713	247,546	1,473,915	57,159	1,808,290	418,170	5,333,057	1,419,027
2013	3,187,232	1,804,320	893,630	247,068	1,473,778	57,177	1,809,101	418,309	5,324,625	1,417,528
2014	3,188,271	1,807,397	898,756	252,884	1,482,232	57,203	1,810,056	418,474	5,428,055	1,437,882
2015	3,187,908	1,809,771	879,736	229,806	1,450,853	57,193	1,809,723	418,418	5,017,887	1,357,799
2016	3,188,132	1,801,362	895,602	249,092	1,477,037	57,200	1,809,932	418,454	5,360,649	1,424,708
2017	3,191,412	1,809,017	895,981	248,153	1,477,652	57,275	1,812,924	418,971	5,344,201	1,422,045
2018	3,191,382	1,805,963	895,286	247,321	1,476,510	57,275	1,812,891	418,965	5,329,421	1,419,159
2019	3,191,529	1,804,298	900,093	253,128	1,484,439	57,278	1,813,028	418,988	5,432,635	1,439,317
2020	3,190,012	1,808,116	877,621	226,329	1,447,367	57,243	1,811,640	418,747	4,956,229	1,346,121
2021	3,190,396	1,807,065	895,576	248,100	1,476,993	57,252	1,811,990	418,810	5,343,177	1,421,677
2022	3,190,583	1,808,259	897,268	250,085	1,479,779	57,257	1,812,163	418,839	5,378,451	1,428,589
2023	3,190,564	1,807,245	895,171	247,537	1,476,325	57,257	1,812,143	418,835	5,333,150	1,419,751
2024	3,190,566	1,806,248	894,210	246,361	1,474,737	57,257	1,812,145	418,837	5,312,238	1,415,670
2025	3,190,650	1,809,560	900,624	254,153	1,485,313	57,258	1,812,228	418,851	5,450,762	1,442,707
2026	3,190,201	1,804,909	894,569	246,951	1,475,330	57,247	1,811,816	418,779	5,322,729	1,417,656
2027	3,190,213	1,808,894	893,907	246,138	1,474,240	57,247	1,811,826	418,779	5,308,302	1,414,842
2028	3,190,256	1,804,079	897,658	250,704	1,480,427	57,249	1,811,864	418,786	5,389,442	1,430,679
2029	3,190,268	1,806,938	891,076	242,659	1,469,566	57,249	1,811,876	418,788	5,246,466	1,402,786
2030	3,190,206	1,807,610	893,846	246,067	1,474,136	57,247	1,811,816	418,779	5,307,026	1,414,593
2031	3,190,372	1,807,074	894,973	247,371	1,475,997	57,252	1,811,974	418,806	5,330,218	1,419,147
2032	3,190,372	1,807,074	894,973	247,371	1,475,997	57,252	1,811,974	418,806	5,330,218	1,419,147
2033	3,190,443	1,808,128	899,229	252,540	1,483,016	57,254	1,812,034	418,819	5,422,050	1,437,073
2034	3,190,231	1,807,930	890,443	241,896	1,468,519	57,247	1,811,845	418,783	5,232,919	1,400,139
2035	3,190,576	1,789,368	924,344	283,158	1,524,453	57,257	1,812,164	418,839	5,966,229	1,543,261
Total	168,023,072	92,652,627	46,870,773	12,907,377	77,299,480	3,008,140	94,995,487	22,010,681	275,917,383	73,520,940

TABLE B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC & WCD (36)	Total (37)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	18,567
1963	0	0	0	0	0	0	0	0	12,626	168,358
1964	0	0	0	0	0	0	0	0	13,938	184,729
1965	0	0	0	0	0	0	0	0	28,937	378,874
1966	0	0	0	0	0	0	0	0	31,321	408,397
1967	0	0	0	0	0	0	0	0	47,719	634,505
1968	8,819	972,744	9,504	1,218,521	0	0	0	0	46,945	2,745,160
1969	11,706	1,295,613	12,610	1,654,812	0	0	0	0	52,963	4,074,939
1970	14,621	1,624,573	15,745	2,069,923	0	0	0	0	69,745	4,676,282
1971	24,302	2,716,582	26,120	3,421,556	0	0	54	54	55,532	6,185,714
1972	89,132	8,038,457	68,368	10,035,856	0	0	40	40	80,412	12,998,869
1973	117,781	9,890,314	78,312	12,289,298	0	0	1	1	54,219	15,194,233
1974	128,166	11,581,499	83,451	14,166,550	0	0	143	143	76,783	17,372,561
1975	147,900	13,584,540	101,892	16,593,959	0	0	1,069	1,069	84,546	20,517,423
1976	158,663	12,862,497	94,799	16,037,424	0	0	139	139	106,717	20,027,213
1977	178,791	16,205,614	121,985	19,895,078	0	0	892	892	98,631	24,217,840
1978	186,386	17,811,759	132,438	21,568,741	0	0	39	39	100,785	26,012,786
1979	186,685	16,414,295	126,757	20,238,766	0	0	3,235	3,235	119,352	24,675,598
1980	248,407	20,927,493	154,101	25,902,817	0	0	416	416	178,817	32,039,355
1981	258,691	23,693,159	186,314	29,176,632	0	0	3,847	3,847	185,220	35,460,529
1982	311,339	28,334,525	211,610	34,733,336	0	0	10,956	10,956	184,152	42,128,610
1983	396,921	38,598,600	322,790	47,428,454	0	0	(422)	(422)	222,530	56,539,095
1984	496,665	45,551,198	381,623	56,319,966	0	0	643	643	225,922	67,016,167
1985	536,359	50,598,413	421,801	62,193,452	0	0	2,599	2,599	341,827	74,292,571
1986	552,298	52,996,918	443,568	65,055,875	0	0	2,595	2,595	279,702	77,009,771
1987	556,549	49,864,815	402,934	61,823,426	0	0	2,595	2,595	342,928	74,137,861
1988	596,472	51,557,540	408,918	64,076,830	0	0	2,600	2,600	365,833	76,548,594
1989	575,254	52,529,034	430,166	64,688,256	0	0	2,672	2,672	420,032	78,523,272
1990	664,489	60,622,363	490,250	74,654,237	0	0	2,687	2,687	473,451	90,915,180
1991	718,537	59,974,202	463,494	74,883,334	0	0	2,730	2,730	222,202	90,542,894
1992	700,480	67,826,963	509,942	83,064,624	0	0	2,774	2,774	562,186	102,342,702
1993	860,091	73,876,326	554,647	91,767,952	0	0	2,912	2,912	786,330	116,959,806
1994	862,023	70,541,638	528,267	88,271,930	0	0	3,058	3,058	674,368	111,287,098
1995	865,161	70,763,817	532,135	88,652,951	0	0	3,211	3,211	576,741	110,195,190
1996	861,176	72,538,275	544,440	90,260,971	0	0	3,211	3,211	559,229	113,996,716
1997	801,139	73,301,175	571,024	90,495,897	0	0	3,211	3,211	564,034	113,737,039
1998	863,233	74,239,092	562,031	92,131,933	0	0	3,211	3,211	564,250	115,361,983
1999	926,224	73,351,773	542,692	91,898,340	0	0	3,211	3,211	564,196	115,120,128
2000	813,945	71,626,895	549,064	88,888,279	0	0	3,211	3,211	564,510	112,120,896
2001	870,406	72,886,843	548,849	90,820,737	0	0	3,211	3,211	565,660	114,094,655
2002	871,518	73,075,349	549,600	91,029,786	0	0	3,211	3,211	565,910	114,312,374
2003	868,556	73,168,648	549,876	91,091,694	0	0	3,211	3,211	566,042	114,378,797
2004	870,019	73,381,630	550,174	91,325,570	0	0	3,211	3,211	566,185	114,617,679
2005	886,215	73,632,972	550,567	91,773,801	0	0	3,211	3,211	566,487	115,076,280
2006	878,630	73,540,869	550,839	91,594,055	0	0	3,211	3,211	566,503	114,897,036
2007	874,154	73,356,899	551,050	91,360,180	0	0	3,211	3,211	566,603	114,666,628
2008	879,284	73,512,719	551,282	91,579,096	0	0	3,211	3,211	566,714	114,889,379
2009	861,516	72,879,056	551,469	90,739,108	0	0	3,211	3,211	566,803	114,052,493
2010	971,800	75,980,652	552,893	95,149,050	0	0	3,211	3,211	567,227	118,476,980
2011	824,762	72,087,844	551,607	89,522,451	0	0	3,211	3,211	567,137	112,847,295
2012	878,534	73,775,071	552,432	91,846,802	0	0	3,211	3,211	567,260	115,175,895
2013	877,534	73,681,957	552,672	91,744,931	0	0	3,211	3,211	567,378	115,078,059
2014	890,847	74,360,687	553,596	92,586,340	0	0	3,211	3,211	567,514	115,924,208
2015	838,380	72,896,965	554,290	90,508,729	0	0	3,211	3,211	567,463	113,844,873
2016	882,217	73,652,871	551,818	91,769,074	0	0	3,211	3,211	567,495	115,106,280
2017	880,396	73,957,028	554,128	92,069,183	0	0	3,211	3,211	567,926	115,421,268
2018	878,505	73,811,795	553,230	91,897,703	0	0	3,211	3,211	567,923	115,249,646
2019	891,710	74,374,267	552,741	92,613,451	0	0	3,211	3,211	567,941	115,966,070
2020	830,678	72,540,009	553,839	90,063,951	0	0	3,211	3,211	567,742	113,409,683
2021	880,181	73,891,927	553,536	91,996,680	0	0	3,211	3,211	567,793	115,344,176
2022	884,703	73,775,840	553,890	91,935,706	0	0	3,211	3,211	567,818	115,284,040
2023	878,909	73,849,888	553,591	91,940,366	0	0	3,211	3,211	567,815	115,288,627
2024	876,236	73,882,143	553,297	91,939,945	0	0	3,211	3,211	567,816	115,288,226
2025	893,953	74,368,333	554,274	92,638,666	0	0	3,211	3,211	567,827	115,987,317
2026	877,548	73,763,456	552,901	91,834,092	0	0	3,211	3,211	567,767	115,180,702
2027	875,706	73,825,787	554,072	91,879,953	0	0	3,211	3,211	567,769	115,226,609
2028	886,079	73,714,026	552,656	91,883,905	0	0	3,211	3,211	567,775	115,230,758
2029	867,802	73,863,028	553,499	91,822,001	0	0	3,211	3,211	567,776	115,168,901
2030	875,542	73,681,645	553,695	91,732,208	0	0	3,211	3,211	567,769	115,078,871
2031	878,520	73,834,719	553,536	91,919,959	0	0	3,211	3,211	567,790	115,267,339
2032	878,520	73,834,719	553,536	91,919,959	0	0	3,211	3,211	567,790	115,267,339
2033	890,265	74,094,119	553,850	92,318,820	0	0	3,211	3,211	567,798	115,666,533
2034	866,069	73,338,282	553,789	91,278,092	0	0	3,211	3,211	567,771	114,624,836
2035	959,846	74,226,403	548,337	93,244,235	0	0	3,211	3,211	567,817	116,592,450
Total	45,493,945	3,874,811,147	29,419,203	4,816,930,255	0	0	179,925	179,925	29,796,435	6,014,749,807

TABLE B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

	North Bay Area			South Bay Area				Central Coastal Area		
Calendar Year	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	10,070	0	10,070	47,473	31,446	863,937	942,856	0	0	0
1984	29,957	0	29,957	157,280	77,388	2,040,188	2,274,856	0	0	0
1985	54,709	0	54,709	458,427	582,679	2,696,449	3,737,555	0	0	0
1986	45,886	0	45,886	312,937	365,147	2,595,766	3,273,850	0	0	0
1987	90,385	0	90,385	622,029	674,111	2,306,079	3,602,219	0	0	0
1988	113,458	113,340	226,798	617,183	799,591	2,101,745	3,518,519	0	0	0
1989	64,584	138,240	202,824	407,353	396,069	1,389,347	2,192,769	0	0	0
1990	74,540	159,551	234,091	470,149	457,126	1,603,525	2,530,800	0	0	0
1991	36,558	101,276	137,834	369,525	496,627	1,107,279	1,973,431	0	172,438	172,438
1992	90,325	155,745	246,070	466,239	587,107	1,256,257	2,309,603	0	252	252
1993	77,250	156,198	233,448	512,478	558,331	1,321,654	2,392,463	0	0	0
1994	86,133	169,139	255,272	559,013	586,964	1,397,533	2,543,510	0	0	0
1995	91,151	185,589	276,740	580,200	580,199	1,381,428	2,541,827	0	0	0
1996	100,629	204,145	304,774	629,514	600,899	1,430,712	2,661,125	155,453	1,492,813	1,648,266
1997	105,413	204,799	310,212	649,534	593,053	1,412,031	2,654,618	305,628	1,769,430	2,075,058
1998	107,341	198,574	305,915	624,982	570,637	1,358,658	2,554,277	915,782	1,666,211	2,581,993
1999	107,349	190,790	298,139	593,602	541,986	1,290,440	2,426,028	869,801	1,582,552	2,452,353
2000	102,066	173,391	275,457	533,250	486,880	1,159,238	2,179,368	781,366	1,421,650	2,203,016
2001	105,561	171,259	276,820	526,691	480,892	1,144,981	2,152,564	771,756	1,404,164	2,175,920
2002	104,456	163,255	267,711	502,073	458,415	1,091,464	2,051,952	735,684	1,338,534	2,074,218
2003	103,738	155,393	259,131	477,899	436,343	1,038,911	1,953,153	700,261	1,274,084	1,974,345
2004	101,226	145,724	246,950	448,159	409,189	974,260	1,831,608	656,684	1,194,799	1,851,483
2005	92,594	134,375	226,969	394,569	360,258	857,758	1,612,585	578,159	1,051,924	1,630,083
2006	92,875	131,096	223,971	384,939	351,467	836,826	1,573,232	564,049	1,026,253	1,590,302
2007	89,857	122,734	212,591	360,384	329,047	783,444	1,472,875	528,069	960,789	1,488,858
2008	85,874	112,974	198,848	331,726	302,880	721,143	1,355,749	486,076	884,385	1,370,461
2009	81,958	104,562	186,520	307,030	280,331	667,454	1,254,815	449,888	818,543	1,268,431
2010	73,824	91,975	165,799	268,448	245,105	583,583	1,097,136	393,354	715,686	1,109,040
2011	72,564	87,374	159,938	255,023	232,847	554,396	1,042,266	373,683	679,893	1,053,576
2012	66,759	78,168	144,927	228,153	208,313	495,983	932,449	334,310	608,257	942,567
2013	19,005	21,552	40,557	62,903	57,433	136,746	257,082	92,171	167,701	259,872
2014	32,594	35,830	68,424	104,578	95,485	227,343	427,406	153,238	278,806	432,044
2015	14,307	15,352	29,659	44,543	40,668	96,831	182,042	65,267	118,750	184,017
2016	7,241	7,563	14,804	21,941	20,034	47,700	89,675	32,151	58,497	90,648
2017	3,371	3,429	6,800	9,948	9,084	21,627	40,659	14,578	26,523	41,101
2018	3,457	3,428	6,885	9,944	9,081	21,619	40,644	14,572	26,513	41,085
2019	3,556	3,439	6,995	9,977	9,109	21,689	40,775	14,619	26,599	41,218
2020	3,650	3,446	7,096	9,995	9,127	21,730	40,852	14,646	26,649	41,295
2021	3,658	3,439	7,097	9,977	9,109	21,689	40,775	14,620	26,598	41,218
2022	3,667	3,447	7,114	10,001	9,132	21,742	40,875	14,654	26,663	41,317
2023	3,678	3,457	7,135	10,030	9,158	21,805	40,993	14,697	26,741	41,438
2024	7,601	7,145	14,746	20,730	18,928	45,065	84,723	30,375	55,267	85,642
2025	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
Total	2,564,875	3,761,193	6,326,068	13,420,829	13,377,675	39,168,055	65,966,559	10,075,591	20,927,964	31,003,555

TABLE B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

	San Joaquin Valley Area							
			Kern County Water Agency					
Calendar Year	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	County of Kings (15)	Oak Flat Water District (16)	Tulare Lake Basin Water Storage District (17)	Total (18)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	159,191	0	34,366	2,964,185	13,174	9,673	3,733	3,184,322
1984	389,518	0	816,103	9,095,509	26,774	33,576	49,601	10,411,081
1985	527,952	59,324	1,053,957	11,978,046	38,810	42,297	1,253,257	14,953,643
1986	552,171	12,858	885,988	11,788,715	40,659	38,275	872,009	14,190,675
1987	450,941	24,936	1,192,388	10,448,063	39,134	37,538	911,938	13,104,938
1988	427,210	30,932	1,133,020	9,927,859	35,605	26,785	853,333	12,434,744
1989	331,852	17,226	619,401	7,540,901	22,979	24,306	754,007	9,310,672
1990	383,009	19,882	714,886	8,703,387	26,521	28,053	870,243	10,745,981
1991	13,559	3,233	664,043	147,745	0	1,406	31,888	861,874
1992	261,513	15,164	745,443	6,262,495	19,651	16,646	522,042	7,842,954
1993	289,889	15,072	723,410	6,005,923	20,096	19,531	595,352	7,669,273
1994	300,401	15,619	749,639	6,223,722	20,825	20,240	616,941	7,947,387
1995	296,939	15,439	741,000	6,151,998	20,585	20,007	609,832	7,855,800
1996	307,533	15,990	767,437	6,371,481	21,319	20,720	631,589	8,136,069
1997	303,518	15,781	757,415	6,288,285	21,041	20,449	623,342	8,029,831
1998	292,045	15,184	735,971	6,491,571	20,246	19,677	599,780	8,174,474
1999	277,382	14,421	699,018	6,165,633	19,229	18,689	569,665	7,764,037
2000	249,179	12,956	627,947	5,538,757	17,274	16,788	511,747	6,974,648
2001	246,115	12,796	620,224	5,470,635	17,062	16,582	505,452	6,888,866
2002	234,611	12,199	591,234	5,214,937	16,264	15,807	481,827	6,566,879
2003	223,315	11,611	562,767	4,963,840	15,481	15,046	458,628	6,250,688
2004	209,418	10,889	527,746	4,654,943	14,517	14,110	430,087	5,861,710
2005	184,376	9,586	464,639	4,098,306	12,782	12,423	378,657	5,160,769
2006	179,877	9,352	453,299	3,998,292	12,470	12,119	369,418	5,034,827
2007	168,402	8,756	424,383	3,743,241	11,674	11,346	345,853	4,713,655
2008	155,010	8,060	390,635	3,445,572	10,746	10,444	318,349	4,338,816
2009	143,470	7,460	361,553	3,189,051	9,946	9,667	294,648	4,015,795
2010	125,442	6,522	316,120	2,788,316	8,696	8,452	257,623	3,511,171
2011	119,168	6,196	300,311	2,648,868	8,261	8,029	244,739	3,335,572
2012	106,612	5,543	268,669	2,369,773	7,391	7,183	218,953	2,984,124
2013	29,394	1,528	74,074	653,362	2,037	1,980	60,367	822,742
2014	48,868	2,540	123,150	1,086,232	3,388	3,292	100,361	1,367,831
2015	20,814	1,082	52,452	462,650	1,443	1,402	42,746	582,589
2016	10,253	533	25,838	227,906	711	690	21,057	286,988
2017	4,649	242	11,715	103,334	322	314	9,547	130,123
2018	4,647	242	11,711	103,295	322	313	9,544	130,074
2019	4,662	243	11,749	103,629	323	314	9,574	130,494
2020	4,671	243	11,770	103,824	324	315	9,592	130,739
2021	4,663	242	11,749	103,628	323	314	9,575	130,494
2022	4,674	243	11,777	103,880	324	315	9,598	130,811
2023	4,687	244	11,811	104,183	325	316	9,625	131,191
2024	9,687	504	24,411	215,318	671	653	19,894	271,138
2025	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0
Total	8,061,287	420,873	19,325,219	178,051,290	579,725	566,082	15,496,013	222,500,489

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TABLE B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (19)	*Castaic Lake Water Agency (20)*	*Coachella Valley Water District (21)*	*Crestline-Lake Arrowhead Water Agency (22)*	*Desert Water Agency (23)*	*Littlerock Creek Irrigation District (24)*	*Mojave Water Agency (25)*	*Palmdale Water District (26)*	*San Bernardino Valley Municipal Water District (27)*	*San Gabriel Valley Municipal Water District (28)*
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	1,083,881	411,247	565,798	35,432	894,572	1,250	0	0	233,134	28,548
1984	2,499,848	1,122,640	1,427,428	102,114	2,263,172	77	0	0	502,967	693,074
1985	3,775,658	1,572,025	2,032,672	170,137	3,230,452	0	0	131,200	884,188	601,582
1986	3,159,858	1,694,487	2,097,407	173,460	3,340,188	15,872	0	301,486	739,563	1,088,902
1987	3,167,759	1,694,698	1,991,841	190,149	3,230,424	95,994	1,786	258,719	1,951,799	1,091,691
1988	2,688,189	1,767,924	1,926,823	187,160	3,172,187	33,051	840	139,620	1,995,304	834,845
1989	2,357,669	1,373,513	1,326,863	132,076	2,218,516	50,948	13,206	493,424	1,257,332	792,087
1990	2,721,121	1,585,250	1,531,409	152,436	2,560,517	58,802	15,242	569,489	1,451,159	914,193
1991	1,089,536	551,995	1,062,506	130,628	1,752,446	67,[illegible]	491,856	507,355	561,304	827,774
1992	3,046,355	1,702,670	1,201,394	23,913	1,985,296	33,903	1,293,977	431,238	519,836	937,071
1993	2,400,070	1,616,376	1,216,448	146,696	2,006,350	102,401	1,895,763	636,666	1,685,123	1,263,842
1994	2,620,697	1,706,380	1,260,562	144,609	2,079,109	106,114	1,964,511	694,817	1,909,942	982,256
1995	2,823,307	1,814,753	1,246,034	156,429	2,055,148	104,891	2,740,197	709,612	2,049,754	970,936
1996	3,084,622	2,012,659	1,290,489	173,183	2,128,468	108,634	2,837,958	816,168	2,290,478	1,005,576
1997	3,204,701	2,129,804	1,273,638	181,949	2,100,676	107,215	2,800,901	806,443	2,425,977	992,446
1998	3,239,658	2,049,349	1,225,497	137,935	2,021,274	103,162	2,695,032	775,961	2,705,854	954,933
1999	3,576,538	1,946,452	1,163,965	131,010	1,919,786	97,983	2,559,716	737,000	2,771,346	906,986
2000	3,673,899	2,041,599	1,045,621	135,796	1,724,597	88,020	2,299,463	662,068	2,715,901	905,300
2001	3,628,714	2,016,488	1,032,762	134,125	1,703,386	86,938	2,271,182	653,924	2,682,498	894,166
2002	3,459,108	1,922,237	984,490	127,856	1,623,770	82,874	2,165,026	623,360	2,557,118	852,373
2003	3,292,554	1,829,682	937,088	121,700	1,545,586	78,884	2,060,781	593,346	2,433,994	811,331
2004	3,087,659	1,715,823	878,773	114,126	1,449,405	73,975	1,932,540	556,422	2,282,528	760,842
2005	3,284,780	1,646,521	773,690	128,111	1,276,085	65,130	1,701,447	489,885	3,014,376	713,402
2006	3,204,617	1,606,340	754,809	124,985	1,244,944	63,540	1,659,925	477,930	2,940,813	695,993
2007	3,000,195	1,503,871	706,660	117,012	1,165,529	59,487	1,554,039	447,443	2,753,218	651,595
2008	2,761,614	1,384,281	650,464	107,707	1,072,844	54,756	1,430,459	411,862	2,534,277	599,779
2009	2,556,014	1,281,222	602,038	99,688	992,972	50,680	1,323,962	381,199	2,345,602	555,126
2010	2,620,141	1,120,224	526,386	108,240	868,195	44,311	1,157,594	333,297	2,337,975	512,714
2011	2,533,029	1,064,200	500,060	102,827	824,775	42,095	1,099,701	316,628	2,221,049	487,072
2012	2,266,139	952,072	447,373	91,992	737,874	37,660	983,832	283,267	1,987,031	435,752
2013	624,789	262,492	123,343	25,363	203,437	10,383	271,249	78,098	547,837	120,140
2014	1,038,729	436,401	205,062	42,166	338,219	17,262	450,959	129,841	910,794	199,736
2015	442,418	185,872	87,341	20,039	144,055	7,352	192,073	55,302	387,928	89,987
2016	217,939	91,562	43,025	9,871	70,963	3,622	94,617	27,242	191,096	44,328
2017	98,815	41,516	19,507	4,476	32,175	1,642	42,901	12,351	86,645	20,099
2018	98,778	41,500	19,500	4,474	32,163	1,641	42,884	12,348	86,612	20,091
2019	99,098	41,633	19,564	4,488	32,267	1,647	43,022	12,388	86,891	20,157
2020	99,284	41,711	19,600	4,837	32,327	1,650	43,103	12,411	87,055	21,212
2021	99,097	41,633	19,564	4,827	32,267	1,647	43,022	12,387	86,891	21,173
2022	99,337	41,734	19,611	4,839	32,345	1,651	43,127	12,417	87,102	21,224
2023	99,627	41,856	19,667	4,854	32,439	1,655	43,253	12,453	87,356	21,285
2024	205,902	86,506	40,648	10,030	67,044	3,422	89,391	25,738	180,542	43,992
2025	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
Total	89,131,743	48,191,198	34,317,420	4,023,745	56,238,244	1,969,886	42,350,537	14,642,805	61,568,189	24,405,611

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TABLE B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

	Southern California Area (continued)				Feather River Area				
Calendar Year	San Gorgonio Pass Water Agency (29)	Metropolitan Water District of Southern California (30)	Ventura County Flood Control District (31)	Total (32)	City of Yuba City (33)	County of Butte (34)	Plumas County FC&WCD (35)	Total (36)	Total State Water Project (a (37)
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0
1983	0	12,791,358	0	16,045,220	0	0	0	0	20,182,468
1984	0	39,229,567	0	47,840,887	0	0	0	0	60,556,781
1985	0	77,446,522	0	89,844,436	0	0	0	0	108,590,343
1986	0	77,581,287	0	90,192,510	0	0	0	0	107,702,921
1987	0	68,939,195	0	82,614,055	0	0	0	0	99,411,597
1988	0	79,972,830	0	92,718,773	0	0	0	0	108,898,834
1989	0	68,311,548	0	78,327,182	0	0	0	0	90,033,447
1990	0	78,842,278	0	90,401,896	0	0	0	0	103,912,768
1991	0	56,340,680	137,394	63,521,139	0	0	0	0	66,666,716
1992	0	81,824,374	27,347	93,027,374	0	0	0	0	103,426,253
1993	0	100,935,832	238,817	114,144,384	0	0	0	0	124,439,568
1994	0	104,525,835	247,477	118,242,309	0	0	0	0	128,988,478
1995	161,823	103,195,857	244,625	118,273,366	0	0	0	0	128,947,733
1996	402,230	106,747,677	253,353	123,151,495	0	0	0	0	135,901,729
1997	396,978	105,225,629	250,045	121,896,402	0	0	0	0	134,966,121
1998	295,498	101,248,278	962,373	118,414,804	0	0	0	0	132,031,463
1999	280,662	96,164,653	914,053	113,170,150	0	0	0	0	126,110,707
2000	287,433	86,387,347	821,119	102,788,163	0	0	0	0	114,420,652
2001	283,898	85,324,859	811,020	101,523,960	0	0	0	0	113,018,130
2002	270,628	81,336,762	773,113	96,778,715	0	0	0	0	107,739,475
2003	257,598	77,420,447	735,888	92,118,879	0	0	0	0	102,556,196
2004	241,568	72,602,605	690,094	86,386,360	0	0	0	0	96,178,111
2005	283,016	63,920,810	607,573	77,904,826	0	0	0	0	86,535,232
2006	276,109	62,360,895	592,745	76,003,645	0	0	0	0	84,425,977
2007	258,497	58,382,895	554,934	71,155,375	0	0	0	0	79,043,354
2008	237,941	53,740,175	510,805	65,496,964	0	0	0	0	72,760,838
2009	220,226	49,739,262	472,776	60,620,767	0	0	0	0	67,346,328
2010	240,405	43,489,043	413,367	53,771,892	0	0	0	0	59,655,038
2011	228,383	41,314,085	392,694	51,126,598	0	0	0	0	56,717,950
2012	204,320	36,961,081	351,318	45,739,711	0	0	0	0	50,743,778
2013	56,332	10,190,404	96,861	12,610,728	0	0	0	0	13,990,981
2014	93,653	16,941,830	161,033	20,965,685	0	0	0	0	23,261,390
2015	51,232	7,215,896	68,588	8,948,083	0	0	0	0	9,926,390
2016	25,238	3,554,610	33,787	4,407,900	0	0	0	0	4,890,015
2017	11,443	1,611,693	15,319	1,998,582	0	0	0	0	2,217,265
2018	11,438	1,611,085	15,313	1,997,827	0	0	0	0	2,216,515
2019	11,475	1,616,290	15,363	2,004,283	0	0	0	0	2,223,765
2020	14,127	1,619,324	15,392	2,012,033	0	0	0	0	2,232,015
2021	14,651	1,616,284	15,363	2,008,806	0	0	0	0	2,228,390
2022	14,687	1,620,205	15,400	2,013,679	0	0	0	0	2,233,796
2023	14,730	1,624,920	15,445	2,019,540	0	0	0	0	2,240,297
2024	30,442	3,358,295	31,921	4,173,873	0	0	0	0	4,630,122
2025	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
Total	5,176,661	2,224,884,502	11,502,715	2,618,403,256	0	0	0	0	2,944,199,927

a) Costs allocated to contractors from 1989 through 1992 are reduced by credits for Off-Aqueduct Power Facility costs allocated to the pumping of non-SWP entitlement water prior to 1993.

TABLE B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per acre-foot)

	North Bay Aqueduct						South Bay Aqueduct		California Aqueduct	
	Reach 1 Barker Slough Pumping Plant		Reach 3A Cordelia Pumping Plant Solano County WA		Reach 3B Cordelia Pumping Plant Napa County FC&WCD (a		Reach 1 South Bay and Del Valle Pumping Plants (b		Reach 1 Banks Pumping Plant	
Calendar Year	Unit Rate (1)	Cumulative Unit Rate (2)	Unit Rate (3)	Cumulative Unit Rate (4)	Unit Rate (5)	Cumulative Unit Rate (6)	Unit Rate (7)	Cumulative Unit Rate (8)	Unit Rate (9)	Cumulative Unit Rate (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	4.1511341	4.1511341	0	0
1963	0	0	0	0	0	0	4.5639383	4.5639383	0	0
1964	0	0	0	0	0	0	3.5452154	3.5452154	0	0
1965	0	0	0	0	0	0	4.1911773	4.1911773	0	0
1966	0	0	0	0	0	0	3.5074573	3.5074573	0	0
1967	0	0	0	0	0	0	3.9306767	5.1337448	1.2030681	1.2030681
1968	0	0	0	0	5.7570016	5.7570016	3.3315620	4.8750942	1.5435322	1.5435322
1969	0	0	0	0	3.1823595	3.1823595	3.6949019	4.8016170	1.1067151	1.1067151
1970	0	0	0	0	3.7584301	3.7584301	4.4256141	5.3721490	0.9465349	0.9465349
1971	0	0	0	0	4.2082507	4.2082507	3.8714396	4.7522833	0.8808437	0.8808437
1972	0	0	0	0	3.9577735	3.9577735	4.3250690	5.2281686	0.9030996	0.9030996
1973	0	0	0	0	3.8103903	3.8103903	5.2455409	6.1841800	0.9386391	0.9386391
1974	0	0	0	0	3.5878850	3.5878850	6.3321503	7.2293909	0.8972406	0.8972406
1975	0	0	0	0	2.1606725	2.1606725	3.7365711	4.8327731	1.0962020	1.0962020
1976	0	0	0	0	2.9283909	2.9283909	4.5191527	5.7132795	1.1941268	1.1941268
1977	0	0	0	0	2.7516411	2.7516411	4.7630172	6.5309908	1.7679736	1.7679736
1978	0	0	0	0	3.5949619	3.5949619	5.2086183	6.8200209	1.6114026	1.6114026
1979	0	0	0	0	2.4747752	2.4747752	4.9524184	7.0889234	2.1365050	2.1365050
1980	0	0	0	0	2.9737588	2.9737588	4.5186576	5.8865852	1.3679276	1.3679276
1981	0	0	0	0	2.6487057	2.6487057	4.3834851	6.4772202	2.0937351	2.0937351
1982	0	0	0	0	10.0239077	10.0239077	4.9779475	6.7284782	1.7505307	1.7505307
1983	0	0	0	0	1.0209882	1.0209882	1.3122465	2.1157080	0.8034615	0.8034615
1984	0	0	0	0	1.6647280	1.6647280	2.7638756	3.9589160	1.1950404	1.1950404
1985	0	0	0	0	2.5219114	2.5219114	3.6775932	5.2979619	1.6203687	1.6203687
1986	0	0	0	0	4.3967036	4.3967036	7.4448499	10.9602095	3.5153596	3.5153596
1987	0	0	0	0	3.5385415	3.5385415	6.5424647	10.0457377	3.5032730	3.5032730
1988	1.1818362	1.1818362	2.0488432	3.2306794	4.2833828	5.4652190	6.1966928	9.4753378	3.2786450	3.2786450
1989	1.2532859	1.2532859	2.5525919	3.8058778	0.8148730	2.0681589	7.6237339	11.1671100	3.5433761	3.5433761
1990	2.2485904	2.2485904	4.3186176	6.5672080	6.2015850	8.4501754	11.9649412	16.5188956	4.5539544	4.5539544
1991	2.6460728	2.6460728	8.6485084	11.2945812	2.3920290	5.0381018	8.7291032	14.8505629	6.1214597	6.1214597
1992	1.3511842	1.3511842	2.2639727	3.6151569	2.7470505	4.0982347	4.6254941	9.3084005	4.6829064	4.6829064
1993	2.1445902	2.1445902	3.5374978	5.6820880	5.6488306	7.7934208	7.8405218	11.7688956	3.9283738	3.9283738
1994	3.7619777	3.7619777	6.5626108	10.3245885	10.0235359	13.7855136	13.7216648	19.7465520	6.0248872	6.0248872
1995	6.3056792	6.3056792	7.6937140	13.9993932	11.7412065	18.0468857	16.0803424	23.4230946	7.3427522	7.3427522
1996	4.3575739	4.3575739	7.8827606	12.2403345	12.8881535	17.2457274	21.7880860	30.5501959	8.7621099	8.7621099
1997	4.1962081	4.1962081	7.6699174	11.8661255	12.3750565	16.5712646	20.7227340	29.6059369	8.8832029	8.8832029
1998	4.2509271	4.2509271	7.7009680	11.9518951	12.5136635	16.7645906	20.9357394	29.5958862	8.6601468	8.6601468
1999	4.3114477	4.3114477	7.8034578	12.1149055	12.6652879	16.9767356	21.1716011	29.1335605	7.9619594	7.9619594
2000	4.4719195	4.4719195	8.0723345	12.5442540	13.0907280	17.5626475	21.8701755	30.0665818	8.1964063	8.1964063
2001	4.4970630	4.4970630	8.1085555	12.6056185	13.1557995	17.6528625	21.9683777	30.2012936	8.2329159	8.2329159
2002	4.6188087	4.6188087	8.3130911	12.9318998	13.4985548	18.1173635	22.5225479	30.9470557	8.4245078	8.4245078
2003	4.6871187	4.6871187	8.4200344	13.1071531	13.6810135	18.3681322	22.8121117	31.3359552	8.5238435	8.5238435
2004	4.7626318	4.7626318	8.5374570	13.3000888	13.8796753	18.6423071	23.1302979	31.7660410	8.6357431	8.6357431
2005	4.9376174	4.9376174	8.9289306	13.8665480	14.3008750	19.2384924	23.8025638	32.6635174	8.8609536	8.8609536
2006	4.9540638	4.9540638	8.9411433	13.8952071	14.3286930	19.2827568	23.8350000	32.7069573	8.8719573	8.8719573
2007	5.0091624	5.0091624	9.0246819	14.0338443	14.4715294	19.4806918	24.0577074	33.0056831	8.9479757	8.9479757
2008	5.0702113	5.0702113	9.1170977	14.1873090	14.6388102	19.7090215	24.3041436	33.3362552	9.0321116	9.0321116
2009	5.1205025	5.1205025	9.1903736	14.3108761	14.7639560	19.8844585	24.4993245	33.6010607	9.1017362	9.1017362
2010	5.3327769	5.3327769	9.5697236	14.9025005	15.3493333	20.6821102	25.4372128	34.8587104	9.4214976	9.4214976
2011	5.3028618	5.3028618	9.4956646	14.7985264	15.2804124	20.5832742	25.2402819	34.5912619	9.3509800	9.3509800
2012	5.3701945	5.3701945	9.5978272	14.9680217	15.4828571	20.8530516	25.5119309	34.9576292	9.4456983	9.4456983
2013	5.4345309	5.4345309	9.6946343	15.1291652	15.7133495	21.1478804	25.7692340	35.3041522	9.5349182	9.5349182
2014	5.5115714	5.5115714	9.8089360	15.3205074	15.9663529	21.4779243	26.0730266	35.7124725	9.6394459	9.6394459
2015	5.5068388	5.5068388	9.8012067	15.3080455	15.9841553	21.4909941	25.9621223	35.5634755	9.6013532	9.6013532
2016	5.5304961	5.5304961	9.8271649	15.3576610	16.1080000	21.6384961	26.0308989	35.6558292	9.6249303	9.6249303
2017	5.7464363	5.7464363	10.1858142	15.9322505	16.7898268	22.5362631	26.9810585	36.9348047	9.9537462	9.9537462
2018	5.7554642	5.7554642	10.1824681	15.9379323	16.8786498	22.6341140	26.9721755	36.9230856	9.9509101	9.9509101
2019	5.7793062	5.7793062	10.1988947	15.9782009	17.0060494	22.7853556	27.0156170	36.9813227	9.9657057	9.9657057
2020	5.6954559	5.6954559	10.0325999	15.7280558	16.8576305	22.5530864	26.5751755	36.3883858	9.8132103	9.8132103
2021	5.7234030	5.7234030	10.0755425	15.7989455	16.9470000	22.6704030	26.6889521	36.5409389	9.8519868	9.8519868
2022	5.7349104	5.7349104	10.0958223	15.8307327	16.9810400	22.7159504	26.7425745	36.6130187	9.8704442	9.8704442
2023	5.7338955	5.7338955	10.0940479	15.8279434	16.9780400	22.7119355	26.7378191	36.6066568	9.8688377	9.8688377
2024	5.7341045	5.7341045	10.0944535	15.8285580	16.9786800	22.7127845	26.7388351	36.6082072	9.8693721	9.8693721
2025	5.7392537	5.7392537	10.1034273	15.8426810	16.9939600	22.7332137	26.7628936	36.6402465	9.8773529	9.8773529
2026	5.7114776	5.7114776	10.0546035	15.7660811	16.9116400	22.6231176	26.6333191	36.4651859	9.8318668	9.8318668
2027	5.7120597	5.7120597	10.0556175	15.7676772	16.9133600	22.6254197	26.6360266	36.4690989	9.8330723	9.8330723
2028	5.7145522	5.7145522	10.0599777	15.7745299	16.9207200	22.6352722	26.6476223	36.4853377	9.8377154	9.8377154
2029	5.7155224	5.7155224	10.0617015	15.7772239	16.9236400	22.6391624	26.6522074	36.4903137	9.8381063	9.8381063
2030	5.7118955	5.7118955	10.0553133	15.7672088	16.9128800	22.6247755	26.6352660	36.4696957	9.8344297	9.8344297
2031	5.7219254	5.7219254	10.0729568	15.7948822	16.9426000	22.6645254	26.6820638	36.5312177	9.8491539	9.8491539
2032	5.7219254	5.7219254	10.0729568	15.7948822	16.9426000	22.6645254	26.6820638	36.5312177	9.8491539	9.8491539
2033	5.7264179	5.7264179	10.0809166	15.8073345	16.9559200	22.6823379	26.7030372	36.5593666	9.8563294	9.8563294
2034	5.7131194	5.7131194	10.0574427	15.7705621	16.9165200	22.6296394	26.6409894	36.4761710	9.8351816	9.8351816
2035	5.7359851	5.7359851	10.0977489	15.8337340	16.9842800	22.7202651	26.7476543	36.6069567	9.8593024	9.8593024

a) For the period 1968 through 1987, rates are for an interim facility.
b) The relatively minor costs of Del Valle Pumping Plant have been combined with those of South Bay Pumping Plant to simplify the allocation procedure.

TABLE B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per acre-foot)

	California Aqueduct (continued)									
	Reach 4 Dos Amigos Pumping Plant		Reach 14A Buena Vista Pumping Plant		Reach 15A Teerink Pumping Plant		Reach 16A Chrisman Pumping Plant		Reach 17E Edmonston Pumping Plant	
Calendar Year	Unit Rate (11)	Cumulative Unit Rate (12)	Unit Rate (13)	Cumulative Unit Rate (14)	Unit Rate (15)	Cumulative Unit Rate (16)	Unit Rate (17)	Cumulative Unit Rate (18)	Unit Rate (19)	Cumulative Unit Rate (20)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	1.0732031	2.6167353	0	0	0	0	0	0	0	0
1969	0.7028165	1.8095316	0	0	0	0	0	0	0	0
1970	0.7813430	1.7278779	0.3333333	2.0612112	0	0	0	0	0	0
1971	0.4125312	1.2933749	1.3594550	2.6528299	4.9729730	7.6258029	0	0	0	0
1972	0.5543356	1.4574352	1.0808850	2.5383202	1.1418280	3.6801482	2.2892599	5.9694081	7.3206022	13.2900103
1973	0.5996892	1.5383283	0.9844807	2.5228090	1.2143719	3.7371809	2.1051633	5.8423442	7.4512435	13.2935877
1974	0.5736894	1.4709300	0.9223291	2.3932591	1.0924098	3.4856689	1.9449022	5.4305711	6.9004732	12.3310443
1975	0.4602594	1.5564614	0.8190849	2.3755463	0.9574493	3.3329956	1.9610412	5.2940368	6.9962702	12.2903070
1976	0.5163827	1.7105095	0.9626676	2.6731771	1.0211874	3.6943645	2.2275746	5.9219391	7.9384515	13.8603906
1977	0.6138931	2.3818667	1.0969170	3.4787837	1.3715867	4.8503704	2.9301764	7.7805468	9.9990004	17.7795472
1978	0.4207825	2.0321851	0.9606230	2.9928081	1.0432294	4.0360375	1.9779157	6.0139532	7.0810192	13.0949724
1979	0.6587934	2.7952984	1.1099369	3.9052353	1.2652451	5.1704804	2.6939701	7.8644505	9.6345625	17.4990130
1980	0.8056952	2.1736228	1.3516057	3.5252285	1.5041463	5.0293748	3.1923433	8.2217181	10.9860288	19.2077469
1981	1.0841003	3.1778354	1.2388784	4.4167138	1.3195560	5.7362698	2.9541028	8.6903726	9.9484860	18.6388586
1982	0.7762022	2.5267329	1.2001820	3.7269149	1.3668611	5.0937760	2.8880977	7.9818737	10.1769284	18.1588021
1983	0.3689994	1.1724609	0.7434250	1.9158859	0.8851706	2.8010565	1.7730111	4.5740676	5.5794328	10.1535004
1984	0.6028753	1.7979157	1.0364230	2.8343387	1.2225175	4.0568562	2.5595676	6.6164238	8.3521698	14.9685936
1985	0.8634931	2.4838618	1.4180390	3.9019008	1.6505071	5.5524079	3.4670086	9.0194165	11.7565847	20.7760012
1986	1.3950680	4.9104276	2.3741588	7.2845864	2.7626510	10.0472374	5.9668234	16.0140608	20.6435041	36.6575649
1987	1.2918341	4.7951071	2.2564137	7.0515208	2.5738801	9.6254009	5.3754819	15.0008828	17.9512279	32.9521107
1988	1.1857125	4.4643575	2.1312092	6.5955667	2.4287598	9.0243265	5.0672280	14.0915545	16.7760708	30.8676253
1989	1.5156533	5.0590294	2.7015545	7.7605839	3.0191335	10.7797174	6.5760148	17.3557322	22.2736391	39.6293713
1990	1.8051582	6.3591126	3.3052168	9.6643294	3.7451498	13.4094792	8.6757569	22.0852361	31.0136730	53.0989091
1991	1.8991358	8.0205955	2.2796972	10.3002927	2.4136828	12.7139755	5.6149196	18.3288951	19.9471760	38.2760711
1992	1.1862309	5.8691373	2.0681503	7.9372876	2.5729831	10.5102707	4.7699308	15.2802015	13.7579955	29.0381970
1993	1.9012063	5.8295801	3.0414584	8.8710385	3.6649523	12.5359908	7.5249503	20.0609411	26.0567536	46.1176947
1994	2.8503125	8.8751997	4.7478131	13.6230128	5.7664001	19.3894129	12.1580904	31.5475033	42.7973877	74.3448910
1995	3.3067725	10.6495247	5.5502808	16.1998055	6.7482844	22.9480899	14.2681118	37.2162017	50.3090034	87.5252051
1996	3.8599693	12.6220792	6.4086636	19.0307428	7.7968030	26.8275458	16.5553678	43.3829136	58.5190340	101.9019476
1997	3.7249347	12.6081376	6.1586883	18.7668259	7.4919961	26.2588220	15.8984806	42.1573026	56.1798576	98.3371602
1998	3.7534536	12.4136004	6.2049681	18.6185685	7.5567582	26.1753267	16.0472892	42.2226159	56.7228284	98.9454443
1999	3.6978219	11.6597813	6.2716750	17.9314563	7.6380836	25.5695399	16.2235252	41.7930651	57.3521435	99.1452086
2000	3.8096086	12.0060149	6.4689739	18.4749888	7.8786913	26.3536801	16.7451326	43.0988127	59.2151427	102.3139554
2001	3.8238484	12.0567643	6.4950470	18.5518113	7.9104477	26.4622590	16.8159237	43.2781827	59.4715486	102.7497313
2002	3.9117968	12.3363046	6.6516566	18.9879612	8.1014250	27.0893862	17.2298622	44.3192484	60.9497640	105.2690124
2003	3.9577719	12.4816154	6.7335395	19.2151549	8.2012369	27.4163918	17.4461841	44.8625759	61.7222288	106.5848047
2004	4.0081670	12.6439101	6.8233316	19.4672417	8.3107566	27.7779983	17.6836229	45.4616212	62.5705843	108.0322055
2005	4.1102669	12.9712205	7.0071129	19.9783334	8.5346372	28.5129706	18.1762940	46.6892646	64.3432637	111.0325283
2006	4.1155170	12.9874743	7.0164467	20.0039210	8.5459885	28.5499095	18.2007344	46.7506439	64.4302938	111.1809377
2007	4.1511369	13.0991126	7.0796954	20.1788080	8.6231431	28.8019511	18.3675872	47.1695383	65.0254262	112.1949645
2008	4.1902040	13.2223156	7.1492400	20.3715556	8.7079798	29.0795354	18.5515553	47.6310907	65.6826057	113.3136964
2009	4.2218457	13.3235819	7.2052631	20.5288450	8.7763105	29.3051555	18.6986130	48.0037685	66.2059352	114.2097037
2010	4.3650569	13.7865545	7.4634013	21.2499558	9.0908448	30.3408006	19.3886218	49.7294224	68.6849156	118.4143380
2011	4.3373652	13.6883452	7.4119764	21.1003216	9.0282861	30.1286077	19.2479904	49.3765981	68.1735423	117.5501404
2012	4.3789322	13.8246305	7.4869299	21.3115604	9.1196310	30.4311914	19.4481033	49.8792947	68.8922167	118.7715114
2013	4.4199515	13.9548697	7.5598383	21.5147080	9.2085225	30.7232305	19.6405961	50.3638266	69.5791643	119.9429909
2014	4.4676764	14.1071223	7.6450711	21.7521934	9.3124841	31.0646775	19.8665998	50.9312773	70.3875257	121.3188030
2015	4.4509541	14.0523073	7.6148337	21.6671410	9.2756595	30.9428005	19.7854074	50.7282079	70.0953134	120.8235213
2016	4.4611616	14.0860919	7.6334401	21.7195320	9.2983023	31.0178343	19.8354998	50.8533341	70.2760115	121.1293456
2017	4.6120289	14.5657751	7.9020606	22.4678357	9.6258371	32.0936728	20.5453661	52.6390389	72.8108715	125.4499104
2018	4.6107641	14.5616742	7.8996878	22.4613620	9.6229627	32.0843247	20.5389710	52.6232957	72.7876327	125.4109284
2019	4.6172082	14.5829139	7.9114489	22.4943628	9.6372495	32.1316123	20.5705395	52.7021518	72.9016750	125.6038268
2020	4.5484119	14.3616222	7.7882479	22.1498701	9.4871220	31.6369921	20.2435701	51.8805622	71.7311257	123.6116879
2021	4.5652192	14.4172060	7.8189448	22.2361508	9.5244368	31.7605876	20.3262857	52.0868733	72.0297363	124.1166096
2022	4.5738223	14.4442665	7.8341786	22.2784451	9.5430775	31.8215226	20.3664837	52.1880063	72.1730958	124.3611021
2023	4.5730380	14.4418757	7.8327924	22.2746681	9.5413936	31.8160617	20.3628852	52.1789469	72.1602941	124.3392410
2024	4.5731890	14.4425611	7.8330711	22.2756322	9.5417039	31.8173361	20.3636515	52.1809876	72.1629865	124.3439741
2025	4.5764422	14.4537951	7.8391763	22.2929714	9.5491368	31.8421082	20.3805633	52.2226715	72.2249181	124.4475896
2026	4.5563878	14.3882546	7.8031690	22.1914236	9.5052516	31.6966752	20.2846856	51.9813608	71.8812438	123.8626046
2027	4.5567699	14.3898422	7.8038716	22.1937138	9.5060931	31.6998069	20.2866328	51.9864397	71.8883032	123.8747429
2028	4.5586643	14.3963797	7.8072573	22.2036370	9.5101797	31.7138167	20.2954098	52.0092265	71.9194780	123.9287045
2029	4.5593366	14.3974429	7.8084715	22.2059144	9.5116889	31.7176033	20.2987115	52.0163148	71.9314483	123.9477631
2030	4.5566320	14.3910617	7.8036951	22.1947568	9.5058898	31.7006466	20.2860958	51.9867424	71.8863438	123.8730862
2031	4.5639568	14.4131107	7.8167943	22.2299050	9.5218477	31.7517527	20.3208549	52.0726076	72.0107645	124.0833721
2032	4.5639568	14.4131107	7.8167943	22.2299050	9.5218477	31.7517527	20.3208549	52.0726076	72.0107645	124.0833721
2033	4.5670385	14.4233679	7.8223878	22.2457557	9.5286732	31.7744289	20.3360766	52.1105055	72.0657384	124.1762439
2034	4.5578789	14.3930605	7.8056604	22.1987209	9.5083070	31.7070279	20.2909132	51.9979411	71.9027976	123.9007387
2035	4.5737911	14.4330935	7.8346081	22.2677016	9.5435675	31.8112691	20.3687711	52.1800402	72.1833380	124.3633782

TABLE B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per acre-foot)

	California Aqueduct (continued)									
	Reach 18A Alamo Powerplant		Reach 22B Pearblossom Pumping Plant		Reach 23 Mojave Siphon Powerplant		Reach 26A Devil Canyon Powerplant		Reach 29A Oso Pumping Plant	
Calendar Year	Unit Rate (21)	Cumulative Unit Rate (22)	Unit Rate (23)	Cumulative Unit Rate (24)	Unit Rate (25)	Cumulative Unit Rate (26)	Unit Rate (27)	Cumulative Unit Rate (28)	Unit Rate (29)	Cumulative Unit Rate (30)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0
1972	0	13.2900103	14.2519509	27.5419612	0	27.5419612	-2.3717647	25.1701965	1.4212193	14.7112296
1973	0	13.2935877	4.4326545	17.7262422	0	17.7262422	-8.4298618	9.2963804	1.0210537	14.3146414
1974	0	12.3310443	3.4431782	15.7742225	0	15.7742225	-5.1043660	10.6698565	0.9241725	13.2552168
1975	0	12.2903070	3.1739313	15.4642383	0	15.4642383	-5.6510611	9.8131772	0.9362286	13.2265356
1976	0	13.8603906	3.9391330	17.7995236	0	17.7995236	-6.4449941	11.3545295	0.8622774	14.7226680
1977	0	17.7795472	3.4988957	21.2784429	0	21.2784429	-11.6274558	9.6509871	0.9076172	18.6871644
1978	0	13.0949724	4.1377503	17.2327227	0	17.2327227	-8.1314274	9.1012953	0.7314697	13.8264421
1979	0	17.4990130	5.1961178	22.6951308	0	22.6951308	-9.5825772	13.1125536	0.9504526	18.4494656
1980	0	19.2077469	4.3918283	23.5995752	0	23.5995752	-8.3797007	15.2198745	1.4269064	20.6346533
1981	0	18.6388586	3.9979411	22.6367997	0	22.6367997	-6.7421980	15.8946017	1.5649076	20.2037662
1982	0	18.1588021	3.6618080	21.8206101	0	21.8206101	-6.9205064	14.9001037	1.4942612	19.6530633
1983	0	10.1535004	1.7398697	11.8933701	0	11.8933701	-23.7901875	-11.8968174	1.4582832	11.6117836
1984	0	14.9685936	2.5301405	17.4987341	0	17.4987341	-29.6920921	-12.1933580	1.7879684	16.7565620
1985	0	20.7760012	3.4967556	24.2727568	0	24.2727568	-30.7672356	-6.4944788	2.1683888	22.9443900
1986	-2.3583180	34.2992469	6.0001395	40.2993864	0	40.2993864	-29.2499580	11.0494284	3.2342581	39.8918230
1987	-2.6107019	30.3414088	5.1909608	35.5323696	0	35.5323696	-30.5133657	5.0190039	3.1272921	36.0794028
1988	-1.4076158	29.4600095	4.8456180	34.3056275	0	34.3056275	-29.5512806	4.7543469	2.9971055	33.8647308
1989	-1.1019487	38.5274226	6.4423849	44.9698075	0	44.9698075	-28.3706997	16.5991078	3.5381171	43.1674884
1990	-1.0672075	52.0317016	8.9799647	61.0116663	0	61.0116663	-28.8762479	32.1354184	3.6781647	56.7770738
1991	-2.0170435	36.2590276	6.1613326	42.4203602	0	42.4203602	-42.9791408	-0.5587806	2.3948596	40.6709307
1992	-0.0903964	28.9478006	6.3052866	35.2530872	0	35.2530872	-26.5017782	8.7513090	4.3663749	33.4045719
1993	-1.2175959	44.9000988	8.2565041	53.1566029	0	53.1566029	-29.5349791	23.6216238	3.7266068	49.8443015
1994	-1.4488596	72.8960314	11.6927306	84.5887620	0	84.5887620	-24.1820287	60.4067333	6.3648418	80.7097328
1995	-1.4538553	86.0713498	15.5611166	101.6324664	0	101.6324664	-27.8448231	73.7876433	6.6593417	94.1845468
1996	-3.5000209	98.4019267	18.0796621	116.4815888	-7.3556465	109.1259423	-28.4880350	80.6379073	7.6254301	109.5273777
1997	-3.5201624	94.8169978	17.3764580	112.1934558	-7.5210900	104.6723658	-28.4606789	76.2116869	7.3060253	105.6431855
1998	-3.5256474	95.4197969	17.5377690	112.9575659	-7.8787718	105.0787941	-28.3409321	76.7378620	7.3752295	106.3206738
1999	-3.5264662	95.6187424	17.7254310	113.3441734	-7.7455793	105.5985941	-28.3772832	77.2213109	7.4676552	106.6128638
2000	-3.5059686	98.8079868	18.3079334	117.1159202	-7.4963537	109.6195665	-28.4379565	81.1816100	7.6881242	110.0020796
2001	-3.5188513	99.2308800	18.3836128	117.6144928	-7.7785149	109.8359779	-28.3575722	81.4784057	7.7212271	110.4709584
2002	-3.5195412	101.7494712	18.8392515	120.5887227	-7.7695054	112.8192173	-28.3620149	84.4572024	7.9024565	113.1714689
2003	-3.5201221	103.0646826	19.0773067	122.1419893	-7.7523245	114.3896648	-28.3688341	86.0208307	7.9973001	114.5821048
2004	-3.5215632	104.5106423	19.3385520	123.8491943	-7.7936260	116.0555683	-28.3585492	87.6970191	8.1014544	116.1336599
2005	-3.5249468	107.5075815	19.8816345	127.3892160	-7.8858516	119.5033644	-28.3201079	91.1832565	8.3193748	119.3519031
2006	-3.5237873	107.6571504	19.9087770	127.5659274	-7.8515118	119.7144156	-28.3299332	91.3844824	8.3298122	119.5107499
2007	-3.5221023	108.6728622	20.0926697	128.7655319	-7.8384199	120.9271120	-28.3320216	92.5950904	8.4027282	120.5976927
2008	-3.5229582	109.7907382	20.2951109	130.0858491	-7.8543139	122.2315352	-28.3279793	93.9035559	8.4834041	121.7971005
2009	-3.5152290	110.6944747	20.4577119	131.1521866	-7.8410472	123.3111394	-28.3281785	94.9829609	8.5473082	122.7570119
2010	-3.4973833	114.9169547	21.2161704	136.1331251	-7.4163175	128.7168076	-28.4672661	100.2495415	8.8540428	127.2683808
2011	-3.4909566	114.0591838	21.0654697	135.1246535	-7.1731142	127.9515393	-28.5289836	99.4225557	8.7902293	126.3403697
2012	-3.4966530	115.2748584	21.2841808	136.5590392	-7.3459299	129.2131093	-28.4835222	100.7295871	8.8788157	127.6503271
2013	-3.4978683	116.4451226	21.4961341	137.9412567	-7.3496280	130.5916287	-28.4804398	102.1111889	8.9630573	128.9060482
2014	-3.5015342	117.8172688	21.7445519	139.5618207	-7.4340934	132.1277273	-28.4579345	103.6697928	9.0621665	130.3809695
2015	-3.4730280	117.3504933	21.6564759	139.0069692	-7.4341448	131.5728244	-28.4453035	103.1275209	9.0253963	129.8489176
2016	-3.4782454	117.6511002	21.7099970	139.3610972	-7.4783538	131.8827434	-28.4391736	103.4435698	9.0493833	130.1787289
2017	-3.4766137	121.9732967	22.4917371	144.4650338	-7.4621639	137.0028699	-28.4435121	108.5593578	9.3596219	134.8095323
2018	-3.4795299	121.9313985	22.4845139	144.4159124	-7.4623190	136.9535934	-28.4433772	108.5102162	9.3572828	134.7682112
2019	-3.4794609	122.1243659	22.5185838	144.6429497	-7.4914752	137.1514745	-28.4378457	108.7136288	9.3717672	134.9755940
2020	-3.4946326	120.1170553	22.1604599	142.2775152	-7.6660615	134.6114537	-28.3641116	106.2473421	9.2267338	132.8384217
2021	-3.4949011	120.6217085	22.2500171	142.8717256	-7.8312236	135.0405020	-28.3210823	106.7194197	9.2641807	133.3807903
2022	-3.4879754	120.8731267	22.2944872	143.1676139	-7.7852624	135.3823515	-28.3329269	107.0494246	9.2815921	133.6426942
2023	-3.4967142	120.8425268	22.2904116	143.1329384	-7.7862065	135.3467319	-28.3339146	107.0128173	9.2801903	133.6194313
2024	-3.4970020	120.8469721	22.2911353	143.1381074	-7.7913394	135.3467680	-28.3328404	107.0139276	9.2806336	133.6246077
2025	-3.4850249	120.9625647	22.3093876	143.2719523	-7.6921548	135.5797975	-28.3649703	107.2148272	9.2880196	133.7356092
2026	-3.4904851	120.3721195	22.2040425	142.5761620	-7.6466547	134.9295073	-28.3770279	106.5524794	9.2462981	133.1089027
2027	-3.4888549	120.3858880	22.2065022	142.5923902	-7.6509704	134.9414198	-28.3755887	106.5658311	9.2465248	133.1212677
2028	-3.4860018	120.4427027	22.2157948	142.6584975	-7.6781869	134.9803106	-28.3662781	106.6140325	9.2511268	133.1798313
2029	-3.4902580	120.4575051	22.2196506	142.6771557	-7.7400180	134.9371377	-28.3509226	106.5862151	9.2521851	133.1999482
2030	-3.5068707	120.3662155	22.2058154	142.5720309	-7.7847647	134.7872662	-28.3354028	106.4518634	9.2465172	133.1196034
2031	-3.4873108	120.5960613	22.2438698	142.8399311	-7.8591940	134.9807371	-28.3124195	106.6683176	9.2619702	133.3453423
2032	-3.4873108	120.5960613	22.2438698	142.8399311	-7.8591940	134.9807371	-28.3124195	106.6683176	9.2619702	133.3453423
2033	-3.4889561	120.6872878	22.2604535	142.9477413	-7.8581656	135.0895757	-28.3131056	106.7764701	9.2686625	133.4449064
2034	-3.4882899	120.4124488	22.2114990	142.6239478	-7.8252644	134.7986834	-28.3198624	106.4788210	9.2483453	133.1490840
2035	-3.4831745	120.8802037	22.2943740	143.1745777	-7.5018973	135.6726804	-28.4162919	107.2563885	9.2863700	133.6497482

TABLE B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per acre-foot)

	California Aqueduct (continued)							
	Reach 29G Warne Powerplant		Reach 29J Castaic Powerplant		Reach 31A Las Perillas and Badger Hill Pumping Plants		Reach 33A Devil's Den, Bluestone, and Polonio Pass PP and San Luis Obispo Powerplant	
Calendar Year	Unit Rate (31)	Cumulative Unit Rate (32)	Unit Rate (33)	Cumulative Unit Rate (34)	Unit Rate (35)	Cumulative Unit Rate (36)	Unit Rate (37)	Cumulative Unit Rate (38)
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	1.5014866	4.1182219	0	0
1969	0	0	0	0	1.2624065	3.0719381	0	0
1970	0	0	0	0	1.6309699	3.3588478	0	0
1971	0	0	0	0	1.4985537	2.7919286	0	0
1972	0	14.7112296	-2.9350830	11.7761466	1.7489056	3.2063408	0	0
1973	0	14.3146414	-6.8099448	7.5046966	1.4609575	2.9992858	0	0
1974	0	13.2552168	-7.4013274	5.8538894	1.4255635	2.8964935	0	0
1975	0	13.2265356	-6.5604921	6.6660435	1.0379624	2.5944238	0	0
1976	0	14.7226680	-6.7213324	8.0013356	1.5465478	3.2570573	0	0
1977	0	18.6871644	-30.4985994	-11.8114350	1.7573375	4.1392042	0	0
1978	0	13.8264421	-9.0130187	4.8134234	1.9032115	3.9353966	0	0
1979	0	18.4494656	-19.0478097	-0.5983441	1.5331899	4.3284883	0	0
1980	0	20.6346533	-20.5438586	0.0907947	1.5124754	3.6860982	0	0
1981	0	20.2037662	-11.3026541	8.9011121	1.5414290	4.7192644	0	0
1982	-2.1714430	17.4816203	-9.5987314	7.8828889	1.7581649	4.2848978	0	0
1983	-9.1019731	2.5098105	-36.3842929	-33.8744824	0.1742772	1.3467381	0	0
1984	-15.0246012	1.7319608	-13.7320333	-12.0000725	0.7223811	2.5202968	0	0
1985	-14.7115359	8.2328541	-40.4779966	-32.2451425	1.1915106	3.6753724	0	0
1986	-14.1893653	25.7024577	-28.1596224	-2.4571647	2.2665598	7.1769874	0	0
1987	-14.8696165	21.2097863	-27.0536484	-5.8438621	1.8902405	6.6853476	0	0
1988	-14.7032843	19.1614465	-25.6857024	-6.5242559	1.7424051	6.2067626	0	0
1989	-14.4231503	28.7443381	-25.3986130	3.3457251	2.3854505	7.4444799	0	0
1990	-14.1850383	42.5920355	-26.0776141	16.5144214	3.5208739	9.8799865	0	0
1991	-20.1942298	20.4767009	-34.7357685	-14.2590676	24.0962567	32.1168522	0	0
1992	-10.8993787	22.5051932	-21.9998926	0.5053006	1.9056940	7.7748313	0	0
1993	-14.4159792	35.4283223	-26.7515622	8.6767601	2.8284312	8.6580113	0	0
1994	-15.8313332	64.8783996	-27.7986616	37.0797380	5.2315376	14.1067373	0	0
1995	-14.1467229	80.0378239	-24.9771304	55.0606935	6.0973501	16.7468748	0	0
1996	-15.1960190	94.3313587	-24.9721848	69.3591739	6.3180689	18.9401481	27.2197753	46.1599234
1997	-15.1242001	90.5189854	-24.8826787	65.6363067	6.7060312	19.3141688	37.0010274	56.3151962
1998	-15.1325703	91.1881035	-24.8780677	66.3100358	6.7734286	19.1870290	38.4024203	57.5894493
1999	-15.2387475	91.3741163	-24.9053487	66.4687676	6.8497410	18.5095223	38.9915302	57.5010525
2000	-15.1806057	94.8214739	-24.8869084	69.9345655	7.0756976	19.0817125	40.7362455	59.8179580
2001	-15.1878336	95.2831248	-24.8885888	70.3945360	7.1074682	19.1642325	40.9814715	60.1457040
2002	-15.1872650	97.9842039	-24.8824533	73.1017506	7.2867605	19.6230651	42.3655478	61.9886129
2003	-15.1869166	99.3951882	-24.8824746	74.5127136	7.3804477	19.8620631	43.0887410	62.9508041
2004	-15.1868962	100.9467637	-24.8824746	76.0642891	7.4833875	20.1272976	43.8834095	64.0107071
2005	-15.1739303	104.1779728	-24.8764421	79.3015307	7.7006462	20.6718667	45.5624379	66.2343046
2006	-15.1704094	104.3403405	-24.8759358	79.4644047	7.7111457	20.6986200	45.6434469	66.3420669
2007	-15.1704094	105.4272833	-24.8720279	80.5552554	7.7831881	20.8823007	46.1996283	67.0819290
2008	-15.1702267	106.6268738	-24.8719845	81.7548893	7.8629182	21.0852338	46.8151264	67.9003602
2009	-15.1715802	107.5854317	-24.8721961	82.7132356	7.9260582	21.2496401	47.3026133	68.5522534
2010	-15.1699992	112.0983816	-24.8717458	87.2266358	8.2294865	22.0160410	49.6449650	71.6610060
2011	-15.1706074	111.1697623	-24.8723388	86.2974235	8.1657789	21.8541241	49.1531652	71.0072893
2012	-15.1719651	112.4783620	-24.8721612	87.6062008	8.2536687	22.0782992	49.8315978	71.9098970
2013	-15.1719651	113.7340831	-24.8721612	88.8619219	8.3369057	22.2917754	50.4742076	72.7659830
2014	-15.1693317	115.2116378	-24.8715895	90.3400483	8.4351888	22.5423111	51.2329399	73.7752510
2015	-15.1672574	114.6816602	-24.8709048	89.8107554	8.3993082	22.4516155	50.9559629	73.4075784
2016	-15.1784528	115.0002761	-24.8736106	90.1266655	8.4215592	22.5076511	51.1277417	73.6353928
2017	-15.1714195	119.6381128	-24.8719837	94.7661291	8.7289560	23.2947311	53.5007803	76.7955114
2018	-15.1754581	119.5927531	-24.8729131	94.7198400	8.7260858	23.2877600	53.4785915	76.7663515
2019	-15.1737332	119.8018608	-24.8730507	94.9288101	8.7401345	23.3230484	53.5870953	76.9101437
2020	-15.1697606	117.6686611	-24.8717569	92.7969042	8.5976465	22.9592687	52.4870754	75.4463441
2021	-15.1725082	118.2082821	-24.8722827	93.3359994	8.6344556	23.0516616	52.7712454	75.8229070
2022	-15.1701091	118.4725851	-24.8718953	93.6006898	8.6518044	23.0960709	52.9051727	76.0012436
2023	-15.1712740	118.4481573	-24.8721621	93.5759952	8.6502658	23.0921415	52.8932980	75.9854395
2024	-15.1729101	118.4516976	-24.8724501	93.5792475	8.6505947	23.0931558	52.8958375	75.9889933
2025	-15.1693063	118.5663029	-24.8715912	93.6947117	8.6583725	23.1121676	52.9559203	76.0680879
2026	-15.1748617	117.9340410	-24.8729437	93.0610973	8.6164596	23.0047142	52.6322816	75.6369958
2027	-15.1696743	117.9515934	-24.8717484	93.0798450	8.6173350	23.0071772	52.6390347	75.6462119
2028	-15.1745428	118.0052885	-24.8729190	93.1323695	8.6210859	23.0174656	52.6680050	75.6854706
2029	-15.1700728	118.0298754	-24.8720058	93.1578696	8.6225661	23.0200090	52.6794683	75.6994773
2030	-15.1709458	117.9486576	-24.8719370	93.0767206	8.6170856	23.0081473	52.6371620	75.6453093
2031	-15.1718484	118.1734939	-24.8721400	93.3013539	8.6322273	23.0453380	52.7540646	75.7994026
2032	-15.1718484	118.1734939	-24.8721400	93.3013539	8.6322273	23.0453380	52.7540646	75.7994026
2033	-15.1706548	118.2742516	-24.8719353	93.4023163	8.6390130	23.0623809	52.8064296	75.8688105
2034	-15.1710676	117.9780164	-24.8719548	93.1060616	8.6189425	23.0120030	52.6514627	75.6634657
2035	-15.1871466	118.4626016	-24.8767191	93.5858825	8.6534491	23.0865426	52.9178560	76.0043986

TABLE B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

	North Bay Area			South Bay Area				Central Coastal Area		
Calendar Year	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	2,051	34,919	0	36,970	0	0	0
1963	0	0	0	7,900	49,811	0	57,711	0	0	0
1964	0	0	0	5,931	68,203	0	74,134	0	0	0
1965	0	0	0	10,918	68,765	62,926	142,609	0	0	0
1966	0	0	0	19,330	52,135	121,140	192,605	0	0	0
1967	0	0	0	19,399	56,949	160,650	236,998	0	0	0
1968	6,989	0	6,989	29,898	120,985	341,769	492,652	0	0	0
1969	8,551	0	8,551	31,859	3,904	298,968	334,731	0	0	0
1970	13,598	0	13,598	49,688	0	431,442	481,130	0	0	0
1971	10,609	0	10,609	23,842	28,329	416,328	468,499	0	0	0
1972	14,434	0	14,434	54,839	144,669	524,207	723,715	0	0	0
1973	14,449	0	14,449	18,397	15,590	547,808	581,795	0	0	0
1974	17,473	0	17,473	9,499	29	636,187	645,715	0	0	0
1975	14,779	0	14,779	22,317	4,765	425,285	452,367	0	0	0
1976	20,856	0	20,856	97,875	121,693	502,768	722,336	0	0	0
1977	22,635	0	22,635	82,578	123,044	497,792	703,414	0	0	0
1978	21,692	0	21,692	74,911	39,986	652,861	767,758	0	0	0
1979	16,237	0	16,237	136,993	77,085	652,117	866,195	0	0	0
1980	19,945	0	19,945	98,836	64,953	518,020	681,809	0	0	0
1981	23,841	0	23,841	126,888	141,961	569,996	838,845	0	0	0
1982	12,159	0	12,159	88,298	42,497	587,133	717,928	0	0	0
1983	2,335	0	2,335	10,083	6,680	183,550	200,313	0	0	0
1984	4,866	0	4,866	26,857	13,215	351,259	391,331	0	0	0
1985	10,186	0	10,186	79,851	102,775	466,220	648,846	0	0	0
1986	15,472	0	15,472	116,276	135,677	964,499	1,216,452	0	0	0
1987	27,222	0	27,222	235,361	255,061	884,626	1,375,048	0	0	0
1988	30,359	31,519	61,878	245,410	317,644	833,460	1,396,514	0	0	0
1989	11,375	67,112	78,487	292,976	290,814	1,005,040	1,588,830	0	0	0
1990	58,708	111,494	170,202	546,130	523,699	1,517,345	2,587,174	0	0	0
1991	6,953	51,788	58,741	139,759	187,830	418,785	746,374	0	(17,680)	(17,680)
1992	19,304	34,077	53,381	136,545	178,284	398,763	713,592	0	0	0
1993	46,316	80,170	126,486	313,053	341,062	807,346	1,461,461	0	0	0
1994	125,931	216,741	342,672	789,862	829,355	1,974,655	3,593,872	0	0	0
1995	176,499	349,315	525,814	983,770	983,770	2,342,310	4,309,850	0	0	0
1996	179,787	304,635	484,422	1,344,209	1,283,109	3,055,019	5,682,337	186,025	1,786,389	1,972,414
1997	183,361	299,714	483,075	1,361,873	1,243,450	2,960,593	5,565,916	452,098	2,617,419	3,069,517
1998	196,313	304,594	500,907	1,361,411	1,243,027	2,959,589	5,564,027	1,439,737	2,619,513	4,059,250
1999	209,323	312,387	521,710	1,340,144	1,223,609	2,913,356	5,477,109	1,437,527	2,615,493	4,053,020
2000	229,193	327,387	556,580	1,383,063	1,262,796	3,006,659	5,652,518	1,495,448	2,720,880	4,216,328
2001	241,226	329,058	570,284	1,389,259	1,268,454	3,020,130	5,677,843	1,503,643	2,735,787	4,239,430
2002	256,995	337,687	594,682	1,423,564	1,299,776	3,094,706	5,818,046	1,549,716	2,819,614	4,369,330
2003	271,848	342,384	614,232	1,441,454	1,316,110	3,133,595	5,891,159	1,573,770	2,863,380	4,437,150
2004	287,092	347,560	634,652	1,461,238	1,334,174	3,176,603	5,972,015	1,600,268	2,911,590	4,511,858
2005	307,816	378,918	686,734	1,502,522	1,371,868	3,266,351	6,140,741	1,655,858	3,012,734	4,668,592
2006	317,201	379,839	697,040	1,504,520	1,373,692	3,270,696	6,148,908	1,658,552	3,017,635	4,676,187
2007	331,172	383,753	714,925	1,518,262	1,386,239	3,300,568	6,205,069	1,677,048	3,051,289	4,728,337
2008	347,864	388,088	735,952	1,533,468	1,400,123	3,333,625	6,267,216	1,697,509	3,088,517	4,786,026
2009	361,897	391,603	753,500	1,545,649	1,411,245	3,360,106	6,317,000	1,713,805	3,118,169	4,831,974
2010	387,790	410,267	798,057	1,603,501	1,464,066	3,485,871	6,553,438	1,791,524	3,259,572	5,051,096
2011	399,316	407,566	806,882	1,591,198	1,452,833	3,459,126	6,503,157	1,775,182	3,229,838	5,005,020
2012	416,018	412,381	828,399	1,608,051	1,468,220	3,495,763	6,572,034	1,797,747	3,270,893	5,068,640
2013	435,646	416,965	852,611	1,623,991	1,482,775	3,530,415	6,637,181	1,819,150	3,309,833	5,128,983
2014	456,406	422,422	878,828	1,642,774	1,499,924	3,571,248	6,713,946	1,844,381	3,355,742	5,200,123
2015	470,653	424,606	895,259	1,635,920	1,493,666	3,556,347	6,685,933	1,835,190	3,339,017	5,174,207
2016	486,866	426,112	912,978	1,640,168	1,497,545	3,565,583	6,703,296	1,840,885	3,349,379	5,190,264
2017	520,588	442,255	962,843	1,699,001	1,551,261	3,693,481	6,943,743	1,919,889	3,493,120	5,413,009
2018	536,429	442,568	978,997	1,698,462	1,550,769	3,692,309	6,941,540	1,919,159	3,491,794	5,410,953
2019	553,684	443,894	997,578	1,701,140	1,553,216	3,698,133	6,952,489	1,922,753	3,498,335	5,421,088
2020	561,572	437,092	998,664	1,673,866	1,528,312	3,638,839	6,841,017	1,886,158	3,431,753	5,317,911
2021	566,760	439,113	1,005,873	1,680,883	1,534,719	3,654,094	6,869,696	1,895,572	3,448,881	5,344,453
2022	567,899	439,996	1,007,895	1,684,198	1,537,747	3,661,302	6,883,247	1,900,031	3,456,993	5,357,024
2023	567,798	439,919	1,007,717	1,683,907	1,537,479	3,660,666	6,882,052	1,899,636	3,456,274	5,355,910
2024	567,820	439,935	1,007,755	1,683,977	1,537,545	3,660,821	6,882,343	1,899,725	3,456,435	5,356,160
2025	568,330	440,329	1,008,659	1,685,451	1,538,891	3,664,024	6,888,366	1,901,702	3,460,033	5,361,735
2026	565,578	438,199	1,003,777	1,677,399	1,531,537	3,646,519	6,855,455	1,890,925	3,440,424	5,331,349
2027	565,635	438,244	1,003,879	1,677,578	1,531,702	3,646,910	6,856,190	1,891,155	3,440,843	5,331,998
2028	565,882	438,434	1,004,316	1,678,326	1,532,384	3,648,534	6,859,244	1,892,137	3,442,629	5,334,766
2029	565,979	438,509	1,004,488	1,678,555	1,532,593	3,649,031	6,860,179	1,892,487	3,443,266	5,335,753
2030	565,619	438,231	1,003,850	1,677,606	1,531,727	3,646,970	6,856,303	1,891,133	3,440,803	5,331,936
2031	566,613	439,000	1,005,613	1,680,436	1,534,311	3,653,121	6,867,868	1,894,986	3,447,811	5,342,797
2032	566,613	439,000	1,005,613	1,680,436	1,534,311	3,653,121	6,867,868	1,894,986	3,447,811	5,342,797
2033	567,058	439,346	1,006,404	1,681,731	1,535,494	3,655,936	6,873,161	1,896,720	3,450,968	5,347,688
2034	565,741	438,324	1,004,065	1,677,904	1,532,000	3,647,616	6,857,520	1,891,588	3,441,628	5,333,216
2035	568,007	440,079	1,008,086	1,683,920	1,537,492	3,660,696	6,882,108	1,900,110	3,457,136	5,357,246
Total	18,221,161	17,042,609	35,263,770	68,369,195	63,406,329	158,143,327	289,918,851	68,425,915	127,721,940	196,147,855

TABLE B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

	San Joaquin Valley Area								
				Kern County Water Agency					
Calendar Year	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	68,978	5,176	0	0	440,922	2,355	4,760	65,680	587,871
1969	56,774	101	0	0	321,387	181	3,338	17,956	399,737
1970	69,819	6,811	0	0	470,866	0	5,595	16,550	569,641
1971	53,097	7,747	0	0	769,055	4,785	6,353	158,419	999,456
1972	61,858	8,445	0	0	1,124,058	2,040	7,375	376,601	1,580,377
1973	33,931	4,615	0	0	764,825	2,308	3,017	77,630	886,326
1974	49,114	4,413	0	46,752	671,406	2,207	3,114	106,332	883,338
1975	63,122	4,670	0	34,574	842,482	2,490	3,920	134,257	1,085,515
1976	70,851	5,131	0	94,653	965,096	2,737	4,910	100,597	1,243,975
1977	26,565	1,758	0	84,875	498,624	3,644	2,602	43,067	661,135
1978	107,194	923	0	188,075	1,593,785	4,249	6,294	24,494	1,925,014
1979	107,742	4,861	0	193,697	2,364,584	5,591	13,137	433,610	3,123,222
1980	89,119	1,943	0	122,020	1,736,941	4,782	7,797	150,511	2,113,113
1981	130,291	18,619	0	264,159	2,406,916	7,309	9,003	265,152	3,101,449
1982	105,769	912	0	143,019	2,325,602	4,421	6,719	46,873	2,633,315
1983	59,746	0	0	13,666	904,115	5,518	3,071	1,179	987,295
1984	81,086	0	0	213,746	1,954,328	5,855	7,621	10,325	2,272,961
1985	114,881	12,973	0	243,229	2,570,860	8,445	8,901	272,706	3,231,995
1986	246,744	5,745	0	393,252	5,045,389	18,169	17,966	391,886	6,119,151
1987	222,269	12,192	0	593,332	4,879,815	19,180	19,801	446,348	6,192,937
1988	216,115	18,257	0	590,122	4,774,833	17,858	14,537	430,349	6,062,071
1989	287,714	15,580	0	686,707	6,201,849	20,237	21,822	655,128	7,889,037
1990	230,810	8,134	0	886,692	4,942,668	12,718	13,307	362,914	6,457,243
1991	7,435	1,773	0	294,087	94,236	0	863	17,485	415,879
1992	139,510	7,947	0	352,455	2,822,747	10,599	10,485	274,253	3,617,996
1993	235,457	12,243	0	583,844	4,790,551	16,322	15,674	483,564	6,137,655
1994	512,099	26,626	0	1,273,219	10,524,929	35,501	34,342	1,051,711	13,458,427
1995	614,478	31,948	0	1,525,536	12,582,713	42,598	41,854	1,261,969	16,101,096
1996	728,294	37,866	0	1,805,570	14,804,396	50,488	49,944	1,495,716	18,972,274
1997	727,490	37,825	0	1,799,495	14,764,292	50,433	50,634	1,494,065	18,924,234
1998	716,264	37,240	0	1,796,034	15,531,077	49,655	49,363	1,471,011	19,650,644
1999	672,769	34,979	0	1,692,020	14,798,480	46,639	45,383	1,381,684	18,671,954
2000	692,747	36,018	0	1,742,415	15,244,614	48,024	46,720	1,422,713	19,233,251
2001	695,675	36,171	0	1,749,773	15,308,892	48,227	46,928	1,428,727	19,314,393
2002	711,805	37,009	0	1,790,431	15,667,789	49,345	48,020	1,461,852	19,766,251
2003	720,189	37,445	0	1,811,570	15,854,567	49,926	48,586	1,479,071	20,001,354
2004	729,553	37,932	0	1,835,161	16,062,410	50,576	49,224	1,498,304	20,263,160
2005	748,439	38,914	0	1,882,785	16,483,750	51,885	50,507	1,537,090	20,793,370
2006	749,377	38,963	0	1,885,151	16,504,698	51,950	50,570	1,539,016	20,819,725
2007	755,819	39,297	0	1,901,396	16,648,320	52,397	51,003	1,552,245	21,000,477
2008	762,928	39,667	0	1,919,321	16,806,767	52,889	51,483	1,566,844	21,199,899
2009	768,770	39,971	0	1,934,039	16,936,303	53,294	51,880	1,578,845	21,363,102
2010	795,484	41,359	0	2,001,376	17,531,164	55,146	53,703	1,633,706	22,111,938
2011	789,818	41,065	0	1,987,124	17,406,160	54,753	53,301	1,622,069	21,954,290
2012	797,681	41,474	0	2,006,934	17,580,738	55,299	53,840	1,638,218	22,174,184
2013	805,196	41,865	0	2,025,875	17,747,890	55,820	54,349	1,653,652	22,384,647
2014	813,981	42,321	0	2,048,019	17,943,430	56,429	54,945	1,671,694	22,630,819
2015	810,818	42,157	0	2,040,050	17,873,113	56,209	54,728	1,665,198	22,542,273
2016	812,767	42,258	0	2,044,960	17,916,459	56,345	54,862	1,669,202	22,596,853
2017	840,445	43,697	0	2,114,726	18,532,237	58,263	56,736	1,726,044	23,372,148
2018	840,209	43,685	0	2,114,129	18,526,917	58,247	56,720	1,725,559	23,365,466
2019	841,434	43,749	0	2,117,216	18,554,194	58,332	56,805	1,728,075	23,399,805
2020	828,665	43,085	0	2,085,038	18,270,268	57,447	55,935	1,701,852	23,042,290
2021	831,873	43,252	0	2,093,120	18,341,634	57,669	56,156	1,708,438	23,132,142
2022	833,435	43,332	0	2,097,057	18,376,405	57,777	56,262	1,711,646	23,175,914
2023	833,296	43,326	0	2,096,707	18,373,320	57,767	56,252	1,711,362	23,172,030
2024	833,336	43,328	0	2,096,807	18,374,149	57,770	56,255	1,711,444	23,173,089
2025	833,984	43,361	0	2,098,440	18,388,587	57,815	56,301	1,712,774	23,191,262
2026	830,203	43,165	0	2,088,915	18,304,693	57,553	56,042	1,705,008	23,085,579
2027	830,294	43,169	0	2,089,144	18,306,648	57,559	56,049	1,705,196	23,088,059
2028	830,671	43,189	0	2,090,090	18,314,888	57,586	56,075	1,705,971	23,098,470
2029	830,733	43,192	0	2,090,253	18,316,565	57,589	56,077	1,706,097	23,100,506
2030	830,365	43,173	0	2,089,311	18,307,794	57,565	56,056	1,705,341	23,089,605
2031	831,636	43,239	0	2,092,526	18,336,480	57,653	56,140	1,707,954	23,125,628
2032	831,636	43,239	0	2,092,526	18,336,480	57,653	56,140	1,707,954	23,125,628
2033	832,228	43,270	0	2,094,017	18,349,630	57,693	56,181	1,709,169	23,142,188
2034	830,480	43,180	0	2,089,610	18,310,715	57,573	56,061	1,705,578	23,093,197
2035	832,790	43,299	0	2,095,511	18,365,432	57,732	56,198	1,710,321	23,161,283
Total	35,696,145	1,874,269	0	88,346,353	773,787,927	2,455,071	2,436,592	72,644,251	977,240,608

TABLE B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

	Southern California Area									
Calendar Year	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	30,401	0	0	0	0	0	0	0	0
1969	0	30,627	0	0	0	0	0	0	0	0
1970	0	39,429	0	0	0	0	0	0	0	0
1971	0	34,871	0	0	0	0	0	0	0	0
1972	779	44,585	0	12,780	0	4,491	1,515	0	32,092	0
1973	286	28,247	102,811	6,895	159,535	3,854	0	0	301,444	0
1974	15,558	28,096	100,954	9,891	157,742	4,932	221	0	177,172	6,529
1975	99,182	27,760	108,250	12,758	170,106	6,391	0	0	136,060	53,482
1976	385,090	38,108	135,276	17,835	213,595	8,163	0	0	139,356	68,933
1977	199,168	21,006	0	23,598	0	1,973	1,702	0	239,663	86,821
1978	580,236	44,714	173,774	20,834	263,661	2,724	0	0	36,905	70,726
1979	1,058,567	83,320	228,381	28,596	340,428	2,327	90,780	0	236	3,803
1980	1,390,776	51,281	256,858	29,240	401,192	3,668	94,398	0	0	16,513
1981	1,479,459	111,213	274,018	33,617	430,100	23,847	90,547	0	254,648	57,523
1982	917,895	130,560	290,783	27,013	458,232	0	229,117	0	125,294	188,148
1983	334,670	(303,945)	173,383	10,834	273,548	386	0	0	(71,309)	(8,732)
1984	488,905	(102,708)	275,919	19,738	437,469	15	0	0	(67,746)	(93,352)
1985	818,808	(355,149)	412,369	34,515	655,364	0	0	32,369	(47,995)	(32,654)
1986	1,117,589	61,239	733,852	60,690	1,168,683	5,591	0	106,190	70,948	104,460
1987	1,053,778	(14,066)	690,429	65,700	1,119,270	33,582	604	163,207	43,922	53,352
1988	1,048,491	(51,121)	708,480	68,817	1,166,391	12,344	310	52,145	60,080	42,543
1989	1,745,094	182,733	983,625	97,585	1,641,398	38,446	8,994	352,583	344,963	213,115
1990	2,456,298	429,240	1,409,370	111,468	2,324,545	90,978	0	448,859	605,142	535,023
1991	311,066	(31,844)	293,973	36,140	484,864	18,926	136,635	141,917	(2,045)	(3,017)
1992	876,105	53,254	367,584	9,306	606,247	7,265	368,454	116,805	29,385	69,205
1993	1,694,320	269,220	620,752	103,656	1,023,838	72,290	1,339,547	449,450	529,125	396,842
1994	4,140,713	1,376,351	1,395,395	224,161	2,301,496	167,662	3,045,194	1,097,815	2,114,236	1,087,322
1995	5,328,506	2,134,523	1,704,494	294,735	2,811,310	197,965	5,162,929	1,339,269	2,803,930	1,328,178
1996	6,426,434	2,843,729	1,862,736	338,291	3,072,304	226,325	5,543,598	1,700,386	3,306,154	1,451,482
1997	6,518,480	2,896,997	1,760,490	345,419	2,903,665	218,080	5,317,357	1,640,334	3,353,314	1,371,810
1998	6,891,981	2,922,667	1,772,643	273,204	2,923,713	219,466	5,338,001	1,650,763	3,913,937	1,381,281
1999	8,027,576	2,920,476	1,783,813	274,555	2,942,133	219,924	5,364,410	1,654,204	4,247,172	1,389,985
2000	9,485,566	3,515,645	1,875,295	328,858	3,093,020	227,259	5,568,674	1,709,378	4,870,897	1,623,633
2001	9,526,165	3,538,535	1,882,151	329,508	3,104,328	228,233	5,579,667	1,716,694	4,888,705	1,629,568
2002	9,767,949	3,673,114	1,950,962	338,457	3,217,818	234,023	5,731,215	1,760,267	5,067,433	1,689,144
2003	9,894,210	3,743,257	1,987,082	343,171	3,277,392	237,049	5,810,995	1,783,018	5,161,250	1,720,418
2004	10,033,022	3,820,401	2,025,802	348,167	3,341,256	240,374	5,895,623	1,808,034	5,261,820	1,753,940
2005	12,470,880	4,298,143	2,106,333	457,100	3,474,082	247,268	6,070,772	1,859,880	8,206,492	1,942,205
2006	12,488,230	4,306,971	2,110,982	457,908	3,481,749	247,613	6,081,491	1,862,469	8,224,603	1,946,490
2007	12,606,052	4,366,094	2,138,946	462,546	3,527,873	249,946	6,143,098	1,880,041	8,333,558	1,972,277
2008	12,735,726	4,431,115	2,169,172	467,537	3,577,725	252,518	6,209,361	1,899,381	8,451,321	2,000,146
2009	12,840,558	4,483,057	2,194,107	471,665	3,618,850	254,598	6,264,207	1,915,015	8,548,466	2,023,136
2010	15,628,708	4,727,682	2,315,766	611,404	3,819,507	264,309	6,538,814	1,988,063	10,285,603	2,255,617
2011	15,785,792	4,677,319	2,296,661	607,769	3,787,999	262,336	6,499,938	1,973,222	10,200,754	2,237,007
2012	15,954,040	4,748,256	2,326,853	613,762	3,837,797	265,133	6,564,026	1,994,256	10,334,855	2,266,416
2013	16,116,006	4,816,316	2,358,770	620,310	3,890,436	267,824	6,634,056	2,014,500	10,476,607	2,297,501
2014	16,305,910	4,896,431	2,394,771	627,606	3,949,819	270,980	6,712,088	2,038,238	10,636,521	2,332,569
2015	16,241,307	4,867,743	2,382,246	697,336	3,929,159	269,905	6,683,900	2,030,165	10,580,884	2,454,435
2016	16,282,912	4,884,865	2,389,547	698,978	3,941,200	270,598	6,699,643	2,035,364	10,613,311	2,461,958
2017	16,881,105	5,136,324	2,507,722	726,116	4,136,111	280,539	6,959,746	2,110,139	11,138,189	2,583,712
2018	16,875,306	5,133,815	2,506,585	725,854	4,134,240	280,443	6,957,243	2,109,413	11,133,146	2,582,545
2019	16,902,014	5,145,143	2,511,284	726,902	4,141,990	280,886	6,967,294	2,112,751	11,154,019	2,587,385
2020	16,624,201	5,029,592	2,454,314	767,285	4,048,022	276,268	6,838,261	2,078,026	10,900,976	2,656,181
2021	16,694,045	5,058,812	2,465,219	769,730	4,066,010	277,430	6,860,057	2,086,755	10,949,412	2,667,984
2022	16,728,839	5,073,156	2,472,842	771,682	4,078,583	278,009	6,877,423	2,091,105	10,983,272	2,676,235
2023	16,724,605	5,071,819	2,471,998	771,476	4,077,189	277,938	6,875,615	2,090,576	10,979,515	2,675,320
2024	16,725,220	5,071,994	2,472,020	771,476	4,077,231	277,948	6,875,616	2,090,652	10,979,630	2,675,349
2025	16,741,221	5,078,255	2,476,663	786,363	4,084,885	278,213	6,887,455	2,092,652	11,000,240	2,819,748
2026	16,659,501	5,043,910	2,461,362	782,589	4,059,649	276,856	6,854,419	2,082,439	10,932,285	2,802,329
2027	16,661,406	5,044,928	2,461,670	782,659	4,060,159	276,888	6,855,025	2,082,676	10,933,654	2,802,680
2028	16,669,270	5,047,775	2,462,784	782,886	4,061,995	277,018	6,856,999	2,083,659	10,938,600	2,803,949
2029	16,671,318	5,049,155	2,462,142	782,636	4,060,935	277,051	6,854,807	2,083,916	10,935,746	2,803,218
2030	16,658,684	5,044,757	2,459,037	781,765	4,055,816	276,842	6,847,193	2,082,336	10,921,960	2,927,426
2031	16,690,495	5,056,932	2,464,038	782,888	4,064,063	277,371	6,857,022	2,086,312	10,944,170	2,933,379
2032	16,690,495	5,056,932	2,464,038	782,888	4,064,063	277,371	6,857,022	2,086,312	10,944,170	2,933,379
2033	16,703,119	5,062,405	2,466,535	783,520	4,068,184	277,580	6,862,552	2,087,889	10,955,265	2,936,354
2034	16,665,082	5,046,348	2,459,662	781,832	4,056,842	276,948	6,847,773	2,083,136	10,924,727	2,928,167
2035	16,729,821	5,072,354	2,477,623	786,902	4,086,468	278,025	6,892,174	2,091,229	11,004,504	3,088,985
Total	597,264,590	186,095,164	102,503,396	25,721,402	168,803,274	11,161,205	268,505,577	82,926,254	371,472,643	97,330,106

TABLE B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

	Southern California Area (continued)				Feather River Area					
Calendar Year	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)	South Bay Area Future Contractor (38)	Grand Total (39)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	36,970
1963	0	0	0	0	0	0	0	0	0	57,711
1964	0	0	0	0	0	0	0	0	0	74,134
1965	0	0	0	0	0	0	0	0	0	142,609
1966	0	0	0	0	0	0	0	0	0	192,605
1967	0	0	0	0	0	0	0	0	0	236,998
1968	0	0	0	30,401	0	0	0	0	0	1,117,913
1969	0	0	0	30,627	0	0	0	0	0	773,646
1970	0	0	0	39,429	0	0	0	0	0	1,103,798
1971	0	0	0	34,871	0	0	0	0	0	1,513,435
1972	0	847,154	0	943,396	0	0	0	0	0	3,261,922
1973	0	1,083,333	0	1,686,405	0	0	0	0	0	3,168,975
1974	0	1,872,299	0	2,373,394	0	0	0	0	0	3,919,920
1975	0	3,886,921	0	4,500,910	0	0	0	0	0	6,053,571
1976	0	5,485,263	0	6,491,619	0	0	0	0	0	8,478,786
1977	0	(796,688)	0	(222,757)	0	0	0	0	0	1,164,427
1978	0	3,679,270	0	4,872,844	0	0	0	0	0	7,587,308
1979	0	4,019,308	0	5,855,746	0	0	0	0	0	9,861,400
1980	0	5,367,081	0	7,611,007	0	0	0	0	0	10,425,874
1981	0	10,499,224	0	13,254,196	0	0	0	0	0	17,218,331
1982	0	7,595,699	0	9,962,741	0	0	0	0	0	13,326,143
1983	0	(8,441,959)	0	(8,033,124)	0	0	0	0	0	(6,843,181)
1984	0	(6,698,556)	0	(5,740,316)	0	0	0	0	0	(3,071,158)
1985	0	(15,853,883)	0	(14,336,256)	0	0	0	0	0	(10,445,229)
1986	0	1,328,675	0	4,757,917	0	0	0	0	0	12,108,992
1987	0	(2,511,334)	0	698,444	0	0	0	0	0	8,293,651
1988	0	(2,830,884)	0	277,596	0	0	0	0	0	7,798,059
1989	0	9,725,080	0	15,333,616	0	0	0	0	0	24,889,970
1990	0	31,167,031	205,976	39,783,930	0	0	0	0	0	48,998,549
1991	0	(4,540,242)	20,231	(3,133,396)	0	0	0	0	0	(1,930,082)
1992	0	1,971,000	0	4,474,610	0	0	0	0	0	8,859,579
1993	0	21,967,214	123,998	28,590,252	0	0	0	0	0	36,315,854
1994	0	97,413,689	324,391	114,688,425	0	0	0	0	0	132,083,396
1995	221,362	128,612,604	400,189	152,339,994	0	0	0	0	0	173,276,754
1996	580,593	149,989,406	471,657	177,813,095	0	0	0	0	0	204,924,542
1997	548,724	141,583,340	452,594	168,910,604	0	0	0	0	0	196,953,346
1998	427,429	142,805,226	1,450,592	171,970,903	0	0	0	0	0	201,745,731
1999	430,123	143,417,919	1,453,903	174,126,193	0	0	0	0	0	202,849,986
2000	515,503	150,836,207	1,523,125	185,173,060	0	0	0	0	0	214,831,737
2001	517,386	151,613,994	1,532,333	186,087,267	0	0	0	0	0	215,889,217
2002	536,304	157,304,959	1,586,447	192,858,092	0	0	0	0	0	223,406,401
2003	546,232	160,281,055	1,614,668	196,399,797	0	0	0	0	0	227,343,692
2004	556,875	163,514,654	1,645,698	200,245,666	0	0	0	0	0	231,627,351
2005	770,500	170,251,356	1,710,411	213,865,422	0	0	0	0	0	246,154,859
2006	772,199	170,613,630	1,713,668	214,308,003	0	0	0	0	0	246,649,863
2007	782,427	172,916,090	1,735,468	217,114,416	0	0	0	0	0	249,763,224
2008	793,485	175,427,493	1,759,457	220,174,437	0	0	0	0	0	253,163,530
2009	802,606	177,464,599	1,778,625	222,659,489	0	0	0	0	0	255,925,065
2010	1,057,633	187,223,875	1,868,891	238,585,872	0	0	0	0	0	273,100,401
2011	1,048,907	185,447,139	1,850,312	236,675,155	0	0	0	0	0	270,944,504
2012	1,062,696	188,078,166	1,876,486	239,922,742	0	0	0	0	0	274,565,999
2013	1,077,270	190,717,794	1,901,599	243,188,989	0	0	0	0	0	278,192,411
2014	1,093,717	193,763,765	1,931,159	246,953,574	0	0	0	0	0	282,377,290
2015	1,397,375	192,687,366	1,920,569	246,142,390	0	0	0	0	0	281,440,062
2016	1,401,660	193,322,942	1,926,902	246,929,880	0	0	0	0	0	282,333,271
2017	1,470,979	203,085,630	2,019,682	259,035,994	0	0	0	0	0	295,727,737
2018	1,470,313	202,989,940	2,018,761	258,917,604	0	0	0	0	0	295,614,560
2019	1,473,070	203,405,261	2,022,941	259,430,940	0	0	0	0	0	296,201,900
2020	1,769,018	198,814,794	1,980,297	254,237,235	0	0	0	0	0	290,437,117
2021	1,846,245	199,838,625	1,991,083	255,571,407	0	0	0	0	0	291,923,571
2022	1,851,955	200,430,060	1,996,375	256,309,536	0	0	0	0	0	292,733,616
2023	1,851,322	200,369,623	1,995,883	256,232,879	0	0	0	0	0	292,650,588
2024	1,851,341	200,374,236	1,995,947	256,238,660	0	0	0	0	0	292,658,007
2025	1,854,816	200,683,691	1,998,252	256,782,454	0	0	0	0	0	293,232,476
2026	1,843,359	199,383,209	1,985,587	255,167,494	0	0	0	0	0	291,443,654
2027	1,843,588	199,416,051	1,985,955	255,207,339	0	0	0	0	0	291,487,465
2028	1,844,422	199,517,792	1,987,012	255,334,161	0	0	0	0	0	291,630,957
2029	1,843,943	199,520,906	1,987,518	255,333,291	0	0	0	0	0	291,634,217
2030	1,841,619	199,309,603	1,985,895	255,192,933	0	0	0	0	0	291,474,627
2031	1,845,362	199,754,064	1,990,387	255,746,483	0	0	0	0	0	292,088,389
2032	1,845,362	199,754,064	1,990,387	255,746,483	0	0	0	0	0	292,088,389
2033	1,847,232	199,963,649	1,992,407	256,006,691	0	0	0	0	0	292,376,132
2034	1,842,084	199,366,467	1,986,482	255,265,550	0	0	0	0	0	291,553,548
2035	1,855,537	200,600,668	1,996,100	256,960,390	0	0	0	0	0	293,369,113
Total	50,832,573	7,660,686,607	72,686,300	9,695,989,091	0	0	0	0	0	11,194,560,175

TABLE B-19

Total Transportation Charge for Each Contractor

(Dollars)

	North Bay Area			South Bay Area				Central Coastal Area		
Calendar Year	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	11,750	43,787	0	55,537	0	0	0
1963	0	0	0	151,140	190,453	449,448	791,041	0	0	0
1964	0	0	0	170,797	277,738	623,343	1,071,878	8,922	17,665	26,587
1965	0	0	0	245,718	404,749	1,160,661	1,811,128	14,706	28,502	43,208
1966	18,096	0	18,096	271,833	422,196	1,415,802	2,109,831	24,019	45,891	69,910
1967	41,644	0	41,644	347,120	502,125	1,686,523	2,535,768	42,370	79,917	122,287
1968	128,824	0	128,824	392,186	604,069	1,988,444	2,984,699	68,510	128,322	196,832
1969	254,981	0	254,981	447,140	539,983	2,086,637	3,073,760	123,594	230,076	353,670
1970	277,819	0	277,819	460,871	533,235	2,206,210	3,200,316	136,687	254,318	391,005
1971	227,749	0	227,749	421,783	552,785	2,173,353	3,147,921	137,849	256,543	394,392
1972	225,255	0	225,255	509,334	679,192	2,323,883	3,512,409	144,068	268,132	412,200
1973	221,370	31,433	252,803	473,850	550,066	2,342,090	3,366,006	141,109	262,722	403,831
1974	240,782	33,008	273,790	497,183	565,268	2,509,832	3,572,283	142,344	265,051	407,395
1975	237,756	36,366	274,122	545,545	606,407	2,413,402	3,565,354	158,925	295,683	454,608
1976	271,596	40,918	312,514	635,843	735,490	2,503,988	3,875,321	268,668	498,348	767,016
1977	293,936	45,185	339,121	599,129	714,277	2,479,981	3,793,387	279,488	518,758	798,246
1978	274,184	49,273	323,457	653,210	693,271	2,789,490	4,135,971	287,212	533,171	820,383
1979	289,799	53,442	343,241	716,611	736,986	2,816,583	4,270,180	286,105	531,246	817,351
1980	311,182	67,873	379,055	833,370	867,133	3,032,233	4,732,736	313,121	581,218	894,339
1981	347,583	87,563	435,146	795,695	880,186	2,922,266	4,598,147	336,009	623,531	959,540
1982	440,975	107,105	548,080	832,779	854,172	3,221,789	4,908,740	336,308	624,196	960,504
1983	355,488	151,515	507,003	849,825	905,721	3,843,842	5,599,388	362,445	672,458	1,034,903
1984	467,726	224,617	692,343	1,132,407	1,097,747	5,741,851	7,972,005	393,236	729,319	1,122,555
1985	736,709	364,898	1,101,607	1,582,320	1,793,429	6,562,828	9,938,577	440,554	816,662	1,257,216
1986	1,085,755	693,592	1,779,347	1,409,601	1,534,658	6,900,532	9,844,791	428,891	795,277	1,224,168
1987	1,774,246	1,561,716	3,335,962	1,906,674	2,027,526	6,736,748	10,670,948	429,355	835,916	1,265,271
1988	2,230,626	2,356,455	4,587,081	1,910,669	2,227,357	6,414,207	10,552,233	480,579	983,188	1,463,767
1989	2,391,731	3,347,913	5,739,644	1,791,909	1,855,395	5,870,205	9,517,509	489,730	1,141,919	1,631,649
1990	2,750,150	3,453,664	6,203,814	2,180,471	2,226,064	6,848,117	11,254,652	577,639	1,198,599	1,776,238
1991	2,746,152	3,530,883	6,277,035	1,459,580	1,700,365	4,717,684	7,877,629	616,773	1,444,782	2,061,555
1992	2,630,351	3,504,603	6,134,954	1,994,617	2,285,777	6,018,371	10,298,765	684,763	1,420,283	2,105,046
1993	2,731,304	3,871,065	6,602,369	3,033,167	3,132,227	8,351,754	14,517,148	906,337	1,733,171	2,639,508
1994	2,796,566	3,989,772	6,786,338	3,225,658	3,328,549	8,855,109	15,409,316	1,517,853	3,154,159	4,672,012
1995	2,905,061	4,219,327	7,124,388	3,091,986	3,154,913	8,429,811	14,676,710	4,232,400	9,465,155	13,697,555
1996	2,943,582	4,242,733	7,186,315	3,464,856	3,428,519	9,024,436	15,917,811	7,800,095	22,229,156	30,029,251
1997	2,956,161	4,245,565	7,201,726	3,511,462	3,389,703	8,935,075	15,836,240	8,733,369	24,874,333	33,607,702
1998	2,971,725	4,245,325	7,217,050	3,487,387	3,367,711	8,882,944	15,738,042	10,343,870	24,800,631	35,144,501
1999	2,984,808	4,245,636	7,230,444	3,434,810	3,319,711	8,768,753	15,523,274	10,312,759	24,750,757	35,063,516
2000	2,999,694	4,243,912	7,243,606	3,417,654	3,304,048	8,731,540	15,453,242	10,299,920	24,734,330	35,034,250
2001	3,016,219	4,245,158	7,261,377	3,419,074	3,305,440	8,735,416	15,459,930	10,317,625	24,773,809	35,091,434
2002	3,031,120	4,246,320	7,277,440	3,428,967	3,314,476	8,756,947	15,500,390	10,327,993	24,792,800	35,120,793
2003	3,045,379	4,243,433	7,288,812	3,422,792	3,308,839	8,743,527	15,475,158	10,316,817	24,772,531	35,089,348
2004	3,058,247	4,239,249	7,297,496	3,412,954	3,299,860	8,722,156	15,434,970	10,299,951	24,741,912	35,041,863
2005	3,070,628	4,259,908	7,330,536	3,400,898	3,288,854	8,695,972	15,385,724	10,277,463	24,701,137	34,978,600
2006	3,080,308	4,257,581	7,337,889	3,393,278	3,281,897	8,679,414	15,354,589	10,266,067	24,680,413	34,946,480
2007	3,091,354	4,253,349	7,344,703	3,382,548	3,272,101	8,656,093	15,310,742	10,248,731	24,648,918	34,897,649
2008	3,104,170	4,248,163	7,352,333	3,369,188	3,259,904	8,627,057	15,256,149	10,227,364	24,610,094	34,837,458
2009	3,114,371	4,243,454	7,357,825	3,356,746	3,248,544	8,600,016	15,205,306	10,207,603	24,574,187	34,781,790
2010	3,132,531	4,250,438	7,382,969	3,376,366	3,266,463	8,642,706	15,285,535	10,229,409	24,614,073	34,843,482
2011	3,142,712	4,242,945	7,385,657	3,350,564	3,242,905	8,586,606	15,180,075	10,193,264	24,548,263	34,741,527
2012	3,153,725	4,238,818	7,392,543	3,340,649	3,233,851	8,565,061	15,139,561	10,176,639	24,518,070	34,694,709
2013	3,125,711	4,187,033	7,312,744	3,080,303	2,991,761	7,874,143	13,946,207	9,956,077	24,116,825	34,072,902
2014	3,160,190	4,207,062	7,367,252	3,105,544	2,981,709	7,840,362	13,927,615	10,033,655	24,256,607	34,290,262
2015	3,156,104	4,188,662	7,344,766	3,000,610	2,831,439	7,324,933	13,156,982	9,930,635	24,068,832	33,999,467
2016	3,147,183	4,182,447	7,329,630	2,963,183	2,783,794	7,110,924	12,857,901	9,893,944	24,001,651	33,895,595
2017	3,153,894	4,195,374	7,349,268	2,979,223	2,796,660	7,099,026	12,874,909	9,937,661	24,080,752	34,018,413
2018	3,089,757	4,195,677	7,285,434	2,937,059	2,755,153	6,975,317	12,667,529	9,922,576	24,052,765	33,975,341
2019	3,063,281	4,197,057	7,260,338	2,901,572	2,722,134	6,879,333	12,503,039	9,922,474	24,052,365	33,974,839
2020	3,067,280	4,189,836	7,257,116	2,860,240	2,682,136	6,780,685	12,323,061	9,883,595	23,981,395	33,864,990
2021	3,070,313	4,191,960	7,262,273	2,864,271	2,685,443	6,789,079	12,338,793	9,891,719	23,996,083	33,887,802
2022	3,070,119	4,192,903	7,263,022	2,867,014	2,687,582	6,792,096	12,346,692	9,895,215	24,002,314	33,897,529
2023	3,069,025	4,161,399	7,230,424	2,866,123	2,686,687	6,788,276	12,341,086	9,894,339	24,000,653	33,894,992
2024	3,070,088	4,163,530	7,233,618	2,876,359	2,695,904	6,809,682	12,381,945	9,909,688	24,028,517	33,938,205
2025	3,054,548	4,153,443	7,207,991	2,856,310	2,677,086	6,764,110	12,297,506	9,880,800	23,975,906	33,856,706
2026	3,047,056	4,146,638	7,193,694	2,847,355	2,668,881	6,744,385	12,260,621	9,762,520	23,757,745	33,520,265
2027	3,044,168	4,142,418	7,186,586	2,845,802	2,667,279	6,739,184	12,252,265	9,759,968	23,752,583	33,512,551
2028	3,041,146	4,138,531	7,179,677	2,844,194	2,665,662	6,734,017	12,243,873	9,754,326	23,741,987	33,496,313
2029	3,037,708	4,134,441	7,172,149	2,840,791	2,662,506	6,725,595	12,228,892	9,752,474	23,738,445	33,490,919
2030	3,027,584	4,119,716	7,147,300	2,837,518	2,659,445	6,717,873	12,214,836	9,748,490	23,730,997	33,479,487
2031	3,015,111	4,100,839	7,115,950	2,833,502	2,655,702	6,708,526	12,197,730	9,742,959	23,720,608	33,463,567
2032	3,003,501	4,081,298	7,084,799	2,835,225	2,657,227	6,711,878	12,204,330	9,746,707	23,727,412	33,474,119
2033	2,976,057	4,037,253	7,013,310	2,836,366	2,658,226	6,714,015	12,208,607	9,750,835	23,734,947	33,485,782
2034	2,910,720	3,963,071	6,873,791	2,825,635	2,648,187	6,688,890	12,162,712	9,744,240	23,722,840	33,467,080
2035	2,783,064	3,824,648	6,607,712	2,823,887	2,646,525	6,684,106	12,154,518	9,751,161	23,735,371	33,486,532
Total	151,785,738	199,109,409	350,895,147	160,080,050	157,923,250	435,787,171	753,790,471	411,855,566	997,777,192	1,409,632,758

TABLE B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	2,729	0	0	0	0	0	2,729
1965	0	0	6,039	73,693	0	0	0	0	79,732
1966	0	0	12,058	137,555	0	0	0	0	149,613
1967	0	0	26,299	268,043	0	0	0	0	294,342
1968	180,584	9,518	54,666	446,057	1,527,908	12,880	11,494	206,311	2,449,418
1969	176,182	9,475	87,668	525,806	2,358,252	11,493	10,490	347,247	3,526,613
1970	197,813	16,240	94,768	574,762	2,873,735	11,621	13,022	286,466	4,068,427
1971	193,473	17,199	95,789	606,688	3,768,786	16,569	14,315	441,124	5,153,943
1972	214,942	17,996	98,886	632,429	4,884,573	13,996	20,503	1,054,822	6,938,147
1973	197,474	14,138	97,647	640,072	4,827,543	14,263	11,609	400,080	6,202,826
1974	274,250	14,107	98,559	699,072	5,118,106	14,356	12,677	582,944	6,814,071
1975	339,382	15,049	106,801	716,430	6,220,122	15,365	14,358	710,807	8,138,314
1976	296,933	15,595	108,184	775,124	6,568,568	15,734	16,014	552,084	8,348,236
1977	259,125	12,709	112,665	798,817	6,733,946	17,185	13,816	499,673	8,447,936
1978	345,609	11,564	115,625	889,187	8,146,812	17,492	17,841	491,912	10,036,042
1979	375,539	15,435	114,358	896,690	9,273,268	18,826	24,735	938,712	11,657,563
1980	396,616	13,804	126,305	890,169	9,830,121	19,401	24,126	711,073	12,011,615
1981	460,412	31,726	134,332	1,081,209	11,257,043	23,593	22,908	895,735	13,906,958
1982	453,046	14,840	136,288	1,007,116	12,063,777	21,534	22,293	732,864	14,451,758
1983	626,451	16,440	150,202	1,030,466	15,267,255	38,502	30,619	428,653	17,588,588
1984	897,561	16,791	164,827	2,061,149	23,330,817	52,939	59,648	771,952	27,355,684
1985	1,100,212	90,021	187,368	2,381,471	27,966,598	68,753	71,126	2,188,676	34,054,225
1986	1,265,711	36,295	181,625	2,392,735	30,828,018	80,363	77,291	2,190,341	37,052,379
1987	1,143,226	54,487	180,295	2,893,192	29,640,019	79,615	78,234	2,292,013	36,361,081
1988	1,123,928	66,576	194,645	2,822,452	29,475,815	74,870	62,344	2,239,305	36,059,935
1989	1,126,787	51,015	188,004	2,447,209	29,062,703	65,611	68,266	2,419,310	35,428,905
1990	1,182,718	48,816	221,412	2,869,798	30,699,284	64,726	66,167	2,390,959	37,543,880
1991	605,215	26,526	229,553	2,280,758	17,648,076	27,026	27,445	1,237,078	22,081,677
1992	1,037,192	47,326	246,285	2,543,134	27,604,323	60,990	57,661	2,090,568	33,687,479
1993	1,169,911	51,745	323,577	2,818,058	30,744,224	67,667	66,837	2,385,924	37,627,943
1994	1,444,050	66,002	310,461	3,512,203	36,261,987	87,062	84,193	2,949,027	44,714,985
1995	1,543,281	71,103	304,660	3,774,765	38,284,209	94,047	91,878	3,151,655	47,315,598
1996	1,666,512	77,486	292,211	4,085,066	40,544,223	102,699	101,041	3,404,199	50,273,437
1997	1,664,362	77,368	308,159	4,079,054	40,380,365	102,616	101,582	3,399,658	50,113,164
1998	1,641,919	76,199	308,390	4,054,841	41,358,232	101,060	99,554	3,353,561	50,993,756
1999	1,583,481	73,162	308,361	3,913,273	40,292,611	97,016	94,581	3,233,572	49,596,057
2000	1,575,456	72,747	308,452	3,893,117	40,117,655	96,457	94,023	3,217,081	49,374,988
2001	1,576,025	72,774	308,819	3,894,382	40,133,590	96,484	94,059	3,218,223	49,394,356
2002	1,580,813	73,023	308,893	3,906,443	40,241,433	96,812	94,381	3,228,045	49,529,843
2003	1,577,984	72,875	308,928	3,899,321	40,179,532	96,613	94,189	3,222,232	49,451,674
2004	1,573,545	72,645	308,971	3,888,118	40,081,166	96,303	93,894	3,213,108	49,327,750
2005	1,567,581	72,334	309,057	3,873,102	39,951,391	95,887	93,496	3,200,846	49,163,694
2006	1,564,030	72,149	309,063	3,864,149	39,872,593	95,640	93,255	3,193,552	49,064,431
2007	1,559,061	71,890	309,092	3,851,633	39,763,021	95,296	92,917	3,183,347	48,926,257
2008	1,552,848	71,568	309,124	3,835,984	39,625,850	94,863	92,496	3,170,582	48,753,315
2009	1,547,208	71,274	309,149	3,821,764	39,500,534	94,470	92,119	3,158,999	48,595,517
2010	1,556,166	71,736	309,270	3,844,323	39,702,426	95,085	92,735	3,177,370	48,849,111
2011	1,544,169	71,114	309,243	3,814,122	39,436,323	94,254	91,908	3,152,735	48,513,868
2012	1,539,554	70,876	309,279	3,802,482	39,334,080	93,934	91,603	3,143,255	48,385,063
2013	1,469,927	67,254	309,312	3,627,011	37,786,981	89,105	86,912	3,000,253	46,436,755
2014	1,498,274	68,726	306,622	3,698,448	38,417,926	91,071	88,822	3,058,463	47,228,352
2015	1,467,026	67,102	303,299	3,546,007	37,723,107	88,903	86,715	2,994,289	46,276,448
2016	1,458,431	66,654	297,290	3,460,488	37,532,279	88,309	86,137	2,976,643	45,966,231
2017	1,480,785	67,818	283,171	3,386,316	38,031,451	89,851	87,643	3,022,528	46,449,563
2018	1,480,543	67,806	260,443	3,268,398	38,026,019	81,317	87,626	3,022,034	46,294,186
2019	1,481,795	67,871	251,967	3,211,659	38,053,990	80,895	87,713	3,024,604	46,260,494
2020	1,468,908	67,199	250,098	3,146,352	37,766,573	79,755	86,839	2,998,143	45,863,867
2021	1,472,142	67,367	249,009	3,132,548	37,838,680	79,835	87,061	3,004,779	45,931,421
2022	1,473,728	67,450	248,396	3,126,467	37,874,154	79,879	87,168	3,008,041	45,965,283
2023	1,473,601	67,445	247,971	3,121,746	37,871,331	79,839	87,159	3,007,782	45,956,874
2024	1,478,641	67,707	247,449	3,132,308	37,983,309	80,171	87,499	3,018,133	46,095,217
2025	1,469,609	67,236	246,892	3,107,089	37,782,620	79,521	86,892	2,999,582	45,839,441
2026	1,465,791	67,036	246,606	3,095,418	37,697,635	79,221	86,633	2,991,739	45,730,079
2027	1,465,882	67,041	245,963	3,092,655	37,699,616	79,183	86,640	2,991,929	45,728,909
2028	1,466,262	67,062	243,526	3,091,560	37,707,963	79,188	86,666	2,992,713	45,734,940
2029	1,466,325	67,065	243,211	3,088,624	37,709,663	79,129	86,668	2,992,841	45,733,526
2030	1,465,953	67,045	242,920	3,084,585	37,700,772	79,037	86,647	2,992,076	45,719,035
2031	1,467,237	67,112	241,339	3,069,472	37,729,834	78,734	86,731	2,994,713	45,735,172
2032	1,467,237	67,112	241,317	3,071,652	37,729,834	78,744	86,731	2,994,713	45,737,340
2033	1,467,837	67,144	241,029	3,068,500	37,743,160	78,656	86,772	2,995,942	45,749,040
2034	1,466,070	67,052	240,433	3,057,828	37,703,732	78,396	86,652	2,992,316	45,692,479
2035	1,468,405	67,174	239,716	3,054,715	37,759,198	78,324	86,789	2,997,108	45,751,429
Total	79,338,746	3,662,236	15,675,020	185,547,329	2,012,650,740	4,629,031	4,700,858	159,529,044	2,465,733,004

TABLE B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,380	0	0	0	0	0	0	0	51,822	0
1964	62,973	27,495	14,452	4,378	37,225	1,145	28,487	8,220	82,953	35,048
1965	118,798	53,095	25,137	7,206	40,837	2,086	50,402	15,247	135,293	35,403
1966	216,130	101,429	44,803	12,499	73,271	3,760	90,547	27,724	232,882	61,564
1967	418,148	211,152	86,258	23,510	141,637	7,296	175,459	54,110	434,047	115,759
1968	737,079	478,808	152,915	41,571	251,568	12,889	311,156	95,604	783,330	209,237
1969	1,060,558	725,285	225,642	61,317	371,507	18,721	458,790	138,265	1,207,644	322,237
1970	1,379,045	905,406	315,733	89,833	520,091	25,267	632,954	185,110	1,780,878	468,279
1971	1,706,796	1,089,448	433,184	128,553	713,792	31,882	857,092	231,613	2,542,024	660,399
1972	2,023,788	1,305,330	562,354	181,418	926,827	42,451	1,111,109	274,961	3,393,179	866,240
1973	2,114,059	1,323,580	696,689	183,937	1,138,351	43,534	1,173,988	287,687	3,976,218	947,886
1974	2,177,612	1,382,827	712,209	193,515	1,165,213	45,265	1,205,771	292,445	4,003,330	991,867
1975	2,354,190	1,450,796	753,130	206,281	1,233,035	48,543	1,272,370	304,659	4,164,039	1,092,369
1976	2,707,247	1,446,632	799,688	215,328	1,308,731	51,516	1,314,774	314,067	4,304,669	1,146,358
1977	2,650,062	1,515,938	695,533	226,286	1,146,470	47,400	1,386,343	329,765	4,559,086	1,210,549
1978	2,966,022	1,599,792	876,162	231,244	1,421,436	47,166	1,385,990	322,068	4,465,229	1,213,318
1979	3,520,543	1,634,505	944,014	238,199	1,520,043	48,450	1,513,097	332,862	4,427,615	1,153,854
1980	4,067,991	1,717,237	1,033,506	259,668	1,681,436	53,404	1,632,174	360,866	4,840,998	1,270,829
1981	4,393,473	1,962,516	1,103,652	271,280	1,797,719	77,820	1,751,038	392,055	5,226,348	1,358,227
1982	3,964,741	2,067,136	1,158,076	281,407	1,887,965	56,238	1,953,806	408,886	5,436,170	1,570,427
1983	5,157,646	2,344,889	1,749,717	334,111	2,834,083	69,595	2,026,584	496,238	6,041,953	1,562,145
1984	7,184,738	3,405,106	2,830,145	445,860	4,558,352	75,822	2,252,204	553,678	7,054,836	2,331,668
1985	8,955,281	3,744,616	3,629,402	542,300	5,838,452	79,872	2,375,726	737,341	7,775,911	2,387,908
1986	8,811,869	4,328,073	4,055,735	578,597	6,527,667	102,630	2,465,380	1,002,318	7,873,764	3,054,279
1987	8,796,008	4,167,795	3,911,136	603,630	6,375,732	211,943	2,472,141	1,025,943	9,121,027	3,021,227
1988	8,326,181	4,242,187	3,897,550	615,416	6,419,665	127,552	2,533,979	794,944	9,426,851	2,816,732
1989	8,665,195	4,128,104	3,547,348	586,117	5,899,141	170,313	2,496,120	1,442,620	8,936,865	2,929,801
1990	10,140,393	4,789,036	4,295,443	658,436	7,118,570	237,930	2,717,317	1,665,766	10,101,543	3,553,862
1991	6,537,621	3,241,611	2,791,321	577,853	4,603,044	179,409	3,503,438	1,328,131	9,004,478	3,038,190
1992	9,180,990	4,895,925	3,029,226	443,812	4,999,171	135,979	4,606,722	1,240,769	8,966,934	3,231,934
1993	9,722,773	5,276,483	3,429,062	705,612	5,654,878	275,986	6,437,524	1,827,189	11,728,428	4,178,921
1994	12,363,601	6,388,867	4,247,968	837,156	7,005,545	375,737	8,191,346	2,535,833	13,758,878	4,636,240
1995	13,840,393	7,273,058	4,557,577	918,312	7,516,197	406,276	11,127,344	2,803,065	14,630,534	4,888,252
1996	15,132,777	8,200,918	4,744,186	977,027	7,823,979	436,133	11,567,971	3,256,950	15,452,596	5,063,988
1997	15,364,898	8,485,348	4,608,265	967,850	7,599,783	426,815	11,314,355	3,189,723	15,277,869	4,908,277
1998	15,776,041	8,400,116	4,595,749	879,480	7,579,156	424,199	11,230,869	3,170,037	16,643,126	4,984,658
1999	17,248,072	8,229,367	4,568,094	901,637	7,533,558	419,470	11,121,975	3,134,466	17,534,856	5,041,607
2000	18,805,887	8,941,259	4,501,546	911,212	7,423,780	416,900	11,068,216	3,115,093	17,223,337	5,102,334
2001	18,807,362	8,938,080	4,517,038	934,824	7,449,335	416,899	11,054,388	3,115,059	17,646,652	5,183,439
2002	18,881,446	8,980,846	4,538,579	937,915	7,484,857	418,671	11,101,521	3,128,371	17,707,420	5,202,987
2003	18,842,151	8,959,306	4,526,540	935,130	7,465,006	417,730	11,077,969	3,121,268	17,654,270	5,188,732
2004	18,777,169	8,923,553	4,507,820	933,146	7,434,126	416,172	11,035,355	3,109,529	17,614,073	5,174,036
2005	21,414,423	9,333,185	4,489,817	1,063,098	7,404,442	414,269	10,981,490	3,095,199	21,415,748	5,339,658
2006	21,351,723	9,302,749	4,472,890	1,057,437	7,376,517	413,028	10,950,788	3,085,851	21,300,878	5,314,958
2007	21,265,893	9,260,074	4,451,336	1,052,103	7,340,964	411,327	10,907,212	3,073,056	21,186,739	5,289,553
2008	21,157,828	9,206,244	4,427,481	1,050,013	7,301,621	409,189	10,850,665	3,056,950	21,125,102	5,273,463
2009	21,057,743	9,155,722	4,397,802	1,038,274	7,252,662	407,210	10,799,641	3,042,031	20,894,137	5,224,707
2010	23,913,219	9,244,009	4,484,550	1,234,968	7,395,764	410,624	10,910,802	3,067,682	23,484,149	5,583,188
2011	23,982,531	9,133,284	4,385,934	1,161,233	7,233,087	406,420	10,813,433	3,036,065	22,132,657	5,314,527
2012	23,884,815	9,094,837	4,383,106	1,180,018	7,228,431	404,803	10,762,494	3,023,886	22,452,749	5,374,712
2013	22,372,938	8,474,094	4,090,910	1,119,459	6,733,106	380,235	10,120,752	2,839,100	21,095,053	5,075,562
2014	22,948,227	8,703,700	4,199,304	1,144,996	6,925,899	389,151	10,350,961	2,906,527	21,690,223	5,202,386
2015	22,231,126	8,401,257	4,039,353	1,166,693	6,662,074	377,215	10,041,640	2,816,831	20,649,212	5,120,335
2016	21,951,143	8,267,326	3,998,538	1,172,160	6,594,774	372,511	9,919,991	2,781,529	20,729,981	5,122,947
2017	22,231,474	8,366,671	4,052,120	1,181,953	6,683,145	377,011	10,046,458	2,815,544	20,932,794	5,163,614
2018	21,971,751	8,151,921	3,995,321	1,165,754	6,589,479	372,409	9,932,587	2,781,486	20,615,969	5,080,474
2019	21,696,714	7,957,727	3,935,988	1,153,843	6,491,628	367,385	9,803,245	2,744,898	20,333,125	4,997,245
2020	21,120,549	7,688,988	3,770,361	1,140,238	6,218,449	356,548	9,506,788	2,665,807	19,047,915	4,832,618
2021	20,933,854	7,549,877	3,694,572	1,128,974	6,093,472	352,289	9,331,321	2,636,992	18,779,399	4,743,588
2022	20,837,595	7,455,998	3,649,275	1,115,651	6,018,764	350,411	9,242,494	2,623,697	18,433,666	4,657,438
2023	20,783,976	7,439,320	3,629,467	1,108,215	5,986,100	349,368	9,206,688	2,616,346	18,247,585	4,612,142
2024	20,872,789	7,436,509	3,641,420	1,108,021	6,005,816	350,824	9,240,684	2,627,358	18,230,166	4,610,210
2025	20,659,943	7,345,248	3,598,608	1,116,890	5,935,199	347,252	9,136,768	2,600,617	18,126,254	4,715,927
2026	20,564,846	7,293,679	3,567,374	1,103,219	5,883,690	345,632	9,083,318	2,588,598	17,852,032	4,652,649
2027	20,554,646	7,285,662	3,560,045	1,100,577	5,871,605	345,447	9,069,763	2,587,253	17,789,888	4,637,133
2028	20,552,374	7,264,692	3,560,248	1,104,051	5,871,940	345,387	9,062,409	2,586,874	17,845,804	4,646,305
2029	20,539,023	7,244,947	3,549,016	1,094,622	5,853,409	345,154	9,052,179	2,585,162	17,678,091	4,611,979
2030	20,508,037	7,193,322	3,544,500	1,096,045	5,845,965	344,638	9,035,973	2,581,302	17,704,242	4,742,454
2031	20,444,673	7,114,300	3,528,997	1,092,694	5,820,399	343,516	9,001,852	2,573,007	17,645,450	4,724,977
2032	20,452,557	7,083,074	3,531,358	1,093,128	5,824,293	343,644	9,007,006	2,573,979	17,652,458	4,727,108
2033	20,385,833	7,046,035	3,522,933	1,094,890	5,810,401	342,518	8,981,448	2,565,548	17,682,791	4,728,172
2034	20,241,881	7,002,814	3,487,006	1,076,581	5,751,138	340,101	8,925,385	2,547,441	17,353,422	4,653,031
2035	20,229,189	6,995,155	3,523,553	1,118,508	5,811,440	339,791	8,938,931	2,545,930	18,086,483	4,935,062
Total	977,104,440	405,775,370	218,875,767	53,717,169	360,336,904	18,362,173	475,098,957	135,843,091	941,418,117	255,919,189

TABLE B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	55,537
1963	0	692,054	0	777,256	0	0	0	0	55,823	1,624,120
1964	21,774	1,262,657	9,394	1,596,201	0	0	0	0	84,094	2,781,489
1965	21,903	2,184,191	17,795	2,707,393	0	0	405	405	129,191	4,771,057
1966	38,026	3,906,499	33,480	4,842,614	0	0	565	565	148,545	7,339,174
1967	71,397	7,706,041	68,264	9,513,078	0	0	563	563	204,922	12,712,604
1968	129,106	15,340,767	143,015	18,687,045	0	0	565	565	279,614	24,726,997
1969	199,064	23,187,849	215,531	28,192,410	0	0	3,196	3,196	349,609	35,754,239
1970	290,069	30,663,254	274,014	37,529,933	0	0	15,144	15,144	386,703	45,869,347
1971	409,939	40,018,151	342,929	49,165,802	0	0	16,026	16,026	376,266	58,482,099
1972	537,899	53,017,698	422,865	64,666,119	0	0	17,400	17,400	401,782	76,173,312
1973	588,712	57,346,729	436,221	70,257,591	0	0	17,361	17,361	376,261	80,876,679
1974	612,193	61,853,182	456,154	75,091,583	0	0	17,505	17,505	399,238	86,575,865
1975	645,411	66,834,776	479,000	80,838,599	0	0	18,433	18,433	408,459	93,697,889
1976	669,123	68,564,636	476,191	83,318,960	0	0	17,504	17,504	431,049	97,070,600
1977	697,354	66,316,766	507,694	81,289,246	0	0	18,260	18,260	423,804	95,110,000
1978	709,872	73,000,655	523,820	88,762,774	0	0	17,408	17,408	427,038	104,523,073
1979	713,699	72,748,266	527,059	89,322,206	0	0	20,606	20,606	447,078	106,878,225
1980	778,837	80,018,730	571,918	98,287,594	0	0	17,788	17,788	507,904	116,831,031
1981	806,369	90,951,866	636,859	110,729,222	0	0	21,221	21,221	517,325	131,167,559
1982	857,728	93,492,058	673,618	113,808,256	0	0	28,331	28,331	515,912	135,221,581
1983	955,510	102,074,595	800,798	126,447,864	0	0	16,954	16,954	554,995	151,749,695
1984	1,073,719	138,504,267	869,329	171,139,724	0	0	18,020	18,020	561,981	208,862,312
1985	1,126,883	173,451,938	914,775	211,560,405	0	0	19,977	19,977	682,132	258,614,139
1986	1,152,128	193,678,929	939,375	234,570,744	0	0	19,975	19,975	620,806	285,112,210
1987	1,161,987	178,385,537	900,532	220,154,638	0	0	19,976	19,976	684,868	272,492,744
1988	1,201,341	190,921,709	908,427	232,232,534	0	0	19,983	19,983	709,318	285,624,851
1989	1,192,863	193,418,842	932,620	234,345,949	0	0	20,058	20,058	766,079	287,449,793
1990	1,304,764	234,807,812	1,206,867	282,597,739	0	0	20,076	20,076	821,918	340,218,317
1991	1,371,406	176,826,189	1,138,057	214,140,748	0	0	20,124	20,124	575,257	253,034,025
1992	1,377,876	217,949,737	1,060,607	261,119,682	0	0	20,172	20,172	918,833	314,284,931
1993	1,558,037	264,183,215	1,445,484	316,423,592	0	0	20,313	20,313	1,145,189	378,976,062
1994	1,589,114	341,024,461	1,630,874	404,585,620	0	0	20,459	20,459	1,034,032	477,222,762
1995	1,985,483	371,901,274	1,714,107	443,561,872	0	0	20,612	20,612	937,182	527,333,917
1996	2,596,609	399,130,971	1,807,192	476,191,297	0	0	20,612	20,612	920,226	580,538,949
1997	2,518,228	390,594,498	1,811,991	467,067,900	0	0	20,612	20,612	925,592	574,772,936
1998	2,363,895	388,978,835	3,513,372	468,539,533	0	0	20,612	20,612	925,895	578,579,389
1999	2,414,787	383,624,450	3,449,055	465,221,394	0	0	20,612	20,612	925,865	573,581,162
2000	2,394,673	379,541,701	3,431,725	462,877,663	0	0	20,612	20,612	926,190	570,930,551
2001	2,449,482	380,516,948	3,430,619	464,460,125	0	0	20,612	20,612	927,340	572,615,174
2002	2,456,242	382,408,322	3,447,577	466,694,754	0	0	20,612	20,612	927,590	575,071,422
2003	2,450,178	381,561,402	3,438,849	465,638,531	0	0	20,612	20,612	927,722	573,891,857
2004	2,446,254	380,190,141	3,424,383	463,985,757	0	0	20,612	20,612	927,865	572,036,313
2005	2,717,523	378,496,390	3,406,968	469,572,210	0	0	20,612	20,612	928,167	577,379,543
2006	2,704,730	377,206,646	3,395,669	467,933,864	0	0	20,612	20,612	928,183	575,586,048
2007	2,692,870	375,347,136	3,379,869	465,658,132	0	0	20,612	20,612	928,283	573,086,378
2008	2,688,502	373,371,639	3,359,961	463,278,658	0	0	20,612	20,612	928,394	570,426,919
2009	2,662,140	370,774,169	3,341,287	460,047,525	0	0	20,612	20,612	928,483	566,937,058
2010	3,047,630	377,384,822	3,373,568	473,534,975	0	0	20,612	20,612	928,907	580,845,591
2011	2,879,844	369,540,320	3,333,030	463,352,365	0	0	20,612	20,612	928,817	570,122,921
2012	2,923,342	369,505,570	3,318,653	463,537,416	0	0	20,612	20,612	928,940	570,098,844
2013	2,780,761	344,589,353	3,089,549	432,760,872	0	0	20,612	20,612	885,861	535,435,953
2014	2,842,778	354,494,877	3,174,811	444,973,840	0	0	20,612	20,612	859,038	548,666,971
2015	3,042,876	341,307,288	3,064,068	428,919,968	0	0	20,207	20,207	828,889	530,546,727
2016	3,048,880	337,315,176	3,017,444	424,292,400	0	0	20,047	20,047	811,951	525,173,755
2017	3,069,212	341,639,562	3,059,282	429,618,840	0	0	20,049	20,049	772,403	531,103,445
2018	3,017,761	334,736,049	2,992,210	421,403,171	0	0	20,047	20,047	696,934	522,342,642
2019	2,966,689	328,194,834	2,926,541	413,569,862	0	0	17,416	17,416	632,974	514,218,962
2020	3,116,167	314,626,698	2,829,676	396,920,802	0	0	5,468	5,468	612,464	496,847,768
2021	3,133,231	308,736,519	2,781,590	389,895,678	0	0	4,640	4,640	608,739	489,929,346
2022	3,080,370	302,385,270	2,749,585	382,600,214	0	0	3,252	3,252	608,128	482,684,120
2023	3,051,821	300,162,601	2,745,427	379,939,056	0	0	3,252	3,252	607,453	479,973,137
2024	3,051,784	299,906,542	2,746,879	379,829,002	0	0	3,251	3,251	607,041	480,088,279
2025	3,029,049	296,379,961	2,713,835	375,705,551	0	0	3,248	3,248	605,594	475,516,037
2026	2,988,239	293,621,041	2,695,513	372,239,830	0	0	3,247	3,247	605,115	471,552,851
2027	2,978,523	293,025,250	2,692,785	371,498,527	0	0	3,245	3,245	604,276	470,786,359
2028	2,984,806	292,413,444	2,686,703	370,925,037	0	0	3,243	3,243	603,201	470,186,284
2029	2,962,523	291,760,523	2,679,131	369,955,759	0	0	3,241	3,241	601,729	469,186,215
2030	2,964,523	289,958,344	2,660,189	368,179,534	0	0	3,240	3,240	600,362	467,343,794
2031	2,953,996	287,520,552	2,631,795	365,396,208	0	0	3,239	3,239	597,365	464,509,231
2032	2,955,285	286,718,201	2,620,332	364,582,423	0	0	3,237	3,237	597,710	463,683,958
2033	2,956,700	285,622,424	2,606,666	363,346,359	0	0	3,237	3,237	597,013	462,403,348
2034	2,908,891	282,973,943	2,590,981	359,852,615	0	0	3,236	3,236	593,392	458,645,305
2035	3,002,651	284,257,437	2,589,880	362,374,010	0	0	3,234	3,234	589,192	460,966,627
Total	139,144,031	17,236,755,179	140,286,263	21,358,636,650	0	0	1,049,884	1,049,884	47,772,490	26,387,510,404

TABLE B-20A

Calculation of Delta Water Rates

(Millions of dollars [$] or millions of acre-feet [AF] discounted to 1993 at 4.620 percent per annum)

Procedure	*Capital Cost Component (1)*		*Minimum Operation, Maintenance, Power, and Replacement Component (a (2)*		*Total Delta Water Rate (3)*	
Beginning in 1994						
Total costs of "Initial" Project ConservationFacilities to be reimbursed and project water entitlements during the Project Repayment Period	$2,635.83 (b	166.37 AF	$1,447.58 (c	166.37 AF	$4,083.41	166.37 AF
Less project power revenues to be realized during the Project Repayment Period	-966.87		-328.61		-1,295.48	
Less Delta Water Charges paid and project water entitlements prior to 1994	-791.56 (d	-89.14 AF	-457.80	-89.14 AF	-1,249.36	-89.14 AF
Total	**877.40**	**77.23 AF**	**661.17**	**77.23 AF**	**1,538.57**	**77.23 AF**
Rate Applicable in 1994	$11.36 per acre-foot		$8.56 per acre-foot		$19.92 per acre-foot	

a) Considering that all operating costs of Project Conservation Facilities will not vary with annual amounts of project water delivered, and therefore are properly classified as "Minimum" OMP&R Costs.
b) Including net credits of $4,850,000 for settlements as to the magnitude of project capital costs incurred prior to December 31, 1960, and net credits of $6,678,320 for settlement as to the magnitude of project capital costs incurred from 1961 through 1978.
c) Including conservation power costs and credits at San Luis.
d) Applying all Delta Water Charges paid prior to 1970 to reimburse capital costs (the charge was not divided into components until 1970).

C—060223

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TABLE B-20B

Delta Water Rates by Facility

(Dollars per acre-foot)

Item	*Capital Cost Component (1)*	*Minimum Operation, Maintenance, Power, and Replacement Component (2)*	*Total Delta Water Rate (3)*
Initial Conservation Facilities			
Oroville Division			
Water supply and power costs (a	20.62	10.02	30.64
Less Oroville power revenues	-12.52	-4.25	-16.77
Subtotal	8.10	5.77	13.87
Delta facilities (b	6.01	3.46	9.47
California Aqueduct, portion			
Reach 1	1.32	1.83	3.15
Reach 2A	0.79	0.34	1.13
Reach 2B	0.40	0.13	0.53
Reach 3	0.28	0.11	0.39
Subtotal	2.79	2.41	5.20
San Luis facilities	3.97	2.85	6.82
Planning and preoperating costs through 1992	1.30	0.00	1.30
Less capital cost credits	-0.56	0.00	-0.56
Less Delta Water Charges paid prior to 1994	-10.25	-5.93	-16.18
Rate applicable in 1994	**11.36**	**8.56**	**19.92**

a) Includes revenue received from non-contractors.
b) Includes (1) Delta facility planning costs, (2) Delta studies costs, and (3) Suisun Marsh facilities costs.

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TABLE B-21

Total Delta Water Charge for Each Contractor

(Dollars)

	North Bay Area			South Bay Area				Central Coastal Area		
Calendar Year	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	14,000	50,050	177,100	241,150	0	0	0
1968	0	0	0	19,156	29,701	193,245	242,102	0	0	0
1969	0	0	0	30,324	44,096	215,483	289,903	0	0	0
1970	0	0	0	80,908	107,730	585,200	773,838	0	0	0
1971	0	0	0	57,320	123,080	637,120	817,520	0	0	0
1972	0	0	0	99,668	143,877	707,328	950,873	0	0	0
1973	0	0	0	120,880	167,099	782,167	1,070,146	0	0	0
1974	0	0	0	137,684	182,339	818,664	1,138,687	0	0	0
1975	0	0	0	146,204	187,324	804,123	1,137,651	0	0	0
1976	0	0	0	168,489	208,652	862,036	1,239,177	0	0	0
1977	0	0	0	172,931	208,645	827,062	1,208,638	0	0	0
1978	0	0	0	206,378	243,231	926,594	1,376,203	0	0	0
1979	0	0	0	237,771	273,208	1,005,955	1,516,934	0	0	0
1980	0	18,325	18,325	272,717	307,426	1,090,867	1,671,010	12,396	3,479	15,875
1981	0	25,440	25,440	415,564	469,768	1,589,984	2,475,316	18,068	10,414	28,482
1982	0	34,917	34,917	457,988	519,053	1,679,289	2,656,330	38,166	99,788	137,954
1983	0	12,035	12,035	316,703	359,775	1,114,795	1,791,273	38,004	68,902	106,906
1984	0	22,453	22,453	334,587	380,914	1,132,448	1,847,949	57,909	105,498	163,407
1985	0	22,001	22,001	381,970	435,728	1,244,939	2,062,637	106,103	192,937	299,040
1986	35,358	21,767	57,125	423,378	485,372	1,330,615	2,239,365	151,206	275,347	426,553
1987	0	22,984	22,984	430,024	493,786	1,304,900	2,228,710	185,355	336,664	522,019
1988	88,878	150,466	239,344	464,114	533,731	1,361,400	2,359,245	239,792	436,607	676,399
1989	102,688	305,328	408,016	513,853	591,760	1,491,833	2,597,446	331,518	602,402	933,920
1990	112,723	355,132	467,855	534,787	616,676	1,537,512	2,688,975	417,802	760,166	1,177,968
1991	129,296	395,515	524,811	603,028	681,067	1,667,194	2,951,289	443,403	806,745	1,250,148
1992	158,879	489,808	648,687	729,545	808,579	1,945,453	3,483,577	506,628	921,780	1,428,408
1993	172,457	530,778	703,235	771,894	840,958	1,990,673	3,603,525	507,825	923,957	1,431,782
1994	181,978	559,380	741,358	796,838	836,680	1,992,094	3,625,612	498,024	906,124	1,404,148
1995	194,827	682,292	877,119	836,680	836,680	1,992,094	3,665,454	498,024	906,124	1,404,148
1996	207,676	753,012	960,688	876,521	836,680	1,992,094	3,705,295	498,024	906,124	1,404,148
1997	220,425	761,976	982,401	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
1998	233,274	771,140	1,004,414	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
1999	245,625	780,303	1,025,928	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2000	259,968	789,268	1,049,236	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2001	272,220	798,431	1,070,651	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2002	282,579	807,595	1,090,174	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2003	294,830	816,759	1,111,589	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2004	306,782	825,723	1,132,505	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2005	318,735	826,719	1,145,454	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2006	327,699	827,715	1,155,414	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2007	338,656	828,711	1,167,367	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2008	351,605	829,707	1,181,312	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2009	362,561	830,703	1,193,264	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2010	373,518	831,699	1,205,217	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2011	386,466	832,695	1,219,161	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2012	397,423	833,691	1,231,114	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2013	410,371	834,687	1,245,058	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2014	423,320	835,683	1,259,003	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2015	436,269	836,680	1,272,949	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2016	448,221	836,680	1,284,901	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2017	460,174	836,680	1,296,854	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2018	472,126	836,680	1,308,806	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2019	484,079	836,680	1,320,759	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2020	496,031	836,680	1,332,711	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2021	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2022	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2023	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2024	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2025	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2026	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2027	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2028	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2029	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2030	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2031	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2032	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2033	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2034	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
2035	498,024	836,680	1,334,704	916,363	836,680	1,992,094	3,745,137	498,024	906,124	1,404,148
Total	17,458,077	36,635,118	54,093,195	46,390,061	44,634,185	112,691,927	203,716,173	23,971,183	43,601,894	67,573,077

TABLE B-21

Total Delta Water Charge for Each Contractor

(Dollars)

	San Joaquin Valley Area								
				Kern County Water Agency					
Calendar Year	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	40,695	10,469	0	0	165,522	3,177	8,073	98,608	326,544
1969	61,267	3,281	0	0	337,686	4,200	8,805	102,478	517,717
1970	104,405	19,950	0	0	964,915	8,645	17,290	228,095	1,343,300
1971	129,596	21,720	0	0	1,377,772	9,412	20,272	264,260	1,823,032
1972	160,756	24,113	0	0	2,175,835	11,253	43,131	905,057	3,320,145
1973	195,541	26,664	0	386,638	2,373,167	13,333	27,553	373,307	3,396,203
1974	224,202	27,909	0	446,545	2,781,595	13,954	29,770	445,138	3,969,113
1975	329,688	27,413	0	481,560	3,041,048	14,620	33,702	827,591	4,755,622
1976	414,245	29,388	0	549,549	3,931,785	15,673	35,966	877,151	5,853,757
1977	312,532	28,195	0	569,545	4,071,218	15,977	40,289	626,210	5,663,966
1978	342,208	31,588	0	674,939	4,950,959	20,006	41,065	666,516	6,727,281
1979	395,523	34,294	0	772,757	5,901,986	22,863	45,725	771,613	7,944,761
1980	555,341	37,679	0	881,371	6,984,026	27,272	70,658	933,481	9,489,828
1981	740,789	54,204	0	1,351,487	11,140,730	41,556	77,692	1,373,168	14,779,626
1982	782,396	57,248	0	1,518,993	12,703,436	47,707	85,873	1,530,443	16,726,096
1983	543,462	38,004	0	1,057,789	9,141,315	35,471	58,273	78,506	10,952,820
1984	580,379	13,572	0	1,333,200	9,741,623	39,893	61,770	756,132	12,526,569
1985	667,740	42,441	0	1,540,611	11,403,920	48,100	69,320	644,383	14,416,515
1986	745,447	45,362	0	2,213,919	12,425,873	55,946	77,115	1,469,725	17,033,387
1987	762,180	44,485	0	1,766,065	13,410,817	59,314	77,108	1,503,601	17,623,570
1988	827,669	46,411	0	1,916,790	14,707,763	61,882	83,540	1,633,680	19,277,735
1989	921,621	49,728	0	2,125,033	16,312,361	66,304	92,825	1,821,693	21,389,565
1990	964,288	50,136	0	1,998,766	17,276,959	66,848	95,259	1,980,383	22,432,639
1991	1,023,374	53,208	0	2,121,239	18,335,590	70,944	101,096	2,101,729	23,807,180
1992	1,169,299	60,795	0	2,727,688	20,646,125	81,061	115,511	2,401,419	27,201,898
1993	1,172,060	60,939	0	2,429,434	20,999,569	81,252	115,784	2,407,089	27,266,127
1994	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
1995	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
1996	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
1997	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
1998	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
1999	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2000	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2001	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2002	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2003	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2004	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2005	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2006	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2007	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2008	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2009	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2010	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2011	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2012	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2013	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2014	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2015	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2016	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2017	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2018	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2019	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2020	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2021	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2022	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2023	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2024	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2025	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2026	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2027	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2028	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2029	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2030	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2031	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2032	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2033	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2034	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
2035	1,149,438	59,763	0	2,382,545	20,594,269	79,684	113,549	2,360,632	26,739,880
Total	62,443,099	3,449,242	0	128,930,808	1,092,262,893	4,283,391	6,302,523	125,968,000	1,423,639,956

TABLE B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	*Castaic Lake Water Agency (21)*	*Coachella Valley Water District (22)*	*Crestline-Lake Arrowhead Water Agency (23)*	*Desert Water Agency (24)*	*Littlerock Creek Irrigation District (25)*	*Mojave Water Agency (26)*	*Palmdale Water District (27)*	*San Bernardino Valley Municipal Water District (28)*	*San Gabriel Valley Municipal Water District (29)*
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	13,060	0	0	0	0	0	0	0	0
1969	0	17,804	0	0	0	0	0	0	0	0
1970	0	37,905	0	0	0	0	0	0	0	0
1971	0	48,508	0	0	0	0	0	0	0	0
1972	160,756	74,751	41,797	4,662	64,303	1,367	67,518	13,021	369,739	85,202
1973	222,207	107,163	51,552	7,279	79,994	2,577	95,104	26,131	54,908	14,338
1974	279,090	143,266	59,539	10,791	93,030	3,721	121,869	39,631	465,150	114,427
1975	319,822	166,307	63,964	13,250	100,515	4,752	140,722	50,989	479,733	119,705
1976	431,018	207,673	74,449	17,045	117,550	6,269	174,366	67,591	538,772	137,142
1977	469,922	226,502	79,144	19,079	122,180	6,861	189,848	77,255	540,410	139,097
1978	600,180	274,819	97,313	24,428	147,413	9,687	236,913	98,345	631,768	165,313
1979	720,173	320,077	115,033	29,836	171,470	11,889	284,640	117,285	714,457	189,760
1980	857,818	376,845	134,920	35,949	210,736	14,256	337,177	138,590	811,952	215,694
1981	1,355,100	592,631	218,713	57,637	343,292	22,946	534,813	211,396	1,237,658	330,644
1982	1,551,434	664,082	254,298	66,408	400,739	26,335	313,057	235,100	1,341,923	364,482
1983	1,110,994	472,521	184,283	47,759	291,367	19,002	434,517	163,925	943,775	252,096
1984	450,405	509,602	202,914	52,247	321,718	20,719	472,282	174,500	1,003,760	266,383
1985	565,881	591,346	240,344	61,540	381,970	24,474	551,734	200,605	1,152,983	308,405
1986	635,066	659,259	275,347	70,160	438,498	27,822	625,994	223,785	1,285,253	350,799
1987	652,450	676,176	288,131	73,104	467,095	29,064	648,002	228,654	1,319,729	364,779
1988	711,641	742,582	319,496	80,756	525,996	32,024	711,641	248,146	1,438,752	402,232
1989	2,083,593	830,453	362,565	91,333	605,021	36,301	803,932	276,155	1,607,864	454,180
1990	2,207,667	869,029	386,049	96,930	636,731	38,438	848,974	289,119	1,696,277	481,308
1991	2,454,678	961,298	409,704	102,869	675,746	40,793	900,994	306,835	1,819,725	510,800
1992	2,804,695	1,098,371	468,125	117,538	772,102	46,610	1,029,469	350,587	2,079,203	583,636
1993	2,811,318	1,100,964	469,230	117,815	773,925	46,720	1,031,900	351,415	2,084,113	585,014
1994	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
1995	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
1996	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
1997	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
1998	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
1999	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2000	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2001	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2002	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2003	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2004	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2005	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2006	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2007	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2008	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2009	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2010	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2011	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2012	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2013	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2014	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2015	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2016	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2017	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2018	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2019	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2020	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2021	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2022	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2023	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2024	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2025	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2026	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2027	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2028	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2029	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2030	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2031	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2032	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2033	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2034	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
2035	2,757,058	1,079,715	460,174	115,541	758,988	45,818	1,011,984	344,632	2,043,889	573,723
Total	139,252,344	57,131,024	24,124,218	6,051,137	39,618,887	2,396,983	53,058,794	18,363,604	109,461,242	30,531,802

TABLE B-21

Total Delta Water Charge for Each Contractor

(Dollars)

	Southern California Area (continued)				Feather River Area					
Calendar Year	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)	South Bay Area Future Contractor (38)	Grand Total (39)
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	241,150
1968	0	0	0	13,060	0	1,050	875	1,925	0	583,631
1969	0	0	0	17,804	0	1,225	929	2,154	0	827,578
1970	0	0	0	37,905	0	3,848	1,995	5,843	0	2,160,886
1971	0	0	0	48,508	0	4,546	3,186	7,732	0	2,696,792
1972	0	2,043,211	0	2,926,327	0	4,929	3,778	8,707	0	7,206,052
1973	0	2,317,893	0	2,979,146	0	7,059	4,444	11,503	0	7,456,998
1974	0	4,231,933	0	5,562,447	0	8,336	4,931	13,267	0	10,683,514
1975	0	5,073,286	0	6,533,045	0	9,416	5,117	14,533	0	12,440,851
1976	0	6,422,167	0	8,194,042	0	7,004	5,780	12,784	0	15,299,760
1977	0	7,104,278	0	8,974,576	0	16,917	5,827	22,744	0	15,869,924
1978	0	9,016,389	0	11,302,568	0	12,635	6,844	19,479	0	19,425,531
1979	0	10,935,192	0	13,609,812	0	16,575	7,773	24,348	0	23,095,855
1980	84,294	13,102,796	12,396	16,333,423	0	19,834	8,801	28,635	0	27,557,096
1981	140,930	20,910,099	36,136	25,991,995	0	21,682	13,370	35,052	0	43,335,911
1982	167,929	23,998,560	57,248	29,441,595	0	16,117	14,694	30,811	0	49,027,703
1983	124,148	17,203,307	50,672	21,298,366	0	15,202	10,134	25,336	0	34,186,736
1984	138,982	18,766,458	64,344	22,444,314	20,590	15,442	10,681	46,713	0	37,051,405
1985	166,935	22,050,974	84,882	26,382,073	24,050	16,976	12,166	53,192	0	43,235,458
1986	195,056	25,089,658	120,965	29,997,662	31,753	18,145	13,457	63,355	0	49,817,447
1987	207,598	26,095,043	148,284	31,198,109	37,071	17,794	13,642	68,507	0	51,663,899
1988	233,604	28,781,238	201,116	34,429,224	46,722	18,565	14,852	80,139	0	57,062,086
1989	268,530	32,505,376	265,215	40,190,518	61,184	19,891	16,576	97,651	0	65,617,116
1990	289,119	33,616,369	334,242	41,790,252	63,506	20,055	17,381	100,942	0	68,658,631
1991	306,835	35,676,185	354,722	44,521,184	170,267	21,283	19,155	210,705	0	73,265,317
1992	350,587	40,763,329	405,303	50,869,555	194,545	24,318	22,697	241,560	0	83,873,685
1993	351,415	40,859,579	406,260	50,989,668	195,005	24,376	23,563	242,944	0	84,237,281
1994	344,632	40,070,973	398,419	50,005,546	191,241	23,905	23,905	239,051	0	82,755,595
1995	344,632	40,070,973	398,419	50,005,546	191,241	23,905	24,901	240,047	0	82,932,194
1996	344,632	40,070,973	398,419	50,005,546	191,241	23,905	25,897	241,043	0	83,056,600
1997	344,632	40,070,973	398,419	50,005,546	191,241	23,905	26,893	242,039	0	83,119,151
1998	344,632	40,070,973	398,419	50,005,546	191,241	23,905	27,889	243,035	0	83,142,160
1999	344,632	40,070,973	398,419	50,005,546	191,241	23,905	28,885	244,031	0	83,164,670
2000	344,632	40,070,973	398,419	50,005,546	191,241	23,905	30,081	245,227	0	83,189,174
2001	344,632	40,070,973	398,419	50,005,546	191,241	547,826	31,276	770,343	0	83,735,705
2002	344,632	40,070,973	398,419	50,005,546	191,241	547,826	32,471	771,538	0	83,756,423
2003	344,632	40,070,973	398,419	50,005,546	191,241	547,826	33,666	772,733	0	83,779,033
2004	344,632	40,070,973	398,419	50,005,546	191,241	547,826	34,862	773,929	0	83,801,145
2005	344,632	40,070,973	398,419	50,005,546	191,241	547,826	36,057	775,124	0	83,815,289
2006	344,632	40,070,973	398,419	50,005,546	191,241	547,826	37,451	776,518	0	83,826,643
2007	344,632	40,070,973	398,419	50,005,546	191,241	547,826	38,846	777,913	0	83,839,991
2008	344,632	40,070,973	398,419	50,005,546	191,241	547,826	40,240	779,307	0	83,855,330
2009	344,632	40,070,973	398,419	50,005,546	191,241	547,826	41,635	780,702	0	83,868,677
2010	344,632	40,070,973	398,419	50,005,546	191,241	547,826	43,029	782,096	0	83,882,024
2011	344,632	40,070,973	398,419	50,005,546	191,241	547,826	44,623	783,690	0	83,897,562
2012	344,632	40,070,973	398,419	50,005,546	191,241	547,826	46,217	785,284	0	83,911,109
2013	344,632	40,070,973	398,419	50,005,546	191,241	547,826	48,009	787,076	0	83,926,845
2014	344,632	40,070,973	398,419	50,005,546	191,241	547,826	49,802	788,869	0	83,942,583
2015	344,632	40,070,973	398,419	50,005,546	191,241	547,826	51,794	790,861	0	83,958,521
2016	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	83,972,466
2017	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	83,984,419
2018	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	83,996,371
2019	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,008,324
2020	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,020,276
2021	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2022	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2023	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2024	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2025	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2026	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2027	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2028	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2029	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2030	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2031	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2032	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2033	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2034	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
2035	344,632	40,070,973	398,419	50,005,546	191,241	547,826	53,787	792,854	0	84,022,269
Total	17,500,506	2,109,544,186	19,275,383	2,626,310,110	8,876,815	19,704,465	2,136,817	30,718,097	0	4,406,050,608

TABLE B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

	North Bay Area			South Bay Area				Central Coastal Area		
Calendar Year	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	36,888	51,291	88,179	32,209	38,210	126,672	197,091	16,621	30,887	47,508
1989	73,556	104,930	178,486	65,325	77,891	256,675	399,891	40,433	74,806	115,239
1990	64,850	95,278	160,128	60,501	80,631	235,408	376,540	44,036	81,591	125,627
1991	98,609	143,740	242,349	97,180	127,546	366,679	591,405	69,827	130,219	200,046
1992	131,376	196,667	328,043	139,051	179,500	507,345	825,896	95,255	177,501	272,756
1993	146,878	223,975	370,853	160,367	203,936	566,085	930,388	110,339	206,360	316,699
1994	144,871	222,900	367,771	161,027	199,216	556,244	916,487	128,512	251,207	379,719
1995	142,517	238,476	380,993	162,732	193,163	539,142	895,037	226,794	480,887	707,681
1996	147,293	257,748	405,041	173,386	197,649	551,554	922,589	319,362	765,686	1,085,048
1997	143,188	249,141	392,329	167,775	189,801	529,563	887,139	311,721	749,581	1,061,302
1998	143,822	248,801	392,623	167,729	188,270	525,201	881,200	314,376	758,202	1,072,578
1999	145,343	249,964	395,307	168,700	187,846	523,924	880,470	319,003	771,629	1,090,632
2000	142,899	244,302	387,201	165,066	182,291	508,336	855,693	314,928	764,012	1,078,940
2001	144,174	244,999	389,173	165,728	181,480	505,975	853,183	319,051	776,285	1,095,336
2002	145,703	243,982	389,685	164,420	180,035	501,893	846,348	316,835	770,955	1,087,790
2003	148,533	245,208	393,741	164,635	180,257	502,461	847,353	317,549	772,751	1,090,300
2004	158,579	258,211	416,790	172,734	189,110	527,085	888,929	333,479	811,581	1,145,060
2005	161,284	259,133	420,417	172,728	189,090	526,976	888,794	333,775	812,362	1,146,137
2006	164,203	260,434	424,637	172,981	189,354	527,657	889,992	334,567	814,352	1,148,919
2007	167,159	261,818	428,977	173,294	189,683	528,522	891,499	335,473	816,617	1,152,090
2008	169,912	262,911	432,823	173,418	189,806	528,813	892,037	336,012	817,989	1,154,001
2009	172,681	264,058	436,739	173,584	189,974	529,231	892,789	336,629	819,550	1,156,179
2010	175,533	265,355	440,888	173,854	190,257	529,967	894,078	337,444	821,594	1,159,038
2011	177,383	266,122	443,505	173,903	190,253	529,714	893,870	338,157	823,402	1,161,559
2012	175,774	265,720	441,494	174,093	190,518	530,695	895,306	337,908	822,723	1,160,631
2013	181,385	267,845	449,230	174,067	190,311	529,356	893,734	339,790	827,532	1,167,322
2014	183,640	268,940	452,580	174,269	190,467	529,514	894,250	340,886	830,282	1,171,168
2015	185,849	269,869	455,718	174,340	190,476	529,252	894,068	341,756	832,487	1,174,243
2016	188,268	270,996	459,264	174,514	190,595	529,281	894,390	342,862	835,271	1,178,133
2017	190,822	272,202	463,024	174,712	190,738	529,359	894,809	344,054	838,267	1,182,321
2018	193,244	273,103	466,347	174,687	190,633	528,736	894,056	344,844	840,290	1,185,134
2019	196,121	274,521	470,642	174,962	190,851	528,992	894,805	346,268	843,862	1,190,130
2020	198,884	275,644	474,528	175,017	190,825	528,555	894,397	347,304	846,491	1,193,795
2021	202,097	277,248	479,345	175,342	191,089	528,900	895,331	348,923	850,551	1,199,474
2022	205,531	278,995	484,526	175,719	191,405	529,367	896,491	350,702	855,003	1,205,705
2023	254,795	342,111	596,906	214,538	233,566	645,451	1,093,555	429,500	1,047,263	1,476,763
2024	151,562	201,216	352,778	125,609	136,674	377,369	639,652	252,283	615,242	867,525
2025	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
Total	5,855,206	8,897,854	14,753,060	5,864,196	6,573,397	18,375,949	30,813,542	10,417,258	24,985,270	35,402,528

TABLE B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

	San Joaquin Valley Area								
				Kern County Water Agency					
Calendar Year	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0
1988	43,035	2,098	0	84,892	916,572	2,822	3,611	84,520	1,137,550
1989	89,334	4,199	0	175,229	1,879,267	5,626	7,427	175,939	2,337,021
1990	84,041	3,809	0	453,379	1,492,333	5,118	6,878	171,890	2,217,448
1991	127,952	5,805	0	559,058	2,434,518	7,833	10,533	261,682	3,407,381
1992	175,382	7,989	0	705,314	3,355,135	10,792	14,466	358,689	4,627,767
1993	194,969	8,893	0	443,880	4,059,486	12,026	16,121	398,854	5,134,229
1994	186,666	8,490	0	386,183	3,923,555	11,523	15,414	381,861	4,913,692
1995	181,088	8,239	0	378,780	3,988,987	11,187	14,662	370,463	4,953,406
1996	185,331	8,430	0	387,035	3,921,672	11,454	15,312	379,148	4,908,382
1997	178,030	8,097	0	440,789	3,698,422	11,004	14,711	364,220	4,715,273
1998	176,655	8,033	0	508,119	3,599,353	10,921	14,599	361,413	4,679,093
1999	176,319	8,017	0	580,133	3,519,780	10,902	14,573	360,734	4,670,458
2000	171,167	7,782	0	636,459	3,343,908	10,585	14,150	350,201	4,534,252
2001	170,469	7,749	0	709,387	3,255,014	10,543	14,094	348,782	4,516,038
2002	169,155	7,690	0	697,727	3,235,610	10,462	13,986	346,097	4,480,727
2003	169,407	7,702	0	692,637	3,246,059	10,478	14,008	346,615	4,486,906
2004	177,772	8,083	0	720,480	3,412,189	10,997	14,701	363,734	4,707,956
2005	177,797	8,085	0	714,296	3,418,457	10,999	14,704	363,790	4,708,128
2006	178,088	8,099	0	709,239	3,429,778	11,017	14,729	364,389	4,715,339
2007	178,441	8,115	0	704,475	3,442,243	11,040	14,759	365,114	4,724,187
2008	178,600	8,123	0	698,995	3,450,913	11,050	14,774	365,442	4,727,897
2009	178,801	8,133	0	693,737	3,460,355	11,063	14,791	365,857	4,732,737
2010	179,109	8,148	0	688,942	3,471,817	11,083	14,818	366,490	4,740,407
2011	179,387	8,161	0	699,230	3,468,159	11,095	14,841	367,061	4,747,934
2012	179,355	8,159	0	689,889	3,476,588	11,098	14,838	366,994	4,746,921
2013	180,040	8,192	0	721,375	3,461,552	11,123	14,895	368,402	4,765,579
2014	180,508	8,214	0	733,667	3,460,311	11,146	14,934	369,360	4,778,140
2015	180,851	8,230	0	745,929	3,456,219	11,161	14,963	370,064	4,787,417
2016	181,313	8,252	0	759,189	3,453,912	11,183	15,001	371,012	4,799,862
2017	181,815	8,275	0	773,163	3,451,812	11,207	15,043	372,040	4,813,355
2018	182,098	8,289	0	786,780	3,445,007	11,217	15,067	372,622	4,821,080
2019	182,710	8,317	0	802,434	3,443,797	11,247	15,118	373,876	4,837,499
2020	183,109	8,336	0	817,825	3,437,928	11,263	15,151	374,694	4,848,306
2021	183,808	8,369	0	835,281	3,436,984	11,298	15,209	376,128	4,867,077
2022	184,582	8,405	0	853,884	3,436,650	11,337	15,274	377,714	4,887,846
2023	225,847	10,285	0	1,064,142	4,185,925	13,860	18,688	462,158	5,980,905
2024	132,531	6,036	0	636,396	2,444,658	8,126	10,967	271,205	3,509,919
2025	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
Total	6,265,562	285,328	0	23,688,349	122,014,925	386,886	517,810	12,809,254	165,968,114

TABLE B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	*Castaic Lake Water Agency (21)*	*Coachella Valley Water District (22)*	*Crestline-Lake Arrowhead Water Agency (23)*	*Desert Water Agency (24)*	*Littlerock Creek Irrigation District (25)*	*Mojave Water Agency (26)*	*Palmdale Water District (27)*	*San Bernardino Valley Municipal Water District (28)*	*San Gabriel Valley Municipal Water District (29)*
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	81,377	72,318	34,229	9,695	56,339	2,728	70,906	20,564	191,436	50,534
1989	309,973	148,786	70,827	19,989	117,714	5,671	146,402	42,172	391,651	104,150
1990	291,440	138,318	66,869	18,753	110,224	5,331	137,561	39,311	364,910	97,431
1991	461,792	218,364	102,588	28,854	169,102	8,145	210,978	60,111	565,173	149,606
1992	626,359	365,239	139,225	39,251	229,495	10,989	286,389	81,269	765,839	203,126
1993	692,210	402,542	153,117	43,280	252,397	12,116	315,027	89,680	842,926	223,689
1994	669,267	390,210	149,159	42,403	245,873	11,729	306,506	86,760	829,268	220,060
1995	649,165	378,962	144,679	41,211	238,488	11,375	297,239	84,148	806,071	213,930
1996	664,352	387,773	148,054	42,188	244,046	11,642	304,159	86,116	827,901	219,740
1997	638,157	372,505	142,216	40,525	234,423	11,182	292,167	82,719	796,125	211,311
1998	633,202	369,635	141,111	40,211	232,602	11,095	289,899	82,075	790,832	209,911
1999	631,973	368,941	140,836	40,134	232,149	11,073	289,337	81,914	790,214	209,752
2000	613,481	358,168	136,715	38,961	225,356	10,748	280,872	79,516	768,014	203,864
2001	610,954	356,717	136,151	38,801	224,427	10,703	279,716	79,187	765,800	203,281
2002	606,173	353,918	135,080	38,495	222,662	10,619	277,519	78,566	759,770	201,682
2003	607,005	354,397	135,260	38,546	222,959	10,634	277,892	78,673	760,775	201,951
2004	636,905	371,847	141,918	40,443	233,932	11,157	291,572	82,547	798,211	211,891
2005	636,924	371,850	141,916	40,442	233,930	11,158	291,573	82,548	798,197	211,889
2006	637,896	372,411	142,128	40,502	234,279	11,175	292,010	82,672	799,377	212,204
2007	639,089	373,100	142,388	40,576	234,708	11,196	292,548	82,826	800,835	212,593
2008	639,587	373,383	142,494	40,606	234,882	11,204	292,768	82,889	801,421	212,750
2009	640,238	373,756	142,634	40,645	235,112	11,216	293,058	82,972	802,200	212,959
2010	641,272	374,353	142,859	40,709	235,483	11,234	293,524	83,105	803,459	213,295
2011	641,403	374,404	142,853	40,704	235,474	11,235	293,531	83,116	803,321	213,270
2012	642,153	374,867	143,055	40,765	235,807	11,249	293,927	83,219	804,563	213,588
2013	641,902	374,641	142,890	40,708	235,536	11,240	293,646	83,170	803,301	213,290
2014	642,591	375,014	143,005	40,737	235,724	11,251	293,901	83,253	803,821	213,441
2015	642,794	375,102	143,008	40,734	235,730	11,253	293,930	83,273	803,715	213,427
2016	643,373	375,408	143,094	40,754	235,872	11,261	294,129	83,341	804,064	213,535
2017	644,040	375,764	143,197	40,779	236,042	11,271	294,365	83,421	804,504	213,667
2018	643,880	375,636	143,114	40,751	235,906	11,267	294,219	83,393	803,892	213,521
2019	644,821	376,149	143,274	40,792	236,169	11,281	294,573	83,507	804,635	213,735
2020	644,950	376,186	143,251	40,780	236,130	11,282	294,553	83,516	804,342	213,675
2021	646,069	376,798	143,444	40,830	236,449	11,299	294,979	83,652	805,259	213,937
2022	647,375	377,518	143,676	40,891	236,832	11,320	295,487	83,812	806,383	214,256
2023	790,284	460,801	175,319	49,890	288,991	13,816	360,603	102,303	983,744	261,406
2024	462,634	269,720	102,586	29,188	169,100	8,086	211,027	59,881	575,485	152,937
2025	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
Total	22,237,060	12,885,501	4,968,219	1,413,523	8,190,344	391,231	10,212,492	2,895,197	27,831,434	7,389,284

TABLE B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

	Southern California Area (continued)				Feather River Area					
Calendar Year	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)	South Bay Area Future Contractor (38)	Grand Total (39)
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	30,414	3,345,930	22,943	3,989,413	1,691	699	1,081	3,471	0	5,463,212
1989	63,360	6,914,298	52,095	8,387,088	3,808	1,385	2,190	7,383	0	11,425,108
1990	59,899	6,360,905	55,124	7,746,076	3,993	1,260	2,023	7,276	0	10,633,095
1991	91,972	9,738,012	84,183	11,888,880	15,470	1,934	3,153	20,557	0	16,350,618
1992	124,847	13,142,613	113,570	16,128,211	21,299	2,662	4,370	28,331	0	22,211,004
1993	137,459	14,476,079	125,219	17,765,741	23,801	2,976	4,930	31,707	0	24,549,617
1994	135,264	14,089,765	121,210	17,297,474	22,743	2,843	4,846	30,432	0	23,905,575
1995	131,495	13,687,713	117,747	16,802,223	22,077	2,760	4,822	29,659	0	23,768,999
1996	135,076	14,021,831	120,486	17,213,364	22,813	2,825	5,060	30,698	0	24,565,122
1997	129,897	13,473,121	115,732	16,540,080	21,921	2,758	4,987	29,666	0	23,625,789
1998	129,040	13,372,771	114,830	16,417,214	21,759	2,782	5,078	29,619	0	23,472,327
1999	128,945	13,351,212	114,603	16,391,083	21,725	2,823	5,202	29,750	0	23,457,700
2000	125,329	12,964,975	111,246	15,917,245	21,097	2,788	5,185	29,070	0	22,802,401
2001	124,974	12,916,127	110,784	15,857,622	21,019	59,606	5,302	85,927	0	22,797,279
2002	123,991	12,814,331	109,912	15,732,718	21,660	59,156	5,487	86,303	0	22,623,571
2003	124,156	12,831,201	110,058	15,753,507	22,487	59,254	5,718	87,459	0	22,659,266
2004	130,266	13,462,505	115,474	16,528,668	24,422	62,190	6,233	92,845	0	23,780,248
2005	130,265	13,462,174	115,472	16,528,338	25,240	62,209	6,463	93,912	0	23,785,726
2006	130,459	13,481,987	115,643	16,552,743	26,089	62,320	6,700	95,109	0	23,826,739
2007	130,698	13,506,479	115,855	16,582,891	26,941	62,454	6,938	96,333	0	23,875,977
2008	130,794	13,516,287	115,940	16,595,005	27,757	62,519	7,167	97,443	0	23,899,206
2009	130,922	13,529,336	116,053	16,611,101	28,572	62,599	7,395	98,566	0	23,928,111
2010	131,129	13,550,474	116,235	16,637,131	29,398	62,716	7,627	99,741	0	23,971,283
2011	131,111	13,548,923	116,235	16,635,580	29,685	62,813	7,693	100,191	0	23,982,639
2012	131,309	13,569,097	116,395	16,659,994	29,438	62,802	7,637	99,877	0	24,004,223
2013	131,118	13,550,238	116,273	16,637,953	30,308	63,043	7,836	101,187	0	24,015,005
2014	131,209	13,559,878	116,371	16,650,196	30,661	63,207	7,918	101,786	0	24,048,120
2015	131,197	13,559,014	116,379	16,649,556	31,004	63,327	7,997	102,328	0	24,063,330
2016	131,260	13,565,859	116,453	16,658,403	31,382	63,490	8,085	102,957	0	24,093,009
2017	131,338	13,574,288	116,542	16,669,218	31,780	63,666	8,177	103,623	0	24,126,350
2018	131,245	13,565,020	116,480	16,658,324	32,156	63,765	8,263	104,184	0	24,129,125
2019	131,373	13,578,663	116,616	16,675,588	32,606	63,980	8,368	104,954	0	24,173,618
2020	131,333	13,574,881	116,603	16,671,482	33,035	64,120	8,466	105,621	0	24,188,129
2021	131,490	13,591,581	116,767	16,692,554	33,538	64,365	8,583	106,486	0	24,240,267
2022	131,682	13,611,847	116,962	16,718,041	34,075	64,636	8,708	107,419	0	24,300,028
2023	160,655	16,607,400	142,730	20,397,942	42,201	79,087	10,769	132,057	0	29,678,128
2024	93,989	9,716,266	83,522	11,934,421	25,078	46,410	6,390	77,878	0	17,382,173
2025	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
Total	4,540,960	471,183,081	4,034,742	578,173,068	924,729	1,534,229	232,847	2,691,805	0	827,802,117

TABLE B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

	North Bay Area			South Bay Area				Central Coastal Area		
Calendar Year	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	11,750	43,787	0	55,537	0	0	0
1963	0	0	0	151,140	190,453	449,448	791,041	0	0	0
1964	0	0	0	170,797	277,738	623,343	1,071,878	8,922	17,665	26,587
1965	0	0	0	245,718	404,749	1,160,661	1,811,128	14,706	28,502	43,208
1966	18,096	0	18,096	271,833	422,196	1,415,802	2,109,831	24,019	45,891	69,910
1967	41,644	0	41,644	361,120	552,175	1,863,623	2,776,918	42,370	79,917	122,287
1968	128,824	0	128,824	411,342	633,770	2,181,689	3,226,801	68,510	128,322	196,832
1969	254,981	0	254,981	477,464	584,079	2,302,120	3,363,663	123,594	230,076	353,670
1970	277,819	0	277,819	541,779	640,965	2,791,410	3,974,154	136,687	254,318	391,005
1971	227,749	0	227,749	479,103	675,865	2,810,473	3,965,441	137,849	256,543	394,392
1972	225,255	0	225,255	609,002	823,069	3,031,211	4,463,282	144,068	268,132	412,200
1973	221,370	31,433	252,803	594,730	717,165	3,124,257	4,436,152	141,109	262,722	403,831
1974	240,782	33,008	273,790	634,867	747,607	3,328,496	4,710,970	142,344	265,051	407,395
1975	237,756	36,366	274,122	691,749	793,731	3,217,525	4,703,005	158,925	295,683	454,608
1976	271,596	40,918	312,514	804,332	944,142	3,366,024	5,114,498	268,668	498,348	767,016
1977	293,936	45,185	339,121	772,060	922,922	3,307,043	5,002,025	279,488	518,758	798,246
1978	274,184	49,273	323,457	859,588	936,502	3,716,084	5,512,174	287,212	533,171	820,383
1979	289,799	53,442	343,241	954,382	1,010,194	3,822,538	5,787,114	286,105	531,246	817,351
1980	311,182	86,198	397,380	1,106,087	1,174,559	4,123,100	6,403,746	325,517	584,697	910,214
1981	347,583	113,003	460,586	1,211,259	1,349,954	4,512,250	7,073,463	354,077	633,945	988,022
1982	440,975	142,022	582,997	1,290,767	1,373,225	4,901,078	7,565,070	374,474	723,984	1,098,458
1983	355,488	163,550	519,038	1,166,528	1,265,496	4,958,637	7,390,661	400,449	741,360	1,141,809
1984	467,726	247,070	714,796	1,466,994	1,478,661	6,874,299	9,819,954	451,145	834,817	1,285,962
1985	736,709	386,899	1,123,608	1,964,290	2,229,157	7,807,767	12,001,214	546,657	1,009,599	1,556,256
1986	1,121,113	715,359	1,836,472	1,832,979	2,020,030	8,231,147	12,084,156	580,097	1,070,624	1,650,721
1987	1,774,246	1,584,700	3,358,946	2,336,698	2,521,312	8,041,648	12,899,658	614,710	1,172,580	1,787,290
1988	2,356,392	2,558,212	4,914,604	2,406,992	2,799,298	7,902,279	13,108,569	736,992	1,450,682	2,187,674
1989	2,567,975	3,758,171	6,326,146	2,371,087	2,525,046	7,618,713	12,514,846	861,681	1,819,127	2,680,808
1990	2,927,723	3,904,074	6,831,797	2,775,759	2,923,371	8,621,037	14,320,167	1,039,477	2,040,356	3,079,833
1991	2,974,057	4,070,138	7,044,195	2,159,788	2,508,978	6,751,557	11,420,323	1,130,003	2,381,746	3,511,749
1992	2,920,606	4,191,078	7,111,684	2,863,213	3,273,856	8,471,169	14,608,238	1,286,646	2,519,564	3,806,210
1993	3,050,639	4,625,818	7,676,457	3,965,428	4,177,121	10,908,512	19,051,061	1,524,501	2,863,488	4,387,989
1994	3,123,415	4,772,052	7,895,467	4,183,523	4,364,445	11,403,447	19,951,415	2,144,389	4,311,490	6,455,879
1995	3,242,405	5,140,095	8,382,500	4,091,398	4,184,756	10,961,047	19,237,201	4,957,218	10,852,166	15,809,384
1996	3,298,551	5,253,493	8,552,044	4,514,763	4,462,848	11,568,084	20,545,695	8,617,481	23,900,966	32,518,447
1997	3,319,774	5,256,682	8,576,456	4,595,600	4,416,184	11,456,732	20,468,516	9,543,114	26,530,038	36,073,152
1998	3,348,821	5,265,266	8,614,087	4,571,479	4,392,661	11,400,239	20,364,379	11,156,270	26,464,957	37,621,227
1999	3,375,776	5,275,903	8,651,679	4,519,873	4,344,237	11,284,771	20,148,881	11,129,786	26,428,510	37,558,296
2000	3,402,561	5,277,482	8,680,043	4,499,083	4,323,019	11,231,970	20,054,072	11,112,872	26,404,466	37,517,338
2001	3,432,613	5,288,588	8,721,201	4,501,165	4,323,600	11,233,485	20,058,250	11,134,700	26,456,218	37,590,918
2002	3,459,402	5,297,897	8,757,299	4,509,750	4,331,191	11,250,934	20,091,875	11,142,852	26,469,879	37,612,731
2003	3,488,742	5,305,400	8,794,142	4,503,790	4,325,776	11,238,082	20,067,648	11,132,390	26,451,406	37,583,796
2004	3,523,608	5,323,183	8,846,791	4,502,051	4,325,650	11,241,335	20,069,036	11,131,454	26,459,617	37,591,071
2005	3,550,647	5,345,760	8,896,407	4,489,989	4,314,624	11,215,042	20,019,655	11,109,262	26,419,623	37,528,885
2006	3,572,210	5,345,730	8,917,940	4,482,622	4,307,931	11,199,165	19,989,718	11,098,658	26,400,889	37,499,547
2007	3,597,169	5,343,878	8,941,047	4,472,205	4,298,464	11,176,709	19,947,378	11,082,228	26,371,659	37,453,887
2008	3,625,687	5,340,781	8,966,468	4,458,969	4,286,390	11,147,964	19,893,323	11,061,400	26,334,207	37,395,607
2009	3,649,613	5,338,215	8,987,828	4,446,693	4,275,198	11,121,341	19,843,232	11,042,256	26,299,861	37,342,117
2010	3,681,582	5,347,492	9,029,074	4,466,583	4,293,400	11,164,767	19,924,750	11,064,877	26,341,791	37,406,668
2011	3,706,561	5,341,762	9,048,323	4,440,830	4,269,838	11,108,414	19,819,082	11,029,445	26,277,789	37,307,234
2012	3,726,922	5,338,229	9,065,151	4,431,105	4,261,049	11,087,850	19,780,004	11,012,571	26,246,917	37,259,488
2013	3,717,467	5,289,565	9,007,032	4,170,733	4,018,752	10,395,593	18,585,078	10,793,891	25,850,481	36,644,372
2014	3,767,150	5,311,685	9,078,835	4,196,176	4,008,856	10,361,970	18,567,002	10,872,565	25,993,013	36,865,578
2015	3,778,222	5,295,211	9,073,433	4,091,313	3,858,595	9,846,279	17,796,187	10,770,415	25,807,443	36,577,858
2016	3,783,672	5,290,123	9,073,795	4,054,060	3,811,069	9,632,299	17,497,428	10,734,830	25,743,046	36,477,876
2017	3,804,890	5,304,256	9,109,146	4,070,298	3,824,078	9,620,479	17,514,855	10,779,739	25,825,143	36,604,882
2018	3,755,127	5,305,460	9,060,587	4,028,109	3,782,466	9,496,147	17,306,722	10,765,444	25,799,179	36,564,623
2019	3,743,481	5,308,258	9,051,739	3,992,897	3,749,665	9,400,419	17,142,981	10,766,766	25,802,351	36,569,117
2020	3,762,195	5,302,160	9,064,355	3,951,620	3,709,641	9,301,334	16,962,595	10,728,923	25,734,010	36,462,933
2021	3,770,434	5,305,888	9,076,322	3,955,976	3,713,212	9,310,073	16,979,261	10,738,666	25,752,758	36,491,424
2022	3,773,674	5,308,578	9,082,252	3,959,096	3,715,667	9,313,557	16,988,320	10,743,941	25,763,441	36,507,382
2023	3,821,844	5,340,190	9,162,034	3,997,024	3,756,933	9,425,821	17,179,778	10,821,863	25,954,040	36,775,903
2024	3,719,674	5,201,426	8,921,100	3,918,331	3,669,258	9,179,145	16,766,734	10,659,995	25,549,883	36,209,878
2025	3,552,572	4,990,123	8,542,695	3,772,673	3,513,766	8,756,204	16,042,643	10,378,824	24,882,030	35,260,854
2026	3,545,080	4,983,318	8,528,398	3,763,718	3,505,561	8,736,479	16,005,758	10,260,544	24,663,869	34,924,413
2027	3,542,192	4,979,098	8,521,290	3,762,165	3,503,959	8,731,278	15,997,402	10,257,992	24,658,707	34,916,699
2028	3,539,170	4,975,211	8,514,381	3,760,557	3,502,342	8,726,111	15,989,010	10,252,350	24,648,111	34,900,461
2029	3,535,732	4,971,121	8,506,853	3,757,154	3,499,186	8,717,689	15,974,029	10,250,498	24,644,569	34,895,067
2030	3,525,608	4,956,396	8,482,004	3,753,881	3,496,125	8,709,967	15,959,973	10,246,514	24,637,121	34,883,635
2031	3,513,135	4,937,519	8,450,654	3,749,865	3,492,382	8,700,620	15,942,867	10,240,983	24,626,732	34,867,715
2032	3,501,525	4,917,978	8,419,503	3,751,588	3,493,907	8,703,972	15,949,467	10,244,731	24,633,536	34,878,267
2033	3,474,081	4,873,933	8,348,014	3,752,729	3,494,906	8,706,109	15,953,744	10,248,859	24,641,071	34,889,930
2034	3,408,744	4,799,751	8,208,495	3,741,998	3,484,867	8,680,984	15,907,849	10,242,264	24,628,964	34,871,228
2035	3,281,088	4,661,328	7,942,416	3,740,250	3,483,205	8,676,200	15,899,655	10,249,185	24,641,495	34,890,680
Total	175,099,021	244,642,381	419,741,402	212,334,307	209,130,832	566,855,047	988,320,186	446,244,007	1,066,364,356	1,512,608,363

TABLE B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

	San Joaquin Valley Area								
				Kern County Water Agency					
Calendar Year	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	2,729	0	0	0	0	0	2,729
1965	0	0	6,039	73,693	0	0	0	0	79,732
1966	0	0	12,058	137,555	0	0	0	0	149,613
1967	0	0	26,299	268,043	0	0	0	0	294,342
1968	221,279	19,987	54,666	446,057	1,693,430	16,057	19,567	304,919	2,775,962
1969	237,449	12,756	87,668	525,806	2,695,938	15,693	19,295	449,725	4,044,330
1970	302,218	36,190	94,768	574,762	3,838,650	20,266	30,312	514,561	5,411,727
1971	323,069	38,919	95,789	606,688	5,146,558	25,981	34,587	705,384	6,976,975
1972	375,698	42,109	98,886	632,429	7,060,408	25,249	63,634	1,959,879	10,258,292
1973	393,015	40,802	97,647	1,026,710	7,200,710	27,596	39,162	773,387	9,599,029
1974	498,452	42,016	98,559	1,145,617	7,899,701	28,310	42,447	1,028,082	10,783,184
1975	669,070	42,462	106,801	1,197,990	9,261,170	29,985	48,060	1,538,398	12,893,936
1976	711,178	44,983	108,184	1,324,673	10,500,353	31,407	51,980	1,429,235	14,201,993
1977	571,657	40,904	112,665	1,368,362	10,805,164	33,162	54,105	1,125,883	14,111,902
1978	687,817	43,152	115,625	1,564,126	13,097,771	37,498	58,906	1,158,428	16,763,323
1979	771,062	49,729	114,358	1,669,447	15,175,254	41,689	70,460	1,710,325	19,602,324
1980	951,957	51,483	126,305	1,771,540	16,814,147	46,673	94,784	1,644,554	21,501,443
1981	1,201,201	85,930	134,332	2,432,696	22,397,773	65,149	100,600	2,268,903	28,686,584
1982	1,235,442	72,088	136,288	2,526,109	24,767,213	69,241	108,166	2,263,307	31,177,854
1983	1,169,913	54,444	150,202	2,088,255	24,408,570	73,973	88,892	507,159	28,541,408
1984	1,477,940	30,363	164,827	3,394,349	33,072,440	92,832	121,418	1,528,084	39,882,253
1985	1,767,952	132,462	187,368	3,922,082	39,370,518	116,853	140,446	2,833,059	48,470,740
1986	2,011,158	81,657	181,625	4,606,654	43,253,891	136,309	154,406	3,660,066	54,085,766
1987	1,905,406	98,972	180,295	4,659,257	43,050,836	138,929	155,342	3,795,614	53,984,651
1988	1,994,632	115,085	194,645	4,824,134	45,100,150	139,574	149,495	3,957,505	56,475,220
1989	2,137,742	104,942	188,004	4,747,471	47,254,331	137,541	168,518	4,416,942	59,155,491
1990	2,231,047	102,761	221,412	5,321,943	49,468,576	136,692	168,304	4,543,232	62,193,967
1991	1,756,541	85,539	229,553	4,961,055	38,418,184	105,803	139,074	3,600,489	49,296,238
1992	2,381,873	116,110	246,285	5,976,136	51,605,583	152,843	187,638	4,850,676	65,517,144
1993	2,536,940	121,577	323,577	5,691,372	55,803,279	160,945	198,742	5,191,867	70,028,299
1994	2,780,154	134,255	310,461	6,280,931	60,779,811	178,269	213,156	5,691,520	76,368,557
1995	2,873,807	139,105	304,660	6,536,090	62,867,465	184,918	220,089	5,882,750	79,008,884
1996	3,001,281	145,679	292,211	6,854,646	65,060,164	193,837	229,902	6,143,979	81,921,699
1997	2,991,830	145,228	308,159	6,902,388	64,673,056	193,304	229,842	6,124,510	81,568,317
1998	2,968,012	143,995	308,390	6,945,505	65,551,854	191,665	227,702	6,075,606	82,412,729
1999	2,909,238	140,942	308,361	6,875,951	64,406,660	187,602	222,703	5,954,938	81,006,395
2000	2,896,061	140,292	308,452	6,912,121	64,055,832	186,726	221,722	5,927,914	80,649,120
2001	2,895,932	140,286	308,819	6,986,314	63,982,873	186,711	221,702	5,927,637	80,650,274
2002	2,899,406	140,476	308,893	6,986,715	64,071,312	186,958	221,916	5,934,774	80,750,450
2003	2,896,829	140,340	308,928	6,974,503	64,019,860	186,775	221,746	5,929,479	80,678,460
2004	2,900,755	140,491	308,971	6,991,143	64,087,624	186,984	222,144	5,937,474	80,775,586
2005	2,894,816	140,182	309,057	6,969,943	63,964,117	186,570	221,749	5,925,268	80,611,702
2006	2,891,556	140,011	309,063	6,955,933	63,896,640	186,341	221,533	5,918,573	80,519,650
2007	2,886,940	139,768	309,092	6,938,653	63,799,533	186,020	221,225	5,909,093	80,390,324
2008	2,880,886	139,454	309,124	6,917,524	63,671,032	185,597	220,819	5,896,656	80,221,092
2009	2,875,447	139,170	309,149	6,898,046	63,555,158	185,217	220,459	5,885,488	80,068,134
2010	2,884,713	139,647	309,270	6,915,810	63,768,512	185,852	221,102	5,904,492	80,329,398
2011	2,872,994	139,038	309,243	6,895,897	63,498,751	185,033	220,298	5,880,428	80,001,682
2012	2,868,347	138,798	309,279	6,874,916	63,404,937	184,716	219,990	5,870,881	79,871,864
2013	2,799,405	135,209	309,312	6,730,931	61,842,802	179,912	215,356	5,729,287	77,942,214
2014	2,828,220	136,703	306,622	6,814,660	62,472,506	181,901	217,305	5,788,455	78,746,372
2015	2,797,315	135,095	303,299	6,674,481	61,773,595	179,748	215,227	5,724,985	77,803,745
2016	2,789,182	134,669	297,290	6,602,222	61,580,460	179,176	214,687	5,708,287	77,505,973
2017	2,812,038	135,856	283,171	6,542,024	62,077,532	180,742	216,235	5,755,200	78,002,798
2018	2,812,079	135,858	260,443	6,437,723	62,065,295	172,218	216,242	5,755,288	77,855,146
2019	2,813,943	135,951	251,967	6,396,638	62,092,056	171,826	216,380	5,759,112	77,837,873
2020	2,801,455	135,298	250,098	6,346,722	61,798,770	170,702	215,539	5,733,469	77,452,053
2021	2,805,388	135,499	249,009	6,350,374	61,869,933	170,817	215,819	5,741,539	77,538,378
2022	2,807,748	135,618	248,396	6,362,896	61,905,073	170,900	215,991	5,746,387	77,593,009
2023	2,848,886	137,493	247,971	6,568,433	62,651,525	173,383	219,396	5,830,572	78,677,659
2024	2,760,610	133,506	247,449	6,151,249	61,022,236	167,981	212,015	5,649,970	76,345,016
2025	2,619,047	126,999	246,892	5,489,634	58,376,889	159,205	200,441	5,360,214	72,579,321
2026	2,615,229	126,799	246,606	5,477,963	58,291,904	158,905	200,182	5,352,371	72,469,959
2027	2,615,320	126,804	245,963	5,475,200	58,293,885	158,867	200,189	5,352,561	72,468,789
2028	2,615,700	126,825	243,526	5,474,105	58,302,232	158,872	200,215	5,353,345	72,474,820
2029	2,615,763	126,828	243,211	5,471,169	58,303,932	158,813	200,217	5,353,473	72,473,406
2030	2,615,391	126,808	242,920	5,467,130	58,295,041	158,721	200,196	5,352,708	72,458,915
2031	2,616,675	126,875	241,339	5,452,017	58,324,103	158,418	200,280	5,355,345	72,475,052
2032	2,616,675	126,875	241,317	5,454,197	58,324,103	158,428	200,280	5,355,345	72,477,220
2033	2,617,275	126,907	241,029	5,451,045	58,337,429	158,340	200,321	5,356,574	72,488,920
2034	2,615,508	126,815	240,433	5,440,373	58,298,001	158,080	200,201	5,352,948	72,432,359
2035	2,617,843	126,937	239,716	5,437,260	58,353,467	158,008	200,338	5,357,740	72,491,309
Total	148,047,407	7,396,806	15,675,020	338,166,486	3,226,928,558	9,299,308	11,521,191	298,306,298	4,055,341,074

TABLE B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

	Southern California Area									
Calendar Year	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,380	0	0	0	0	0	0	0	51,822	0
1964	62,973	27,495	14,452	4,378	37,225	1,145	28,487	8,220	82,953	35,048
1965	118,798	53,095	25,137	7,206	40,837	2,086	50,402	15,247	135,293	35,403
1966	216,130	101,429	44,803	12,499	73,271	3,760	90,547	27,724	232,882	61,564
1967	418,148	211,152	86,258	23,510	141,637	7,296	175,459	54,110	434,047	115,759
1968	737,079	491,868	152,915	41,571	251,568	12,889	311,156	95,604	783,330	209,237
1969	1,060,558	743,089	225,642	61,317	371,507	18,721	458,790	138,265	1,207,644	322,237
1970	1,379,045	943,311	315,733	89,833	520,091	25,267	632,954	185,110	1,780,878	468,279
1971	1,706,796	1,137,956	433,184	128,553	713,792	31,882	857,092	231,613	2,542,024	660,399
1972	2,184,544	1,380,081	604,151	186,080	991,130	43,818	1,178,627	287,982	3,762,918	951,442
1973	2,336,266	1,430,743	748,241	191,216	1,218,345	46,111	1,269,092	313,818	4,031,126	962,224
1974	2,456,702	1,526,093	771,748	204,306	1,258,243	48,986	1,327,640	332,076	4,468,480	1,106,294
1975	2,674,012	1,617,103	817,094	219,531	1,333,550	53,295	1,413,092	355,648	4,643,772	1,212,074
1976	3,138,265	1,654,305	874,137	232,373	1,426,281	57,785	1,489,140	381,658	4,843,441	1,283,500
1977	3,119,984	1,742,440	774,677	245,365	1,268,650	54,261	1,576,191	407,020	5,099,496	1,349,646
1978	3,566,202	1,874,611	973,475	255,672	1,568,849	56,853	1,622,903	420,413	5,096,997	1,378,631
1979	4,240,716	1,954,582	1,059,047	268,035	1,691,513	60,339	1,797,737	450,147	5,142,072	1,343,614
1980	4,925,809	2,094,082	1,168,426	295,617	1,892,172	67,660	1,969,351	499,456	5,652,950	1,486,523
1981	5,748,573	2,555,147	1,322,365	328,917	2,141,011	100,766	2,285,851	603,451	6,464,006	1,688,871
1982	5,516,175	2,731,218	1,412,374	347,815	2,288,704	82,573	2,266,863	643,986	6,778,093	1,934,909
1983	6,268,640	2,817,410	1,934,000	381,870	3,125,450	88,597	2,461,101	660,163	6,985,728	1,814,241
1984	7,635,143	3,914,708	3,033,059	498,107	4,880,070	96,541	2,724,486	728,178	8,058,596	2,598,051
1985	9,521,162	4,335,962	3,869,746	603,840	6,220,422	104,346	2,927,460	937,946	8,928,894	2,696,313
1986	9,446,935	4,987,332	4,331,082	648,757	6,966,165	130,452	3,091,374	1,226,103	9,159,017	3,405,078
1987	9,448,458	4,843,971	4,199,267	676,734	6,842,827	241,007	3,120,143	1,254,597	10,440,756	3,386,006
1988	9,119,199	5,057,087	4,251,275	705,867	7,002,000	162,304	3,316,526	1,063,654	11,057,039	3,269,498
1989	11,058,761	5,727,896	3,360,187	697,439	6,621,876	212,285	3,446,454	1,760,947	10,936,380	3,488,131
1990	12,639,500	5,796,383	4,748,361	774,119	7,865,525	281,699	3,703,852	1,994,196	12,162,730	4,132,601
1991	9,454,091	4,421,273	3,303,613	709,576	5,447,892	228,347	4,615,410	1,695,077	11,389,376	3,698,596
1992	12,612,044	6,359,535	3,636,576	600,601	6,000,768	193,578	5,922,580	1,672,625	11,811,976	4,018,696
1993	13,226,301	6,779,989	4,051,409	866,707	6,681,200	334,822	7,784,451	2,268,284	14,655,467	4,987,624
1994	15,789,926	7,858,792	4,857,301	995,100	8,010,406	433,284	9,509,836	2,967,225	16,632,035	5,430,023
1995	17,246,616	8,731,735	5,162,430	1,075,064	8,513,673	463,469	12,436,567	3,231,845	17,480,494	5,675,905
1996	18,554,187	9,668,406	5,352,414	1,134,756	8,827,013	493,593	12,884,114	3,687,698	18,324,386	5,857,451
1997	18,760,113	9,937,568	5,210,655	1,123,916	8,593,194	483,815	12,618,506	3,617,074	18,117,883	5,693,311
1998	19,166,301	9,849,466	5,197,034	1,035,232	8,570,746	481,112	12,532,752	3,596,744	19,477,847	5,768,292
1999	20,637,103	9,678,023	5,169,104	1,057,312	8,524,695	476,361	12,423,296	3,561,012	20,368,959	5,825,082
2000	22,176,426	10,379,142	5,098,435	1,065,714	8,408,124	473,466	12,361,072	3,539,241	20,035,240	5,879,921
2001	22,175,374	10,374,512	5,113,363	1,089,166	8,432,750	473,420	12,346,088	3,538,878	20,456,341	5,960,443
2002	22,244,677	10,414,479	5,133,833	1,091,951	8,466,507	475,108	12,391,024	3,551,569	20,511,079	5,978,392
2003	22,206,214	10,393,418	5,121,974	1,089,217	8,446,953	474,182	12,367,845	3,544,573	20,458,934	5,964,406
2004	22,171,132	10,375,115	5,109,912	1,089,130	8,427,046	473,147	12,338,911	3,536,708	20,456,173	5,959,650
2005	24,808,405	10,784,750	5,091,907	1,219,081	8,397,360	471,245	12,285,047	3,522,379	24,257,834	6,125,270
2006	24,746,677	10,754,875	5,075,192	1,213,480	8,369,784	470,021	12,254,782	3,513,155	24,144,144	6,100,885
2007	24,662,040	10,712,889	5,053,898	1,208,220	8,334,660	468,341	12,211,744	3,500,514	24,031,463	6,075,869
2008	24,554,473	10,659,342	5,030,149	1,206,160	8,295,491	466,211	12,155,417	3,484,471	23,970,412	6,059,936
2009	24,455,039	10,609,193	5,000,610	1,194,460	8,246,762	464,244	12,104,683	3,469,635	23,740,226	6,011,389
2010	27,311,549	10,698,077	5,087,583	1,391,218	8,390,235	467,676	12,216,310	3,495,419	26,331,497	6,370,206
2011	27,380,992	10,587,403	4,988,961	1,317,478	8,227,549	463,473	12,118,948	3,463,813	24,979,867	6,101,520
2012	27,284,026	10,549,419	4,986,335	1,336,324	8,223,226	461,870	12,068,405	3,451,737	25,301,201	6,162,023
2013	25,771,898	9,928,450	4,693,974	1,275,708	7,727,630	437,293	11,426,382	3,266,902	23,942,243	5,862,575
2014	26,347,876	10,158,429	4,802,483	1,301,274	7,920,611	446,220	11,656,846	3,334,412	24,537,933	5,989,550
2015	25,630,978	9,856,074	4,642,535	1,322,968	7,656,792	434,286	11,347,554	3,244,736	23,496,816	5,907,485
2016	25,351,574	9,722,449	4,601,806	1,328,455	7,589,634	429,590	11,226,104	3,209,502	23,577,934	5,910,205
2017	25,632,572	9,822,150	4,655,491	1,338,273	7,678,175	434,100	11,352,807	3,243,597	23,781,187	5,951,004
2018	25,372,689	9,607,272	4,598,609	1,322,046	7,584,373	429,494	11,238,790	3,209,511	23,463,750	5,867,718
2019	25,098,593	9,413,591	4,539,436	1,310,176	7,486,785	424,484	11,109,802	3,173,037	23,181,649	5,784,703
2020	24,522,557	9,144,889	4,373,786	1,296,559	7,213,567	413,648	10,813,325	3,093,955	21,896,146	5,620,016
2021	24,336,981	9,006,390	4,298,190	1,285,345	7,088,909	409,406	10,638,284	3,065,276	21,628,547	5,531,248
2022	24,242,028	8,913,231	4,253,125	1,272,083	7,014,584	407,549	10,549,965	3,052,141	21,283,938	5,445,417
2023	24,331,318	8,979,836	4,264,960	1,273,646	7,034,079	409,002	10,579,275	3,063,281	21,275,218	5,447,271
2024	24,092,481	8,785,944	4,204,180	1,252,750	6,933,904	404,728	10,463,695	3,031,871	20,849,540	5,336,870
2025	23,417,001	8,424,963	4,058,782	1,232,431	6,694,187	393,070	10,148,752	2,945,249	20,170,143	5,289,650
2026	23,321,904	8,373,394	4,027,548	1,218,760	6,642,678	391,450	10,095,302	2,933,230	19,895,921	5,226,372
2027	23,311,704	8,365,377	4,020,219	1,216,118	6,630,593	391,265	10,081,747	2,931,885	19,833,777	5,210,856
2028	23,309,432	8,344,407	4,020,422	1,219,592	6,630,928	391,205	10,074,393	2,931,506	19,889,693	5,220,028
2029	23,296,081	8,324,662	4,009,190	1,210,163	6,612,397	390,972	10,064,163	2,929,794	19,721,980	5,185,702
2030	23,265,095	8,273,037	4,004,674	1,211,586	6,604,953	390,456	10,047,957	2,925,934	19,748,131	5,316,177
2031	23,201,731	8,194,015	3,989,171	1,208,235	6,579,387	389,334	10,013,836	2,917,639	19,689,339	5,298,700
2032	23,209,615	8,162,789	3,991,532	1,208,669	6,583,281	389,462	10,018,990	2,918,611	19,696,347	5,300,831
2033	23,142,891	8,125,750	3,983,107	1,210,431	6,569,389	388,336	9,993,432	2,910,180	19,726,680	5,301,895
2034	22,998,939	8,082,529	3,947,180	1,192,122	6,510,126	385,919	9,937,369	2,892,073	19,397,311	5,226,754
2035	22,986,247	8,074,870	3,983,727	1,234,049	6,570,428	385,609	9,950,915	2,890,562	20,130,372	5,508,785
Total	1,138,593,844	476,412,448	247,347,651	61,181,829	408,146,135	21,150,387	538,370,243	157,101,892	1,078,710,793	293,840,275

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Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

	Southern California Area (continued)				Feather River Area					
Calendar Year	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)	South Bay Area Future Contractor (38)	Grand Total (39)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	55,537
1963	0	692,054	0	777,256	0	0	0	0	55,823	1,624,120
1964	21,774	1,262,657	9,394	1,596,201	0	0	0	0	84,094	2,781,489
1965	21,903	2,184,191	17,795	2,707,393	0	0	405	405	129,191	4,771,057
1966	38,026	3,906,499	33,480	4,842,614	0	0	565	565	148,545	7,339,174
1967	71,397	7,706,041	68,264	9,513,078	0	0	563	563	204,922	12,953,754
1968	129,106	15,340,767	143,015	18,700,105	0	1,050	1,440	2,490	279,614	25,310,628
1969	199,064	23,187,849	215,531	28,210,214	0	1,225	4,125	5,350	349,609	36,581,817
1970	290,069	30,663,254	274,014	37,567,838	0	3,848	17,139	20,987	386,703	48,030,233
1971	409,939	40,018,151	342,929	49,214,310	0	4,546	19,212	23,758	376,266	61,178,891
1972	537,899	55,060,909	422,865	67,592,446	0	4,929	21,178	26,107	401,782	83,379,364
1973	588,712	59,664,622	436,221	73,236,737	0	7,059	21,805	28,864	376,261	88,333,677
1974	612,193	66,085,115	456,154	80,654,030	0	8,336	22,436	30,772	399,238	97,259,379
1975	645,411	71,908,062	479,000	87,371,644	0	9,416	23,550	32,966	408,459	106,138,740
1976	669,123	74,986,803	476,191	91,513,002	0	7,004	23,284	30,288	431,049	112,370,360
1977	697,354	73,421,044	507,694	90,263,822	0	16,917	24,087	41,004	423,804	110,979,924
1978	709,872	82,017,044	523,820	100,065,342	0	12,635	24,252	36,887	427,038	123,948,604
1979	713,699	83,683,458	527,059	102,932,018	0	16,575	28,379	44,954	447,078	129,974,080
1980	863,131	93,121,526	584,314	114,621,017	0	19,834	26,589	46,423	507,904	144,388,127
1981	947,299	111,861,965	672,995	136,721,217	0	21,682	34,591	56,273	517,325	174,503,470
1982	1,025,657	117,490,618	730,866	143,249,851	0	16,117	43,025	59,142	515,912	184,249,284
1983	1,079,658	119,277,902	851,470	147,746,230	0	15,202	27,088	42,290	554,995	185,936,431
1984	1,212,701	157,270,725	933,673	193,584,038	20,590	15,442	28,701	64,733	561,981	245,913,717
1985	1,293,818	195,502,912	999,657	237,942,478	24,050	16,976	32,143	73,169	682,132	301,849,597
1986	1,347,184	218,768,587	1,060,340	264,568,406	31,753	18,145	33,432	83,330	620,806	334,929,657
1987	1,369,585	204,480,580	1,048,816	251,352,747	37,071	17,794	33,618	88,483	684,868	324,156,643
1988	1,465,359	223,048,877	1,132,486	270,651,171	48,413	19,264	35,916	103,593	709,318	348,150,149
1989	1,524,753	232,838,516	1,249,930	282,923,555	64,992	21,276	38,824	125,092	766,079	364,492,017
1990	1,653,782	274,785,086	1,596,233	332,134,067	67,499	21,315	39,480	128,294	821,918	419,510,043
1991	1,770,213	222,240,386	1,576,962	270,550,812	185,737	23,217	42,432	251,386	575,257	342,649,960
1992	1,853,310	271,855,679	1,579,480	328,117,448	215,844	26,980	47,239	290,063	918,833	420,369,620
1993	2,046,911	319,518,873	1,976,963	385,179,001	218,806	27,352	48,806	294,964	1,145,189	487,762,960
1994	2,069,010	395,185,199	2,150,503	471,888,640	213,984	26,748	49,210	289,942	1,034,032	583,883,932
1995	2,461,610	425,659,960	2,230,273	510,369,641	213,318	26,665	50,335	290,318	937,182	634,035,110
1996	3,076,317	453,223,775	2,326,097	543,410,207	214,054	26,730	51,569	292,353	920,226	688,160,671
1997	2,992,757	444,138,592	2,326,142	533,613,526	213,162	26,663	52,492	292,317	925,592	681,517,876
1998	2,837,567	442,422,579	4,026,621	534,962,293	213,000	26,687	53,579	293,266	925,895	685,193,876
1999	2,888,364	437,046,635	3,962,077	531,618,023	212,966	26,728	54,699	294,393	925,865	680,203,532
2000	2,864,634	432,577,649	3,941,390	528,800,454	212,338	26,693	55,878	294,909	926,190	676,922,126
2001	2,919,088	433,504,048	3,939,822	530,323,293	212,260	607,432	57,190	876,882	927,340	679,148,158
2002	2,924,865	435,293,626	3,955,908	532,433,018	212,901	606,982	58,570	878,453	927,590	681,451,416
2003	2,918,966	434,463,576	3,947,326	531,397,584	213,728	607,080	59,996	880,804	927,722	680,330,156
2004	2,921,152	433,723,619	3,938,276	530,519,971	215,663	610,016	61,707	887,386	927,865	679,617,706
2005	3,192,420	432,029,537	3,920,859	536,106,094	216,481	610,035	63,132	889,648	928,167	684,980,558
2006	3,179,821	430,759,606	3,909,731	534,492,153	217,330	610,146	64,763	892,239	928,183	683,239,430
2007	3,168,200	428,924,588	3,894,143	532,246,569	218,182	610,280	66,396	894,858	928,283	680,802,346
2008	3,163,928	426,958,899	3,874,320	529,879,209	218,998	610,345	68,019	897,362	928,394	678,181,455
2009	3,137,694	424,374,478	3,855,759	526,664,172	219,813	610,425	69,642	899,880	928,483	674,733,846
2010	3,523,391	431,006,269	3,888,222	540,177,652	220,639	610,542	71,268	902,449	928,907	688,698,898
2011	3,355,587	423,160,216	3,847,684	529,993,491	220,926	610,639	72,928	904,493	928,817	678,003,122
2012	3,399,283	423,145,640	3,833,467	530,202,956	220,679	610,628	74,466	905,773	928,940	678,014,176
2013	3,256,511	398,210,564	3,604,241	499,404,371	221,549	610,869	76,457	908,875	885,861	643,377,803
2014	3,318,619	408,125,728	3,689,601	511,629,582	221,902	611,033	78,332	911,267	859,038	656,657,674
2015	3,518,705	394,937,275	3,578,866	495,575,070	222,245	611,153	79,998	913,396	828,889	638,568,578
2016	3,524,772	390,952,008	3,532,316	490,956,349	222,623	611,316	81,919	915,858	811,951	633,239,230
2017	3,545,182	395,284,823	3,574,243	496,293,604	223,021	611,492	82,013	916,526	772,403	639,214,214
2018	3,493,638	388,372,042	3,507,109	488,067,041	223,397	611,591	82,097	917,085	696,934	630,468,138
2019	3,442,694	381,844,470	3,441,576	480,250,996	223,847	611,806	79,571	915,224	632,974	622,400,904
2020	3,592,132	368,272,552	3,344,698	463,597,830	224,276	611,946	67,721	903,943	612,464	605,056,173
2021	3,609,353	362,399,073	3,296,776	456,593,778	224,779	612,191	67,010	903,980	608,739	598,191,882
2022	3,556,684	356,068,090	3,264,966	449,323,801	225,316	612,462	65,747	903,525	608,128	591,006,417
2023	3,557,108	356,840,974	3,286,576	450,342,544	233,442	626,913	67,808	928,163	607,453	593,673,534
2024	3,490,405	349,693,781	3,228,820	441,768,969	216,319	594,236	63,428	873,983	607,041	581,492,721
2025	3,373,681	336,450,934	3,112,254	425,711,097	191,241	547,826	57,035	796,102	605,594	559,538,306
2026	3,332,871	333,692,014	3,093,932	422,245,376	191,241	547,826	57,034	796,101	605,115	555,575,120
2027	3,323,155	333,096,223	3,091,154	421,504,073	191,241	547,826	57,032	796,099	604,276	554,808,628
2028	3,329,438	332,484,417	3,085,122	420,930,583	191,241	547,826	57,030	796,097	603,201	554,208,553
2029	3,307,155	331,831,496	3,077,550	419,961,305	191,241	547,826	57,028	796,095	601,729	553,208,484
2030	3,309,155	330,029,317	3,058,608	418,185,080	191,241	547,826	57,027	796,094	600,362	551,366,063
2031	3,298,628	327,591,525	3,030,214	415,401,754	191,241	547,826	57,026	796,093	597,365	548,531,500
2032	3,299,917	326,789,174	3,018,751	414,587,969	191,241	547,826	57,024	796,091	597,710	547,706,227
2033	3,301,332	325,693,397	3,005,085	413,351,905	191,241	547,826	57,024	796,091	597,013	546,425,617
2034	3,253,523	323,044,916	2,989,400	409,858,161	191,241	547,826	57,023	796,090	593,392	542,667,574
2035	3,347,283	324,328,410	2,988,299	412,379,556	191,241	547,826	57,021	796,088	589,192	544,988,896
Total	161,185,497	19,817,482,446	163,596,388	24,563,119,828	9,801,544	21,238,694	3,419,548	34,459,786	47,772,490	31,621,363,129

TABLE B-24

Equivalent Unit Charge for Water Supply for Each Contractor (a

(Dollars per acre-foot)

Project Service Area and Water Supply Contractor	Transportation Charge: Capital Cost Component (1)	Minimum OMP&R Component (2)	Off-Aqueduct Component (3)	Variable OMP&R Component (4)	Total (5)	Delta Water Charge (6)	Water System Revenue Bond Surcharge (7)	Total Equivalent Unit Charge (8)
Feather River Area								
City of Yuba City	0.00	0.00	0.00	0.00	0.00	29.46	3.27	32.73
County of Butte	0.00	0.00	0.00	0.00	0.00	12.44	1.11	13.55
Plumas County Flood Control and Water Conservation District	17.63	2.20	0.00	0.00	19.83	19.56	2.18	41.57
Feather River Area	1.23	0.15	0.00	0.00	1.38	16.09	1.59	19.06
North Bay Area								
Napa County Flood Control and Water Conservation District	113.88	35.24	3.83	13.47	166.42	13.50	6.14	186.06
Solano County Water Agency	85.17	29.67	3.53	8.76	127.13	21.05	6.14	154.32
North Bay Area	96.42	31.85	3.68	10.60	142.56	18.09	6.14	166.79
South Bay Area								
Alameda County Flood Control and Water Conservation District, Zone 7	16.81	26.35	7.84	21.60	72.60	19.57	2.30	94.47
Alameda County Water District	18.72	22.17	6.97	18.23	66.09	17.59	2.28	85.96
Santa Clara Valley Water District	17.85	16.85	6.25	14.12	55.07	13.66	1.76	70.49
South Bay Area	17.84	19.31	6.68	16.05	59.88	15.31	1.94	77.13
San Joaquin Valley Area								
County of Kings	4.18	3.52	3.37	7.26	18.33	16.79	1.35	36.47
Dudley Ridge Water District	4.89	4.09	2.72	6.43	18.13	14.77	1.29	34.19
Empire West Side Irrigation District	2.63	3.31	2.30	5.72	13.96	15.03	0.96	29.95
Kern County Water Agency	8.34	7.97	4.14	8.73	29.18	16.15	1.76	47.09
Oak Flat Water District	2.05	2.07	1.74	4.33	10.19	14.96	1.02	26.17
Tulare Lake Basin Water Storage District	5.13	4.30	2.64	6.73	18.80	15.40	1.38	35.58
San Joaquin Valley Area	7.80	7.37	3.74	8.39	27.30	16.01	1.69	45.00
Central Coastal Area								
San Luis Obispo County Flood Control and Water Conservation District	328.80	68.33	15.21	68.16	480.50	33.43	14.45	528.38
Santa Barbara County Flood Control and Water Conservation District	433.36	70.83	18.18	66.78	589.15	30.92	17.39	637.46
Central Coastal Area	398.09	69.98	17.70	67.25	553.02	31.77	16.40	601.19
Southern California Area								
Antelope Valley-East Kern Water Agency	40.56	34.45	23.35	78.09	176.45	26.78	4.20	207.43
Castaic Lake Water Agency	46.77	32.87	23.33	42.46	145.43	20.98	4.31	170.72
Coachella Valley Water District	42.54	36.11	40.05	59.86	178.56	18.41	3.57	200.54
Crestline-Lake Arrowhead Water Agency	92.80	70.52	30.70	88.77	282.79	32.72	7.23	322.74
Desert Water Agency	43.24	36.70	40.30	60.49	180.73	18.48	3.62	202.83
Littlerock Creek Irrigation District	39.58	32.66	26.22	84.40	182.86	25.46	3.95	212.27
Mojave Water Agency	68.20	60.26	30.00	112.65	271.11	33.25	6.03	310.39
Palmdale Water District	45.69	37.87	31.07	96.50	211.13	31.96	4.63	247.72
San Bernardino Valley Municipal Water District	121.39	94.02	24.73	75.73	315.87	39.13	8.96	363.96
San Gabriel Valley Municipal Water District	94.81	75.52	35.44	63.99	269.76	32.45	7.16	309.37
San Gorgonio Pass Water Agency	207.79	164.88	20.30	97.28	490.25	59.21	15.53	564.99
The Metropolitan Water District of Southern California	60.80	43.05	33.24	55.70	192.79	23.15	4.85	220.79
Ventura County Flood Control District	84.39	58.59	21.99	86.96	251.93	31.87	7.32	291.12
Southern California Area	61.43	44.47	32.90	58.50	197.31	23.96	4.96	226.23
All Areas	39.00	27.23	18.45	34.14	118.82	20.04	3.49	142.36

a) Hypothetical charges, which, if assessed on all entitlement water delivered to date, all surplus water delivered prior to May 1, 1973, and all entitlement water now estimated to be delivered during the remainder of the project repayment period (Table B-5B), would provide a sum at the end of the period financially equivalent to all Transportation Charge and Delta Water Charge payments required under a water supply contract, considering interest at the Project Interest Rate, 4.620 percent per annum.

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TABLE B-25

Equivalent Unit Transportation Costs of Water Delivered from or through Each Aqueduct Reach (a

(Dollars per acre-foot)

Aqueduct Reach	Unit Costs of Reach (b						Cumulative Unit Costs from the Delta					
	Capital Costs (1)	Water System Revenue Bond Surcharge (c (2)	Minimum OMP&R (3)	Off-Aqueduct Costs (4)	Variable OMP&R (5)	Total (6)	Capital Costs (7)	Water System Revenue Bond Surcharge (c (8)	Minimum OMP&R (9)	Off-Aqueduct Costs (10)	Variable OMP&R (11)	Total (12)
North Bay Aqueduct												
1	43.60	6.85	13.15	1.88	4.08	69.56	43.60	6.85	13.15	1.88	4.08	69.56
2	48.11	7.56	5.63	0.00	0.00	61.30	91.71	14.41	18.78	1.88	4.08	130.86
3A	9.91	1.56	13.40	4.12	5.45	34.44	101.62	15.97	32.18	6.00	9.53	165.30
3B	47.37	7.45	22.47	4.65	10.19	92.13	139.08	21.86	41.25	6.53	14.27	222.99
South Bay Aqueduct												
1	6.16	0.97	12.33	10.24	11.70	41.40	7.87	1.24	14.66	13.47	18.94	56.18
2	0.58	0.09	1.56	0.00	0.00	2.23	8.45	1.33	16.22	13.47	18.94	58.41
4	1.94	0.30	2.33	0.00	0.00	4.57	10.39	1.63	18.55	13.47	18.94	62.98
5	4.17	0.66	1.88	0.00	0.00	6.71	14.56	2.29	20.43	13.47	18.94	69.69
6	0.24	0.04	0.26	0.00	0.00	0.54	14.80	2.33	20.69	13.47	18.94	70.23
7	1.88	0.30	0.36	0.00	0.00	2.54	16.68	2.63	21.05	13.47	18.94	72.77
8	2.56	0.40	0.41	0.00	0.00	3.37	19.24	3.03	21.46	13.47	18.94	76.14
9	5.30	0.83	2.17	0.00	0.00	8.30	24.54	3.86	23.63	13.47	18.94	84.44
California Aqueduct												
1	1.71	0.27	2.33	3.23	7.24	14.78	1.71	0.27	2.33	3.23	7.24	14.78
2A	1.09	0.17	0.46	0.00	0.00	1.72	2.80	0.44	2.79	3.23	7.24	16.50
2B	0.55	0.09	0.18	0.00	0.00	0.82	3.35	0.53	2.97	3.23	7.24	17.32
3	0.47	0.07	0.18	0.00	0.00	0.72	3.82	0.60	3.15	3.23	7.24	18.04
4	0.75	0.12	1.13	1.50	3.33	6.83	4.57	0.72	4.28	4.73	10.57	24.87
5	0.59	0.09	0.24	0.00	0.00	0.92	5.16	0.81	4.52	4.73	10.57	25.79
6	0.15	0.02	0.11	0.00	0.00	0.28	5.31	0.83	4.63	4.73	10.57	26.07
7	0.65	0.10	0.28	0.00	0.00	1.03	5.96	0.93	4.91	4.73	10.57	27.10
8C	0.02	0.00	0.06	0.00	0.00	0.08	5.98	0.93	4.97	4.73	10.57	27.18
8D	0.34	0.05	0.23	0.00	0.00	0.62	6.32	0.98	5.20	4.73	10.57	27.80
9	0.28	0.04	0.21	0.00	0.00	0.53	6.60	1.02	5.41	4.73	10.57	28.33
10A	0.29	0.05	0.25	0.00	0.00	0.59	6.89	1.07	5.66	4.73	10.57	28.92
11B	0.43	0.07	0.18	0.00	0.00	0.68	7.32	1.14	5.84	4.73	10.57	29.60
12D	0.40	0.06	0.16	0.00	0.00	0.62	7.72	1.20	6.00	4.73	10.57	30.22
12E	0.27	0.04	0.26	0.00	0.00	0.57	7.99	1.24	6.26	4.73	10.57	30.79
13B	0.61	0.10	0.32	0.00	0.00	1.03	8.60	1.34	6.58	4.73	10.57	31.82
14A	2.29	0.36	2.27	2.56	4.98	12.46	10.89	1.70	8.85	7.29	15.55	44.28
14B	0.36	0.06	0.28	0.00	0.00	0.70	11.25	1.76	9.13	7.29	15.55	44.98
14C	0.31	0.05	0.21	0.00	0.00	0.57	11.56	1.81	9.34	7.29	15.55	45.55
15A	1.67	0.26	2.39	3.09	6.15	13.56	13.23	2.07	11.73	10.38	21.70	59.11
16A	2.77	0.44	3.64	6.68	13.18	26.71	16.00	2.51	15.37	17.06	34.88	85.82
17E	9.41	1.48	10.22	23.32	46.64	91.07	25.41	3.99	25.59	40.38	81.52	176.89
17F	2.47	0.39	0.14	0.00	0.00	3.00	27.88	4.38	25.73	40.38	81.52	179.89
18A	2.38	0.37	1.36	0.00	-2.36	1.75	30.26	4.75	27.09	40.38	79.16	181.64
19	1.75	0.28	0.94	0.00	0.00	2.97	32.01	5.03	28.03	40.38	79.16	184.61
19C	0.00	0.00	0.00	0.00	0.00	0.00	32.01	5.03	28.03	40.38	79.16	184.61
20A	1.39	0.22	0.96	0.00	0.00	2.57	33.40	5.25	28.99	40.38	79.16	187.18
20B	1.65	0.26	0.74	0.00	0.00	2.65	35.05	5.51	29.73	40.38	79.16	189.83
21	0.83	0.13	0.58	0.00	0.00	1.54	35.88	5.64	30.31	40.38	79.16	191.37
22A	0.85	0.13	0.39	0.00	0.00	1.37	36.73	5.77	30.70	40.38	79.16	192.74
22B	8.40	1.32	8.94	7.28	14.49	40.43	45.13	7.09	39.64	47.66	93.65	233.17
23	1.97	0.31	0.46	0.00	-4.48	-1.74	47.10	7.40	40.10	47.66	89.17	231.43
24	4.45	0.70	1.62	0.00	0.00	6.77	51.55	8.10	41.72	47.66	89.17	238.20
25	3.28	0.52	0.10	0.00	0.00	3.90	54.83	8.62	41.82	47.66	89.17	242.10
26A	3.35	0.53	5.82	0.00	-24.86	-15.16	58.18	9.15	47.64	47.66	64.31	226.94
28G	5.73	0.90	1.52	0.00	0.00	8.15	63.91	10.05	49.16	47.66	64.31	235.09
28H	5.53	0.87	1.91	0.00	0.00	8.31	69.44	10.92	51.07	47.66	64.31	243.40
28J	73.21	11.51	37.54	0.00	0.00	122.26	142.65	22.43	88.61	47.66	64.31	365.66
West Branch												
29A	2.84	0.45	5.20	2.98	6.19	17.66	30.72	4.83	30.93	43.36	87.71	197.55
29F	2.08	0.33	0.68	0.00	0.00	3.09	32.80	5.16	31.61	43.36	87.71	200.64
29G	7.04	1.11	2.76	0.00	-12.69	-1.78	39.84	6.27	34.37	43.36	75.02	198.86
29H	4.32	0.68	2.89	0.00	0.00	7.89	44.16	6.95	37.26	43.36	75.02	206.75
29J	7.41	1.16	0.76	0.00	-23.17	-13.84	51.57	8.11	38.02	43.36	51.85	192.91
30	11.83	1.86	2.36	0.00	0.00	16.05	63.40	9.97	40.38	43.36	51.85	208.96
Coastal Branch												
31A	6.25	0.98	15.07	3.06	4.14	29.50	12.57	1.96	20.27	7.79	14.71	57.30
33A	236.23	37.14	21.01	15.62	46.21	356.21	248.80	39.10	41.28	23.41	60.92	413.51
34	71.58	11.25	5.63	0.00	0.00	88.46	320.38	50.35	46.91	23.41	60.92	501.97
35	38.68	6.08	5.92	0.00	0.00	50.68	359.06	56.43	52.83	23.41	60.92	552.65

a) Representative of transportation unit costs only; does not include a unit cost of conservation. The Delta Water Rate should be added to these values in order to approximate unit costs at canalside. Includes surplus water prior to May 1, 1973.

b) Hypothetical charges which, if assessed on all entitlement water delivered to date, all surplus water delivered prior to May 1, 1973, and all entitlement water now estimated to be delivered during the remainder of the project repayment period(Table B-5B), would provide a sum at the end of the period financially equivalent to all Transportation Charges required under the water supply contract considering interest rate at the Project Interest Rate of 4.620 percent per annum.

c) The Water System Revenue Bond Surcharge equivalent unit rate is calculated by dividing the WSRB surcharge for 1994 (from 132-93, Table B-22) by the totalTransportation Capital (132-93, B-15) and the Capital component of the Delta Water Charge (132-93, B-4 * 11.36049872). This rate is multiplied by the equivalent rate for theTransportation Capital cost (column 1).

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TABLE B-26

Capital Costs of Each Aqueduct Reach to Be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct							
	Mojave Division							
	Reach 18A (1)	Reach 19 (2)	Reach 20A (3)	Reach 20B (4)	Reach 21 (5)	Reach 22A (6)	Reach 22B (7)	Reach 23B (8)
1952	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	117,000	0	0	0	0	0	0	0
1980	200,000	0	0	0	0	0	0	74,000
1981	135,000	0	0	0	0	0	0	385,000
1982	1,503,000	0	0	0	0	0	0	1,586,000
1983	2,260,000	0	0	0	0	0	0	2,965,000
1984	735,000	0	0	0	0	0	796,000	1,380,000
1985	93,000	520,000	153,000	625,000	955,000	703,000	1,139,000	146,000
1986	784,000	5,207,000	3,318,000	2,417,000	1,785,000	1,203,000	4,971,000	34,000
1987	11,000	139,000	2,356,000	2,007,000	1,985,000	47,000	21,741,000	43,000
1988	1,000	123,000	2,034,000	2,099,000	2,461,000	40,000	5,317,000	70,000
1989	0	205,000	351,000	354,000	357,000	61,000	10,930,000	229,000
1990	1,000	577,000	809,000	636,000	811,000	194,000	24,411,000	887,000
1991	1,000	280,000	360,000	278,000	357,000	93,000	16,740,000	1,215,000
1992	0	40,000	41,000	39,000	35,000	13,000	8,884,000	3,719,000
1993	0	20,000	26,000	20,000	25,000	7,000	2,958,000	20,059,000
1994	0	0	0	0	0	0	0	6,460,000
1995	0	0	0	0	0	0	0	2,061,000
1996	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	5,841,000	7,111,000	9,448,000	8,475,000	8,771,000	2,361,000	97,887,000	41,313,000

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TABLE B-26

Capital Costs of Each Aqueduct Reach to Be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)							Grand Total (16)
	Mojave Division (continued)			Santa Ana Division				
	Reach 23C (9)	Reach 24 (10)	Total (11)	Reach 25 (12)	Reach 26A (13)	Reach 26B (14)	Total (15)	
1952	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	117,000	0	0	0	0	117,000
1980	0	0	274,000	0	0	0	0	274,000
1981	0	0	520,000	0	0	0	0	520,000
1982	0	0	3,089,000	0	0	0	0	3,089,000
1983	0	0	5,225,000	0	0	0	0	5,225,000
1984	0	0	2,911,000	0	0	0	0	2,911,000
1985	0	0	4,334,000	0	528,000	89,000	617,000	4,951,000
1986	25,000	0	19,744,000	0	1,926,000	154,000	2,080,000	21,824,000
1987	178,000	0	28,507,000	0	3,699,000	437,000	4,136,000	32,643,000
1988	632,000	0	12,777,000	0	5,736,000	3,329,000	9,065,000	21,842,000
1989	1,130,000	0	13,617,000	0	41,463,000	1,650,000	43,113,000	56,730,000
1990	2,066,000	0	30,392,000	0	31,341,000	1,650,000	32,991,000	63,383,000
1991	4,980,000	0	24,304,000	0	29,334,000	999,000	30,333,000	54,637,000
1992	11,920,000	0	24,691,000	0	17,953,000	299,000	18,252,000	42,943,000
1993	23,143,000	0	46,258,000	0	36,610,000	0	36,610,000	82,868,000
1994	7,492,000	0	13,952,000	0	20,880,000	0	20,880,000	34,832,000
1995	1,611,000	0	3,672,000	0	0	0	0	3,672,000
1996	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	53,177,000	0	234,384,000	0	189,470,000	8,607,000	198,077,000	432,461,000

TABLE B-27

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of the East Branch Enlargement Transportation Charge (a

(Dollars)

	California Aqueduct							
	Mojave Division							
Calendar Year	Reach 18A (1)	Reach 19 (2)	Reach 20A (3)	Reach 20B (4)	Reach 21 (5)	Reach 22A (6)	Reach 22B (7)	Reach 23B (8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	173,173	0
1995	0	0	0	0	0	0	180,964	0
1996	0	0	0	0	0	0	184,548	0
1997	0	0	0	0	0	0	184,548	0
1998	0	0	0	0	0	0	184,548	0
1999	0	0	0	0	0	0	184,548	0
2000	0	0	0	0	0	0	184,548	0
2001	0	0	0	0	0	0	184,548	0
2002	0	0	0	0	0	0	184,548	0
2003	0	0	0	0	0	0	184,548	0
2004	0	0	0	0	0	0	184,548	0
2005	0	0	0	0	0	0	184,548	0
2006	0	0	0	0	0	0	184,548	0
2007	0	0	0	0	0	0	184,548	0
2008	0	0	0	0	0	0	184,548	0
2009	0	0	0	0	0	0	184,548	0
2010	0	0	0	0	0	0	184,548	0
2011	0	0	0	0	0	0	184,548	0
2012	0	0	0	0	0	0	184,548	0
2013	0	0	0	0	0	0	184,548	0
2014	0	0	0	0	0	0	184,548	0
2015	0	0	0	0	0	0	184,548	0
2016	0	0	0	0	0	0	184,548	0
2017	0	0	0	0	0	0	184,548	0
2018	0	0	0	0	0	0	184,548	0
2019	0	0	0	0	0	0	184,548	0
2020	0	0	0	0	0	0	184,548	0
2021	0	0	0	0	0	0	184,548	0
2022	0	0	0	0	0	0	184,548	0
2023	0	0	0	0	0	0	184,548	0
2024	0	0	0	0	0	0	184,548	0
2025	0	0	0	0	0	0	184,548	0
2026	0	0	0	0	0	0	184,548	0
2027	0	0	0	0	0	0	184,548	0
2028	0	0	0	0	0	0	184,548	0
2029	0	0	0	0	0	0	184,548	0
2030	0	0	0	0	0	0	184,548	0
2031	0	0	0	0	0	0	184,548	0
2032	0	0	0	0	0	0	184,548	0
2033	0	0	0	0	0	0	184,548	0
2034	0	0	0	0	0	0	184,548	0
2035	0	0	0	0	0	0	184,548	0
Total	0	0	0	0	0	0	7,736,057	0

a) This table shows only the estimated incremental minimum OMP&R costs attributable to East Branch Enlargement. Under Article 49(e)(1), the contractors participating in the East Branch Enlargement will also share in the remaining minimum OMP&R costs of the affected reaches according to a formula to be developed by DWR in consultation with the affected contractors. Once the formula is developed, subsequent versions of this table will reflect the transfer of a share of the minimum OMP&R costs now shown in Table B-11.

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TABLE B-27

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of the East Branch Enlargement Transportation Charge (a

(Dollars)

	California Aqueduct (continued)							
	Mojave Division (continued)			Santa Ana Division				
Calendar Year	Reach 23C (9)	Reach 24 (10)	Subtotal (11)	Reach 25 (12)	Reach 26A (13)	Reach 26B (14)	Subtotal (15)	Total (16)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994	11,682	0	184,855	0	51,132	0	51,132	235,987
1995	146,913	0	327,877	0	20,559	0	20,559	348,436
1996	124,706	0	309,254	0	77,969	0	77,969	387,223
1997	124,706	0	309,254	0	77,969	0	77,969	387,223
1998	124,706	0	309,254	0	77,969	0	77,969	387,223
1999	124,706	0	309,254	0	77,969	0	77,969	387,223
2000	124,706	0	309,254	0	77,969	0	77,969	387,223
2001	124,706	0	309,254	0	77,969	0	77,969	387,223
2002	124,706	0	309,254	0	77,969	0	77,969	387,223
2003	124,706	0	309,254	0	77,969	0	77,969	387,223
2004	124,706	0	309,254	0	77,969	0	77,969	387,223
2005	124,706	0	309,254	0	77,969	0	77,969	387,223
2006	124,706	0	309,254	0	77,969	0	77,969	387,223
2007	124,706	0	309,254	0	77,969	0	77,969	387,223
2008	124,706	0	309,254	0	77,969	0	77,969	387,223
2009	124,706	0	309,254	0	77,969	0	77,969	387,223
2010	124,706	0	309,254	0	77,969	0	77,969	387,223
2011	124,706	0	309,254	0	77,969	0	77,969	387,223
2012	124,706	0	309,254	0	77,969	0	77,969	387,223
2013	124,706	0	309,254	0	77,969	0	77,969	387,223
2014	124,706	0	309,254	0	77,969	0	77,969	387,223
2015	124,706	0	309,254	0	77,969	0	77,969	387,223
2016	124,706	0	309,254	0	77,969	0	77,969	387,223
2017	124,706	0	309,254	0	77,969	0	77,969	387,223
2018	124,706	0	309,254	0	77,969	0	77,969	387,223
2019	124,706	0	309,254	0	77,969	0	77,969	387,223
2020	124,706	0	309,254	0	77,969	0	77,969	387,223
2021	124,706	0	309,254	0	77,969	0	77,969	387,223
2022	124,706	0	309,254	0	77,969	0	77,969	387,223
2023	124,706	0	309,254	0	77,969	0	77,969	387,223
2024	124,706	0	309,254	0	77,969	0	77,969	387,223
2025	124,706	0	309,254	0	77,969	0	77,969	387,223
2026	124,706	0	309,254	0	77,969	0	77,969	387,223
2027	124,706	0	309,254	0	77,969	0	77,969	387,223
2028	124,706	0	309,254	0	77,969	0	77,969	387,223
2029	124,706	0	309,254	0	77,969	0	77,969	387,223
2030	124,706	0	309,254	0	77,969	0	77,969	387,223
2031	124,706	0	309,254	0	77,969	0	77,969	387,223
2032	124,706	0	309,254	0	77,969	0	77,969	387,223
2033	124,706	0	309,254	0	77,969	0	77,969	387,223
2034	124,706	0	309,254	0	77,969	0	77,969	387,223
2035	124,706	0	309,254	0	77,969	0	77,969	387,223
Total	5,146,835	0	12,882,892	0	3,190,451	0	3,190,451	16,073,343

TABLE B-28

Capital Costs of East Branch Enlargement Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	Southern California Area							
	Antelope Valley-East Kern Water Agency (1)	*Coachella Valley Water District (2)*	*Desert Water Agency (3)*	*Mojave Water Agency (4)*	*Palmdale Water District (5)*	*San Bernardino Valley Municipal Water District (6)*	*Metropolitan Water District of Southern California (7)*	*Total (8)*
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	11,731	1,010	10,566	466	0	93,227	117,000
1980	0	28,241	4,708	27,495	797	0	212,759	274,000
1981	0	56,134	16,676	61,271	538	0	385,381	520,000
1982	0	326,180	76,872	337,913	5,988	0	2,342,047	3,089,000
1983	0	554,658	138,964	582,070	9,004	0	3,940,304	5,225,000
1984	0	306,514	68,842	314,468	2,928	0	2,218,248	2,911,000
1985	55,475	497,825	70,126	392,798	5,471	21,614	3,907,691	4,951,000
1986	198,387	2,205,466	274,879	1,766,932	46,198	78,842	17,253,296	21,824,000
1987	145,427	3,322,254	453,175	2,555,299	17,585	151,421	25,997,839	32,643,000
1988	150,897	2,005,908	444,550	1,088,539	16,586	234,807	17,900,713	21,842,000
1989	25,543	6,599,387	2,403,534	1,137,946	3,562	1,697,316	44,862,712	56,730,000
1990	55,735	7,046,265	2,058,642	2,595,106	7,929	1,282,965	50,336,358	63,383,000
1991	24,751	6,264,722	2,017,617	1,794,201	3,604	1,200,807	43,331,298	54,637,000
1992	2,911	5,085,357	1,746,887	1,294,508	471	734,918	34,077,948	42,943,000
1993	1,774	10,052,690	3,877,665	2,834,024	259	1,498,655	64,602,933	82,868,000
1994	0	4,283,290	1,732,290	823,524	0	854,737	27,138,159	34,832,000
1995	0	432,326	157,423	262,737	0	0	2,819,514	3,672,000
1996	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	660,900	49,078,948	15,543,860	17,879,397	121,386	7,756,082	341,420,427	432,461,000

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TABLE B-29

Capital Cost Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

	Southern California Area							
Calendar Year	Antelope Valley-East Kern Water Agency (1)	Coachella Valley Water District (2)	Desert Water Agency (3)	Mojave Water Agency (4)	Palmdale Water District (5)	San Bernardino Valley Municipal Water District (a (6)	Metropolitan Water District of Southern California (7)	Total (8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	16,567	1,230,300	389,650	448,197	3,043	0	8,558,653	10,646,410
1989	17,412	1,292,997	409,507	471,037	3,198	0	8,994,804	11,188,955
1990	17,405	1,292,536	409,361	470,869	3,197	0	8,991,597	11,184,965
1991	17,403	1,292,328	409,295	470,793	3,196	0	8,990,150	11,183,165
1992	45,821	3,402,700	1,077,673	1,239,599	8,416	0	23,671,073	29,445,282
1993	50,718	3,766,323	1,192,837	1,372,066	9,315	0	26,200,636	32,591,895
1994	47,353	3,516,481	1,113,709	1,281,049	8,697	0	24,462,599	30,429,888
1995	47,268	3,510,143	1,111,702	1,278,740	8,681	0	24,418,510	30,375,044
1996	45,861	3,405,700	1,078,624	1,240,692	8,423	0	23,691,946	29,471,246
1997	47,214	3,506,134	1,110,432	1,277,280	8,672	0	24,390,613	30,340,345
1998	47,119	3,499,084	1,108,199	1,274,712	8,654	0	24,341,576	30,279,344
1999	47,095	3,497,341	1,107,647	1,274,077	8,650	0	24,329,451	30,264,261
2000	48,583	3,607,774	1,142,623	1,314,307	8,923	0	25,097,680	31,219,890
2001	48,639	3,611,944	1,143,944	1,315,826	8,933	0	25,126,694	31,255,980
2002	48,283	3,585,518	1,135,574	1,306,199	8,868	0	24,942,859	31,027,301
2003	48,315	3,587,883	1,136,323	1,307,061	8,874	0	24,959,307	31,047,763
2004	46,160	3,427,839	1,085,635	1,248,757	8,478	0	23,845,955	29,662,824
2005	46,192	3,430,242	1,086,396	1,249,633	8,484	0	23,862,671	29,683,618
2006	46,258	3,435,181	1,087,961	1,251,432	8,496	0	23,897,030	29,726,358
2007	46,346	3,441,712	1,090,029	1,253,811	8,512	0	23,942,466	29,782,876
2008	46,437	3,448,417	1,092,153	1,256,254	8,529	0	23,989,103	29,840,893
2009	46,506	3,453,595	1,093,792	1,258,140	8,542	0	24,025,124	29,885,699
2010	46,604	3,460,818	1,096,080	1,260,771	8,559	0	24,075,374	29,948,206
2011	46,679	3,466,432	1,097,858	1,262,817	8,573	0	24,114,430	29,996,789
2012	46,759	3,472,367	1,099,738	1,264,979	8,588	0	24,155,717	30,048,148
2013	46,830	3,477,631	1,101,405	1,266,896	8,601	0	24,192,335	30,093,698
2014	46,905	3,483,179	1,103,162	1,268,917	8,615	0	24,230,926	30,141,704
2015	46,978	3,488,601	1,104,879	1,270,893	8,628	0	24,268,649	30,188,628
2016	47,063	3,494,932	1,106,884	1,273,199	8,644	0	24,312,687	30,243,409
2017	47,164	3,502,411	1,109,253	1,275,924	8,662	0	24,364,720	30,308,134
2018	47,275	3,510,713	1,111,882	1,278,948	8,683	0	24,422,470	30,379,971
2019	47,383	3,518,689	1,114,409	1,281,854	8,703	0	24,477,958	30,448,996
2020	47,511	3,528,219	1,117,427	1,285,325	8,726	0	24,544,250	30,531,458
2021	47,675	3,540,401	1,121,285	1,289,763	8,756	0	24,628,998	30,636,878
2022	47,865	3,554,498	1,125,750	1,294,899	8,791	0	24,727,063	30,758,866
2023	36,342	2,698,761	854,728	983,155	6,675	0	18,774,077	23,353,738
2024	37,572	2,790,138	883,668	1,016,444	6,901	0	19,409,753	24,144,476
2025	26,872	1,995,544	632,011	726,974	4,935	0	13,882,117	17,268,453
2026	4,991	370,669	117,395	135,034	917	0	2,578,577	3,207,583
2027	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0
Total	1,637,423	121,596,175	38,510,880	44,297,323	300,738	0	845,890,598	1,052,233,137

a) Under Article 49(d)(4)(A) of its contract, San Bernardino Valley Municipal Water District elected to pay a portion of its allocated costs of East Branch Enlargement in advance rather than to participate in payment of Water System Revenue Bonds. This election was made via a letter of agreement signed June 1, 1987. As of June 30, 1992, $5,479,000 has been received from the San Bernardino Valley Municipal Water District.

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TABLE B-30

Minimum OMP&R Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

	Southern California Area							
Calendar Year	*Antelope Valley-East Kern Water Agency (1)*	*Coachella Valley Water District (2)*	*Desert Water Agency (3)*	*Mojave Water Agency (4)*	*Palmdale Water District (5)*	*San Bernardino Valley Municipal Water District (a (6)*	*Metropolitan Water District of Southern California (7)*	*Total (8)*
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994	0	25,326	4,798	15,701	0	2,093	188,069	235,987
1995	0	39,425	9,461	16,407	0	842	282,301	348,436
1996	0	44,169	11,563	16,732	0	3,192	311,567	387,223
1997	0	44,169	11,563	16,732	0	3,192	311,567	387,223
1998	0	44,169	11,563	16,732	0	3,192	311,567	387,223
1999	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2000	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2001	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2002	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2003	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2004	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2005	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2006	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2007	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2008	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2009	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2010	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2011	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2012	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2013	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2014	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2015	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2016	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2017	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2018	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2019	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2020	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2021	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2022	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2023	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2024	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2025	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2026	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2027	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2028	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2029	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2030	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2031	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2032	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2033	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2034	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2035	0	44,169	11,563	16,732	0	3,192	311,567	387,223
Total	0	1,831,511	476,779	701,388	0	130,615	12,933,050	16,073,343

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TABLE B-31

Total East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area							
	Antelope Valley-East Kern Water Agency (1)	*Coachella Valley Water District (2)*	*Desert Water Agency (3)*	*Mojave Water Agency (4)*	*Palmdale Water District (5)*	*San Bernardino Valley Municipal Water District (a (6)*	*Metropolitan Water District of Southern California (7)*	*Total (8)*
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	16,567	1,230,300	389,650	448,197	3,043	0	8,558,653	10,646,410
1989	17,412	1,292,997	409,507	471,037	3,198	0	8,994,804	11,188,955
1990	17,405	1,292,536	409,361	470,869	3,197	0	8,991,597	11,184,965
1991	17,403	1,292,328	409,295	470,793	3,196	0	8,990,150	11,183,165
1992	45,821	3,402,700	1,077,673	1,239,599	8,416	0	23,671,073	29,445,282
1993	50,718	3,766,323	1,192,837	1,372,066	9,315	0	26,200,636	32,591,895
1994	47,353	3,541,807	1,118,507	1,296,750	8,697	2,093	24,650,668	30,665,875
1995	47,268	3,549,568	1,121,163	1,295,147	8,681	842	24,700,811	30,723,480
1996	45,861	3,449,869	1,090,187	1,257,424	8,423	3,192	24,003,513	29,858,469
1997	47,214	3,550,303	1,121,995	1,294,012	8,672	3,192	24,702,180	30,727,568
1998	47,119	3,543,253	1,119,762	1,291,444	8,654	3,192	24,653,143	30,666,567
1999	47,095	3,541,510	1,119,210	1,290,809	8,650	3,192	24,641,018	30,651,484
2000	48,583	3,651,943	1,154,186	1,331,039	8,923	3,192	25,409,247	31,607,113
2001	48,639	3,656,113	1,155,507	1,332,558	8,933	3,192	25,438,261	31,643,203
2002	48,283	3,629,687	1,147,137	1,322,931	8,868	3,192	25,254,426	31,414,524
2003	48,315	3,632,052	1,147,886	1,323,793	8,874	3,192	25,270,874	31,434,986
2004	46,160	3,472,008	1,097,198	1,265,489	8,478	3,192	24,157,522	30,050,047
2005	46,192	3,474,411	1,097,959	1,266,365	8,484	3,192	24,174,238	30,070,841
2006	46,258	3,479,350	1,099,524	1,268,164	8,496	3,192	24,208,597	30,113,581
2007	46,346	3,485,881	1,101,592	1,270,543	8,512	3,192	24,254,033	30,170,099
2008	46,437	3,492,586	1,103,716	1,272,986	8,529	3,192	24,300,670	30,228,116
2009	46,506	3,497,764	1,105,355	1,274,872	8,542	3,192	24,336,691	30,272,922
2010	46,604	3,504,987	1,107,643	1,277,503	8,559	3,192	24,386,941	30,335,429
2011	46,679	3,510,601	1,109,421	1,279,549	8,573	3,192	24,425,997	30,384,012
2012	46,759	3,516,536	1,111,301	1,281,711	8,588	3,192	24,467,284	30,435,371
2013	46,830	3,521,800	1,112,968	1,283,628	8,601	3,192	24,503,902	30,480,921
2014	46,905	3,527,348	1,114,725	1,285,649	8,615	3,192	24,542,493	30,528,927
2015	46,978	3,532,770	1,116,442	1,287,625	8,628	3,192	24,580,216	30,575,851
2016	47,063	3,539,101	1,118,447	1,289,931	8,644	3,192	24,624,254	30,630,632
2017	47,164	3,546,580	1,120,816	1,292,656	8,662	3,192	24,676,287	30,695,357
2018	47,275	3,554,882	1,123,445	1,295,680	8,683	3,192	24,734,037	30,767,194
2019	47,383	3,562,858	1,125,972	1,298,586	8,703	3,192	24,789,525	30,836,219
2020	47,511	3,572,388	1,128,990	1,302,057	8,726	3,192	24,855,817	30,918,681
2021	47,675	3,584,570	1,132,848	1,306,495	8,756	3,192	24,940,565	31,024,101
2022	47,865	3,598,667	1,137,313	1,311,631	8,791	3,192	25,038,630	31,146,089
2023	36,342	2,742,930	866,291	999,887	6,675	3,192	19,085,644	23,740,961
2024	37,572	2,834,307	895,231	1,033,176	6,901	3,192	19,721,320	24,531,699
2025	26,872	2,039,713	643,574	743,706	4,935	3,192	14,193,684	17,655,676
2026	4,991	414,838	128,958	151,766	917	3,192	2,890,144	3,594,806
2027	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2028	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2029	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2030	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2031	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2032	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2033	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2034	0	44,169	11,563	16,732	0	3,192	311,567	387,223
2035	0	44,169	11,563	16,732	0	3,192	311,567	387,223
Total	1,637,423	123,427,686	38,987,659	44,998,711	300,738	130,615	858,823,648	1,068,306,480

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TABLE B-32

Annual Surplus and Unscheduled Water Deliveries

(Acre-feet)

Calendar Year (a	North Bay Area: Napa County FC&WCD (1)	Solano County Water Agency (2)	Area Total (3)	South Bay Area: Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Area Total (7)
1973	0	0	0	0	0	2,499	2,499
1974	0	0	0	0	0	2,934	2,934
1975	0	0	0	0	0	18,470	18,470
1976	0	0	0	3,636	4,147	24,705	32,488
1977	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0
1979	0	0	0	0	0	15,998	15,998
1980 (b	0	0	0	0	0	14,278	14,278
1981 (b	0	0	0	0	0	18,920	18,920
1982 (b	0	0	0	0	0	1,303	1,303
1983	0	0	0	0	0	0	0
1984	0	0	0	0	0	3,663	3,663
1985	0	0	0	0	0	9,638	9,638
1986 (c	0	0	0	0	0	2,595	2,595
1987 (d	0	0	0	0	0	6,949	6,949
1988	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0
1990 (d	0	0	0	0	0	0	0
1991 (d	768	2,753	3,521	0	0	0	0
1992 (d	1,156	3,065	4,221	0	0	0	0
Total	1,924	5,818	7,742	3,636	4,147	121,952	129,735

Calendar Year (a	San Joaquin Valley Area: Dudley Ridge Water District (8)	Empire West Side Irrigation District (9)	Kern County Water Agency (10)	Oak Flat Water District (11)	Tulare Lake Basin Water Storage District (12)	Area Total (13)	Southern California Area: Castaic Lake Water Agency (e (14)	Littlerock Creek Irrigation District (15)	Area Total (16)	Total All Areas (17)
1973	13,192	2,814	163,744	1,013	69,588	250,351	4,104	80	4,184	257,034
1974	33,391	1,539	299,433	3,471	70,961	408,795	4,128	67	4,195	415,924
1975	40,555	3,448	410,820	3,576	135,965	594,364	7,495	356	7,851	620,685
1976	30,922	3,457	442,150	3,840	61,526	541,895	5,727	0	5,727	580,110
1977	0	0	0	0	0	0	0	0	0	0
1978	7,586	0	8,623	6	0	16,215	0	0	0	16,215
1979	38,545	0	524,247	698	67,342	630,832	0	0	0	646,830
1980 (b	39,079	0	327,233	718	14,817	381,847	6,092	0	6,092	402,217
1981 (b	32,327	2,992	624,581	2,788	215,926	878,614	10,647	247	10,894	908,428
1982 (b	14,463	926	124,736	721	67,365	208,211	6,359	0	6,359	215,873
1983	13,019	0	0	0	0	13,019	0	0	0	13,019
1984	19,500	0	230,691	1,644	0	251,835	7,419	0	7,419	262,917
1985	7,636	0	186,486	764	96,887	291,773	6,095	0	6,095	307,506
1986 (c	903	1,130	14,987	247	12,788	30,055	3,970	0	3,970	36,620
1987 (d	0	1,876	52,048	255	51,206	105,385	2,573	0	2,573	114,907
1988	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0
1990 (d	0	0	0	90	0	90	0	0	0	90
1991 (d	0	0	0	0	0	0	0	0	0	3,521
1992 (d	0	0	0	0	0	0	0	0	0	4,221
Total	291,118	18,182	3,409,779	19,831	864,371	4,603,281	64,609	750	65,359	4,806,117

a) All deliveries are surplus water deliveries unless otherwise indicated.
b) Includes surplus and unscheduled water.
c) Includes 12,270 acre-feet of 1985 surplus water carried over and delivered during January and February 1986. Also includes 22,034 acre-feet of unscheduled water.
d) Unscheduled water only.

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TABLE B-33

Power Costs for Pumping Surplus Water

(Dollars)

Calendar Year	North Bay Aqueduct Reach 1 Barker Slough Pumping Plant (1)	North Bay Aqueduct Reach 3A Cordelia Solano Pumping Plant (2)	North Bay Aqueduct Reach 3B Cordelia Napa Pumping Plant (3)	South Bay Aqueduct Reach 1 South Bay and Del Valle Pumping Plants (4)	California Aqueduct Reach 1 Banks Pumping Plant (5)	California Aqueduct Reach 4 Dos Amigos Pumping Plant (6)	California Aqueduct Reach 14A Buena Vista Pumping Plant (7)	California Aqueduct Reach 15A Teerink Pumping Plant (8)	California Aqueduct Reach 16A Chrisman Pumping Plant (9)	California Aqueduct Reach 17E Edmonston Pumping Plant (10)	California Aqueduct Reach 31A Las Perillas and Badger Hill Pumping Plants (11)	Combined Total (12)
1973(a												
Capacity	0	0	0	5,290	0	37,033	25,622	29,816	0	0	15,588	113,349
Energy	0	0	0	6,302	231,691	102,725	53,375	12,819	1,697	526	24,245	433,380
Total	0	0	0	11,592	231,691	139,758	78,997	42,635	1,697	526	39,833	546,729
1974												
Capacity	0	0	0	21,773	0	81,328	69,381	62,301	0	0	31,511	266,294
Energy	0	0	0	7,561	374,506	181,827	95,596	22,550	5,599	450	33,406	721,495
Total	0	0	0	29,334	374,506	263,155	164,977	84,851	5,599	450	64,917	987,789
1975												
Capacity	0	0	0	32,288	298,709	126,806	99,676	30,049	0	0	32,231	619,759
Energy	0	0	0	47,597	617,396	264,000	99,745	313	661	2,391	49,501	1,081,604
Total	0	0	0	79,885	916,105	390,806	199,421	30,362	661	2,391	81,732	1,701,363
1976												
Capacity	0	0	0	41,897	60,502	63,788	85,415	8,579	0	0	30,449	290,630
Energy	0	0	0	83,722	597,636	225,126	103,213	4,885	5,385	0	45,101	1,065,068
Total	0	0	0	125,619	658,138	288,914	188,628	13,464	5,385	0	75,550	1,355,698
1977												
Capacity	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
1978												
Capacity	0	0	0	0	144,188	51,403	0	0	0	0	0	195,591
Energy	0	0	0	0	15,039	6,591	0	0	0	0	0	21,630
Total	0	0	0	0	159,227	57,994	0	0	0	0	0	217,221
1979												
Capacity	0	0	0	27,116	382,070	232,001	35,743	6,771	3,165	0	8,769	695,635
Energy	0	0	0	39,517	599,886	256,188	51,045	8,205	4,194	0	11,808	970,843
Total	0	0	0	66,633	981,956	488,189	86,788	14,976	7,359	0	20,577	1,666,478
1980												
Capacity	0	0	0	30,319	530,982	227,837	28,682	3,559	5,146	0	3,228	829,753
Energy	0	0	0	35,268	373,023	162,404	73,422	11,451	9,753	0	22,755	688,076
Total	0	0	0	65,587	904,005	390,241	102,104	15,010	14,899	0	25,983	1,517,829
1981												
Capacity	0	0	0	36,749	625,106	281,362	69,202	22,262	24,138	1,054	26,168	1,086,041
Energy	0	0	0	44,229	806,574	366,945	85,341	27,489	29,847	1,629	34,020	1,396,074
Total	0	0	0	80,978	1,431,680	648,307	154,543	49,751	53,985	2,683	60,188	2,482,115
1982												
Capacity	0	0	0	40,355	1,704,800	578,744	176,362	16,932	2,612	0	6,148	2,525,953
Energy	0	0	0	3,225	192,415	88,494	19,390	2,109	296	0	5,278	311,207
Total	0	0	0	43,580	1,897,215	667,238	195,752	19,041	2,908	0	11,426	2,837,160
1983												
Capacity	0	0	0	0	40,303	16,941	0	0	0	0	0	57,244
Energy	0	0	0	0	43,045	20,026	0	0	0	0	0	63,071
Total	0	0	0	0	83,348	36,967	0	0	0	0	0	120,315
1984 (b												
Energy	0	0	0	51,632	1,865,605	769,718	0	0	0	0	37,407	2,724,362
1985												
Energy	0	0	0	301,663	2,835,778	1,180,255	0	0	0	0	46,140	4,363,836
1986												
Energy	0	0	0	43,007	227,832	99,593	0	0	0	0	20,176	390,608
1987												
Energy	0	0	0	98,970	610,046	273,559	59,496	15,365	6,776	0	12,700	1,076,912
1988												
Energy	0	0	0	0	0	0	0	0	0	0	0	0
1989												
Energy	0	0	0	0	0	0	0	0	0	0	0	0
1990												
Energy	0	0	0	0	485	0	0	0	0	0	0	485
1991												
Energy	32,766	14,685	18,043	0	0	0	0	0	0	0	0	65,494
1992												
Energy	27,909	19,495	19,297	0	0	0	0	0	0	0	0	66,701
Grand Total	60,675	34,180	37,340	998,480	13,177,617	5,694,694	1,230,706	285,455	99,269	6,050	496,629	22,121,095

a) May through December only.
b) No capacity costs are charged to surplus water pumping after 1983.

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TABLE B-34

Power, Replacement, and Administrative Charge for Surplus Water Delivery

(Dollars)

Calendar Year	North Bay Area		South Bay Area		San Joaquin Valley Area						Southern California Area				Total
	NCFC&WCD (1)	SCWA (2)	ACWD (3)	SCVWD (4)	CLWA (5)	DRWD (6)	EWSID (7)	KCWA (a (8)	OFWD (9)	TLBWSD (10)	AVEK (11)	LCID (12)	CVWD (13)	DWA (14)	(15)
1978															
Capacity	0	0	0	3,275	0	14,642	0	154,051	4	23,619	0	0	0	0	195,591
Energy	0	0	0	0	0	10,119	0	11,505	6	0	0	0	0	0	21,630
Replacement	0	0	0	0	0	248	0	281	0	0	0	0	0	0	529
Administrative	0	0	0	0	0	3,793	0	4,312	3	0	0	0	0	0	8,108
Total	0	0	0	3,275	0	28,802	0	170,149	13	23,619	0	0	0	0	225,858
1979															
Capacity	0	0	0	37,413	0	37,615	0	547,875	417	72,315	0	0	0	0	695,635
Energy	0	0	0	54,354	0	51,418	0	774,587	651	89,833	0	0	0	0	970,843
Replacement	0	0	0	413	0	886	0	7,633	5	2,042	0	0	0	0	10,979
Administrative	0	0	0	4,005	0	20,051	0	116,977	176	46,075	0	0	0	0	187,284
Total	0	0	0	96,185	0	109,970	0	1,447,072	1,249	210,265	0	0	0	0	1,864,741
1980															
Capacity	0	0	0	41,641	8,485	40,160	0	636,135	432	102,900	0	0	0	0	829,753
Energy	0	0	0	48,510	13,101	52,131	0	553,902	666	19,766	0	0	0	0	688,076
Replacement	0	0	0	533	3,332	1,255	0	149,588	134	5,705	0	0	0	0	160,547
Administrative	0	0	0	5,638	3,815	21,859	0	281,776	666	22,258	0	0	0	0	336,012
Total	0	0	0	96,322	28,733	115,405	0	1,621,401	1,898	150,629	0	0	0	0	2,014,388
1981															
Capacity	0	0	0	50,706	14,608	40,674	2,520	784,875	1,601	189,238	0	1,819	0	0	1,086,041
Energy	0	0	0	61,028	22,575	42,078	3,897	980,142	2,475	281,071	0	2,808	0	0	1,396,074
Replacement	0	0	0	3,538	4,099	12,446	1,152	275,232	521	83,132	0	431	0	0	380,551
Administrative	0	0	725	11,192	6,160	19,221	1,869	348,397	1,950	146,357	0	123	0	0	535,994
Total	0	0	725	126,464	47,442	114,419	9,438	2,388,646	6,547	699,798	0	5,181	0	0	3,398,660
1982															
Capacity	0	0	0	55,431	20,739	74,514	6,103	1,658,571	434	339,639	370,522	0	0	0	2,525,953
Energy	0	0	0	4,386	13,578	18,876	1,208	184,594	643	87,922	0	0	0	0	311,207
Replacement	0	0	0	105	2,462	5,596	361	54,018	135	26,070	0	0	0	0	88,747
Administrative	0	0	0	7,328	3,710	5,487	698	185,494	676	50,524	0	0	0	0	253,917
Total	0	0	0	67,250	40,489	104,473	8,370	2,082,677	1,888	504,155	370,522	0	0	0	3,179,824
1983															
Capacity	0	0	0	1,698	187	3,850	60	48,348	0	3,101	0	0	0	0	57,244
Energy	0	0	0	0	0	62,996	0	0	75	0	0	0	0	0	63,071
Replacement	0	0	0	0	0	5,851	0	0	6	0	0	0	0	0	5,857
Administrative	0	0	0	0	0	6,510	0	0	14	0	0	0	0	0	6,524
Total	0	0	0	1,698	187	79,207	60	48,348	95	3,101	0	0	0	0	132,696
1984 (b															
Energy	0	0	0	70,885	98,169	222,456	0	2,322,714	10,138	0	0	0	0	0	2,724,362
Replacement	0	0	0	782	3,334	8,763	0	103,670	351	0	0	0	0	0	116,900
Administrative	0	0	2,450	7,160	6,800	9,380	0	36,460	6,340	0	0	0	0	0	68,590
Total	0	0	2,450	78,827	108,303	240,599	0	2,462,844	16,829	0	0	0	0	0	2,909,852
1985															
Energy	0	0	0	414,281	124,603	107,436	0	2,444,591	6,373	1,266,552	0	0	0	0	4,363,836
Replacement	0	0	0	2,053	2,737	3,429	0	83,732	163	43,502	0	0	0	0	135,616
Administrative	0	0	0	4,811	4,596	5,227	0	18,251	4,245	11,883	0	0	0	0	49,013
Total	0	0	0	421,145	131,936	116,092	0	2,546,574	10,781	1,321,937	0	0	0	0	4,548,465
1986															
Energy	0	0	0	58,939	52,904	7,658	12,104	113,630	1,267	144,106	0	0	0	0	390,608
Replacement	0	0	0	553	1,783	405	507	6,729	53	5,742	0	0	0	0	15,772
Administrative	0	0	2,263	3,468	6,051	3,995	1,550	7,533	3,545	5,470	0	0	0	0	33,875
Total	0	0	2,263	62,960	60,738	12,058	14,161	127,892	4,865	155,318	0	0	0	0	440,255
1987															
Energy	0	0	0	135,461	32,558	0	14,941	500,919	1,367	391,666	0	0	0	0	1,076,912
Replacement	0	0	0	1,974	1,508	0	1,099	37,897	72	30,007	0	0	0	0	72,557
Administrative	0	0	0	1,392	1,240	711	1,298	4,135	1,252	2,769	0	0	0	0	12,797
Total	0	0	0	138,827	35,306	711	17,338	542,951	2,691	424,442	0	0	0	0	1,162,266
1988															
Energy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative	0	0	0	839	838	839	838	839	838	839	0	0	839	839	7,548
Total	0	0	0	839	838	839	838	839	838	839	0	0	839	839	7,548
1989															
Energy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative	0	0	0	490	490	490	490	490	490	490	0	0	490	490	4,410
Total	0	0	0	490	490	490	490	490	490	490	0	0	490	490	4,410
1990															
Energy	0	0	0	0	0	0	0	0	485	0	0	0	0	0	485
Replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	485	0	0	0	0	0	485
1991															
Energy	25,190	40,304	0	0	0	0	0	0	0	0	0	0	0	0	65,494
Replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	25,190	40,304	0	0	0	0	0	0	0	0	0	0	0	0	65,494
1991															
Energy	26,940	39,761	0	0	0	0	0	0	0	0	0	0	0	0	66,701
Replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	26,940	39,761	0	0	0	0	0	0	0	0	0	0	0	0	66,701
Grand Total	52,130	80,065	5,438	1,094,282	454,462	923,065	50,695	13,439,883	48,669	3,494,593	370,522	5,181	1,329	1,329	20,021,643

a) 1982 costs are preliminary and may change when 1982 exchange is taken into consideration.
b) No capacity costs are charged to surplus water pumping after 1983.

STATE OF CALIFORNIA THE RESOURCES AGENCY DEPARTMENT OF WATER RESOURCES

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