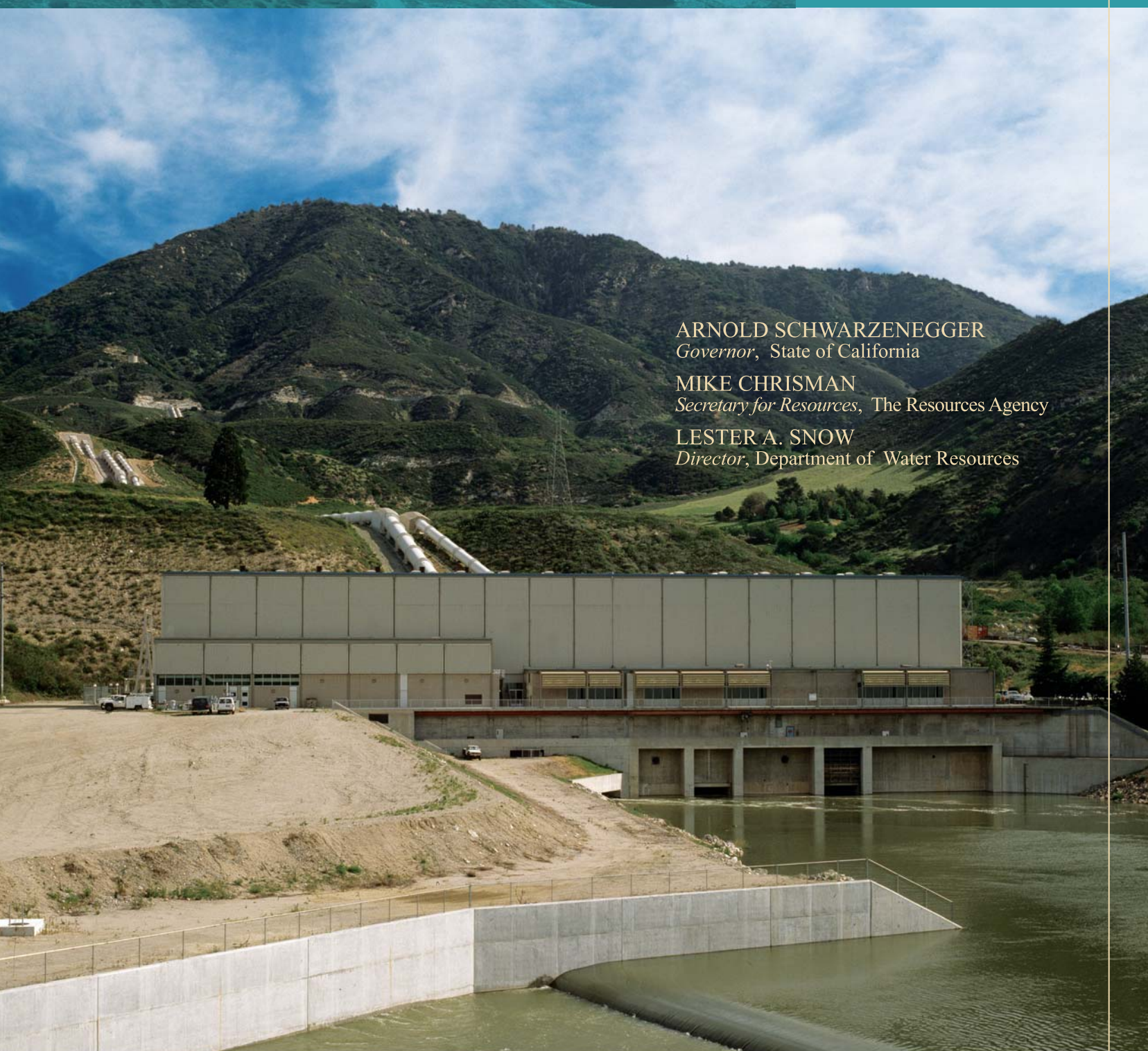
MANAGEMENT OF THE CALIFORNIA STATE WATER PROJECT

BULLETIN 132-03

DECEMBER 2004



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Foreword

Bulletin 132-03, *Management of the California State Water Project*, continues the Bulletin 132 annual series begun in 1963. Bulletin 132-03 updates water supply planning, construction, financing, management, and operation activities of the State Water Project. Appendix B contains data and computations used to determine the State Water Project contractors' Statement of Charges for 2004. Appendix B was previously published as an individual document.

The Bulletin discusses significant events and issues that affect SWP management and operations. The Bulletin covers the period from January 1, 2002, to December 31, 2002.

Bulletin 132-03 also discusses water supply and delivery; the continuation of construction of the East Branch Extension; Delta resources and environmental issues, including the CALFED Bay-Delta Program; Oroville facilities relicensing; financial analysis of the SWP; and the update of business systems in the Department.

Lester A. Snow
Director

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Appendix B: Data and Computations Used in Determining Water Charges for 2004

Appendix D: Costs of Recreation and Fish and Wildlife Enhancement (discontinued)

Appendix E: Water Operations in the Sacramento-San Joaquin Delta (bound separately)

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California Water Commission



The California Water Commission serves as a policy advisory body to the Director of Water Resources on all California water resources matters. The citizen commission provides a water resources forum for the people of the State, acts as a liaison between the legislative and executive branches of State government, and coordinates federal, State, and local water resources efforts.

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Abbreviations and Acronyms

A

AB Assembly Bill

Ag Council Agricultural Water Management Council

ASCE American Society of Civil Engineers

ADA Americans with Disabilities Act

AFRP Anadromous Fish Restoration Plan

AWMP Agricultural Water Management Plan

B

BDAC Bay-Delta Advisory Council

BOD biochemical oxygen demand

The Bureau Bureau of Reclamation

C

CALFED State (CAL) and federal (FED) agencies participating in the Bay-Delta Accord

CalPX California Power Exchange

CCSG Cantua Creek Stream Group

CCWA Central Coast Water Authority

CD Conservation District

CDEC California Date Exchange Center

CEA Capacity Exchange Agreement

CEQA California Environmental Quality Act

CESA California Endangered Species Act

cfs cubic feet per second

CIMIS California Irrigation Management Information System

COA Coordinated Operation Agreement

Corps U.S. Army Corps of Engineers

CVC Cross Valley Canal

CVHJV Central Valley Habitat Joint Venture

CVP Central Valley Project

CVPIA Central Valley Project Improvement Act

CVRWQCB Central Valley Regional Water Quality Control Board

D

D-1485 State Water Resources Control Board Water Right Decision 1485

D-1641 State Water Resources Control Board Water Right Decision 1641

DBW Department of Boating and Waterways

DCVCW Direct Cross Valley Canal Wheeling

DEIR draft environmental impact report

DFG California Department of Fish and Game

DHS California Department of Health Services

DLRD Delta Lands Reclamation District

DO dissolved oxygen

DOC dissolved organic carbon

DOE Department of Energy or Division of Engineering

DOI U.S. Department of the Interior or Delta Outflow Index

DSM2 Delta Simulation Model 2

DSOD Division of Safety of Dams

E

EA/IS Environmental Assessment/Initial Study

EBRPD East Bay Regional Park District

ECAT Environmental Coordination Advisory Team

EHV Extra-High Voltage

E/I Export/Import

EIR environmental impact report

EIS environmental impact statement

EPA U.S. Environmental Protection Agency

ESA Endangered Species Act

ESO Environmental Services Office

ESU Evolutionarily Significant Unit

ET_o Reference Evapotranspiration

EWA Environmental Water Account

F

FERC Federal Energy Regulatory Commission

FLIMS Field and Laboratory Information Management System

G

gpm gallons per minute

H

HMP Hazard Mitigation Plan

I

ICR Information Collection Rule

IEP Interagency Ecological Program

IFDM Integrated on-Farm Drainage Management

INDP Interim North Delta Plan

ISDP Interim South Delta Program

ISI Integrated Storage Investigation

ISO California Independent System Operator

K

kV kilovolt

KWB Kern Water Bank

kWh kilowatt hour

L

LADWP Los Angeles Department of Water and Power

M

MCL maximum contaminant level

MCWA Mokelumne-Cosumnes Watershed Alliance

mg/L milligrams per liter

MIDS Morrow Island Distribution System

MTBE methyl tertiary butyl ether

MWh megawatt hour

MWQI Municipal Water Quality Investigations

N

NBA North Bay Aqueduct

NDOI Net Delta Outflow Index

NEPA National Environmental Policy Act

NOAA Fisheries National Marine Fisheries Service

NODOS north-of-the-Delta offstream storage

NOP/NOI Notice of Preparation/Notice of Intent

NPC Nevada Power Company

NPDES National Pollutant Discharge Elimination System

O

O&M Division of Operations and Maintenance

OM&P operations, maintenance, and power

OMP&R operations, maintenance, power, and replacement

OM&R operations, maintenance, and replacement

OWUE Office of Water Use Efficiency

P

PCL Planning and Conservation League

PG&E Pacific Gas and Electric Company

pH [p(otential) of H(ydrogen)]

ppt parts per thousand

Q

QA/QC Quality Assurance/Quality Control

R

RCRC Regional Council of Rural Counties

RD reclamation district

RMR Reliability Must-Run

RMS Reliability Management System

ROD Record of Decision

S

SAP System Application Products

SB Senate Bill

SCE Southern California Edison

SDIP South Delta Improvements Program

SDTBP South Delta Temporary Barriers Project

SDWA South Delta Water Agency

SEW Suisun Ecological Workgroup

SGA Sacramento Groundwater Authority

SJVDIP San Joaquin Valley Drainage Implementation Program

SJRA San Joaquin River Agreement

SLFD San Luis Field Division

SMPA Suisun Marsh Preservation Agreement

SMSCG Suisun Marsh Salinity Control Gates

SPPC Sierra Pacific Power Company

SRB State Reclamation Board

SRCD Suisun Resource Conservation District

SVUR Sacramento Valley Unimpaired Runoff

SVWMA Sacramento Valley Water Management Agreement

SWP State Water Project

SWRCB State Water Resources Control Board

T

TOC total organic carbon

U

UCLA University of California at Los Angeles

USFWS U.S. Fish and Wildlife Service

USGS U.S. Geological Survey

V

VAMP Vernalis Adaptive Management Plan

W

WAM Water Awareness Month

WECC Western Electricity Coordinating Council

WQA water quality assessment

WQCP Water Quality Control Plan

WR 95-06 SWRCB Water Right Order 95-06

WSCC Western Systems Coordinating Council

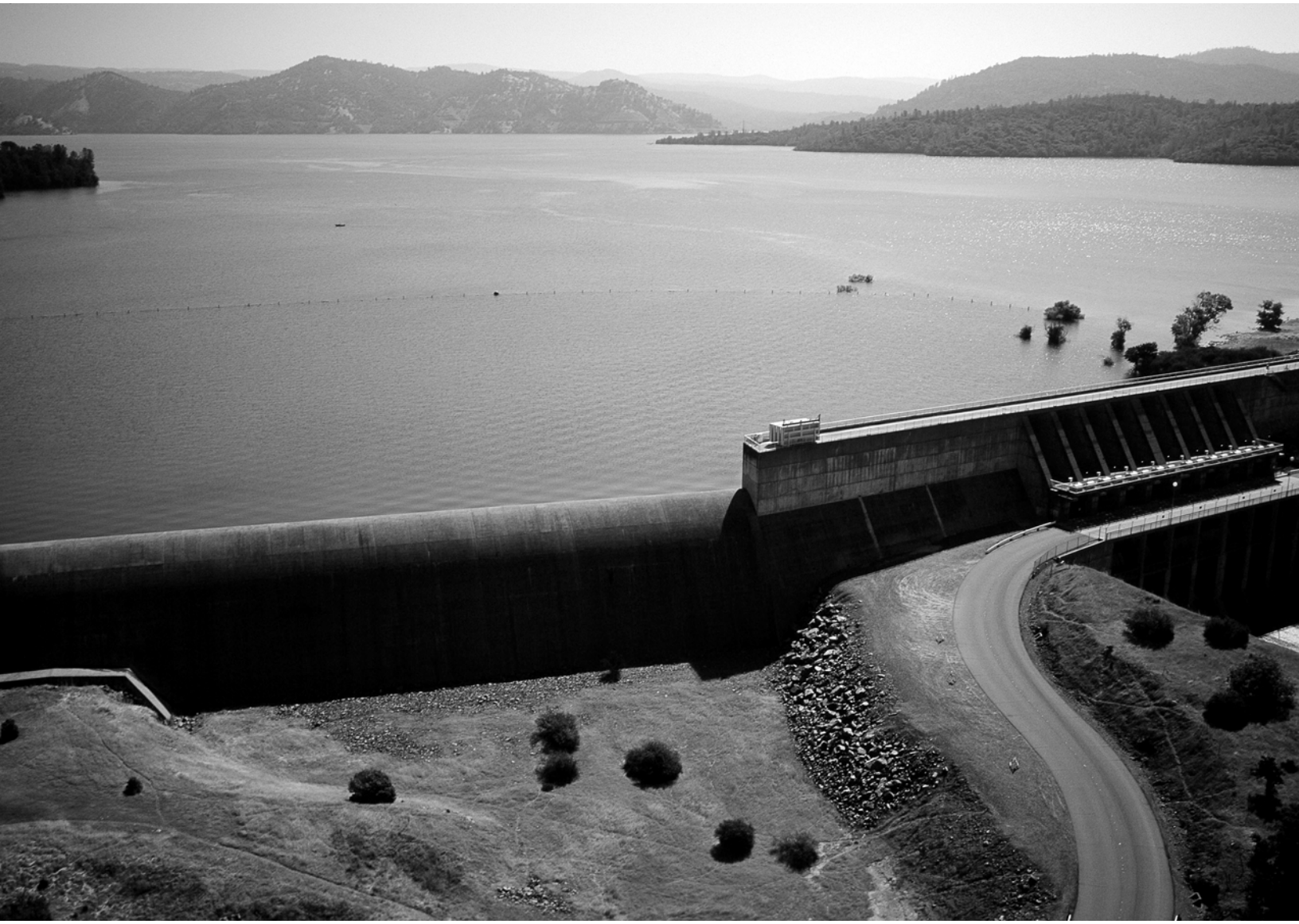
The State Water Project long-term water supply contractors are listed below, followed by shortened forms of their names that are used in Bulletin 132 instead of acronyms.

Alameda County Flood Control and Water Conservation District, Zone 7	Alameda-Zone 7
Alameda County Water District	Alameda County
Antelope Valley-East Kern Water Agency	AVEK
Castaic Lake Water Agency	Castaic Lake
City of Yuba City	Yuba City
Coachella Valley Water District	Coachella
County of Butte	Butte
County of Kings	Kings
Crestline-Lake Arrowhead Water Agency	Crestline
Desert Water Agency	Desert
Dudley Ridge Water District	Dudley Ridge
Empire-West Side Irrigation District	Empire
Kern County Water Agency	Kern
Littlerock Creek Irrigation District	Littlerock
Metropolitan Water District of Southern California	Metropolitan
Mojave Water Agency	Mojave
Napa County Flood Control and Water Conservation District	Napa
Oak Flat Water District	Oak Flat
Palmdale Water District	Palmdale
Plumas County Flood Control and Water Conservation District	Plumas
San Bernardino Valley Municipal Water District	San Bernardino
San Gabriel Valley Municipal Water District	San Gabriel
San Gorgonio Pass Water Agency	San Gorgonio
San Luis Obispo County Flood Control and Water Conservation District	San Luis Obispo
Santa Barbara County Flood Control and Water Conservation District	Santa Barbara
Santa Clara Valley Water District	Santa Clara
Solano County Water Agency	Solano
Tulare Lake Basin Water Storage District	Tulare
Ventura County Flood Control District	Ventura

The non-SWP contractors are listed below, followed by shortened forms of their names that are used in Bulletin 132 instead of acronyms.

Arvin-Edison Water Storage District	Arvin-Edison
Berrenda Mesa Water District	Berrenda Mesa
Belridge Water Storage District	Belridge
Buena Vista Water Storage District	Buena Vista
Byron-Bethany Irrigation District	Byron-Bethany
Cawelo Water District	Cawelo
Contra Costa Water District	Contra Costa
East Contra Costa Irrigation District	East Contra Costa
Lost Hills Water District	Lost Hills
Lower Tule River Irrigation District	Lower Tule
Merced Irrigation District	Merced
Oroville-Wyandote Irrigation District	Oroville-Wyandote
Pixley Irrigation District	Pixley
Rag Gulch Water District	Rag Gulch
Rosedale-Rio Bravo Water Storage District	Rosedale-Rio
Semitropic Water Storage District	Semitropic
West Kern Water District	West Kern
Western Hills Water District	Western Hills
Westlands Water District	Westlands
Westside Mutual Water Company	Westside
Wheeler Ridge-Maricopa Water Storage District	Wheeler Ridge-Maricopa
Yuba County Water Agency	Yuba

Executive Summary



Oroville Lake and Dam, keystone of
the State Water Project

The Bulletin 132 series began in 1963 and reported the first deliveries of water by the new State Water Project, which was still under construction. Bulletin 132-03, *Management of the California State Water Project*, continues this series with the fortieth edition. It reports planning, construction, financing, managing, and operating activities of the SWP in 2002. The SWP is operated and maintained by the California Department of Water Resources.

2002 Highlights

The SWP is one of the largest water and power systems in the world. It has conveyed an average annual 2.4 million acre-feet of water to the long-term water contractors through its 17 pumping plants, 8 hydroelectric power plants (including 3 pumping-generating plants), 28 dams and reservoirs, and more than 660 miles of aqueducts and pipelines.

In 2002, the SWP delivered 4,053,989 acre-feet of water to 26 of its 29 long-term water contractors and 24 other agencies. The project provides water for approximately 23 million people throughout the State, irrigation for 750,000 acres of farmland, and environmental benefits to wildlife refuges, as well as environmental mitigation programs.

The SWP facilitated the transfer or exchange of 66,145 acre-feet of approved Table A water among SWP long-term contractors and non-SWP agencies, conveyed 138,575 acre-feet of Central Valley Project water through SWP facilities, and provided 1,141,622 acre-feet to water rights holders within the SWP service area.

Construction of Phase I of the East Branch Extension for San Bernardino and Riverside Counties continued with completion of the pipeline Reaches 1, 2, and 3 and initial filling of Crafton Hills Reservoir. The project, when completed, will convey water to the San Gorgonio Pass Water Agency service area.

The project continued to pay bondholders as scheduled and remained financially viable. The long-term water contractors continued to repay project construction bonds and operating expenses. In 2002, the SWP handled approximately $733 million each in income and expenses, with general fund contributions limited to recreation facilities.

2002 Precipitation and Water Storage

The water stored and delivered by the SWP conservation and transportation facilities originates from rainfall and snowmelt in Northern and Central California watersheds, where most of the State's precipitation occurs.

The Department monitors and records annual precipitation and runoff during water years, which run from October 1 to September 30.

Precipitation in Water Year 2001-02

Water year 2001-02 was classified as *dry* in both the Sacramento and San Joaquin Valleys for the second year in a row. All areas of the State except the San Francisco Bay Area were drier than average, with extremely dry conditions prevailing in Southern California. Statewide precipitation was 80 percent of average, with percentages decreasing from north to south, a reversal of last year's pattern. Mountain snowpack peaked at about 95 percent of average in late March, slightly earlier than normal. The water year concluded in September with the

ninth consecutive month of below average statewide precipitation.

Runoff

Statewide water year runoff totaled three-quarters of average in the 2001-02 water year, and was less than average in all months except December. Runoff in the Sacramento River and San Joaquin River Regions was 77 and 67 percent of average, respectively. Feather River unimpaired inflow to Lake Oroville was 3.1 million acre-feet (65 percent of average) for the water year.

Storage

Water Year 2001-02. Reservoir storage in the SWP at the end of the 2001-02 water year was 74 percent of average, compared to 79 percent in water year 2000-01. Total storage in major SWP reservoirs was 2.47 million acre-feet on September 30, 2002, about 180,000 acre-feet less than storage at the same time in water year 2000-01 (2.65 million acre-feet).

Calendar Year 2002. Total storage in major SWP reservoirs was about 2.62 million acre-feet at the end of calendar year 2002, compared with 2.9 million acre-feet in 2001.

Precipitation in the First Quarter of Water Year 2002-03

Water year 2002-03 began very dry with statewide precipitation and runoff below average in October as reservoir storage dropped to 48 percent of capacity. October was the tenth consecutive month with below average statewide precipitation. The net water depletion in the Sacramento Valley was the most in 50 years of record, reflecting low stream flows and high consumption. Productive storms with strong westerly flow greatly improved the water supply outlook in November and December.

These storms were good snow producers throughout the Sierra, building the early snowpack to about 165 percent of average by January 1, nearly the same as a year earlier. Reservoir storage statewide rose to 21.5 million acre-feet (97 percent of average) on December 31, but remained below the maximum winter flood control limits for most major reservoirs.

2002 Water Supplies, Contracts, and Deliveries

Water Deliveries

The Department approved deliveries of 824,000 acre-feet on November 30, 2001, resulting in initial approved Table A amounts of 20 percent for most SWP contractor requests. Above average precipitation that occurred in Northern California during December caused the Department to increase the 2002 approved Table A amounts to 1.86 million acre-feet (45 percent) on January 11, 2002. As a result of improvements in water conditions, approved Table A amounts were increased to 2.3 million acre-feet (55 percent) on March 22; 2.5 million acre-feet (60 percent) on March 28; 2.68 million acre-feet (65 percent) on May 15; and finally to 2.89 million acre-feet (70 percent) on August 26.

In 2002, 4,053,989 acre-feet of water were conveyed to 26 long-term contractors and 24 other agencies. The SWP delivered 2,573,030 acre-feet of approved Table A water. In addition, a total of 37,165 acre-feet of Article 21 and unscheduled water was delivered to the SWP long-term contractors. Table ES-1 shows SWP water deliveries by category for the years 1962-02.

Nonproject Water. The long-term water contractors received 117,121 acre-feet of nonproject water.

The SWP also delivered 3,694 acre-feet of recreation/fish and wildlife water and 1,141,622 acre-feet of water to satisfy water rights settlement holders and agreements made with SWP contractors and other agencies, including the Bureau of Reclamation.

Water rights water is transported through SWP facilities to long-term SWP contractors and

Table ES-1. SWP Water Delivered by Category, 1962-02 (Acre-feet)

	Table A Water			Other SWP Water Deliveries					
				Article 21					
Year	Municipal and Industrial (1)	Agricultural (2)	Total (3)	Municipal and Industrial (4)	Agricultural (5)	Other Water[a] (6)	Feather River Diversions[b] (7)	Fish and Wildlife/ 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	507,076	794,834	4,889	3,691,921
1989	1,602,454	1,251,293	2,853,747	0	0	474,559	830,500	8,135	4,166,941
1990	1,876,072	706,079	2,582,151	0	90	424,697	875,099	9,262	3,891,299
1991	536,669	12,444	549,113	3,521	0	551,051	565,395	4,879	1,673,959
1992	961,649	509,805	1,471,454	1,156	0	144,789	613,978	2,605	2,233,982
1993	1,064,866	1,250,369	2,315,235	0	0	254,854	822,589	2,609	3,395,287
1994	1,134,992	614,359	1,749,351	48,150	64,475	236,739	874,018	8,200	2,980,933
1995	801,570	1,165,523	1,967,093	17,984	46,346	78,425	860,077	2,575	2,972,500
1996	1,145,638	1,369,187	2,514,825	12,091	16,556	251,391	934,997	3,907	3,733,767
1997	1,258,456	1,067,319	2,325,775	2,814	18,618	322,000	993,211	4,146	3,666,564
1998	864,795	860,724	1,725,519	9,982	10,306	134,682	872,738	2,108	2,755,335
1999	1,405,299	1,333,592	2,738,891	61,191	96,879	85,312	1,108,672	4,324	4,095,269
2000	2,022,703	1,177,974	3,200,677	170,302	138,483	332,654	1,085,886	4,030	4,932,032
2001	1,162,897	383,845	1,546,742	10,261	33,174	535,160	1,078,656	2,929	3,206,922
2002	1,808,017	765,013	2,573,030	9,528	27,637	307,162	1,132,938	3,694	4,053,989
Total	**30,263,895**	**25,750,436**	**51,894,559**	**567,244**	**6,125,638**	**8,046,568**	**29,651,342**	**129,676**	**100,534,799**

[a]Includes water conveyed for SWP and non-SWP water contractors.

[b]Includes amounts of water diverted according to various water right agreements.

other agencies, according to terms of various local water right agreements. Water may pass through SWP transportation facilities or a portion may be stored in SWP reservoirs for release at a later time.

Two South Bay Aqueduct contractors holding water rights to runoff from the Lake Del Valle watershed received 8,684 acre-feet of local water; and ten nonproject agencies in the Feather River area received 1,132,938 acre-feet.

The Feather River water right settlement contractors are agencies that held water rights for Feather River water before the SWP was built. The Department negotiated settlements with these water rights holders and agreed to deliver a regulated water supply from Oroville in exchange for the agencies' agreement concerning their Feather River water rights.

In addition, the Department conveyed 138,575 acre-feet of CVP water through SWP facilities for the Bureau.

Dry Year Water Purchase Program. In 2002, significant areas of California experienced water deficiencies. To reduce the possibility of adverse economic impacts and hardship associated with water shortages, the Department initiated the Dry Year Water Purchase Program. The total amount of dry year water delivered to four participating agencies was 17,119 acre-feet.

Environmental Water Account. EWA is a cooperatively managed program intended to provide protection to the fish of the San Francisco Bay/Sacramento-San Joaquin Delta Estuary through environmentally beneficial changes and increased flexibility in the operation of the SWP and CVP, at no uncompensated water cost to the project's water users.

Year 2002 was EWA's second year of operation. The first fish actions occurred in January and continued throughout the year. Management agencies (National Marine Fisheries Services, U.S. Fish and Wildlife Service, and the Department of Fish and Game) required 280,353 acre-feet of curtailments for fish protection, which was achieved by reduced pumping at Banks and Tracy Pumping Plants. In 2002, to minimize spillage of EWA water from San Luis Reservoir, the Department implemented a *2 for 1 exchange* with the State Water Contractors. A total of 40,012 acre-feet of water was transferred to the contractors in return for 20,006 acre-feet of water transferred back by the contractors in July and August. Thus, a total of 20,006 acre-feet of water was saved for use later in the year. The Department was able to compensate the SWP for its pumping reductions by acquiring 75,952 acre-feet in variable assets and 206,158 acre-feet of purchase assets through contract agreements. Year 2002 ended with 23,357 acre-feet of water for use during 2003.

Delta Resources and Environmental Issues

The 738,000-acre Delta is the heart of California's water environment. The Delta, at the convergence of the Sacramento and San Joaquin Rivers, is a network of islands, sloughs, marshes, and reclaimed farmland that stretches from Sacramento to San Francisco Bay. A source of drinking water for about two-thirds of California's population, the Delta also provides irrigation for the Central Valley.

The State Water Resources Control Board has adopted water quality control plans and policies to protect the Delta's water quality and ecosystem while at the same time maintaining SWP water supply reliability.

Bay-Delta Water Right Hearings

Implementation of the Bay-Delta Plan. In 2001, SWRCB adopted Water Right Order 2001-05, staying Phase 8 and requiring the Department and the Bureau to continue to meet certain objectives in the Bay-Delta Plan until adoption of a further decision assigning responsibility for meeting those objectives. Under Order WR 2001-05, Phase 8 would have been automatically dismissed on October 26, 2002, unless SWRCB received notice from the Department or the Bureau requesting resumption of

Phase 8. On October 17, 2002, however, SWRCB adopted an order extending the automatic dismissal date to allow time for parties to sign a water management settlement agreement, and to dismiss Phase 8 on January 31, 2003. During 2002, the Department, the Bureau, Sacramento Valley upstream water users, and certain downstream water users negotiated a settlement in lieu of continuing with the SWRCB Phase 8 hearings. These efforts culminated in December 2002 with these agencies beginning to sign a short-term settlement agreement, known as the *Sacramento Valley Water Management Agreement or Short-Term Settlement Agreement*. SVWMA avoided the adversarial issues of Phase 8 and was developed to promote better management of California's water resources.

CALFED Bay-Delta Program

In 2002, the CALFED Bay-Delta Program continued to work on a comprehensive, long-term solution for the Delta. CALFED is part of a process defined in the State-federal Framework Agreement, signed in June 1994, which calls for a cooperative and coordinated response to solve long-term water quality and ecosystem problems in the Bay-Delta Estuary. CALFED is responsible for developing long-term solutions for fish and wildlife, water supply reliability, flood control, and water quality problems in the estuary.

Surface Storage Investigation. The Storage Program is part of an ongoing evaluation of the appropriate role of storage, both groundwater and surface storage, in the CALFED solution. Surface Storage Investigations staff continued to evaluate five potential reservoir projects—In-Delta Storage, Los Vaqueros Reservoir Enlargement, Shasta Lake Enlargement, North-of-the-Delta Offstream Storage, and the Upper San Joaquin River Basin Storage.

Environmental Water Account. CALFED's Environmental Water Account had its second year of operation in 2002. EWA is designed to provide water at critical times to meet environmental needs at no uncompensated cost to SWP/CVP water users. To do that, EWA buys water from willing sellers or diverts surplus water when safe for fish. EWA then banks, stores, transfers, and releases the water as needed to protect fish and compensate water users. Between 2001 and 2002, acquisition of assets for EWA's use was achieved through annual contracts with willing water sellers and source-shift participants.

South Delta Improvements Program. In 1999, CALFED decided that South Delta facilities would be included as a key component of the CALFED decision-making process. Subsequently, the program was renamed the South Delta Improvements Program. SDIP's purpose is to improve the reliability of existing SWP facilities; ensure that water of adequate quantity and quality is available for diversion to the South Delta Water Agency's service area; and reduce the effects of SWP exports on both aquatic resources and direct losses of fish in the south Delta. Biological monitoring programs have been conducted and four temporary rock barriers installed on an annual basis during low flow conditions. A Draft EIR/EIS for SDIP is scheduled for release in 2003 and a final EIR/EIS in 2004.

Status of Threatened Listings

North American Green Sturgeon. On June 12, 2001, the National Marine Fisheries Service was petitioned to list the North American green sturgeon (*Acipenser medirostris)* as either a threatened or endangered species under the federal Endangered Species Act. In a 90-day finding notice published in the Federal Register on December 14, 2001, NOAA Fisheries determined that the petition had merit, and initiated a status review for green sturgeon that was extended until early 2003.

Splittail. USFWS listed splittail as threatened under FESA in 1999. In 2001, USFWS opened the ESA listing comment period for splittail on three separate occasions. A final rule is still pending and is expected in early 2003.

Power Resources

In 2002, SWP pumping plants consumed 8.39 million MWh of energy and power plants generated 4.95 million MWh of energy. The Department sold 1.17 million MWh of energy in 2002 to 15 utilities and 13 power marketers for total revenues of $58.09 million in 2002. The Department also received $24.67 million in revenues for capacity sales and exchanges, including $17.14 million for transactions made through the California Independent System Operator.

The Department purchased 2.09 million MWh of energy at a cost of $62.41 million. Associated costs for capacity totaled $21.07 million. Other SWP power costs, including transmission, operation, maintenance, and ISO ancillary services, totaled $84.7 million. The sidebar below documents 2002 SWP power generation and consumption.

Southern California Edison Energy Exchanges

The Department and Southern California Edison have two existing agreements (*Power Contract* and *Capacity Exchange Agreement*) for the exchange of energy. From June 1, 2000, through May 5, 2001, SCE curtailed the delivery of exchange energy to the Department under circumstances that were disputed by the Department. The dispute culminated in a December 26, 2002, *Settlement Agreement* in which the parties agreed to revise certain agreement provisions pertaining to SCE's right to interrupt or curtail deliveries of energy to the Department. Additionally, SCE paid the Department $30 million as compensation for curtailing exchange energy during 2000 and 2001.

California Energy Resources Scheduling Division

During the 2001 energy crisis, the Governor ordered the Department to begin purchasing short-term and long-term energy on behalf of the State's investor-owned utilities, Pacific Gas and Electric and SCE. This act created CERS, which manages long-term power contracts for the utilities. From January 17 through December 31, 2002, CERS purchased and scheduled electricity to meet the demands on the State's utilities. CERS is funded independently of the financial systems related to the SWP.

Oroville Facilities Relicensing

The existing 50-year term hydroelectric license for the Oroville facilities will expire January 31, 2007. To obtain a new license the Department must file a new application to FERC by January 31, 2005. During 2002, primary achievements included filing a "Notice of Intent To File Application for New License" with FERC; completion of a draft guidance document for cumulative impacts and Endangered Species Act

State Water Project Power Generation and Consumption in 2002

Power Generation and Consumption	Millions of Megawatt Hours
Energy generation by SWP facilities	4.95
Energy purchased under long-term agreements	2.96
Short-term energy purchases	1.65
Total energy available to the SWP	**9.56**
Energy sales	(1.17)
Net power consumption of the SWP	**8.39**

compliance; distribution of Final National Environmental Policy Act Scoping Document and California Environmental Quality Act Notice of Preparation; collaborative concurrence on and the initial implementation of 71 field studies needed to support the Department's license application that will be filed before January 31, 2005; and preliminary development of a framework for settlement agreement negotiations and screening criteria for potential protection, mitigation, and enhancement measures.

Restructuring of the Electric Utility Industry

In 2002, the Department worked closely with ISO and provided data to help toward modeling various stakeholder processes, such as Market Design 2002; Congestion Revenue Rights; Locational Marginal Pricing; and Metered Subsystems.

Financial Analysis

In 2002, the Department continued to pay bondholders as scheduled. The SWP was financially viable and was indirectly paid for by the approximately 23 million water users who were served by the project. Direct payment was through the 29 long-term water contractors In 2002, the SWP handled approximately $733 million in income and $733 million in expenses. The sidebar below shows a 2002 income statement for the SWP.

Monterey Amendment

The Monterey Amendment, based on the 1994 Principles of Agreement, was designed to increase the reliability of existing water supplies, provide stronger financial management for the SWP, and increase water management flexibility. An EIR was prepared by the Central Coast Water Authority.

In 1995, the Planning and Conservation League filed a lawsuit against the Department and CCWA, challenging CEQA compliance. PCL later amended the complaint, alleging that the Department could not legally transfer the Kern Water Bank to the Kern County Water Agency as part of the Monterey Amendment.

2002 Income Statement for the State Water Project

Revenues	**Thousands of Dollars**
Water contractor payments	$ 711,143
Revenue bond cover adjustments	(44,855)
Rate management adjustments	(40,443)
Other revenue	107,307
Total operating revenues	**$733,152**
Expenses	
Project operations, maintenance, and power	$ 437,437
Deposits to reserves	27,822
Water bond principal	103,140
Water bond interest	164,753
Total operating expenses and debt service	**$733,152**
Net system revenues	**0**

In 1996, a Sacramento County Superior Court judge ruled in favor of the Department and CCWA and dismissed the lawsuit. PCL appealed the decision to the Third District Court of Appeal, which reversed the Superior Court ruling and ordered a new EIR to be prepared by the Department. The Department then filed a petition asking the California Supreme Court to review the Court of Appeal's decision; in 2000 the California Supreme Court denied review.

The parties commenced mediation on March 26, 2002, and proceedings in Superior Court were stayed pending completion of mediation. On July 18, 2002, the parties reached agreement on principles for settling the lawsuit. The Department started preparing a new EIR and the interested parties continued mediation to convert the settlement principles into a legal agreement. The final settlement agreement is being prepared for execution and submittal to the Superior Court for approval.

Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50)

California voters approved the *Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002* (Proposition 50, Chapter 8) in the November 2002 elections.

Proposition 50 allocates funds to the Department for making grants for specified projects that support integrated regional water management efforts. The Department would administer 50 percent of the $500 million provided for integrated regional water management grants for projects to "protect communities from drought, protect and improve water quality, and improve local water security by reducing dependence on imported water."

No funds were committed for 2002.

Security of the State Water Project

Security and protection of the SWP is a primary goal for the Department. Since September 2001, the Department is significantly more secure and vigilant. The Department has taken action to further increase security, regulate access, and closely monitor activities at SWP facilities and the Department's offices.

While the Department does not discuss details of its security program, it does coordinate very closely on security issues and emergency preparedness with federal and State public safety and law enforcement agencies, the Bureau, utilities, regional and municipal water entities, and others. The Department is a catalyst at the State level on security planning, coordination, and communication among agencies that share a concern to protect lives and infrastructure, especially water agencies.

Project Development

East Branch Extension

Work continued on the East Branch Extension of the California Aqueduct. Construction began in 1999. It is being constructed to convey 8,650 acre-feet of SWP water annually to the San Bernardino Valley Municipal Water District and the San Gorgonio Pass Water Agency service area. In 2002, all contracts were under construction and it is anticipated that the Extension will be fully operational in early 2003.

Pipeline Reaches 1, 2, and 3 of the East Branch Extension were completed and used to supply water to San Bernardino Valley Municipal Water District.

The Department is working with two regional water agencies—San Gorgonio and San Bernardino—to build the pipeline. San Gorgonio is the last original contractor to receive SWP water.

Initial filling of Crafton Hills Reservoir on the East Branch Extension began on May 3 and finished in September.

A map of the East Branch Extension, Phase I area, is shown in Figure ES-1.

Financing

The balance of the project costs will be financed, as needed, through the sale of short-term commercial paper notes and SWP revenue bonds.

Planning

Arroyo Pasajero

The Arroyo Pasajero and its tributaries drain the coastal mountains west of the California Aqueduct in Fresno County. During heavy rainfall, high flows in the Arroyo Pasajero carry heavy sediment loads. Over eons, this flood sediment has formed an alluvial fan traversed by the California Aqueduct, which forms a barrier to Arroyo flood flows. Flood control facilities constructed to solve this problem include the West Side Detention Basin, designed to store storm runoff and sediment, an evacuation culvert to release floodwaters east of the Aqueduct, and drain inlets to release floodwaters into the Aqueduct. Since the floods of 1969, when nearly all the West Side Detention Basin's planned 50-year sediment storage space was filled, the Department and the Bureau have worked to minimize the effects of heavy flooding.

In 1990, the Department asked the U.S. Army Corps of Engineers to help identify solutions to the Arroyo Pasajero flooding and sediment problems. Two candidate plans were prepared and released to the public in 1999; however, due to prohibitive costs, neither plan was adopted.

Since then the Department and the Bureau have been working on an alternate plan. This plan would rely on increased storage in the existing West Side Detention Basin, possibly combined with a reservoir to be constructed in the western Tulare Lakebed east of the Aqueduct.

The Department and the Bureau's version of this western Tulare Lakebed plan provides a lower, but acceptable, level of flood protection at considerably lower cost than the original. The State Water Contractors asked the Department to develop the least costly alternative that would still provide a 100-year level of flood protection to the Aqueduct. The Department plans to finish its feasibility investigation into this more cost effective plan during 2003.

Community Service

In addition to water supply, the Department provided education and outreach, recreation opportunities on the SWP, and local assistance to users of the SWP. The Department managed several programs—including the Water Use Efficiency Program, Agricultural Drainage Program, and Environmental Impact Document Review—that benefited local agencies and the 29 long-term water contractors.

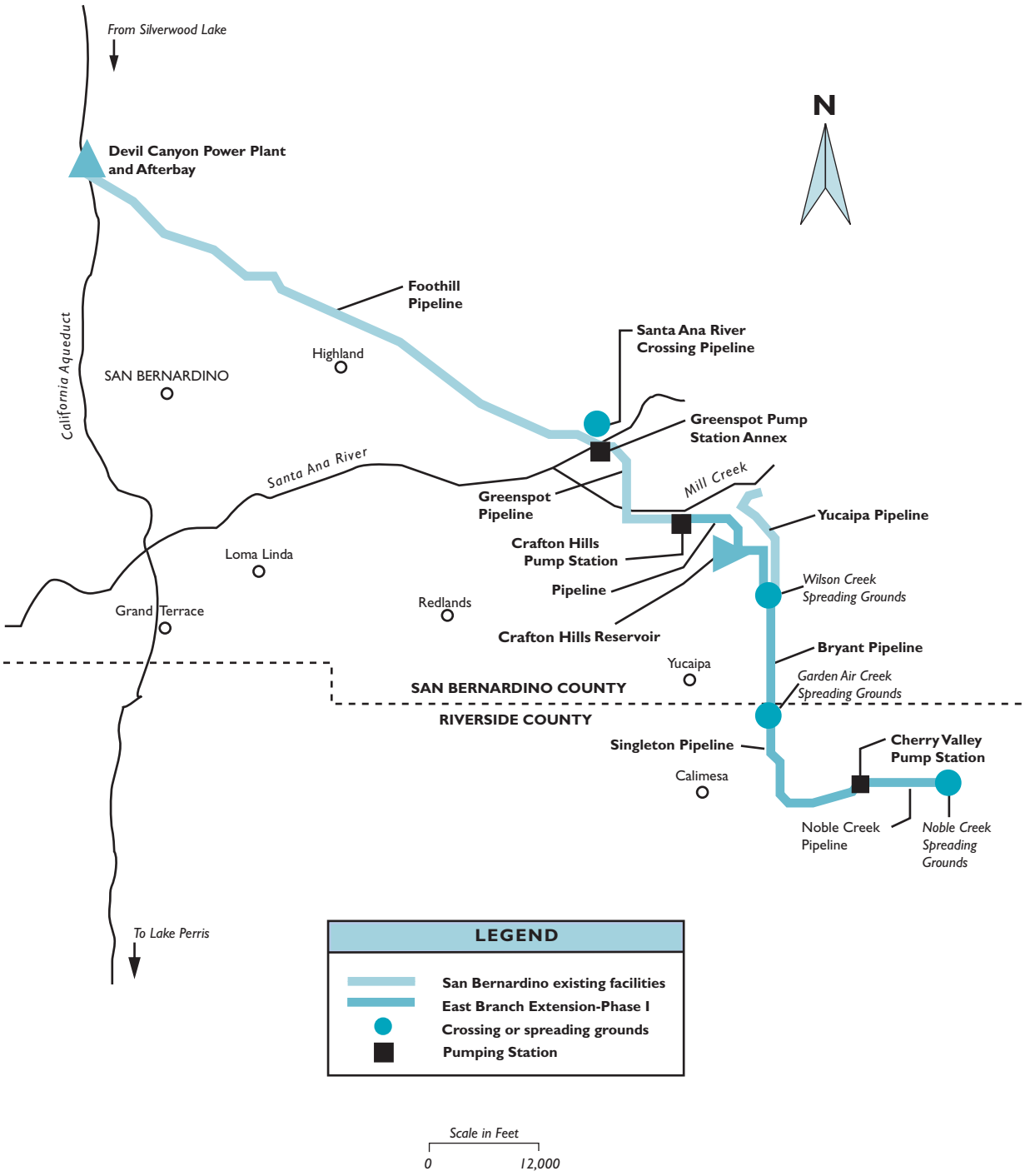
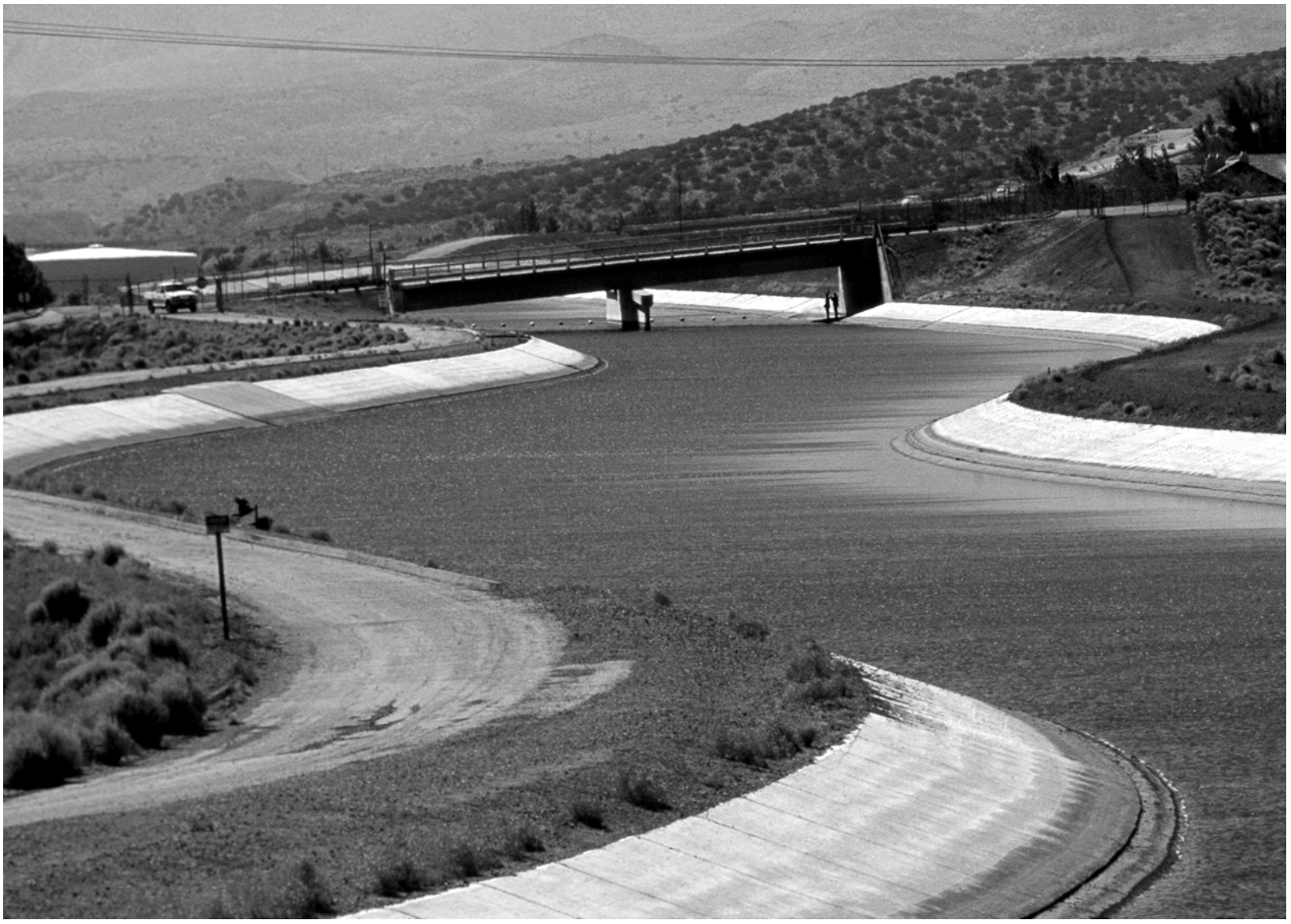
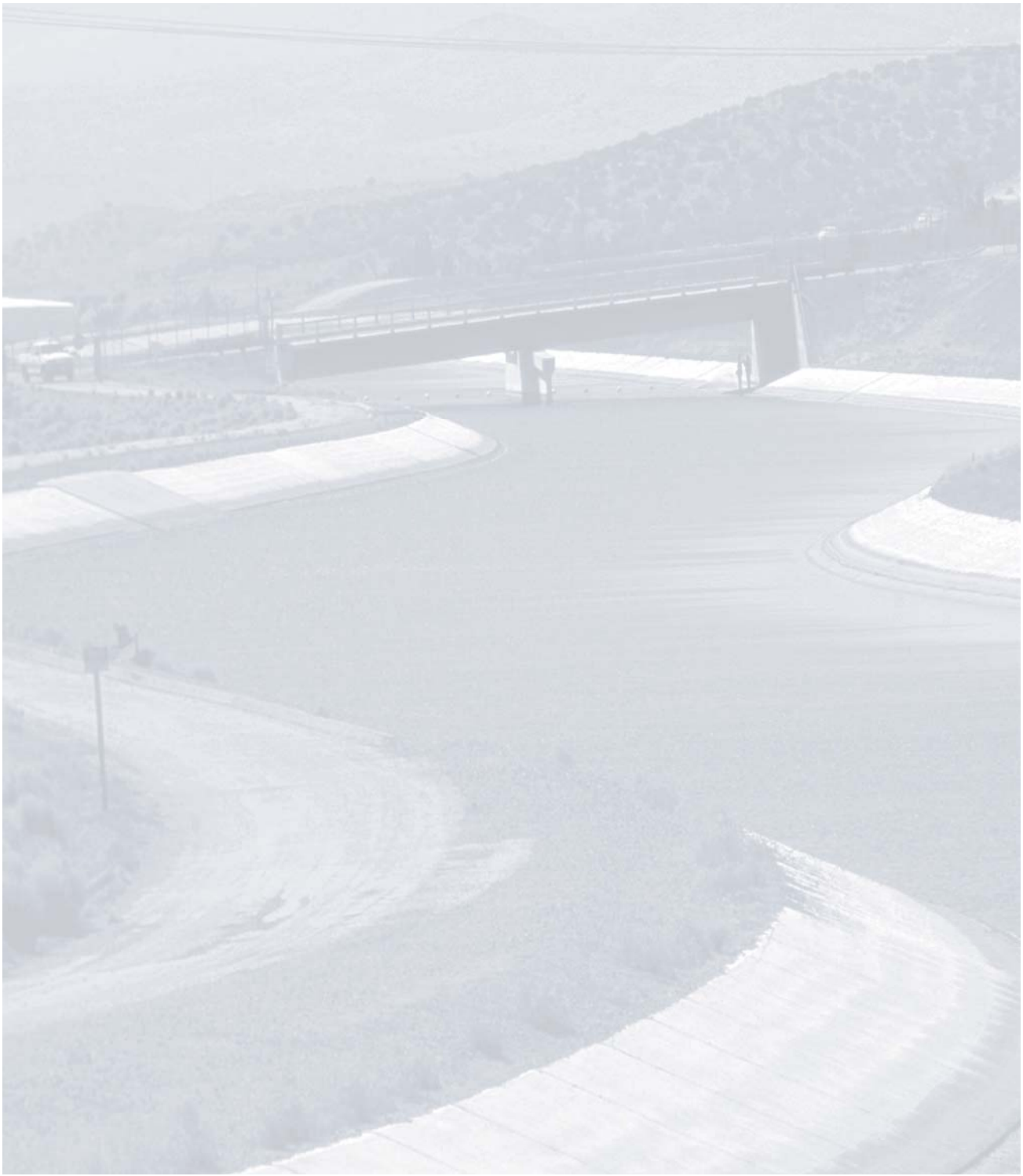


Figure ES-1. East Branch Extension, Phase I

Chapter 1
The State Water Project



East Branch of the California Aqueduct



California's diverse geography contains both the highest and lowest elevations in the coterminous United States, with a resulting diversity of climate that ranges from desert to alpine to subtropical. In a typical year, some areas receive as little as 2 inches of rain, while others receive more than 100. This diversity of geography and climate creates an intricate and constantly changing pattern of water supplies, which, in turn, creates enormous challenges in managing this vital resource.

Like present-day Californians, the earliest settlers faced the problem of how best to conserve, control, and deliver water. Remains of aqueducts, canals, and dams are still found near some of California's original missions. The first recorded aqueduct was 6 miles long; it was built in 1770 to serve the San Diego mission. In the early twentieth century, several cities—San Francisco and Los Angeles among them—built aqueducts to convey water from the Sierra Nevada to other parts of the State.

In 1951, after many years of discussion and study, the Legislature authorized construction of a water storage and supply system to capture and store runoff in Northern California and deliver it to areas of need throughout the State. 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 in general obligation bonds, as authorized in the act, thereby obtaining funds to build the State Water Project. In 1962, the first water was delivered through a portion of the South Bay Aqueduct to two long-term contracting agencies in Alameda County.

Today the SWP, managed by the Department of Water Resources, is the largest state-built, multipurpose water project in the country. The SWP was designed and built to deliver water, control floods, generate power, provide recreational opportunities, and enhance habitats for fish and wildlife. About 23 million of California's estimated 35 million residents benefit from SWP water; it irrigates about 750,000 acres of farmland, mainly in the south San Joaquin Valley.

Precipitation and Runoff

The water stored and delivered by the SWP originates from rainfall and snowmelt runoff in Northern and Central California's watersheds, where most of the State's precipitation occurs.

Since 1968, the Department has monitored and recorded annual precipitation and runoff, because precipitation, snowpack, and the rate and amount of snowmelt help determine how much water the SWP can deliver in any given year. The water year as designated by the Department is October 1 through September 30.

Water Delivery Facilities

The SWP depends on a complex system of dams, reservoirs, power plants, pumping plants, canals, and aqueducts to deliver water. Although initial transportation facilities were essentially completed in 1973, other facilities have since been built, and still others are either under construction or are planned to be built as needed (Figure 1-1). The SWP facilities include 28 dams and reservoirs, 26 pumping and generating plants, and approximately 660 miles of aqueducts.

Existing long-term SWP water supply contracts call for the annual delivery of 4,125,031 acre-feet of Table A water by 2002 through SWP facilities, gradually increasing to a maximum of



Figure 1-1. Names and Locations of Primary Water Delivery Facilities Current and Projected, December 31, 2002

4,172,686 acre-feet by 2020. A number of changes have occurred since the long-term water contracts were signed in the 1960s. These changes include population growth variations, differences in local use, local water conservation programs, and conjunctive-use programs. The SWP delivered 2,573,030 acre-feet of approved Table A water to long-term contractors' service areas in 2002. Demands for SWP water are expected to increase as the population of California continues to increase.

Project Design

Water from rainfall and snowmelt runoff is stored in SWP conservation facilities and delivered via SWP transportation facilities to water agencies and districts in Southern California, Central Coastal, San Joaquin Valley, South Bay, North Bay, and Upper Feather River areas.

Three small reservoirs—Lake Davis, Frenchman Lake, and Antelope Lake—are the northernmost SWP facilities. Situated on Feather River tributaries in Plumas County, these lakes are used primarily for recreation; they also provide water to the City of Portola and local agencies that have water rights agreements with the Department.

Downstream from these three lakes is Lake Oroville, the keystone of the SWP. Lake Oroville conserves water from the Feather River watershed. Created by Oroville Dam, the tallest earthfill dam in the Western Hemisphere, Lake Oroville is the project's largest storage facility, with a capacity of about 3.5 million acre-feet (an acre-foot is about 326,000 gallons).

Releases from Lake Oroville flow down the Feather River into the Sacramento River, which drains the northern portion of California's great Central Valley. The Sacramento River flows into the Sacramento-San Joaquin Delta, comprised of 738,000 acres of land interlaced with channels that receive runoff from 40 percent of the State's land area. The SWP, along with the federal Central Valley Project and local agencies, diverts water from the Delta.

From the northern Delta, Barker Slough Pumping Plant diverts water for delivery to Napa and Solano Counties through the North Bay Aqueduct, completed in 1988. Near Byron, in the southern Delta, the SWP diverts water into Clifton Court Forebay for delivery south of the Delta. Banks Pumping Plant lifts water from Clifton Court Forebay into Bethany Reservoir; from Bethany Reservoir, the South Bay Pumping Plant lifts water into the South Bay Aqueduct to supply Alameda and Santa Clara Counties. The South Bay Aqueduct provided initial deliveries in 1962 and has been fully operational since 1965.

Most of the water delivered to Bethany Reservoir from Banks Pumping Plant flows into the California Aqueduct. This 444-mile-long main aqueduct conveys water to the primarily agricultural lands of the San Joaquin Valley and the mainly urban regions of Southern California.

The California Aqueduct winds along the west side of the San Joaquin Valley. It transports water to O'Neill Forebay, Gianelli Pumping-Generating Plant, and San Luis Reservoir. San Luis Reservoir has a storage capacity of more than 2 million acre-feet and is jointly owned by the Department and the Bureau of Reclamation. The Department's share of gross storage in the reservoir is about 1,062,000 acre-feet. Generally, water is pumped into San Luis Reservoir during late fall through early spring, and is temporarily stored for release back to the California Aqueduct to meet summertime peaking demands of SWP and CVP contractors.

SWP water not stored in San Luis Reservoir, and water eventually released from San Luis, continue to flow south through the San Luis Canal, a portion of the California Aqueduct jointly owned by the Department and the Bureau.

As the water flows through the San Joaquin Valley, numerous turnouts convey the water to farmlands within the service areas of the SWP and CVP. Along its journey, the water is lifted more than 1,000 feet by four pumping plants—Dos Amigos, Buena Vista, Teerink, and Chrisman—before reaching the foot of the Tehachapi Mountains.

In the San Joaquin Valley near Kettleman City, Phase I of the Coastal Branch Aqueduct serves agricultural areas west of the California Aqueduct. This branch was extended in Phase II to serve municipal and industrial water users in San Luis Obispo and Santa Barbara Counties, beginning in August 1997.

The remaining water conveyed by the California Aqueduct is delivered to Southern California, home to about two-thirds of California's population. Before this water can be delivered, it must first cross the Tehachapi Mountains. Pumps at Edmonston Pumping Plant, situated at the foot of the mountains, raise the water 1,926 feet—the highest single lift of any pumping plant in the world. Then the water enters 8.5 miles of tunnels and siphons as it flows into Antelope Valley, where the California Aqueduct divides into two branches: the East Branch and the West Branch.

The East Branch carries water through Alamo Power Plant, Pearblossom Pumping Plant, and Mojave Siphon Power Plant into Silverwood Lake in the San Bernardino Mountains. From Silverwood Lake, water flows through the San Bernardino Tunnel into Devil Canyon Power Plant. Water continues down the East Branch through the Santa Ana Pipeline to Lake Perris, the southernmost SWP reservoir.

The East Branch Extension, Phases I and II, will carry water from Devil Canyon Power Plant Afterbay to Cherry Valley, bringing water to Yucaipa, Calimesa, Beaumont, Banning, and other communities. When completed, the East Branch Extension will be a nearly 33-mile pipeline linking parts of service areas for San Bernardino Valley Municipal Water District and San Gorgonio Pass Water Agency to the California Aqueduct.

Construction of the East Branch Extension, which started in February 1999, continued during 2002. Pipeline Reaches 1, 2, and 3 were completed. Initial filling of Crafton Hills Reservoir began on May 3, 2002, and finished in September.

Water in the West Branch flows through Warne Power Plant into Pyramid Lake in Los Angeles County. From there it flows through the Angeles Tunnel, Castaic Power Plant, Elderberry Forebay, and Castaic Lake, terminus of the West Branch. Castaic Power Plant is operated by the Los Angeles Department of Water and Power.

The energy needed to operate the SWP, the single largest user of electrical power in California, comes from a combination of its own hydroelectric and coal-fired generation plants and power purchased and exchanged from other utilities. The coal-fired plant and the project's eight hydroelectric power plants, including three pumping-generating plants, produce enough electricity in a normal year to supply about two-thirds of the necessary operating power.

Tables 1-1 through 1-5 present statistical information about primary reservoirs, primary dams, pumping plants, power plants, and aqueducts. Additional information regarding operation of the plants under full development can be found in Chapter 10.

Table 1-1. Physical Characteristics of Primary 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	11,800	630	10
Thermalito Afterbay	57,000	4,300	26
Thermalito Diversion Pool	13,400	320	10
Clifton Court Forebay	31,300	2,180	8
Bethany Reservoir	5,100	180	6
Lake Del Valle	77,100	1,060	16
San Luis Reservoir SWP storage, 1,062,183 AF	2,040,500	12,700	65
O'Neill Forebay SWP storage, 29,500 AF	56,400	2,700	12
Los Banos Reservoir	34,600	620	12
Little Panoche Reservoir	5,580	190	6
Quail Lake	7,600	290	3
Pyramid Lake	171,200	1,300	21
Elderberry Forebay	32,500	500	7
Castaic Lake	323,700	2,240	29
Silverwood Lake	75,000	980	13
Lake Perris	131,500	2,320	10

Table 1-2. Physical Characteristics of Primary Dams

Facility	Crest Elevation (Feet)	Structural Height (Feet)	Crest Length (Feet)	Structural Volume (Thousand Cubic Yards)
Antelope	5,025	120	1,320	380
Frenchman	5,607	139	720	537
Grizzly Valley	5,785	132	800	253
Oroville	922	770	6,920	80,000
Thermalito Diversion	233	143	1,300	154
Thermalito Forebay	231	91	15,900	1,840
Thermalito Afterbay	142	39	42,000	5,020
Clifton Court Forebay	14	30	36,500	2,440
Bethany	250	121	3,940	1,400
Del Valle	773	235	880	4,150
Sisk	554	385	18,600	77,645
O'Neill	233	88	14,350	3,000
Los Banos Detention	384	167	1,370	2,100
Little Panoche Detention	676	152	1,440	1,210
Pyramid	2,606	400	1,090	6,800
Elderberry Forebay	1,550	200	1,990	6,000
Castaic	1,535	425	4,900	46,000
Cedar Springs	3,378	249	2,230	7,600
Perris	1,600	128	11,600	20,000

Table 1-3. Pumping Plant Characteristics

Facility	Number of Units	Normal Static Head (Feet)	Total Flow at Design Head (cfs)	Total Motor Rating (hp)
Thermalito	3 (p-g)[a]	85-102	9,120	120,000
Hyatt	3 (p-g)[a]	410-660	5,610	519,000
Barker Slough	9	95-120	228	4,800
Cordelia	11	104-439	138	5,600
Banks	11	236-252	10,670	333,000
South Bay	9	566	330	27,750
Del Valle	4	0-38	120	1,000
Gianelli	8 (p-g) [a]	99-327	11,000	504,000
Dos Amigos	6	107-125	15,450	240,000
Las Perillas	6	55	461	4,050
Badger Hill	6	151	454	11,750
Devil's Den[b]	6	521	134	10,500
Bluestone[b]	6	484	134	10,500
Polonio Pass [b]	6	533	134	10,500
Buena Vista [b]	10	205	5,405	144,500
Teerink[b]	9	233	5,445	150,000
Chrisman[b]	9	518	4,995	330,000
Edmonston[b]	14	1,926	4,480	1,120,000
Oso	8	231	3,252	93,800
Pearblossom	9	539-546	2,575	203,200

[a]The p-g indicates pumping-generating units.

[b]These plants have one unit in reserve.

Table 1-4. Power Plant Characteristics, by Type and Facility

Type and Facility	Number of Units	Normal Static Head (Feet)	Total Flow at Design Head (cfs)	Net Dependable Capacity	Nameplate Capacity
Hydro					
Thermalito Diversion Dam	1	63-77	615	3.3	3.3
Thermalito	4 (3 p-g)[a]	85-101	17,400	128	126.1
Hyatt	6 (3 p-g)[a]	410-676	16,950	639	714
Gianelli (total)	8 p-g[a]	99-327	16,960	362.25	424
Alamo	1	115-141	1,740	18	18
Warne	2	719-739	1,600	76	78.2
Mojave Siphon	3	81-136	2,880	14	30
Devil Canyon	4	1,406	2,940	235	291
Castaic (total)	7 (6 p-g)[a]	900-1,050	20,820		1,319.7
SWP share[b]	n/a	n/a	n/a		
Geo-thermal					
Reid Gardner, Unit 4 (total)	1[c]			275	265
SWP share of generation[d]					

[a]The p-g indicates pumping-generating units.
[b]Based on the amount of water that SWP releases.
[c]Life of the plant is expected to extend through 2013.
[d]SWP ownership share in Reid Gardner, Unit 4, is 67.8 percent.

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					
Delta to O'Neill Forebay	1.4	67.0	0.0	0.0	68.4
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
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	0.0	15.0	97.9	2.7	115.6
Subtotal	*9.2*	*24.1*	*104.3*	*9.9*	*147.5*
Total	**15.7**	**417.5**	**205.4**	**23.2**	**661.8**

Additional Construction

SWP aqueduct facilities were initially designed and constructed to provide service to all agencies to meet their water delivery needs up to 1990. Project water conservation reservoirs were planned to be constructed in stages as water demands increased. Oroville and San Luis were the first SWP conservation reservoir facilities constructed. Additional SWP facilities were scheduled to meet increased demands. It was anticipated that population growth in delivery service areas and water supply areas of origin would influence the final schedule for the additional SWP facilities. However, increased costs, environmental issues, and increased non-SWP demands for limited water supplies delayed the construction schedule for some of the planned additional facilities.

In response to changes in water management policy, the Department continues to reassess plans for the additional facilities that will incorporate increased environmental safeguards while also increasing the SWP delivery yield. Developing these plans involves the time-consuming process of finding technically suitable projects and satisfying the many complex and dynamic environmental procedures, laws, and regulations.

In the mid-1980s, the Department began planning an offstream storage complex, Los Banos Grandes, in Merced County. Initial plans for Los Banos Grandes were completed, but additional planning has been suspended until environmental concerns have been addressed. The Department also developed alternative methods of storing water, including the Kern Water Bank, a conjunctive-use groundwater storage facility located in Kern County.

The signing of the Monterey Agreement in December 1994 set the principles for permanently transferring the State-owned Kern Fan Element of the Kern Water Bank from the Department to two agricultural contractors, Kern County Water Agency and Dudley Ridge Water District. The transfer occurred August 9, 1996.

The Department continues to plan, design, and construct transportation and power-producing facilities for the SWP. The enlarged Devil Canyon Power Plant and the new Devil Canyon Power Plant Second Afterbay became operational in 1995. Mojave Siphon Power Plant was completed in 1996. Phase II of the Coastal Branch of the California Aqueduct began operation in August 1997. The Coastal Branch can transport about 50,000 acre-feet of water annually to San Luis Obispo and Santa Barbara Counties.

Methods of Financing

Project facilities have been constructed with several general types of financing: general obligation bonds and tideland oil revenues (under the Burns-Porter Act, which was approved by the Legislature in 1959, and the bond issue approved by voters in 1960); revenue bonds; and capital resources revenues. Repayment of these funds and the operations, maintenance, power, and replacement costs associated with water supply are paid by the 29 agencies and districts that have long-term contracts with the Department for SWP water; costs are repaid as they are incurred.

The contracts initially provided for a combined maximum annual Table A amount of 4,230,000 acre-feet of water supply. As a result of contract amendments in the 1980s and the Monterey Amendment, the current combined maximum annual Table A totals 4,172,686 acre-feet. The contracts are in effect for the longest of the following periods:

- the project repayment period, which extends to the year 2035;
- 75 years from the date of the contract; or
- the period ending with the latest maturity date of any bond used to finance the construction costs of project facilities.

Long-Term Contracting Agencies

From 1963 through 1967, 32 agencies or districts signed long-term water supply 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 water supply contract. The 29 agencies and districts that now have long-term contracts with the Department as of December 31, 2002, are listed in Figure 1-2 and Table 1-6.

Figure 1-2 shows the name and location of each contracting agency and district and lists the first year of SWP delivery service for each. Table 1-6 presents information about each contracting agency.



Figure 1-2. Names, Locations, and First Year of Service of Long-Term Contracting Agencies, December 31, 2002

Table 1-6. Long-Term Water Supply Contracting Agencies, by Area, as of December 31, 2002

Contracting Agency	Cumulative Deliveries through December 31, 2002 (Acre-Feet)[a]	Maximum Annual Table A (Acre-Feet)	Payments through December 31, 2002 (Dollars)	Gross Area as of December 31, 2002 (Acres)	Assessed Valuation 2002 (Dollars)[b]	Estimated Population December 31, 2002
Upper Feather River Area						
City of Yuba City	12,506	9,600	2,931,231	6,976	2,075,108,529	48,369
County of Butte	10,405	3,500	808,803	1,069,000	6,239,500,000	172,600
Plumas County Flood Control and Water Conservation District	10,472	1,630	1,255,848	1,676,056[c]	2,060,744,342[c]	21,200
Subtotal	*33,383*	*14,730*	*4,995,882*	*2,752,032*	*10,375,352,871*	*242,169*
North Bay Area						
Napa County Flood Control and Water Conservation District	192,390	21,100	54,264,131	510,010	14,008,347,997	128,145
Solano County Water Agency	427,845	46,296	72,333,440	537,600	28,007,960,594	394,542
Subtotal	*620,235*	*67,396*	*126,597,570*	*1,047,610*	*42,016,308,591*	*522,687*
South Bay Area						
Alameda County Flood Control and Water Conservation District, Zone 7	958,240	78,000	92,351,646	275,900	26,883,954,795	180,000
Alameda County Water District	897,143	42,000	74,282,491	65,920	34,855,936,565	323,250
Santa Clara Valley Water District	3,060,309	100,000	231,965,120	849,000	147,074,863,200	1,715,374
Subtotal	*4,915,692*	*220,000*	*398,599,257*	*1,190,820*	*208,814,754,560*	*2,218,624*
San Joaquin Valley Area						
County of Kings	79,851	4,000	3,356,085	893,300	3,847,066,037	122,848
Castaic Lake Water Agency	435,778	12,700		8,700	4,386,000	0
Dudley Ridge Water District	1,796,332	57,343	54,742,933	37,568	44,500,000	36
Empire West Side Irrigation District	97,157	3,000	2,786,640	7,400	[d]	50
Kern County Water Agency	27,414,376	1,000,949	1,264,417,469	5,161,000	39,989,475,308	695,000
Oak Flat Water District	174,787	5,700	4,393,429	4,500	[d]	10
Tulare Lake Basin Water Storage District	4,008,817	111,527	112,957,016	189,519	152,288,305	23
Subtotal	*34,007,098*	*1,195,219*	*1,442,653,571*	*6,301,987*	*44,037,715,650*	*817,967*
Central Coastal Area						
San Luis Obispo County Flood Control and Water Conservation District	21,134	25,000	42,670,991	2,122,240	24,314,798,958	246,681
Santa Barbara County Flood Control and Water Conservation District	116,757	45,486	216,385,117	1,775,296	16,388,608,721	431,505
Subtotal	*137,891*	*70,486*	*259,056,108*	*3,897,536*	*40,703,407,679*	*678,186*
Southern California Area						
Antelope Valley-East Kern Water Agency	1,302,801	141,400	298,744,107	1,525,547	14,000,000,000	325,000
Castaic Lake Water Agency[e]	412,093	82,500	157,009,919	133,700	18,056,922,310	210,000
Coachella Valley Water District	653,996	23,100	137,278,811	639,857	27,867,344,456	219,793
Crestline-Lake Arrowhead Water Agency	39,190	5,800	17,602,964	55,100	1,500,527,807	25,000
Desert Water Agency	915,427	38,100	164,956,214	209,760	5,276,513,800	65,445
Littlerock Creek Irrigation District	18,995	2,300	4,651,947	10,000	266,368,755	2,900
Metropolitan Water District of Southern California	21,083,363	2,011,500	6,113,104,378	3,328,000[f]	1,342,833,775,159[f]	17,600,000[f]
Mojave Water Agency	174,146	75,800	142,275,821	3,160,400	13,300,357,119	353,391
Palmdale Water District	143,817	21,300	42,104,510	119,680	910,070,664	90,000
San Bernardino Valley Municipal Water District	395,565	102,600	316,250,639	210,000	16,788,841,754	600,000
San Gabriel Valley Municipal Water District	282,286	28,800	96,215,255	18,297	11,569,583,479	210,482
San Gorgonio Pass Water Agency	0	4,000	43,256,946	140,600	1,945,425,320	44,600
Ventura County Flood Control District	22,272	20,000	37,392,647	308,252	21,957,265,429	457,000
Subtotal	*25,436,001*	*2,557,200*	*7,570,844,157*	*9,859,193*	*1,476,272,636,052*	*20,203,611*
Total, State Water Project	**65,156,250**	**4,125,031**	**9,802,746,545**	**25,049,178[g]**	**1,822,220,175,403[g]**	**24,683,244[g]**

[a] All water delivered to long-term SWP contractors, including carryover, Article 21, surplus, unscheduled, exchange, permit, purchased, local, and non-SWP water.
[b] Statutes of 1978, Chapter 1207, added Section 135 to the Revenue and Taxation Code, requiring assessment at 100 percent of full value for the 1981-82 fiscal year and fiscal years thereafter.
[c] Total of all Plumas County Flood Control and Water Conservation District, including Last Chance Creek Water District.
[d] Assessed valuation not available on an agency area breakdown.
[e] District includes land in the San Joaquin Valley Area formerly known as Devil's Den Water District.
[f] Total for MWD, including Calleguas Municipal Water District, which is common to MWD and Ventura County Flood Control District.
[g] Includes duplicate values. Some areas that are within two or more agencies are included in each agency's total.

Information in this chapter was contributed by the Division of Operations and Maintenance and the State Water Project Analysis Office.

Chapter 2
Delta Resources



The Suisun Marsh is a mosaic of seasonally managed wetlands, unmanaged tidal wetlands, bays, and sloughs bordered by upland grasslands.

Significant Events in 2002

- The Delta Flood Protection Program continued developing valuable habitat, including almost 36 acres for flood mitigation and 10 acres for enhancement.
- The Department is overseeing preparation of an environmental impact report/environmental impact statement for integrated flood control and ecosystem restoration in the North Delta. It has engaged stakeholders and interested agencies through the North Delta Improvements Group and the Mokelumne-Cosumnes Watershed Alliance.
- The Department initiated an agency and stakeholder process to identify a preferred alternative for increasing Clifton Court Forebay diversions to 8,500 cfs as a part of the South Delta Improvements Program. Although no preferred alternative was identified, three different proposals of operational rules for 8,500 cfs capacity were proposed by the various interests represented.
- SDIP elements originally included in the CALFED Record of Decision were to increase diversions through Clifton Court Forebay (first to 8,500 cfs and then to 10,300 cfs), dredge and install operable tidal barriers in the south Delta, install a fish barrier at Old River at Head, and construct the first phase of a new intake and fish screen into Clifton Court Forebay. Because of major funding issues and significant technical uncertainties associated with the design and construction of new fish screens, the Department decided to defer the increase in diversions of up to 10,300 cfs and the associated new fish screens as components of SDIP.
- The Department coordinated Proposition 13 funding and oversaw the study and environmental documentation of the CALFED Old River-Byron Tract and Rock Slough-Veale Tract water quality improvement project. Contra Costa Water District, the project's proponent, began to identify and quantify sources of water quality degradation.

Over the past 40 years many programs were developed and implemented by federal and State agencies, including the Department of Water Resources, to manage the Sacramento-San Joaquin Delta as both a unique environmental resource and as one of California's major water supply sources.

The common goals of these programs have been to

- improve water supply reliability to the State Water Project, Central Valley Project, and Delta water users;
- determine levels of flow and salinity necessary to protect fish and wildlife habitat; and
- devise methods to control flooding, protect fish and wildlife, and provide recreational activities.

Delta Water Management Programs

The Department's planning programs focus on solving water management problems in three distinct areas of the Sacramento-San Joaquin Delta: north Delta, west Delta, and south Delta (Figure 2-1).

During the last decade or so, the issues in these areas have been complicated by the listing of native species under the Federal Endangered Species Act, the creation of new Delta standards by the federal Environmental Protection Agency; the issuance of biological opinions under the Endangered Species Act; and the implementation of 800,000 acre-feet of Central Valley Project yield for fish and wildlife protection (1992 Central Valley Improvement Act). Some of the Department's programs were deferred while solutions were sought.

In June 1994, a Framework Agreement between federal and State governments was established which defined a joint federal-State cooperative process for developing a long-term solution to water supply, water quality, and ecosystem problems of the Delta. Hence, the CALFED Bay-Delta Program came into being with the goal of developing a long-term Delta solution. It put into place an extensive public outreach and input program as an important element of its planning methods.

South Delta Improvements Program

During the late 1990s, the Department pursued the accelerated construction of South Delta facilities to improve Delta water conditions (the Interim South Delta Program) while awaiting the independent development of the CALFED Bay-Delta Program's long-term solution. The Department released a Draft Environmental Impact Statement/Environmental Impact Report for ISDP in July 1996; however, a Final EIS/EIR was never produced. In 1999, the South Delta facilities became a key component of the CALFED Bay-Delta Program. Subsequently, the program was renamed the *South Delta Improvements Program*. The purpose of SDIP has been slightly revised from that of the former ISDP. The new purpose for SDIP is to

- improve the reliability of existing SWP facilities;
- ensure that water of adequate quantity and quality is available for diversion to the South Delta Water Agency's service area for beneficial use; and
- reduce the effects of SWP exports on both aquatic resources and direct losses of fish in the south Delta.

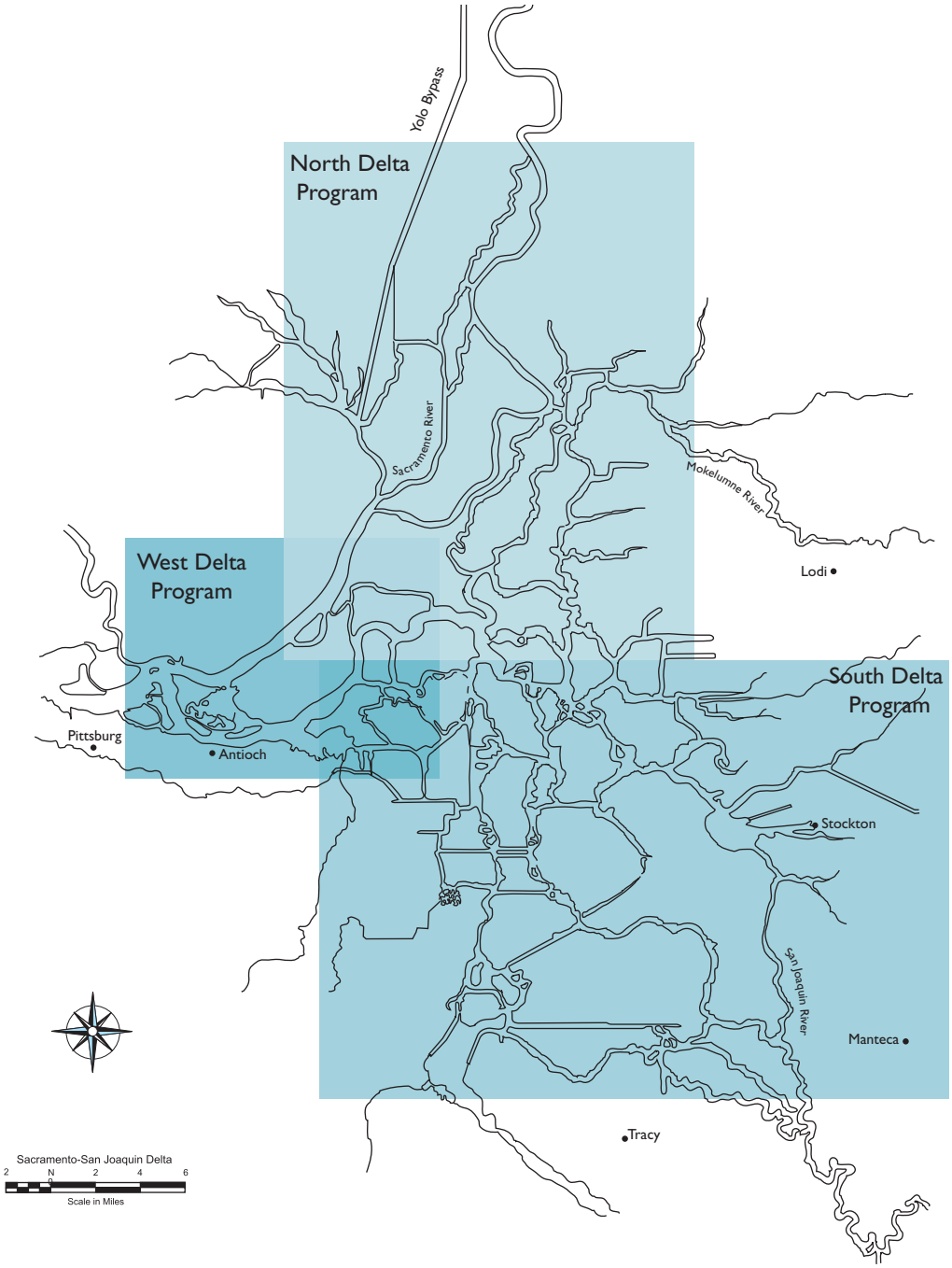


Figure 2-1. Boundaries of North, West, and South Delta Water Management Programs

Preferred Plan. A preferred plan for SDIP is being formulated as part of the ongoing process of preparing project-specific environmental documentation. It is likely to consist of

- three flow-control structures to improve local water levels and circulation in south Delta channels;
- a fish-control structure to improve fish migration in the San Joaquin River;
- some dredging in West Canal to improve conveyance capacity to Clifton Court Forebay;
- extensive dredging in the south Delta to improve channel capacity for local agricultural users;

- modifications to existing agricultural diversion intakes; and
- increasing the maximum allowable diversion rate into Clifton Court Forebay to 8,500 cfs.

The Department initiated an agency and stakeholder process to identify a preferred alternative for increasing Clifton Court Forebay diversions to 8,500 cfs. The participating agencies included the Department, the Bureau of Reclamation, Department of Fish and Game, U.S. Fish and Wildlife Service, and National Marine Fisheries Service. Stakeholders included several agricultural and municipal water agencies and environmental interest groups. Although no preferred alternative was identified, three different proposals of operational rules for 8,500 cfs capacity were proposed.

The proposal to construct flow control structures in south Delta channels would allow the Department and the Bureau to improve conditions for local agricultural diverters in the vicinity of the project export facilities. The flow control structure would benefit both spring and fall salmon migrations in the San Joaquin River. The action to increase the maximum export limit to 8,500 cfs is scheduled for implementation in 2004.

SDIP elements originally included in the CALFED Record of Decision were to increase diversions through Clifton Court Forebay (first to 8,500 cfs and then to 10,300 cfs), dredge and install operable tidal barriers in the south Delta, install a fish barrier at Old River at Head, and construct the first phase of a new intake and fish screen into Clifton Court Forebay. Because of major funding issues and significant technical uncertainties associated with the design and construction of new fish screens, the Department decided to defer the increase in diversions of up to 10,300 cfs and the associated new fish screens as components of SDIP.

Environmental Review Process

A Draft EIS/EIR for SDIP is scheduled for release in 2004 and a Final EIR/EIS is scheduled for 2005. Once the Final EIR/EIS is completed, a Notice of Determination and Record of Decision will be filed. State and federal regulatory agencies may then act on permits required to construct and operate the proposed facilities.

The necessary permits are issued by the U.S. Army Corps of Engineers according to both Section 404 of the Federal Water Pollution Control Act (Clean Water Act) for dredging operations and Section 10 of the Rivers and Harbors Act for Navigation. Approval for the permits must be coordinated with the USFWS, National Marine Temporary Barriers Project, NOAA Fisheries, EPA, and DFG. In order to improve conditions and collect data to design and operate permanent barrier facilities as proposed in SDIP, the Department has installed and operated temporary barrier facilities in the south Delta since 1990.

In addition, biological monitoring programs have been conducted to

- determine potential effects of barriers on Delta fish and vegetation;
- evaluate and review computer model calibration; and
- develop comprehensive environmental information for the design and operation of permanent barrier facilities.

Until the four permanent barriers are operational, temporary rock barriers are being installed on an annual basis during low flow conditions, at the four sites listed below.

(1) Old River at Head, in Old River where it splits from the San Joaquin River
(2) Old River near Tracy, in Old River, one-half mile east of the Tracy Pumping Plant intake and about 8 miles northwest of the City of Tracy
(3) Middle River, just south of the confluence of Middle River, Trapper Slough, and North Canal
(4) Grant Line Canal, 420 feet east of the Tracy Boulevard Bridge

The barrier at Old River at Head prevents San Joaquin River flow from entering Old River and flowing toward export facilities. This additional flow in the San Joaquin River helps guide San Joaquin salmon to the ocean in the spring and improves dissolved oxygen levels for upstream salmon migration in the fall. The other barriers have culverts with flap gates that improve water levels and circulation in south Delta channels during the irrigation season.

Since 1963, the Old River at Head barrier has been installed in the fall. Since 1992, it has also been installed intermittently in the spring, although high San Joaquin River flows sometimes prevent installation. The Old River barrier near Tracy also has been seasonally installed since 1991, as has the Middle River barrier (since 1987), and the Grant Line Canal barrier (since 1996).

Clean Water Act

Section 404 of the Federal Water Pollution Control Act (Title 33, United States Code Section 1344 [1977]), also known as the Clean Water Act, requires that a permit be obtained from the U.S. Army Corps of Engineers for any activity that results in discharge of dredged material or placement of fill material in the waters of the United States. Section 404 has been interpreted by the federal courts to include most structures or fills introduced into waters within a state that may be used for interstate or foreign commerce. Section 402 of the Clean Water Act established a permit system known as the National Pollutant Discharge Elimination System to regulate point sources of discharges in navigable waters of the United States.

The Porter-Cologne Water Quality Control Act is California's comprehensive water quality control law and is a complete regulatory program designed to protect water quality and beneficial uses of the State's water. In 1972, the Porter-Cologne Act was amended to give California the authority and ability to operate the NPDES permits program. These laws require regional water quality plans to be adopted and implemented by issuing waste discharge requirements to each discharger of waste that could impact the waters of the State.

West Delta Program

The objectives of the West Delta Program are to

- effectively manage SWP-owned lands on Sherman and Twitchell Islands (approximately 12,000 acres total);
- improve the integrity of local levees;
- implement land-use management to control subsidence and soil erosion on Sherman and Twitchell Islands;
- implement mitigation requirements associated with the Temporary Barriers Program and proposed SDIP; and
- provide diverse habitat for wildlife and waterfowl.

The Department contracted with a consultant to develop preliminary wildlife management plans for Sherman and Twitchell Islands. The plans are designed to benefit species of wildlife that occupy wetland, upland, and riparian habitats and to provide recreational opportunities for hunting and viewing. In addition, property acquired and potential habitat developed by the Department could mitigate impacts associated with current and future Delta water management programs, including those being proposed by the Department and the CALFED Bay-Delta Program. (See Chapter 7 for more information.)

The Department is a major landowner on both Twitchell and Sherman Islands and holds two of the three trustees' positions for Reclamation Districts 1601 (Twitchell Island) and 341 (Sherman Island). This allows the Department to participate in the management and operation of each district with the goal of improving conditions and accountability. The reclamation districts provide levee maintenance, island drainage, and some internal water supply. The districts also assess the landowners for the operational needs of the public districts.

North Delta Program

North Delta Flood Control and Ecosystem Restoration Improvements, a Stage I action under the CALFED Bay-Delta Program, will provide flood control and ecosystem restoration in the north Delta area, and will also support other CALFED goals including water supply reliability to the greatest extent possible. The Department is the State Implementation Agency and many of the proposed CALFED elements for the project are similar to the elements of earlier North Delta planning efforts that were suspended in deference to the CALFED Program.

The Department is overseeing preparation of an EIR/EIS and has engaged stakeholders and interested agencies in the north Delta planning process through the North Delta Improvements Group and the Mokelumne-Cosumnes Watershed Alliance. The Department is working cooperatively with Sacramento County and Sacramento Area Flood Control Agency to develop a regional HEC-RAS hydraulic model along with the input of numerous agencies and stakeholders. The regional hydraulic model will be used for regional flood control planning and is currently being peer-reviewed by experts in the hydraulic modeling field. While the hydraulic modeling is being developed and peer reviewed, staff has developed conceptual flood control and ecosystem restoration alternatives for public scoping for the EIR/EIS in early 2003.

Delta Flood Control

The Sacramento-San Joaquin Delta is one of California's most valuable and irreplaceable resources. Without adequate levee protection, the Delta, as we know it today, would be an inland sea. The levees serve many needs: they protect valuable wildlife habitat, farms, homes, urban areas, recreational developments, highways and railroads, natural gas fields, utility lines, major aqueducts, and other public developments. They are critical to the protection of in-Delta water quality and water quality for more than 23 million Californians who receive their water from the State's water transfer system. The State Legislature recognized the importance of the Delta and enacted the Delta Flood Protection Act of 1988 (SB 34 [Water Code Sections 12310 *et seq.*, and 12980 *et seq.*]). With SB 34, the Legislature declared that, "...the Delta is endowed with many invaluable and unique resources and that these resources are of major statewide significance."

In SB 34, the Legislature declared its intent to appropriate $12 million annually through fiscal year 1998-99 for the Delta Flood Protection Fund. Six million dollars of the appropriation are for local assistance under the Delta Levee Maintenance Subventions Program. The remaining $6 million are for Delta Special Flood Control Projects, including subsidence studies and monitoring on Bethel, Bradford, Jersey, Sherman, and Twitchell Islands; Holland, Hotchkiss, and Webb Tracts; and the towns of Thornton and Walnut Grove.

Since 1988, the program has managed $158 million in appropriated funds and, combined with local funds, has realized $214 million in levee improvements. In 1996, AB 360 was signed into law and expanded the area covered by the Delta Special Flood Control Projects Program to include the remainder of the legal Delta and the northern Suisun Bay from Van Sickle Island to Montezuma Slough. Bond appropriations of $25 million from Proposition 204 (enacted in 1996) and $30 million from Proposition 13 (enacted in 2000) provide supplemental funding. In November 2002, Proposition 50 was approved; it provides $70 million in additional funding to implement the Delta Flood Protection Program as adopted in CALFED, where the program is known as the *Levee System Integrity Program*.

CALFED Levee System Integrity Program

The goals and objectives for the Levee System Integrity Program are listed below.

Base Level Protection. The program is designed to ultimately provide funding to help local reclamation districts reconstruct all Delta levees to a base level of protection (the PL 84-99

standard). Currently, about 520 out of 1,100 miles of Delta levees do not meet this standard. During Stage 1, about 200 additional miles of levees will be brought up to a base level of protection.

Special Improvement Projects. This program will enhance levee stability on levees that have particular importance in the system. Priorities include protecting life and personal property (more than 400,000 people live in Delta towns and cities), water quality (preventing salinity intrusion), the Delta ecosystem, and agricultural production.

Suisun Marsh Flood Protection and Ecosystem Enhancement. This goal is to manage a program to provide levee integrity, ecosystem restoration, and water quality benefits to the Suisun Marsh. The Suisun Marsh Levee Investigation was undertaken in January 1999 at the request of the CALFED Policy Group to determine if adding Suisun Marsh levees into the Levee Program would contribute to CALFED program goals. The team has identified significant links between Suisun Marsh levee maintenance and achievement of CALFED goals, particularly regarding drinking water quality and ecosystem restoration. Furthermore, modeling research indicates a significant risk of water quality impacts in the Delta if Suisun Marsh levees are inadequately maintained and fail. When adopted, the CALFED Suisun Marsh Charter will help to guide future actions.

Levee Emergency Response Plan. This will enhance the ability of local, State, and federal agencies to rapidly respond to levee emergencies.

Delta Levee Maintenance Subventions Program

To assure continuance of the Delta's ability to provide the many statewide and local benefits, the Delta Levee Maintenance Subventions Program provides matching funds for levee work critical to the long-term survival of Delta islands and the State water supply. Within CALFED's Levee System Integrity Program, the Delta Levee Maintenance Subventions Program provides funding, as a reimbursement, to local Delta reclamation districts for levee maintenance and improvement, and each year up to 65 participating districts prepare work plans and file applications with the State Reclamation Board for funding.

The applications and work plans are reviewed by the Department, which then makes a recommendation and requests the approval of SRB for the program funding level. SRB approves each district's maximum possible reimbursement—up to 75 percent for levee work and habitat mitigation—and maximum advanced reimbursement amount. The reimbursement amount may be up to 75 percent of eligible costs. After SRB approval, agreements are executed between SRB and each participating district. These agreements state that eligible work will be completed during the current fiscal year. All work must be in compliance with appropriate State and federal laws, including the California Environmental Quality Act, the State and federal ESA, Section 1600 of the Fish and Game Code, Section 404 of the Clean Water Act, and must have confirmation from DFG that a net long-term habitat improvement of riparian, fisheries, and wildlife habitat will result.

Delta Special Flood Control Projects

The Special Flood Control Projects Program under CALFED assists the eight western islands, northern Suisun Bay, the towns of Thornton and Walnut Grove, and other locations in the Delta with flood protection and levee stability repairs. The California Water Commission approved a report of initial actions in September 1989 and approved the long-term actions and priorities in May 1990. The long-term actions and priorities serve as a guide for the Department to determine how best to use appropriations to protect these islands. Long-term actions and priorities include

- rehabilitation of threatened levees through the use of imported dredged material;

- verification of elevations in the Delta through the use of Global Positioning System equipment; and
- upgrading levees to the standards included in Bulletin 192-82, *Delta Levees Investigation*.

While the Department always seeks cost sharing for all projects, the actual reimbursement depends on each reclamation districts's ability to pay. The Department provides up to 100 percent of the cost of these activities. Districts receiving these funds are required to participate in habitat improvement programs to ensure a net long-term habitat enhancement.

Levee restoration projects in 2002 include

- landside berms on Bradford Island to reduce seepage and stabilize foundations;
- levee restoration on Bethel Island;
- stability berms on Hotchkiss Tract;
- improvements on Sherman Island, including stability berms to strengthen levees in critical areas;
- stability berms to control seepage along Three Mile Slough on Sherman Island;
- engineering investigation for levee restoration and a beneficial reuse project on Jersey Island; and
- levee rehabilitation on Van Sickle Island.

Delta Levees Habitat Improvement

The Delta Flood Protection Program, as part of the CALFED Levee System Integrity Program, continues to make significant strides in its efforts to create valuable habitat in the Delta. By the end of 2001, the program had developed 233.4 acres of various types of habitat and 9,410 linear feet of shaded riverine aquatic habitat for mitigation and also 14.4 acres and 14,328 linear feet for enhancement. During 2002, the program continued to develop almost 36 acres of habitat for flood mitigation and 10 acres for enhancement.

Completed mitigation and enhancement projects include

- Medford Island
- Terminous Tract
- Twitchell Island setback levee
- Twitchell Island mitigation areas
- Staten Island berm and channel islands
- Wright Elmwood Tract
- Thornton-New Hope Tract (Grizzly Slough)
- Palm Tract
- Bethel Island
- Canal Ranch attached berm
- Kimball Island
- Lower Sacramento River revegetation, Grand Island, in participation with the Corps
- Webb Tract Site 3
- Decker Island Phase I construction, including opening to tidal influences of the Sacramento River
- Tyler Island bank stabilization demonstration

Projects underway include

- Decker Island Phase 2 design
- design of setback levee on Sherman Island;
- Sherman Island Parcel 11
- the last phase of Tyler Island

Projects that have been proposed include

- Dutch Slough Tidal Restoration
- restoration of Flooded Islands study
- Bradford Island Tract 19 Acquisition
- developing habitat on McCormack-Williamson Tract

The Department, DFG, and reclamation districts are making substantial progress in providing adequate avoidance or mitigation of habitat losses and net long-term habitat improvement in the Delta. As the program's habitat development process moves forward, many participating districts are identifying potential habitat mitigation and enhancement areas that may be developed into diverse habitats. The

U.S. Army Corps of Engineers

In addition to its historical leadership in flood control, the U.S. Army Corps of Engineers 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 any activity which results in discharges of dredged or fill material into waters of the United States (which includes wetlands), according to Section 404 of the Clean Water Act.

Bureau of Reclamation

The 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. CVP delivers about 7 million acre-feet of water a year to contractors in the Sacramento and San Joaquin Valleys and parts of the San Francisco Bay Area. Under the requirements of CVPIA, the Bureau also supplies water for fisheries and wildlife refuges in the Central Valley.

Because the Department and the Bureau share Delta responsibilities, the Department coordinates SWP operations with the Bureau according to terms and conditions of the Coordinated Operation Agreement, signed in 1986. That agreement replaced an earlier system of year-to-year agreements regarding the responsibilities of the Department and the Bureau in the Delta. COA is significant in that the federal government agreed to accept a significant portion of responsibility for meeting the State Water Resources Control Board's water quality requirements for the Delta, with certain restrictions as to limitations of State and federal authorities.

newly-opened Decker Island Habitat Restoration Area is targeted specifically to suit the needs of the endangered Sacramento splittail and Delta smelt, providing 15 acres of tidal aquatic area for them. Monitoring will show the efficacy of the habitat at increasing at-risk species and will provide valuable data for the design of Decker Island Phase 2, scheduled for construction in 2003-04.

The Department and DFG will continue to work with the reclamation districts to preserve existing habitat and to improve the quantity and quality of newly developed habitat in the Delta.

Reuse of Dredged Material for Delta Levees

As local sources of fill material for levee repair are depleted, new economical sources must be located. During the last 13 years, the Department, in coordination with the Corps, local reclamation districts, and the Central Valley Regional Water Quality Control Board, implemented three pilot projects at Sherman, Twitchell, and Jersey Islands to demonstrate the viability of relocating material from the San Francisco Bay Area to the Delta. Extensive monitoring and testing programs for salinity impact were required; no salinity impact was demonstrated. More recently, CVRWQCB has started looking at other constituents of dredged material and is becoming more stringent in its requirements. The addition of new monitoring and preparation requirements has raised the cost of reuse. If these costs continue to rise, the Department will re-evaluate the practicality of participating in this portion of the program. Based on the assumption that reuse will remain economically beneficial, the Department has endeavored to find more opportunities to reuse clean, bay-dredged materials in the Sacramento-San Joaquin Delta. Current efforts for beneficial reuse of dredged material from the Bay area principally consist of

- coordination with CVRWQCB to address water quality concerns;
- discussions with the Corps to promote identification and acquisition of federal funds to support beneficial reuse projects;
- assistance to the Long-Term Management Strategy and Save the Bay in preparing proposals to CALFED to evaluate the potential for Delta reuse of clean, dredged material from San Francisco Bay;
- coordination with the Corps, CVRWQCB, CALFED, and RD 341 to stockpile dredged material from Suisun Bay and New York Slough on Sherman Island—this is a long-term project and could consist of

200,000 cubic yards of material dredged annually for 5 years. This project will be initiated by a demonstration project with 150,000 cubic yards coupled with an intense monitoring program;
- levee restoration and habitat projects proposed or under construction; and
- submission of a Report of Waste Discharge to CVRWQCB and obtaining Waste Discharge Requirements for the demonstration project.

Levee Upgrades

Upgrading the Delta levees is an integral part of the CALFED Levee System Integrity Program plan that is being implemented through the Department's Delta Flood Control Program. According to the CALFED ROD, all Delta levees should be built to the Corps' Delta-specific PL84-99 levee standard. This standard is comparable to the Department's Bulletin 192-82 standard and provides protection against flooding in a 100-year flood event. The minimum freeboard is 1.5 feet for levees protecting agricultural land, and 3 feet for levees protecting urban areas. A typical improved levee section would have a 16-foot crown width, a waterside slope of 2 horizontal to 1 vertical, and a landside slope designed for the depth of peat soils under the levee. Generally, the landside slope would be between 2:1 and 5:1.

The Department and the Corps signed an agreement in 2001 to co-manage the CALFED Levee System Integrity Program, including the Delta Flood Protection Program. This agreement allows close coordination of efforts and assures compatibility with CALFED goals and objectives.

Subsidence Investigations

Historically, draining and cultivating of Sacramento-San Joaquin Delta marshlands caused the peat soil to break down and compact. The peat has oxidized and subsided since the mid-1800s, when the land was first drained and levees constructed, and the surface of organic soils in the Delta are now between 10 and 25 feet below sea level. The Legislature recognized the problem and, with the initiation of the Delta Flood Protection Act of 1988, the Department began monitoring subsidence and studying its causes and the means for reversing its effects.

The Department and the U.S. Geological Survey conduct an ongoing subsidence investigation in the Delta. Preliminary data indicate that

- land management practices substantially influence subsidence rates;
- cultivation practices that raise soil temperature and lower the water table dramatically increase oxidation of the peat soils;
- conversion of highly organic peat soils to carbon dioxide gas (oxidation) appears to be the recent primary cause of subsidence;
- permanently shallow flooded wetlands decrease release of gaseous carbon by as much as 80 percent, thereby mitigating subsidence;
- permanently shallow flooded wetlands also promote the growth of wetland vegetation that adds biomass back to the system; and
- current studies of subsidence mitigation and growth of wetland vegetation suggest that shallow permanent flooding will be part of the process to reverse subsidence through biomass accretion.

In 1999, CALFED granted Category III funds to the Department to construct a Subsidence Reversal Demonstration Project on Twitchell Island. To date, field monitoring, determination of hydrologic and tidal boundary conditions, and sediment modeling have been completed, and construction, monitoring, and instrumentation installation continues at the field test sites. Water quality, soils, and hydraulic and carbon release data were collected from the test sites. The preliminary model for groundwater has also been completed.

The Department will also work with the CALFED Science Program to develop "best management practices" to control and reverse

subsidence and will also work with local districts and landowners to implement cost-effective measures.

USGS and area consultants have set up a learning laboratory to study ways to reverse subsidence at Elton Point on Twitchell Island. This project will combine the cultivation of tules and other aquatic vegetation in shallow ponds with application of thin layers of sediment. Land surface accretion and organic soil oxidation rates will be measured.

Delta Water Rights Management

Several agencies in the western Delta have rights to water in the Delta. To manage those water rights and resolve issues associated with them, the Department negotiated water rights management contracts with some of the agencies concerned. Those agencies serve agricultural, municipal, and industrial users of Delta water.

Delta Agricultural Water Users

In 1974, the Delta Water Agency was replaced by six Delta agricultural water agencies—North Delta, South Delta, and Central Delta Water Agencies, East Contra Costa Irrigation District, Contra Costa County Water Agency, and Byron-Bethany Irrigation District. Two of those agencies—North Delta and East Contra Costa—signed water rights management contracts with the Department in 1981. The Department also negotiated contracts, or is requesting negotiations, with other agencies to provide for water level, circulation, and quality needs in certain areas.

South Delta Water Agency Contract

In September 1990, the Department completed negotiations for a long-term agreement with the South Delta Water Agency and the Bureau. Under the proposed South Delta contract, the parties agreed to proceed with the design, construction, and operation of certain barrier facilities in the south Delta channels. These facilities resolved those portions of the lawsuit that South Delta filed in 1982 regarding the alleged effects of export pumping by the SWP and/or CVP on water levels, quality, and circulation in the south Delta.

Since 1990, the Department has installed and operated temporary barrier facilities in the south Delta to improve south Delta conditions and collect data needed to design and operate permanent barrier facilities as proposed in SDIP. In 1999, data collected in the Temporary Barriers Program was used to assess the barriers' ability to reduce or eliminate adverse water levels and improve local hydraulic circulation patterns.

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 from Mallard Slough and the San Joaquin River, the Department signed contracts with Contra Costa in 1967 and the City of Antioch in 1968.

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 water supplies of usable quality lost because of SWP operations. Credits for the number of days of above-average water supplies of usable quality from Mallard Slough and the San Joaquin River accrue to offset the number of below-average days in future years.

Information in this chapter was contributed by the Division of Planning and Local Assistance, the Central District, and the Bay-Delta Office.

Chapter 3
Environmental Programs



Skinner Fish Facility at Clifton Court Forebay in the Delta

Significant Events in 2002

- On June 12, 2001, National Marine Fisheries Service received a petition requesting that the North American green sturgeon (*Acipenser medirostris*) be listed as either a threatened or an endangered species under the Endangered Species Act, and that critical habitat for the species be designated concurrently with any listing determination. A final rule is still pending.
- The U. S. Fish and Wildlife Service listed splittail as threatened under FESA in 1999. This species had been considered for listing since 1994. In 2000, a Federal District Court judge found that the decision by USFWS to list the splittail as endangered under FESA was not reached in accordance with the law. The judge remanded the decision to USFWS for further analysis and review. In 2001, USFWS opened ESA listing comment period on three separate occasions. A final rule is still pending and is expected in early 2003.

The Department of Water Resources has developed and implemented several programs to avoid, minimize, or offset adverse environmental impacts that might result from construction and operation of State Water Project facilities.

Operations for Fish Species of Concern

Avoiding, minimizing, and offsetting adverse environmental impacts to fish species of concern is a primary consideration in the operation of the SWP. By definition, a *species of concern* is one that has been listed or proposed for listing as threatened or endangered by a State or federal Endangered Species Act. Maintaining flexibility in SWP operations is key to avoiding and minimizing adverse impacts to these fish. Operational responses can include Delta Cross Channel gate closure, export curtailments, changes in delivery schedules, increased reservoir releases, preferential use of certain facilities, or a combination of these actions.

The Environmental Water Account, a cooperatively managed program, is intended to provide protection to the fish of the Bay-Delta Estuary at no uncompensated cost to the SWP and Central Valley Project water users. (Additional information about EWA can be found in Chapters 7 and 9.)

San Joaquin River Activities

In recent years the Department coordinated with the Bureau of Reclamation to increase flows in the San Joaquin River from mid-April through mid-May (pulse flow period) to benefit fall-run Chinook salmon emigrating from the San Joaquin River Basin. This plan, known as the Vernalis Adaptive Management Plan, is a 12-year federal/State research component associated with the San Joaquin River Agreement. VAMP calls for intensive fisheries sampling in the lower San Joaquin River. Several studies intended to estimate the relative survival of marked salmon moving through the Delta under varied export pumping rates were coordinated with fisheries collection efforts under VAMP during the pulse flow period. The goal is to conduct operational changes and associated studies over a number of years to determine if a relationship exists between river flow, Delta exports, and salmon survival through the Delta. The resulting information will be used to determine if changing San Joaquin River flows and Delta exports in the spring can significantly benefit San Joaquin River fall-run Chinook salmon.

Temporary Barriers. As part of VAMP, temporary barriers were constructed to

- provide an adequate water supply for south Delta water diverters;
- improve water quality conditions in the Stockton Deep Water Channel; and
- prevent young Chinook salmon from entering Old River, thereby reducing the likelihood of entrainment at the south Delta facilities.

In 2001, a temporary barrier was installed in Old River at Head on April 18 and removed on June 7. The purpose of this spring season barrier was to improve conditions for juvenile Chinook salmon migrating out of the San Joaquin River Basin. The Old River at Head barrier was installed again in the fall (October 4 through November 21) to help with low dissolved oxygen levels in the lower San Joaquin River and to prevent migrating adult Chinook salmon from entering the area.

Temporary barriers were installed on Middle River and Old River near Tracy on April 15 and

April 18, respectively, and the Grant Line Canal barrier was completed on June 12. The primary purpose of these barriers is to increase water levels in the south Delta for local water users. The barriers were removed in late November due to the end of the need for irrigation water and possible conflicts with winter-run salmon.

Spring-Run Chinook Salmon Protection Plan

Implementation of the Spring-Run Chinook Salmon Protection Plan continued in 2002. This plan outlines a monitoring program, identifies indicators that would trigger a response, and identifies possible actions to minimize SWP and CVP impacts on emigrating yearling spring-run salmon. Flow, turbidity, and either fish movement or fish presence are all continuously monitored using in-stream measurements, surveys, and in-stream sampling devices (e.g., rotary screw traps). Indicators triggering a potential response include an increase in flows or turbidity in the Sacramento River and its tributaries, fish migration toward the Delta, and the detection of spring-run salmon at the export facilities. Possible actions include the closure of the Delta Cross Channel gates and export reductions.

The gates are operated to improve water quality, and protect fisheries resources and scientific experimentation. Beginning in late May and ending in mid-June, the gates were opened and closed at different intervals to study impacts on fish, flows, and water quality. In mid-October they were operated for a similar study, but had to be closed unexpectedly for maintenance through mid-November. The gates were closed again in early December because fish sampling found young out-migrating Chinook salmon in the north Delta. The gates were closed in mid-December for the rest of the year due to high river flows.

Delta Export Curtailments Due to Delta Smelt

The biological opinion on the effects of SWP/CVP operations on Delta smelt has set thresholds for combined (SWP and CVP) Delta smelt salvage for each month. SWP and CVP Delta smelt salvage is compared with these thresholds to determine when consultation should be reinitiated between USFWS, the Bureau, and the Department. If needed, further actions are taken to reduce SWP/CVP impact on Delta smelt. These thresholds include

- the 14-day running average of combined SWP and CVP Delta smelt salvage greater than or equal to 400 fish, commonly referred to as the *yellow-light level*; and
- the cumulative total of combined salvage for each month, commonly referred to as the *red-light level.*

The red-light level is based on historical salvage data and varies by month and water year type. For example, in an above-normal water year, the red-light level ranges from 733 fish in December to 11,990 fish in October. Monthly red-light levels for below-normal water years are generally higher—as much as six times—than levels for above-normal water years. Reaching the yellow-light level triggers informal consultation to consider options for reducing Delta smelt take. Reaching the red-light level triggers formal reconsultation among the agencies to determine whether additional actions are necessary to avoid jeopardizing the species.

In 2002, approximately 49,800 Delta smelt were salvaged by SWP and about 18,400 by CVP, an increase from the approximately 25,900 Delta smelt salvaged at both facilities in 2001. Adult salvage numbers (almost 47,400) peaked in May 2002. The high salvage numbers in May were due, in part, to an experiment in which the Clifton Court Forebay intake gates were closed on May 25. The result was an 8-fold increase in the density of Delta smelt numbers in the fish salvage operation. The purpose of the experiment was to determine if an increase in Delta smelt salvage at the end of the VAMP export reduction period may be caused by the Delta smelt population growing in Clifton Court Forebay during the VAMP export reduction period in May. Despite the high salvage in May, the red-light take level was not exceeded in 2002.

Decisions on Endangered Species

North American Green Sturgeon

On June 12, 2001, NOAA Fisheries received a petition from the Environmental Protection Information Center, the Center for Biological Diversity, and the Waterkeepers Northern California, requesting that NOAA Fisheries list the North American green sturgeon (*Acipenser medirostris*) as either a threatened or an endangered species under ESA, and that it designate critical habitat for the species concurrently with any listing determination. In a 90-day finding notice published in the Federal Register on December 14, 2001, NOAA Fisheries determined that the petition presented substantial scientific and commercial information in support of the petitioned action, and also solicited information and comments pertaining to the species. NOAA Fisheries initiated a status review for green sturgeon that was extended until early 2003. A final ruling is still pending.

Endangered Species Acts

In planning, constructing, and operating the SWP, the Department must consider the effects its actions will have on organisms, including plants, birds, reptiles, fish, and mammals, listed as threatened or endangered according to the Federal Endangered Species Act (Title 16, United States Code sections 1531-1544 [1973]) and the California Endangered Species Act (California Fish and Game Code sections 2050-2098 [1984]). 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. These acts are designed to protect threatened and endangered species by

- ensuring federal and State agencies adopt measures to protect the species during the design, construction, and operation of projects and in taking other forms of agency action; and
- prohibiting the unauthorized take of endangered species.

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

Splittail

USFWS listed splittail as threatened under FESA in 1999. This species had been considered for listing since 1994. In 2000, a Federal District Court judge found that the decision by USFWS to list the splittail as endangered under FESA was not reached in accordance with the law. The judge remanded the decision to USFWS for further analysis and review. In 2001, USFWS opened the ESA listing comment period on three separate occasions. A final ruling is still pending and is expected in early 2003. The Department and the Bureau have continued consultation with USFWS to develop an incidental take statement for operation of the SWP and CVP.

Fish Abundance Estimates

Figure 3-1 shows the abundance index for Delta smelt from 1967 through 2002, based on fall midwater trawl sampling. Using the first two tow-net surveys only, Delta smelt abundance indices are calculated as the product of the total catch at each site and a weighting factor that represents the estimated water volume for the site, divided by 1,000. The fall abundance index is significant because it provides one of the best indicators of the status of the adult Delta smelt population. The 2002 index was the third lowest index in the past 10 years, and the fifth lowest on record. Scientists do not know what causes these variations in abundance.

Figure 3-2 shows estimates of returning adult winter-run Chinook salmon from 1967 through 2002. The estimates are referred to as *escapement estimates*—the number of adults that escape mortality and return to spawn. The estimated escapement for 2002 was 9,200, which more than replaced the estimated 3,200 adults in the parent stock of 1999. This data continues to indicate a positive trend in the size of the reproductive population. Factors such as improved spawning and rearing habitat, reduced losses in the Delta, and reduced commercial fishing losses are all thought to have benefited winter-run Chinook salmon.

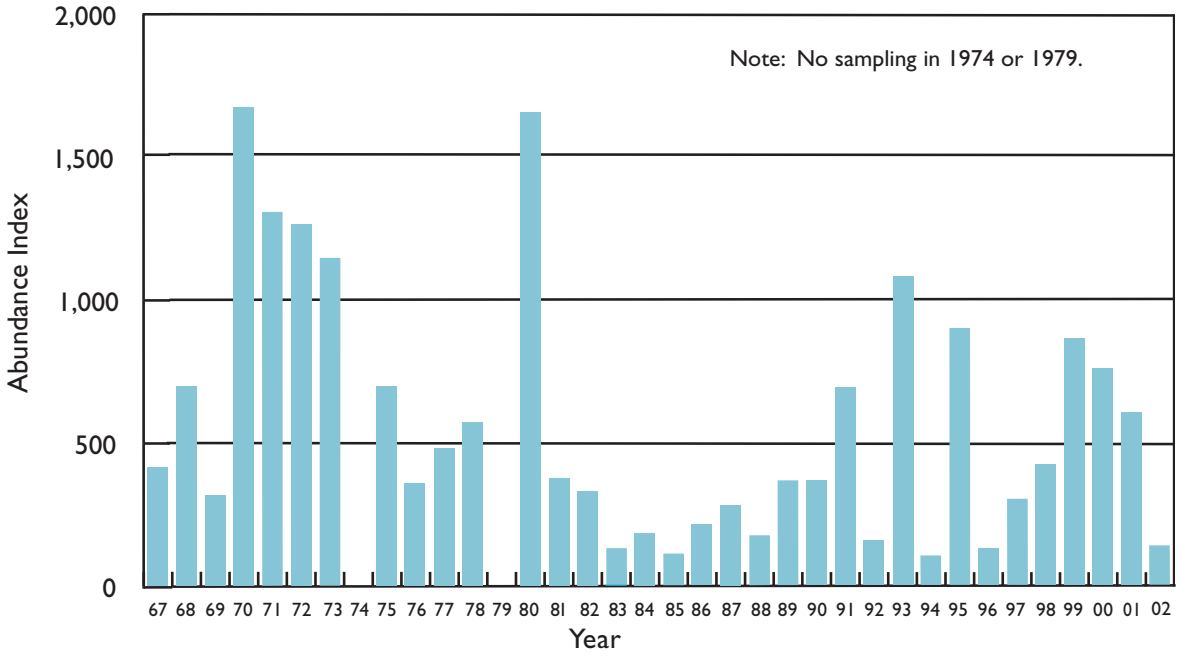


Figure 3-1. Delta Smelt Fall Midwater Trawl Sampling Abundance Index, 1967 through 2002

Figure 3-3 shows estimates of returning adult spring-run Chinook salmon from 1990 through 2002. Individual estimates are shown for Mill Creek, Deer Creek, Butte Creek, and the Feather River—the principal spawning streams for this race of salmon. The escapement estimates are shown separately for each stream because the Feather River estimate is based on returns to the Feather River Hatchery, where the genetic integrity of spring-run Chinook salmon is uncertain. The estimated escapement for 2002 was 4,200 for the Feather River Hatchery and about 12,600 for the other streams combined. Overall, spring-run escapement in 2002 decreased about 3.5 percent from 2001. Although the escapement estimates are lower than 1998, the 2002 escapement is the third highest over the last 10 years and the numbers remain consistently higher than those observed during the early 1990s. Factors such as improved spawning and rearing habitat, reduced losses in the Delta, and reduced commercial fishing losses are all thought to have benefited spring-run Chinook salmon.

Due to lack of comprehensive monitoring programs, there are no reliable escapement estimates for wild Central Valley steelhead.

Figure 3-4 shows the fall midwater abundance trawl index for young-of-the-year splittail for the period 1967 through 2002. In comparison, the index for year 2002 was very low. Splittail reproduce in spring and appear to have greater reproductive success in years when ample seasonally flooded habitat (such as Sutter and Yolo Bypasses) is available. Much of this habitat was not available during the splittail spawning season in 2002. Splittail is a long-lived minnow species (5-8 years), which helps the population persist through periods of low reproduction.

Feather River Fish Studies

The Feather River fish studies were initiated in the early 1990s to document and monitor fish populations of the lower Feather River. Early efforts focused on studies to identify flow requirements for Chinook salmon and steelhead. The program has progressively expanded

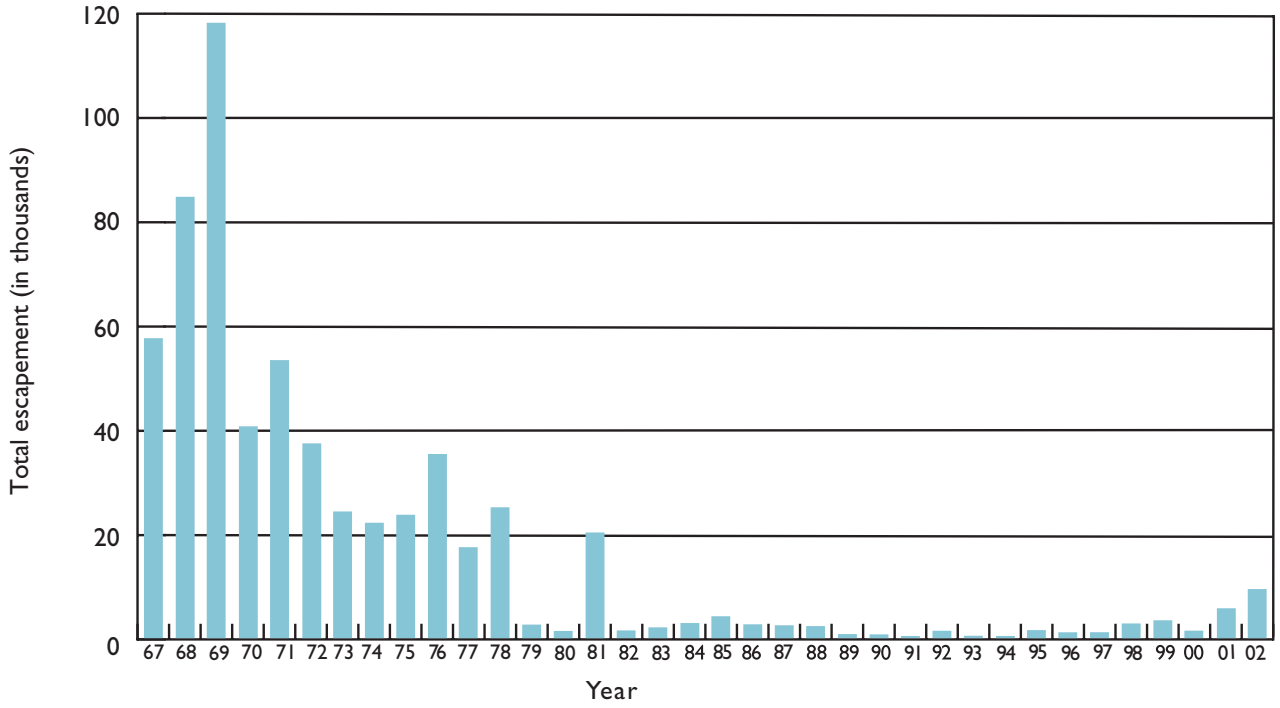


Figure 3-2. Estimated Total Adult Winter-Run Chinook Salmon Escapement, 1967 through 2002

since the mid-1990s in preparation for the Federal Energy Regulatory Commission relicensing of the SWP's Oroville-Thermalito Complex. In 2002, field program elements included operation of rotary screw traps, snorkeling, salmon spawning surveys, and temperature monitoring.

Rotary screw traps capture juvenile salmon and steelhead as they emigrate from the Feather River. Data collected from the traps are used to monitor the timing and abundance of salmonid emigrants. This long-term monitoring effort yields valuable baseline information about juvenile salmon production in the Feather River and the effects of project operations on abundance and migration timing. *Snorkel surveys* monitor juvenile and adult steelhead abundance, distribution, and habitat use in the Feather River. This information is useful for identifying the major habitats and evaluating the impacts of project operations on natural production of steelhead in the Feather River. *Salmon spawning surveys* estimate the number and distribution of adult Chinook salmon that returned to spawn in the Feather River.

Data from these Feather River sampling programs have revealed several significant and noteworthy trends. For example, snorkeling studies have shown that there is substantial in-river spawning of steelhead. Juvenile steelhead first appear in March, and are most abundant in well-vegetated side channels of the low-flow channel. Within the low-flow channel, water temperatures do not appear to limit the abundance of juvenile steelhead. Also, rotary screw traps show that the peak of salmon emigration occurs in February or March. Flows do not appear to cue or influence the timing of salmon emigration. Salmon spawning surveys have demonstrated that two-thirds of all spawning occurs within the low-flow channel. In 2002, over 105,100 salmon spawned in the Feather River from the Fish Barrier Dam downstream to Gridley.

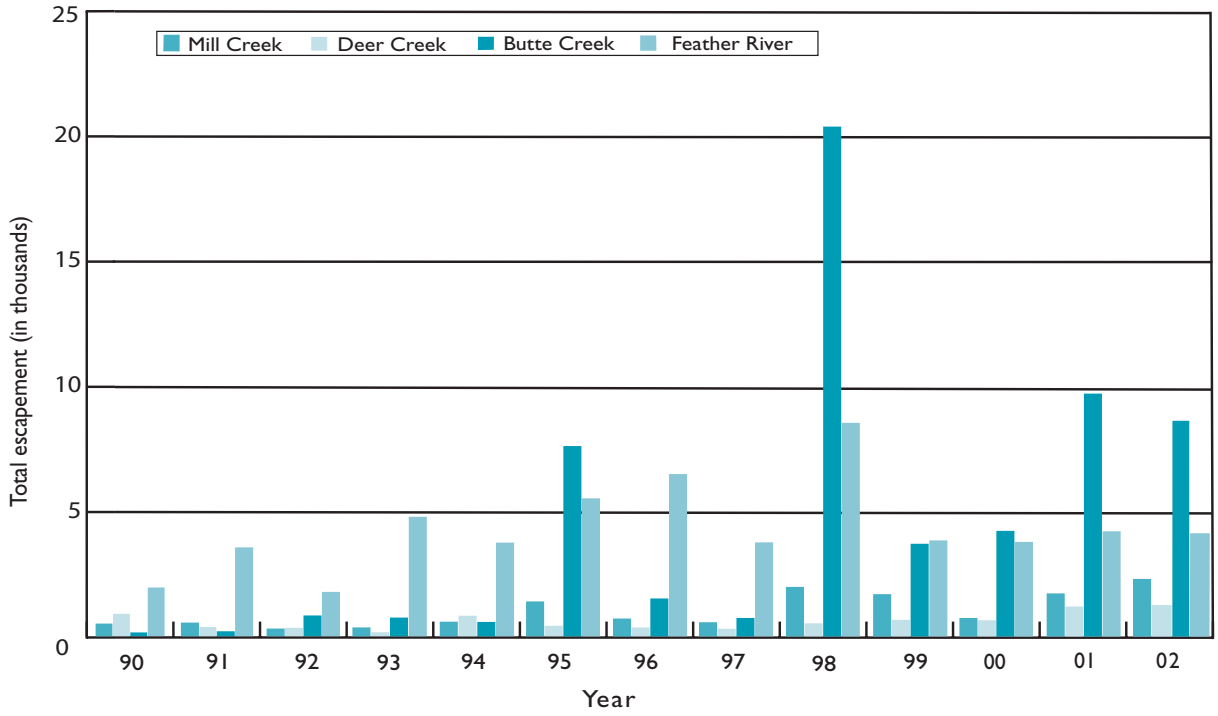


Figure 3-3. Estimated Spring-Run Chinook Salmon Escapement, 1990 through 2002

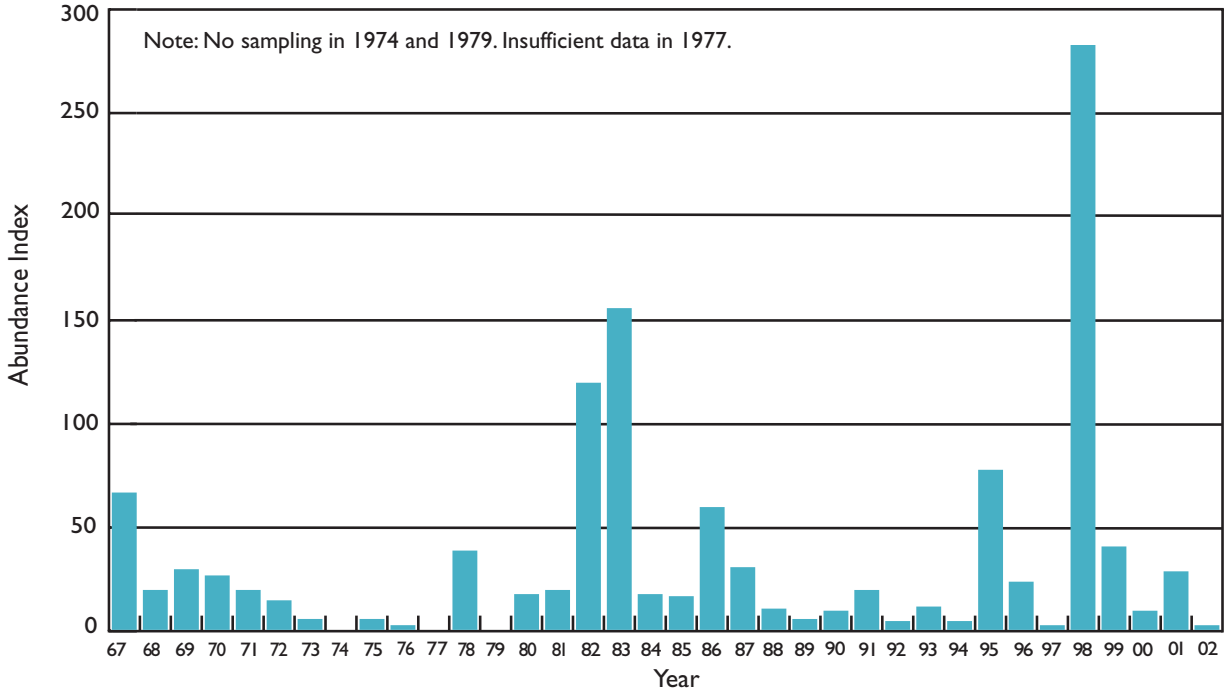


Figure 3-4. Young-of-the-Year Splittail Abundance Index, Fall Midwater Trawl, 1967 through 2002

Fish-Related Mitigation Projects

In 1986, the Department and the Department of Fish and Game signed the Four Pumps Agreement to annually provide funds to replace fish lost at Banks Pumping Plant. The agreement also provides a $15 million lump sum for additional projects to compensate for losses prior to 1986. Although the agreement focuses on Chinook salmon, striped bass, and steelhead, it also considers other fish.

Since 1986, the Department has spent $36 million on mitigation projects developed under this agreement. These projects include the following:

- improving salmon spawning and rearing habitat and migration pathways in the San Joaquin Basin;
- planting hatchery-reared and net-pen-reared striped bass;
- implementing a conjunctive-use project to improve salmon migration flows in Mill and Deer Creeks in Tehama County;
- constructing fish ladders and screens on Butte Creek;
- constructing fish screens in Suisun Marsh;
- operating an acclimation pen to improve survival of hatchery-reared salmon during their release into San Pablo Bay; and
- enhancing enforcement of fish and game laws in the Delta and upstream to benefit salmon, steelhead, and striped bass and to increase protection for spring-run salmon.

In 1996, the Department and DFG amended the agreement to

- allow another 5 years to spend the remaining $9 million of the $15 million lump sum provided in the agreement; and
- specify the likely allocation of the remaining funds.

Because of difficulties in developing mitigation projects, the Department could not spend the full $15 million lump sum in the 10 years required by the original agreement. The remaining funds were tentatively allocated to provide

- $2 million for screening diversions in Suisun Marsh;
- $1 million for predator-isolation projects on San Joaquin River tributaries;
- $2 million for a conjunctive-use project to improve spring-run salmon migration in Deer Creek in Tehama County; and
- $4 million for a salmon conservation hatchery on the Tuolumne River.

As of December 2001, the 5-year extension expired with only $4 million of the remaining $9 million spent due to difficulties in implementing several of the mitigation projects. About $1.4 million remained of the allocations under Amendment One, and $3.6 million became available for other projects when DFG halted planning for a conservation salmon hatchery in the San Joaquin Basin. The Department and DFG amended the agreement again to provide 3 more years to spend the remaining $5 million of the $15 million lump sum provided in the agreement, and to specify the likely allocation of the remaining unallocated funds.

The $3.6 million in available remaining funds were tentatively allocated to provide

- $950,000 for a revised conjunctive-use project to improve spring-run salmon migration in Deer Creek in Tehama County;
- $300,000 for screening diversions on the San Joaquin River tributaries;
- $500,000 for salmon spawning habitat and floodplain restoration on the Stanislaus River;
- $700,000 for two salmon spawning habitat and channel restoration projects on the Tuolumne River;
- $1.1 million for salmon habitat and river restoration on the Merced River; and

- $68,000 for salmon spawning gravel replenishment at wing deflector sites on the Merced River.

Other mitigation projects approved in 2002 for implementation from the agreement's annual mitigation funds and the $15 million lump sum include a 6-year extension in funding for the increased protection of spring-run salmon in the upper Sacramento River Basin, planning funds for the Expanded Western Stones Reach on the Merced River, and the transfer of the Tuolumne River salmon hatchery property to DFG for use as a screen and habitat shop, biologists' field office, and future interpretive visitors center.

Information in this chapter was contributed by the Division of Environmental Services and the Division of Operations and Maintenance.

Chapter 4
Water Quality Programs

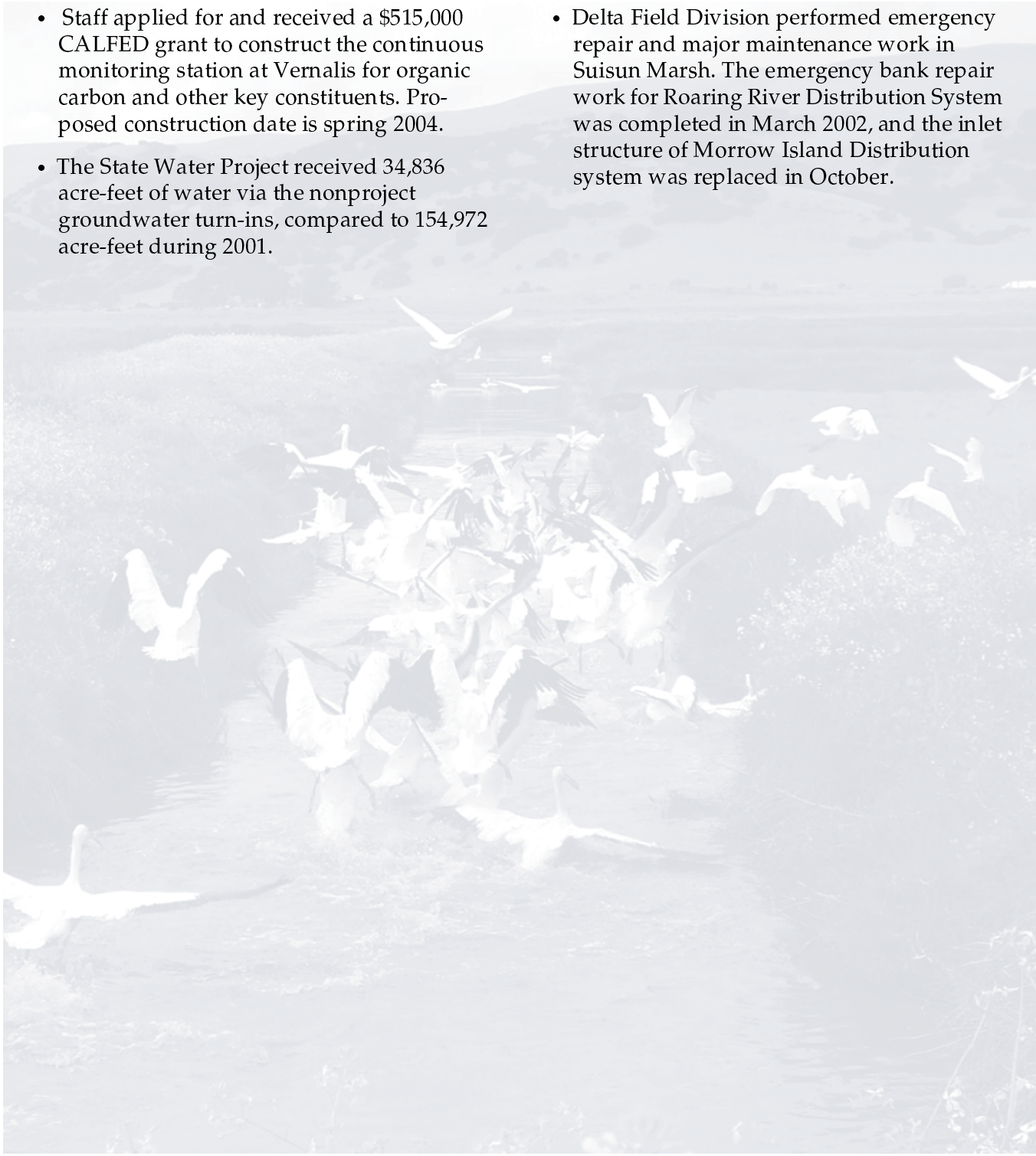


Pelicans enjoying the water at Suisun Marsh

Photo courtesy of Angelo Garcia, Jr.

Significant Events in 2002

- Staff applied for and received a $515,000 CALFED grant to construct the continuous monitoring station at Vernalis for organic carbon and other key constituents. Proposed construction date is spring 2004.
- The State Water Project received 34,836 acre-feet of water via the nonproject groundwater turn-ins, compared to 154,972 acre-feet during 2001.
- Delta Field Division performed emergency repair and major maintenance work in Suisun Marsh. The emergency bank repair work for Roaring River Distribution System was completed in March 2002, and the inlet structure of Morrow Island Distribution system was replaced in October.



Many Californians rely on the State Water Project for part or all of their daily residential water needs. Water for agriculture, industry, power generation, recreation, and fish and wildlife is also provided by the SWP. The Department monitors SWP water quality throughout the system, using an automated network of continually operating recorders and laboratory analyses of field samples collected weekly, monthly, quarterly, or annually.

Delta Activities

The State Water Resources Control Board sets water quality objectives for beneficial water uses in California, and the Department of Health Services establishes maximum contaminant levels for treated drinking water. Additional water quality objectives are set at points of delivery by Article 19 of the long-term SWP water supply contracts. Water quality in the Delta and Suisun Marsh is protected under SWRCB's Decision 1641, adopted in December 1999.

Decision 1641

SWRCB's issuance of D-1641 is part of their implementation of the 1995 Bay-Delta Water Quality Control Plan and, accordingly, this decision amends certain water rights of the water rights holders to help achieve the plan's objectives.

State Water Resources Control Board

The State Water Resources Control Board, established by the California Legislature in 1967, oversees water rights and water quality for California. Among its many responsibilities, SWRCB issues permits for the use of all water except groundwater and riparian water; distributes State and federal loans and grants for constructing sewage facilities; adopts water quality control plans, regulations, and policies; and sets water quality standards for the Delta.

To implement its mandate to set Delta water quality standards, SWRCB issued Water Right Decision 1485: Sacramento-San Joaquin Delta and Suisun Marsh in 1978. That decision focused on SWP and CVP water right permits and operations, requiring the SWP and CVP to maintain Delta water quality as it would have existed without the projects. However, after D-1485 was adopted, various water users as well as the federal government challenged it in court. Since then, SWRCB updated its Water Quality Control Plan, adopted on May 22, 1995. Water Right Order 95-06 amended D-1485 to be consistent with the plan on June 8, 1995. WR 95-06 modified the standards for Suisun Marsh and allowed the SWP and CVP to use either project's Delta pumping plant to pump project water to increase fish protection and maintain project delivery capability. Water Right Order 98-09, adopted by SWRCB on December 3, 1998, extended the terms and conditions of WR 95-06 to allow time for the issuance of a comprehensive Water Right Decision.

On December 29, 1999, SWRCB issued Decision 1641, replacing D-1485, and conditioning the water right permits of the SWP and CVP to implement the objectives of the Bay-Delta Water Quality Control Plan. D-1641 covers Phases 1-7 of the Bay-Delta Water Rights Hearings. On March 15, 2000, SWRCB adopted Water Right Order 2000-02, which denies the petitions for reconsideration of D-1641, clarifies findings, and amends several conditions of D-1641. On April 26, 2001, SWRCB adopted Water Right Order 2001-05, which facilitates negotiations to settle the potential responsibilities for implementing WQCP. This order stayed Phase 8 for 18 months and automatically dismisses it at the end of that period, unless SWRCB receives notice requesting its resumption.

During 2001, SWRCB issued Water Right Order 2001-05, which stayed the resumption of Phase 8 of the Bay-Delta Water Right Hearing for 18 months. Phase 8 involves the allocation of responsibility among water rights holders for meeting the water quality and flow requirements contained within the 1995 Bay-Delta Water Quality Control Plan. The stay followed negotiations and agreement among the Sacramento River Basin water rights holders. On October 17, 2002, SWRCB adopted a final order extending the dismissal date for Phase 8 until January 31, 2003.

The Department conducts extensive monitoring to protect beneficial uses of water in the Delta and Suisun Marsh, as required by D-1641. Figure 4-1 shows water quality compliance stations throughout the Sacramento-San Joaquin Delta required by D-1641.

Water Supply Conditions

Water Year Classifications and Water Supply Indexes

Water year 2002 was classified as *dry* for California under criteria set forth by SWRCB in D-1641. (For a detailed discussion of water year 2002, see Chapter 8.)

SWRCB's D-1641 contains water quality and flow standards that are conditioned by water year type, which, generally, become less stringent in years with less precipitation. The water year classification system provides relative estimates of a basin's available water supply from the amounts of rainfall, snowmelt runoff, and groundwater accretion rates. Water year types are classified as either *wet, above normal, below normal, dry,* or *critical.*

D-1641 applies a water supply forecast tool, the *Sacramento Valley 40-30-30 Index*, which largely replaced the Sacramento River Index. SWRCB first introduced the Sacramento Valley 40-30-30 Index in its 1991 *Bay-Delta Water Quality Control Plan for Salinity.*

The Sacramento Valley unimpaired runoff sums the major flows into the Sacramento Basin. The factors used in the Sacramento Valley 40-30-30 Index are (1) the current year's April-through-July Sacramento Valley unimpaired runoff (40 percent), (2) current October-through-March Sacramento Valley unimpaired runoff (30 percent), and (3) the previous year's 40-30-30 Index (30 percent, with a cap of 10).

D-1641 also includes another water supply forecast tool, the San Joaquin Valley 60-20-20 Index, which uses methods similar to the Sacramento Valley 40-30-30 Index.

The Eight River Index—the sum of the runoff from the eight major rivers of the Sacramento and San Joaquin Valleys—determines the duration of the fish and wildlife salinity/flow standard at Chipps Island or Port Chicago during February through June.

The April-through-July Sacramento Valley unimpaired runoff forecast for May 1, 2002, was 4.96 million acre-feet (72 percent of average). The resulting Sacramento Valley 40-30-30 Index forecast was 6.5, resulting in the forecast classification of *dry* for water year 2002. The forecast of the San Joaquin Valley 60-20-20 Index on May 1 was 2.4, resulting in the water year being classified as *dry* in the San Joaquin Basin as well. The Eight River Index forecast on May 1 was 7.8 million acre-feet for April through July.

Operations under the State Water Resources Control Board Water Right Decision 1641

During 2002, the Department and the Bureau of Reclamation operated joint projects in accordance with SWRCB's D-1641, which includes water quality, flow, and operational criteria for the estuary. Operations of the SWP and CVP were coordinated with various objectives of CALFED, the Bay-Delta Plan, Central Valley Project Improvement Act, and biological opinions for fish species listed under federal and State endangered species acts. CALFED's Record of Decision, signed on August 28, 2000,

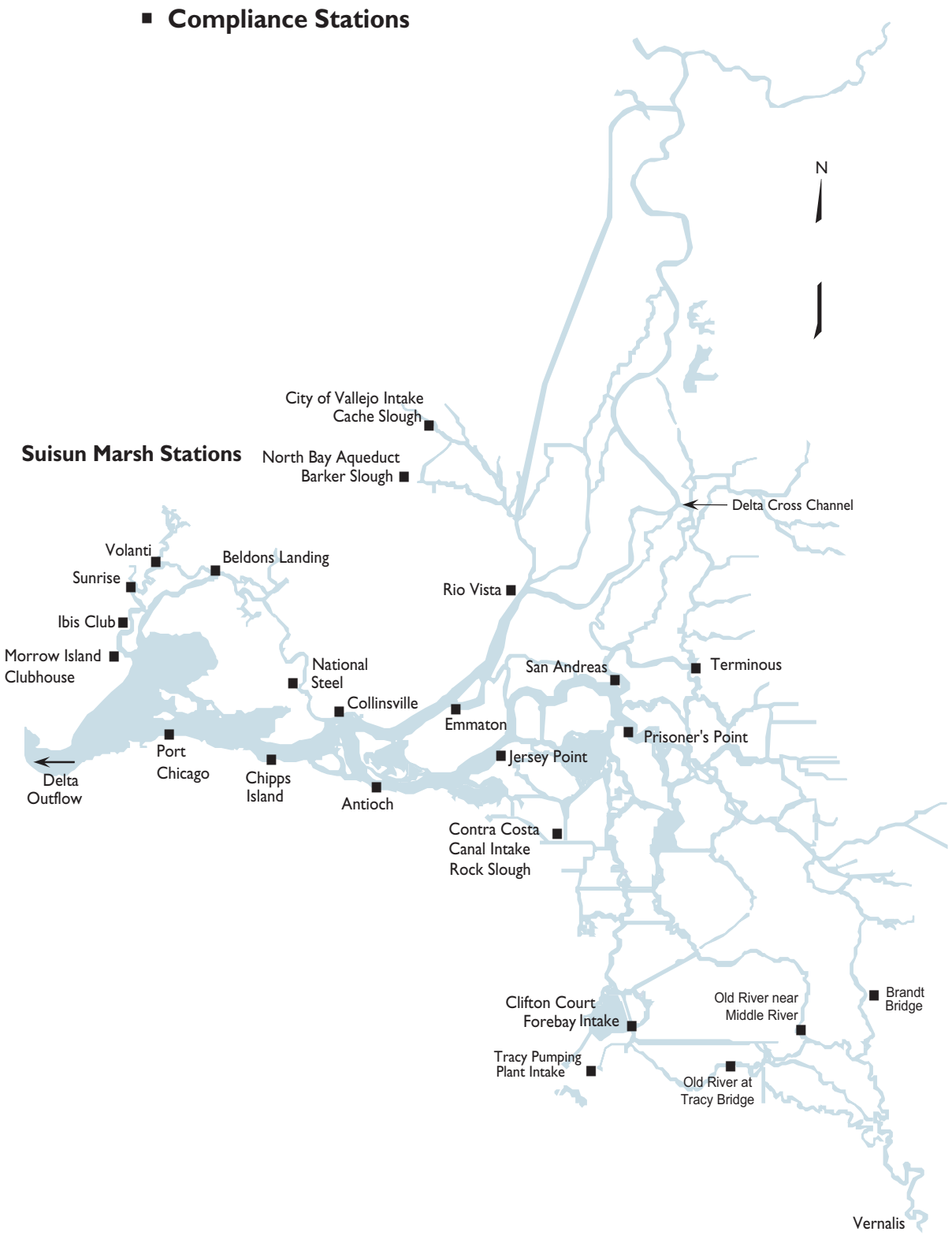


Figure 4-1. Decision 1641 Water Quality Compliance Stations in the Sacramento-San Joaquin Delta

mandates an Environmental Water Account managed by the Department, the Bureau, Department of Fish and Game, and U.S. Fish and Wildlife Service for the protection of listed fish species. Fish species currently listed under the federal and State Endangered Species Act include the winter and spring runs of Chinook salmon, Delta smelt, steelhead, and splittail.

Real-time monitoring of fish movement and conditions in the estuary aid daily water management, by providing more timely protection of targeted fish species from entrainment at the Delta pumping facilities of the SWP and CVP to ensure water supply reliability. (See Chapter 3 for a discussion of other environmental issues.)

Delta Cross Channel Gates

The Delta Cross Channel Gates allow fresher Sacramento River water to flow into interior Delta channels toward the export facilities of the SWP and CVP. During 2002, the gates were open for 194 days. To reduce flooding potential on the Mokelumne River and to prevent scour on the downstream side of the gate structure, the Bureau's standard operating procedures call for gate closure any time Sacramento River flow at Freeport reaches between 20,000 to 25,000 cfs. D-1641 contains measures that require closure of the gates from February 1 until May 20, during peak migration of winter, spring, and fall-run Chinook salmon smolts and steelhead, and the spawning season for Delta smelt, longfin smelt, Sacramento splittail, and striped bass.

The gates remained closed in 2002 until May 24. After remaining open for 4 days, a gate study began on May 31, when the gates were opened for approximately 15 hours each day from June 4 to June 14, 2002. This study was undertaken to determine the best method of operation to protect both fish and Delta water quality. Following the study, the gates remained open until October 16 when they were closed for 4 days to conduct a fish study. At the end of the fish study, gate No. 2 fell while being opened. Gate No. 1 remained open until November 12, when both gates were closed for repair and maintenance. Later that same day, the gates were reopened and remained open until December 3 when they were closed as part of a fish release and salvage experiment. The gates were reopened on December 10 when water quality became a concern. When precipitation brought Freeport flows up above 20,000 cfs, the gates were closed on December 16, and remained closed throughout the balance of the year.

Water Quality Standards

Water quality standards and objectives are categorized by the beneficial uses they are intended to protect, including municipal and industrial, agricultural, and fish and wildlife. The Department attempts to meet D-1641 water quality and flow standards through releases from upstream reservoirs and Delta export operations, but D-1641 also contains a salinity standard for the San Joaquin River at Vernalis. San Joaquin River flows are not influenced by SWP upstream reservoirs, but they may be influenced by SWP exports and placement of south Delta barriers.

High river outflows, export restrictions, and water releases to benefit migrating fish (both pulse and attraction flows) help maintain most electrical conductivity values below standards.

Municipal and Industrial Standards

D-1641 includes a year-round 250 mg/L chloride standard that is in effect at the Delta export locations (Contra Costa Canal Pumping Plant No. 1, Clifton Court Forebay, Tracy Pumping Plant, Cache Slough at the City of Vallejo intake, and Barker Slough) where, with one exception, the chloride levels remained below the objective throughout 2002.

All locations met the chloride objective during 2002 with the exception of Contra Costa Canal Pumping Plant No. 1, which exceeded the objective eight times during October 2002 despite

improving conditions in Rock Slough and surrounding channels.

An additional municipal and industrial water quality objective for chloride at the Contra Costa Canal Intake near Rock Slough specifies that the chloride level must be below 150 mg/L for a given number of days during the year. The dry year requirement of 165 days was met on June 14, 2002.

Agricultural Standards

Agricultural standards include an EC objective which varies by location based on both water-year type and a 14-day running average during the irrigation season from April to mid-August, set at Emmaton, Jersey Point, Terminous, and San Andreas in the western and central Delta. The agricultural salinity objective at these Delta locations are also based on water year type, becoming less stringent under dryer conditions; all locations met the objectives in 2002. An additional salinity objective is applied year-round in the southern Delta at two locations on the San Joaquin River—Brandt Bridge and Vernalis—and two locations on Old River, at the Tracy Road Bridge and at the head of Middle River. Responsibility for meeting the salinity objective at the latter two sites was included in D-1641. This year-round agricultural salinity objective was met at all four locations throughout 2002.

Estuarine Habitat Protection Standard

The estuarine habitat protection standard incorporates modified X2 criteria (geographic isohaline), first established in the 1994 Delta Smelt Biological Opinion. The upstream movement of a 2 ppt isohaline (2 parts per thousand of salt in the water), measured as 2.64 mS/cm at the surface, is maintained within a certain range of positions in the estuary by adequate Delta outflow. These positions (Chipps Island or Port Chicago, from February through June) are associated with fish and biota abundance.

The number of days per month when the daily averaged EC maximum (2.64 mS/cm) is in effect at Chipps Island or at Port Chicago is conditioned by the previous month's Eight River Index. This may alternately be met with a maximum 14-day running average EC of 2.64 mS/cm or with specific Delta outflow, set as a 3-day average Net Delta Outflow Index of 11,400 cfs or 29,200 cfs, when the X2 position is at Chipps Island or Port Chicago, respectively. The Port Chicago standard becomes effective when the Port Chicago 14-day EC average immediately prior to the first day of the month is less than or equal to 2.64 mS/cm. The Eight River Index from December 2001 through May 2002 was 2.49 million acre-feet, 2.72 million acre-feet, 1.73 million acre-feet, 2.30 million acre-feet, 2.83 million acre-feet, and 2.59 million acre-feet, respectively. On the last day of January 2002, the 14-day EC average at Port Chicago exceeded 2.64 mS/cm, triggering compliance at Chipps Island for February. Twenty-eight days were required for X2 at Chipps Island during February; all three criteria were met. During March, the required 31 days were met at Chipps Island with 14-day running average of EC below 2.64 mS/cm. The Chipps Island 30-day requirement for April was met with 14-day running average of EC below 2.64 mS/cm. In May, 29 days were required for X2 compliance at Chipps Island, and it was met with all three criteria. During June, the required 28 days were met with 14-day running average of EC below 2.64 mS/cm.

Net Delta Outflow Index Standard

Delta outflow cannot be measured directly due to the tidal influence in the Delta. Instead, an approximation of Delta outflow is calculated using measured inflows, exports, and estimated Delta water use. NDOI, introduced in the 1995 Bay-Delta Plan, now part of D-1641, guided operations in 2002. It provides a more accurate method for calculating Delta outflow by including inflows of the Sacramento River, Yolo Bypass system, the eastside stream system (consisting of the Mokelumne, Cosumnes, and Calaveras Rivers), the Sacramento Regional Treatment Plant, and a measurement of San Joaquin River flow at Vernalis. The NDOI-calculated flows cannot be directly compared to the Delta Outflow Index used prior to 1995,

because DOI does not include all of the above-listed flows. The calculation of in-Delta consumptive use is also different in NDOI.

Excess outflow conditions, as defined by the Coordinated Operation Agreement, allow greater flexibility in project operations. During 2002, conditions began and ended in excess conditions, but accumulated about an equal number of days in excess and balanced conditions. From February 15 through March 15, Delta outflow, calculated as NDOI, averaged nearly 30,000 cfs per day. January 2002 recorded a monthly average of NDOI (37,812 cfs) that was more than twice the NDOI monthly average for January 2001(15,803 cfs).

D-1641 sets specific minimum monthly NDOI standards, based upon water year type, between 3,000 and 8,000 cfs for the protection of fish and wildlife during January and from July to December. During dry years, July's NDOI objective of 5,000 cfs is the strictest of all months. In 2002, monthly NDOI was highest in January at 37,812 cfs. Monthly mean NDOI remained above 3,500 cfs during all months of 2002, with the lowest monthly mean occurring in August at 3,586 cfs. All NDOI standards were met in 2002, although some monthly averages were very close to the dry-year NDOI requirements.

Flow Standards

D-1641 includes minimum fish and wildlife flows measured in the Sacramento River at Rio Vista. These flow standards, incorporated from the Winter-Run Salmon Biological Opinion, set flow requirements based on the May 1 water year classification forecast. Water year 2002 was forecast to be dry, requiring mean monthly flows of 3,000 cfs, 4,000 cfs, and 4,500 cfs for September, October, and November to December, respectively. During these periods, the 7-day running average cannot be more than 1,000 cfs below the monthly standard. All Rio Vista flow objectives were met during 2002.

D-1641 also includes a minimum San Joaquin River base and pulse flows from the Winter-Run Salmon Biological Opinion that are dependent upon water year type. These flows are measured at Vernalis on the San Joaquin River. Dry year base flows are set at 2,280 cfs from February to April 14 and from May 16 through June 30, if the X2 objective is required to be at or west of the Chipps Island location. The baseflow objective is relaxed to 1,420 cfs when X2 is required to be east of Chipps Island. The X2 objective was required to be met at Chipps Island during February through May.

During June, X2 was located east of Chipps Island, allowing the relaxed Vernalis flow minimum of 1,420 cfs for June. The Vernalis flow objective was not met during February, March, and the first half of April. The Bureau informed SWRCB that water monies were not available to meet the objective. SWRCB decided that the Bureau dedicate a similar quantity of water to fishery purposes later in the year.

During dry years, D-1641 requires the San Joaquin River spring pulse flow for April 15 to May 15 to be at a mean of 4,020 cfs at Vernalis. This spring pulse flow requirement varies based on the location of X2 during April. However, the CALFED Operations Group may vary the actual timing and duration of the pulse/attraction flow, based on real-time monitoring data. The Vernalis Adaptive Management Plan, part of the San Joaquin River Agreement approved in D-1641, contains SWRCB-approved alternate spring pulse flow and export limits, which the Bureau and the Department typically use in lieu of D-1641 limits. A pulse attraction flow of up to 2,000 cfs is also required during October.

Export Standards

D-1641 includes an SWP and CVP export limitation, carried over from the Bay-Delta Accord, that conditions SWP and CVP exports, using a ratio of total Delta exports to Delta inflow and expressed as a maximum allowable percentage of Delta inflow diverted. The maximum percentage of Delta inflow diverted varies by month; in February, it is conditioned by the previous month's Eight River Index. During the San Joaquin River spring pulse flow season, VAMP export rates are usually used as an

alternative of the D-1641 spring export limitation and the CALFED Operations Group may impose additional export restrictions.

The actual export amount is calculated using the 3-day average combined inflow rate for Clifton Court Forebay (excluding Byron-Bethany Irrigation District diversions from Clifton Court Forebay) added to the Tracy Pumping Plant diversion. The export/inflow ratio limit is reported as either a 3-day or 14-day running average. A 14-day running average of inflows is used unless storage withdrawals from upstream reservoirs are being made for export, in which case a 3-day average of inflows is used. In all water year types, the February-through-June maximum combined export rate is 35 percent of Delta inflow; this may be relaxed in February, during years with less precipitation, to between 35 percent and 45 percent. From July through January, the export/inflow ratio rises to 65 percent.

During January 2002, combined SWP and CVP exports averaged 24 percent of Delta inflow, far below the 65 percent limitation. Inflows into Clifton Court were held to 1,500 cfs January 5 to January 9 due to concerns over salvage of adult Delta smelt. EWA water ensured that there was no loss of water to the SWP. Exports during the more restrictive February-through-June period (35 percent objective) averaged 27 percent. During most of February, the fishery agencies allowed the percent of inflow diverted limit to be raised to 45 percent to pump water for EWA. Exports were constrained during this February-through-June period by water quality and Delta outflow concerns, as well as reductions made for the protection of winter-run salmon and Delta smelt.

Exports at Banks and Tracy Pumping Plants are limited under D-1641 to 1,500 cfs or 100 percent of the 3-day average of San Joaquin River flow at Vernalis during the 30-day April 15-to-May 15 pulse flow period, whichever is greater. This export limit can be used in lieu of the 35 percent export/inflow ratio only if it results in more restrictive conditions. As stated above, the SWP and CVP use alternate export and flow criteria contained within VAMP during the spring pulse flow period. In 2002, the VAMP spring experimental period extended from April 15 through May 15, during which time the SWP and CVP used a combined export target of 1,500 cfs; exports averaged 9 percent of outflow during this period.

Combined exports typically ramp up following the end of the VAMP experimental period. However, concerns over Delta smelt salvage caused combined exports to be held to about 1,500 cfs through the end of May. From July through the following January, the SWP and CVP are allowed to export at 65 percent of Delta inflow. During July through December 2002, the combined percent inflow diverted averaged 49 percent as water quality concerns hampered operations during late summer and fall. Banks Pumping Plant pumped a total of 195,286 acre-feet of CVP water in 2002.

Temporary Delta Barriers

The Temporary Barriers Project began in 1991 and is now part of the Department's South Delta Improvement Program. SDIP was formerly the Interim South Delta Program and received a name change in 1999, when the CALFED Bay-Delta Program included South Delta facilities as a key component of the CALFED decision-making process.

These seasonal barriers are designed to improve local water levels and circulation patterns, protect fishery resources, and improve water quality. The temporary barriers are placed across Middle River, Old River at Tracy, Grant Line Canal, and Old River at Head. In 1996, the U.S. Army Corps of Engineers extended the testing program of the temporary barriers for another 5 years. The 5-year barriers testing period extension will include an evaluation of means to improve Chinook salmon survival during spring and fall migrations.

The installation of the Middle River barrier was completed on April 15, 2002, and the Old River barrier near Tracy on April 18. The spring Old

River at Head barrier, which functions as part of VAMP, was also operational by April 18 and helped prevent migrating juvenile salmon from straying from their migration routes into interior Delta channels. The spring Old River at Head barrier was removed by June 7, 2002. The installation of the Grant Line Canal barrier was finished on June 12, 2002. The Old River near Tracy, Middle River, and Grant Line Canal barriers were all removed by November 29.

The barrier placed at Old River at Head in the fall, which helps keep upstream migrating adult salmon from straying out of the San Joaquin River into interior Delta channels, was operational on October 4, 2002. Removal of the fall Old River at Head barrier was completed on November 21.

Special Study and Biological Surveys

In response to the mandate of D-1641, the Department conducts several special studies of biological surveys each year. One of these is a special study in the Stockton Ship Channel during the late summer and early fall to monitor the occurrence of low dissolved oxygen levels that can potentially cause physiological stress to fish and block migration of salmon up the San Joaquin River. The Department also conducts special studies to survey benthic organism density and diversity, and to survey phytoplankton biomass and community composition in the Sacramento-San Joaquin Delta, Suisun Bay, and San Pablo Bay.

Fall Dissolved Oxygen Study in the Stockton Ship Channel

Historically, during the late summer and early fall, dissolved oxygen levels in the eastern and central portions of the Stockton Ship Channel have dropped below both the 5.0 mg/L and 6.0 mg/L water quality objectives set by SWRCB and the Regional Water Quality Control Board, respectively. These low DO levels are a result of several factors, including low San Joaquin River inflows, warm water temperatures, high biochemical oxygen demand, reduced tidal circulation, and intermittent reverse flow conditions in the San Joaquin River past Stockton.

Low DO levels have the potential to cause physiological stress to fish and block upstream migration of salmon. Therefore, in an effort to prevent these low DO conditions from occurring, the Department normally installs a temporary rock barrier across Old River at Head during periods of projected low fall flows in the San Joaquin River. The barrier increases net flows in the San Joaquin River past Stockton by reducing upstream diversion of flows from the main river down Old River to Clifton Court Forebay.

Water year 2002 for the San Joaquin Valley was classified as *dry*, with relatively low San Joaquin River daily flows measured at Vernalis, ranging from 1,000 to 1,326 cfs during August and September. Because these low late-summer flows were not projected to be sufficient to alleviate DO concerns within the Eastern Channel, the barrier was installed on October 4, and was in place until November 15. During this period, DO levels were generally high in all channel regions.

Methods. Monitoring of DO concentrations in the Stockton Ship Channel was conducted by a vessel on nine monitoring runs from July 23 to December 18, 2002. Funding for these special studies was provided by the Division of Operations and Maintenance. During each of the monitoring runs, 14 sites were sampled at low water slack from Prisoner's Point in the central Delta to the Stockton Turning Basin at the terminus of the ship channel.

Because monitoring results differ within the channel, sampling stations were grouped into western, central, and eastern regions. The findings of previous fall studies have shown that fall DO levels are typically robust and high (7.0-9.0 mg/L) in the western channel; transitional, variable (4.0-7.0 mg/L), and stratified in the central channel; and low (3.0-5.0 mg/L) and stratified in the eastern channel. The western

channel begins at Prisoner's Point and ends at Columbia Cut. The central channel begins a half-mile east of Columbia Cut and ends at Fourteen Mile Slough. Finally, the Eastern Channel begins at Buckley Cove and ends at Rough and Ready Island. The Turning Basin is unique within the channel because it is east of the entry point of the San Joaquin River into the channel and isolated from down-channel flow.

DO levels which fall below the State water quality objectives are referred to as either a DO *sag*, when DO levels are <5.0 mg/L, or DO *depression,* defined as DO levels = 5.0 mg/L but < 6.0 mg/L.

Results. During this study, DO levels varied considerably between regions within the channel. DO concentrations in the western channel were relatively high and stable and ranged from 7.0-10.0 mg/L during the July 23 to December 18 study. The robustness of DO concentrations in this portion of the channel was apparently due to greater tidal mixing, the absence of conditions creating biochemical oxygen demand, and shorter hydrological residence time as compared to upstream regions.

Low DO conditions occurred in both the central and eastern channel regions. DO sag conditions in the central channel appeared to be either extensions of extended low DO sags in the eastern channel, or a result of low DO waters moving downstream from the eastern channel as inflows increased. In the central channel, DO concentrations dropped below 5.0 mg/L through much of September and October.

In the eastern channel, the DO levels were low in August and September, and stratified and more variable in October. DO levels ranged from a low of 3.3 mg/L in September to a high of 10.8 mg/L in October. Changing inflows from the San Joaquin River into the eastern channel may partially account for the variability of the DO levels within the eastern channel.

Because of the improved DO conditions in the central and eastern channels in late October and anticipated increases in fall San Joaquin River flows, the barrier was removed on November 15. The removal of the barrier coincided with an immediate return of low DO conditions in the eastern channel. Decreased inflows to the channel appear to have contributed to the return of sag conditions within the eastern channel in November.

The relatively low inflow conditions to the channel continued through December, with net daily San Joaquin River flow past Stockton ranging from 9 to 836 cfs except for a 1-day pulse flow of 1,340 cfs on December 17. On December 3, DO values in the eastern channel were exceptionally low, dropping to 3.3 mg/L. DO conditions in the central channel were similar to those in late November with a DO depression present only at Fourteen Mile Slough.

Improved net San Joaquin River inflows past Stockton in late December and cooler water temperatures (11.3-12.8° C) may have contributed to the slightly improved DO conditions measured in the eastern channel on December 18. Average DO levels in the east and east-central channel stations increased to 5.7 mg/L. Because of the improving conditions, the 2002 DO special studies were terminated on December 18.

Benthic Monitoring

The benthic monitoring program documents changes in the composition, abundance, density, and distribution of the benthic biota within the upper San Francisco estuary. Benthic biota are relatively long-lived, and can respond to changes in physical factors within the estuary such as fresh water inflows, salinity, and substrate composition. As a result, benthic data can provide an indication of physical changes occurring within the upper estuary. Because the operation of the SWP can impact the flow characteristics of the estuary, and subsequently influence the density and distribution of benthic biota, benthic monitoring is an important biological survey conducted by the Department. In addition, benthic monitoring data are also used to detect and document the presence of newly introduced species within the upper estuary.

Benthic monitoring is conducted at ten sampling sites distributed throughout the major habitat types within the estuary. Bay-Delta Section staff collect four bottom grab samples and one sediment sample monthly at each site. The grab samples are analyzed to identify organisms to the lowest possible identifiable taxon, and to enumerate all organisms collected.

The Department maintains a database of 284 benthic organisms located within the upper estuary. The benthic database is dynamic and is constantly undergoing peer review and updates. When a new organism is identified at any of the sampling stations, the organism is added to the database. In addition, the taxonomic names of organisms on the list are updated when sufficient evidence is produced to warrant such changes.

Ten new organisms were added to the benthic species list during 2002. These new organisms were found in 3 of the 10 sample areas. Eight species were found in San Pablo Bay, a saline to brackish-water site west of the Delta. Grizzly Bay, a saline to brackish-water site west of the Delta, and Buckley Cove, a freshwater site along the Stockton Deep Water Ship Channel near the City of Stockton, each had one new benthic species observed in 2002. The new species and the locations at which they were collected are as follows:

San Pablo Bay

- crustacean (*Cragnon nigromaculata)*, January 2002
- spionid (*Pseudopolydora paucibranchiata)*, March 2002
- sabellide polychaete (*Myxicola infundibulum),* September 2002
- amphipod (*Paradexamine sp. A)*, October 2002
- spionid (*Boccardia sp. A)*, November 2002
- spionid (*unidentified Spionid sp. A),* November 2002
- spionid (*Polydora branchycephala)*, November 2002
- polychaete (*Glycera Americana)*, December 2002

Grizzly Bay

- crustacean *(Anisogammarus confervicolus)*, February 2002

Buckley Cove

- chironomide (*Dicrotendipes sp. A)*, February 2002

A total of 166 species of benthic macrofauna were collected in 2002 at the 10 sampling sites. Of the 166 species, 10 species represented approximately 90 percent of all organisms collected. The 10 dominant species were

(1) the amphipods *Americorophium stimpsoni, Americorophium spinicorne, Corophium alienense, Monocorophium acherusicum, Ampelisca abdita*, and *Gammarus daiberi;*
(2) the aquatic oligocheates *Varichaetadrilus angustipenis* and *Limnodrilus hoffmeisteri*; and,
(3) the Asian clams *Potamocorbula amurensis*, and *Corbicula fluminea*.

Of the 10 dominant species, 2 species, *Ampelisca abdita* and *Potamocorbula amurensis,* represent macrofauna that inhabit a typically high saline environment and were found in San Pablo Bay, Suisun Bay, and Grizzly Bay. The amphipods *Americorophium stimpsoni* and *Americorophium spinicorne* tolerate a wider range of salinity, and were collected both in the higher saline western sites, and the more brackish to fresh water eastern sites, such as the San Joaquin River at Twitchell Island and the Sacramento River above Point Sacramento. The remaining 6 species are predominantly fresh water species and were collected at sites east of Suisun Bay.

Database Updates. During 2002, several changes were made in the taxonomic classification of previously recorded benthic species. In addition, the gammarid amphipod, *Monocorophium oaklandense*, was made synonymous with *Monocorophuim insidiosum*. As a result, all

records of *M. oaklandense* are now listed as *M. insidiosum*.

Phytoplankton and Chlorophyll *a* Studies

Monthly sampling of chlorophyll *a* concentrations and phytoplankton was conducted in 2002 by the Department's Bay-Delta Monitoring Branch at 10 stations throughout the Delta. These stations are

- Sacramento River at Green's Landing and Point Sacramento
- Suisun Bay off Bull's Head Point
- Old River opposite Rancho Del Rio
- San Pablo Bay near Pinole Point
- San Joaquin River at Vernalis, Buckley Cove, and Potato Point
- Disappointment Slough at Bishop Cut
- Grizzly Bay off Middle Point, near Nichols

Average monthly chlorophyll *a* concentrations throughout much of the Delta were low, with 94 percent of the 130 samples (excluding replicates) taken in 2002 (from January 3 to December 13) having levels below 25 µg/L, and 85 percent of all samples having levels below 10 µg/L. These levels are consistent with those detected throughout the Delta in 2000 and 2001, which show a gradual decrease in chlorophyll *a* each year. Average chlorophyll *a* concentrations for all samples in 2002 were 7.0 µg/L, and the median value was 2.4 µg/L. The maximum chlorophyll *a* concentration for all sample locations in the Delta was recorded August 13 on the San Joaquin River at Vernalis, at 118 µg/L. This maximum was well above the highs of 36.6 µg/L (July 1999) and 46 µg/L (September 2000) recorded in previous years, but equivalent to the value recorded last year, 119 µg/L (July 2001) in the same area.

The highest chlorophyll *a* concentrations were observed at Vernalis, Buckley Cove, and Disappointment Slough (stations C10, P8, and MD10), with average concentrations of 36.3, 13.3, and 7.1 µg/L, respectively. These values compare with average chlorophyll *a* levels in 2001 in the same areas of 41.2, 13.1, and 9.9 µg/L, respectively.

Average yearly chlorophyll *a* concentrations recorded at all other Delta locations ranged from 1.7 to 2.9 µg/L. The lowest observed concentration of 0.6 µg/L was reported at Old River opposite Ranch Del Rio (station D28A) on January 7, 2002. In general, chlorophyll *a* minima did not appear to be consistent with a particular season.

Phytoplankton biomass and resulting chlorophyll *a* concentrations in some areas of the Delta may be influenced by extensive filtration of the water column by the introduced Asian clam, *Potamocorbula amurensis*. Well-established benthic populations of *P. amurensis* in Suisun and San Pablo Bays are thought to have contributed to the low chlorophyll *a* concentrations (and increased water clarity) measured in these westerly bays since the mid-1980s.

In addition to monitoring for chlorophyll *a*, water samples were analyzed for pheophytin. Pheophytin is a primary degradation product of chlorophyll *a* and its relative concentration is useful for estimating the general physiological state of phytoplankton populations. When phytoplankton are actively growing, the concentrations of pheophytin are normally expected to be low in relation to chlorophyll *a*. Percent chlorophyll *a* concentrations measured in 2002 ranged from 30 percent to more than 95 percent, with an average of 67 percent and a median of 71 percent. In addition, 87 percent of the samples collected had chlorophyll *a* levels above 50 percent. This relatively high percentage of chlorophyll *a* is generally associated with healthy, growing populations.

Phytoplankton populations consisted of (in order of abundance): flagellates, diatoms, green algae, cryptomonads, and blue-green algae. Of the genera identified (20 percent of all samples were unidentified), the following were the most common, in order of abundance: *Cyclotella, Melosira, Achnanthes, Thalassiosira, Diatoma, Skeletonema, Ankistrodesmus, Chlorella, Scenedesmus,*

Cryptomonas, *Oscillatoria*, *Selenastrum*, *Synedra*, and *Navicula*.

Activities Outside the Delta

Activities conducted outside the Delta included scheduled routine SWP water quality monitoring as well as special studies. Most of these special studies were in response to fish and wildlife and water quality issues of importance to agencies that provide domestic water supply. These agencies face increasingly stringent regulations and look to the SWP to deliver high quality raw water.

Water Quality Monitoring

The Division of Operations and Maintenance collects detailed water quality information on the concentration and distribution of chemical, biological, and physical parameters at 40 aqueduct and reservoir sites located throughout SWP facilities. Stations are situated south of the Delta at reservoirs, pumping plants, power plants, and check structures of the South Bay, Coastal Branch, and California Aqueduct. Other monitoring activities are conducted on the North Bay Aqueduct, Feather River, and at State reservoirs north of the Delta—Lake Oroville, Antelope Lake, Frenchman Lake, and Lake Davis.

The Water Quality Program of the SWP was established in 1968 when the California Aqueduct was completed. More than 200 different chemical constituents are monitored monthly or quarterly. In addition, 13 automated stations are maintained for continuous monitoring of aqueduct water.

The Department maintains an analytical laboratory (Bryte Laboratory in West Sacramento), which processes most SWP laboratory water quality samples. The Department also contracts for some laboratory services. Water samples from 15 SWP stations are analyzed monthly to determine concentrations of dissolved solids, nutrients, chloride, sulfate, sodium, trace metals, and other constituents. Herbicides, pesticides, organic substances, and phytoplankton are monitored three times per year.

Selected SWP water quality data are available electronically through the Department's Web site at wwwomwq.water.ca.gov. Table 4-1 presents laboratory results of sampling at several representative stations during 2002.

Nonproject Groundwater Turn-ins

Turn-ins are authorized during periods of reductions in approved Table A amounts. The Department had previously accepted turn-ins in the early 1990s in response to the 1987-92 drought. Nonproject groundwater was accepted into SWP facilities provided it did not result in the degradation of SWP water quality, toxicity to fish and wildlife, or adverse changes in the suitability of the water for beneficial uses.

In 2001, the Department established new criteria to review the water quality of the turn-ins.

A two-tier approach was implemented. Tier 1 programs have a "no adverse impact" criteria and are tied to historical water quality levels in California. Programs meeting Tier 1 criteria require Department approval.

Tier 2 programs involve water quality levels that exceed the historical water quality in the California Aqueduct and have the potential to cause adverse impacts to the State water contractors. Tier 2 programs are referred to a State water contractor facilitation group for review. The facilitation group subsequently makes recommendations to the Department.

Turn-ins not only add versatility to SWP water operations, but can also improve SWP water quality for some constituents. Turn-ins usually coincide with monthly decreases in total dissolved solids, conductivity, and organic carbon in the Aqueduct, while slight increases in nitrate and sulfate often result. During 2002, the SWP received 36,799 acre-feet of water via the nonproject groundwater turn-ins compared to 154,972 acre-feet during 2001.

Table 4-1. 2002 Mean Water Quality at Selected State Water Project Locations

Constituents	Units	Detection Limit	Thermalito Afterbay at Outlet to Feather River	North Bay Aqueduct Barker Slough Pumping Plant	Banks Pumping Plant	Delta-Mendota Canal Upstream of McCabe Road	California Aqueduct				
							O'Neill Outlet (Check 13)	*Kettleman City (Check 21)*	*Highway 119 (Check 29)*	*Tehachapi Afterbay (Check 41)*	*Devil Canyon Afterbay near San Bernardino*
Alkalinity	mg/L	1	40	75	58	71	67	68	68	65	72
Arsenic	mg/L	0.001	<0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001
Boron	mg/L	0.1	<0.1	0.1	<0.1	0.2	0.1	0.1	0.1	<0.1	0.1
Bromide	mg/L	0.01	<0.01	0.02	0.06	0.11	0.11	0.12	0.10	0.10	0.13
Calcium	mg/L	1	8	12	11	17	14	15	14	13	16
Carbon-Total Organic	mg/L	0.5	<0.5	4.8	4.2	5.2	3.8	3.9	4.6	3.4	4.3
Chloride	mg/L	1	<1	9	23	37	38	41	36	35	48
Chromium	mg/L	0.001	<0.001	<0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Copper	mg/L	0.001	0.001	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.002
Fluoride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3
Hardness	mg/L	1	36	63	56	80	68	75	65	65	81
Iron	mg/L	0.005	0.006	<0.005	0.011	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium	mg/L	1	4	9	7	9	9	9	9	8	10
Manganese	mg/L	0.005	0.005	0.007	0.012	<0.005	0.005	<0.005	<0.005	<0.005	0.039
Nitrate + Nitrite	mg/L	0.01	<0.01	0.19	0.13	<0.01	<0.01	0.38	<0.01	0.28	0.20
Phosphorus - Ortho	mg/L	0.01	<0.01	0.09	0.06	<0.01	<0.01	0.07	<0.01	0.08	0.045
Phosphorus - Total	mg/L	0.01	<0.01	0.15	0.08	<0.01	<0.01	0.10	<0.01	0.11	0.05
Selenium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium	mg/L	1	3	13	19	30	28	31	27	26	34
Specific Conductance	µS/cm	1	81	194	212	332	299	317	294	280	358
Sulfate	mg/L	1	2	10	10	31	20	22	19	17	26
Total Dissolved Soilds	mg/L	1	48	118	128	200	180	191	178	170	214
Turbidity	NTU	1	3	49	9	16	4	5	5	12	2
Zinc	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.015	0.006

Note: All reported constituents are the yearly mean of laboratory analytical values sampled monthly. Nondetectable values were not used in the calculation of the yearly mean.
NR = No data recorded at this location.
NTU = nephelometric turbidity units
mg/L = milligrams per liter
µS/cm = microsiements per centimeter

Municipal Water Quality Investigations Program

The Sacramento-San Joaquin Delta provides drinking water for over 23 million people in California. Because the Delta is a relatively unprotected watershed, water quality degradation is possible from many sources, including industrial and municipal wastewater discharges, storm water runoff from cities, agricultural discharges, recreational activities, abandoned mines, and illegal dumping. The Municipal Water Quality Investigations Program was established to evaluate the suitability of Delta water as a drinking water source, to identify sources of water quality degradation, and to evaluate means of eliminating or preventing degradation.

Participants in the program include the municipal water contractors of the SWP and Contra Costa Water District. Program advisors include representatives of participating agencies, including the Environmental Protection Agency, DHS, and California Urban Water Agencies. Because water quality concerns change rapidly with new drinking water regulations and water quality issues, the MWQI Program must be flexible enough to adapt to changing requirements. The former Delta Health Aspects Monitoring and Delta Island Drainage Investigations Programs merged into the MWQI Program in 1990; the program continues to evolve.

The program's initial focus was to compile a comprehensive database on the quality of drinking water in the Delta. Since then, it has investigated ways of managing Delta lands and waters to minimize adverse impacts on drinking water quality. It has also identified sources of contaminants in the Delta and assessed their significance for drinking water quality and water treatment. Drinking water standards are more difficult to meet when natural organic materials from agricultural drainage and watershed runoff are involved.

The current MWQI Program has progressed from the monitoring, problem identification, and assessment stages to the development of studies on source water improvement and management. The MWQI Program has also continued to provide the CALFED participating agencies with scientific data, findings, and expertise for assessing potential effects from proposed Delta projects. December 2001 marked the publication of the *2001 California State Water Project Watershed Sanitary Survey Report*. This report is the third in a series for the SWP. The first was produced in 1990, and the second in 1996. Both the 1996 and 2001 reports are 5-year updates from the original sanitary survey required by DHS. A searchable CD-ROM version of the report was produced in spring 2002 and also made available on the MWQI Web site at www.wq.water.ca.gov/mwq/index.htm.

The North Bay Aqueduct/Barker Slough Watershed Study was started to investigate problems identified in the 1996 Sanitary Survey. A 4-year report was published in May 2002. This report is also available at the MWQI Web site. Sodium-enriched soils and poor land use practices within the watershed are identified as major culprits for causing the poor water quality of runoff in the watershed.

Currently, the stakeholders are evaluating the feasibility of best management practices to reduce carbon and turbidity in the slough. The MWQI Program has continued to work with the stakeholders to provide water quality technical assistance to the project, including providing supportive scientific documentation for a CALFED grant, which was awarded for the development and evaluation of best management practices.

In fall 1999, the MWQI Program began an assessment study of EPA Method 1623, a new EPA-approved sampling methodology for the protozoans *Cryptosporidium* and *Giardia*. The study continued into winter 2000. Staff published the results in a paper titled *Cryptosporidium and Giardia Recoveries in Natural Waters by Using Environmental Protection Agency Method*

the use of Method 1623 for source water monitoring in the Delta.

The MWQI Program received a CALFED grant in 2000 to purchase and install three automated carbon analyzers in the Delta. In summer 2001, the first analyzer began operating at Banks Pumping Plant. The analyzer automatically samples the exported water, determines the total organic carbon and dissolved organic carbon levels, and sends the data to Sacramento where it is posted on the CDEC data Web site.

The second analyzer started operation in winter 2002, and is located at the Hood water quality monitoring station on the Sacramento River. The third unit is destined for the future San Joaquin River monitoring station to be constructed at Vernalis.

In 2002, staff applied for and received a $515,000 CALFED grant to construct the continuous monitoring station at Vernalis for organic carbon and other key constituents. The proposed construction date is spring 2004.

The carbon analyzers can sample up to every 6 minutes, compared to the historical grab-sample organic carbon data, which has been sampled weekly. The data, coupled with flow measurements, will allow for the calculation of mass transport and loading of carbon from the two main Delta tributaries. The data, currently posted to the Department's CDEC, will also be used by modelers to refine Delta Simulation Model 2 for calculation of organic carbon transport through the Delta.

In addition to the CALFED grant for the construction of the San Joaquin monitoring station, staff has received approval for a grant to study the carbon isotopes to date the carbon molecules. This will help identify the source of the organic carbon in the SWP. Older carbon would indicate peat soils from Delta islands, and younger carbon would indicate fresh plant residue from crops or vegetation. This could then help determine where to focus source water protection efforts.

Other components of the MWQI Program include

- evaluation of the water quality impacts at drinking water intakes from the proposed Delta wetlands storage project;
- the study and fractionation of organic carbon molecules from Delta carbon sources;
- evaluation of proposed CALFED restoration actions in terms of drinking water impacts;
- working with the State and regional water quality control boards to develop drinking water policy as part of the basin plan;
- development of models to predict water quality based on sources and loads; and
- investigation of new and increasing sources of pollution, including urban sources.

Collectively, these and other MWQI studies and activities are designed and conducted to address major water quality and water supply issues, such as the Delta's ability to meet user needs, adjust to stricter State and federal regulations, and provide reliable, clean water supplies in the future. Each study or activity serves to discover, test, and assess possible solutions to problems in the Delta and other watersheds of the SWP and assures that future demands for safe, potable water supplies can be met.

Bryte Chemical Laboratory

Bryte Chemical Laboratory, established in 1951, continues to perform the vast majority of chemical and other related analyses required to support the Department's water quality programs. Thousands of water samples are analyzed routinely for minerals, nutrients, metals, pesticides, volatile organic compounds, and many other chemical constituents. The laboratory has continued to manage several analytical contracts with outside laboratories in accordance with the master contract policy approved in fiscal year 1994-95. The laboratory works in conjunction with the Quality Assurance/Quality Control Section to replace these contracts as they expire each fiscal year.

In 2002, Bryte Laboratory successfully replaced a 3-year contract for analytical services concerning water and wastewater for the Department under master contract policy. The new 3-year contract was awarded to Sequoia Analytical Laboratory. It will provide backup analytical services and analytical services not currently provided by Bryte Laboratory for water and wastewater samples for SWP and other water quality programs.

The laboratory purchased several new analytical instruments in 2002 to replace outdated instrumentation. One of the new instruments was a Lachet QuickChem 8000 FIA (Flow Injection Analyzer) used to perform automated flow analyses in water. The new system will replace three outdated flow analyzers that perform nutrient analyses in water. It will perform up to three analyses simultaneously, such as dissolved ammonia, ortho-phosphate, and nitrate-nitrite analyses, with a sampling rate of 60 analyses per hour. The new instrumentation will save time and labor, and also expand the laboratory's capability to perform nutrient analyses.

Also purchased in 2002 were two new ion trap, gas chromatograph mass spectrometers to be used by the laboratory's organic section. The new systems will allow the performance of a variety of EPA methods for water and wastewater analyses that were previously unavailable for departmental programs. One new ion trap, GC/MS systems, was equipped with a solid phase micro extraction system for specialized semi-volatiles organic analyses. The new systems were needed to supplement the laboratory's capability to detect organic compounds in waters from the SWP involving accidental spills, acts of nature, and certain classes of chemical agents that could be used by terrorist groups.

The FERC requirements for the relicensing of Lake Oroville and several other SWP-funded programs require analysis of trace metals in water to parts per trillion levels to meet aquatic water quality criteria. The ultra low-level metal analyses have continued to be contracted to a private environmental laboratory at a cost of more than $300,000 per year. After estimating the required equipment and labor cost, it was determined that it would be cost effective to perform these tests at Bryte Laboratory. A major requirement for the laboratory to perform these analyses was the construction of a class 100 clean room. The construction, started in late 2001 and continued through 2002, is now scheduled to be fully completed and operational in early 2003.

The Field and Laboratory Information Management System, implemented in 1997, has continued to enhance the laboratory's data management capabilities. In 2002, the server and backup system were upgraded to include the essential chemist workstations to prevent data loss. The laboratory purchased and installed a new server and backup system. The server and chemist workstations are now backed up daily.

Security and protection of the SWP has become a primary goal for the Department since September 11, 2001. In an effort to protect the SWP from biochemical and chemical agents, Bryte Laboratory has continued to be an active member in a group of laboratories headed by DHS, the California Mutual Aid Laboratories. One of the group's objectives is to assist in the development of additional analytical methods to detect and quantify biochemical and chemical agents. Once the methods and procedures are validated, a mutual assistance network will be established within the group to provide aid should a threat occur. Bryte Laboratory has acquired additional instrumentation necessary to perform the analytical methods developed by the California Mutual Aid Laboratories to detect and quantify these agents. It has also been investigating the possible use of additional real-time field instrumentation that could be used to augment the current monitoring of SWP waters and source waters by enhancing its early warning system. Until these measures are fully evaluated, the lab continues to take additional steps, including testing, to ensure that the quality of water delivered through the SWP meets all water quality objectives.

Quality Assurance/Quality Control

The QA/QC Program, established in 1992, ensures that data generated by the Department's environmental monitoring activities meet high quality standards and are scientifically defensible.

The QA/QC Program actively ensures that in-house and contract laboratories providing water quality analytical services for the Department comply with QA/QC procedures, standards, and requirements. The program performs the following functions:

- procures specialized products and services from outside sources on an as-needed basis. These may include obtaining certified laboratory standards and outside instructors for teaching technical classes;
- periodically submits performance evaluation samples to all in-house and contract laboratories to evaluate their performance;
- assists in the data quality review of environmental data for the Office of Water Quality and other departmental programs upon request;
- publishes QA/QC technical documents;
- develops and maintains the drinking water quality database and associated QC metadata as part of the Department's Water Data Library; and
- assists departmental programs in developing quality assurance project plans.

In 2002, QA/QC staff performed data quality review for the 1998-2001 Municipal Water Quality Investigations Program Annual Report to be published in July 2003. The review evaluated the laboratory analyses performed for various MWQI projects to determine if the data met the required quality for the Program. The data were found to be of adequate quality and the findings will be included in the Annual Report.

QA/QC staff continued collecting data for the total organic carbon method comparison study initiated in November 2001. Bryte Laboratory had been analyzing organic carbon using wet chemical oxidation since 1986. In 2000, a new instrument using a high temperature combustion method was acquired. Initial comparisons between the two instruments indicated that high temperature combustion analytical results were sometimes significantly higher than those from wet chemical oxidation. The comparison study was designed to determine the causes of these analytical differences. Samples were collected at five stations for multiple instrument comparisons between December 2001 and December 2002. A report summarizing the results of the comparison study will be prepared in 2003.

QA/QC staff drafted and finalized a contract to supply the Department with certified performance evaluation standards. The performance evaluation samples are used to monitor and audit the Department's field and laboratory procedures. They also assess the proficiency of laboratories under contract with the Department.

Quality Assurance/Quality Control

The water quality data collected by the Department must be scientifically supportable. To help protect the Department's large investment in water quality data, the Quality Assurance/Quality Control Program was established in 1992. The QA/QC Program provides guidance and technical support to managers of water data collection programs throughout the Department.

In addition to the basic mission of supporting and strengthening the validity, integrity, and credibility of water quality data collected by the Department, the QA/QC Program provides leadership in efficient planning and execution of field sampling activities. To minimize cost, it is necessary to carefully plan, implement, interpret, and evaluate the data collected. Good data collection programs begin with identifying the data collection goal and establishing the data quality objectives to meet the goal. This planning is done before actual data collection commences and assures that the correct type and amount of data are collected to meet program objectives. Through this process, the Department avoids collecting inadequate, irrelevant, or extraneous data, and thereby avoids waste.

In 2001-02, the Department brought the Water Data Library into limited production and work was started on producing a user interface. All data, from May 2001 to date, have been transferred into the data tables. When completed, the Water Data Library will permanently house all the FLIMS data in an accessible format for the Department. Development also began on an update to the field module software for use in the FLIMS data system. This version will enable better integration with the Water Data Library database.

Suisun Marsh Activities

The Suisun Marsh

Suisun Marsh is about 59,000 acres of tidal and managed brackish water wetlands and 30,000 acres of bays and sloughs. It is the largest contiguous brackish marsh remaining 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 thousands of waterfowl migrating on the Pacific Flyway.

Since the early 1970s, the California Legislature, SWRCB, the Bureau, DFG, Suisun Resource Conservation District, the Department, and other agencies have focused on preserving the Suisun Marsh as a unique environmental resource. As part of its responsibility for protecting Suisun Marsh, SWRCB included water quality standards for the marsh in Term 10 of D-1641, which applies to SWP and CVP operations. D-1641 was adopted by SWRCB on December 29, 1999. In 1987, the Department, the Bureau, DFG, and SRCD signed the Suisun Marsh Preservation Agreement (see sidebar). SMPA contains provisions for actions to control channel water and soil salinity to mitigate impacts of the SWP, CVP, and other upstream diverters on managed wetlands in Suisun Marsh.

Amendment Three Actions. SMPA Amendment Three issues are now addressed as part of the Suisun Marsh Charter. During 2002, the parties began to discuss which of the Amendment Three actions could move forward through a separate amendment to SMPA. With the assistance of the regulatory agencies, actions were identified that would not cause any taking of listed species.

Suisun Marsh Charter. CALFED requested that the Department, DFG, the Bureau, USFWS, and SRCD develop a charter for resolving the conflicts that had escalated over Amendment Three, regional general permits, the levee investigations, and endangered species recovery. Since fall 2000, the Charter Group has been meeting to address the myriad of issues in Suisun Marsh and develop a coordinated and comprehensive solution to marsh conflicts. The goal of the charter is to "develop a regional plan that balances implementation of the CALFED program, SMPA, and other management and restoration programs within Suisun Marsh in a manner responsive to the concerns of stakeholders and based upon voluntary participation of private landowners."

During 2002, the agencies continued to work on the Suisun Marsh Charter Implementation Plan. This plan addresses water quality; managed wetland enhancement; and levee and endangered species recovery needs, proposing to address these needs on an equal basis. The parties, with the assistance of a facilitator, are working through the myriad of complex issues and challenging process of developing an implementation plan for this biologically rich region.

Environmental Coordination Advisory Team. The SMPA Environmental Coordination Advisory Team was convened to ensure compliance with conditions, mitigation, and monitoring responsibilities specified in SMPA. ECAT includes staff from the Department, the Bureau, DFG Grizzly Island, DFG Central Valley Bay-Delta Branch, and SRCD. USFWS, NOAA Fisheries, and the Corps staff have participated on ECAT in an advisory role. ECAT documents compliance with biological opinion measures

and permit terms and provides reports to SMPA coordinators.

Primarily, ECAT provides support for the Suisun Marsh Preservation Agreement Charter Group. At ECAT's monthly meetings during 2002, discussions included Suisun Marsh monitoring efforts, property acquisition for tidal marsh restoration, and maintenance of primary facilities. Monitoring focused on Island Slough, the salt marsh harvest mouse, and the California clapper rail.

Individual Ownership Cost Share Program. The Individual Ownership Cost Share Program is a component of SMPA and is designed to assist individual landowners with water management on privately owned land within Suisun Marsh. The program includes replacing, lowering, and/or enlarging drainage structures, and the purchase of drainage pumps. This program began in 1987 with a 50 percent reimbursement by the Department and the Bureau. Participation in the program has greatly increased since SMPA coordinators retroactively increased reimbursement to the Department and Bureau to 75 percent in 1994.

The Department did not process any invoices under the cost-share program during 2002. Since 1987, the Department and the Bureau have paid a total of $1,246,106.

Modeling Support

Suisun Marsh Planning Participation in the Project Work Team

The IEP DSM2 Project Work Team completed a multiagency cooperative effort to recalibrate the DSM2 model. Recalibration efforts began in August 1999. The project work team activities include collection of new Bay-Delta channel geometry data, such as

- collection of flow data at strategic Delta locations
- model testing and sensitivity analysis
- preparation of calibration protocols
- active participation in calibration activities among participants

Suisun Marsh Preservation Agreement

In 1986, federal legislation (Public Law 99-546) authorized funds to the Bureau to protect Suisun Marsh. On March 2, 1987, the Department, the Bureau, DFG, and SRCD signed the Suisun Marsh Preservation Agreement. The objective of SMPA is to assure that the Bureau and the Department mitigate for any adverse effects of the Central Valley Project and State Water Project on managed wetlands in the marsh, as well as a portion of the adverse effects of other upstream diversions. Under the original agreement, this objective is primarily accomplished by constructing large-scale facilities in the marsh to maintain a dependable supply of adequate quality water within Suisun Marsh channels. A component of the large-scale facilities is the Suisun Marsh Salinity Control Gates facility, which began operating in November 1988.

On August 4, 1995, the Suisun Marsh Coordinators, representing the four agencies party to SMPA, began discussions directed at updating the agreement, pursuant to SMPA Articles 4 and 17. Representatives from the Bureau, the Department, DFG, and SRCD established an ad hoc Negotiating Team, Technical Group, Drafting Committee, and Environmental Documentation Team. Beginning September 1995, the SMPA Negotiation Team met monthly in Sacramento and made significant progress in developing the basis to amend the agreement. Representatives from the SWP and CVP contractors actively participated in the negotiations. Updating SMPA will reflect future hydrologic and salinity conditions in the Suisun Marsh as prescribed by the SWRCB 1995 Water Quality Control Plan and will place more emphasis on improving water and land management practices and facilities on managed wetlands. The SMPA parties will sign Amendment Three after completing the Suisun Marsh Charter Implementation Plan.

Geometry data is available to the public at modeling.water.ca.gov/delta/models/dsm2/tools/csdp/index.html. Flow data are available at www.iep.ca.gov/dss/. Project work team participation in the calibration is facilitated by Web site wwwiep/dsm2pwt/dsm2pwt.html.

Participants in the calibration effort include staff from the Department's ESO Bay-Delta Office, Department of Planning and Local Assistance, and O&M; the Bureau; USGS; University of California, Berkeley; Stanford University; Contra Costa Water District; and the Metropolitan Water District of Southern California. The process is unique—a virtual interagency collaboration on calibration of a complex hydrodynamics and water quality model. The potential benefits include creating an accurate model and generating trust and understanding about the cooperative process. Suisun Marsh Planning staff began a companion effort to gather available flow data in the Suisun Marsh for calibration and verification of the DSM2 model there.

Suisun Marsh Planning Participation in Bay Delta Datum Realignment

Suisun Marsh Planning staff initiated the first comprehensive resurvey of the Delta and facilitated a multi-agency effort to implement the project. The project was coordinated with the Department's Central District, Suisun Marsh Branch, North and South Delta Planning, and O&M. The project includes surveying more than 120 benchmarks using GPS, by installing reference marks at each Delta and Suisun Marsh tidal gauge and USGS flow monitoring station to facilitate leveling and correction of tidal measurements. The methods conformed to National Geodetic Survey standards and will be included in its database.

Replacement of Flow Meter

Suisun Marsh Planning staff is working with staff from Central District, Delta Field Division, and O&M to upgrade the existing ultrasonic velocity meter at the Suisun Marsh Salinity Control Gates. The existing meter was designed to sense current velocity direction to operate the gates during the October-through-May salinity control season. However, the existing meter is outdated, is not supported by the manufacturer, and does not provide an accurate estimate of the flow through Montezuma Slough.

Modeling Support

Suisun Marsh Planning developed and executed a contract with RMA Associates of Suisun City for use of the RMA2/11 model of the San Francisco Bay/Delta estuary. The model is a 2-dimensional finite element program that simulates dynamic water velocity, elevation, transport of conservative and non-conservative constituents, and particle tracking. It also handles wetting and drying boundaries, a capability that is essential for tidal wetland restoration planning. The model is currently being used to plan restoration of a 70-acre parcel in the Suisun Marsh under a CALFED grant. The project is being coordinated through the Suisun Marsh Charter process.

Operation and Maintenance

Suisun Marsh Salinity Control Gates

The Suisun Marsh Salinity Control Gates are operated from October 1 of the current year through May 31 of the next year, as needed, to meet salinity standards; otherwise, they are placed in an open position to minimize fish concerns related to predation and impedance. In the past, the gates' operation and installation or removal of the flashboards has varied due to salinity conditions, fisheries agencies' requests for sensitive species concerns, or special studies and repairs.

During the 2001-02 control season (October 2001 through May 2002), the fall 2001 fish passage study was restarted with modification to the boat lock as an alternative for passage, instead of flashboards as in previous years. The gates were operated for both the fish study and for salinity control.

From October 1 through October 7, 2001, the gates were held open with flashboards installed

because of good water quality conditions in the marsh. Phase I of the fish study does not require gate operation. From October 8 through October 21, 2001, the gates were operated to Phase II of the fish study. Phase II operation was with full-bore operations, flashboards installed, and boat lock gates open. Thereafter, Phase III operations began from October 22 through November 5, 2001. Phase III operation was with full-bore operations, flashboards installed, and boat lock closed. During Phase III of the fish study, gate No. 3 of the salinity control structure malfunctioned and was stuck closed from October 26 through November 2, 2001. Despite the gate malfunction, the fish study continued. At the end of the fish study (November 6, 2001), the gates continued to operate normally for salinity control. On January 17, 2002, the gates were held open due to favorable water quality conditions; however, the flashboards were left in place in case they were needed. The flashboards were removed on May 6, 2002, since water quality was no longer a threat for the remainder of the control season.

Suisun Marsh Initial Facilities Maintenance

Several facilities, constructed by the Department and the Bureau, operate in the Suisun Marsh. These facilities are identified in the Plan of Protection for the Suisun Marsh and the 1987 SMPA. These facilities provide lower salinity water to managed wetlands. The initial facilities, including the Roaring River Distribution System, Morrow Island Distribution System, and Goodyear Slough Outfall, were constructed in 1979 and 1980. The Suisun Marsh Salinity Control Gates were installed and became operational in 1988. During 2002, the Department's Delta Field Division performed routine maintenance on all initial facilities, including MIDS, in the Suisun Marsh.

Routine maintenance included the following maintenance activities at all initial facilities including the Montezuma Slough Facility:

- grading and placing gravel on access roads as needed;
- conducting both mechanical and chemical weed control on all levees;
- continuing maintenance on Montezuma Park;
- conducting annual herbicide program on park and right of way;
- continuing maintenance on levees for settlement, wind and wave erosion, and rodent damage; and
- conducting the rodent control on Montezuma Slough and park area.

In addition, DFD performed emergency repair and major maintenance work in Suisun Marsh. The emergency bank repair work for Roaring River Distribution System was completed in March 2002, and in October 2002, the inlet structure of Morrow Island Distribution system was replaced.

Monitoring

Comprehensive Review of Suisun Marsh Monitoring Data

SMPA and the Suisun Marsh Monitoring Agreement, signed in 1987, outlined a monitoring program for data collection in the Suisun Marsh. Monitoring was conducted from water years 1985 through 1995. These agreements also stipulated that the monitoring data and the effectiveness of the agreements were to be reviewed every 5 years. This review was not completed in 1992; a comprehensive review of all the monitoring data began in 1996. The monitoring program included channel water salinity, water quality, and pond stage data from managed wetlands in the marsh, vegetation monitoring, and wildlife surveys. The final report was released March 2001 and is online at http://iep.water.ca.gov/suisun/dataReports/reports/ComprehensiveReview.pdf.

Water Quality and Compliance

Suisun Marsh channel water salinity standards were specified in SWRCB WR 98-09 for seven compliance stations. Four of these—National Steel (S-64), Beldons Landing (S-49), Volanti

(S-42), and Sunrise (S-21)—are located within the marsh. A fifth—Collinsville (C-2)—is located in the western Delta (Figure 4-2). The Department requested that the two remaining sites located in the western marsh—Morrow Island (S-35) and Ibis (S-97)—be converted to monitoring stations because of the SWP's minimal control on salinity levels at these locations. D-1641 granted an exemption from the compliance monitoring requirement for these stations. However, both remain active as water salinity monitoring stations.

Salinity levels remained well within compliance during the period from October 1, 2001, through May 31, 2002. See the Department's annual report to SWRCB, *Suisun Marsh Monitoring Program Data Summary: 2002 Water Year*, for details.

Station Maintenance, Repair, and Enhancements

Routine maintenance, repair, and enhancement activities for Suisun Marsh monitoring stations during water year 2001-02 included

- flushing of tide wells to remove accumulated sediments
- clearing/trimming of encroaching vegetation
- repairing and resetting of staff gauges
- repairing and painting station housing
- calibrating monitoring instruments
- quality control and assurance of collected data
- surveying the station elevation

These maintenance activities are necessary to ensure proper operation of the stations, protection of the environment, and public safety. Activities also included upgrading scientific instrumentation to provide accurate hydrologic and water quality data. Generally, upgrading instrumentation and deploying electronic sensors, such as replacing stilling wells with pressure transducers, reduce the size and impact of monitoring stations on the marsh.

Vegetation

During 2002 no activity occurred on this project. In 2001, a new vegetation map for Suisun Marsh was completed. In addition, a change detection analysis was conducted using aerial photos taken in July 2000. The change detection analysis showed less than 1 percent of the vegetation acreage had changed. Based on these results, DFG recommended conducting a change detection every 3 years, with the caveat that no significant alteration occur in the marsh during this period. The next changed detection is scheduled for 2003. Aerial photos will be taken in June and vegetation surveys will be conducted in late summer 2003.

Salt Marsh Harvest Mouse in Conservation Areas

In 1981, USFWS issued a Section 7 Biological Opinion for the implementation of the Suisun Marsh Plan of Protection that required DFG, on behalf of the Department, to manage 1,000 acres as salt marsh harvest mouse (*Reithrodontomys raviventris halicoetes*) conservation areas, with a goal of preserving a total of 2,500 acres as conservation areas throughout the marsh. Currently there are 11 areas totalling 2,200 acres in Suisun Marsh that have been set aside as salt marsh harvest mouse conservation areas. Efforts are ongoing to attain the 2,500-acre goal. In addition to the conservation areas, two parcels at Island Slough and one on Van Sickle Island are managed as mouse habitat as mitigation for the Department's projects in the marsh.

Western harvest mice occur with salt marsh harvest mice in wetland habitats of Suisun Marsh, but they also commonly occupy upland grassland habitats. During early salt marsh harvest mouse surveys, several standard morphological characteristics (including several characteristics of the shape and color of the animals' tails) were assessed to determine the species of captured harvest mice. Many harvest mice captured in the marsh in these surveys had characteristics between the two species and were recorded as unknown harvest mice. The prevalence of these unknowns raised questions



Figure 4-2. Compliance and Monitoring Stations in the Suisun Bay and Marsh

about the genetics of harvest mice in Suisun Marsh and the applicability of the standard protocols.

In 2000, with recommendations from the Suisun Marsh ECAT, the Department funded a harvest mouse genetics study at California Polytechnic State University, San Luis Obispo. The study had three objectives: (1) identification of species-specific genetic markers and matching the markers to morphological characteristics; (2) test for hybridization between the salt marsh harvest mouse and the western harvest mouse; and (3) test for genetic differentiation between populations from different areas around the San Francisco Bay Estuary. Six areas of the marsh were targeted for sample collection and, during 2000 and 2001, both wetland and upland sites were sampled from these areas. During the surveys, hair samples were collected from captured mice and sent to Cal Poly for analysis. The study will be completed in 2003. Preliminary results show that some of the standard protocols were not applicable in Suisun Marsh, including those related to tail color. Tail length was the most important characteristic, with salt marsh harvest mice having significantly longer tails than western harvest mice. The study also found no evidence of hybridization between the two species.

Nine areas of the marsh were surveyed in 2002: six conservation areas, one mitigation area, one upland area where salt marsh harvest mice were captured in 2001, and Rush Ranch, a tidal marsh/upland complex owned by the Solano Land Trust. Salt marsh harvest mice were captured at all of the areas surveyed. Survey efforts at four of the areas (two managed and two tidal wetlands) were expanded in 2002 so that demographic parameters could be measured as well as habitat associations. This will be a 2-year study, with surveys occurring three times per year. Three different habitat types will be surveyed at each of the study areas: pickleweed wetland, upland grassland, and wetlands dominated by plants other than pickleweed.

Suisun Marsh Waterfowl Feeding Ecology Study

The objective of the waterfowl feeding ecology study was to determine the food source for mallards, northern pintail, and green-winged teal in Suisun Marsh. During winters 1997 and 1998, 223 feeding birds were collected and their esophagi removed for analysis. Mud core samples were also collected from feeding sites to assess availability of plant and invertebrate foods. In addition, hunters from public and private areas of the marsh contributed more than 750 of the birds' esophagi for the study.

The samples are being analyzed at a University of California, Davis laboratory. During 2001, sample analysis was completed and the final report will be released in October 2003.

Aquatic Monitoring

In 2002, the Department contracted with UC Davis and DFG to conduct fisheries monitoring in Suisun Marsh. The monitoring was conducted to meet Corps and San Francisco Bay Conservation and Development Commission permit requirements for construction and operation of the Suisun Marsh Salinity Control Gates and the NOAA Fisheries 1993 Biological Opinion for Operation of the SWP and CVP.

The UC Davis fish survey and DFG juvenile striped bass sampling have not led to definitive findings on the gates' impacts, since the control or background condition for an assessment (the absence of gates) no longer exists. These monitoring programs were not designed to address this question. The data analyses have compared data collected before and after 1988. Because the overall decline in Suisun Marsh fish abundance began before installation of the gates, the decline seems independent of gate operation.

UC Davis has sampled for fish in Suisun Marsh since 1979, with Department and Bureau funding. The number of fish sampled in the marsh dropped slightly in 2001; however, it was the second highest average catch since 1983. Catch

of native and introduced fishes in Suisun Marsh has fluctuated considerably since sampling began, and at lower levels compared to the early 1980s. This effect is largely due to changes in the abundance of introduced species, which have dominated the fisheries since 1988. Prior to 2000, the general trend in abundance of introduced fishes over the history of this survey has been an overall decline. Despite this trend, abundance of introduced species in 2000 and 2001 reached its highest and fourth highest levels, respectively, since sampling began, and then declined significantly in 2002 with half the abundance recorded in the previous year. This widely fluctuating catch could be attributed to volatile abundances of introduced species, primarily striped bass, yellowfin goby, and shimofuri goby.

From 1995-02, there has been a gradual rise in abundance of native species, with primarily the Sacramento splittail, and more recently (2001-02) tule perch showing consistent increases during this period. Other native fishes have either fluctuated considerably or have remained at relatively low levels. Overall, native fish catch exceeded introduced fish catch in 2002. This has occurred only seven times since 1980 and twice in the last 14 years. Delta smelt catch increased from 1999 to 2001, and declined in 2002 to nearly one-third the catch of the previous year. Longfin smelt catch in 2002 more than doubled the previous year, with catch per trawl rates that were the fifth highest since 1980. The presence of eggs and larvae of Delta smelt and longfin smelt since surveying began in 1994 indicates that these species use the marsh for rearing and likely spawning. In 2000, splittail larvae were captured in the marsh for only the fourth year since sampling began in 1994. None were caught in 2002.

DFG and the IEP Environmental Monitoring Program have monitored *Neomysis mercedis* densities and chlorophyll *a* concentrations in Suisun Marsh since 1972 and 1976, respectively. *N. mercedis* catch has undergone a general downward trend since sampling began, with the most dramatic decrease following 1991. Densities have remained relatively low since then. Mysid shrimp abundance was extremely low in 2001 and 2002. None were captured in spring and fall 2002. *Neomysis kadiakensis* has recently moved up from San Pablo Bay into Suisun Marsh, perhaps in response to the decline in *N. mercedis*.

Chlorophyll *a* concentrations, which serve as an indicator of phytoplankton abundance, have shown an overall decline in Suisun Marsh since 1987. This decline has in part, been attributed to the efficient feeding habits of *Potamocorbula amurensis*, a suspension-feeding clam that invaded the San Francisco Bay and estuary in 1986. In 1999, the average annual chlorophyll *a* concentration in Suisun Marsh fluctuated slightly, but remained low compared to levels measured prior to 1992. In 2000 and 2001, chlorophyll *a* concentrations dropped off, and remained very low in 2002. Food limitation, caused by low phytoplankton abundance, and competition with *Acanthomysis bowmani*, a mysid shrimp introduced from Asia in the early 1990s, are important factors in the decline of *N. mercedis*.

DFG researchers also conduct sampling for juvenile striped bass in Suisun Marsh as part of the Summer Townet Survey, which produces an annual abundance index based on a sample mean length of 38.1 mm. In 2001, average abundance in Montezuma Slough greatly decreased after 3 consecutive years of increases, to a level slightly above the lowest level measured to date (1997). In 2002, an index for striped bass was not calculated as a result of consistently small fish, record low catches, and ultimately a boat breakdown. The Summer Townet Survey striped bass total catch was the lowest on record and represented a 70 percent decline from 2001 and 83 percent from 2000. Since sampling began in 1959, a gradual decrease in average abundance has been observed in the Delta and Montezuma Slough. Because this decline has been relatively constant over the last 30 years, it is unlikely that changes in abundance have been due to installation and operation of the gates.

Mitigation and Fulfillment of Permit Conditions

Suisun Marsh Salinity Control Gates Flashboard Modification Study

Preliminary results from the first 2 years of the modified control gates' test indicate that the slots in the flashboards did not provide improved passage for salmon at the gates. The reasons for this are unknown. In addition, the 1998 and 1999 studies showed no statistical difference in passage numbers between the full operation configuration (no slots) and when the flashboards and gates were out of the water.

Because preliminary results from the modified test indicate that the slots are resulting in less passage than the original flashboards, the Department and the Bureau postponed the third year of the test until September 2001 and decided to reinstall the original flashboards if gate operation was needed during the 2000-01 control season.

The gates review team devised a new strategy using the boatlock for the 2001 test. Three 2-week operation configurations were tested for salmon passage, including one period when the radial gates were operated while the boatlock remained open. Results suggest that salmon successfully used the boatlock for passage during this period. In 2002, the same three 2-week operation configurations were tested for salmon passage. The 2002 test will be repeated in 2003.

Salt Marsh Harvest Mouse Habitat Restoration and Mitigation Sites at Island Slough

Two ponds are designated in the 525-acre Island Slough wetland complex as salt marsh harvest mouse mitigation areas. The 100-acre Pond 7 serves as mitigation for impacts from construction of the initial facilities described in the Suisun Marsh Plan of Protection. Pond 4, 57 acres, serves as mitigation for the loss of habitat due to the dredging of MIDS in 1997.

Construction at Island Slough began in May 1996. In 2000, the development of 57 acres of salt marsh harvest mouse habitat in Pond 4, required by the MIDS permit, was completed. The final construction included building the east end levee to separate the wetland area from the parking lot. The levee along Grizzly Island Road, adjacent to Ponds 4 and 6, was also upgraded.

Vegetation was monitored in both Island Slough ponds designated as mitigation areas and compared to USFWS criteria for preferred salt marsh harvest mouse mitigation. Neither pond met the criteria for percentage of pickleweed. A vegetation improvement plan will be developed and implemented subsequent to USFWS approval to improve the vegetation to meet these criteria.

Morrow Island Distribution System Fish Screen and Alternatives

On July 2, 1997, the Corps issued permit No. 20698N to perform maintenance on MIDS. Permit conditions required installation of a fish screen on the Goodyear Slough diversion structure. During 2000, the pre-construction activities began on a hybrid fish screen proposal, developed by the Department and approved by USFWS and the Corps, and the Department began a final engineering design for fish screen components. A request for proposal was issued for installation of the five conical fish screens distributed along Goodyear and Suisun Sloughs. Department staff also began preparation of the documents required to obtain necessary environmental permits for the project.

In November 2000, the Suisun Marsh Charter Group was formed at the request of CALFED to prepare an implementation plan to guide ongoing operations in managed wetlands and recovery actions for listed species. To discuss cost-saving alternatives to fish screens, charter management representatives from the Department and USFWS toured the MIDS facilities in January 2001. USFWS has agreed to consider alternative measures to minimize the potential for harassment, harm, or mortality to species of

concern at the MIDS inlet. In early 2001, due in part to escalating costs, the Department began exploring alternative mitigation strategies. Concurrently, the Suisun Marsh Charter committee began negotiating a blueprint long-term plan for the marsh, which included evaluating existing departmental mitigation obligations (see CALFED Suisun Marsh Charter section). It was decided that the MIDS fish screen issue would be resolved within the charter process. Resolution of this issue is expected by 2004. Potential alternatives to screening the MIDS inlet on Goodyear Slough continue to be discussed among the agencies at both the ECAT and Charter Group meetings.

Reports

The following reports on Suisun Marsh have been written and/or published. The reports are available by request, or online at iep.water.ca.gov/suisun/curr-report/.

- The *Annual Data Summary Report* for water year 1998 was published in August 2000. The report includes data from water quality monitoring stations, salt marsh harvest mouse surveys, waterfowl surveys conducted in the marsh, and a discussion of maintenance activities in the marsh.
- The *Suisun Marsh Monitoring Program Reference Guide* was updated in June 2000 to reflect changes in regulations following release of D-1641. The *Reference Guide* provides comprehensive information on the Department's Suisun Marsh monitoring program.
- The *Suisun Marsh Monitoring Program Channel Water Salinity Reports* (monthly reports from October, 2001, through May, 2003).

Suisun Marsh Expenditure History

Suisun Marsh expenditures and reimbursements administered by the Department for calendar years 1968 through December 2002 are summarized in Table 4-2. From 1968 through December 31, 2002, the Department disbursed more than $100 million SWP funds for planning, design, environmental documentation, construction, maintenance, monitoring, mitigation, and permit compliance in support of implementing the plan of protection for Suisun Marsh and SMPA and meeting standards set by SWRCB. The Bureau has reimbursed the Department about $40.1 million (40 percent) and the State's General Fund has reimbursed about $9.5 million (9 percent). These figures do not include up-front payments made by the Bureau for staff and other direct costs, as well as about $5.7 million in Bureau interest payments during 1988 and 1989.

Annual figures are reported in Table 4-2 for the Department's up-front payments, Bureau reimbursements, General Fund reimbursements, and the Department's cumulative expenditure balance.

Table 4-2. Suisun Marsh Expenditures and Reimbursements Administered by the Department (in dollars)

Calendar Year	Costs	General Fund Payment[a]	Bureau Payments	Costs Billed to SWP Contractors	Total
1968	10,571	0	0	10,571	10,571
1969	34,182	0	0	34,181	34,182
1970	23,343	0	0	23,343	23,343
1971	1,042	0	0	1,042	1,042
1972	47	0	0	47	47
1973	0	0	0	0	0
1974	0	0	0	0	0
1975	2,709	0	0	2,709	2,709
1976	32,961	0	0	32,960	32,961
1977	37,475	0	0	37,475	37,475
1978	350,831	0	0	350,831	350,831
1979	3,660,096	0	0	3,660,099	3,660,096
1980	5,005,759	0	0	5,005,759	5,005,759
1981	2,964,977	0	0	2,964,974	2,964,977
1982	2,955,702	0	(2,500,000)	455,705	2,955,702
1983	2,754,091	0	0	2,754,094	2,754,091
1984	2,418,345	0	0	2,418,345	2,418,345
1985	2,332,776	0	0	2,332,773	2,332,776
1986	6,495,323	0	0	6,495,322	6,495,323
1987	13,600,701	0	0	13,600,701	13,600,701
1988	7,456,364	0	(17,368,725)[b]	(9,912,361)	(11,952,113)[c]
1989	2,341,960	(9,478,000)	(1,219,691)[b]	(8,355,731)	(2,004,988)[d]
1990	3,030,010	0	(695,450)	2,334,560	3,030,010
1991	6,223,042	0	(2,925,429)	3,297,613	6,223,042
1992	2,737,259	0	(1,174,655)	1,562,604	2,737,259
1993	2,979,255	0	(238,130)	2,979,255	2,979,255
1994	3,192,213	0	(1,962,549)	3,192,213	3,192,213
1995	2,721,078	0	(647,138)	2,721,078	2,721,078
1996	3,391,678	0	(1,482,396)	3,391,678	3,391,678
1997	3,634,267	0	(1,520,219)	3,634,267	3,634,267
1998	5,342,834	0	(1,107,501)	5,342,834	4,235,333
1999	8,791,864	0	(2,696,200)	8,791,864	6,175,664
2000	2,881,903	0	(3,300,053)	(418,250)	(418,150)
2001	2,616,726	0	(444,009)	2,172,717	2,172,717
2002	2,726,183	0	(791,319)	1,934,564	1,934,864
Total	**102,828,466**	**(9,478,000)**	**(40,073,464)**	**53,277,002**	**57,587,993**

[a]Under AB 1442, the General Fund paid $9,478,000 or 20% of the Suisun Marsh costs through June 1988. Six percent or $2,843,400 of this amount reduced the costs billed to the SWP contractors.
[b]Excludes interest payments made by the Bureau.
[c]Includes $2,039,752 in interest payments credited back to the SWP contractors.
[d]Includes a $6,634,600 adjustment for General Fund payments representing the 14% recreational project share, and a $283,857 interest payment credited back to the SWP contractors.

Information in this chapter was contributed by the Division of Environmental Services and the Division of Operations and Maintenance.

Chapter 5
Local Assistance



Agricultural water irrigating orchards and ground crops

Significant Events in 2002

- In March, the Department sponsored the second day of the University of California Salinity/Drainage Meeting featuring update reports on research projects funded either fully or partially by the Department through Proposition 204 (Drainage Management Subaccount) and/or by the Agricultural Drainage Program.
- In December, the Central Valley Regional Water Quality Board adopted a Conditional Waiver of Waste Discharge Requirements for discharges to surface waters from irrigated lands.
- The Department continues to participate and provide assistance to the Bureau of Reclamation on its San Luis Drainage Feature Reevaluation. The reevaluation is being performed as a result of the Ninth Circuit Court of Appeals' decision to mandate the U.S. Department of Interior to provide drainage service to the Central Valley Project's San Luis Unit.
- The Water Recycling and Desalination Branch of the Office of Water Use Efficiency established the Recycling State Agencies Team and also conducted 22 workshops and meetings.
- The Agricultural Water Management Memorandum of Understanding was signed by the members of the Agricultural Water Management Council, including 55 water districts, 3 environmental interest groups, and over 53 other interested groups.
- A Three-Way Cooperative Agreement was set up between the Department, the Bureau, and CALFED. This agreement provides funding to the Agricultural Water Management Council for a period of 3 years to help implement the Council's MOU.
- A Three-Way Cooperative Agreement was set up between the Department, the Bureau, and CALFED. This agreement provides funding to the California Urban Water Conservation Council for a period of 3 years to help implement the Council's MOU. It will provide technical assistance to urban water suppliers to implement the first 4 years of the CALFED incentive-driven Water Use Efficiency Program.
- Senate Bills 610 and 221 became effective January 1, 2002. SB 221 prohibits cities and counties from approving large subdivision proposals unless a finding is made of adequate and reliable water supply. SB 661 expands the requirement for public water systems to prepare water supply assessments for large-scale projects and requires that additional information be included in assessments.
- The Department released, for public review and comment, a draft *Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001* to assist water suppliers, cities, and counties in integrating water and land-use planning.

The Department of Water Resources manages water use efficiency, the Davis-Grunsky Act, agricultural drainage, environmental impact document review, and Water Conservation Bond Law programs, and participates in several other programs that assist local agencies and benefit State Water Project contractors.

Davis-Grunsky Act Program

The Davis-Grunsky Act, authorized in 1960 as part of the Burns-Porter Act, provides construction loans for local domestic water projects and agricultural water conservation projects. It also provides grants for recreation and fish and wildlife enhancement. Loans and grants may also be given to rehabilitate dams and reservoirs.

The Department's ongoing administration of the program provides oversight of the 32 recreation grant projects to ensure compliance with the contracts. Administration costs are recovered from the revenues provided by the repayment of Davis-Grunsky loans. The recreation grant contracts are being amended to reflect actual facilities constructed and the modification of the Department's fee oversight function.

Water Use Efficiency

The Water Conservation Office was reorganized and a new Office of Water Use Efficiency was created in 2001. OWUE activities include providing technical assistance to local agencies; managing water use efficiency financial assistance programs; managing the California Irrigation Management Information System; reviewing, tracking, and reporting on Urban and Agricultural Water Management Plans; and managing drainage and water recycling/desalination projects.

California Irrigation Management Information System

The Department's CIMIS network expanded to 122 stations in 2002. Approximately 70 percent of the stations on the network belong to local cooperators. The demand for CIMIS data has been increasing steadily since its establishment in 1982. For example, the number of registered data users has grown from 661 in 1989 to nearly 6,000 in 2002.

The CIMIS data base has been upgraded and the Web application is in the process of being enhanced to satisfy the growing demand for data. There were approximately 70,000 requests for information, mostly visits to the Web site, in 2002. Users can register online, access archived data, download data files, and peruse content about the CIMIS program and other helpful information. Currently, an investigation is underway to develop a method for using remotely sensed satellite data to map reference evapotranspiration for the entire state.

Another program underway is the development of a nonideal site station network, to be located primarily in urban environments, for determining ET_o rates, to assist landscapers and urban water agency's with the use of ET_o controllers for irrigation scheduling.

CIMIS is continuing to actively pursue the establishment of new partnerships and outreach activities, especially in the urban sector. CIMIS brochures and other publications are being updated. Investigations involving the CIMIS

ET_o calculation and other methods of data acquisition and dissemination are ongoing.

Water Recycling and Desalination Branch

The Water Recycling and Desalination Branch of the OWUE was established in 2001. The Branch's mission is *"Protecting the environment and increase local water supply and reliability, and improve water and energy efficiency through the safe use of recycled and desalinated water,"* with a strategic goal of helping to increase the use of non-conventional water sources (recycled and desalinated water) in the State. In 2002, the Branch:

- provided technical and engineering knowledge on water recycling and desalination issues to other programs and the public;
- participated in and conducted 22 workshops and meetings with technical presentations;
- responded to policy makers, legislators, and regulators on issues related to water recycling;
- responded to several public questions and inquiries regarding water recycling and desalination permitting process;
- established the Recycling State Agencies Team;
- participated in the Southern California Water Recycling Project Initiative II;
- participated in several of CALFED's Water Use Efficiency activities;
- provided staffing and technical support to the Recycled Water Task Force pursuant to AB 331;
- participated in preparation for the California Desalination Task Force pursuant to AB 2717;
- participated in the California Water Plan Update processes by providing technical support related to water recycling and desalination;
- helped increase public awareness on the importance of water recycling issues and projects; and
- improved the Water Recycling and Desalination Web site at www.owue.water.ca.gov/recycle.

Agricultural Water Management Plans

By the end of 2002, 55 water districts, 3 environmental interest groups, and over 53 other interested groups signed the Agricultural Water Management Memorandum of Understanding as members of the Agricultural Water Management Council. The agricultural signatories represent more than 4.7 million acres of irrigated agricultural land statewide.

An additional four Agricultural Water Management Plans were submitted by agricultural water suppliers to the council. Department staff provided technical review and evaluated these plans.

Department staff also provided technical assistance to water districts to prepare water management plans and helped implement efficient water management practices, as well as administrative and programmatic assistance to both the Ag Council and water districts.

Three-Way Cooperative Agreement—Ag Council. The Department set up the Three-Way Cooperative Agreement between itself, the Bureau, and CALFED and has been managing the State-funded portion of the agreement. This agreement provides funding to the Ag Council for a period of 3 years to help implement MOU. The management and implementation of tasks in the agreement are closely coordinated with the Bureau, Mid-Pacific Region. This is a 1.2 million dollar 3-year activity, shared equally between the Department and the Bureau.

The Ag Council is making progress on tasks identified in this cooperative agreement, including administrative support for hiring an executive director and an assistant. It is also making significant progress in implementing all tasks identified in the agreement. The council provided technical and financial assistance to signatories of MOU to develop water management plans, since development of a model water

management plan and refinement of net benefit analysis are important tasks of the agreement.

Urban Water Management Plans

The Department received 346 Urban Water Management Plan submittals between December 31, 2000 (the legal deadline) and December 31, 2002. A report to the Legislature entitled *Summary of 2000 Urban Water Management Plans,* required by Section 10644 of the California Water Code, was prepared.

Three-Way Cooperative Agreement—Urban Council. The Department set up a Three-Way Cooperative Agreement between itself, the Bureau, and CALFED and has been managing the State-funded portion of the agreement. This agreement provides funding to the California Urban Water Conservation Council for a period of 3 years to provide technical assistance to urban water suppliers to implement the first 4 years of the CALFED incentive-driven Water Use Efficiency Program. The management and implementation of tasks in the agreement are closely coordinated with the Bureau, Mid-Pacific Region. This is a $1.5 million 3-year activity, of which $600,000 is funded by the Bureau.

The Urban Council is making progress on tasks identified in this cooperative agreement, including timely achievement of the tasks outlined in the CALFED Water Use Efficiency Program Budget Change Proposal. It is also making significant progress in implementing all tasks identified in the agreement. The council provided technical assistance to the signatories of MOU for the preparation of comprehensive and consistent Urban Water Management Plans and Best Management Practice reporting, and increased implementation and refinement of locally cost-effective urban water conservation Best Management Practice.

Draft Senate Bill 610/Senate Bill 221 Guidebook

SB 610 became effective January 1, 2002. It expands the requirement for public water systems to prepare water supply assessments for large-scale projects, requires that additional information be included in assessments, and makes related changes.

SB 221 became effective January 1, 2002. It prohibits cities and counties from approving large subdivision proposals unless a finding is made of adequate and reliable water supply.

As a result of these bills, the Department released, for public review and comment, a draft *Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001* to assist water suppliers, cities, and counties in integrating water and land-use planning. This document can be found at the Department's Web site at www.owue.water.ca.gov/DraftGuidebook.pdf.

The Department accepted public comments on the guidebook and conducted four workshops to provide assistance to agencies and organizations seeking to comply with SB 610 and SB 221. Any comments received will be incorporated into the next update.

The draft guidebook provides a step-by-step procedure to assist water suppliers to prepare the water assessment and written verification of water supply required by SB 610 and SB 221, respectively.

The Department has no regulatory, permitting, or any other approval authority concerning water assessments or verifications of sufficient water supply. The guidebook is an assistance tool only and has no effect on existing state law. The information provided in it is not all-inclusive and is not required to be used. In case of conflict between suggestions in the guidebook and any applicable laws, those laws shall have precedence.

Leak Detection Workshops

OWUE, in cooporation with the California Urban Water Management Council, conducted three 2-day Water Audit and Leak Detection workshops that showed attendees various techniques used to quantify and identify distribution water system water supplies, water uses,

also supplied information on complying with the council's Best Management Practice 3 and benefiting from available opportunities for matching state funding for leak detection programs and the American Water Works Association's new water-loss management policies and performance indicators were discussed.

Water Efficient Landscapes Booklet

Three thousand copies of a new landscape booklet, *Water Efficient Landscapes*, were printed. The booklet is intended to help home owners create a landscape that is not only water efficient, but attractive, colorful, and easy to maintain.

Mobile Irrigation Laboratories

OWUE provided financial assistance to help start two new Mobile Laboratories in Tehama and Siskiyou Counties to help irrigators evaluate irrigation system performance, offer recommendations for system improvement, and conduct pump tests. Financial assistance was also provided to an existing Mobile Laboratory in Kern County so that it may evaluate irrigation systems outside its service area. The intent is to show agencies that do not have mobile laboratories the benefits of the labs and to encourage them to establish their own labs.

Outreach

The *Water Conservation News* continues to be the primary water conservation outreach newsletter. The quarterly publication reaches more than 8,000 California subscribers.

Agricultural Drainage Program

The Agricultural Drainage Program continues to seek a solution to the subsurface agricultural drainage problems of the State and, in particular, the San Joaquin Valley. It collects, evaluates, and disseminates information, provides technical assistance to growers and local agencies, and conducts research and demonstration projects focusing on subsurface agricultural drainage water problems in the San Joaquin Valley. The resulting data and information helps define subsurface drainage problems and leads to implementation of drainage management plans. Specifically, data and information are used to implement drainage and toxic element reduction, collection, storage and containment, reuse, reclamation, disposal actions, and projects. Departmental projects include

- demonstration of irrigation management improvements
- integrated on-farm drainage management research and demonstration
- evaporation systems design and management improvements
- Best Management Practices to reduce or eliminate environmental impacts
- development of pilot treatment, drainage water reclamation, and disposal facilities

In March 2002, the Department sponsored the second day of the University of California Salinity/Drainage Meeting featuring update reports on research projects funded either fully or partially by the Department through Proposition 204 (Drainage Management Subaccount) and/or by the Agricultural Drainage Program. The program featured 18 speakers, all of whom provided valuable information for developing management plans to cope with the salinity-toxicity-drainage issues in the western San Joaquin Valley.

In December 2002, CVRWQCB adopted a Conditional Waiver of Waste Discharge Requirements for discharges to surface waters from irrigated lands. This controversial regulation requires dischargers (either by group or individually) to perform extensive water quality monitoring and to establish reporting methods in exchange for the waiver. The Department is exploring ways to assist SWP contractors and local agencies obtain these waivers.

The Agricultural Drainage Program is divided into three major activities: participation in the multiagency San Joaquin Valley Drainage Implementation Program; Proposition 204 (Drainage Management Subaccount); and the

San Joaquin Valley Agricultural Drainage Program.

San Joaquin Valley Drainage Implementation Program

The Department continues to participate in the multiagency SJVDIP, which is sponsored by four State and four federal agencies. The Department is the lead agency, providing management, staff, and funding. SJVDIP is managed by OWUE.

In September 2002, SJVDIP released a draft report entitled *Agricultural Drainage in the San Joaquin Valley, A Gap Analysis*. This report summarizes the drainage management options recommended by the SJVDIP Management Group, and describes its accomplishments and remaining goals.

The SJVDIP Action Plan along with cooperative effort among the involved parties are necessary to resolve drainage problems. The Department continues to assist the local districts and growers implement drainage management options. To that end, it also continues to play a major role in collecting necessary data, developing and transferring technologies and identifying research needs.

Proposition 204 (Drainage Management Subaccount)

In 1996, Proposition 204, The Safe, Clean, Reliable Water Supply Act, authorized the transfer of approximately $6.1 million from the State Water Resources Control Board to the California Department of Food and Agriculture. In 1997, DFA, SWRCB, and the Department signed MOU establishing a process for utilizing the funds designated for agricultural drainage activities. In 1999, DFA and the Department signed an interagency agreement to transfer the funds to the Department for developing and implementing programs consistent with Water Code Section 78645, as outlined in MOU. The funds are distributed throughout the duration of the 6-year Proposition 204 program. The goal of the program is to develop methods of using and concentrating salts, and reducing contaminants in the State's subsurface agricultural drainage water.

Each year the Department solicits proposals from public entities seeking funding for research activities. A Technical Review Committee of SJVDIP members, representatives of universities, consultants, and stakeholders reviews and screens the proposals for the Department. The Department submits the proposal packages to an Oversight Committee comprised of representatives from the Department, DFA, and SWRCB for final approval. Ultimately, the Department is responsible for preparing and managing contracts for the approved proposals. In 2002, 11 projects totaling $1,420,400 were approved.

San Joaquin Valley Agricultural Drainage Program

This program consists of several activities: drainage monitoring and evaluation; drainage treatment; integrated on-farm drainage management; on-farm drainage reduction and reuse; and environmental activities.

Drainage Monitoring and Evaluation. Drainage monitoring and evaluation involves collecting and evaluating information on the quality, quantity, and movement of drainage water. The following activities were conducted:

- participation in a cooperative information system for the San Joaquin River Real Time Water Quality Monitoring Program. This program provides State, federal, and local agencies with flow and salinity projections to help manage agricultural drainage releases into the San Joaquin River. This activity is primarily funded by a CALFED grant that expired in 2002;
- shallow groundwater level monitoring and collecting flow and water quality data for drainage water from west side San Joaquin Valley tile drain sumps;

- completed preparation of a draft of an annual drainage report, *The San Joaquin Valley Drainage Monitoring Program 1999 Report*;
- shallow groundwater and irrigation methods maps of drainage-impaired areas were prepared using drainage monitoring data in conjunction with land use and irrigation methods data;
- shallow groundwater specific conductivity for the west side of the San Joaquin Valley was monitored and a 2002 specific conductivity map was developed;
- assistance was provided for the collection of groundwater, soil, and operational data for the integrated on-farm drainage management project at Red Rock Ranch in western Fresno County; and
- a site (wwwdpla. water.ca.gov/sjd/water-quality/index.html) is maintained that includes information on drainage programs and activities, salinity and shallow groundwater maps, and links related to other agricultural drainage programs.

Drainage Treatment. *Buena Vista Pilot-scale Reverse Osmosis Project*. The Department continues to investigate technologies for the treatment for reuse of saline agricultural subsurface drainage water. The project is a cooperative effort among the Buena Vista Water Storage District in Kern County, Boyle Engineering, University of California, Los Angeles, and the Department to gather information on pretreatment, reverse osmosis treatment, and brine disposal. After a 1-year break in testing due to the absence of tiled drainage water, the reverse osmosis treatment system was restarted in March 2002, and was treating saline shallow groundwater until December 2002, when testing ceased. The desalting unit's product water recovery during the period went from 50 to 75 percent, for an average total dissolved solids feed-water concentration of 4,130 mg/L. A final project report is due June 2003.

Reverse Osmosis – Microfiltration Membrane Research. The Department continues to fund research on the use of membranes for reverse osmosis and micro/ultra/nanofiltration processes under a contract with UCLA, Department of Chemical Engineering. The work is in the middle of a 2-year study that investigates the kinetics and mechanisms of mineral scale formation, control of mineral scale formation, and evaluation and ranking of antiscalants for inhibition of gypsum scale formation. A final report is due June 2003.

Grasslands Area Farmers: In-Valley Drainage Reuse Plan. The Department continues to participate in a multiagency cooperative effort with Grasslands Area farmers, to comply with the objectives of the CVRWQCB's Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River. The Department developed an economic model to evaluate all possible options, costs for subsurface drainage water treatment, and active land management alternatives.

Agricultural Subsurface Drainage: Salt Recovery, Purification, and Utilization. The Department continues to support investigations of processes for concentrating and purifying drainage salts for marketing purposes. These activities are performed on two fronts. The first is with UC Davis and involves recovering sodium sulfate from farm drainage water and using it in the reactive dye process of cotton. It also involves separating and purifying agricultural salts and brines to produce value-added salt products while mitigating environmental impacts of salt accumulation. The university is developing a pilot salt separation unit for field testing. The second area of investigation involves pilot scale research at Red Rock Ranch using a solar still to demonstrate various ways of using solar energy to recover potable water from drainage water.

Selenium Removal from Agricultural Subsurface Water. The Department is in its second year of a contract with Southern Illinois University to investigate practical, inexpensive, and easy-to-implement methods of removing selenium from agricultural subsurface drainage water to reach acceptable levels before discharging it. The

preferred method involves the use of a variety of solid absorbents. The Department is also contributing to a UC Berkeley research project at Panoche Drainage District to remove nitrates and selenium from a subsurface agricultural drainage sump by using aerobic and anaerobic processes that employ algae and bacteria.

The Department continues to participate in cooperative research with the University of California Salinity/Drainage Program (www.waterresources.ucr.edu). Activities include a multiyear study for mitigating selenium ecotoxic risk in agricultural drainage systems (see Web site above for specific details) and completion of a report assessing the efficacy of the Tulare Lake Drainage District flow-through wetland system for removing selenium from irrigation drainage waters before discharging it into evaporation ponds.

Integrated on-Farm Drainage Management

IFDM became a permanent activity with the creation of the Integrated Drainage Management Section in 2001. The objectives of this section are to provide technical assistance on IFDM systems through advisory, technical, and oversight committees. IFDM is a drainage management system based on sequential reuse of saline drainage water to irrigate crops of progressively increasing salt tolerance. Each sequential reuse reduces the volume of drainage water and increases the salt concentration. Drainage water too saline for irrigation can be applied to a variety of discharge points. The IFDM program funds, administers, and monitors contracts with State, federal, university, and local entities to learn more about IFDM systems. Preliminary findings indicate that IFDM systems have less significant environmental impacts than other options and also reduce the volume of drainage water. The program is also planning to investigate the use of accelerated evaporation systems (solar evaporators) for zero discharge systems and the feasibility of using salt-gradient solar pond systems as a way of removing salt and generating heat or electricity for agricultural use.

Program activities also include

- coordinating IFDM research activities and data collection with other agencies;
- assisting growers and local agencies to plan and develop IFDM systems, and working with the Westside Resources Conservation District and SWRCB to develop a manual for designing, managing, and operating IFDM systems;
- investigating new techniques for zero discharge including enhanced evaporation techniques and extraction of salts from reused drainage water at a solar still facility in Red Rock Ranch;
- participating in a joint investigation with the University of Texas at El Paso and the Bureau to determine the feasibility of salinity gradient solar pond technology; and
- providing assistance to research projects for development of crops, including a research project being performed at Red Rock Ranch by California State University, Fresno, to assess suitability of various salt-tolerant forages and halophytes for sequential reuse of drainage water, forage quality, productivity, and water use; and
- cooperating with U.S. Department of Agriculture in an investigation to determine crop production using an active drainage management system that employs in-situ use of shallow groundwater and subsurface drainage water.

Planning continues in a cooperative project with the Bureau to investigate the long-term interaction of irrigation, rainfall, and local and regional groundwater with the movement of salts and selenium in the soils of Red Rock Ranch. The project will use an integrated surface-groundwater hydrogeological model developed by the University of Waterloo, near Toronto. The Department installed a series of shallow observation wells at Red Rock Ranch and surrounding areas for monitoring movement and level of subsurface water.

Other activities include

- assisting growers by providing information on salt tolerant grasses and IFDM design specifications;
- assisting SWRCB to develop policies for the management of drainage water, salt, and selenium. SB 1372 was written to establish minimum requirements, design, construction, operation, and closure of solar evaporators;
- constructing a pilot solar evaporator to collect data on evaporation rates of subsurface drainage water using nozzles, screens, and other devices and materials. The purpose is to develop design specifications for evaporating and recovering salts from drainage water in the solar evaporator, to determine the best season to operate it, and to study methods to minimize and control potential salt drift. The results and conclusions from the pilot model will be used to scale a solar evaporator for the 640-acre IFDM system at Red Rock Ranch and future IFDM systems in the Central Valley;
- developing IFDM systems to manage drainage water and to separate and harvest salt from irrigated farmland. Sodium sulfate is the major component of salt in the San Joaquin Valley, so several meetings were held with the largest producer of sodium sulfate in the United States to evaluate the potential for selling farm-produced salt and boron products. The existing domestic market for sodium sulfate is over 1.5 million tons per year—of that, more than 780,000 tons are imported; and
- providing data and performing water and salt-balance calculations for the Panoche Drainage District (Grassland Integrated Drainage Management Project)—a project to construct irrigation and drainage facilities for 550 acres of land assigned for the disposal of subsurface water. The project was designed to dispose of 1,400 acre-feet of drainage water annually, thus reducing the volume of drainage water discharged through the Grassland Bypass to the San Joaquin River.

IFDM Manual. Department staff has assisted with the preparation and review of IFDM "how to" manuals that are being assembled by CSU Fresno's Center for Irrigation Technology, under contract to the Westside Resource Conservation District. Technical information from the Department's Red Rock Ranch wildlife studies were incorporated into the *Drainage Water and Its Effect on Wildlife Resources* chapter. This chapter will assist landowners with identifying techniques that reduce or avoid wildlife impacts during operation of an IFDM system. Both a landowner and technical version of the manual will be completed by spring 2004.

On-Farm Drainage Reduction and Reuse Program. The Department's on-Farm Drainage Reduction and Reuse Program, managed by OWUE, offers technical assistance, information, and other resources to growers and irrigators for applying irrigation water efficiently to reduce both excessive deep percolation and drainage water from the immediate on-farm source, while maintaining salt balance in the root zone.

The program objective is being achieved through on-farm demonstration projects, studies, research, and training and workshops on scheduling irrigation, management, advances in irrigation technology, evaluating irrigation systems, reusing drainage water, and managing salinity.

Several on-farm demonstrations and other studies for salinity and irrigation management are ongoing. They help improve and advance irrigation management, fine-tune the performance of irrigation hardware, and increase grower and irrigator knowledge.

Staff is presently involved in managing in-progress contracts, preparing technical report summaries on the findings and results of on-farm demonstrations and studies, and

participating in the SJVDIP Phase III Implementation Process.

Management of In-Progress Contracts

In-progress contracts for research and demonstration projects, and contracts for workshops, are designed to disseminate state-of-the-art irrigation technologies and management practices to reduce and manage drainage water. The following contracts were developed from a Request for Proposals process initiated in 1996-97, which was targeted for State water contract areas. The contracts include

- *Integrated Management of Irrigation and Shallow Groundwater*—field demonstration at Westlake Farms of irrigation management techniques to optimize crop use of shallow groundwater.
- *Using Forage Grasses and Livestock to Manage Subsurface Drainage Water in the San Joaquin Valley*—field demonstration at Westlake Farms to evaluate the feasibility of growing Bermuda, Elephant, and other salt-tolerant grasses with subsurface drainage water as livestock forage.
- *Lost Hills Drainage Reuse Trial*—small field trial to determine if drainage water can be reused on selected crops, such as pistachios, and incorporated in the District's drainage water management programs.
- *Lost Hills Pre-irrigation Drainage Reduction*—Field demonstration of sprinkler/furrow irrigation management for pre-irrigation drainage reduction.
- *Pond-Shafter-Wasco Mobile Lab*—program to assist growers with irrigation system evaluations to improve distribution uniformity and irrigation efficiency.
- *Pond-Shafter-Wasco Irrigation Training Workshops*—irrigation training workshops conducted in both English and Spanish for growers and field workers.
- *Center for Irrigation Technology Irrigation/Drainage Management Workshops*—training and educational workshops on recent advances in irrigation and drainage management, conducted at CSU, Fresno.
- *Detrimental Salinity Buildup on the Periphery of the Wetted Areas Caused by Subsurface Drip Irrigation*—identification of factors in subsurface drip irrigation that may lead to a detrimental buildup of salinity and suggestions for practices to reduce or avoid salinity buildup in root zones.
- *Salinity Mobile Lab Mapping and Analysis*—mapping of the salinity profile in a given crop field to assess the performance of irrigation management. This will produce site-specific salinity management programs resulting in substantial water savings, prevention of drainage problems from over-irrigation, and increased yields.
- *Irrigation Management Education and Training Workshop Through the Use of Demonstration Farms*—workshops that provide practical methods of irrigation management at on-farm demonstration sites. Effectiveness of various practices will be determined through the use of a mobile irrigation lab.

UC Riverside completed a report for the Department titled *Findings and Recommendations to Develop the Six-Year Activity Plan for the Department's Drainage Reduction and Reuse Program*. The report documents the state of knowledge and understanding of drainage water reuse studies, and research and demonstration projects.

Environmental Services

The Environmental Services Section investigates and reports on short and long-term use and operation of evaporation ponds, IFDM, and other systems used for disposal and/or management of drainage water. During 2002, the section continued to assist CVRWQCB in assessing the biological implications of proposed and implemented modifications to evaporation basins. Environmental investigations include

- Grasslands Bypass long-term planning process, including EIS/EIR input;

- Red Rock Ranch research activities which involve the required biological monitoring activities in accordance with Waste Discharge Requirements permits;
- IFDM Wildlife Monitoring and Development of Best Management Practices (Proposition 204 funded);
- monitoring avian wildlife at IFDM sites; avian wildlife was monitored at the existing Red Rock Ranch IFDM terminal reuse areas, including a solar evaporator, halophyte plots, and salt-tolerant grasses. Although the Department biological staff has monitored this site since 1994, an intensive 3-year monitoring study, in cooperation with the U.S. Fish and Wildlife Service, was initiated so adequate long-term wildlife impact and avoidance assessments can be made, and the Best Management Practice for current and future IFDM projects can be generated. This information is crucial because IFDM systems that are not managed can result in selenium-induced avian teratogenesis (developmental defects). IFDM appears to be a viable drainage management tool when managed in a way that avoids or minimizes wildlife impacts posed by other drainage water management techniques such as evaporation ponds. A final report, including developed Best Management Practices, will be prepared during late 2003; and
- assisting in evaporation pond studies; the Department continues to provide assistance with invertebrate collection and species identification at San Joaquin Valley evaporation ponds. This information is being used by several UC studies that are evaluating food-chain transfer of selenium and in-situ volatilization. A final report is expected in late 2003.

Environmental Impact Documents Review

The Environmental Review Section in the Division of Planning and Local Assistance screens State Clearinghouse documents and circulates SWP-related materials for review by the Department's four districts, as well as DPLA, Division of Operations and Maintenance, and the Division of Engineering. In addition, other divisions and offices are notified of activities and are asked to comment when their expertise is required.

Some environmental impact documents handled by the State Clearinghouse concern proposed activities that would affect the SWP. State Clearinghouse documents are regularly reviewed to identify any public safety or liability issues arising from the proposed activities.

From January through December, about 4,160 documents were screened by the Environmental Review Section; 759 were referred for detailed review. Of these referrals, 416 were made when the projects were at the Notice of Preparation or Early Consultation stage and 343 assignments were for negative declarations, environmental impact reports, and NEPA environmental assessments. O&M received 98 formal referrals and 8 for information. The State Water Project Analysis Office received 16 formal referrals and 20 for information. In addition to the information referrals made to O&M and SWPAO, 704 other information referrals were made to other departmental staff.

Comments submitted to the lead agencies addressed a number of issues, including safety and water supply, encroachment on physical facilities, and water quality. Additional departmental actions involving such items as encroachment permit submittals and informal comments took place, but cannot be tracked by the Environmental Review Section.

During 2002, the Environmental Review Section tracked documents related to development along the California Aqueduct, water transfers and other water supply issues, wastewater treatment, and fiber optic construction near SWP facilities. The total number of documents submitted through the State Clearinghouse process remained at about the same level as 2001. However, more time was spent on preliminary screening, reducing the number of referrals for more detailed review by at least 34. If any of

these proposals eliminated from further review were 5 miles or less from SWP facilities, presenting a potential SWP impact, a note was entered in the database.

Water Conservation Bond Laws

To assist local agencies in obtaining financing for their water management programs, California voters approved six bond laws between 1984 and 2002, authorizing the Department to provide low-interest loans and grants to fund project feasibility studies or construction activities.

(1) The Clean Water Bond Law of 1984 (Proposition 25) authorized $10.5 million for water conservation projects.

(2) The Water Conservation and Water Quality Bond Law of 1986 (Proposition 44) authorized $75 million for water conservation and groundwater recharge projects.

(3) The Water Conservation Bond Law of 1988 (Proposition 82) authorized $60 million for water conservation, groundwater recharge, and new local water supply improvements.

(4) The Safe, Clean, Reliable Water Supply Act of 1996 (Proposition 204) authorized $55 million for water conservation, groundwater recharge, and local water supply projects.

(5) The Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act of 2000 (Proposition 13) authorized $535 million for agricultural and urban water conservation, groundwater recharge, infrastructure rehabilitation, groundwater storage, and interim reliable water supply projects and studies.

(6) The Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50, Chapter 8) authorized $500 million for the Integrated Regional Water Management Grant Program to be implemented jointly by the Department and SWRCB.

Construction loans and grants are available with repayment for the loans of up to 20 years at reduced interest rates for most programs. Proposition 204 provided grants for local water supply feasibility studies and a single construction grant for a groundwater recharge project. Proposition 13 provides grants for groundwater storage, infrastructure rehabilitation, and interim reliable water supply studies and projects. Proposition 50 provides grants for water management projects that support integrated regional water management efforts. Among other approval criteria for most programs, applicants for this funding must demonstrate that project benefits equal or exceed project costs. Typical projects fall under the following seven categories:

Water Conservation-Agricultural and Urban

- improvements to, or replacement of, distribution and storage systems
- lining and piping ditches
- water meters

Groundwater Recharge

- facilities for new artificial groundwater recharge
- expansion of existing artificial groundwater recharge facilities

Local Water Supply/Local Projects

- new conveyance and/or storage facilities
- groundwater recharge extraction facilities, well-field development
- desalination (ocean or brackish groundwater recovery)

Groundwater Storage

- utilization of existing sub-surface storage and construction of artificial recharge, extraction, and conveyance facilities

Infrastructure Rehabilitation

- replacement or rehabilitation of leaking mains, reservoirs, or distribution system components

- replacement of failing system components that threaten the health, safety, economy, or welfare of the community served by the system

Interim Reliable Water Supply

- projects or programs located in the Delta export service area designed to increase water supplies, enhance water supply reliability, or improve water quality

Integrated Regional Water Management

- projects to protect communities from drought, protect and improve water quality, and improve water security by reducing dependence on imported water

Table 5-1 summarizes the number of projects and funds committed for each of the six bond laws.

Table 5-1. Water Conservation Bond Laws Projects and Funding

Bond Law	Type of Project	Number of Projects[a]	Funding[a] (millions of dollars)
Clean Water Bond Law of 1984	Water conservation	7	9.74
Water Conservation and Water Quality Bond Law of 1986	Water conservation	24	41.60
	Groundwater recharge	10	28.04
	Subtotal	*34*	*69.64*
Water Conservation Bond Law of 1988	Water conservation	7	17.44
	Groundwater recharge	8	24.30
	Local water supply	4	9.00
	Subtotal	*19*	*50.74*
Safe, Clean, Reliable Water Supply Act of 1996	Water conservation	2	7.00
	Groundwater recharge	5	22.10
	Local water supply	22	20.58
	Subtotal	*29*	*49.68*
Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act of 2000	Agricultural water conservation	13	1.18
	Urban water conservations	29	9.91
	Groundwater recharge	20	19.00
	Infrastructure rehabilitation	12	15.25
	Groundwater storage	26	102.66
	Interim reliable water supply	13	160.11
Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (no funds committed for 2002)			
	Subtotal	*113*	*308.12*
	All water conservation	82	86.87
	All groundwater recharge	43	93.44
	All local water supply	26	29.58
	All infrastructure rehabilitation	12	15.25
	All groundwater storage	26	102.66
	All interim reliable water supply	13	160.11
	Total of all projects	**202**	**487.92**

[a]Construction project and feasibility study loan and grant commitments as of December 31, 2002.

Information in this chapter was contributed by the Division of Planning and Local Assistance and the Office of Water Use Efficiency.

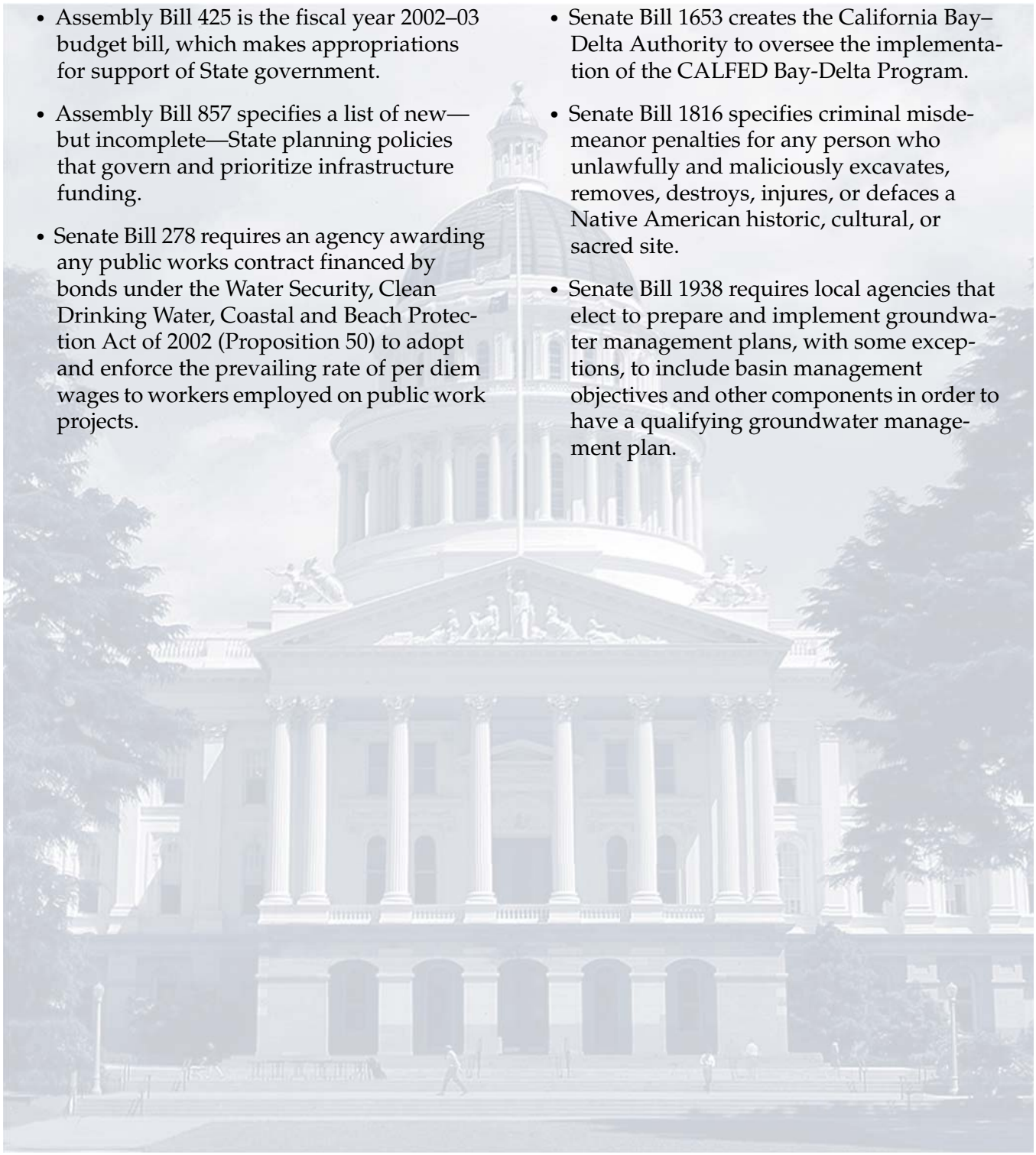
Chapter 6
Legislation and Litigation



Panoramic view of the State capitol

Significant Events in 2002

- Assembly Bill 425 is the fiscal year 2002–03 budget bill, which makes appropriations for support of State government.
- Assembly Bill 857 specifies a list of new—but incomplete—State planning policies that govern and prioritize infrastructure funding.
- Senate Bill 278 requires an agency awarding any public works contract financed by bonds under the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50) to adopt and enforce the prevailing rate of per diem wages to workers employed on public work projects.
- Senate Bill 1653 creates the California Bay–Delta Authority to oversee the implementation of the CALFED Bay-Delta Program.
- Senate Bill 1816 specifies criminal misdemeanor penalties for any person who unlawfully and maliciously excavates, removes, destroys, injures, or defaces a Native American historic, cultural, or sacred site.
- Senate Bill 1938 requires local agencies that elect to prepare and implement groundwater management plans, with some exceptions, to include basin management objectives and other components in order to have a qualifying groundwater management plan.



The Department of Water Resources' Deputy Director for Legislation monitors State and federal legislation introduced or enacted, including bills or laws that could impact the State Water Project. Similarly, the Office of the Chief Counsel tracks litigation of potential significance to the SWP and manages litigation involving SWP operations.

Legislation

State Legislation

AB 425 (Oropeza) Budget Bill (Chapter 379, Statutes of 2002). This is the fiscal year 2002-03 budget bill, which makes appropriations for support of State government. CALFED is required to submit a report to the Legislature regarding the following:

(1) a recommendation to establish a process to certify urban water conservation Best Management Practices implementation;
(2) a proposal to generate $35 million annually in user fees to support ecosystem restoration;
(3) cost allocation principles and a draft financing plan for each potential surface storage facility consistent with CALFED's "beneficiary pays" requirements;
(4) an identification of likely beneficiaries of each potential surface storage facility;
(5) environmental monitoring and adaptive management programs for all Environmental Water Account and SWP purchases;
(6) an analysis of the impact of court filings regarding the Central Valley Project Improvement Act on CALFED implementation, including ecosystem restoration, EWA, and conveyance issues;
(7) a status report on progress in preparing groundwater management legislation;
(8) a report regarding progress in implementing the CALFED Environmental Justice Program; and
(9) a definition of appropriate water measurement, as discussed in the CALFED Record of Decision, including urban water metering.

AB 857 (Wiggins) Infrastructure Planning: Priorities and Funding (Chapter 1016, Statutes of 2002). This bill specifies a list of new—but incomplete—State planning policies that govern and prioritize infrastructure funding. This bill amends existing requirements for the annual proposed 5-year infrastructure plan to include every infrastructure project proposed by State agencies. State agencies are required to assure that their requested funding for infrastructure, including special funds, bond sales, loans, and grants, are consistent with the new list of State planning policies. SB 2055 (Chapter 1109, Statutes of 2002) clarifies that nothing in AB 857 should be construed to affect the CALFED Bay–Delta Program.

SB 278 (Machado) Public Works Project (Chapter 892, Statutes of 2002). This bill requires an agency awarding any public works contract financed by bonds under the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50) to adopt and enforce the prevailing rate of per diem wages to workers employed on public work projects.

SB 1653 (Costa) California Bay-Delta Act (Chapter 812, Statutes of 2002). This bill creates the California Bay-Delta Authority to oversee the implementation of the CALFED Bay-Delta Program. The Authority will be housed in The Resources Agency and consist of six State

and six federal agencies (if the federal agencies are allowed to participate), seven public members, one member from the Bay-Delta Public Advisory Committee, and four nonvoting ex–officio members of the Legislature. The bill also requires the Governor, in consultation with the U.S. Secretary of the Interior, to appoint a director. SB 1653 requires the Authority to appoint a lead scientist and establish an independent science board. The Authority will end on January 1, 2006, unless federal legislation has been enacted authorizing the participation of appropriate federal agencies in the Authority.

SB 1816 (Chesbro) Historical Resources: Native American Sacred Sites (Chapter 1155, Statutes of 2002). This bill specifies criminal misdemeanor penalties for any person who unlawfully and maliciously excavates, removes, destroys, injures, or defaces a Native American historic, cultural, or sacred site. In addition, this bill allows civil penalties collected, as the result of legal actions brought by the Attorney General, to be distributed to the Native American Heritage Commission to restore vandalized Native American cultural resources and cover the costs of prosecuting violations.

SB 1938 (Machado) Groundwater Management: State Funding (Chapter 603, Statutes of 2002). This bill requires local agencies that prepare and implement groundwater management plans, with some exceptions, to include basin management objectives and other components in order to have a qualifying groundwater management plan. It requires local agencies seeking State funds under programs administered by the Department for groundwater–related projects to prepare and implement groundwater management plans that meet this bill's requirements. Local agencies would be required to provide for public participation in the development of the plan and submit adopted groundwater management plans to the Department. The completed plans would be public information.

Federal Legislation

There was no significant federal legislation in 2002.

Litigation

As of December 31, 2002, the Department was involved in a number of court cases related to management of the SWP. In addition, the Department monitored other cases that could significantly impact management of the SWP.

Planning and Conservation League, Plumas County, and Santa Barbara Citizens Planning Association of Santa Barbara County v. Department of Water Resources and Central Coast Water Authority. The Planning and Conservation League filed a lawsuit on December 27, 1995, against the Department and Central Coast Water Authority, challenging the California Environmental Quality Act compliance for the Monterey Amendment. PCL amended the complaint February 13, 1996, alleging that the Department could not legally transfer the Kern Water Bank to Kern County Water Agency as part of the Monterey Amendment.

After a hearing held May 17, 1996, a Sacramento County Superior Court judge ruled in favor of the Department and CCWA on PCL's complaint and dismissed the lawsuit. PCL appealed the decision to the Third District Court of Appeal. On September 15, 2000, the Court of Appeal held that EIR was inadequate and that the Department should have acted as lead agency for the project. In addition, the Court of Appeal reversed the Superior Court's entry of summary judgment and reinstated the validation claim in the complaint, providing a forum for review of the entire Monterey Amendment and, in particular, the transfer of the Kern Fan Element of KWB.

In its decision, the Court of Appeal held EIR was inadequate because the document should have included an analysis of Article 18(b), a standard term in the long-term water supply contracts, as part of its 'no project alternative' analysis. Article 18(b) authorized the Department to declare a permanent shortage and reduce all contractors' allocations across the board, thereby avoiding the agricultural shortage provisions. The Department believed that it was very unlikely that Article 18(b) would ever

be invoked and, therefore, the elimination of Article 18(b) did not require a 'no project alternative' analysis.

The Court of Appeal adopted PCL's reasoning that local planners rely on allocation amounts in the contracts and that reductions would affect local land use planning decisions. Accordingly, the Court held that both the elimination and possible invocation of Article 18(b) needed to be evaluated for environmental impacts, and the EIR was inadequate for failure to do so. The Court directed the Department to prepare a new EIR and remanded the matter to the trial court to vacate the Department's certification of the EIR and make such other orders as appropriate.

On December 13, 2000, the California Supreme Court denied review. The parties commenced mediation on March 26, 2002, and proceedings in Superior Court were stayed pending completion of mediation. On July 18, 2002, the parties reached agreement on principles for settling the lawsuit. The Department commenced preparing a new EIR and the interested parties continued mediation to convert the settlement principles into a legal agreement. The final settlement agreement is being prepared for execution and submittal to the Superior Court for approval.

Coordinated Special Proceedings, State Water Resources Control Board Cases. On March 15, 2000, SWRCB adopted Water Rights Decision 1641, which implemented certain water quality objectives in the May 1995 Water Quality Control Plan for the Sacramento-San Joaquin Bay Delta Estuary on a long-term basis. D-1641 did not implement the Delta outflow objectives in the 1995 Plan. Those objectives were to be addressed in a subsequent water rights hearing. D-1641 also approved the joint point of diversion which allowed interchangeable use of SWP and CVP pumping facilities under certain conditions. It also approved modification of the petition to modify the place and purpose of use in the CVP permits subject to condition.

Eleven different lawsuits across the State were filed in 2000 challenging D-1641, including five in which the Department was named as a real party in interest. These lawsuits were all coordinated into one special proceeding in Sacramento Superior Court.

The case will address several important legal questions, including whether D-1641 complied with CEQA, whether the changes in D-1641 injured certain Delta water users, and whether D-1641 was consistent with area of origin laws.

The Department is supportive of D-1641 and is working in cooperation with SWRCB. The trial commenced in August 2002 and extended 16 days. The trial was completed on November 15, 2002. A decision is expected in 2003.

Southern California Bass Council, et al. v. State of California. In late November 1994, the Southern California Bass Council, the Sierra Club, and the Audubon Society filed a CEQA lawsuit against the Department, challenging the Department's Mitigated Negative Declaration prepared for the reconstruction of the intake tower at Silverwood Lake. The Department was directed by the Federal Energy Regulatory Commission to replace the existing intake tower to the San Bernardino Tunnel because the existing tower did not meet current seismic standards. The petitioners claimed the Department's environmental documentation did not provide sufficient mitigation for adverse effects on the environment, including impacts on fisheries and the bald eagle.

At an April 1995 hearing in San Bernardino Superior Court, the judge ruled that the Department's mitigated negative declaration was adequate. The ruling validated the Department's plans to mitigate possible adverse effects on fish and wildlife resources, including the bald eagle, and recreation at the lake.

In June 1995, the petitioners appealed the trial court judgment. No order for stay (to prevent work from proceeding) was filed, and construction at Silverwood Lake began in September 1995. Work on replacement of the intake tower

was substantially completed by May 1997, and the lake was returned to its preproject level.

On October 17, 1996, the Court of Appeal affirmed the Mitigated Negative Declaration in all respects but one. As to fishery mitigation, the appellate court held that the Mitigated Negative Declaration should have included either a commitment to the specific nature and extent of restocking the fishery or specific standards under which the Department and the California Department of Fish and Game would determine the nature and extent of restocking. A hearing was held in San Bernardino Superior Court on May 2, 1997, and the Department presented its Fishery Mitigation Plan. Further briefing occurred on the merits of the plan, and oral argument was postponed to January 30, 1998.

On January 30, 1998, the judge approved the Department's fishery mitigation plan as providing sufficient performance criteria for mitigating the project's significant effects on the fishery at Silverwood Lake. The mitigation plan was amended in 1999.

The mitigation plan included the following mitigation measures: fish macro and micro habitat enhancement, fish population studies, rough fish removal, annual fish stockings, and a 1-time fish stocking if the fishery has not recovered by the end of 2002. The Department and DFG are discussing methods to improve the fisheries.

The Department is continuing to implement the mitigation plan. The Court has ordered a hearing for February 21, 2003, to determine the adequacy of the Department's mitigation effort.

El Dorado Irrigation District v. State Water Resources Control Board. This litigation involves SWRCB Decision 1635, which approved the application by El Dorado Irrigation District to divert water for urban purposes based on the assignment of a "state filing." "State filings" are water rights filings made by the Department (or the Department of Finance prior to 1956) as part of a general plan for State water development.

Two separate lawsuits were filed and consolidated in this case. The first lawsuit was filed by El Dorado Irrigation District and El Dorado County Water Agency, which challenged the imposition of Term 91 as part of the decision. Term 91 is a standard permit term that prohibits diverters within the Sacramento-San Joaquin watershed from diverting natural flow during the time periods that the SWP and CVP are releasing stored water to meet the Delta's water quality objectives. The second lawsuit was filed by an environmental group, League to Save Sierra Lakes. This lawsuit alleges that SWRCB failed to comply with CEQA and improperly allocated water for urban purposes contrary to the Water Code and the public trust doctrine. The Department was not named originally in either lawsuit, but was later ruled to be an indispensable party for the El Dorado litigation as a result of a motion brought by SWRCB. Consequently, the Department was later named as a party in the lawsuit in an amended petition.

If the court finds that Term 91 was improperly imposed on El Dorado as part of D-1635, the Department will be required to adjust its operations accordingly to compensate, which would affect SWP water supply. The litigation is expected to go to trial in 2003.

San Luis and Delta-Mendota Water Authority v. Department of Interior, et al. On November 12, 1997, the San Luis and Delta-Mendota Water Authority filed a lawsuit in federal district court for injunctive relief against the United States for misinterpretation and misapplication of the Central Valley Project Improvement Act. The plaintiffs have challenged the legality of the U.S. Department of the Interior's November 20, 1997, CVPIA Final Administrative Proposal on Management of Section 3406(b)(2) Water, in which DOI sets forth its plan for implementing the so-called "(b)(2)" section of CVPIA. The water districts claim that the administrative proposal fails to account for the water as required by CVPIA and is subject to the National Environmental Policy Act. In contrast, environmental groups also filed a lawsuit against the United States, claiming that the proposal fails to properly account for the water, fails to dedicate

sufficient water to implement (b)(2), and that the United States misinterpreted its authority in permitting reuse of CVP yield. The two cases have been consolidated and, in November 1998, plaintiffs submitted motions for partial summary judgment in preparation for a January 1999 hearing.

On March 19, 1999, the federal District Court issued a Memorandum Opinion for partial summary judgment finding that the administrative proposal was contrary to CVPIA. Plaintiffs sought a preliminary injunction to prevent the Bureau of Reclamation from implementing (b)(2) measures. In March 2000, the District Court judge issued an order dissolving its preliminary injunction against DOI finding that DOI's interpretation of the definition of CVP yield was lawful, except for a deduction for D-1400 flows on the American River. The Court also found that DOI had acted lawfully when modeling the proposed 1999-00 fishery actions and when accounting for use of CVP yield for (b)(2) purposes. In March, the Bureau submitted to the Court a corrected CVP yield value using D-893 flows. In May, the Water Authority and water district intervenors appealed the District Court order that dissolved the preliminary injunction.

Summary judgment motions were filed by the water districts, the government, and the environmental groups. In October 2001, the District Court issued a decision on the summary judgment motions, ruling in favor of the federal government affirming its March 1999 memorandum, except for an issue regarding the methodology determining "offset and reset." In February 2002, the Court decided that the offset and reset methodology were not acceptable and issued its final judgment in the case.

The Court entered its Final Partial Judgment on Accounting Issues in March 2002, and the parties appealed. The United States voluntarily dismissed its appeal in August 2002, because it believed the District Court's decision was not final and the appellate court lacked jurisdiction. In its March 2002 decision, the District Court remanded to DOI the issue of accounting, and DOI prepared a modification of its 1999 Decision on Implementation of Section 3406(b)(2) of the Central Valley Project Improvement Act (Decision). The environmental plaintiffs filed an appeal to stay DOI's implementation of the Court's orders. The Water Authority also appealed but moved to dismiss its appeal as moot if the Court also dismissed the appeal of the environmental plaintiffs. On November 12, 2002, the District Court issued a 52-page Memorandum Decision and Order denying environmental plaintiffs' request to stay and enjoin DOI's implementation of the Court's orders. DOI will not implement past offset and reset methodology and issued a Draft Revised Decision on Implementation of Section 3406(b)(2), which has been made available for a 30-day public comment period.

Tulare Lake Basin Water Storage District v. U.S.
In February 1998, plaintiffs Tulare, Kern, Wheeler Ridge-Maricopa Water Storage District, and others filed a claim in the U.S. Court of Federal Claims alleging that the federal government took plaintiffs' water without just compensation in violation of the Fifth Amendment of the U.S. Constitution. The plaintiffs claim that in 1992, 1993, and 1994 the U.S. Fish and Wildlife Service and National Marine Fisheries Service, under authority of the Endangered Species Act and through issuance of biological opinions for winter-run salmon and Delta smelt, took their water for a public purpose without compensation. The plaintiffs claim a right to the water based on their long-term water supply contracts with the Department. The plaintiffs claimed damages of $25,720,320 plus attorney fees and other costs.

On April 30, 2001, the U.S. Court of Federal Claims issued a decision regarding liability, but not the amount of compensation, for the Constitutional takings claim. The Court held that the federal government has authority to protect winter-run Chinook salmon and Delta smelt under ESA, but that it must pay the costs of this protection to water users who would have received that water from the SWP. The trial to determine the amount of compensation to be paid was held in July 2002. The Court's final decision is expected in late 2003 or early 2004.

Water Code Section 1810 *et seq.*

1810. Notwithstanding any other provision of law, neither the state, nor any regional or local public agency may deny a bona fide transferor of water the use of a water conveyance facility which has unused capacity, for the period of time for which that capacity is available, if fair compensation is paid for that use, subject to the following:

(a) Any person or public agency that has a long-term water service contract with or the right to receive water from the owner of the conveyance facility shall have the right to use any unused capacity prior to any bona fide transferor.

(b) The commingling of transferred water does not result in a diminution of the beneficial uses or quality of the water in the facility, except that the transferor may, at the transferor's own expense, provide for treatment to prevent the diminution, and the transferred water is of substantially the same quality as the water in the facility.

(c) Any person or public agency that has a water service contract with or the right to receive water from the owner of the conveyance facility who has an emergency need may utilize the unused capacity that was made available pursuant to this section for the duration of the emergency.

(d) This use of a water conveyance facility is to be made without injuring any legal user of water and without unreasonably affecting fish, wildlife, or other instream beneficial uses and without unreasonably affecting the overall economy or the environment of the county from which the water is being transferred.

1811. As used in this article, the following terms shall have the following meanings:

(a) "Bona fide transferor" means a person or public agency as defined in Section 20009 of the Government Code with a contract for sale of water which may be conditioned upon the acquisition of conveyance facility capacity to convey the water that is the subject of the contract.

(b) "Emergency" means a sudden occurrence such as a storm, flood, fire, or an unexpected equipment outage impairing the ability of a person or public agency to make water deliveries.

(c) "Fair compensation" means the reasonable charge incurred by the owner of the conveyance system, including capital, operation, maintenance, and replacement costs, increased costs from any necessitated purchase of supplemental power, and including reasonable credit for any offsetting benefits for the use of the conveyance system.

(d) "Replacement costs" means the reasonable portion of costs associated with material acquisition for the correction of unrepairable wear or other deterioration of conveyance facility parts which have an anticipated life which is less than the conveyance facility repayment period and which costs are attributable to the proposed use.

(e) "Unused capacity" means space that is available within the operational limits of the conveyance system and which the owner is not using during the period for which the transfer is proposed and which space is sufficient to convey the quantity of water proposed to be transferred.

1812. The state, regional, or local public agency owning the water conveyance facility shall in a timely manner determine the following:

(a) The amount and availability of unused capacity.

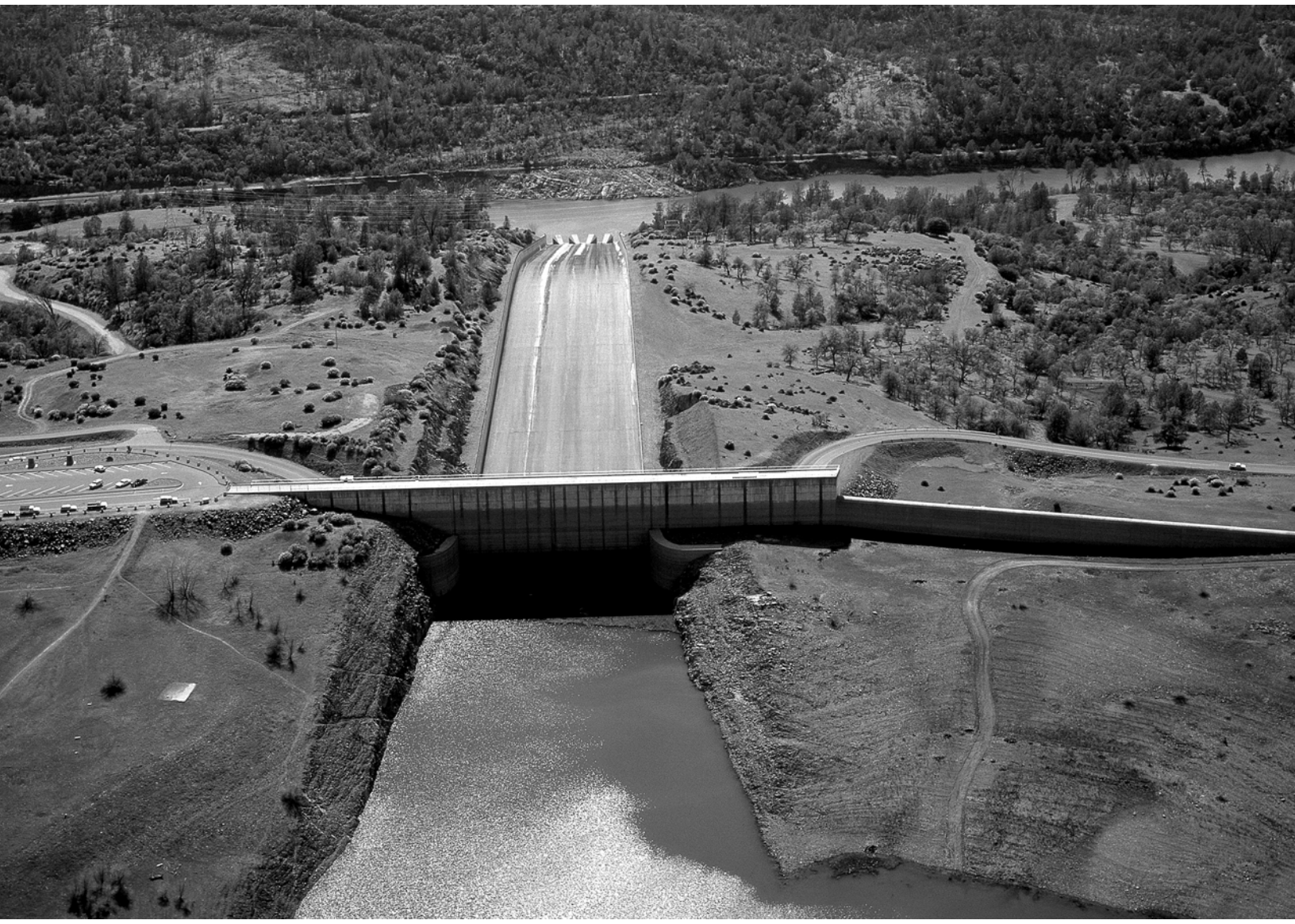
(b) The terms and conditions, including operation and maintenance requirements and scheduling, quality requirements, term or use, priorities, and fair compensation.

1813. In making the determinations required by this article, the respective public agency shall act in a reasonable manner consistent with the requirements of law to facilitate the voluntary sale, lease, or exchange of water and shall support its determinations by written findings. In any judicial action challenging any determination made under this article the court shall consider all relevant evidence, and the court shall give due consideration to the purposes and policies of this article. In any such case the court shall sustain the determination of the public agency if it finds that the determination is supported by substantial evidence.

1814. This article shall apply to only 70 percent of the unused capacity.

Information for this chapter was contributed by the Assistant Director, Legislative Affairs Office and the Office of the Chief Counsel.

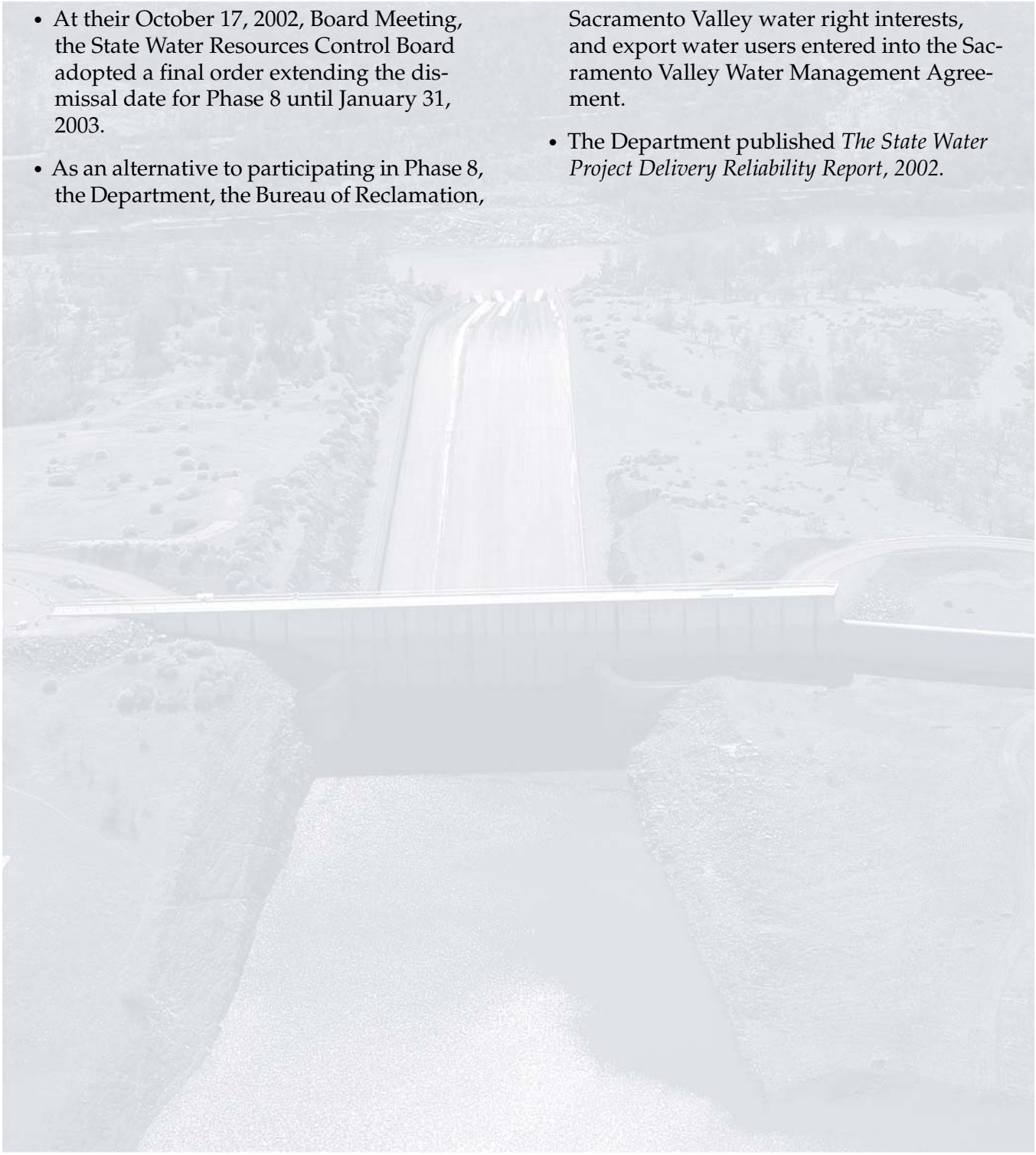
Chapter 7
Water Supply Development and Reliability



Oroville Reservoir spillway to the Feather River

Significant Events in 2002

- At their October 17, 2002, Board Meeting, the State Water Resources Control Board adopted a final order extending the dismissal date for Phase 8 until January 31, 2003.
- As an alternative to participating in Phase 8, the Department, the Bureau of Reclamation, Sacramento Valley water right interests, and export water users entered into the Sacramento Valley Water Management Agreement.
- The Department published *The State Water Project Delivery Reliability Report, 2002.*



To deliver the full annual Table A amount specified in water service contracts, the Department of Water Resources works to maintain and improve the reliability of all State Water Project supplies—the core of the SWP planning strategy—by developing solutions for additional supply and storage.

Researching, planning, and developing supply and storage projects that are economically, environmentally, and technically sound while satisfying complex regulations, laws, and environmental procedures, present significant challenges. Many environmental concerns center on the effects that additional storage and delivery facilities may have on the water quality and the environment of the Sacramento-San Joaquin Delta. The Delta is the critical link in the SWP conveyance system between water supplies in Northern California and deliveries to the Central Valley and Southern California. As such, developing additional SWP facilities depends on resolution of Delta conflicts and the solutions currently being outlined by CALFED.

Through 2002, the CALFED Bay-Delta Program continued to work on a comprehensive, long-term solution for the Delta. This program is a component of a process defined in the State-federal Framework Agreement, signed in June 1994, which calls for a cooperative and coordinated process to solve long-term water quality and ecosystem problems in the Bay-Delta estuary. The signatories of the agreement, known collectively as CALFED, became responsible for developing long-term solutions for fish and wildlife, water supply reliability, flood control, and water quality problems in the estuary.

In June 1999, CALFED released its multivolume *Draft Programmatic Environmental Impact Statement/Environmental Impact Report for the Bay-Delta Program*. The plan proposes strategies for improving four interrelated problem areas: ecosystem health, water quality, levee system integrity, and water supply reliability. It is comprised of near-term actions and studies and sets the groundwork for actions in the future. On August 28, 2000, CALFED released its Record of Decision, formalizing State and federal agreement on the CALFED Bay-Delta Program's plan to address major Delta water issues, including establishment of the Environmental Water Account.

Following the issuance of ROD, CALFED agencies began Stage 1 in 2001. Stage 1 covers the first 7 years of a 30-year program and builds the foundation for long-term actions. In 2002, implementation of the program consisted of early planning on specific projects.

As a CALFED agency, the Department is working with the federal government, local agencies, and public interest stakeholder groups to ensure water supply reliability now and in the future.

Development and Reliability

To meet the SWP contractors' increasing need for water, the Department is engaged in research, development, and planning in order to augment SWP water supplies and maintain delivery reliability.

Some of these plans include

- developing programs to transfer water, such as the drought water bank, EWA, or facilitating transfers between SWP long-term contractors and/or other agencies, including Central Valley Project contractors;
- investigating feasibility and assisting in the development and implementation of local

and regional conjunctive-use projects and programs;
- using SWP funds to assist in monitoring and developing local water supplies;
- managing the Feather River watershed above Lake Oroville to increase the base-flow (groundwater) runoff and reduce sedimentation to preserve storage capacity; and
- investigating and evaluating storage projects (see CALFED Bay-Delta Program below).

Water Conveyance Through the SWP

The Department arranges for the temporary transfer of water through SWP facilities for the SWP long-term contractors, as well as for other agencies. These transfers can occur in three different ways:

- water exchanges either among the SWP long-term contractors or between contractors and non-SWP contracting entities;
- water transfers among long-term SWP contractors with approved Table A water; and
- transfers of nonproject water to the non-SWP and SWP agencies.

For information regarding specific transfers or exchanges, please see Chapter 9.

Transfer and Exchange Evaluations. Evaluation of the effects of proposed non-SWP water transfers on the SWP continues in cooperation with the State Water Project Analysis Office, Division of Operations and Maintenance, and the Office of the Chief Counsel. This team develops formal responses to specific issues, projects, or programs. The team also identifies and evaluates water transfer proposals and water acquisitions by the Bureau of Reclamation and other water agencies, and proposes settlement agreements for potential impact on the SWP.

Emphasis on early intervention allows tailoring of the proposals to maximize benefits to the SWP or minimize adverse effects. The team is monitoring the Bureau contract renewal process to evaluate potential impact. These activities help the Department understand the potential cumulative impact of other agencies' actions on the SWP and to proactively address those actions.

This team also explores potential transfer options available to the SWP and individual contractors. Analysis of contractor profiles helps the Department facilitate transfers and exchanges between individual contractors. In addition, the Department coordinates its participation in the CALFED Transfer Agency Group and the Bay-Delta Advisory Committee Transfers Workgroup.

Water Supply Contract Evaluation

Evaluation of existing SWP water supply contracts and project operations is a continuing activity aimed at improving reliability.

SWP Delivery Reliability Report

To assist local agencies assessing their overall water supplies, the Department provided current data on the ability of the SWP to deliver water under 2001 conditions and for conditions projected to exist 20 years in the future in a report entitled *The State Water Project Delivery Reliability Report, 2002.* This report is to be updated every 2 years.

Water delivery reliability depends on three factors: the availability of water at the source; the ability to convey water from the source to the desired point of delivery; and the level of demand. Information in *Report 2002* is based on the assumption that future weather patterns will be similar to those in the past. As more information becomes available on the impact of global warming upon SWP water supply, it will be analyzed in future editions of this report. In addition, the analyses of the ability to convey water from the source to the point of delivery assumes only the SWP facilities and permits existing in 2002 would be used. No planned facility improvements to the SWP are assumed in order to provide a conservative estimate of water delivery reliability. Last, the level of

Environmental Review Acts

The National Environmental Policy Act (Title 42 United States Code sections 4321-4370 [1970]) and the California Environmental Quality Act (California Public Resources Code sections 21000-21177 [1970]) require government 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, including a discussion of mitigation measures and alternatives, for actions significantly affecting environmental quality.

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

CEQA applies to projects directly undertaken, funded, or approved by State or local agencies. NEPA 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.

NEPA requires that mitigation measures and alternatives be disclosed to the public in the Environmental Impact Statement, but it does not generally require federal agencies to adopt such mitigation measures or alternatives. CEQA, on the other hand, does impose substantive duties on all California government agencies approving projects with significant environmental impacts to adopt alternatives or mitigation measures that they find to be feasible to 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 preparing joint environmental documents.

Through the environmental review process, citizens can learn about those significant effects and, if the project is approved, the reasons for approving the project. The review process requires agencies to

- describe the proposed project;
- identify the lead and cooperating agencies involved in the project;
- determine the scope of study with responsible agencies and/or the public;
- prepare and distribute a draft EIS or EIR;
- respond to comments received on the draft;
- prepare the final EIS or EIR;
- make findings and adopt feasible alternatives or mitigation measures to avoid significant effects, if applicable;
- adopt a monitoring plan to ensure compliance with mitigation measures; and
- prepare a list of permits required to implement the project if the project is approved.

The scoping phase, which occurs early in the review process, is particularly important because it enables government agencies to identify issues and topics to be considered when preparing the report. Information gathered in the scoping phase helps agencies identify and evaluate reasonable alternatives; identify potential environmental impacts of the project; determine data and information needed; develop a work schedule; and allocate resources for preparing and distributing the draft environmental document for public review and comment.

NEPA requires a lead agency to involve the public during scoping, while CEQA does not. CEQA, however, does encourage public involvement at this stage. Members of the public may raise issues during the scoping phase and not just after the draft environmental document is prepared. Thus, the CEQA process leads to changes in projects through the development, consideration, and adoption of alternatives or enforceable mitigation measures to avoid or reduce any potential significant adverse effects on the environment.

demand for the SWP, the amount and pattern of demand, were derived from historical data and information received from the SWP contractors.

One probability that a given level of SWP Table A amount will be delivered from the Delta for conditions projected to exist in year 2021 is shown in Figure 7-1. The following can be deduced:

- In 75 percent of the years, the annual water delivery of the SWP is estimated to be at or above 2.7 million acre-feet per year (66 percent of 4.13 million acre-feet);
- In 50 percent of the years, it is estimated to be at or above 3.4 million acre-feet per year (83 percent of 4.13 million acre-feet); and
- In 10 percent of the years, it is at or greater than 4.1 million acre-feet per year (98 percent of 4.13 million acre-feet).

Detailed information on the assumptions, data, and results of additional studies, as well as the other scenarios for annual Table A amounts, can be found in this report, published on the Web at swpdelivery.water.ca.gov.

Conjunctive Use

Conjunctive use refers to the planned and coordinated management of surface water and groundwater in a complementary manner so that all available water resources are efficiently utilized to improve water supply reliability. Conceptually, groundwater basins are recharged with surplus surface water in wetter years through natural or artificial processes. This stored groundwater is then extracted when needed to augment diminished surface water supplies during dry years. In the 1990s, conjunctive use became increasingly controversial as it became part of various water transfer proposals. As a result, many counties, particularly in the Sacramento Valley, have adopted ordinances designed to regulate water transfers that involve groundwater substitution.

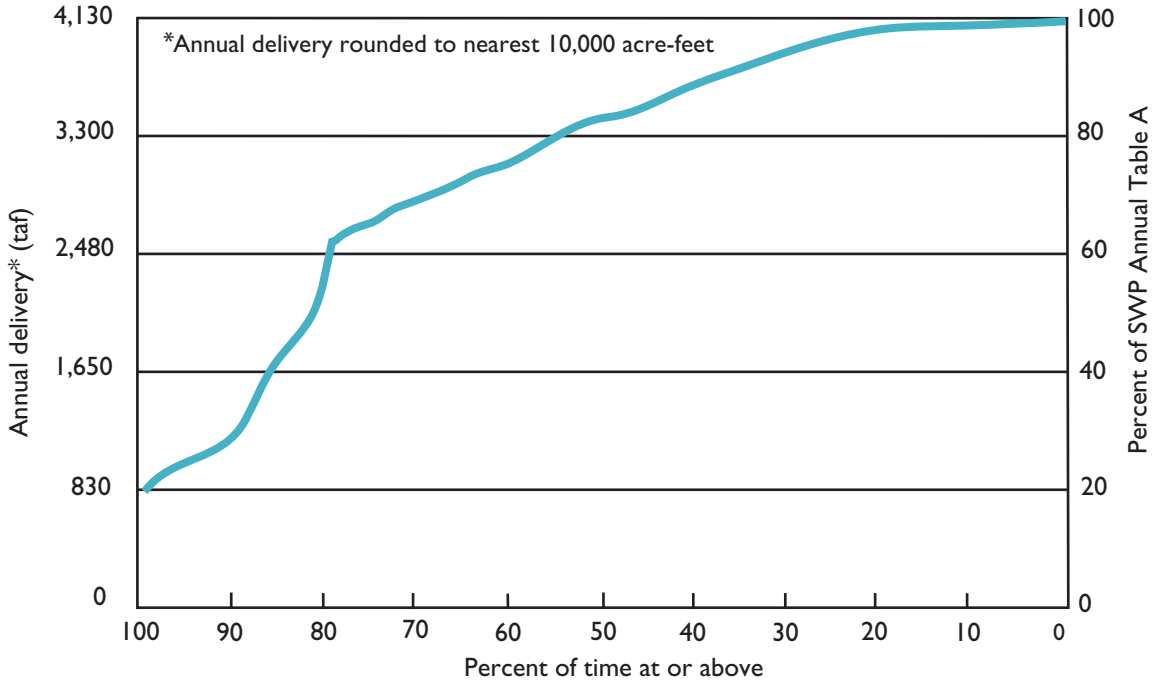


Figure 7-1. Projected SWP System Delivery Capability (Scenario 2021B, Annual Table A)

(*Groundwater substitution* refers to the use of groundwater as a substitute supply for crop irrigation or other purpose rather than the normal surface water allocations from river diversions, and transferring the undiverted surface water to willing buyers.)

If thoughtfully designed and implemented, conjunctive-use projects can be operated with minimal impact to the environment or to other water users. Increasingly, conjunctive-use projects are being designed to have multiple benefits, including water supply reliability, water quality improvement, environmental enhancement, and flood control.

The Department recognizes that despite the potential benefits, conjunctive use is somewhat of a double-edged sword. It is an integral part of many of the projects that can provide water supply for local use or statewide benefit. However, given the frequent interconnection of surface and groundwater, conjunctive use and other groundwater development projects, if poorly designed, have the potential to deplete SWP supplies as well as affect other water users. To preclude this from happening, the Sacramento Valley Groundwater Program evaluates water transfer, conjunctive use, and other proposals that could impact supplies.

Sacramento Valley Groundwater Program. The emphasis of SWP-related groundwater activities in the Sacramento Valley Groundwater Program, a component of the SWP Future Supply Program, has shifted from investigating and developing conjunctive-use projects to augment SWP supplies to facilitating transfers and development of projects by local entities. It also focuses on the benefits and potential adverse impacts to the SWP of local conjunctive-use projects and programs. These activities support CALFED's Water Transfer, Storage, and EWA Program components and the Department's Phase 8 activities and are closely coordinated with the Department's Conjunctive Water Management Program in the geographic areas in which they overlap. A description of the CALFED program elements can be found in the CALFED Bay-Delta section.

Local agencies are increasingly active in developing groundwater management programs and asserting control over water supply development and management activities. The Department works with local agencies and interested parties by providing technical and other assistance to improve groundwater monitoring and management; study and develop alternatives; help alleviate local anxieties; and build consensus for local and regional conjunctive use.

Sacramento Valley Groundwater Program involving local agencies in 2002 included the activities described below.

Yuba County. The Department, in cooperation with the Yuba County Water Agency, continued the development and operation of an adaptive long-term groundwater monitoring and measurement program. These activities focused on evaluating water level impacts and on the evaluation of impacts to other groundwater users. The operations of the Yuba River system are becoming intertwined with those of the SWP and the monitoring activities are focused on determining the groundwater capabilities of the area within that context.

Lower Colusa Basin. During 2001, activities focused on the continued development and calibration of a surface and groundwater flow model to evaluate possible conjunctive-use project alternatives. To that end, the Department completed installation of a monitoring network consisting of 12 multiple-head wells in Reclamation District 108 where the extraction component of a project would be located, and prepared a report documenting technical aspects of these wells.

Butte Basin. The Department's efforts in Butte County focused on improving the technical understanding of the Butte Basin groundwater system; assisting in updating the groundwater model for the Butte Basin Water Users Association; assisting in the design and development of a monitoring-well network for the basin; and on building relationships with local interests through stakeholder-based development of an integrated water management plan. In addition,

the Department, in cooperation with the county, Western Canal, and several landowners in the Cherokee Strip, designed a conjunctive-use demonstration project with the intent of testing the permitting process under the Butte County groundwater ordinance.

Glenn County. The Department is providing technical assistance to Glenn County during the process of developing basin management objectives under the county groundwater management ordinance. The Department is also assisting in developing a groundwater level, groundwater quality, and subsidence monitoring networks in the county to facilitate future water transfers and the development of Phase 8 conjunctive-use projects that will benefit the SWP. These activities are also coordinated with related investigations being facilitated by the Department's storage program.

Conjunctive Water Management Program. The Department's Conjunctive Water Management Program, established in 1999, provides assistance to local agencies throughout the State to improve groundwater management and improve water supply reliability through development of locally controlled conjunctive-use projects and programs. Assistance takes many forms, including forming close working partnerships with local agencies to support planning efforts, technical assistance through Department staff, facilitation assistance provided through contract services, and direct financial assistance for conducting feasibility and pilot studies. In addition, the program manages the award of grants under AB 303, Proposition 13, and Proposition 50 to support local groundwater management efforts and construction of conjunctive-use facilities. Although the program is neither funded by the SWP contractors, nor has benefit to the SWP as its primary goal, it may complement and supplement the Sacramento Valley Groundwater Program component of the SWP Future Supply Program, which seeks to augment SWP supplies in dry years by providing substantial assistance to local agencies.

Local Water Supply Projects

Local projects to augment water supply may be financed with SWP funds and become units of the SWP only if SWP contractors agree that the project is advantageous, the Department determines that the projects are structurally, economically, financially, and contractually feasible, as well as environmentally acceptable, and all participants sign an agreement. SWP contractors benefit from increased water supplies or reduced demands resulting from these projects.

In 2002, no local water supply projects were considered by the Department. However, the Department is the State implementing agency for the CALFED Storage Program that includes both surface storage and groundwater conjunctive use proposals which may augment local water supplies.

Watershed Management

This continuing effort evaluates the state of the Feather River watershed above Lake Oroville and identifies actions that can be taken within the watershed to increase base-flow runoff and reduce sedimentation. The initial effort explored ways to improve local water supplies without adversely affecting SWP supply or operations. Early activities included installing monitoring equipment and gathering pertinent data on stream flows, water quality, erosion, and land use. This data will be used to formulate reports and studies for future actions. The work continues to receive strong local support.

SWP Bay-Delta Proceedings—2002 Activities

The Department has worked intensely for decades to develop appropriate water quality standards for the Bay-Delta and to identify which water sources are required to meet those standards. SWRCB has received and reviewed numerous testimony and evidence to establish water quality objectives for the Bay-Delta estuary to protect urban, agricultural, and fish and wildlife water uses. The current water quality

objectives are set forth in the 1995 Water Quality Control Plan, which is designed to implement

- in-Delta water quality flow objectives
- Suisun Marsh salinity objectives
- salinity control actions in the San Joaquin Basin
- south Delta salinity objectives
- dissolved oxygen objectives
- combined use of the SWP and CVP points of diversion in the Delta

In order to implement the WQCP objectives, SWRCB convened a series of Bay-Delta water right hearings which were staged in eight phases. Between July 1, 1998, and December 31, 1999, the SWRCB heard 80 days of testimony, concluded Phases 1 through 7, and adopted the Final EIR and Water Right Decision 1641.

Phase 8

Phase 8 of SWRCB water right hearings was to consider potential responsibilities of numerous water users to implement certain flow-dependent objectives of the 1995 Bay-Delta Water Quality Control Plan. In Phase 8, the Department and the Bureau probably would have asserted that certain water right holders in the valley should cease their diversions or release water from storage during certain times of the year to help meet the Delta water quality objectives. On the other hand, the Sacramento Valley water users probably would have asserted that their use did not contribute to water quality problems in the Delta and as senior water right holders within the watershed they were not responsible for meeting these objectives. Through the Phase 8 process SWRCB would have determined which water rights would be conditioned with responsibility for meeting the Delta water quality objectives.

In December 1999, SWRCB concluded Phases 1 through 7 of the Bay-Delta Water Right hearings with adoption of D-1641. To avoid prolonged adversarial hearings of Phase 8, the Department, the Bureau, Sacramento Valley upstream water users, and certain downstream water users executed an agreement requesting that SWRCB postpone, or stay, Phase 8 until the parties completed agreement on a water management settlement proposal. On April 26, 2001, in response to the request, SWRCB adopted Water Right Order 2001-05, staying Phase 8 and requiring the Department and the Bureau to continue to meet certain objectives in the Bay-Delta Plan until adoption of a further decision assigning responsibility for meeting those objectives. Under Order WR 2001-05, Phase 8 would have been automatically dismissed on October 26, 2002, unless SWRCB received notice from the Department or the Bureau requesting resumption of Phase 8. On October 17, 2002, however, SWRCB adopted an order extending the automatic dismissal date to allow time for parties to sign a water management settlement agreement, and to dismiss Phase 8 on January 31, 2003.

Sacramento Valley Water Management Agreement. During 2002, the Department, the Bureau, Sacramento Valley upstream water users, and certain downstream water users negotiated a settlement in lieu of continuing with the SWRCB Phase 8 hearings. These efforts culminated in December 2002 with these agencies beginning to sign a short-term settlement agreement, known as the *Sacramento Valley Water Management Agreement or Short-Term Settlement Agreement*, and formally titled *Short-Term Agreement to Guide Implementation of Short-Term Water Management Actions to Meet Local Water Supply Needs and to Make Water Available to the SWP and CVP to Assist in Meeting the Requirement of the 1995 Water Quality Control Plan and to Resolve Phase 8 Issues.* SVWMA avoided the adversarial issues of Phase 8 and was developed to promote better management of California's water resources.

SVWMA provides that the Department and the Bureau will continue to be responsible for meeting the flow-related water quality objectives of D-1641 and that a series of local projects, owned and operated by Sacramento Valley water users, will be developed to provide up to 185,000 acre-feet of water for purposes of local water needs and the SWP and CVP. These local projects are

to develop water supplies for use by the sponsoring local agencies and to provide water to the SWP and CVP for Delta water quality and water supply. A key element in developing the agreement was the preparation of a short-term workplan for investigating short-term projects to meet the goals of SVWMA. The short-term workplan was adopted with approximately 45 projects falling into the following general categories:

- water management—conjunctive use
- reservoir reoperation
- system improvements
- surface water and groundwater planning
- regulatory/institutional arrangements

It is anticipated that a short-term project would operate for 10 years. The Department and the Bureau, in cooperation with the Sacramento Valley water users and downstream water users, will be preparing environmental analysis and documentation for the projects as required prior to implementation. SVWMA establishes a Technical Measurement and Monitoring Committee responsible for developing monitoring programs for the projects being developed, assessing their accomplishments and impacts, and recommending remediation activities if needed. The local agencies and the Department and the Bureau will enter into specific implementation agreements for each project. SVWMA also provides for the possible development of a long-term workplan and settlement agreement that could provide for continuation of certain short-term projects and other projects that could meet the goals of the Phase 8 settlement.

CALFED Bay-Delta Program

The mission of the CALFED Bay-Delta Program is to develop and implement a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta. The program supports a strategy of conveying water through the Delta and not around it. The Department has vigorously supported this effort, seeing it as a means of developing and managing the State's water resources to meet the water delivery commitments of the SWP and to benefit the public and the environment.

The CALFED Program was envisioned as a 30-year plan, and is implemented through 11 major program elements.The first 7-year phase of implementation, Stage 1, includes planning for proposed large facilities and implementation of lesser facilities. The Department is the State lead agency for the storage program element, which consists of surface storage studies and groundwater programs and projects.

Storage Program

This is a comprehensive program with a good potential benefit for the SWP consisting of actions related to surface and groundwater storage. The Division of Planning and Local Assistance has been working with CALFED to enhance storage as well as conjunctive-use programs that support local project development via loans and grants.

Surface Storage Investigations. The Storage Program was part of an ongoing evaluation of the appropriate role of storage, both groundwater conjunctive use and surface storage, in the CALFED solution. The Surface Storage Investigations are developing environmental and feasibility engineering documentation for the surface storage projects identified for further study in the CALFED ROD.

In 2002, investigations of five reservoir projects continued: In-Delta Storage, Los Vaqueros Reservoir Enlargement, Shasta Lake Enlargement, North-of-the-Delta Offstream Storage, and Upper San Joaquin River Basin Storage. During 2002, the following investigative studies have been completed for these five potential projects.

In-Delta Storage Program. The Department and the California Bay-Delta Authority, along with technical assistance from the Bureau, completed a joint planning study of the In-Delta storage alternatives in May 2002. It was concluded that the project concepts as proposed by the original

CALFED Bay-Delta Program

The San Francisco Bay/Sacramento-San Joaquin Delta (Bay/Delta) Estuary is the largest estuary on the West Coast. It is a maze of tributaries, sloughs, and islands, and a haven for over 750 plants and wildlife species. It is also the hub of California's two largest water distribution systems—the Central Valley Project, operated by the Bureau of Reclamation, and the State Water Project, operated by the Department of Water Resources. Together, these water development projects divert approximately 20 to 70 percent of the natural flow in the system, depending on the amount of runoff available in a given year. This, along with other issues, such as population growth and pollution, have had a serious impact on water supply and quality, and on the fish and wildlife resources in the estuary. Although there was consensus that the Bay-Delta estuary is important as both a reliable source of water and as a fish and wildlife habitat, there was none for solving conflicts regarding methods of management, conservation, increasing capacity of the system, and protecting the ecology of the region.

In June 1994, in the quest for solutions to the resource problems in the Bay-Delta, State and federal agencies signed an agreement to (1) coordinate their actions to meet water quality standards to protect the Bay-Delta estuary; (2) coordinate the operation of the State Water Project and the Central Valley Project more closely with recent environmental mandates; and (3) develop a process to establish a long-term Bay-Delta solution to address four categories of problems—ecosystem quality, water quality, water supply reliability, and levee system vulnerability. This agreement laid the foundation for the Principles of Agreement signed in December 1994 by the State and federal governments, detailing interim measures for both environmental protection and regulatory stability. This Accord led to the CALFED Bay-Delta Program, which began in May 1995, and the Record of Decision, which was signed on August 28, 2000.

The Program is designed to address the complex issues that surround the Bay-Delta and is a cooperative interagency effort involving 18 State and federal agencies with management or regulatory responsibilities for the Bay-Delta. It is an unprecedented effort to build a framework for managing California's most precious natural resource—water. The establishment of the CALFED Bay-Delta Program represents State and federal government in partnership, launching the largest, most comprehensive water management program in the world.

Delta Wetlands Proposal were generally well planned; however, additional analyses would be needed before initiating negotiation for acquisition of the associated property. In June 2002, the Bay-Delta Public Advisory Committee adopted the recommendations of the subcommittee to continue studies of the In-Delta Storage Project, and to support the Department's work plan to conclude all necessary technical studies by June 30, 2003.

The work plan objective is to provide technical and financial information to the CALFED agencies that will decide if the project can be implemented with an acceptable level of risk and whether it would provide water supply reliability and ecosystem restoration benefits at a reasonable cost. Another major focus is to resolve the issues of operational risk, water quality, and project design as identified during the planning stage of the study.

Los Vaqueros Reservoir Expansion. Contra Costa Water District owns and operates the 100,000 acre-feet Los Vaqueros Reservoir just northwest of the Sacramento-San Joaquin Delta. The Los Vaqueros enlargement would increase reservoir storage up to 400,000 acre-feet, for a potential storage capability of 500,000 acre-feet.

In 2002, a draft project concept report (pre-feasibility) was completed. The preliminary assessment in the report shows that an expanded Los Vaqueros Reservoir could provide improved water quality and supply reliability for Bay Area water agencies and increased system flexibility to support Delta environmental enhancement and fish restoration. In addition, water supplied to SBA by the project could also be credited to the EWA.

In late 2002, work was started on a planning report scheduled for completion in mid-2003. The report will continue to evaluate and

advance the description of project facilities, reservoir operations, project economics, financing and institutional arrangements, as well as potential project benefits, environmental effects, and approaches to mitigation.

Shasta Lake Enlargement. The Bureau, in coordination with the Department and other agencies, is conducting a feasibility study of expanding Shasta Dam and Reservoir primarily to promote increased survival of anadromous fish populations in the upper Sacramento River and to increase water supply reliability. An enlargement of Shasta Dam would inundate additional lands around the existing reservoir and affect a portion of the McCloud River. California Public Resources Code section 5093, the Wild and Scenic Rivers Act, prohibits the participation of any State agency, with the exception of the Department in technical and economic feasibility studies, in actions that could have an adverse effect on the free-flowing condition of the McCloud River, or on its wild trout fishery.

In 2002, the Department, the Bureau, local partners, and other federal agencies began studying project alternatives, water supply benefits, potential adverse effects, and mitigation strategies. These activities included reservoir area mapping, detailed topographic surveys to assess the impacts of existing facilities, initial hydrologic studies, and development of a plan formulation strategy that will address impacts of relocating transportation routes, recreational facilities, and communities.

North-of-the-Delta Offstream Storage. The Department and the Bureau are working in partnership with local and other State and federal agencies to further study north-of-the-Delta offstream storage opportunities. Storing water in offstream reservoirs during excess flow periods provides opportunities to increase water storage in an environmentally sensitive manner. The stored water could then be made available for beneficial uses, including enhancing water management flexibility, reducing water diversion on the Sacramento River during critical fish migration periods, increasing the reliability of supplies for a significant portion of the Sacramento Valley, and providing storage and operational benefits for other CALFED programs including Delta water quality and EWA.

The North-of-the-Delta Offstream Storage Investigation focuses on potential projects on the west side of the Sacramento Valley, including Sites Reservoir.

The Department and the Bureau published a scoping report in October 2002 summarizing the comments received during the scoping process held earlier in the year. Also, a number of draft feasibility reports were completed on Sites Reservoir and appurtenant structures, new roadways, and expansion of or new construction of conveyance facilities.

Additionally, the Department and the Bureau worked with a Flow Regime Technical Advisory Group to consider and evaluate potential NODOS flow regime effects, improvements, or benefits, and further the general understanding of the Upper Sacramento River flow regime and related ecosystem processes. A report documenting the findings of both completed and ongoing studies and describing the historical changes in its flow regime will be published in 2005.

Upper San Joaquin River Basin Storage. The Department and the Bureau, in coordination with other State and federal agencies, are evaluating increased storage in the upper San Joaquin River watershed. This additional storage could be added by expanding Millerton Lake, raising Friant Dam, or a similar storage program. Additional water would be available to help restore and improve habitat and water quality in the San Joaquin River. The storage would also be designed to use groundwater and water exchanges that could improve water quality to urban areas. Other benefits could include hydropower, flood control, and recreation.

The Department and the Bureau identified and considered 17 surface water storage options that could meet project objectives. An appraisal level engineering and environmental analysis of each was completed in 2002. An assessment of

Central Valley Project Improvement Act of 1992

The Central Valley Project Improvement Act (PL 102-575; 106 Stat. 4706) made protection, restoration, and enhancement of fish and wildlife a major purpose of CVP. Because it requires specific water supply actions, CVPIA directly affects the joint activities of the SWP and CVP. The act indirectly influences SWP operations by addressing several Delta environmental issues.

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 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, CVPIA requires the implementation of a program to ensure that by 2002, natural production of anadromous fish will be sustainable at population levels twice the average sustained from 1967 to 1991. CVPIA also requires the dedication and management of an additional 800,000 acre-feet of CVP yield for fish and wildlife needs.

CVPIA also specifies 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. The Bureau is responsible for establishing guidelines and procedures to implement CVPIA requirements. The Department works closely with the Bureau as these programs develop to manage any effects on SWP operations and minimize adverse impacts to threatened and endangered species.

groundwater storage opportunities is continuing. Public involvement is also a key element of the program. A series of stakeholder workshops were initiated in 2002 to encourage interested parties to participate in formulating and evaluatiing alternatives.

Conjunctive-Use Programs. The CALFED Storage Program component, like the Department's Conjunctive Water Management Program, emphasizes the importance of forming partnerships with local agencies and stakeholders to assist in planning and developing conjunctive water management projects. Six principles guide the implementation of this component:

- locally driven planning process
- local control of proposed projects
- voluntary implementation of projects
- priority for in-basin water needs
- compensation for out-of-basin transfers
- basin-wide planning and monitoring

Water Transfer Program

The Department actively participated in the formulation of CALFED's Water Transfer Program through the Bay-Delta Advisory Council Water Transfer Work Group and the Transfers Agency Group. The program proposed a framework of actions, policies, and processes to facilitate water transfers and further develop a statewide water transfer market. The program document describes the relationship of water transfers to other water management actions and programs, discusses existing laws and statutes, and identifies issues and problems related to transfers. It also makes recommendations to resolve these issues and suggests strategies to implement them.

As part of the Water Transfer Work Group, Department staff, along with other agencies, assisted SWRCB in the formulation and publication of *A Guide to Water Transfers* (July 1999 draft) in order to provide a resource for information.

Conveyance Program

The Conveyance Program consists of projects proposed in the north and south Delta. The North Delta Program is comprised of studies related to the Delta Cross-Channel, a potential through-Delta facility, and a project to improve flood management and the ecosystem along the Mokelumne River.

North Delta. Two north Delta conveyance facilities improvements are being evaluated. One is to improve operational procedures for the Delta Cross Channel to address fishery and water quality concerns, and the other is a screened Through-Delta facility on the Sacramento River. The Department is leading the Through-Delta facility studies in cooperation with other agencies.

With the North Delta Flood Control and Ecosystem Restoration Project, solutions to improve flood management and the ecosystem are being considered, including setback levees, detention basins, dredging, and levee degradation for floodplain expansion.

South Delta. Actions in the south Delta include the South Delta Improvement Program, implementing flood/ecosystem improvements in the lower San Joaquin River, and potential interties between the SWP and CVP.

SDIP is a key component of the CALFED Program. The purpose of SDIP is to

- improve the reliability of existing SWP facilities;
- ensure that water of adequate quantity and quality is available for diversion to the South Delta Water Agency's service area for beneficial use; and
- reduce the effects of SWP exports on both aquatic resources and direct losses of fish in the south Delta.

The proposed project is likely to consist of

- three flow-control structures to improve local water levels and circulation in south Delta channels;
- a fish-control structure to improve fish migration in the San Joaquin River;
- some dredging in West Canal to improve conveyance capacity to Clifton Court Forebay;
- extensive dredging in the south Delta to improve channel capacity for local agricultural users;
- modifications to existing agricultural diversion intakes; and
- planning to build a new intake to Clifton Court Forebay and increase the export limit to 10,300 cfs.

For more information on the south Delta, see Chapter 2, *Delta Resources*.

Environmental Water Account

EWA is a cooperatively managed program intended to provide protection to the fish of the Bay-Delta Estuary through environmentally beneficial changes and increased flexibility in the operations of the SWP and CVP, at no uncompensated water cost to the projects' water users. Responsibility for implementing EWA rests with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the Department of Fish and Game (management agencies), as well as with the Bureau and the Department (project agencies).

The management agencies are responsible for managing EWA assets and recommending SWP/CVP operational changes beneficial to the Bay-Delta ecosystem and/or the long-term survival of fish species, while the project agencies cooperate with the management agencies in administering EWA and implement operational changes proposed by the management agencies, as appropriate.

Under EWA, fish protection is achieved by periodic curtailment of project water delivery from the Bay-Delta to project water users south of the Delta and replacing it at a later date within the

same calendar year. This necessitates the acquisition of alternative sources of project water, called *EWA assets*, which are used to replace the project water supply. EWA assets consist of *variable assets*, which are acquired through changes in operations; *fixed assets*, which are acquired through purchases from willing water sellers; and *source shifting*, which involves deferral of scheduled delivery of water allocations by willing participants. EWA is considered operational for any year when these assets are in place and Endangered Species Act commitments are provided by the management agencies. 2001 was the initial operational year of EWA.

In 2001, the Department and the Bureau initiated work on a joint EIS/EIR document for EWA, which takes into consideration the environmental impacts associated with the long-term use of EWA on both SWP and CVP operations, and will allow for long-term EWA contracts with willing water sellers. The Notice of Determination was not yet signed as of December 31, 2002. Between 2001 and 2002, acquisition of assets for EWA's use was achieved through annual contracts with willing water sellers and source-shift participants. Throughout this period, environmental reviews were performed on a contract-by-contract basis to assess the impacts of EWA's acquisitions on the SWP. These reviews indicated that the SWP would not be adversely impacted as a result of EWA actions.

For more details on EWA deliveries, see Chapter 9, *Water Contracts and Deliveries*.

The information in this chapter was contributed by the State Water Project Analysis Office, the Division of Planning and Local Assistance, and the Bay-Delta Office.

Chapter 8
Water Supply



Spring snowmelt runoff

Significant Events in 2002

- Water year 2001-02 was classified as *dry* in both the Sacramento and San Joaquin Valleys for the second year in a row.
- All regions of the State except the San Francisco Bay were drier than average, with extremely dry conditions prevailing in Southern California. Statewide precipitation was 80 percent of average, with percentages decreasing from north to south. Several locations in the South Coastal Region had the driest rainfall season of record in over 100 years.
- After a wet fall, statewide precipitation was below average for 10 consecutive months from January through October 2002.
- Mountain snowpack peaked at 95 percent of average in late March, slightly earlier than normal.
- Spring snowmelt runoff ranged from 43 to 82 percent of average in mountain basins. Overall water year river runoff in California was about three-quarters of average.
- There were water shortages for those exporting water from the Sacramento-San Joaquin Delta and areas of Southern California dependent on local runoff. The State Water Project approved delivery of 70 percent of SWP contractors' Table A amounts in 2002, while the Central Valley Project deliveries ranged from 70 percent for San Joaquin agricultural contractors to 100 percent for water rights holders.
- Statewide reservoir storage on October 1 was unchanged since the previous fall, at 19.2 million acre-feet, or 13 percent below average.
- Flood stages were slightly exceeded at two points on the upper Sacramento River on January 3, causing up to 2 weeks of overflow at the Moulton, Colusa, Tisdale, and Fremont Weirs.

To meet contracted obligations to the State Water Project long-term water supply contractors, the Department of Water Resources monitors precipitation, calculates runoff, and operates storage facilities during each water year, from October 1 through September 30.

Water Year 2001-02

Precipitation and Snowpack

All regions of the State except the San Francisco Bay were drier than average, with extremely dry conditions prevailing in Southern California. Statewide precipitation was 80 percent of average, with percentages decreasing from north to south, a reversal of last year's pattern. Mountain snowpack peaked at about 95 percent of average in late March, slightly earlier than normal. The timing of the snow accumulation was unusual, with little gain during January and February after a productive fall.

Eastern tropical Pacific Ocean surface temperatures were near average in fall 2001, and long-range weather forecasts were mixed. By fall 2002, the sea surface temperatures warmed to moderately above normal.

After a slow start to the water year with half of average precipitation in October 2001, November and December were very wet. Northern Sierra precipitation accumulation rose above average in mid-November and reached 160 percent of average on January 1, 2002. Over a quarter of the water year's total precipitation fell in December, the most productive month of water year 2001-02. Snow accumulation in the northern Sierra rivaled the pace set in the very wet 1982-83 water year. This was the wettest start to the water year since 1997, and the snowpack on New Year's Day was 165 percent of average for the date.

In late December and early January warm storms brought higher snow levels. The result was more direct runoff, especially in the Sacramento Basin, and some limited melting of the snowpack at low elevations. For the second year in a row, January precipitation was well below average in the northern Sierra. Several dry weeks between storms at the beginning and end of the month caused precipitation to total only about half of average statewide. Cold temperatures lowered snow levels to the Sacramento Valley floor during the last week of January.

February was even drier, especially in the southern half of the State. Several inches of precipitation fell during storms centered in Northern California on February 7 and Central California on February 19, but the total was less than half of average, dropping season-to-date precipitation below average despite the wet fall. Little snow accumulated in February, ranging from less than an inch in the Kern Basin to nearly 5 inches in the upper Sacramento Basin. By March 1, the snowpack had dropped to near or below average in all regions.

March statewide precipitation totaled only about two-thirds of average but a series of cool storms kept the snowpack near average in the Sacramento River Region. The statewide snowpack peaked on March 25 at 95 percent of normal, before dropping to 90 percent of average on April 1, the date of the historical maximum accumulation. Sunny weather at the end of March initiated the snowmelt, especially at lower elevations.

Statewide precipitation was about half of average in April and below average in May. An unseasonably active, cool storm arrived in Northern and Central California on May 19, producing thunderstorms, hail, and tornadoes. The snowpack was depleted to 45 percent of average by May 15. Sunny weather and night temperatures above freezing caused 24-hour melt at all elevations during the hottest periods, and three-quarters of the snow sensor sites were bare by June 1. Snow melted from all sites by late June, earlier than normal, but several weeks later than last year.

The summer was dry. A massive high-pressure area triggered 49 record high temperatures in California from July 8 to July 11. The water year concluded in September with the ninth consecutive month of below average statewide precipitation.

The Northern Sierra Eight Station Precipitation Index finished with 46 inches for the water year (92 percent of average). The Feather River Basin was again among the driest mountain basins, receiving less than 80 percent of average precipitation during the water year. Figure 8-1 shows statewide precipitation by hydrologic region.

Runoff and Storage

Statewide river runoff totaled three-quarters of average in the 2001-02 water year, and was less than average in all months except December. Runoff in the Sacramento River and San Joaquin River Regions was 77 and 67 percent of average, respectively. Feather River unimpaired inflow to Lake Oroville was 3.1 million acre-feet (65 percent of average) for the water year. While conditions were wetter than last year in many parts of the State, there were water shortages in areas of Southern California dependent on local runoff.

The Sacramento River Index for water year 2001-02 was 14.6 million acre-feet (77 percent of average). The Sacramento Valley Water Year Hydrologic Classification (40-30-30 Index) was *dry*. San Joaquin River system unimpaired runoff from the Stanislaus, Tuolumne, Merced, and San Joaquin Rivers was 4.1 million acre-feet (67 percent of average). The San Joaquin Valley Water Year Hydrologic Classification (60-20-20 Index) was *dry*.

The water year began dry, with statewide runoff about half of average in October. This changed with the November storms. By late November, daily inflow to foothill reservoirs in the Sacramento Region rivaled the highest inflows of all the previous water year. These inflows peaked at twice this level around January 1. Season to date runoff totals rose to 125 percent of average by the end of December, and much of it was captured in reservoirs. Reservoir storage statewide increased by 2 million acre-feet to 21.2 million acre-feet on December 31. Lake Shasta reached the top of its conservation limit in January, but most major foothill reservoirs were below their maximum winter flood control limits by the end of January. Storm runoff receded slowly despite the abrupt cutoff in rainfall in early January, and Northern California runoff totaled only a little below average in January.

The highest water of the year occurred from January 3 to 5 when locally heavy rains caused a rise on the Sacramento River sufficient to cause overflows of 1.5 feet at Moulton Weir, 4.5 feet at Colusa Weir, 5 feet at Tisdale Weir, and 1 foot at Fremont Weir. Flood stage was reached at Ord Ferry and exceeded at Tehama Bridge on the Sacramento River on January 3.

Statewide runoff in February dropped to 55 percent of average as dry weather continued. Inflows to the Sacramento-San Joaquin Delta receded to less than half of historical average. At the end of March, the seasonal runoff since October was down to about 80 percent of average, which was still nearly double the flows for the same period in 2001. Statewide reservoir storage reached average in February, where it remained through April.

Low temperature records were set at dozens of locations throughout the State during the first 3 weeks of March. In contrast, the end of March and early April saw record high temperatures at several Central Valley locations. The high temperatures and sunny weather softened the snowpack and caused snowmelt runoff

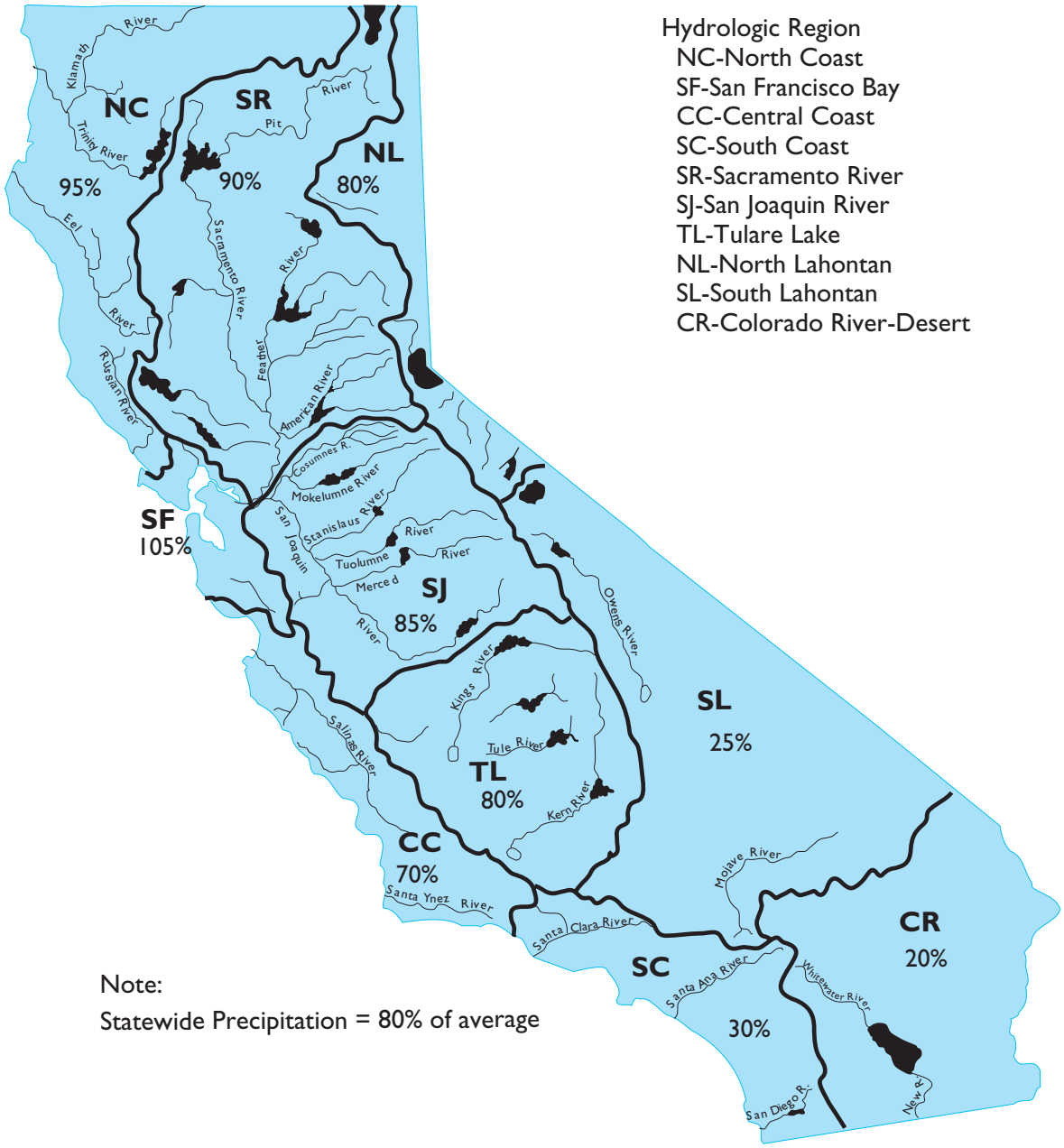


Figure 8-1. Statewide Precipitation by Hydrologic Region, 2001-02 Water Year, in Percentage of Average

to peak in some northern Sierra basins by mid-April. The snowmelt in the high Sierra peaked twice more, in middle and late May, interrupted by an unseasonably cool storm. San Joaquin Region runoff exceeded average in April, but was well below average for the remainder of the snowmelt season due to the early depletion of the snowpack. The flows in the Sacramento River Region were below average for the entire April-July period. Millerton Lake and Lake Kaweah filled to capacity by the end of May, but most other major reservoirs were not. Statewide storage peaked on June 1 at 75 percent of capacity.

With an early snowmelt and no significant summer rain, summer runoff was below half of average. The water year ended with statewide reservoir storage at 51 percent of capacity.

First Quarter Water Year 2002-03

Water year 2002-03 began very dry with statewide precipitation and runoff below average in October as reservoir storage dropped to 48 percent of capacity. October was the tenth consecutive month with below average statewide precipitation. The net water depletion in the Sacramento Valley was the most in 50 years of record, reflecting low stream flows and high consumption. Productive storms with strong westerly flow greatly improved the water supply outlook in November and December. These storms were good snow producers throughout the Sierra, building the early snowpack to about 165 percent of average on January 1, nearly the same as a year earlier. Statewide precipitation in November and December was about 1.8 times average. The South Coast Region was not as wet, but the storms were a welcome relief after the extremely dry preceding year. Central Valley runoff rose above average in December, and reached nearly 170 percent of average flow in the Sacramento River Region, much higher than in December 2001. Flood stage was reached at Tehama Bridge on the Upper Sacramento River in mid and late December, but receded quickly. Reservoir storage statewide rose to 21.5 million acre-feet (97 percent of average) on December 31, but remained below the maximum winter flood control limits for most major reservoirs.

SWP Storage

The SWP operates a complex system of 28 dams and reservoirs to collect and store water for future deliveries. Lake Oroville is the first of two primary SWP conservation facilities. Inflow into Lake Oroville comes from the Feather River.

San Luis Reservoir, in the central part of the State, is the second primary SWP conservation facility and derives its inflow from pumping at Gianelli Pumping-Generating Plant. San Luis is an off-stream reservoir, with most water in the reservoir pumped in from late fall to early spring, temporarily stored, and then later released back to the Aqueduct to meet water contractor peaking demands in the summer months. The remaining 26 dams and reservoirs regulate the stored water supply into water delivery patterns designed to fit local needs.

Water Year 2001-02 Storage Totals

Reservoir storage in the SWP at the end of the 2001-02 water year was 74 percent of average, compared to 79 percent of average at the end of water year 2000-01. Total 2001-02 storage in major SWP reservoirs was 2.47 million acre-feet on September 30, 2002, about 180,000 acre-feet less than storage at the same time in water year 2000-01 (2.65 million acre-feet). September 30 storage at Lake Oroville was 1.40 million acre-feet, about 90,000 acre-feet less than last year. The State's share of San Luis Reservoir storage was 400,558 acre-feet, compared to 516,007 acre-feet last year. The combined storage in southern reservoirs was 663,495 acre-feet on September 30, compared to 642,630 acre-feet at the end of the 2000-01 water year.

Calendar Year 2002 Storage Totals

Total storage in major SWP reservoirs was about 2.62 million acre-feet at the end of calendar year 2002, compared with 2.9 million acre-feet in 2001. The State's share of San Luis Reservoir storage was 319,803 acre-feet

on December 31, 2002, as compared to 675,992 acre-feet at the same time in 2001. The combined storage in the southern reservoirs was 679,101 acre-feet on December 31, 2002, compared to 634,595 acre-feet at the same time in 2001.

Lake Oroville

Lake Oroville, the keystone of the SWP, has a maximum capacity of 3,537,580 acre-feet. Runoff from the Feather River drainage is collected and stored in the reservoir for release to the Sacramento-San Joaquin Delta through Oroville Dam, Thermalito Diversion Dam, and Thermalito Afterbay.

Water Year 2001-02 Inflow. Lake Oroville inflow for the 2001-02 water year totaled about 2.62 million acre-feet—56 percent of average. Minimum storage occurred on September 30, 2002, at 1,299,905 acre-feet. Maximum storage occurred April 28, 2002, at 2,659,224 acre-feet—about 75 percent of capacity. See Figures 8-2 and 8-3 for monthly and cumulative inflow, respectively, into Lake Oroville.

Calendar Year 2002 Inflow. Total inflow into Lake Oroville during the 2002 calendar year was 2,848,475 acre-feet. Minimum storage occurred December 12, 2002, at 1,182,694 acre-feet—33 percent of its capacity. Lake Oroville storage at the end of 2002 was 1,624,337 acre-feet. Figure 8-4 compares end-of-month storage in Oroville Reservoir for the 2001 and 2002 calendar years.

San Luis Reservoir

The Department and the Bureau of Reclamation operate San Luis Reservoir jointly according to operating procedures adopted in June 1981. San Luis Reservoir has a normal operating capacity of 2,027,840 acre-feet. The SWP share of this capacity is 1,062,183 acre-feet.

Water Year 2001-02. At the beginning of the 2001-02 water year, San Luis Reservoir contained 832,317 acre-feet—41 percent of its capacity. The SWP share was 515,768 acre-feet.

Calendar Year 2002. By March 27, 2002, San Luis Reservoir reached its maximum storage for 2002 at 2,027,963 acre-feet—100 percent of normal maximum operating capacity. The highest end-of-month SWP share of storage was in March 2002 at 1,074,297 acre-feet (Figure 8-5).

Lake Del Valle: 2001-02 Water Year

Lake Del Valle, situated off the South Bay Aqueduct, functions primarily as a storage facility for later water delivery in Santa Clara and Alameda Counties. At the beginning of the 2001-02 water year, Lake Del Valle held 38,308 acre-feet—about 50 percent of its maximum capacity of 77,106 acre-feet. Its highest storage occurred June 4, 2002, with 39,928 acre-feet.

On September 30, 2002, storage in Lake Del Valle was 32,278 acre-feet—42 percent of maximum capacity. Water year releases to Arroyo Del Valle and South Bay Aqueduct from Lake Del Valle totaled 17,196 acre-feet.

Southern Reservoirs: 2001-02 Water Year

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

At the beginning of the water year, these reservoirs held 638,314 acre-feet—92 percent of combined normal maximum operating capacity of 701,321 acre-feet. At the end of the water year, they held 661,561 acre-feet—94 percent of combined normal maximum operating capacity.

Diversions from the Delta

The SWP diverts water from the Sacramento-San Joaquin Delta through Banks and Barker Slough Pumping Plants for delivery to contractors and SWP storage facilities. In 2002, the SWP diverted 2,792,269 acre-feet at Banks Pumping Plant, including a combined total of 207,748 acre-feet of Central Valley Project and

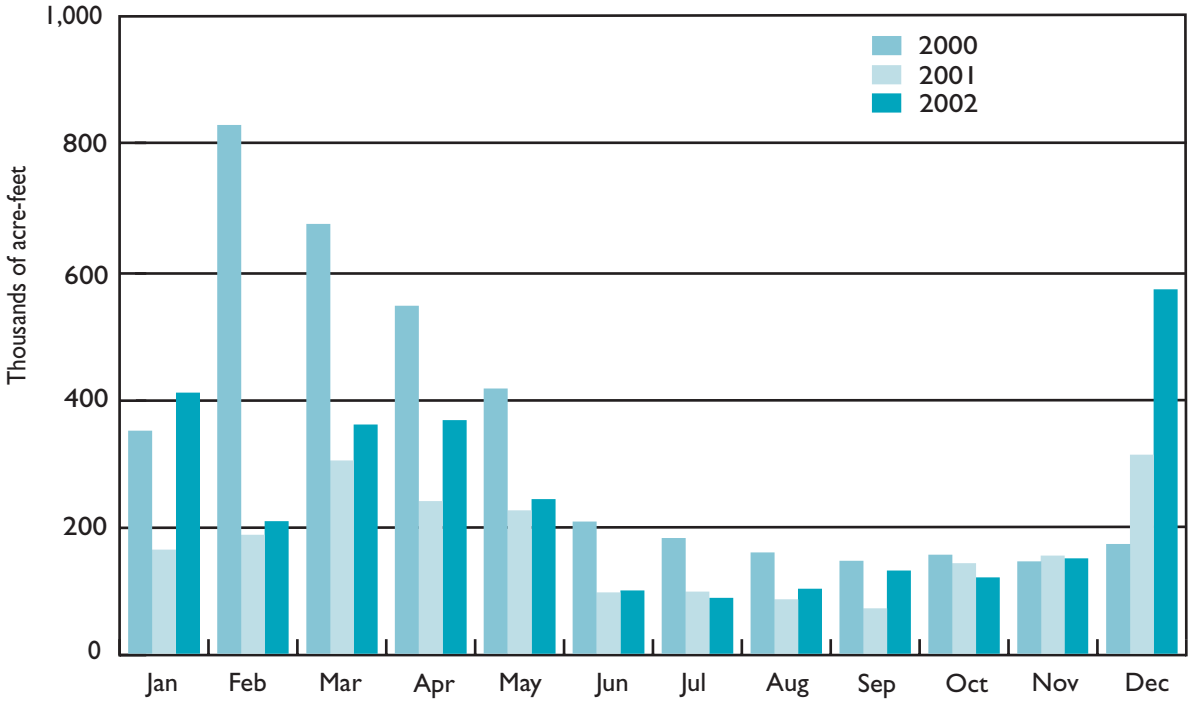


Figure 8-2. Monthly Inflow into Lake Oroville, 2000-02

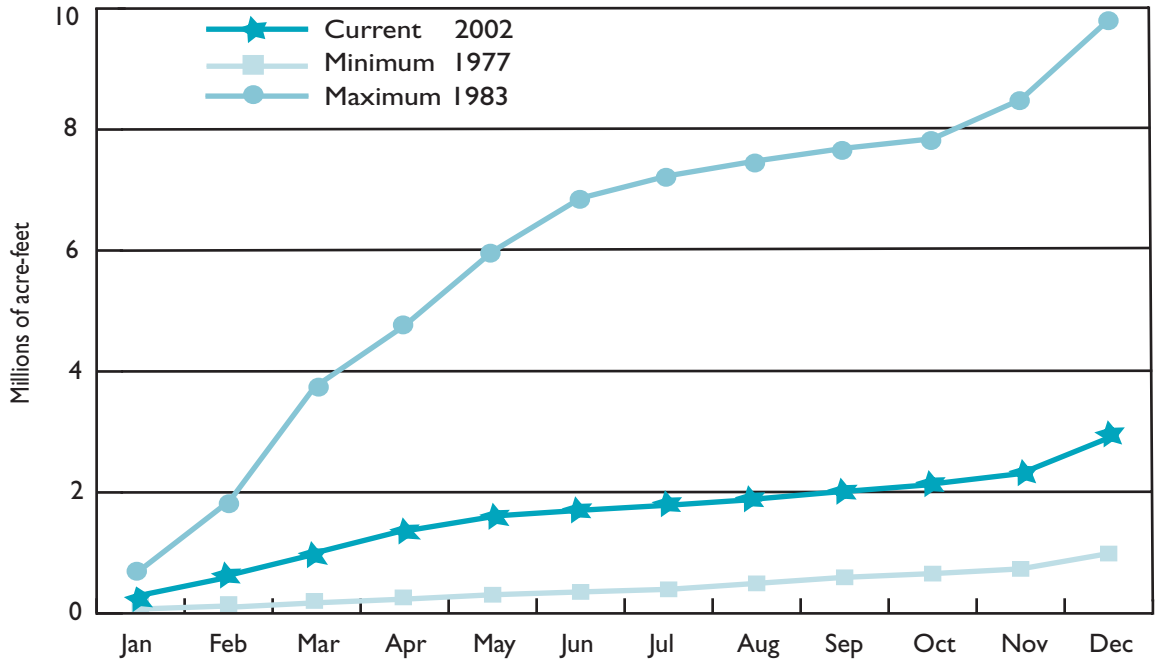


Figure 8-3. Cumulative Inflow into Lake Oroville

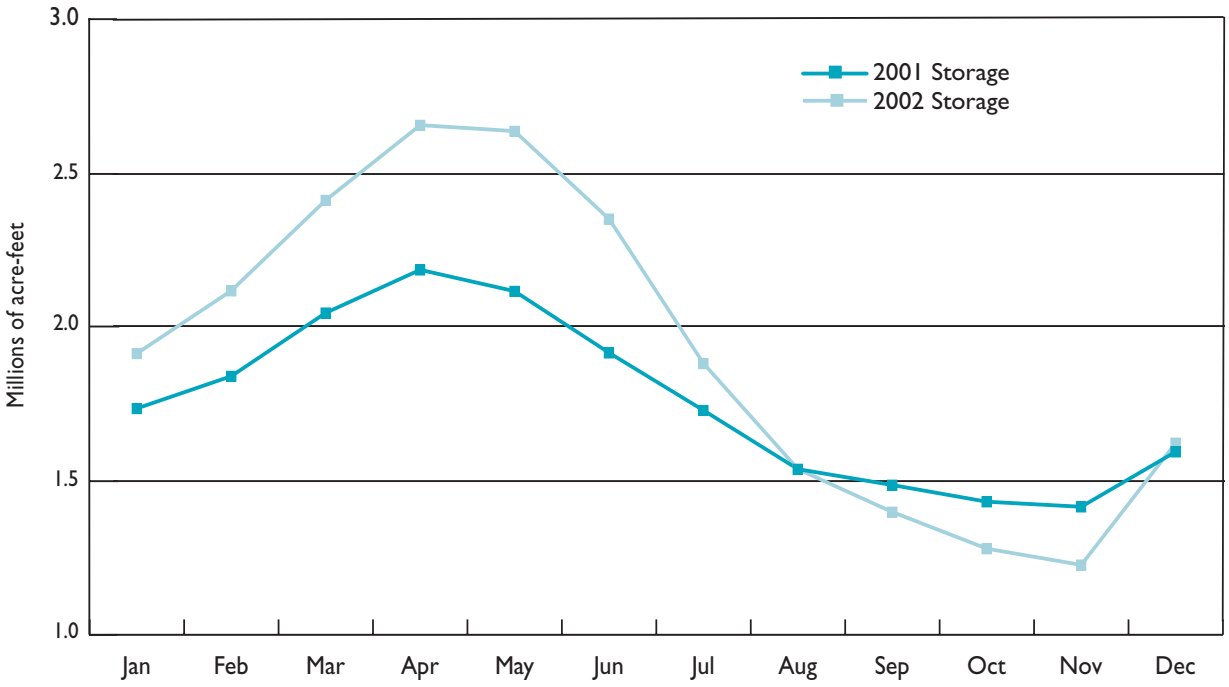


Figure 8-4. End-of-Month Storage in Lake Oroville, 2001 and 2002 Calendar Years

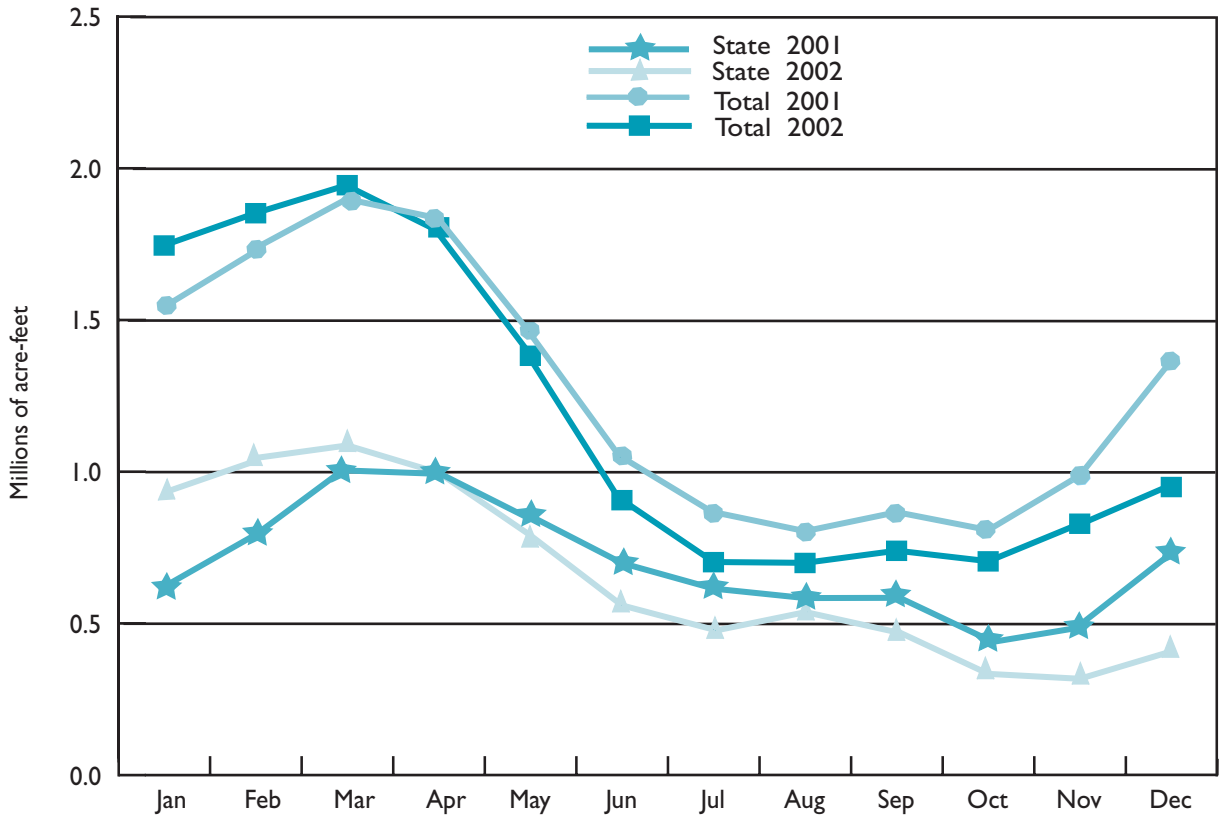


Figure 8-5. End-of-Month Storage in San Luis Reservoir

Cross Valley Canal water wheeled by the Department. Figure 8-6 shows the amounts of water pumped each month in 2002 at Banks Pumping Plant; Figure 8-7 shows the monthly amounts of water diverted from the Delta by the SWP and CVP in 2002. CVP diverts water to similar areas from the Delta through Tracy Pumping Plant and Contra Costa Pumping Plant. CVP diverted about 2,502,704 acre-feet at Tracy Pumping Plant and 120,937 acre-feet at Contra Costa Pumping Plant in 2002. Combined Delta exports include all of these plants.

From Banks Pumping Plant, water is delivered either to the South Bay area through the South Bay Aqueduct or to the San Joaquin Valley, Central Coastal, and Southern California areas through the California Aqueduct. From Barker Slough Pumping Plant, the SWP diverts water to the North Bay Aqueduct; a total of 45,931 acre-feet was diverted in 2002.

The Department pumped CVC water at Banks Pumping Plant from July 1 through October 14 during 2002 in compliance with the CVC conveyance agreements. The pumping rate varied from as low as 64 acre-feet per day to a high of 1,838 acre-feet per day. The amount pumped during this period was 51,894 acre-feet.

Daily Delta exports were highest at around 24,000 acre-feet per day during January, July, and August. Combined SWP and CVP monthly Delta exports in 2002 varied from a low of 102,908 acre-feet in May to a high of 692,174 acre-feet in August. Delta exports totaled about 5.46 million acre-feet for 2002.

In the San Joaquin Valley near Kettleman City, the Coastal Branch of the Aqueduct serves agricultural areas west of the California Aqueduct, including municipal and industrial water users in San Luis Obispo and Santa Barbara Counties. In 2002, water pumped through Dos Amigos Pumping Plant to the San Joaquin Valley was 3,731,722 acre-feet. Included in that amount are 50,638 acre-feet for CVC water delivered to Westlands Water District. Also included is the 992,239 acre-foot federal share of pumping at Dos Amigos. Figure 8-8 shows the total water pumped each month.

In 2002, water pumped through Edmonston Pumping Plant for delivery to Southern California totaled 1,718,888 acre-feet. Figure 8-9 shows the amount of water pumped each month.

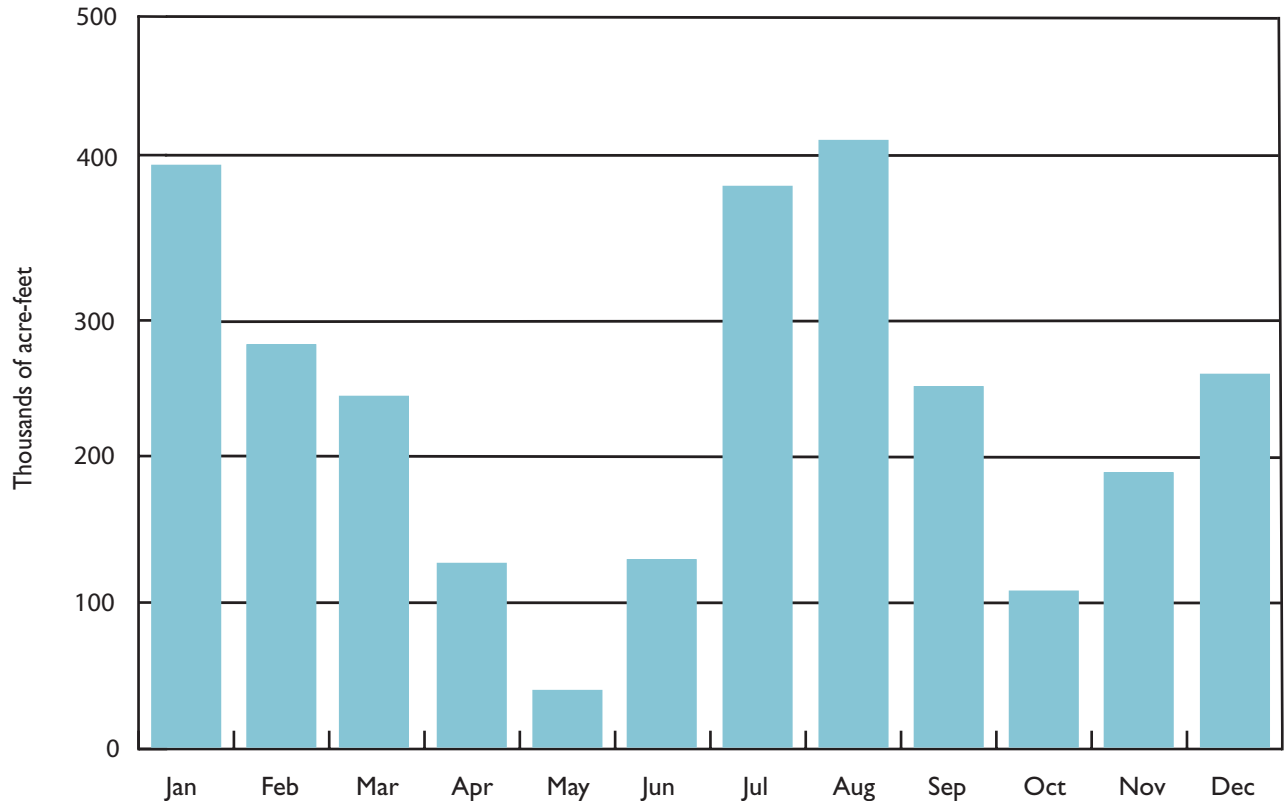


Figure 8-6. Water Pumped at Banks Pumping Plant in 2002, by Month

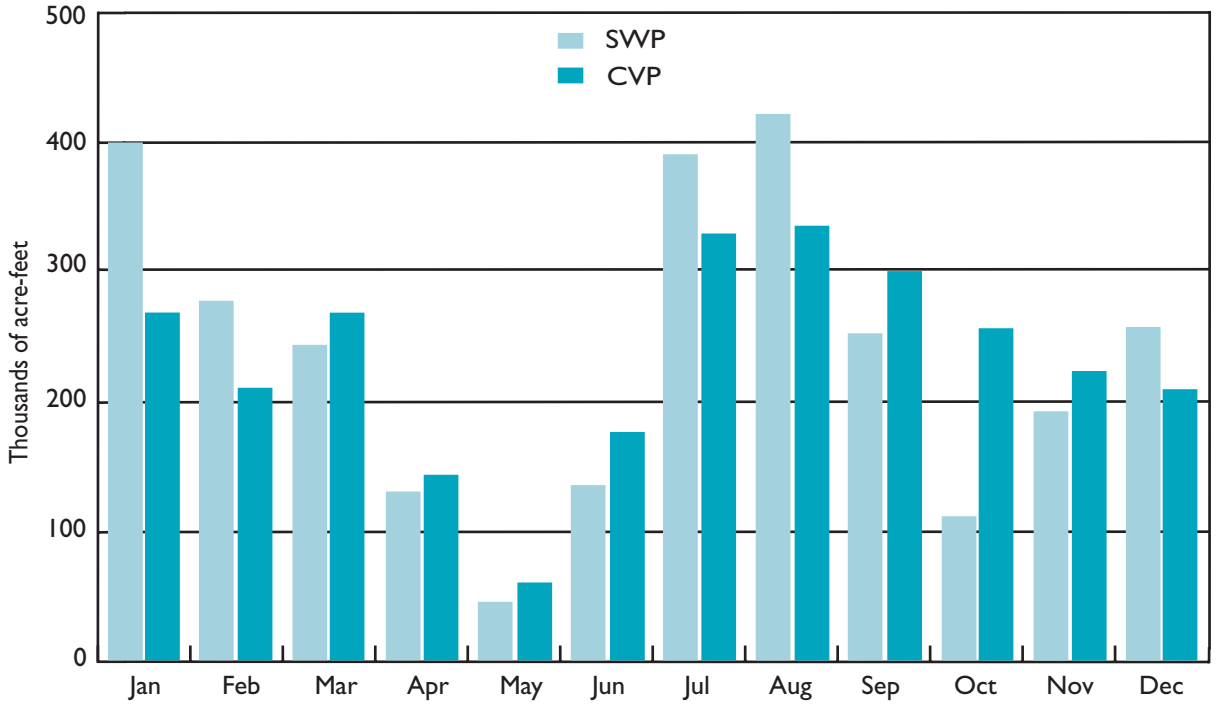


Figure 8-7. Sacramento-San Joaquin Delta Exports by State Water Project and Central Valley Project, 2002

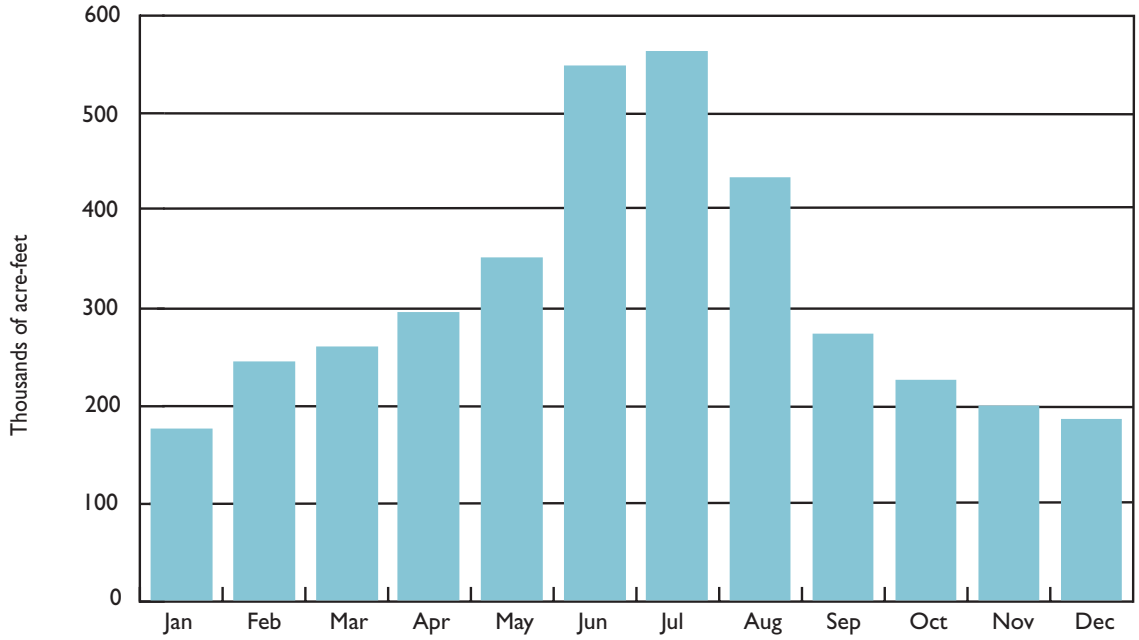


Figure 8-8. Water Pumped at Dos Amigos Pumping Plant in 2002, by Month

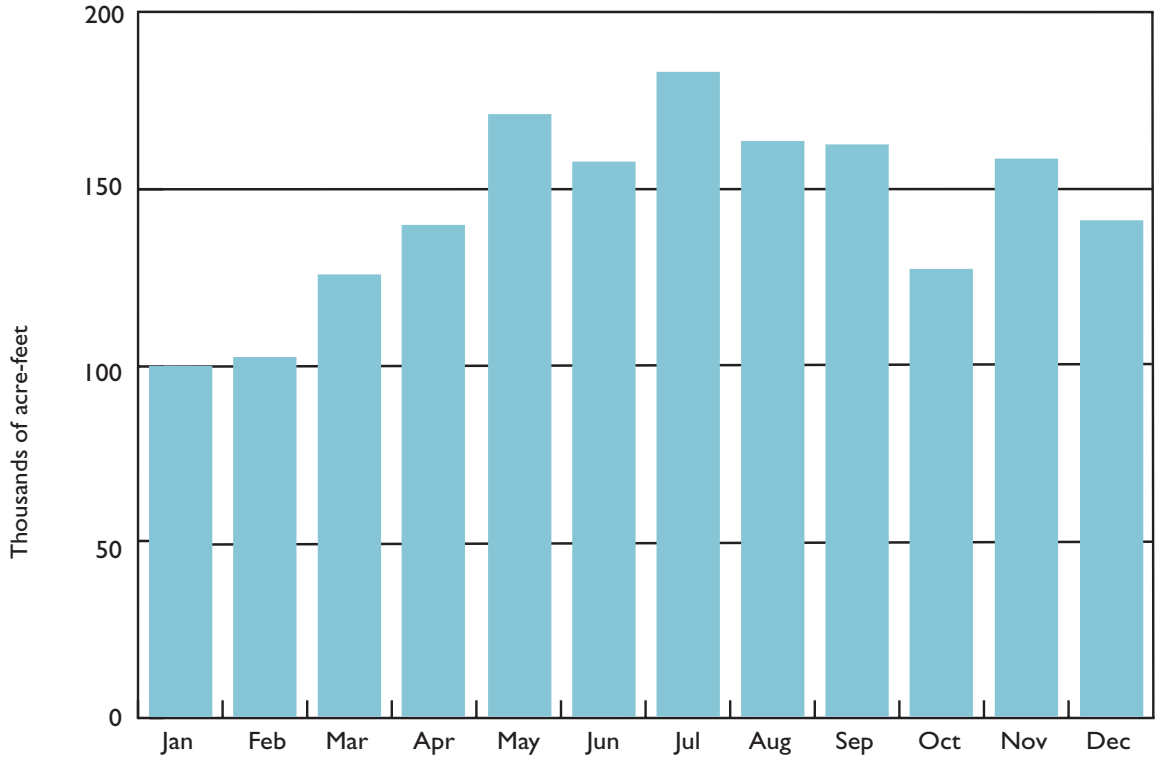


Figure 8-9. Water Pumped at Edmonston Pumping Plant in 2002, by Month

Information for this chapter was contributed by the Division of Flood Management, the Division of Operations and Maintenance, and the State Water Project Analysis Office.

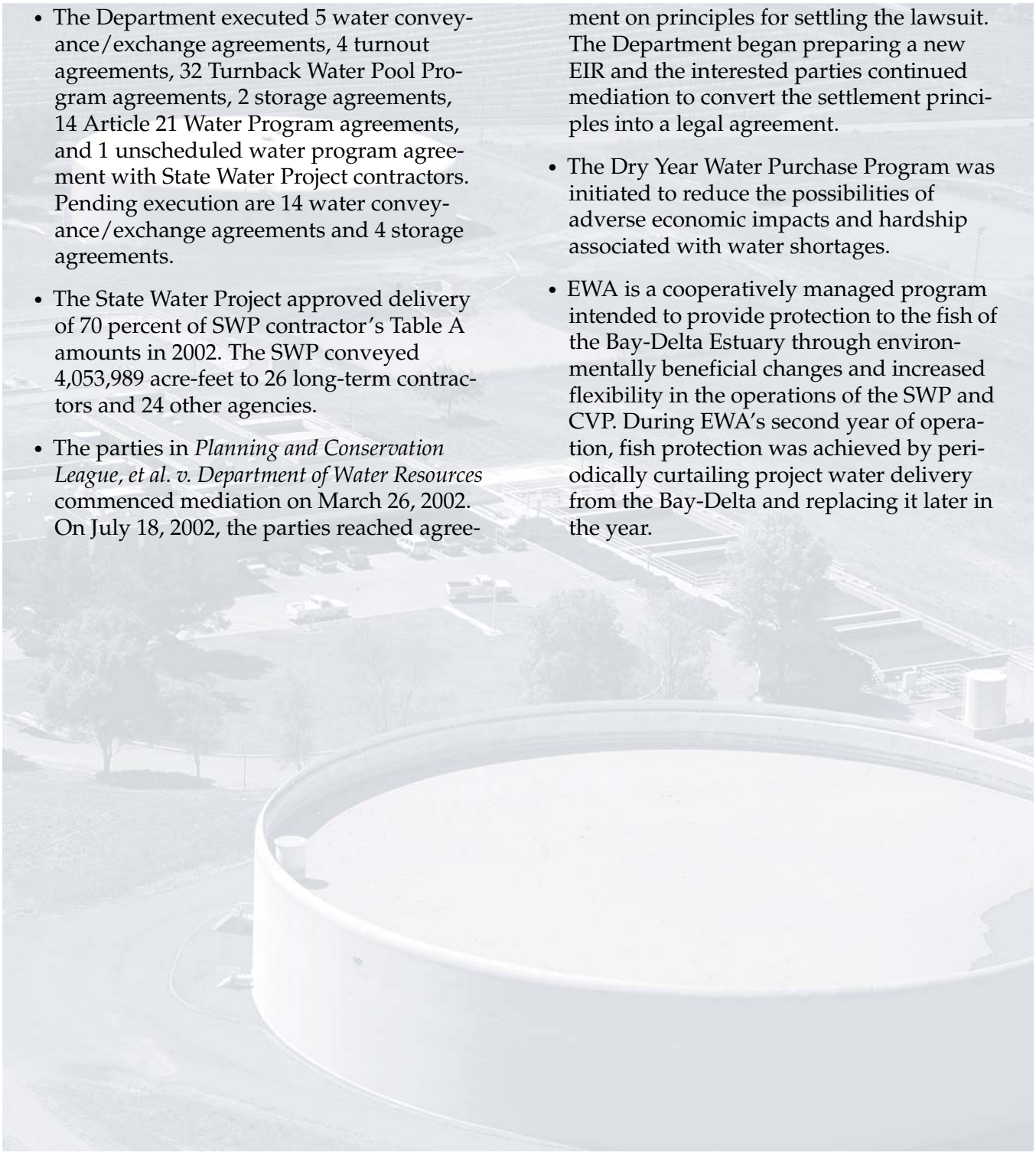
Chapter 9
Water Contracts and Deliveries



Napa Terminal Tank, end of the North Bay Aqueduct

Significant Events in 2002

- The Department executed 5 water conveyance/exchange agreements, 4 turnout agreements, 32 Turnback Water Pool Program agreements, 2 storage agreements, 14 Article 21 Water Program agreements, and 1 unscheduled water program agreement with State Water Project contractors. Pending execution are 14 water conveyance/exchange agreements and 4 storage agreements.
- The State Water Project approved delivery of 70 percent of SWP contractor's Table A amounts in 2002. The SWP conveyed 4,053,989 acre-feet to 26 long-term contractors and 24 other agencies.
- The parties in *Planning and Conservation League, et al. v. Department of Water Resources* commenced mediation on March 26, 2002. On July 18, 2002, the parties reached agreement on principles for settling the lawsuit. The Department began preparing a new EIR and the interested parties continued mediation to convert the settlement principles into a legal agreement.
- The Dry Year Water Purchase Program was initiated to reduce the possibilities of adverse economic impacts and hardship associated with water shortages.
- EWA is a cooperatively managed program intended to provide protection to the fish of the Bay-Delta Estuary through environmentally beneficial changes and increased flexibility in the operations of the SWP and CVP. During EWA's second year of operation, fish protection was achieved by periodically curtailing project water delivery from the Bay-Delta and replacing it later in the year.



The long-term water supply contracts for water service from the State Water Project between the Department and 29 local agencies are basic to the project's construction and operation. In return for State financing, constructing, operating, and maintaining facilities needed to provide water service, the agencies contractually agreed to repay all associated SWP capital and operating costs.

The Department delivers water to SWP contractors according to their long-term water supply contracts.

These contracts set forth Table A amounts, which determine how much water a contractor may request each year from the Department.

Annual Table A represents the total amount of project water that an SWP contractor may request each year, according to that contractor's long-term water supply contract.

Approved Table A represents the amount of annual Table A requested by the contractors and approved for delivery by the Department, based on hydrologic conditions, current reservoir storage, and total requests by the SWP water contractors. The Department is not always able to deliver the quantity of water requested by the

Long-Term SWP Water Supply Contracts

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 Metropolitan according to terms of the contracting principles for water service contracts announced by Governor Edmund G. Brown on January 20, 1960.

The Metropolitan contract became 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 Table A amount was transferred to Metropolitan through an amendment to the district's long-term contract with the Department. Long-term contracts with Hacienda Water District and Devil's Den Water District were also terminated when those districts transferred their Table A amounts, through contract amendments, to Tulare Lake Basin Water Storage District (1981) and Castaic Lake Water Agency (1992), respectively. Today the SWP has long-term water supply contracts with 29 agencies. Those contracts have been amended periodically to incorporate mutually desired modifications.

All water contracts signed in the 1960s included an estimate of the date water would first be delivered and a schedule of the amount of water the agency could expect to be delivered annually (annual Table A amounts). That amount was designed to increase gradually until the maximum amount of annual Table A was reached. The total combined maximum annual Table A amount for all water contracting agencies was initially 4,230,000 acre-feet, assuming full development of the SWP.

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. As a result of amendments to contracts in the 1990s, the current combined maximum annual Table A amount totals 4,172,786 acre-feet, and the contracts are in effect for the longest of the following periods: (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.

contractors; under certain conditions, a lesser amount, allocated according to the long-term water supply contracts and the process noted above, is made available for delivery.

Approved Table A amounts may also be referred to in this chapter as *approved amounts* or *approved water.*

The long-term water supply contracts are amended as needed. During 2002, no amendments were executed.

The Department also enters into miscellaneous agreements with SWP contractors and other agencies—which may be amended periodically—to convey SWP and non-SWP water through the California Aqueduct and approve the construction, operation, and maintenance of turnouts along SWP facilities. During 2002, the Department executed 6 water conveyance/exchange agreements (including one unscheduled water program agreement), 4 turnout agreements, 32 Turnback Water Pool Program agreements, 2 storage agreements, and 14 Article 21 Water Program agreements, with SWP contractors. During 2002, the Department delivered water pursuant to 6 agreements previously executed with the contractors. Pending execution are 14 water conveyance/exchange agreement and 4 storage agreements.

The State Water Project Analysis Office has developed a numbering system for contracts, amendments, and agreements executed by the Department. These numbers, designated as SWPAO #XXXXX, are located in parentheses after each contract, amendment, or agreement.

Detailed information about amendments and agreements follows.

Amendments to Long-Term SWP Water Supply Contracts

All the original contracts signed by the Department and local agencies have been previously amended to incorporate mutually desired changes. Most amendments fall under the following five general categories:

(1) revision of annual Table A amounts in the water supply contracts;
(2) allocation of costs and benefits for the enlargement or extension of the East Branch and extension of the Coastal Branch of the California Aqueduct;
(3) purchase of excess capacity in the California Aqueduct;
(4) provisions to allow contractors, under certain conditions, to carry over undelivered SWP approved Table A water from one year for delivery in the next year; and
(5) implementation of Monterey Agreement principles.

None of the long-term SWP Water Supply Contracts were amended during 2002.

Monterey Amendments

The Monterey Amendments increase the reliability of existing water supplies; provide stronger financial management for the SWP; and increase water management flexibility, providing more tools for local water agencies to maximize use of existing facilities.

Changes to SWP operations incorporated in the Monterey Amendments include changes in determination of approved Table A water, the transfer of Table A amounts and land, financial restructuring, and increased operational flexibility. The Monterey Amendments are discussed in detail in Chapter 1, *Summary of Significant Events*, of Bulletin 132-95.

No Monterey Amendments were executed during 2002. Plumas County Flood Control and Water Conservation District and Empire West Side Irrigation District remain the only long-term SWP contractors who have not signed the Monterey Amendment.

The Planning and Conservation League filed a lawsuit on December 27, 1995, challenging the California Environmental Quality Act

compliance for the Monterey Amendment. A Sacramento County Superior Court judge later dismissed the lawsuit. PCL appealed the decision and on September 15, 2000, the Third District Court of Appeal reversed the Superior Court ruling. On December 13, 2000, the California Supreme Court denied review. The parties commenced mediation on March 26, 2002, and proceedings in Superior Court were stayed pending completion of mediation. On July 18, 2002, the parties reached agreement on principles for settling the lawsuit. The Department began preparing a new EIR and the interested parties continued mediation to convert the settlement principles into a legal agreement. Additional information can be found in Chapter 6, *Legislation and Litigation*.

Miscellaneous Agreements with Long-Term SWP Contractors

2002 Water Conveyance/Exchange Agreements

During 2002, water conveyance/exchange agreements were executed or pending execution with long-term SWP contractors as described below.

Antelope Valley-East Kern Water Agency. A temporary diversion agreement, executed on June 25, 2002, and subsequently amended on August 5, 2002, (Amendment No. 1) and on December 23, 2002, (Amendment No. 2) between the Department and AVEK, provided for the delivery of AVEK's approved 2002 SWP water supplies to Reach 22B of the California Aqueduct. Amendment No. 3, pending execution, allows AVEK to be billed for a use-of-facility charge for Reach 22B. During 2002, a total of 497 acre-feet was delivered to AVEK at Reach 22B. (SWPAO #02034)

County of Kings. A long-term agreement, pending execution among the Department, County of Kings, Tulare Lake Basin Water Storage District, and Westlands Water District, will provide for a change in point of delivery of up to 200 acre-feet of Kings' annual approved Table A amounts and other SWP water supplies to Westlands' turnouts at Reaches 6 and 7 of the California Aqueduct. The water is conveyed to GWF Energy, LLP for use within Kings' service area. No water was delivered in 2002. (SWPAO #02031)

Dudley Ridge Water District. A long-term agreement, pending execution among the Department, Dudley Ridge Water District, and Tulare, will provide for a change in point of delivery of a portion of Dudley Ridge's annual approved SWP water and other water supplies to Tulare's turnout at Reach 8D of the California Aqueduct. Two long-term water supply contract amendments with Tulare (Amendment No. 26) and Dudley Ridge (Amendment No. 24), were executed in December 2001 for the permanent transfer of 3,973 acre-feet of Tulare's Table A amounts to Dudley Ridge to accommodate the needs of Sandridge Partners, who farms in both Tulare and Dudley Ridge. This is a subsequent agreement to provide delivery of water to Sandridge Partners in Dudley Ridge's service area through Tulare's turnout at Reach 8D. A total of 543 acre-feet was delivered to Tulare's turnout at Reach 8D during 2002. (SWPAO #02005)

Empire West Side Irrigation District. An agreement executed April 11, 2002, between the Department and Empire, approved the delivery of unscheduled water to Empire in 2002 at times when project water was not needed for fulfilling approved Table A deliveries or for meeting project operational commitments. A total of 26 acre-feet of unscheduled water was delivered to Empire in 2002. (SWPAO #02006)

Kern County Water Agency. A letter agreement dated September 27, 2002, and executed October 8, 2002, between the Department and Kern, approved the delivery of up to 20,000 acre-feet of 2001 Central Valley Project water from the Bureau of Reclamation on behalf of four CVP contractors. In exchange, Kern returned a like amount of its approved Table A amounts to the CVP contractors by December 31, 2001. The Department petitioned the State Water Resources Control Board in May 2001 for approval for delivery of the return

water. A total of 11,487 acre-feet was delivered to CVP contractors at O'Neill Forebay and 11,487 acre-feet of water was returned from O'Neill Forebay to Kern in 2001. (SWPAO #01010)

Kern County Water Agency. A letter agreement, pending execution between the Department and Kern, will provide for the delivery of up to 13,000 acre-feet of 2001 CVP water from two CVP contractors to Kern. In exchange, Kern would return a like amount of its 2002 approved Table A amounts to the CVP contractors by December 31, 2002. The Department petitioned SWRCB on June 21, 2002, and received approval on August 16, 2002, for a temporary change of place of use for delivery of the return water. A total of 7,400 acre-feet was delivered to Kern from O'Neill Forebay and a total of 7,400 acre-feet of water was returned to the CVP contractors at O'Neill Forebay in 2002. (SWPAO #02014)

Kern County Water Agency. A letter agreement, pending execution among the Department, Kern, and Dudley Ridge, will provide for the delivery of up to 6,400 acre-feet of Kern's 2002 approved Table A amounts to Dudley Ridge. The agreement facilitates the water transfer from Kern to Dudley Ridge on behalf of four landowners—C. J. Ritchie Farms, Sandridge Farms, C.R. Shannon, and the Ritchie Sandridge Partnership—who farm in both Kern and Dudley Ridge service areas. During 2002, a total of 6,133 acre-feet was delivered to Dudley Ridge. (SWPAO #02016)

Kern County Water Agency. A letter agreement, pending execution between the Department and Kern, will provide for the delivery of up to 53,300 acre-feet of CVP water to Kern. Kern acquired this water from CVP (Del Puerto Water District and San Luis Water District) and Cross Valley Canal contractors (Kern-Tulare Water District and Rag Gulch Water District) and requested delivery of the water pursuant to Article 55 of its long-term water supply contract. During 2002, a total of 45,443 acre-feet was delivered to Kern. (SWPAO #02024)

San Bernardino Valley Municipal Water District. San Bernardino Valley Municipal Water District and Metropolitan Water District of Southern California entered Attachment 2, *Coordinated Use Agreement for Conveyance Facilities and State Water Project Water Supplies* on May 14, 2001. The Department responded on February 27, 2002, concurring with the Agreement and acknowledging the coordinated use of local facilities currently existing within San Bernardino Valley's jurisdictional boundaries. This coordinated use involves delivery of San Bernardino Valley's SWP water to Metropolitan's facilities within San Bernardino's service area. This action is permitted under Article 10 of the long-term water supply contract. During 2002, a total of 35,000 acre-feet of San Bernardino Valley's approved Table A amounts was delivered to Metropolitan at Reaches 26A and 30. (SWPAO #02035)

Santa Barbara County Flood Control and Water Conservation District. A letter agreement dated September 13, 2002, and executed October 30, 2002, among the Department, Santa Barbara, and Dudley Ridge, approved the delivery of up to 745 acre-feet of Santa Barbara's 2002 SWP water to Dudley Ridge at Reach 8D. In exchange, Dudley Ridge will return a like amount of its future SWP water to Santa Barbara at Reaches 35, 37, and 38 by December 31, 2012. During 2002, a total of 745 acre-feet was delivered to Dudley Ridge at Reach 8D of the California Aqueduct. (SWPAO #02013)

Tulare Lake Basin Water Storage District. A letter agreement dated May 22, 2002, and executed June 3, 2002, between the Department and Tulare, approved the transfer of up to 5,000 acre-feet of Tulare's 2002 Table A amounts to Westlands at Reaches 5 and 7 of the California Aqueduct, on behalf of two landowners, Hansen Ranches and Newton Brothers, who farm in both the Tulare and Westlands (Vista Verde Farm and Venture Farms Trust) service areas. The Department petitioned SWRCB on May 21, 2002, and received approval on July 25, 2002, for a temporary change of place of use. During 2002, a total of 3,000 acre-feet was delivered to Westlands. (SWPAO #02011)

Tulare Lake Basin Water Storage District. A letter agreement, pending execution between the Department and Tulare, will provide for the delivery of up to 10,000 acre-feet of nonproject water to Tulare at Reaches 8C and 8D (SWPAO #02025). Lower Tule River Irrigation District requested this water be delivered to Tulare and, in exchange, will receive a like amount of Tulare's Tule River water. Tulare requested the water be delivered pursuant to Article 55 of its long-term water supply contract. The water was made available at Banks Pumping Plant. A subsequent Amendment (SWPAO #04022), pending execution between the Department and Tulare, will amend the delivered amounts up to 10,956 acre-feet of nonproject water. During 2002, a total of 10,956 acre-feet of nonproject water was delivered to Tulare. (SWPAO #02025/ #04022)

Water Conveyance/Exchange Agreements Prior to 2002

During 2002, water was delivered pursuant to agreements with SWP contractors executed prior to 2002, as described below.

Alameda County Flood Control and Water Conservation District-Zone 7. A conveyance agreement dated July 28, 1995, between Alameda-Zone 7 and the Department, provides for the transfer of up to 5,000 acre-feet of Byron-Bethany Irrigation District's local water annually to Alameda-Zone 7 through SWP facilities. An amendment to extend the agreement to December 31, 2001, was executed January 17, 2001. Byron-Bethany may only transfer water that has been made available by conservation and crop idling. In 2002, 2,000 acre-feet of Byron Bethany's local water was pumped at Banks Pumping Plant and delivered to Alameda-Zone 7's turnouts in the South Bay Aqueduct. (SWPAO #02325)

Kern County Water Agency. An agreement executed on June 8, 2000, among the Department, Kern, and Western Hills Water District, approved delivery of 8,000 acre-feet of pre-1914 Lower Kern River Rights water banked in Kern's share of the Pioneer Groundwater Banking Project. A portion of Kern's annual Table A amounts will be delivered annually to Western Hills from Reach 2A of the California Aqueduct; in exchange, Kern will take a like amount of banked local water from the Pioneer Groundwater Bank. The Department petitioned SWRCB and by SWRCB Order dated April 21, 2000, Western Hills' service area was included within the authorized SWP place of use. During 2002, a total of 773 acre-feet of Kern's Table A amounts was delivered to Western Hills at Reach 2A. (SWPAO #01001)

Mojave Water Agency. An agreement executed November 13, 1997, among AVEK, Mojave, and the Department approved a change in point of delivery through 2019 of up to 2,250 acre-feet annually of Mojave's approved Table A amount to AVEK's Fairmont Turnout in Reach 19 of the California Aqueduct. Mojave does not have conveyance facilities to provide service to a solar energy generating station located within its service area. AVEK has conveyance capability and has agreed to provide service. During 2002, the Department delivered 1,370 acre-feet of Mojave's 2002 approved Table A amounts through AVEK's turnout at Reach 19. (SWPAO #97003)

Tulare Lake Basin Water Storage District. A letter agreement, dated June 15, 2001, and executed July 26, 2001, between the Department and Tulare, approved the delivery of up to 50,000 acre-feet of nonproject water from Westlands to Tulare between December 2000 and April 15, 2001, in exchange for a like amount of Tulare's Table A amounts during 2001 through 2003. The delivery of SWP exchange water to Westlands will be from the Delta to Reach 7 of the California Aqueduct, for use within the Kings County portion of Westlands' service area. A combined total of 28,145 acre-feet was delivered to Tulare during 2000 and 2001. During 2001, 1,975 acre-feet were returned to Westlands. During 2002, a total of 12,067 acre-feet was delivered to Westlands, leaving a balance of 14,103 acre-feet to be returned to Westlands. (SWPAO #01009)

EWA 2:1 Exchange Agreements

During 2002, seven SWP contractors had agreements with the Department for the in lieu exchange of a portion of their 2002 Table A amounts for stored Environmental Water Account water. A portion of the EWA water subject to "spilling" in San Luis Reservoir was made available for exchange as of midnight March 29, 2002. For every two units of EWA water delivered to each contractor noted below, the contractor returned one unit of its 2002 approved Table A amounts to EWA by August 31, 2002. The following agreements include provisions concerning the exchanges.

Alameda County Flood Control and Water Conservation District, Zone 7. A letter agreement, pending execution between the Department and Alameda-Zone 7, will provide for an in lieu exchange of a portion of Alameda-Zone 7's 2002 approved Table A amounts for up to 2,000 acre-feet of stored EWA water. During 2002, a total of 803 acre-feet of EWA water was delivered to Semitropic in April in accordance with the *Alameda County Flood Control and Water Conservation District, Zone 7 and Semitropic Water Storage District Banking Program Agreement*, pursuant to a change in point of delivery agreement among the Department, Alameda-Zone 7, and Kern (SWPAO #02010), and a total of 402 acre-feet of Alameda-Zone 7's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02017)

Alameda County Water District. A letter agreement, pending execution between the Department and Alameda County, will provide for an in lieu exchange of a portion of Alameda County's 2002 approved Table A amounts for up to 2,000 acre-feet of stored EWA water. During 2002, a total of 571 acre-feet of EWA water was delivered to Alameda County in March and April, and a total of 286 acre-feet of Alameda County's 2002 Table A amount was returned to EWA in July and August. (SWPAO #02018)

Dudley Ridge Water District. A letter agreement, pending execution between the Department and Dudley Ridge, will provide for an in lieu exchange of a portion of Dudley Ridge's 2002 approved Table A amount for up to 4,000 acre-feet of stored EWA water. During 2002, the Department delivered a total of 2,140 acre-feet of EWA water to Dudley Ridge, of which 1,597 acre-feet were delivered to Dudley Ridge's turnout and 543 acre-feet were delivered to Tulare's turnout in March and April pursuant to a long-term change in point of delivery agreement among the Department, Dudley Ridge, and Tulare (SWPAO #02005). A total of 1,070 acre-feet of Dudley Ridge's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02020)

Kern County Water Agency. A letter agreement, pending execution between the Department and Kern, will provide for an in lieu exchange of a portion of Kern's 2002 approved Table A amounts for stored EWA water. During 2002, a total of 6,744 acre-feet of EWA water was delivered to Kern in March and April, and a total of 3,372 acre-feet of Kern's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02021)

Metropolitan Water District of Southern California. A letter agreement, pending execution between the Department and Metropolitan, will provide for an in lieu exchange of a portion of Metropolitan's 2002 approved Table A amounts for up to 57,000 acre-feet of stored EWA water. During 2002, a total of 27,630 acre-feet of EWA water was delivered to Metropolitan in March and April, and a total of 13,815 acre-feet of Metropolitan's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02022)

Santa Clara Valley Water District. A letter agreement, pending execution between the Department and Santa Clara, will provide for an in lieu exchange of a portion of Santa Clara's 2002 approved Table A amounts for up to 2,176 acre-feet of stored EWA water. During 2002, a total of 1,448 acre-feet of EWA water was delivered to Santa Clara in March and April, and a total of 724 acre-feet of Santa Clara's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02019)

Tulare Lake Basin Water Storage District. A letter agreement, pending execution between the Department and Tulare, will provide for an in lieu exchange of a portion of Tulare's 2002 approved Table A amounts for up to 800 acre-feet of stored EWA water. During 2002, a total of 675 acre-feet of EWA water was delivered to Tulare in March and April, and a total of 337 acre-feet of Tulare's 2002 Table A amounts was returned to EWA in July and August. (SWPAO #02023)

Turn-in Agreements

During 2002, a total of 36,799 acre-feet of Kern local water was introduced into the California Aqueduct and recovered by Kern through their existing turnouts. Negotiations continue on an agreement to cover Kern's pump-in recoveries.

Turnout Agreements

Alameda County Flood Control and Water Conservation District, Zone 7. An agreement dated January 23, 2002, between the Department and Alameda-Zone 7, allowed the construction, operation, and maintenance of the Corbett-Ising Turnout at Milepost 14.2, Reach 4 of the South Bay Aqueduct. The turnout has a design capacity of 6.7 cfs. Construction was essentially completed in 2002, but was not formally accepted in 2002.

Antelope Valley-East Kern Water Agency. An agreement dated March 28, 2000, between the Department and AVEK, allowed the construction, operation, and maintenance of the Rancho Vista Turnout at Milepost 339.68, Reach 20B of the California Aqueduct. The turnout has a design capacity of 5 cfs. Construction was completed in March 2000, but was not formally accepted in 2002.

Kern County Water Agency and Belridge Water Storage District. An agreement dated October 29, 2001, among the Department, Kern, and Belridge Water Storage District, allowed the modification, operation, and maintenance of the existing Belridge Turnout No. 1A at Milepost 209.71, Reach 10A of the California Aqueduct. The turnout has a design capacity of 100 cfs. Modification work was completed in 2002, but not formally accepted.

Kern County Water Agency and Western Hills Water District. An agreement dated June 8, 2000, among the Department, Kern, and Western Hills, allowed the construction, operation, and maintenance of the Western Hills Turnout at Milepost 42.90, Reach 2A, on the west side of the California Aqueduct. The turnout has a design capacity of 30 cfs. The turnout was formally accepted in October 2002.

Agreements and Activities Related to the Monterey Amendments

Turnback Water Pool Program. Under Article 56(d) of the Monterey Amendments, the seventh year of the Turnback Water Pool Program was initiated through Notice to State Water Project Contractors No. 02-04, dated February 8, 2002. All SWP contractors who signed Monterey Amendments were permitted to participate in the program. The program allowed SWP contractors to offer a portion of their approved 2002 Table A water for sale in a turnback pool for use by interested SWP contractors. Based on Table A supply and demand, the turnback water was allocated among the selling and purchasing contractors. In 2002, 45,252 acre-feet of water were purchased under the Turnback Water Pool Program.

Transactions for Pool A and Pool B of the Turnback Water Pool Program occurred in February and March 2002, respectively. Turnback water sold for $12.16 per acre-foot—50 percent of the Delta Water Rate—through Pool A, and for $6.08 per acre-foot—25 percent of the Delta Water Rate—through Pool B. All money collected through the Turnback Water Pool Program was paid to the selling contractors. The 2002 Turnback Water Pool Program closed April 1, 2002.

Table 9-1 lists contractors who participated in Pool A and Pool B of the Turnback Water Pool Program.

Table 9-1. 2002 Turnback Water Pool Program (Acre-feet)

Contractor	Sold	Purchased
	Pool A	
Mojave	19,110	
San Gorgonio	300	
Ventura	6,750	
Alameda-Zone 7		556
Alameda County		299
Santa Clara		713
Dudley Ridge		409
Kern		7,133
Tulare		795
Santa Barbara		324
AVEK		1,008
Coachella Valley		165
Desert		271
Metropolitan		14,335
Palmdale		152
Total	*26,160*	*26,160*
	Pool B	
Butte	900	
Yuba	3,261	
San Luis Obispo	100	
Mojave	11,379	
San Gorgonio	1,200	
Ventura	2,252	
Napa		283
Alameda County		563
Santa Clara		1,340
Oak Flat		76
Kings		54
Dudley Ridge		768
Kern		13,410
Tulare		1,494
Coachella Valley		309
Desert		510
Palmdale		285
Total	*19,092*	*19,092*

Storage of Water Outside Service Area. Pursuant to Article 56 of the Monterey Amendments, five SWP contractors have agreements with the Department to deliver and store SWP water outside their service area for later use within their service area. The following agreements include provisions concerning the points of delivery and method for transporting such water.

Alameda County Flood Control and Water Conservation District, Zone 7. A change in point of delivery agreement pending execution, among the Department, Alameda-Zone 7, and Kern, will provide for the delivery of Alameda-Zone 7's approved 2001 carryover water and a portion of Alameda-Zone 7's approved 2002 SWP water supplies for storage in and later recovery from Semitropic, in accordance with the *Alameda County Flood Control and Water Conservation District, Zone 7 and Semitropic Water Storage District Banking Program Agreement*. Alameda-Zone 7 signed similar delivery agreements annually since 1998. All return water is to be delivered to Alameda-Zone 7 by December 31, 2012. During 2002, the Department delivered a total of 14,287 acre-feet of Alameda-Zone 7's approved SWP water to Reach 10A for storage in Semitropic, of which 4,000 acre-feet were 2002 Table A amounts, 8,000 acre-feet were 2001 extended carryover water, 1,484 acre-feet were Article 21 water, and 803 acre-feet were EWA exchange water. (SWPAO #02010)

Alameda County Water District. A change in point of delivery agreement, pending execution among the Department, Alameda County, and Kern, will provide for the delivery of a portion of Alameda County's approved 2002 SWP water supplies for storage and later recovery from Semitropic, in accordance with the Alameda County and Semitropic Banking Program Agreement. Alameda County has signed similar delivery agreements annually since 1996. All return water is to be delivered to Alameda County by December 31, 2012. During 2002, the Department delivered a total of 2,000 acre-feet of Alameda County's 2002 Table A amounts and 83 acre-feet of Article 21 water to Reach 10A for storage in Semitropic. (SWPAO #02009)

Castaic Lake Water Agency. A change in point of delivery agreement executed on December 19, 2002, among the Department, Castaic Lake, and Kern, approved the delivery of up to 24,000 acre-feet of Castaic Lake's 2002 approved Table A amounts for storage in and later recovery from Semitropic, in accordance with the *Castaic Lake and Semitropic Banking Program Agreement.* All return water is to be delivered to Castaic Lake by December 31, 2012. During

2002, the Department delivered 24,000 acre-feet of Castaic Lake's 2002 approved Table A amounts to Reach 10A for storage in Semitropic. (SWPAO #02015)

Dudley Ridge Water District. A change in point of delivery agreement executed on September 13, 2002, among the Department, Dudley Ridge, and Kern, approved the delivery of Dudley Ridge's 2001 carryover water, 2002 Article 21 water, and a portion of Dudley Ridge's 2002 SWP water supplies for storage in and later recovery from KWB. Dudley Ridge has signed similar delivery agreements annually since 1996. All return water is to be delivered to Dudley Ridge by December 31, 2012. During 2002, the Department delivered 140 acre-feet of Dudley Ridge's 2001 carryover water and 596 acre-feet of Article 21 water for storage in KWB. (SWPAO #02007)

Dudley Ridge Water District. A change in point of delivery agreement pending execution, among the Department, Dudley Ridge, and San Gabriel Valley Municipal Water District, will provide for the delivery of up to 1,800 acre-feet of Dudley Ridge's 2002 Table A amounts for storage in and later recovery from groundwater basins within San Gabriel. All return water is to be delivered to Dudley Ridge by December 31, 2012. During 2002, the Department delivered 1,800 acre-feet of Dudley Ridge's 2002 approved Table A amounts to Reach 26A for storage in San Gabriel Valley. (SWPAO #02032)

Dudley Ridge Water District. A letter agreement, executed November 19, 1996, among the Department, Dudley Ridge, and Kern, approved the delivery of up to 5,000 acre-feet of Dudley Ridge's 1996 Article 21 water and up to 1,000 acre-feet of Dudley Ridge's Table A amounts to KWB for storage and later recovery. The transfer was part of an exchange with Kern that allowed three landowners in Dudley Ridge to receive a like amount of water from Kern in future years when they could utilize the water more beneficially. The water is to be returned to Dudley Ridge by December 31, 2006. During 1996, a total of 4,131 acre-feet was delivered to Kern. According to the *Memorandum of Understanding Regarding Operation and Monitoring of Kern Water Bank Groundwater Banking Program*, executed on October 26, 1995, among Kern Water Bank participants, 94 percent of the water stored (3,883 acre-feet with 6 percent loss) will be returned to Dudley Ridge. During 2001, a total of 3,215 acre-feet was recovered and delivered to Dudley Ridge at Reach 8D. During 2002, a total of 668 acre-feet was recovered and delivered to Dudley Ridge at Reach 8D, completing this agreement. (SWPAO #96019)

Dudley Ridge Water District. A letter agreement, executed November 10, 1997, among the Department, Dudley Ridge, and Kern, approved the delivery of up to 5,000 acre-feet of Dudley Ridge's 1997 Article 21 water and up to 2,000 acre-feet of Dudley Ridge's Table A amounts to KWB for storage and later recovery. A like amount of water is to be returned to Dudley Ridge by December 31, 2007. During 1997, a total of 5,342 acre-feet was delivered to Kern. During 2002, a total of 721 acre-feet was recovered and delivered to Dudley Ridge at Reach 8D. (SWPAO #97021)

Santa Clara Valley Water District. A change in point of delivery agreement pending execution, among the Department, Santa Clara, and Kern, will provide for the delivery of a portion of Santa Clara's approved 2002 SWP water supplies for storage in and later recovery from Semitropic, in accordance with the *Santa Clara and Semitropic Banking Program Agreement.* Santa Clara has signed similar delivery agreements annually since 1996. All return water is to be delivered to Santa Clara by December 31, 2012. During 2002, the Department delivered 3,311 acre-feet of Santa Clara's 2001 carryover water to Semitropic. (SWPAO #02008)

Article 21 Water Program

Pursuant to Article 21 of the Monterey Amendments, Article 21 water replaces surplus, wet weather, and Article 12(d) water. The Article 21 water program allows a contractor to take delivery of water over the approved and scheduled Table A amounts for the current year. Article 21 water is available for delivery on a

short-term basis as determined by the Department when water is still available after operational requirements for project water deliveries, water quality, and other requirements are being met.

The conditions for the Article 21 Water Program for 2002 were described in the January 30, 2002, Notice to State Water Project Contractors No. 02-02. Fourteen participants signed the notice, which indicated acceptance of the criteria, procedures, and charges for the program, and collectively received a total of 37,139 acre-feet of Article 21 water.

Since Empire has not signed the Monterey Amendment, it may still receive unscheduled water for agricultural purposes. Empire received 26 acre-feet of unscheduled water in 2002.

Flexible Storage Program

Pursuant to Article 54 of the Monterey Amendments, the Flexible Storage Program provides SWP contractors participating in the repayment of the capital costs of Castaic Lake and Lake Perris the option to withdraw water in excess of approved deliveries. The objective of this program is to provide additional flexibility and water management benefits to local participating agencies.

Available "flexible storage" is approximately 50 percent of active storage, providing for 160,000 acre-feet at Castaic Lake and 65,000 acre-feet at Lake Perris. Participating contractors of the Castaic Lake program include Metropolitan, Ventura, and Castaic Lake. Each can withdraw a maximum amount of 153,940 acre-feet, 1,377 acre-feet, and 4,683 acre-feet, respectively. At Lake Perris, Metropolitan can withdraw a maximum amount of 65,000 acre-feet. Any participating contractor is given 5 years to replace the water with Table A amounts, purchased water, exchange water, or local water.

Two SWP contractors participated in the Flexible Storage Program in 2001. Metropolitan had a negative balance of 10,692 acre-feet in Lake Perris at the end of 2001 and replaced 10,692 acre-feet in 2002, resulting in a zero water balance at the end of 2002. Metropolitan had a negative balance of 64,300 acre-feet in Castaic Lake at the end of 2001 and replaced 64,300 acre-feet in 2002, resulting in a zero water balance at the end of 2002. Castaic Lake Water Agency withdrew 395 acre-feet from Castaic Lake in 2002, leaving a negative balance of 395 acre-feet at the end of 2002.

Extended Carryover Program

Pursuant to Article 56 of the Monterey Amendments, contractors can elect to store project water outside of their service area for later use within their service area. Qualified contractors can request carryover Table A amounts for delivery in the following year to the extent that such deliveries do not adversely affect current or future project operations. Factors that influence how much extended carryover water can be delivered include operational constraints of project facilities, filling of SWP conservation storage facilities, flood control releases, and water quality restrictions. If storage requests exceed the available storage capacity, the amount available is allocated among the contractors requesting storage in proportion to their annual Table A amounts for that year. Four SWP contractors took delivery of 125,476 acre-feet of 2001 approved Table A amounts carried over into 2002 as extended carryover. One SWP contractor had 8,000 acre-feet of its extended carryover delivered to storage outside its service area.

2001 Carryover Program

To help contractors prepare for potentially limited water supplies in 2002, the Department provided a 2001 Carryover Program on January 2, 2002. Under this program, long-term SWP contractors were allowed to carry over a portion of their undelivered 2001 approved Table A amounts for storage in San Luis Reservoir during the first 3 months of 2002. This program is separate from other carryover programs afforded by Articles 12(e), 14(b), and 56 of the

long-term water supply contracts. Eleven SWP contractors took a total delivery of 34,695 acre-feet of 2001 approved Table A amounts carried over into 2002. Two SWP contractors had a combined total of 3,451 acre-feet of their carryover water delivered to storage outside their service areas.

Dry Year Water Purchase Program

In 2002, significant areas of California experienced water deficiencies. To reduce the possibility of adverse economic impacts and hardship associated with water shortages, the Department initiated the Dry Year Water Purchase Program. Four SWP contractors participated in the program by signing a Memorandum of Understanding with the Department. The participating agencies requested 22,050 acre-feet of dry year water. The Department obtained the water from Yuba County Water Agency, who made the water available through groundwater substitution and reservoir releases.

The four SWP contractors that participated in the dry year program and the amount of water they purchased are as follows:

- Kern—1,875 acre-feet
- Dudley Ridge—6,675 acre-feet
- Palmdale Water District—12,500 acre-feet
- Oak Flat—1,000 acre-feet

The participating agencies also entered into conveyance agreements with the Department to convey the dry year water across the Delta and through SWP facilities. Actual dry year water received by these agencies was less than the amount purchased at the source due to deductions for Delta carriage water losses (20 percent) and conveyance losses (2-3 percent). The total amount of dry year water delivered to the participating agencies was 17,119 acre-feet after deducting those losses.

Environmental Water Account

EWA is a cooperatively managed program intended to provide protection to the fish of the Bay-Delta Estuary through environmentally beneficial changes and increased flexibility in the operations of the SWP and CVP, at no uncompensated water cost to the projects' water users. Responsibility for implementing EWA rests with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the Department of Fish and Game (management agencies), as well as with the Bureau of Reclamation and the Department (project agencies).

Under EWA, fish protection is achieved by periodically curtailing project water delivery from the Bay-Delta to project water users south of the Delta and replacing it at a later date within the same calendar year. This necessitates the acquisition of alternative sources of water, called *EWA assets*, which are used to replace the water supply lost during project curtailments. EWA assets consist of *variable assets*, which are acquired through changes in operations; *purchase assets*, which are acquired through purchases from willing water sellers; and *source shifting*, which involves deferral of scheduled delivery of water allocations by willing participants. EWA is considered operational for any year when these assets are in place and Endangered Species Act commitments are provided by the management agencies.

EWA's second operational year was 2002. The first fish actions occurred in January and continued throughout the year. Management agencies required 280,353 acre-feet of curtailments at Banks and Tracy Pumping Plants in the Delta for fish protection. All purchase asset acquisitions in 2002 were made by the Department and the Bureau as single-year transactions and studies were carried out to ensure that the transactions complied with CEQA.

In 2002, 38,147 acre-feet of EWA's purchased water were converted to project water, since San Luis Reservoir was filled to capacity. To minimize spillage of EWA water from San Luis Reservoir, the Department implemented a *2 for 1 exchange* with the State Water Contractors. A total of 40,012 acre-feet of water was transferred to the contractors in return for 20,006 acre-feet of water transferred back by the contractors in July

and August. Thus, a total of 20,006 acre-feet of water was saved for use later in the year. Twenty thousand acre-feet of purchased water were backed into Oroville Reservoir in anticipation of San Luis Reservoir filling and to reduce possible spillage of EWA assets.

The Department was able to compensate the SWP and CVP for pumping reductions by acquiring 75,952 acre-feet in variable assets and 206,158 acre-feet of purchase assets through contract agreements. A source shift was not implemented because there was not a risk of low-point problems at San Luis Reservoir. The initial year of EWA operation ended with 83,710 acre-feet of water for use during 2002. The second year of EWA operation ended with 23,357 acre-feet of water for use during 2003.

The following SWP contractors and non-SWP contractors participated in the EWA Program.

Purchase Assets

The purchase asset water amounts below represent the total amounts of water acquired for EWA from various sources. These amounts have not been adjusted to reflect conveyance losses. Table 9-3 provides the actual amounts of water delivered.

Kern County Water Agency. An agreement executed on June 28, 2002, between the Department, the Bureau, and Kern approved the purchase of up to 97,400 acre-feet of water stored in KWB through the exchange of approved Table A water for support of EWA under the CALFED Program. A total of 60,624 acre-feet of Kern's water was purchased. (SWPAO #02700)

Yuba County Water Agency. An agreement executed on February 1, 2002, between the Department and Yuba approved the transfer of up to 185,000 acre-feet of water from storage in New Bullards Bar Reservoir and groundwater substitution for support of EWA under the CALFED Program. A total of 135,000 acre-feet of Yuba's water was transferred. (SWPAO #02701)

The Sacramento Groundwater Authority. An agreement executed on June 7, 2002, between the Bureau and the Sacramento Groundwater Authority approved the transfer of up to 10,000 acre-feet of surface water for support of EWA under the CALFED Program. A total of 8,143 acre-feet of Sacramento Groundwater Authority's water was transferred, of which 7,143 acre-feet was used for instream flow purposes and the remaining 1,000 acre-feet was used as an EWA Purchase Asset. (SWPAO #02702)

Variable Assets

Relaxation of the Export/Import Ratio. The Department has the opportunity to gain water credits if the EWA managing agencies decide that the E/I ratio can be relaxed, thus allowing the SWP to pump any extra water that the fisheries do not need. A total of 75,952 acre-feet of water was credited to EWA. (SWPAO #02730)

2 for 1 Exchange. In March and April, San Luis Reservoir was at capacity and EWA was at risk of spilling assets. To minimize spillage, EWA transferred 40,012 acre-feet of water in San Luis Reservoir to the SWP contractors in return for 20,006 acre-feet of water in July and August. (See Table 9-2, EWA 2:1 Exchange.) Detailed information on the 2 for 1 exchange agreements, and the actual transfer operations, are provided in the *EWA 2:1 Exchange Agreements* section earlier in this chapter.

Table 9-2. EWA 2:1 Exchange (Acre-feet)

Contractor	Transferred	Returned
Alameda-Zone 7	803	402
Alameda County	571	286
Dudley Ridge	2,141	1,070
Kern	6,744	3,372
Metropolitan	27,630	13,815
Santa Clara	1,448	724
Tulare	675	337
Total	**40,012**	**20,006**

For additional information on EWA, see Chapter 7, *Water Supply Development and Reliability.*

Miscellaneous Agreements with Other Agencies

In addition to negotiating agreements with SWP contractors to provide for specified water deliveries, the Department also entered into several agreements with other agencies for water conveyance, or exchange, between January 1, 2002, and December 31, 2002.

Water Conveyance Agreements–CVP Water

The Department regularly enters into agreements to convey CVP water such as agreements with contractors receiving water from the Bureau through the Cross Valley Canal, a water conveyance facility that connects with the Aqueduct near Tupman in Kern County. Other agencies or corporations receive CVP water through agreements between the Department and the Bureau, including the U.S. Department of Veterans Affairs, USFWS, and Musco Olive Products, Inc. Occasionally, the Department also enters into agreements with the Bureau to convey CVP or SWP water from the Delta to O'Neill Forebay through CVP or SWP facilities. Some of these agreements allow the Bureau to make up for curtailed water exports from Tracy Pumping Plant associated with improving conditions for fish in the Delta. Other agreements allow replacing water exports foregone during maintenance and repair of Tracy and Banks Pumping Plants and CVP and SWP conveyance facilities between the Delta and O'Neill Forebay.

Cross Valley Canal. Eight CVP water contractors use CVC to obtain water from the California Aqueduct either by exchange with other agencies or by direct delivery. The eight water contractors are: County of Fresno, County of Tulare, Hills Valley Irrigation District, Kern-Tulare Water District, Lower Tule River Irrigation District, Pixley Irrigation District, Rag Gulch Water District, and Tri-Valley Water District. These agencies have had water conveyance service by the Department since 1976 through

- long-term 3-party contracts with the Department and the Bureau, executed in 1976, and amendments extending the contracts through February 29, 1996; and
- interim renewal contracts: the first from March 1, 1996, through February 28, 1998; the second from March 1, 1998, through February 28, 2000; the third from March 1, 2000, through November 30, 2000; the fourth from December 1, 2000, through February 28, 2001; the fifth from March 1, 2001, through February 28, 2002; and the sixth from March 1, 2002 through February 28, 2003.

Between January 1, 2002, and December 31, 2002, the Department delivered CVP water to the CVC contractors as follows:

- In February 2002, four CVC contractors received the last portion of their 2001-02 renewal agreement's approved CVP water through Reach 12E. The Department conveyed 97 acre-feet of water for the County of Fresno, 100 acre-feet of water for Hills Valley Irrigation District, 35 acre-feet of water for Tri-Valley Water District, and 163 acre-feet of water for the County of Tulare. The total amount of water delivered in February 2002 to Reach 12E totaled 395 acre-feet. (SWPAO #s 01303, 01304, 01309, and 01310)
- From July through October 2002, six CVC contractors received their 2002-03 approved CVP water. County of Tulare, Tri-Valley Water District, Pixley Irrigation District, Lower Tule River Irrigation District, Hills Valley Irrigation District, and Fresno County Public Works received 3,981, 857, 3,110, 3,110, 2,510, and 1,950 acre-feet of water, respectively. The 2002-03 CVP water delivered to the CVC contractors totalled 15,518 acre-feet. (SWPAO #s 02300, 02301, 02303, 02304, 02306, and 02307)
- In April 2002, the Department conveyed a total of 6,148 acre-feet of surplus water (Section 215) from O'Neill Forebay to Reach 12E for five CVC contractors. Rag Gulch, Kern-Tulare, Tri-Valley, Hills Valley, and County of Tulare received 228, 572, 624, 1,826, and 2,898 acre-feet of surplus water, respectively. Conveyance agreements are expected to be executed in 2003.

- On June 6, 2002, Pixley requested the Department to convey up to 20,216 acre-feet of its CVP water to Westlands during the 2002 contract year. From July through August 2002, the Department delivered a total of 20,212 acre-feet of Pixley's CVP water to Westlands' turnouts in Reaches 4 through 7 of the California Aqueduct. The conveyance agreement is expected to be executed in February 2003.
- On June 6, 2002, Lower Tule River requested the Department to convey up to 10,984 acre-feet of its CVP water to Westlands. From July through August 2002, the Department conveyed a total of 10,984 acre-feet of the District's CVP water to Westlands' turnouts in Reaches 4 through 7 of the California Aqueduct. The conveyance agreement is expected to be signed in January 2003.
- On June 6, 2002, Kern-Tulare Water District requested the Department change the point of delivery for up to 2,000 acre-feet of the District's 2001 CVP water from the CVC turnout in Reach 12E to O'Neill Forebay for delivery to San Luis Water District. Under the agreement executed on September 27, 2002, the Department conveyed 1,932 acre-feet of water in August and September 2002 (SWPAO #02315).

Madera Irrigation District. On August 5, 2002, Madera Irrigation District requested that the Department convey 1,134 acre-feet of CVP water from the San Joaquin River Exchange Contractor Authority to Madera through SWP facilities. Under an agreement executed on October 25, 2002, the Department delivered 1,100 (1,134 minus 3 percent conveyance loss) acre-feet of water in September 2002. (SWPAO #02319)

Westlands Water District. On March 12, 2002, Westlands requested that the Department convey up to 15,000 acre-feet of Contra Costa Water District's CVP water to Westlands through SWP facilities. The Bureau approved the proposed transfer in a letter agreement to Westlands dated March 22, 2002. Westlands, as the lead agency, filed a Notice of Exemption for the project on May 20, 2002. Between October and December 2002, the Department conveyed 7,760 acre-feet (8,000 acre-feet minus 3 percent loss) of water to Westlands under an agreement that is expected to be executed in January 2003.

U.S. Bureau of Reclamation. In a letter dated July 19, 2002, the Bureau requested that the Department convey up to 60,000 acre-feet of CVP water from Banks Pumping Plant to O'Neill Forebay pursuant to SWRCB Water Right Decision 1641, Joint Point of Diversion provisions. Included within the 60,000 acre-feet were 9,050 acre-feet of CVP water for Level 4 refuge water supplies. In September 2002, the Department conveyed 56,095 acre-feet (57,240 acre-feet minus 2 percent conveyance losses) of water to O'Neill Forebay under an agreement executed in September 18, 2002. (SWPAO #02318)

Musco Olive Products, Incorporated. An agreement dated October 22, 2001, among Musco Olive Products, Inc., the Department, and the Bureau, provides for the conveyance of up to 800 acre-feet of CVP water to Reach 2A of the California Aqueduct for use by Musco Olive Products, Inc. A total of 626 acre-feet was delivered in 2002 under this agreement (SWPAO #02320).

A second agreement dated November 13, 2002, among Musco Olive Products, Inc., the Department, and the Bureau, provides for the conveyance of up to 800 acre-feet of CVP water to Reach 2A of the California Aqueduct for use by Musco Olive Products, Inc. A total of 175 acre-feet was delivered in 2002 under this agreement. (SWPAO #02320)

U.S. Department of Veterans Affairs. A letter agreement dated March 3, 2002, among the U.S. Department of Veterans Affairs, the Department, and the Bureau, provided for the conveyance of up to 450 acre-feet of CVP approved water to Reach 2B of the California Aqueduct to the U.S. Department of Veterans Affairs' San Joaquin Valley National Cemetery. A total of 51 acre-feet was delivered to the National Cem-

etery in Reach 2B of the California Aqueduct in 2002 under this agreement. (SWPAO #01327)

A total of 16 acre-feet was delivered to the National Cemetery in Reach 2B of the California Aqueduct in 2002 under a pending letter agreement. (SWPAO #02321)

U.S. Fish and Wildlife Service Cooperative Agreement. The Bureau initiated a cooperative agreement with the Department to deliver CVP water to the Kern National Wildlife Refuge for USFWS. Under the terms of this cooperative agreement, dated September 9, 1994, up to 26,530 acre-feet of CVP water would be delivered from Check 21 to the Buena Vista Water Storage District Turnout BV-1B, on Reach 10A of the California Aqueduct, from October 1, 1993, through April 10, 1995. Since the cooperative agreement was signed, twelve modifications to the agreement have been executed. Under Modification No. 001, dated October 31, 1994, additional funding was provided. Similar funding adjustments through modifications were made each year to the agreement. Modification No. 012, executed February 3, 2002, extended the agreement through April 30, 2002, and defined the water delivery rates for 2001 and 2002. The Department conveyed 14,726 acre-feet of CVP water to Kern National Wildlife Refuge in 2002. A new 5-year agreement with the Bureau for Kern National Wildlife Refuge is currently pending.

Other Turnout Agreements. In 2002, there were no new turnout agreements with non-SWP contractor agencies.

Water Deliveries

Approved Table A Deliveries

Each year, by October 1, the SWP long-term water contractors submit initial requests for approved Table A deliveries allocated to contractors for use in the subsequent calendar year. Initial approved Table A amounts for the coming year are made by the Department in December and are based on operations studies that assume 90 percent exceedence of historic water supply (where exceedence refers to the possibility that water supply in the coming year will be exceeded by the historic water supply), current reservoir storage, and total requests by the SWP water contractors. Forecasts for the year are updated as hydrological conditions change. Approved Table A amounts are increased or decreased depending on both actual and projected hydrologic conditions.

The Department approved deliveries of 824,000 acre-feet on November 30, 2001, resulting in initial approved Table A amounts of 20 percent of most SWP contractor requests. Above average precipitation occurred in Northern California during December, causing the Department to increase the 2002 approved Table A amounts to 1.86 million acre-feet, or 45 percent, on January 11, 2002. As water conditions improved, approved Table A amounts were increased to 2.3 million acre-feet (55 percent) on March 22; 2.5 million acre-feet (60 percent) on March 28; 2.68 million acre-feet (65 percent) on May 15; and finally to 2.89 million acre-feet (70 percent) on August 26.

SWP Deliveries

The SWP delivers water for a variety of beneficial uses. In addition to delivering approved Table A water to long-term water supply contractors, the SWP

- conveys water to, and stores water for, other public agencies through special contracts and agreements;
- provides water for wildlife and recreational uses; and
- stores, releases, and delivers local runoff water from SWP facilities to agencies that hold local water rights.

In 2002, 4,053,989 acre-feet of water were conveyed to 26 long-term contractors and 24 other agencies. That amount includes

- 2,573,030 acre-feet of approved Table A water;

- 37,139 acre-feet of Article 21 water and 26 acre-feet of unscheduled water;
- 3,694 acre-feet of SWP water for recreation, fish and wildlife; and
- 1,141,622 acre-feet of water delivered to satisfy water rights settlement agreements and agreements with SWP contractors for local water supplies.

Figure 9-1 shows amounts of water delivered to various locations during 2002.

Specific information about water deliveries made to long-term contractors and other agencies during 2002 and historical deliveries from 1962 through 2002 are presented in the following three sections, each with a corresponding table:

- Water Delivered to Long-term Water Supply Contractors in 2002, by Service Area (Table 9-3);
- Water Delivered in 2002, by Month (Table 9-4); and
- Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-02 (Table 9-5).

Water Deliveries and Credits to Long-Term SWP Contractors

Table 9-3 shows amounts of water delivered in 2002. The following information about specific columns in Table 9-3 is arranged by column number.

2002 Approved Table A Water Delivered. Columns 1 through 6 show a detailed breakdown of approved Table A water delivered to long-term water supply contractors in 2002.

Turnback Pool Water. Column 5 shows 45,252 acre-feet of turnback pool water was delivered to long-term water supply contractors in 2002.

2001 Carryover Approved Table A Water Delivered During 2002. For several years, the Department has offered contractors the opportunity to carry over a portion of their approved Table A water for delivery in the current year to be delivered 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. The SWP contractors' long-term contracts and amendments state the criteria for carrying over approved Table A water from one year to the next. Column 7 shows 160,171 acre-feet of water was carried over from 2001 for delivery in 2002.

Total Table A Water Delivered. Column 8 shows all approved Table A water delivered in 2002—a total of 2,573,030 acre-feet.

2002 Water Bank Recoveries. Column 9 shows 38,188 acre-feet of water bank recoveries in 2002.

2002 Article 21 Water. Column 10 shows 37,165 acre-feet of 2002 Article 21 water delivered to long-term water supply contractors in 2002 (includes 37,139 acre-feet of Article 21 water and 26 acre-feet of unscheduled water). Long-term water supply contractors who have not signed the Monterey Amendment receive unscheduled water.

Dry Year Water Purchase Program. Column 11 shows 17,119 acre-feet of Dry Year Water Purchase Program water delivered in 2002.

2002 Article 54 Flexible Storage Withdrawal Recoveries. Column 12 shows 395 acre-feet of Article 54, Flexible Storage Withdrawal in 2002.

Total SWP Water Delivered. Column 13 shows 2,665,897 acre-feet of total SWP water delivered in 2002. This includes total approved Table A water, water bank recoveries, Dry Year Water Purchase Program, Flexible Storage Withdrawal, and Article 21 and unscheduled water.



Figure 9-1. Water Delivered in 2002 and Delivery Locations of Long-Term Water Supply Contractors and Feather River Area Districts with Water Right Agreements with the Department

Table 9-3. Water Delivered to Long-Term Contractors through 2002, by Service Area (Acre-Feet)

Water Contractor or Agency	Approved Table A Water Deliveries								Water Bank Recoveries (9)	2002 Article 21 Water (10)	2002 Dry Year Water Purchase (11)	2002 Article 54 Flexible Withdrawal (12)	Total SWP Water Delivered (13)	Non-SWP Water Deliveries (14)	Total Deliveries (15)
	2002 Table A without Transfers, Exchanges, and Storage (1)	2002 Table A Supplied (Not a Delivery) (2)	2002 Table A Delivered through Transfers and Exchanges (3)	2002 Table A Delivered to Storage (4)	Pool Water (5)	Total 2002 Table A Delivered (6)	2001 Carryover Table A Delivered during 2002 (7)	Total Table A Deliveries (8)							
Feather River Area															
County of Butte	419	0	0	0	0	419	0	419	0	0	0	0	419	0	419
Plumas County Flood Control and Water Conservation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Yuba City	1,181	0	0	0	0	1,181	0	1,181	0	0	0	0	1,181	0	1,181
North Bay Area															
Napa County Flood Control and Water Conservation District	2,022	0	0	0	283	2,305	3,743	6,048	0	827	0	0	6,875	0	6,875
Solano County Water Agency	28,223	0	0	0	0	28,223	0	28,223	0	2,242	0	0	30,465	8,095[a]	38,560
South Bay Area															
Alameda County Flood Control and Water Conservation District-Zone 7	36,305	402[b]	0	4,000[c]	556	40,861	8,113[c]	48,974	0	1,484[c]	0	0	50,458	9,243[d]	59,701
Alameda County Water District	21,964	286[b]	0	2,000[c]	862	24,826	2,331	27,157	0	83[c]	0	0	27,240	2,815[e]	30,055
Santa Clara Valley Water District	55,172	724[b]	0	0	2,053	57,225	3,311[c]	60,536	0	202	0	0	60,738	1,448[f]	62,186
San Joaquin Valley Area															
Castaic Lake Water Agency	2,737	0	0	0	0	2,737	0	2,737	0	0	0	0	2,737	0	2,737
County of Kings	2,800	0	0	0	54	2,854	0	2,854	0	0	0	0	2,854	0	2,854
Dudley Ridge Water District	35,818	1,070[b]	1,800[g]	0	1,177	38,795	1,994[h]	40,789	1,389	1,861[h]	5,180	0	49,219	2,140[f]	51,359
Empire West Side Irrigation District	1,278	0	0	0	0	1,278	101	1,379	0	26[i]	0	0	1,405	0	1,405
Kern County Water Agency	599,366	65,385[j]	13,533[k]	0	20,543	633,442	15,680	649,122	36,799	21,951	1,455	0	709,327	54,119[l]	763,446
Oak Flat Water District	3,841	0	0	0	76	3,917	134	4,051	0	50	784	0	4,885	0	4,885
Tulare Lake Basin Water Storage District	58,381	337[b]	15,067[m]	0	2,289	75,737	5,385	81,122	0	3,749	0	0	84,871	11,631[n]	96,502
Central Coastal Area															
San Luis Obispo County Flood Control and Water Conservation District	4,355	0	0	0	0	4,355	0	4,355	0	0	0	0	4,355	0	4,355
Santa Barbara County Flood Control and Water Conservation District	23,421	0	745[o]	0	324	24,490	3,455	27,945	0	436	0	0	28,381	0	28,381
Southern California															
Antelope Valley-East Kern Water Agency	54,335	0	0	0	1,008	55,343	2,828	58,171	0	0	0	0	58,171	0	58,171
Castaic Lake Water Agency	35,143	0	0	24,000[c]	0	59,143	6,657	65,800	0	280	0	395	66,475	0	66,475
Coachella Valley Water District	16,170	0	0	0	474	16,644	0	16,644	0	111	0	0	16,755	0	16,755
Crestline-Lake Arrowhead Water Agency	2,189	0	0	0	0	2,189	0	2,189	0	0	0	0	2,189	0	2,189
Desert Water Agency	26,670	0	0	0	781	27,451	0	27,451	0	189	0	0	27,640	0	27,640
Littlerock Creek Irrigation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Metropolitan Water District of Southern California	1,190,348	82,857[p]	0	0	14,335	1,204,683	97,940	1,302,623	0	9,624[q]	0	0	1,306,297	27,630[f]	1,333,927
Mojave Water Agency	4,346		0	0	0	4,346	0	4,346	0	0	0	0	4,346	0	4,346
Palmdale Water District	8,359		0	0	437	8,796	0	8,796	0	0	9,700	0	18,496	0	18,496
San Bernardino Valley Municipal Water District	33,268		35,000[r]	0	0	68,268	3,801	72,069	0	0	0	0	72,069	0	72,069
San Gabriel Valley Municipal Water District	18,353		0	0	0	18,353	4,698	23,051	0	0	0	0	23,051	0	23,051
San Gorgonio Pass Water Agency	0		0	0	0	0	0	0	0	0	0	0	0	0	0
Ventura County Flood Control District	4,998		0	0	0	4,998	0	4,998	0	0	0	0	4,998	0	4,998
Total	**2,271,462**	**151,061**	**66,145**	**30,000**	**45,252**	**2,412,859**	**160,171**	**2,573,030**	**38,188**	**37,165**	**17,119**	**395**	**2,665,897**	**117,121**	**2,783,018**

[a] Solano's permit water.
[b] Supplied to EWA (not counted in total delivery).
[c] 8,000 acre-feet delivered to Semitropic Water Bank.
[d] Alameda-Zone 7's 6,440 acre-feet of local water; 2,000 acre-feet of Byron-Bethany water; and 803 acre-feet of EWA 2:1 water.
[e] Alameda's 2,244 acre-feet of local water; 571 acre-feet of EWA 2:1 water.
[f] EWA 2:1 water.
[g] Dudley Ridge exchange to San Gabriel.
[h] Delivered to Kern Water Bank.
[i] Empire's unscheduled water
[j] Kern supplied 63,996 acre-feet to EWA; exchange of 1,389 acre-feet to Dudley Ridge for Kern Water Bank water.
[k] Kern transferred 6,133 acre-feet to Dudley Ridge; exchanged 6,500 acre-feet to Del Puerto Water District, and exchanged 900 acre-feet to San Luis Water District.
[l] Kern's 6,744 acre-feet of EWA 2:1 water; 7,400 acre-feet exchanged from Del Puerto Water District and San Luis Water District; 1,932 acre-feet transferred from San Luis Water District; and 38,043 acre-feet of Article 55 water from Kern-Tulare and Rag Gulch.
[m] Tulare transferred 3,000 acre-feet to Westlands; exchanged 12,067 acre-feet to Westlands.
[n] Tulare's 7,500 acre-feet of Article 55 water transferred from Lower Tule; 3,456 acre-feet of Article 215 exchange water from Lower Tule; and 675 acre-feet of EWA 2:1 water
[o] Santa Barbara exchanged with Dudley Ridge.
[p] Metropolitan supplied 13,815 acre-feet to EWA; used 69,042 acre-feet for Flexible Water Payback.
[q] Metropolitan's Article 21 includes 5,950 acre-feet for Flexible Water Payback. As a transaction and not a delivery, this number is not included in the total.
[r] San Bernardino transferred to Metropolitan.

Table 9-4. Water Delivered in 2002, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2002 Total Deliveries	2002 Contract Table A
Feather River Area														
City of Yuba City														
Approved Table A water	0	0	0	0	0	0	617	553	0	0	11	0	1,181	9,600
Pool B water sale[a]	3,261	0	0	0	0	0	0	0	0	0	0	0	3,261	
Agency total	0	0	0	0	0	0	617	553	0	0	11	0	1,181	
County of Butte														
Approved Table A water	67	15	1	15	39	41	48	58	59	7	23	46	419	3,500
Pool B water sale[a]	900	0	0	0	0	0	0	0	0	0	0	0	900	
Agency total	67	15	1	15	39	41	48	58	59	7	23	46	419	
Plumas County Flood Control and Water Conservation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	1,630
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	0	0	0	0	0	0	1	1	1	1	0	0	4	
Last Chance Creek Water District														
Regulated delivery of local supply	0	0	0	30	2,985	2,815	1,702	1,714	498	127	32	0	9.903	
Thermalito Irrigation District														
Regulated delivery of local supply	0	0	33	180	261	378	448	390	313	248	138	0	2,389	
Oroville-Wyandotte Irrigation District														
Regulated delivery of local supply	14	0	0	215	813	835	979	985	995	942	34	0	5,812	
Western Canal Water District														
Regulated delivery of local supply	297	0	0	16,292	53,589	56,454	62,360	37,895	5,992	21,855	30,182	14,296	299,212	
Joint Water Districts Board														
Regulated delivery of local supply	25,870	0	0	45,820	113,200	122,320	129,560	104,450	50,690	72,450	66,280	56,510	787,150	
Oswald Water District														
Regulated delivery of local supply	0	0	0	0	0	71	96	37	71	12	0	0	287	
Tudor Mutual Water Company														
Regulated delivery of local supply	0	0	0	38	862	904	867	308	529	6	0	0	3,514	
Garden Highway Mutual Water Company														
Regulated delivery of local supply	0	0	0	1,894	2,203	3,138	1,999	2,312	1,568	2,544	0	0	15,658	
Plumas Mutual Water Company														
Regulated delivery of local supply	0	0	0	627	1,534	1,730	1,775	784	1,461	44	0	0	7,955	
Dana Brothers														
Regulated delivery of local supply	0	0	0	130	206	357	230	134	1	0	0	0	1,058	
SWP	67	15	1	15	39	41	666	612	60	8	34	46	1,604	
Non-SWP	26,181	0	33	65,226	175,653	189,002	200,016	149,009	62,118	98,228	96,666	70,806	1,132,938	
Feather River Area Total	*26,248*	*15*	*34*	*65,241*	*175,692*	*189,043*	*200,682*	*149,621*	*62,178*	*98,236*	*96,700*	*70,852*	*1,134,542*	*14,730*
North Bay Area														
Napa County Flood Control and Water Conservation District														
Approved Table A water	0	0	0	0	0	0	0	0	445	350	868	359	2,022	21,100
Article 21 water	132	0	355	340	0	0	0	0	0	0	0	0	827	
Article 56(c) extended carryover	277	119	532	776	290	660	714	316	59	0	0	0	3,743	
Pool B water	0	0	0	0	0	0	0	283	0	0	0	0	283	
Agency Total	409	119	887	1,116	290	660	714	599	504	350	868	359	6,875	
Solano County Water Agency														
Approved Table A water	165	855	1,483	1,988	2,329	3,981	4,595	4,568	3,837	2,252	1,645	525	28,223	46,296
Article 21 water	400	46	0	0	1,796	0	0	0	0	0	0	0	2,242	
Vallejo Permit water	0	0	0	263	467	977	907	792	1,074	1,782	1,281	552	8,095	
Agency Total	565	901	1,483	2,251	4,592	4,958	5,502	5,360	4,911	4,034	2,926	1,077	38,560	
SWP	974	1,020	2,370	3,104	4,415	4,641	5,309	5,167	4,341	2,602	2,513	884	37,340	
Non-SWP	0	0	0	263	467	977	907	792	1,074	1,782	1,281	552	8,095	
North Bay Area Total	*974*	*1,020*	*2,370*	*3,367*	*4,882*	*5,618*	*6,216*	*5,959*	*5,415*	*4,384*	*3,794*	*1,436*	*45,435*	*67,396*
South Bay Area														
Alameda County Flood Control and Water Conservation District, Zone 7														
Approved Table A water	0	585	1,568	1,466	5,083	5,256	4,740	4,271	5,352	5,667	2,317	0	36,305	78,000
Approved Table A water stored in Semitropic[a]	0	0	0	0	0	0	0	1,000	3,000	0	0	0	4,000	
Approved Table A water to EWA[a]	0	0	0	0	0	0	200	202	0	0	0	0	402	
Article 21 water stored in Semitropic[a]	0	0	397	1,087	0	0	0	0	0	0	0	0	1,484	
Article 56(c) extended carryover	96	17	0	0	0	0	0	0	0	0	0	0	113	
Article 56(c) extended carryover stored in Semitropic[a]	1,081	6,919	0	0	0	0	0	0	0	0	0	0	8,000	
EWA water (2:1) stored in Semitropic[a]	0	0	0	803	0	0	0	0	0	0	0	0	803	
Transfer water from Byron-Bethany	0	0	0	0	0	0	0	1,000	1,000	0	0	0	2,000	
Local water	1,008	457	681	2,704	88	24	90	29	123	106	167	963	6,440	
Pool A water	0	0	0	0	0	0	556	0	0	0	0	0	556	
Agency Total	1,104	1,059	2,249	4,170	5,171	5,280	5,386	5,300	6,475	5,773	2,484	963	45,414	
Alameda County Water District														
Approved Table A water	0	0	999	1,724	2,243	2,102	3,747	3,756	3,485	3,301	607	0	21,964	42,000
Approved Table A water stored in Semitropic[a]	0	0	0	0	0	0	0	0	2,000	0	0	0	2,000	
Approved Table A water to EWA[a]	0	0	0	0	0	0	100	186	0	0	0	0	286	

[a]Excluded water

Table 9-4. Water Delivered in 2002, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2002 Total Deliveries	2002 Contract Table A
Article 21 water stored in Semitropic[a]	0	0	0	83	0	0	0	0	0	0	0	0	83	
Carryover special (2001)	986	1,345	0	0	0	0	0	0	0	0	0	0	2,331	
EWA water received (2:1)	0	0	131	440	0	0	0	0	0	0	0	0	571	
Local water	973	208	411	0	0	0	53	29	123	106	0	341	2,244	
Pool A water	0	0	0	0	0	299	0	0	0	0	0	0	299	
Pool B water	0	0	0	0	0	563	0	0	0	0	0	0	563	
Agency Total	1,959	1,553	1,541	2,164	2,243	2,964	3,800	3,785	3,608	3,407	607	341	27,972	
Santa Clara Valley Water District														
Approved Table A water	0	0	1,612	2,255	5,130	7,513	10,292	11,112	9,362	2,819	3,415	1,662	55,172	100,000
Approved Table A water to EWA[a]	0	0	0	0	0	0	350	374	0	0	0	0	724	
Article 21 water	0	0	0	202	0	0	0	0	0	0	0	0	202	
Carryover special (2001) stored in Semitropic[a]	3,311	0	0		0	0	0	0	0	0	0	0	3,311	
EWA water received (2:1)	0	0	337	1,111	0	0	0	0	0	0	0	0	1,448	
Pool A water	0	0	0	0	0	713	0	0	0	0	0	0	713	
Pool B water	0	0	0	0	0	1,340	0	0	0	0	0	0	1,340	
Agency Total	0	0	1,949	3,568	5,130	9,566	10,292	11,112	9,362	2,819	3,415	1,662	58,875	
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water, Lake Del Valle	3	2	4	7	13	23	29	26	22	12	3	2	146	
SWP	1,085	1,949	4,183	5,654	12,469	17,809	19,364	19,165	18,221	11,799	6,342	1,664	119,704	
Non-SWP	1,981	665	1,560	4,255	88	24	143	1,058	1,246	212	167	1,304	12,703	
South Bay Area Total	*3,066*	*2,614*	*5,743*	*9,909*	*12,557*	*17,833*	*19,507*	*20,223*	*19,467*	*12,011*	*6,509*	*2,968*	*132,407*	*220,000*
San Joaquin Valley Area														
Castaic Lake Water Agency														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	1,414	1,323	2,737	12,700
County of Kings														
Approved Table A water	0	0	0	0	400	400	500	500	400	0	0	600	2,800	4,000
Pool B water	0	0	0	0	0	54	0	0	0	0	0	0	54	
Agency Total	0	0	0	0	400	454	500	500	400	0	0	600	2,854	
Dudley Ridge Water District														
Approved Table A water	0	892	4,050	1,257	1,400	7,881	9,600	2,888	3,991	2,309	769	781	35,818	57,343
Approved Table A water delivered to EWA[a]	0	0	0	0	0	0	500	570	0	0	0	0	1,070	
Article 21 water	0	0	687	578	0	0	0	0	0	0	0	0	1,265	
Article 21 water stored in Kern Water Bank[a]		0	246	350	0	0	0	0	0	0	0	0	596	
Bank water recovery, Kern Water Bank	0	0	0	1,389	0	0	0	0	0	0	0	0	1,389	
Carryover special (2001)	1,185	669	0	0	0	0	0	0	0	0	0	0	1,854	
Carryover special (2001) stored in Kern Water Bank[a]	140	0	0	0	0	0	0	0	0	0	0	0	140	
Dudley Ridge's EWA 2:1 water delivered through Tulare[a]	0	0	170	373	0	0	0	0	0	0	0	0	543	
Dry Year Water Purchase Program	0	0	0	0	3,580	1,600	0	0	0	0	0	0	5,180	
EWA water received (2:1)	0	0	42	1,555	0	0	0	0	0	0	0	0	1,597	
Exchange approved Table A water to San Gabriel[a]	0	0	0	0	0	0	0	0	0	0	1,800	0	1,800	
Pool A water	0	0	0	0	409	0	0	0	0	0	0	0	409	
Pool B water	0	0	0	0	768	0	0	0	0	0	0	0	768	
Transfer approved Table A water from Kern	0	0	0	0	0	0	801	5,332	0	0	0	0	6,133	
Exchange of approved water from Santa Barbara	0	0	0	0	0	0	0	0	0	745	0	0	745	
Agency Total	1,185	1,561	4,779	4,779	6,157	9,481	10,401	8,220	3,991	3,054	769	781	55,158	
Empire West Side Irrigation District														
Approved Table A water	0	750	0	385	29	114	0	0	0	0	0	0	1,278	3,000
Carryover special (2001)	0	101	0	0	0	0	0	0	0	0	0	0	101	
Unscheduled water	0	0	0	26	0	0	0	0	0	0	0	0	26	
Agency Total	0	851	0	411	29	114	0	0	0	0	0	0	1,405	
Kern County Water Agency														
Approved Table A water	9,532	28,910	39,103	21,543	45,678	144,343	134,801	98,664	38,071	31,073	2,650	4,225	598,593	1,000,949
Approved Table A water delivered to EWA (2:1 return)[a]	0	0	0	0	0	0	1,500	1,872	0	0	0	0	3,372	
Approved Table A water delivered to EWA[a]	0	0	0	0	0	0	0	32,400	15,000	0	13,224	0	60,624	
Approved Table A water delivered to Western Hills	0	0	8	89	92	107	136	123	87	113	6	12	773	
Article 21 water	0	0	5,752	16,199	0	0	0	0	0	0	0	0	21,951	
Article 56(c) extended carryover	11,135	4,532	13	0	0	0	0	0	0	0	0	0	15,680	
Dry Year Water Purchase Program	0	0	0	0	0	0	0	1,455	0	0	0	0	1,455	
EWA water received (2:1)	0	0	1,349	5,395	0	0	0	0	0	0	0	0	6,744	
Exchange water from Del Puerto Water District	0	6,500	0	0	0	0	0	0	0	0	0	0	6,500	
Exchange water from San Luis Water District	0	900	0	0	0	0	0	0	0	0	0	0	900	
Exchange approved Table A water to Del Puerto[a]	0	0	0	0	0	0	0	0	5,050	1,450	0	0	6,500	
Exchange approved Table A water to San Luis[a]	0	0	0	0	0	0	0	0	900	0	0	0	900	
Exchange approved Table A water to Dudley Ridge for water bank water[a]	0	0	0	1,389	0	0	0	0	0	0	0	0	1,389	
Pool A water	0	0	0	0	0	0	6,875	258	0	0	0	0	7,133	
Pool B water	0	0	0	0	0	0	12,925	485	0	0	0	0	13,410	
Turn-in water recovered by Kern	0	0	0	13,734	12,549	571	0	0	0	0	5,645	4,300	36,799	
Transfer of approved Table A water to Dudley Ridge[a]	0	0	0	0	0	0	801	5,332	0	0	0	0	6,133	
Article 55 water from Kern-Tulare	0	0	0	0	0	0	0	14,291	0	4,466	265	0	19,022	

[a]Excluded water

Table 9-4. Water Delivered in 2002, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2002 Total Deliveries	2002 Contract Table A
Article 55 water from Rag Gulch	0	0	0	0	0	0	0	14,291	0	4,466	264	0	19,021	
Transfer water from San Luis Water District	0	1,932	0	0	0	0	0	0	0	0	0	0	1,932	
Agency Total	20,667	42,774	46,225	56,960	58,319	145,021	154,737	129,567	38,158	40,118	8,830	8,537	749,913	
Water Bank Deliveries														
Approved Table A water from Alameda-Zone 7 stored in Semitropic	0	0	0	0	0	0	0	1,000	3,000	0	0	0	4,000	
Article 21 water from Alameda-Zone 7 stored in Semitropic	0	0	397	1,087	0	0	0	0	0	0	0	0	1,484	
Article 56(c) extended carryover water from Alameda-Zone 7 stored in Semitropic	1,081	6,919	0	0	0	0	0	0	0	0	0	0	8,000	
EWA 2:1 water from Alameda-Zone 7 stored in Semitropic	0	0	0	803	0	0	0	0	0	0	0	0	803	
Approved Table A water from Alameda County stored in Semitropic	0	0	0	0	0	0	0	0	2,000	0	0	0	2,000	
Article 21 water from Alameda County stored in Semitropic	0	0	0	83	0	0	0	0	0	0	0	0	83	
Carryover special (2001) water from Santa Clara stored in Semitropic	3,311	0	0	0	0	0	0	0	0	0	0	0	3,311	
Approved Table A water from Castaic stored in Semitropic	0	0	0	0	0	0	0	0	3,332	12,819	3,408	4,441	24,000	
Article 21 water from Dudley Ridge stored in Kern Water Bank	0	0	246	350	0	0	0	0	0	0	0	0	596	
Carryover special (2001) water from Dudley Ridge stored in Kern Water Bank	140	0	0	0	0	0	0	0	0	0	0	0	140	
Agency Total	25,199	48,793	46,868	59,283	58,319	145,021	154,737	130,567	46,490	52,937	12,238	12,978	793,430	
Oak Flat Water District														
Approved Table A water	0	0	231	566	1,012	875	712	149	234	40	17	5	3,841	5,700
Article 21 water	0	0	0	50	0	0	0	0	0	0	0	0	50	
Carryover special (2001)	18	84	32	0	0	0	0	0	0	0	0	0	134	
Dry Year Water Purchase Program	0	0	0	0	0	200	200	384	0	0	0	0	784	
Pool B water	0	0	0	0	0	0	76	0	0	0	0	0	76	
Agency Total	18	84	263	616	1,012	1,075	988	533	234	40	17	5	4,885	
Tulare Lake Basin Water Storage District														
Approved Table A water	0	644	3,900	5,726	6,580	30,019	5,872	969	950	1,758	0	1,963	58,381	111,527
Approved Table A water to EWA[a]	0	0	0	0	0	100	237	0	0	0	0	0	337	
Article 21 water	0	0	1,942	1,807	0	0	0	0	0	0	0	0	3,749	
Carryover special (2001)	5,058	327	0	0	0	0	0	0	0	0	0	0	5,385	
EWA water received (2:1)	0	0	278	397	0	0	0	0	0	0	0	0	675	
Exchange approved Table A water to Westlands[a]	0	0	0		5,250	5,250	0	0	1,567	0	0	0	12,067	
Article 55 water from Lower Tule to Tulare	0	0	0	0	0	0	0	7,500	0	0	0	0	7,500	
Section 215 water exchange from Lower Tule	0	0	0	3,456	0	0	0	0	0	0	0	0	3,456	
Pool A water	0	0	0	0	0	639	0	156	0	0	0	0	795	
Pool B water	0	0	0	0	0	1,015	0	479	0	0	0	0	1,494	
Transfer approved Table A water to Westlands[a]	0	0	0	0	0	0	0	3,000	0	0	0	0	3,000	
Dudley Ridge's EWA 2:1 water delivered through Tulare	0	0	170	373	0	0	0	0	0	0	0	0	543	
Agency Total	5,058	971	6,290	11,759	6,580	31,673	5,872	9,104	950	1,758	0	1,963	81,978	
Westlands Water District														
CVP water from Lower Tule	0	0	0	0	0	0	5,216	5,768	0	0	0	0	10,984	
CVP water from Pixley	0	0	0	0	0	0	7,935	12,277	0	0	0	0	20,212	
Transfer water from Contra Costa	0	0	0	0	0	0	0	0	0	4,229	2,634	897	7,760	
Exchange approved Table A water from Tulare	0	0	0	0	5,250	5,250	0	0	1,567	0	0	0	12,067	
Transfer approved Table A water from Tulare	0	0	0	0	0	0	0	3,000	0	0	0	0	3,000	
Agency Total	0	0	0	0	5,250	5,250	13,151	21,045	1,567	4,229	2,634	897	54,023	
Recreation/Fish and Wildlife														
Department of Fish and Game, O'Neill Forebay/Lateral 4	43	34	48	25	29	40	57	37	43	58	36	32	482	
Department of Parks and Recreation, O'Neill Forebay/San Luis/Cattle	2	0	4	8	11	13	19	11	9	7	0	2	86	
Total	45	34	52	33	40	53	76	48	52	65	36	34	568	
EWA Program														
EWA 2:1 water to Alameda-Zone7[a]	0	0	0	803	0	0	0	0	0	0	0	0	803	
EWA 2:1 water to Alameda County[a]	0	0	131	440	0	0	0	0	0	0	0	0	571	
EWA 2:1 water to Dudley Ridge[a]	0	0	42	1,556	0	0	0	0	0	0	0	0	1,597	
Dudley Ridge's EWA 2:1 water delivered through Tulare[a]	0	0	170	373	0	0	0	0	0	0	0	0	543	
EWA 2:1 water to Kern[a]	0	0	1,349	5,395	0	0	0	0	0	0	0	0	6,744	
EWA 2:1 water to Metropolitan[a]	0	0	6,347	21,283	0	0	0	0	0	0	0	0	27,630	
EWA 2:1 water to Santa Clara[a]	0	0	337	1,111	0	0	0	0	0	0	0	0	1,448	
EWA 2:1 water to Tulare[a]	0	0	278	397	0	0	0	0	0	0	0	0	675	
Approved Table A water from Alameda-Zone 7 to EWA	0	0	0	0	0	0	200	202	0	0	0	0	402	
Approved Table A water from Alameda County to EWA	0	0	0	0	0	0	100	186	0	0	0	0	286	
Approved Table A water from Dudley Ridge to EWA	0	0	0	0	0	0	500	570	0	0	0	0	1,070	
Approved Table A water from Kern to EWA for 2:1 exchange	0	0	0	0	0	0	1,500	1,872	0	0	0	0	3,372	
Approved Table A water from Kern to EWA (groundwater purchase)	0	0	0	0	0	32,400	15,000	0	13,224	0	0	0	60,624	
Approved Table A water from Metropolitan to EWA	0	0	0	0	0	0	7,000	6,815	0	0	0	0	13,815	
Approved Table A water from Santa Clara to EWA	0	0	0	0	0	0	350	374	0	0	0	0	724	
Approved Table A water from Tulare to EWA	0	0	0	0	0	100	237	0	0	0	0	0	337	
EWA relaxation	0	75,952	0	0	0	0	0	0	0	0	0	0	75,952	
EWA water purchased from a non-SWP contractor	0	0	0	0	0	13,448	43,824	0	5,502	0	0	0	62,774	
Total EWA water	0	75,952	0	0	0	45,948	68,711	10,019	18,726	0	0	0	219,356	
SWP	31,505	43,862	56,413	64,234	74,207	191,321	172,374	114,051	53,684	48,922	13,945	17,684	882,870	
Non-SWP	0	9,332	1,839	11,979	3,580	1,800	13,351	55,966	0	13,161	3,163	897	115,068	

[a]Excluded water

Table 9-4. Water Delivered in 2002, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2002 Total Deliveries	2002 Contract Table A
San Joaquin Valley Area subtotal	31,505	53,194	58,252	76,213	77,787	193,121	185,725	170,017	53,684	62,083	17,108	18,581	997,938	
CVP Water Conveyed–Annual Contracts														
Plain View Water District/ Musco Olive Products, Inc.	78	43	59	67	68	71	76	74	90	0	0	0	626	
Plain View Water District/ Musco Olive Products, Inc.	0	0	0	0	0	0	0	0	0	111	61	3	175	
U.S. Department of Veteran Affairs, S.J.V. National Cemetery	2	2	3	7	6	7	10	8	6	0	0	0	51	
U.S. Department of Veteran Affairs, S.J.V. National Cemetery	0	0	0	0	0	0	0	0	0	9	4	3	16	
Subtotal	80	45	62	74	74	78	86	82	96	120	65	6	868	
Cross Valley Canal Contracts														
CVP water to Tulare	0	163	0	0	0	0	0	0	0	0	0	0	163	
CVP water to County of Tulare	0	0	0	0	0	0	3,450	0	227	304	0	0	3,981	
CVP water to Fresno County Public Works	0	97	0	0	0	0	0	0	0	0	0	0	97	
CVP water to Fresno County Public Works	0	0	0	0	0	0	1,950	0	0	0	0	0	1,950	
CVP water to Hills Valley Irrigation District	0	100	0	0	0	0	0	0	0	0	0	0	100	
CVP water to Hills Valley Irrigation District	0	0	0	0	0	0	2,175	0	143	192	0	0	2,510	
CVP water to Lower Tule	0	0	0	0	0	0	0	0	1,320	1,790	0	0	3,110	
CVP water to Pixley	0	0	0	0	0	0	0	0	1,320	1,790	0	0	3,110	
CVP water to Tri-Valley Water District	0	35	0	0	0	0	0	0	0	0	0	0	35	
CVP water to Tri-Valley Water District	0	0	0	0	0	0	742	0	48	67	0	0	857	
Kern-Tulare water to San Luis Water District	0	0	0	0	0	0	0	1,418	514	0	0	0	1,932	
Lower Tule water to Westlands	0	0	0	0	0	0	5,216	5,768	0	0	0	0	10,984	
Pixley water to Westlands	0	0	0	0	0	0	7,935	12,277	0	0	0	0	20,212	
Lower Tule to Tulare[a]	0	0	0	3,456	0	0	0	0	0	0	0	0	3,456	
Article 55 from Rag Gulch to Kern[a]	0	0	0	0	0	0	0	14,291	0	4,466	264	0	19,021	
Article 55 from Kern-Tulare to Kern[a]	0	0	0	0	0	0	0	14,291	0	4,466	265	0	19,022	
Article 55 from Lower Tule to Tulare[a]	0	0	0	0	0	0	0	7,500	0	0	0	0	7,500	
Section 215 CVP water to County of Tulare	0	0	0	2,898	0	0	0	0	0	0	0	0	2,898	
Section 215 CVP water to Hills Valley Irrigation District	0	0	0	1,826	0	0	0	0	0	0	0	0	1,826	
Section 215 CVP water to Kern-Tulare	0	0	0	572	0	0	0	0	0	0	0	0	572	
Section 215 CVP water to Rag Gulch	0	0	0	228	0	0	0	0	0	0	0	0	228	
Section 215 CVP water to Tri-Valley Water District	0	0	0	624	0	0	0	0	0	0	0	0	624	
Agency Total	0	395	0	6,148	0	0	8,317	0	3,058	4,143	0	0	22,061	
Bureau of Reclamation														
Conveyance of CVP water to O'Neill Forebay	0	0	0	0	0	0	0	0	56,095		0	0	56,095	
Delivery of Kern-Tulare water to San Luis Water District[a]	0	0	0	0	0	0	0	1,418	514	0	0	0	1,932	
Exchange water to Del Puerto from Kern	0	0	0	0	0	0	0	0	5,050	1,450	0	0	6,500	
Exchange water to San Luis Water District from Kern	0	0	0	0	0	0	0	0	900	0	0	0	900	
Kern National Wildlife Refuge	808	690	0	0	89	280	60	1,096	3,865	1,613	4,656	1,569	14,726	
Recreation/fish and wildlife water	85	32	38	30	30	46	59	43	41	53	31	27	515	
Transfer of Contra Costa water to Westlands[a]	0	0	0	0	0	0	0	0	0	4,229	2,634	897	7,760	
Transfer of San Joaquin River Authority water to Madera Irrigation District	0	0	0	0	0	0	0	0	1,100	0	0	0	1,100	
Transfer of San Luis Water District water to Kern[a]	0	1,932	0	0	0	0	0	0	0	0	0	0	1,932	
Agency Total	893	722	38	30	119	326	119	2,557	66,665	7,345	7,321	2,493	88,628	
SWP	0	0	0	0	0	0	0	0	5,950	1,450	0	0	7,400	
Non-SWP	973	1,162	100	6,252	193	404	8,522	1,221	64,255	5,929	4,752	1,602	95,365	
San Joaquin Valley Area subtotal	973	1,162	100	6,252	193	404	8,522	1,221	70,205	7,379	4,752	1,602	102,765	
SWP (Total)	31,505	43,862	56,413	64,234	74,207	191,321	172,374	114,051	59,634	50,372	13,945	17,684	890,270	
Non-SWP (Total)	973	10,494	1,939	18,231	3,773	2,204	21,873	57,187	64,255	19,090	7,915	2,499	210,433	
San Joaquin Valley Area Total	*32,478*	*54,356*	*58,352*	*82,465*	*77,980*	*193,525*	*195,247*	*171,238*	*123,889*	*69,462*	*21,860*	*20,183*	*1,100,703*	*1,195,219*
Central Coastal Area														
San Luis Obispo County Flood Control and Water Conservation District														
Approved Table A water	197	411	338	347	399	431	469	451	421	367	225	299	4,355	25,000
Pool B water sale[a]	100	0	0	0	0	0	0	0	0	0	0	0	100	
Agency Total	197	411	338	347	399	431	469	451	421	367	225	299	4,355	
Santa Barbara County Flood Control and Water Conservation District														
Approved Table A water	0	123	796	1,882	2,887	2,401	2,576	3,288	3,210	2,452	1,851	1,955	23,421	45,486
Article 21 water	0	0	99	337	0	0	0	0	0	0	0	0	436	
Carryover special (2001)	1,404	1,073	978	0	0	0	0	0	0	0	0	0	3,455	
Pool A water	0	0	0	0	324	0	0	0	0	0	0	0	324	
Exchange of approved Table A water to Dudley Ridge[a]	0	0	0	0	0	0	0	0	0	745	0	0	745	
Agency Total	1,404	1,196	1,873	2,219	3,211	2,401	2,576	3,288	3,210	2,452	1,851	1,955	27,636	
SWP	1,601	1,607	2,211	2,566	3,610	2,832	3,045	3,739	3,631	2,819	2,076	2,254	31,991	
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
Central Coastal Area Total	1,601	1,607	2,211	2,566	3,610	2,832	3,045	3,739	3,631	2,819	2,076	2,254	31,991	70,486

[a]Excluded water

Table 9-4. Water Delivered in 2002, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2002 Total Deliveries	2002 Contract Table A
Southern California Area														
Antelope Valley-East Kern Water Agency														
Approved Table A water	428	779	3,176	4,304	5,516	7,384	7,663	8,129	6,771	4,775	2,826	2,087	53,838	141,400
AVEK's approved Table A water delivered through Littlerock[a]	0	0	0	0	0	22	146	165	91	51	22	0	497	
Mojave's approved Table A water delivered through AVEK	56	61	92	95	128	205	156	202	155	105	77	38	1,370	
Carryover special (2001)	1,649	1,179	0	0	0	0	0	0	0	0	0	0	2,828	
Pool A water	0	0	0	0	0	0	1,008	0	0	0	0	0	1,008	
Agency Total	2,133	2,019	3,268	4,399	5,644	7,589	8,827	8,331	6,926	4,880	2,903	2,125	59,044	
Castaic Lake Water Agency														
Approved Table A water	0	0	1,615	2,425	3,593	4,420	5,146	5,051	4,810	3,876	2,627	1,580	35,143	82,500
Approved Table A water stored in Semitropic	0	0	0	0	0	0	0	0	3,332	12,819	3,408	4,441	24,000	
Article 21 water	0	0	0	280	0	0	0	0	0	0	0	0	280	
Carryover special (2001)	2,869	2,517	1,271	0	0	0	0	0	0	0	0	0	6,657	
Flexible storage withdrawal	0	0	0	0	0	0	0	0	0	0	0	395	395	
Agency Total	2,869	2,517	2,886	2,705	3,593	4,420	5,146	5,051	4,810	3,876	2,627	1,975	42,475	
Coachella Valley Water District														
Approved Table A water	0	0	1,387	1,387	1,532	1,532	1,532	1,763	1,763	1,763	1,763	1,748	16,170	23,100
Article 21 water	0	0	16	95	0	0	0	0	0	0	0	0	111	
Pool A water	0	0	0	0	0	0	165	0	0	0	0	0	165	
Pool B water	0	0	0	0	0	0	309	0	0	0	0	0	309	
Agency Total	0	0	1,403	1,482	1,532	1,532	2,006	1,763	1,763	1,763	1,763	1,748	16,755	
Crestline-Lake Arrowhead Water Agency														
Approved Table A water	113	115	95	117	170	236	296	296	249	202	159	141	2,189	5,800
Agency Total	113	115	95	117	170	236	296	296	249	202	159	141	2,189	
Desert Water Agency														
Approved Table A water	0	0	2,287	2,287	2,524	2,524	2,524	2,905	2,905	2,905	2,905	2,904	26,670	38,100
Article 21 water	0	0	28	161	0	0	0	0	0	0	0	0	189	
Pool A water	0	0	0	0	0	0	271	0	0	0	0	0	271	
Pool B water	0	0	0	0	0	0	510	0	0	0	0	0	510	
Agency Total	0	0	2,315	2,448	2,524	2,524	3,305	2,905	2,905	2,905	2,905	2,904	27,640	
Littlerock Creek Irrigation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	2,300
AVEK's approved Table A water delivered through Littlerock	0	0	0	0	0	22	146	165	91	51	22	0	497	
Agency Total	0	0	0	0	0	22	146	165	91	51	22	0	497	
Metropolitan Water District of Southern California														
Approved Table A water	393	94,519	97,874	98,098	114,098	113,477	132,193	113,000	123,811	129,632	107,845	65,408	1,190,348	2,011,500
Approved Table A water to EWA[a]	0	0	0	0	0	0	7,000	6,815	0	0	0	0	13,815	
Article 21 water	0	0	187	3,487	0	0	0	0	0	0	0	0	3,674	
Article 56(c) extended carryover	97,940	0	0	0	0	0	0	0	0	0	0	0	97,940	
EWA water received (2:1)	0	0	6,347	21,283	0	0	0	0	0	0	0	0	27,630	
Flexible storage replacement with Article 21 water (Castaic Lake)[a]	0	0	1,190	4,760	0	0	0	0	0	0	0	0	5,950	
Flexible storage replacement with Table A water (Lake Perris)[a]	0	0	0	0	1,336	1,336	1,336	0	0	0	3,342	3,342	10,692	
Flexible storage replacement with Table A water (Castaic Lake)[a]	0	0	0	0	7,294	7,294	7,294	0	0	16,468	10,000	10,000	58,350	
Pool A water	0	0	0	0	0	0	0	14,335	0	0	0	0	14,335	
Transfer approved water from San Bernardino	0	0	0	0	5,000	0	0	0	0	0	0	30,000	35,000	
Agency Total	98,333	94,519	104,408	122,868	119,098	113,477	132,193	127,335	123,811	129,632	107,845	95,408	1,368,927	
Mojave Water Agency														
Approved Table A water	320	145	143	139	360	173	96	350	361	430	251	208	2,976	75,800
Mojave's approved Table A water delivered through AVEK[a]	56	61	92	95	128	205	156	202	155	105	77	38	1,370	
Pool A water sale[a]	19,110	0	0	0	0	0	0	0	0	0	0	0	19,110	
Pool B water sale[a]	11,379	0	0	0	0	0	0	0	0	0	0	0	11,379	
Agency Total	320	145	143	139	360	173	96	350	361	430	251	208	2,976	
Palmdale Water District														
Approved Table A water	569	646	904	1,443	1,873	2,006	0	0	0	0	9	909	8,359	21,300
Dry Year Water Purchase	0	0	0	0	0	0	2,082	2,446	2,317	1,631	1,224	0	9,700	
Pool A water	0	0	0	71	81	0	0	0	0	0	0	0	152	
Pool B water	0	0	0	0	0	0	285	0	0	0	0	0	285	
Agency Total	569	646	904	1,514	1,954	2,006	2,367	2,446	2,317	1,631	1,233	909	18,496	
San Bernardino Valley Municipal Water District														
Approved Table A water	0	0	0	1,107	1,614	2,786	2,954	3,338	7,099	7,466	5,359	1,545	33,268	102,600
Carryover special (2001)	1,895	880	1,026	0	0	0	0	0	0	0	0	0	3,801	
Table A transfer to Metropolitan[a]	0	0	0	0	5,000	0	0	0	0	0	0	30,000	35,000	
Agency Total	1,895	880	1,026	1,107	1,614	2,786	2,954	3,338	7,099	7,466	5,359	1,545	37,069	
San Gabriel Valley Municipal Water District														
Approved Table A water	0	56	0	704	3,015	2,555	2,318	2,486	2,398	2,497	614	1,710	18,353	28,800
Carryover special (2001)	3,278	1,420	0	0	0	0	0	0	0	0	0	0	4,698	
Exchange approved Table A water from Dudley Ridge	0	0	0	0	0	0	0	0	0	1,800	0	0	1,800	
Agency Total	3,278	1,476	0	704	3,015	2,555	2,318	2,486	2,398	4,297	614	1,710	24,851	
San Gorgonio Pass Water Agency														
Pool A water sale[a]	300	0	0	0	0	0	0	0	0	0	0	0	300	4,000
Pool B water sale[a]	1,200	0	0	0	0	0	0	0	0	0	0	0	1,200	
Agency Total	0	0	0	0	0	0	0	0	0	0	0	0	0	

[a]Excluded water

Table 9-4. Water Delivered in 2002, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2002 Total Deliveries	2002 Contract Table A
Ventura County Flood Control District														
Approved Table A water	154	154	154	154	154	154	303	772	1,202	1,418	223	156	4,998	20,000
Pool A water sale[a]	6,750	0	0	0	0	0	0	0	0	0	0	0	6,750	
Pool B water sale[a]	2,252	0	0	0	0	0	0	0	0	0	0	0	2,252	
Agency Total	154	154	154	154	154	154	303	772	1,202	1,418	223	156	4,998	
Recreation/Fish and Wildlife														
Castaic Lake	15	3	19	32	35	45	45	31	30	25	9	16	305	
Castaic Lake to Lagoon	0	0	0	0	582	410	501	291	0	0	397	0	2,181	
Silverwood Lake	2	1	2	5	8	9	12	12	11	9	4	2	77	
Lake Perris	23	23	25	34	41	40	50	52	47	35	23	20	413	
Agency Total	40	27	46	71	666	504	608	386	88	69	433	38	2,976	
Recreation/Fish and Wildlife														
USFWS recreation/fish and wildlife water (Pyramid Lake)	1	1	1	2	2	2	3	2	2	1	1	0	18	
SWP	109,704	102,498	110,301	116,425	140,324	137,978	158,483	153,178	151,703	156,989	125,113	108,867	1,571,563	
Non-SWP	1	1	6,348	21,285	2	2	2,085	2,448	2,319	1,632	1,225	0	37,348	
Southern California Area Total	*109,705*	*102,499*	*116,649*	*137,710*	*140,326*	*137,980*	*160,568*	*155,626*	*154,022*	*158,621*	*126,338*	*108,867*	*1,608,911*	*2,557,200*
SWP Water														
SWP Approved Table A Water														
Agricultural and M&I approved Table A water	11,994	129,660	161,816	151,503	207,878	342,938	334,032	270,807	229,851	220,447	143,906	96,630	2,301,462	
Agricultural and M&I approved Table A water for EWA[a]	0	0	0	0	0	100	9,887	42,419	15,000	0	13,224	0	80,630	
Article 21 water	532	46	9,709	25,056	1,796	0	0	0	0	0	0	0	37,139	
Article 56(c) extended carryover	110,529	11,587	545	776	290	660	714	316	59	0	0	0	125,476	
Carryover special (2001)	21,793	9,595	3,307	0	0	0	0	0	0	0	0	0	34,695	
Flexible storage replacement with Article 21 water (Castaic Lake)[a]	0	0	1,190	4,760	0	0	0	0	0	0	0	0	5,950	
Flexible storage replacement (Lake Perris)[a]	0	0	0	0	1,336	1,336	1,336	0	0	0	3,342	3,342	10,692	
Flexible storage replacement (Castaic Lake)[a]	0	0	0	0	7,294	7,294	7,294	0	0	16,468	10,000	10,000	58,350	
Flexible storage withdrawal (Castaic Lake)	0	0	0	0	0	0	0	0	0	0	0	395	395	
Unscheduled water	0	0	0	26	0	0	0	0	0	0	0	0	26	
Transfer approved water	0	0	0	0	5,000	0	801	8,332	0	0	0	30,000	44,133	
Exchange approved water	0	0	0	0	5,250	5,250	0	0	7,517	2,195	1,800	0	22,012	
Exchange approved water for banked water[a]	0	0	0	1,389	0	0	0	0	0	0	0	0	1,389	
Pool A water	0	0	0	71	814	1,651	8,875	14,749	0	0	0	0	26,160	
Pool B water	0	0	0	0	768	2,972	14,105	1,247	0	0	0	0	19,092	
Pool A water sale[a]	26,160	0	0	0	0	0	0	0	0	0	0	0	26,160	
Pool B water sale[a]	19,092	0	0	0	0	0	0	0	0	0	0	0	19,092	
Pump-in recoveries	0	0	0	13,734	12,549	571	0	0	0	0	5,645	4,300	36,799	
Water Bank water recoveries	0	0	0	1,389	0	0	0	0	0	0	0	0	1,389	
Total	144,848	150,888	175,377	192,555	234,345	354,042	358,527	295,451	237,427	222,642	151,351	131,325	2,648,778	
SWP Table A-related water														
Recreation/fish and wildlife water	88	63	102	111	719	580	714	461	163	147	472	74	3,694	
Subtotal (SWP water)	144,936	150,951	175,479	192,666	235,064	354,622	359,241	295,912	237,590	222,789	151,823	131,399	2,652,472	
Non-SWP Water														
Other water														
Dry Year Purchase Program	0	0	0	0	3,580	1,800	2,282	4,285	2,317	1,631	1,224	0	17,119	
Conveyance of nonproject water to O'Neill Forebay	0	0	0	0	0	0	0	0	56,095	0	0	0	56,095	
EWA water received (2:1)	0	0	8,654	31,357	0	0	0	0	0	0	0	0	40,011	
Local	28,162	665	1,125	67,930	175,741	189,026	200,159	149,067	62,364	98,440	96,833	72,110	1,141,622	
Vallejo permit water	0	0	0	263	467	977	907	792	1,074	1,782	1,281	552	8,095	
Subtotal	28,162	665	9,779	99,550	179,788	191,803	203,348	154,144	121,850	101,853	99,338	72,662	1,262,942	
CVP Water														
Conveying water to CVP contractor	0	395	0	6,148	0	0	8,317	0	3,058	4,143	0	0	22,061	
Conveying CVP water annual contract	80	45	62	74	74	78	86	82	96	120	65	6	868	
Conveying CVP water (Kern National Wildlife Refuge–the Bureau)	808	690	0	0	89	280	60	1,096	3,865	1,613	4,656	1,569	14,726	
Conveying CVP water recreation/fish and wildlife water (San Luis/Pyramid)	86	33	39	32	32	48	62	45	43	54	32	27	533	
Delivery of CVP water from CVP/CVC to SWP contractor	0	7,400	0	3,456	0	0	0	36,082	8,932	529	0	0	56,399	
Transfer of CVP water to SWP contractor	0	1,932	0	0	0	0	0	1,000	1,000	0	0	0	3,932	
Transfer of CVP/CVC water to CVP contractor	0	0	0	0	0	0	13,151	18,045	1,100	4,229	2,634	897	40,056	
Transfer of CVC water to CVP contractor at San Luis Reservoir[a]	0	0	0	0	0	0	0	1,418	514	0	0	0	1,932	
Subtotal (CVP water)	974	10,495	101	9,710	195	406	21,676	56,350	18,094	10,688	7,387	2,499	138,575	
Total (Non-SWP water)	*29,136*	*11,160*	*9,880*	*109,260*	*179,983*	*192,209*	*225,024*	*210,494*	*139,944*	*112,541*	*106,725*	*75,161*	*1,401,517*	
Grand Total	174,072	162,111	185,359	301,926	415,047	546,831	584,265	506,406	377,534	335,330	258,548	206,560	4,053,989	4,125,031

[a]Excluded water

Table 9-5. Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-02 (Acre-feet)

Year	Annual Table A Water According to Long-Term Water Supply Contract							Water Conveyed								Total
								Deliveries								
	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)*	*Annual Table A Water (8)*	*Article 21 Surplus and Unscheduled Water[a] (9)*	*Other Water[b] (10)*	*Feather River Diversions[c] (11)*	*Wildlife/ Recreation Water (12)*	*Subtotal (13)*	**Initial Fill Water (14)**	**Operational Losses and Storage Changes[d] (15)**	**(16)**
1962	0	0	0	0	0	0	0	0	0	18,289	0	0	18,289	9	272	18,570
1963	0	0	0	0	0	0	0	0	0	22,456	0	0	22,456	71	185	22,712
1964	0	0	0	0	0	0	0	0	0	32,507	0	0	32,507	171	152	32,830
1965	0	0	0	0	0	0	0	0	0	44,105	0	0	44,105	93	729	44,927
1966	0	0	0	0	0	0	0	0	0	67,928	0	0	67,928	0	1,746	69,674
1967	0	0	11,538	0	0	0	11,538	11,538	0	53,605	0	0	65,143	8,328	4,212	77,683
1968	550	0	109,900	77,350	0	3,700	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	163,075	0	5,000	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	202,000	0	5,700	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	251,800	0	6,700	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	413,066	0	209,423	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	383,652	0	481,100	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	460,650	0	597,920	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	545,809	0	714,950	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	543,417	0	836,480	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	581,400	0	954,901	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	635,900	0	1,049,584	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	702,685	0	1,190,573	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	758,100	1,946	1,317,614	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	818,000	2,813	1,432,065	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	876,500	5,626	1,550,449	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	867,118	8,439	1,681,257	2,701,164	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	979,211	12,698	1,744,098	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	1,019,049	21,138	1,864,849	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	1,091,946	28,210	1,983,890	3,257,736	1,995,636	36,620	193,606	791,737	3,865	3,021,464	0	284,380	3,305,844
1987	4,620	1,550	150,300	1,188,500	35,204	2,103,941	3,484,115	2,130,086	114,907	377,592	831,947	7,672	3,462,204	0	(390,413)	3,071,791
1988	5,060	15,471	152,500	1,246,100	43,722	2,225,482	3,688,335	2,385,122	0	507,076	794,834	4,889	3,691,921	0	(92,850)	3,599,071
1989	5,500	24,615	156,700	1,290,400	56,342	2,424,633	3,958,190	2,853,747	0	474,559	830,500	8,135	4,166,941	0	447,917	4,614,858
1990	6,040	28,190	160,900	1,313,450	70,486	2,500,600	4,079,666	2,582,151	90	424,697	875,099	9,262	3,891,299	0	(528,869)	3,362,430
1991	11,880	29,590	166,400	1,338,011	70,486	2,510,200	4,126,567	549,113	3,521	551,051	565,395	4,879	1,673,959	0	167,435	1,841,394
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	1,471,454	1,156	144,789	613,978	2,605	2,233,982	0	(63,541)	2,170,441
1993	11,960	34,620	177,400	1,342,300	70,486	2,510,200	4,146,966	2,315,235	0	254,854	822,589	2,609	3,395,287	0	726,123	4,121,410
1994	12,000	37,215	182,000	1,342,300	70,486	2,510,200	4,154,201	1,749,351	112,625	236,739	874,018	8,200	2,980,933	0	(295,405)	2,685,528
1995	12,050	44,030	184,000	1,342,300	70,486	2,510,200	4,163,066	1,967,093	64,330	78,425	860,077	2,575	2,972,500	0	69,536	3,042,036
1996	12,100	48,225	186,000	1,301,630	70,486	2,492,900	4,111,341	2,514,825	28,647	251,391	934,997	3,907	3,733,767	86	491,550	4,225,403
1997	12,150	49,315	188,000	1,297,300	45,201	2,492,900	4,084,866	2,325,775	21,432	322,000	993,211	4,146	3,666,564	527	(11,806)	3,655,285
1998	12,200	50,420	188,000	1,272,300	45,201	2,517,900	4,086,021	1,725,519	20,288	134,682	872,738	2,108	2,755,335	0	(132,491)	2,622,844
1999	12,250	51,500	188,000	1,272,300	70,486	2,519,900	4,114,436	2,738,891	158,070	85,312	1,108,672	4,324	4,095,269	0	(189,525)	3,905,744
2000	14,000	55,945	210,000	1,205,300	70,486	2,565,900	4,121,631	3,200,677	308,785	322,655	1,085,886	4,030	4,932,032	0	(20,103)	4,911,929
2001	14,670	66,561	220,000	1,185,519	70,486	2,566,900	4,124,136	1,690,926	43,435	477,835	1,078,656	2,929	3,293,781	0	159,983	3,453,764
2002	14,730	67,396	220,000	1,195,219	70,486	2,557,200	4,125,031	2,573,030	37,165	307,162	1,132,938	3,694	4,053,989	0	80,709	4,129,673
Total	**208,490**	**643,303**	**5,346,638**	**31,845,957**	**1,081,886**	**57,149,509**	**96,275,783**	**56,158,515**	**6,692,882**	**7,989,243**	**29,651,342**	**129,676**	**100,621,658**	**1,834,310**	**266,539**	**102,717,482**

[a] Values include amounts of deliveries to short-term contractors (Mustang Water District, 1970-72; Tracy Golf and Country Club, 1974, 1979, and 1980; Green Valley Water District, 1974, 1975, 1978, 1979, 1980, and 1985; Granite Construction Company, 1980).
[b] Includes amounts of SWP non-Table A water and non-SWP water conveyed for SWP and non-SWP water 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 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.

Non-SWP Water Deliveries. Column 14 includes deliveries of nonproject water to long-term water contractors. Nonproject water is generally local and permit water that a SWP contractor has a water right to, or water purchased from, exchanged with, or transferred from non-SWP agencies. In 2002, nonproject water deliveries totaled 117,121 acre-feet.

Total Deliveries. Column 15 shows total amounts of water delivered to long-term contractors. In 2002, the SWP delivered 2,783,018 acre-feet to 26 long-term contractors. This amount included 2,573,030 acre-feet of approved Table A water, 37,165 acre-feet of Article 21 and unscheduled water, and 117,121 acre-feet of nonproject water.

Water Delivered in 2002 by Month

During 2002, the SWP provided water service to 51 agencies, including 26 long-term water contractors. Those agencies and the amounts of water delivered to them by month are listed in Table 9-4.

This section and the accompanying table summarize water deliveries for 2002. Information about those deliveries is categorized as SWP water and nonproject water.

SWP Water

SWP water delivered in 2002 is categorized as follows:

Long-term water supply contracts

Article 21

carryover approved Table A water

current year approved Table A amounts

flexible storage

transfer and exchange of approved Table A water

turnback pools A and B

Related water

operational flood release

recreation and fish and wildlife

In 2002, SWP water was delivered in the following classifications and amounts.

Approved Table A Water. A total of 2,412,859 acre-feet of 2002 approved Table A water was delivered to 26 long-term contractors. Also, 160,171 acre-feet of carryover water, and 395 acre-feet of flexible storage withdrawal water were delivered in 2002.

Exchanges and Transfers of Approved Table A Water. During 2002, a total of 66,145 acre-feet of approved Table A water was exchanged or transferred to SWP long-term contractors and non-SWP water agencies as follows:

- Santa Barbara transferred 745 acre-feet to Dudley Ridge;
- Kern transferred 6,133 acre-feet to Dudley Ridge;
- Tulare Lake transferred 3,000 acre-feet of water to Westlands and exchanged 12,067 acre-feet with Westlands;
- Del Puerto Water District received 6,500 acre-feet of exchange water from Kern, and San Luis Water District received 900 acre-feet of exchange water from Kern;
- San Bernardino transferred 35,000 acre-feet to Metropolitan; and
- San Gabriel received 1,800 acre-feet of exchange water from Dudley Ridge.

2001 Carryover Approved Table A Water. In 2002, 160,171 acre-feet of 2001 approved Table A water were delivered that had been stored in SWP storage facilities in 2001.

Article 21 Water. The Article 21 water program allows a contractor to take delivery of

water over the approved and scheduled Table A amounts for the current year. In 2002, 14 contractors participated in the program. A total of 37,165 acre-feet of Article 21 water was delivered, including 37,139 acre-feet delivered to Napa, Solano, Alameda-Zone 7, Alameda County, Dudley Ridge, Santa Clara, Kern, Tulare, Oak Flat, Santa Barbara, Castaic Lake, Coachella, Desert, and Metropolitan. Empire took delivery of 26 acre-feet of unscheduled water.

Water for Recreation and Fish and Wildlife. A total of 3,694 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife.

Recreational Use. The SWP delivered 726 acre-feet of water for facilities at Lake Oroville, Lake Del Valle, O'Neill Forebay, Silverwood Lake, and Lake Perris. In addition, 2,486 acre-feet were delivered to Castaic Lake and Castaic Lagoon, an impoundment downstream from Castaic Lake devoted entirely to recreation.

Wildlife Management. The SWP delivered 482 acre-feet of water to use in managing wildlife in the Pilibos Wildlife Area, located on about 770 acres of land near O'Neill Forebay, 40 miles south of Los Banos.

Operational Flood Release Water

There was no operational flood water released in 2002.

Non-SWP Water

In 2002, the Department used SWP facilities to convey non-SWP water for various agencies according to the terms of water rights and water transfer and exchange agreements. Detailed information concerning those conveyances is found under the *Miscellaneous Agreements with Other Agencies* section in this chapter.

Floodwater. Occasionally, during wet years, the Department accepts floodwater from the Kern River into the California Aqueduct through the Kern River-California Aqueduct Intertie under an agreement entitled *Agreement among the State of California, Kern County Water Agency, and the Kern River Interests for Diversions of Floodwaters through the Kern River-California Aqueduct Intertie*, dated November 18, 1975. In 2002, the Department did not accept any floodwater into the California Aqueduct.

Water Rights Water. Water in this category is transported through SWP facilities to long-term SWP contractors and other agencies according to terms of various local water rights agreements. Some water simply passes through SWP transportation facilities; a portion is stored in SWP reservoirs for release at a later time. In 2002, 1,141,622 acre-feet of water in this category were delivered to the Feather River and South Bay.

Feather River Area. Ten nonproject agencies in the Feather River area received 1,132,938 acre-feet. Those agencies are

- Last Chance Creek Water District, 9,903 acre-feet
- Thermalito Irrigation District, 2,389 acre-feet
- Oroville-Wyandotte Irrigation District, 5,812 acre-feet
- Western Canal Water District, 299,212 acre-feet
- Joint Water Districts Board, 787,150 acre-feet
- Oswald Water District, 287 acre-feet
- Tudor Mutual Water Company, 3,514 acre-feet
- Garden Highway Mutual Water Company, 15,658 acre-feet
- Plumas Mutual Water Company, 7,955 acre-feet
- Dana Brothers, 1,058 acre-feet

South Bay Area. In the South Bay area, 8,684 acre-feet of local water were delivered to Alameda-Zone 7 and Alameda County. These two South Bay Aqueduct contractors hold water rights to runoff from Lake Del Valle watershed.

Annual Table A Water and Water Delivered Since 1962

Information about annual Table A water and water conveyed for the past 40 years is contained in Table 9-5. The following discussion of conveyed Table A water is arranged according to column numbers.

Annual Table A. Columns 1 through 7 of Table 9-4 show the amount of long-term contractor's annual Table A water by area for years 1962 through 2002 as specified in the Table A schedules of the long-term water supply contracts.

In some instances Table A schedules—projections of each contractor's need for water to 2035—have been amended to meet the needs of individual contractors. The amounts of annual Table A water each contractor may request for years 1962 through 2035 can be found in Table B-4 in Appendix B.

Water Delivered. Columns 8 through 16 show water delivered or conveyed, including initial fill water and operational losses and storage changes.

Approved Table A Water. Column 8 shows amounts of approved Table A water delivered each year from 1962 through 2002.

Article 21 and Unscheduled Water. Article 21 and unscheduled water is water in excess of that required to meet all demands for the year's approved Table A water and water to be stored in SWP reservoirs.

Column 9 shows amounts of Article 21 water, as defined under *SWP Deliveries*, and unscheduled water delivered from 1962 through 2002.

Other Water. Column 10 includes amounts of water classified as other water delivered, including nonproject water conveyed through SWP facilities and regulated delivery of local supply.

In 2002, a total of 307,162 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 2002, a total of 1,132,938 acre-feet in this category was delivered to agencies in the Feather River area.

Recreation Water. Column 12 shows water conveyed for recreational use or to provide water to improve water quality for fish and wildlife. In 2002, a total of 3,694 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 the aqueducts and reservoirs south of the Delta to maximum operating capacities. Initial filling began in 1962 with the filling of the South Bay Aqueduct and was completed in 1979 when Lake Perris reached its maximum operating capacity of 127,000 acre-feet. In 1996 and 1997, the Coastal Aqueduct was initially filled.

Operational Losses. Column 15 includes the total amounts of water lost through evaporation and seepage, net storage changes in reservoirs south of the Delta, and amounts of inflow from local drainage areas, including inflows into San Luis Canal and from the Kern River Intertie.

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

Information for this chapter was contributed by the State Water Project Analysis Office.

Chapter 10
Power Resources



Staff monitoring operations at Joint Operations Center

Significant Events in 2002

- Energy used at the 25 State Water Project pumping and generating plants totaled 8.39 million MWh.
- The Department sold 1.17 million MWh of energy to 15 utilities and 13 power marketers for total revenues of $58.09 million in 2002. The Department also received $24.67 million in revenues for capacity and exchanges, including $17.14 million for transactions made through the California Independent System Operator.
- The Department purchased 2.09 million MWh of energy at a cost of $62.41 million. Associated costs for capacity totaled $21.07 million. Other SWP power costs, including transmission, operation, maintenance, and ISO ancillary services, totaled $84.78 million.
- The Department and Southern California Edison have two existing agreements (*Power Contract* and *Capacity Exchange Agreement*) for the exchange of energy. Under these agreements, the Department provides SCE with energy and capacity during the on-peak period, while SCE provides the Department with exchange energy during the off-peak period. These two agreements have provisions which allow SCE to curtail delivery of energy under certain circumstances. From June 1, 2000, through May 5, 2001, SCE curtailed the delivery of exchange energy to the Department under circumstances that were disputed by the Department. The dispute culminated in a December 26, 2002, *Settlement Agreement*, in which the parties agreed to revise certain agreement provisions pertaining to SCE's right to interrupt or curtail deliveries of energy to the Department. Additionally, SCE paid the Department $30 million as compensation for curtailing exchange energy during 2000 and 2001.

Long-term State Water Project contractors depend on the SWP to provide economical sources of power to deliver affordable water. Responding to that need, the Department developed and administers a comprehensive power resources program. Key elements of the program include the strategic timing of generation and pumping schedules, purchase of power resources and transmission services, short-term sales of power surpluses, and studies of power resources for future needs.

Power Resources Program

The goals of the SWP power resources program are to

- obtain reliable, environmentally sensitive, and competitively priced power sources and transmission services sufficient to operate the SWP;
- develop and manage power resources to minimize the cost of water deliveries to SWP contractors;
- minimize impacts on the SWP when major contractual power arrangements begin to expire in 2004;
- meet responsibilities and criteria of the Western Electricity Coordinating Council; and
- conform with regulations of the California Energy Commission and the Federal Energy Regulatory Commission.

To achieve these goals, the Department constructed its own power facilities and contracted for long-term power resources with many electric utilities. In addition, the Department arranged for transmission service between SWP power resources and pumping loads and interconnected utilities. The power resources program takes advantage of SWP water storage and conveyance capacities that allow the Department to operate the SWP in a cost-effective manner. This control of pumping loads and generation allows the Department to enter into advantageous agreements with other electric utilities that complement the use of SWP generation to meet SWP power requirements.

Restructuring of the Electric Utility Industry

On September 23, 1996, Assembly Bill 1890 was signed into law by the Governor. AB 1890 called for restructuring the electric utility industry in California and creating the California Independent System Operator and the separate California Power Exchange. To make the new California markets viable and to limit market power control of the investor-owned utilities (Pacific Gas and Electric Company, Southern California Edison, and San Diego Gas and Electric Company), the utilities were required to unbundle their transmission, generation, and distribution into separate business units and divest half of their thermal generation. The investor-owned utilities were granted full recovery of their stranded costs through a competition transition charge.

On March 31, 1998, ISO and CalPX began operation. ISO manages most of California's transmission grid and is responsible for overall system reliability. Scheduling coordinators were created to submit energy schedules to ISO. All loads and resources within the ISO-controlled grid, and resources imported or exported within California, must schedule through these coordinators. ISO operates the following three markets:

- *ancillary services market*, which consists of regulation, spinning, nonspinning, replacement reserves, voltage support, and black start. Regulation, spinning, nonspinning, and replacement reserves are acquired through day-ahead and hour-ahead markets. Voltage support and black start are purchased on a yearly contract basis;
- *congestion management market*, which uses adjustment bids to clear congestion on a transmission path; and
- *real-time imbalance market*, which uses supplemental energy bids to maintain grid integrity by adjusting generation to match constantly changing loads and system losses.

In 1998, the Department signed numerous agreements to participate in ISO markets, including

- Scheduling Coordinator Agreement
- Meter Service Agreement for Scheduling Coordinators
- Participating Generator Agreement
- Meter Service Agreement for ISO Metered Entities

In 2001, the Department signed the Participating Load Agreement with ISO.

In 2001, FERC ordered the termination of the requirement for the Investor-Owned Utilities to buy and sell energy through the California Power Exchange. This effectively shut down operations of the CalPX.

The Department participated in various stakeholder processes and intervened in numerous dockets before FERC to resolve ongoing issues of concern. Major issues included

- development of ISO's transmission access charge and off-peak rates;
- conversion of existing transmission contracts to ISO service and receipt of financial and physical transmission rights from ISO as compensation;
- unbundling ISO's grid management charge paid by scheduling coordinators to recover ISO's costs;
- reaching conformity between the investor-owned utilities transmission owner's tariffs and ISO's tariff;
- numerous ISO tariff amendments covering operational and market issues;
- redesign of the ISO's Ancillary Services markets to increase participation, reduce costs, and provide for proper cost allocation;
- revision of Reliability Must-Run contracts to reduce costs and prevent gaming by owners;
- firm transmission rights auction to purchase firm transmission capacity on congested interzonal and intertie transmission paths; and
- formulation of price cap policies to eventually end the use of price caps by establishing market mechanisms to encourage competition.

In 2002, The Department worked closely with the ISO and provided data to help towards modeling various stakeholder processes such as: Market Design 2002; Congestion Revenue Rights; Locational Marginal Pricing; and Metered Subsystems.

The Department

- sells spinning, nonspinning, and replacement reserves to ISO;
- bids pump loads into nonspinning reserves to provide ISO more resources in case of system emergencies or contingencies; and
- buys and sells energy.

Oroville Facilities Relicensing

The existing 50-year term FERC hydropower license, Project Number 2100 for operation of the Oroville Facilities, will expire January 31, 2007. To obtain a new license the Department must file a new application by January 31, 2005.

FERC offers three relicensing procedures—traditional, hybrid, and alternative—that allow

applicants to accommodate their unique interests and operations while seeking a license renewal. The traditional procedure involves minimal FERC involvement while the alternative procedures allow for more FERC involvement and stakeholder interaction. The Department selected the alternative licensing procedure that encourages a collaborative stakeholder approach throughout the multiyear relicensing process.

Participants in the relicensing activities indicated support for a collaborative approach in the Oroville Facilities Relicensing process, and on November 16, 2000, the Department, as licensee, submitted a request to FERC to use the alternative licensing procedures in relicensing the Oroville facilities. On January 11, 2001, FERC approved the Department's request.

During calendar year 2002, primary achievements included

- filing a "Notice of Intent to File Application for New License" with FERC;
- completion of a draft guidance document for cumulative impacts and Endangered Species Act compliance;
- distribution of Final National Environmental Policy Act Scoping Document and California Environmental Quality Act Notice of Preparation;
- collaborative concurrence on and the initial implementation of 71 field studies needed to support the Department's license application that will be filed before January 31, 2005; and
- preliminary development of a framework for settlement agreement negotiations and screening criteria for potential protection, mitigation, and enhancement measures.

As an interim settlement activity, the Department obtained approval to provide $3 million to Feather River Recreation and Park District to fund recreation improvements at Riverbend Park in Oroville through calendar year 2007.

SWP facilities that will be subject to new license terms and conditions include

- Oroville Dam and Reservoir
- Hyatt Pumping-Generating Plant
- Thermalito Pumping-Generating Plant
- Thermalito Diversion Dam Power Plant
- Thermalito Diversion Dam
- Fish Barrier Dam
- Feather River Fish Hatchery
- Thermalito Power Canal
- Thermalito Forebay
- Thermalito Afterbay

California Energy Resources Scheduling Division

During the 2001 energy crisis, the Governor declared a State of Emergency on January 17, 2001, and ordered the Department to begin purchasing short-term and long-term energy on behalf of the State's investor-owned utilities, PG&E and SCE. This act created CERS, which manages long-term power contracts for the utilities. From January 17 through December 31, 2002, CERS purchased and scheduled electricity to meet the demands on the State's utilities. CERS is funded independently of the financial systems related to the SWP.

Reliability Management System Program

In 1996, electrical disturbances on local transmission networks led to two major outages of the interconnected transmission systems of several states, including California. In both instances, operation of the SWP, as well as that of numerous other major transmission-dependent systems, was adversely impacted.

The 1996 summer outages on the western grid focused attention on the need to take additional steps to ensure the reliability of the western interconnected grid. To address these concerns and ensure reliability, the Western Systems Coordinating Council developed the voluntary Reliability Management System Program, implemented in September 1999. In 2002, Western Electricity Coordinating Council was formed from the merger of WSCC and two other transmission associations.

The RMS criteria are based on existing WECC and FERC reliability criteria; participants are subject to sanctions for noncompliance. Currently, there is no legal authority to require any entity to participate in a mandatory reliability program with sanctions.

Existing SWP Power Facilities

Figure 10-1 shows the names, locations, and nameplate capacity of the Department's primary power facilities.

Hydroelectric. Economic hydroelectric generation provides the largest share of SWP power resources. The combined Hyatt Pumping-Generating Plant and Thermalito Pumping-Generating Plant (Hyatt-Thermalito) generate about 2.2 billion kWh of energy in a median water year, while the 3 MW from Thermalito Diversion Dam Power Plant add another 24 million kWh of energy a year.

Generation at SWP Aqueduct recovery plants—Gianelli, Alamo, Devil Canyon, Warne, and Mojave Siphon—varies with the amount of water conveyed. These five plants generate about one-sixth of the total energy used by the SWP.

Coal. Since July 1983, under the "Participation Agreement Reid Gardner Unit No. 4" between the Department and Nevada Power Company, the Department has received energy from Reid Gardner Power Plant, a coal-fired facility near Las Vegas, Nevada. Reid Gardner consists of four units. The Department owns 67.8 percent of Unit 4, while NPC owns the remainder of Unit 4 as well as all of Units 1, 2, and 3. Under the Agreement, the Department received up to 235 MW (90.4 percent of 260 MW total capacity) from Reid Gardner Unit No. 4, subject to NPC's limited right to interrupt the Department's energy deliveries during specific periods. Whenever NPC interrupted the Department's scheduled energy, the Department received payment based on NPC's combustion turbine costs.

In addition, the Department receives 15 MW upgrade capacity completed in June 1990. Since September 1998, the Department has received all the upgrade capacity and associated energy and will continue receiving it through 2013.

Future SWP Power Facilities

To meet future SWP power requirements, the Department also considers and evaluates new power resources, including reviewing SWP power requirements and analyzing the type of resource and its cost. Factors considered include

- ability to meet anticipated power requirements for pumping;
- transmission access availability;
- anticipated water deliveries to contractors;
- cost of the resource;
- availability and cost of financing;
- environmental impacts and costs of mitigation; and
- operating characteristics.

The Department continues to consider several potential power resources. These include a second unit at Alamo Power Plant, a third unit at Warne Power Plant, and additional capacity at Hyatt-Thermalito.

Contractual Resource Arrangements

Through joint development, exchanges, and purchases the Department obtains a significant amount of capacity and energy for SWP operations from other utilities throughout California, the Northwest, and the Southwest. Under these agreements, the Department can sell, buy, or exchange energy.

Some agreements allow 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.

Negotiations continue with various utilities in the Pacific Northwest to develop arrangements for purchases, sales, and exchanges to take



Figure 10-1. Names, Locations, and Nameplate Capacity of Primary Power Facilities

advantage of the Department's 300 MW transmission capacity on the Extra-High Voltage Pacific Northwest Intertie.

Joint Developments. In 1966, the Department entered into a contract with the Los Angeles Department of Water and Power for the joint development of the West Branch of the California Aqueduct. LADWP constructed and operates Castaic Power Plant, which is connected to the LADWP transmission system at the Sylmar Substation.

The Department receives capacity and energy at the Sylmar Substation based on weekly water schedules through the West Branch.

Gianelli Pumping-Generating Plant is a joint SWP (222 MW) and Bureau of Reclamation (202 MW) facility.

Power Exchanges. The largest portion of the energy used by the SWP is provided by the 1979 *Power Contract* and the 1981 *Capacity Exchange Agreement* with SCE. Service began in April 1983 under the Power Contract and in April 1987 under CEA.

Curtailments of return and additional energy to the Department from SCE under the Power Contract and Capacity Exchange Agreement continued until early May, at which time SCE agreed to suspend their curtailments of energy deliveries and the arbitration process until December in order for staff from the Department and SCE to reach a solution to the dispute. The dispute culminated in a December 26, 2002, *Settlement Agreement* in which the parties agreed to revise certain agreement provisions on SCE's right to curtail deliveries of energy to the Department, and SCE paid the Department $30 million as compensation for curtailing exchange energy in 2000 and 2001.

According to terms of the Power Contract, the Department provides SCE with up to

- 350 MW of capacity and approximately 40 percent of the energy from Hyatt-Thermalito;
- 120 MW of capacity and all the energy generated by Devil Canyon Power Plant Units 1 and 2; and
- 15 MW of capacity and all the energy generated by Alamo Power Plant.

In return, the Department receives off-peak energy from SCE equal to the amount of energy provided to SCE from Hyatt-Thermalito, Devil Canyon Power Plant, and Alamo Power Plant, plus an additional amount of energy as payment for the capacity. This additional amount of energy is determined annually, based on the Capacity-Energy Exchange Formula as defined in the 1979 Power Contract. The formula determines the value of capacity in dollars and converts the dollar amounts into an equivalent amount of off-peak energy.

According to terms of CEA, each year the Department must provide 412.5 million kWh of energy to SCE during on-peak periods at a maximum delivery rate of 225 MW. SCE returns approximately 110 percent of the energy the Department provides during mid-peak and off-peak periods. In addition, SCE waives 75 percent of its charges to the Department for specified firm transmission service provided to SWP pumping and generating facilities. SCE also makes an annual payment of $900,000 to the Department.

Also, according to terms of the 1979 Power Contract, SCE receives energy from four of the Metropolitan Water District of Southern California power plants—Lake Mathews, Foothill Feeder, San Dimas, and Yorba Linda. In return, the Department receives off-peak energy from SCE averaging 107 percent of the total energy provided to SCE from those plants. All the energy from the fifth plant, Greg Avenue, is provided to LADWP according to a 1983 agreement between LADWP and the Department. The utility returns 98.8 percent of this energy to the Department during off-peak periods.

The 1979 Power Contract and the 1981 CEA with SCE will expire in 2004. The Department developed the Post 2004 Program to establish

new power and transmission contracts for replacing the existing SCE contracts.

Purchases. The Department obtains a significant amount of energy through long-term and short-term purchase agreements with the following utilities.

Long-Term Purchases. The Department purchases hydroelectric energy generated by other utilities. The output of the 165 MW Pine Flat Power Plant, owned and operated by Kings River Conservation District, supplies the SWP about 400 million kWh of energy in median water years.

The Department contracts for the energy output of five hydroelectric plants owned and operated by Metropolitan. The total capacity of those plants is 30 MW. To use this resource efficiently, the Department included it in the exchange arrangements with SCE.

The Department signed an agreement with PacifiCorp of Portland, Oregon, to purchase 100 MW of firm capacity and associated energy. That agreement became effective June 1, 1991, and will continue through 2004.

Short-Term Purchases. Additionally, according to terms of the 1988 Coordination Agreement between the Department and Metropolitan, the Department may purchase surplus energy from Metropolitan's Colorado River Aqueduct system. The Coordination Agreement provides for coordinated operation between the SWP and Metropolitan's Colorado River Aqueduct system. It also provides for

- monthly surplus firm energy sales to Metropolitan;
- economy energy sales to Metropolitan;
- surplus energy purchases from the Colorado River Aqueduct system; and
- energy exchanges between the Department and Metropolitan.

The Department also has the Western Systems Power Pool agreement with member utilities to purchase energy to satisfy unexpected, short-term energy shortages and to sell surplus short-term energy.

Contractual Transmission Arrangements

Although able to acquire transmission independently, the Department depends on other sources for transmission services. PG&E and SCE are the primary providers of transmission service between SWP power resources and pumping loads and interconnected utilities for purchases, sales, and exchanges of power.

Under the Comprehensive Agreement with 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 allows the Department to request and receive additional firm and interruptible transmission service if needed.

To interconnect the SWP loads and resources in Southern California, the Department receives transmission service from SCE over the SCE transmission system under the SCE-DWR Power Contract and Firm Transmission Service Agreement.

In August 1967, the Department contracted for 300 MW of transmission capacity on the Extra-High Voltage 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 Intertie through December 31, 2004; 100 MW of this capacity is committed to receiving the long-term purchase of 100 MW from PacifiCorp.

In December 1984, the Department signed a Memorandum of Understanding with many public and private California utilities. As implemented in the Interim Participation Agreement and the Long-Term Participation Agreement, the Department has an option (which can be exercised during a 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 Intertie. The transmission line began operation March 17, 1993.

Other SWP transmission needs are met by contractual arrangements with California utilities.

Load Management

The SWP controls the timing of its pumping load through an extensive computerized network. 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 by selling power to other utilities during on-peak periods, when power values are high. By taking advantage of this flexibility in scheduling SWP pumping load and generation, the net cost of power needed for SWP water deliveries is reduced.

Sales of Excess Power. When generation from SWP power resources exceeds requirements, the excess power is sold on the open market. Currently, the Department contracts with utilities and marketers for short-term purchase, sale, or exchange of power. In addition to selling firm power, the Department may sell power on a day-to-day or hour-to-hour basis according to the terms of its interchange agreements and of the Western Systems Power Pool Agreement. These agreements provide the basis for making economical energy transactions, short-term capacity and energy sales or exchanges, unit commitments, and transmission service purchases. Through these contracts, the Department sells excess capacity and energy at market rates.

In 2002, the Department also bought and sold excess energy not sold through bilateral agreements.

SWP Power Operation in 2002

Tables 10-1 through 10-4 present actual information about SWP power operation for calendar year 2002, including energy consumed and generated, energy exchanged and purchased, and energy sold.

Energy Consumed

Energy used at the 26 SWP pumping and generating plants totaled 8.39 million MWh.

Table 10-1 shows the amount of energy used each month at SWP pumping and generating plants to operate the SWP in 2002.

According to terms and conditions of various water conveyance contracts and exchange agreements, some water belonging to the Central Valley Project is pumped through Banks and Dos Amigos Pumping Plants and Gianelli Pumping-Generating Plant. The Bureau furnishes the energy for pumping this water.

Energy Generated

Table 10-2 shows amounts of energy generated at SWP facilities in 2002, as well as energy purchased for SWP operations.

Hydroelectric and Coal. The Hyatt-Thermalito power complex in Oroville produces a large amount of SWP energy and generated 1.49 million MWh of energy.

Energy generated at SWP recovery plants—Alamo, Devil Canyon, Mojave Siphon, and Warne—totaled 1.63 million MWh.

The SWP share of energy generated at the coal-fired Reid Gardner Unit 4 totaled 1.62 million MWh of energy.

Table 10-1. Energy Used at Pumping Plants and Power Plants in 2002, by Month (Millions of Kilowatt-Hours)

	Month												
Pumping Plants and Power Plants	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*	***Total***
Hyatt-Thermalito Pumping-Generating Plant (pumpback and station service)	17.843	15.285	17.728	21.077	14.694	1.578	0.000	0.002	0.003	0.000	0.011	0.139	88.360
North Bay Interim Pumping Plant	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.013
Cordelia Pumping Plant	0.398	0.286	0.812	1.104	0.742	0.951	1.069	1.030	0.841	0.779	0.875	0.369	9.257
Barker Slough Pumping Plant	0.174	0.181	0.431	0.622	0.978	1.215	1.383	1.281	1.076	0.782	0.682	0.289	9.094
South Bay Pumping Plant	0.261	0.301	4.133	8.317	14.577	14.908	15.734	16.316	13.219	7.572	2.702	2.366	100.405
Bottle Rock Power Plant (station service)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Del Valle Pumping Plant	0.009	0.009	0.006	0.164	0.404	0.017	0.009	0.009	0.007	0.006	0.007	0.008	0.655
Banks Pumping Plant	112.444	77.299	67.680	35.404	11.087	36.411	108.001	96.496	56.016	11.426	46.230	68.808	727.300
Gianelli Pumping-Generating Plant (SWP share)	84.861	48.046	35.625	0.131	0.105	0.393	4.137	14.740	4.088	1.148	10.600	38.045	241.920
Dos Amigos Pumping Plant (SWP share)	23.924	29.048	23.363	28.305	36.601	61.188	51.064	30.726	14.850	25.517	26.653	23.080	374.317
Buena Vista Pumping Plant	24.094	25.923	32.681	36.267	44.904	44.919	49.574	43.240	40.940	31.874	37.889	33.651	445.956
Teerink Pumping Plant	26.716	28.071	34.926	38.884	47.932	46.486	51.484	45.389	44.418	34.958	42.208	38.183	479.653
Chrisman Pumping Plant	60.542	62.819	77.489	85.925	104.726	100.429	112.298	99.990	98.929	77.524	95.590	85.310	1,061.571
Edmonston Pumping Plant	222.216	227.914	281.304	311.772	382.289	363.508	407.933	364.154	362.205	283.309	354.059	315.029	3,875.692
Alamo Power Plant (station service)	0.007	0.012	0.012	0.009	0.004	0.002	0.003	0.000	0.000	0.014	0.029	0.020	0.112
Pearblossom Pumping Plant	38.964	38.487	35.000	37.569	47.314	48.142	53.369	57.512	59.587	50.589	48.779	36.734	552.048
Mojave Siphon Power Plant (station service)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080	0.156	0.000	0.000	0.000	0.237
Pine Flat Power Plant	0.002	0.003	0.012	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.002	0.012	0.035
Devil Canyon Power Plant (station service)	0.007	0.004	0.010	0.021	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.005	0.048
Oso Pumping Plant	10.062	10.870	18.117	20.034	23.644	20.714	23.174	16.165	15.824	10.998	20.658	21.649	211.909
Warne Power Plant (station service)	0.206	0.023	0.048	0.014	0.000	0.011	0.000	0.003	0.001	0.034	0.002	0.021	0.363
Las Perillas Pumping Plant	0.361	0.190	0.389	0.632	0.888	1.154	1.217	1.044	0.730	0.569	0.293	0.290	7.756
Badger Hill Pumping Plant	0.939	0.473	1.043	1.723	2.425	3.070	3.256	2.772	1.979	1.540	0.778	0.747	20.747
Devil's Den Pumping Plant	1.151	1.150	1.565	1.843	2.616	2.050	2.156	2.804	2.596	2.083	1.500	1.590	23.106
Bluestone Pumping Plant	1.099	1.090	1.482	1.760	2.546	1.971	2.063	2.699	2.503	1.985	1.440	1.516	22.154
Polonio Pass Pumping Plant	1.170	1.170	1.574	1.843	2.579	2.043	2.152	2.739	2.549	2.054	1.487	1.601	22.961
Subtotal	*627.452*	*568.655*	*635.432*	*633.422*	*741.056*	*751.162*	*890.075*	*799.191*	*722.518*	*544.763*	*692.477*	*669.464*	*8,275.666*
Deviation Adjustments	18.813	1.305	0.352	10.607	21.175	8.762	1.848	20.126	14.027	2.869	2.579	15.668	118.131
Total Energy Required for SWP	**646.265**	**569.960**	**635.783**	**644.029**	**762.231**	**759.924**	**891.923**	**819.317**	**736.545**	**547.631**	**695.056**	**685.132**	**8,393.797**

Table 10-2. Energy Generated and Purchased in 2002, by Month (Millions of Kilowatt-Hours)

Sources of Energy	Month												
	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*	***Total***
SWP Energy Sources													
Hyatt-Thermalito Power Plant	54.056	27.758	43.077	78.699	155.011	218.519	307.655	222.950	121.503	102.656	71.772	81.966	1,485.621
Gianelli Pumping-Generating Plant (SWP share)	0.113	(0.402)	(0.014)	23.674	56.642	53.946	20.514	1.733	15.379	25.891	9.505	6.253	213.234
Alamo Power Plant	7.225	7.086	6.318	7.134	9.081	9.282	10.439	10.805	10.819	8.248	4.282	6.547	97.266
Mojave Siphon Power Plant	4.674	4.495	4.076	4.305	5.541	5.590	6.315	6.802	7.098	5.939	5.770	4.214	64.819
Devil Canyon Power Plant	76.004	68.436	63.960	67.607	87.782	87.067	97.134	105.580	108.663	93.654	86.776	69.056	1,011.719
Reid Gardner Unit 4[a]	151.061	124.274	169.246	159.876	172.762	103.195	134.543	109.749	139.258	115.348	98.697	141.956	1,619.965
Warne Power Plant	22.335	24.170	39.624	43.072	49.875	43.556	49.398	36.444	35.184	25.253	45.299	45.785	459.994
Subtotal	*315.467*	*255.817*	*326.287*	*384.366*	*536.694*	*521.156*	*625.999*	*494.062*	*437.905*	*376.989*	*322.101*	*355.777*	*4,952.619*
Energy Sources from Long-Term Agreements													
Castaic Power Plant	33.634	39.862	66.674	71.324	83.431	73.092	83.431	56.928	57.010	39.802	73.567	78.321	757.076
Metropolitan Water District Small Hydro Generation	24.385	14.124	9.677	8.993	13.622	22.419	24.535	17.641	16.407	14.907	17.727	12.053	196.490
Pine Flat Power Plant KRCD	0.000	0.128	13.814	26.437	55.170	97.677	67.752	7.102	0.000	0.000	0.000	0.000	268.079
Power Exchange Delivered to other entities[b]	(141.774)	(141.825)	(196.598)	(165.556)	(210.312)	(291.558)	(228.783)	(300.768)	(288.752)	(232.826)	(176.545)	(204.717)	(2,580.014)
Power Exchange Received from other entities[b]	188.774	168.250	218.148	171.531	214.712	295.854	248.783	295.768	268.792	205.560	153.825	180.915	2,610.912
Power Exchange Delivered to SCE	(125.819)	(104.220)	(108.393)	(122.335)	(185.541)	(210.035)	(244.322)	(214.408)	(172.696)	(170.204)	(139.546)	(134.516)	(1,932.035)
Power Exchange Received from SCE	228.370	202.510	218.048	234.631	271.859	281.166	296.248	420.708	371.367	302.903	384.926	426.698	3,639.434
Power System Imbalances	0.000	0.000	0.000	0.000	0.081	0.196	0.000	0.000	0.000	(0.957)	(0.068)	0.000	(0.748)
Purchases													
Purchases (firm and power contractors)	143.844	202.027	152.722	124.592	95.700	98.740	183.126	185.892	122.175	118.035	109.170	114.402	1,650.425
Subtotal	351.414	380.856	374.092	349.616	338.723	367.550	430.770	468.863	374.303	277.220	423.056	473.156	4,609.619
Total Resources	666.880	636.673	700.378	733.982	875.417	888.706	1,056.769	962.925	812.208	654.209	745.157	828.932	9,562.237
Less Energy Sales	(20.615)	(66.713)	(64.595)	(89.953)	(113.186)	(128.782)	(164.846)	(143.608)	(75.663)	(106.578)	(50.101)	(143.800)	(1,168.440)
Total Energy Provided to the SWP	**646.265**	**569.960**	**635.783**	**644.029**	**762.231**	**759.924**	**891.923**	**819.317**	**736.545**	**547.631**	**695.056**	**685.132**	**8,393.797**

[a] The upgrade energy of 10,027 MWh from Reid Gardner Unit 4 is included.
[b] Amounts show actual energy available for SWP use and include transmission losses.

Table 10-3. Power, Transmission, and Other Services Purchased in 2002 and Costs of Purchases, by Area

Name of Supplier	Type of Service Purchased	Energy (MWh)	Energy Cost (Dollars)	Capacity Cost (Dollars)	Total Cost (Dollars)
Power and Capacity Purchases					
Northwest Area					
BC Hydro, Powerex	Firm and nonfirm energy	1,328.00	32,020.00		32,020.00
Bonneville Power Administration	Firm and nonfirm energy	8,000.00	147,500.00		147,500.00
PacifiCorp	Firm and nonfirm energy	614,584.00	13,114,722.79		13,114,722.79
	Capacity			21,068,666.22	21,068,666.22
Portland General Electric	Firm and nonfirm energy	225.00	9,000.00		9,000.00
Seattle City Light	Firm and nonfirm energy	1,093.00	28,981.00		28,981.00
Northern California Area					
Kings River Conservation District	Hydroelectric energy	268,076.00	2,090,992.92		2,090,992.92
Sacramento Municipal Utility District	Firm and nonfirm energy	150.00	6,000.00		6,000.00
City and County of San Francisco	Firm and nonfirm energy	11,395.00	395,732.50		395,732.50
California Energy Resources Scheduling	Firm and nonfirm energy	139,160.00	5,454,553.11		5,454,553.11
Southern California Area					
Metropolitan Water District of Southern California	Hydroelectric energy	161,786.00	7,421,504.61		7,421,504.61
Southwest Area					
Nevada Power Company	Upgrade energy	10,027.00	276,892.72		276,892.72
Energy Marketers	Firm and nonfirm energy	874,392.00	33,427,402.86		33,427,402.86
Subtotal		*2,090,216.00*	*62,405,302.51*	*21,068,666.22*	*83,473,968.73*
Transmission and Other Purchases					
California Independent System Operator	Ancillary and other services				19,110,418.24
	FERC charges				426,580.17
California Power Exchange	Management fee (wind-up charge)				14,168.53
Kings River Conservation District	Pine Flat operation and maintenance				3,907,597.00
	Pine Flat debt service				4,587,109.23
Los Angeles Department of Water and Power	Hydro power plant scheduling				1,150.00
	Castaic line transmission service				51,499.31
Nevada Power Company	Reid Gardner Unit 4 firm transmission				1,828,080.00
	Operations and maintenance				17,901,221.87
	Coal and diesel fuel				21,184,971.31
	Insurance				797,760.00
	Property taxes				1,117,905.89
Pacific Gas and Electric Company	EHV transmission				1,500,000.00
	Midway-Wheeler Ridge, transmission operation and maintenance				132,864.00
	Firm transmission				8,776,981.05
	Table Mountain—Tesla line credit				(2,429,316.44)
	Pine Flat firm and additions				251,749.60
	Castle Rock Junction–Lakeville Line—ownership charges				100,549.02
	Coastal Branch—ownership charge				156,463.00
	East Branch Extension—interconnection and wholesale distribution service				269,282.14
Southern California Edison Company	Firm transmission—power contracts				10,675,560.00
	Capacity exchange agreement transmission credit				(6,856,200.00)
	Additional facilities charges (D.C. and Mojave)				1,259,927.04
	ISO GMC charges				(413,815.15)
	Southern California Edison share of Oroville Table A amounts to ISO				325,580.03
FERC charges for Oroville, Pine Flat, and southern facilities					93,465.95
Miscellaneous Fees					13,412.81
Subtotal					*84,784,964.60*
Total		**2,090,216.00**	**62,405,302.51**	**21,068,666.22**	**168,258,933.33**

Table 10-4. Energy Sold in 2002 and Revenue from Sales, by Area

Name of Supplier	Energy Sold (MWh)	Revenue from Energy Sales (Dollars)	Revenue from Capacity, Sales, Exchanges (Dollars)	Total Power Sales (Dollars)
Power and Transmission Purchases				
Pacific Northwest Area				
Powerex	481	10,354.50		10,354.50
Northern California Area				
CAISO—Ancillary and Other Services			17,140,979.09	17,140,979.09
City and County of San Francisco	865	14,690.00	633,060.00	647,750.00
City of Redding	695	24,971.25		24,971.25
City of Santa Clara			19,141.10	19,141.10
Northern California Power Agency	4,453	155,867.50	111,394.91	267,362.41
Sacramento Municipal Utility District	69,378	2,114,385.50		2,114,385.50
California Department of Water Resources (CERS)	130,965	4,979,964.88	2,506,000.00	7,485,964.88
Turlock Irrigation District			52,200.00	52,200.00
Southern California Area				
City of Azusa	15,770	446,964.55		446,964.55
City of Banning	4,613	145,749.25		145,749.25
City of Glendale	785	24,755.00		24,755.00
City of Riverside	81,760	2,420,606.10	1,132,080.00	3,552,686.10
City of Vernon	1,225	37,112.50		37,112.50
Los Angeles Department of Water and Power	4,564	91,781.00	587,100.00	678,881.00
Metropolitan Water District of Southern California			39,760.00	39,760.00
San Bernardino Valley Municipal Water District	85	2,824.66[a]		2,824.66
San Diego Gas and Electric	1,756	56,611.50		56,611.50
Southern California Edison			900,000.00	900,000.00
Southwest Area				
Nevada Power Company	323,565	21,515,983.05	1,533,946.29	23,049,929.34
			15,201.24	15,201.24
Miscellaneous				
Energy Marketers				
Thirteen marketers	527,481	26,043,046.34		26,043,046.34
Total	**1,168,441[b]**	**58,085,767.58[c]**	**24,670,862.63**	**82,756,630.21**

[a]Received from San Bernardino Valley Municipal Water District due to generation lost by Southern California Edison, which was replaced by the Department.
[b]Excludes energy exchanges.
[c]Includes revenues from energy exchanges.

Contractual Resource Arrangements

SWP power operations rely on contractual arrangements as well as SWP facilities. Those contractual arrangements include joint development projects, energy exchanges, purchases, and transmission.

Joint Development. Through the West Branch Cooperative Development Agreement with LADWP, the Department receives energy based on the amount of water scheduled through the West Branch. In 2002, LADWP provided 757,076 MWh of energy for the Department's share of energy generated at Castaic Power Plant.

The Department's share of Gianelli Pumping-Generating Plant used 241,920 MWh and generated 213,234 MWh of energy.

Energy Exchanges. The Department has two agreements with SCE to purchase and/or exchange power. According to terms of the 1979 Power Contract (in effect since April 1983), part of the output of Devil Canyon Power Plant and the Hyatt-Thermalito Complex and all output of Alamo Power Plant are delivered to SCE.

According to the terms of the Capacity Exchange Agreement (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 1,707,399 MWh of energy to the SWP in 2002.

Under the two agreements, the Department provides SCE with energy and capacity during the on-peak period, while SCE provides the Department with exchange energy during the off-peak period. These two agreements have provisions that allow SCE to curtail delivery of energy under certain circumstances. From June 1, 2000, through May 5, 2001, SCE curtailed the delivery of exchange energy to the Department under circumstances that were disputed by the Department. The dispute culminated in a December 26, 2002, Settlement Agreement in which the parties agree to revise certain agreement provisions pertaining to SCE's right to interrupt or curtail deliveries of energy to the Department. Additionally, SCE paid the Department $30 million as compensation for curtailing exchange energy during 2000 and 2001.

Purchases and Costs. Table 10-3 shows amounts of power, transmission, and other services purchased in 2002 and costs of purchases, by area. It also reflects the restructuring of the electric industry through transactions with ISO and through new charges (grid management and ancillary services charges.)

The Department purchased 2.09 million MWh of energy at a cost of $62.41 million.

Associated costs for capacity totaled $21.07 million. Other SWP power costs, including transmission, operation, maintenance, and ISO ancillary services totaled $84.78 million. This amount includes $4.59 million and $3.91 million for debt service and operations and maintenance costs, respectively, at Pine Flat Power Plant. It also includes $1.83 million for transmission at Reid Gardner Unit 4 and $41.0 million for costs associated with operations and maintenance, fuel, insurance, and property taxes at Reid Gardner Unit 4.

Long-Term Purchases. According to terms of the Kings River Conservation District contract, the Department receives the total output of the 165 MW Pine Flat Power Plant. In 2002, the power plant provided 268,076 MWh of energy to the SWP at a total cost of $2.09 million.

The Department purchased 614,584 MWh of energy at a cost of $13.11 million, under a contract for firm energy with PacifiCorp.

Under the Metropolitan Small Hydro Contract, the Department purchased 161,786 MWh of energy in 2002 from five small hydroelectric power plants on the Metropolitan system at a cost of $7.42 million.

Long-term purchases are shown in Table 10-3.

Short-Term Purchases. Existing resources and long-term power and transmission contracts ensure that the SWP has enough power to meet long-term needs. When SWP power requirements exceed resources during daily operations, short-term purchases meet the difference. In 2002, the SWP purchased short-term energy from 9 marketers. The short-term energy purchases totaled 874,392 MWh at a cost of $33.43 million (Table 10-3).

Sales of Excess Energy

The Department sold 1.17 million MWh of energy to 15 utilities, and 13 energy marketers, for total revenues of $58.09 million in 2002. The Department also received $24.67 million in revenues for capacity and exchanges, including $17.14 million for transactions made through ISO. See Table 10-4 for information about energy and other services sold and revenue received, including those sold to ISO.

Forecasting Power Operations

Each year, after reviewing the water contractors' water delivery requests and the construction schedule for future facilities, the Department forecasts SWP power requirements through 2035, paying particular attention to forecasts through 2004, the year major power contracts expire.

Actual SWP power requirements may vary significantly from the amounts forecast. Those variations are 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 would be used than was originally forecasted. Power requirements could also decrease during a wet year because of the availability of local water in the San Joaquin Valley or Southern California.

Conversely, power requirements could exceed the amount originally forecasted if actual water deliveries were greater than the amounts estimated. For example, if additional pumping is needed to refill reservoirs south of the Delta after an unexpected dry year, more power would be used than was initially forecast.

Criteria

The Department bases its forecast of electric power primarily on SWP pumping power requirements to deliver water for SWP contractors' short-term and long-term water delivery requests. Requirements are based on the amount of energy necessary to deliver approved Table A water requested by water contractors, including losses in reservoirs and aqueducts, recreation water, and water to replace storage in reservoirs south of the Delta.

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.

Information for this chapter was contributed by the State Water Project Analysis Office.

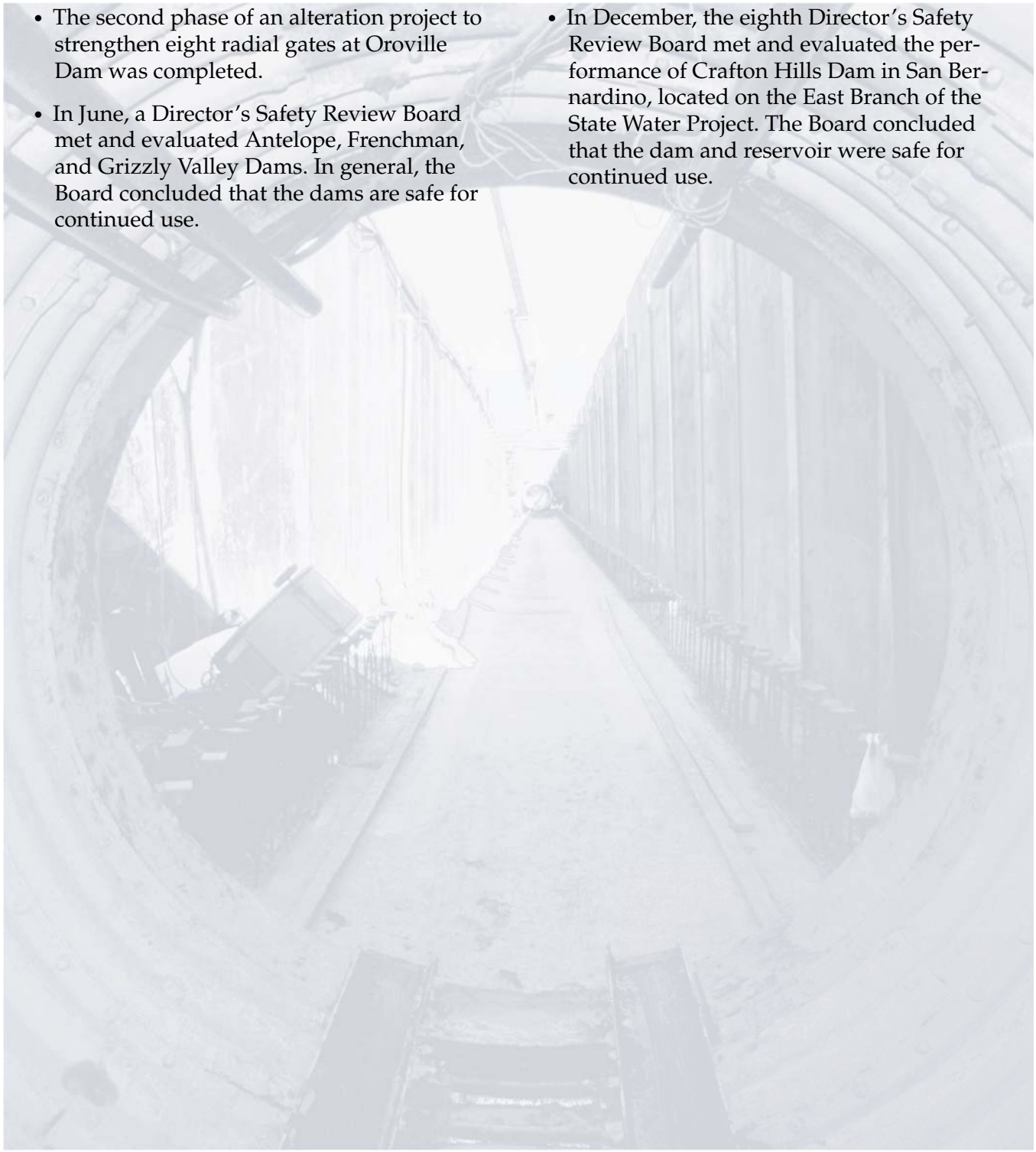
Chapter 11
Facilities Maintenance



Repair work on the Altamont Pipeline, South Bay Aqueduct

Significant Events in 2002

- The second phase of an alteration project to strengthen eight radial gates at Oroville Dam was completed.
- In June, a Director's Safety Review Board met and evaluated Antelope, Frenchman, and Grizzly Valley Dams. In general, the Board concluded that the dams are safe for continued use.
- In December, the eighth Director's Safety Review Board met and evaluated the performance of Crafton Hills Dam in San Bernardino, located on the East Branch of the State Water Project. The Board concluded that the dam and reservoir were safe for continued use.



The Department of Water Resources, through the Division of Operations and Maintenance, monitors all State Water Project facilities to ensure safety and reliability. The Department is required, under federal and State law, to contract periodically with independent consultants to review the safety of SWP dams and power facilities.

Inspecting and Maintaining Project Dams

Several types of inspections of SWP facilities are conducted by the Department to ensure that each dam is safe for continued operation.

O&M staff collect and evaluate data about the performance of each facility. Engineers from Division of Safety of Dams review instrumentation data and inspect jurisdictional SWP dams annually to ensure that each dam is satisfactory for continued safe operation. The engineers evaluate proposed modifications to existing dams as well as the design and construction of new jurisdictional dams.

The Department is required to contract periodically with independent consultants to review the safety of SWP dams and power facilities, except Pearblossom Spill Basin. The four dams in the San Luis Field Division (San Luis, O'Neill Forebay, Los Banos Detention, and Little Panoche Detention) are used jointly with the Bureau of Reclamation, and are not under the jurisdiction of DSOD. Pearblossom Spill Basin Dam was originally designed to be used during misoperation at the Pearblossom Pumping Plant. The spill basin was never fully completed and has never been used.

The Federal Energy Regulatory Commission inspects all licensed SWP facilities annually. These inspections include a review of significant events, instrumentation data, and visual appearance of each dam, penstock, or power plant. In addition, under FERC and California Water Code requirements, consulting engineers and geologists are retained to evaluate SWP dam facilities every 5 years.

Routine Inspections

During 2002, DSOD, along with O&M staff, inspected and performed routine and scheduled maintenance at Frenchman, Antelope, and Grizzly Valley Dams in the Upper Feather River area; at Oroville, Bidwell Bar, Parish Camp, Thermalito Diversion, Thermalito Forebay, Thermalito Afterbay, and Feather River Hatchery Dams in the Oroville Field Division; at Clifton Court Forebay, Bethany, Patterson, and Del Valle Dams in the Delta Field Division; and at Pyramid, Castaic, Cedar Springs, Devil Canyon Power Plant First and Second Afterbays, and Perris Dams in Southern Field Division.

Radial Gate Retrofitting

In May 2001, work began on an alteration project to strengthen eight radial gates at Oroville Dam. The first of the two phases of construction (four gates) was completed in November 2001. The second phase of the construction for the remaining four gates was completed in winter 2002.

Independent Reviews

California Water Code Reviews. To comply with the California Water Code and the California Code of Regulations, the Department is required to retain a consulting board to review

(1) the adequacy of the design of any dam or reservoir the Department proposes to construct; and

(2) the safety of the completed construction, including the terms and conditions for the Certificate of Approval.

These provisions require the Department to retain a board of three consultants to meet at least once every 5 years to review the operational performance of Department-owned dams, and more often when consulting on new dams. The board of consultants independently reviews and assesses safety conditions of SWP dams.

Consultants are selected based on their knowledge of geotechnical, structural, and civil engineering, including their experience in evaluating the performance of dams. Their independent assessments include review of dam performance during earthquakes, evaluation of instrumentation data, inspection of each dam, and evaluation of studies performed by the Department. The consultants then prepare their reports on each dam, approving whether the dams are safe for continued operation and making recommendations. Based on these recommendations, the Department prepares action plans.

In June 2002, a Director's Safety Review Board met and evaluated Antelope, Frenchman, and Grizzly Valley Dams. In general, the Board concluded that the dams are safe for continued use.

In December 2002, the eighth Director's Safety Review Board met and evaluated the performance of Crafton Hills Dam in San Bernardino, located on the East Branch of the SWP. The Board concluded that the dam and reservoir were safe for continued use.

FERC Reviews. These reviews, which may be conducted by one or more consultants, are scheduled every 5 years. The last review was conducted in September 1999.

Maintaining Other Project Facilities

The Department continually monitors all SWP facilities and performs repairs and modifications as necessary to ensure safe, reliable water delivery.

Arroyo Pasajero Program

The Arroyo Pasajero and its tributaries drain approximately 530 square miles of the Diablo range of the coastal mountains west of the California Aqueduct in Fresno County. Its downstream juncture with the San Luis Canal segment of the California Aqueduct, between Highway 198 and Avenal Cutoff Road, poses a particularly difficult operational and maintenance problem for the SWP.

During periods of heavy rainfall, high flows in the Arroyo Pasajero and its tributaries transport heavy sediment loads eroded from the Diablo range of the coastal mountains. Over many eons, sediment transported by Arroyo floods formed a 450-square-mile alluvial fan extending from its apex at the eastern margin of Pleasant Valley (Anticline Ridge) to the San Joaquin Valley trough. The California Aqueduct traverses the Arroyo's alluvial fan and forms a barrier to Arroyo flood flows. Flood control facilities include the West Side Detention Basin designed to store storm runoff and sediment west of the Aqueduct, an evacuation culvert to release floodwaters east of the Aqueduct, and drain inlets to release floodwaters into the Aqueduct. The volume of runoff and transported sediment is roughly 400 percent greater than was originally estimated during the design of the detention basin in the mid-1960s.

The Bureau designed and constructed the San Luis Canal segment of the California Aqueduct and the Department operates and maintains them, with all costs being shared 45 percent and 55 percent, respectively.

Since the floods of 1969, when nearly all of the detention basin's planned 50-year sediment storage capacity was filled by deposition, the

Department and the Bureau have worked to minimize the effects of heavy flooding. In 1980, asbestos was discovered in the Metropolitan Water District of Southern California's water supply and traced to runoff from the Arroyo Pasajero and other Diablo range streams. This discovery, in conjunction with the high cost of removing sediment from the Aqueduct, led the Department to adjust operating procedures to minimize runoff entering the Aqueduct.

Cooperative Efforts with the U.S. Army Corps of Engineers

In 1990, the Department sought the assistance of the U.S. Army Corps of Engineers to identify viable long-term solutions to the Arroyo Pasajero flooding and sediment problems. In 1992, the Corps issued the *Arroyo Pasajero Reconnaissance Report*, which demonstrated a federal interest in flood control at Arroyo Pasajero. The feasibility study—started in 1994 as a joint effort among the Corps, the Department, and the Bureau—provides a more rigorous analysis of the flooding and sedimentation problems and evaluates potential solutions in greater detail. The Department, as local sponsor, is committed to 50 percent of the total study cost, with one-half of this commitment met by providing in-kind services for the study. Under the Department's agreement with the Bureau for the Joint-Use Facilities of the San Luis Unit, the Bureau pays 45 percent of the Department's study cost.

A draft Feasibility Report/Environmental Impact Statement/Environmental Impact Report was released to the public in March 1999. A public meeting on the document was held in April 1999. Two candidate plans demonstrating a federal interest were presented. However, due to prohibitive costs as well as environmental impacts that could not be mitigated, neither plan was implemented. The Department halted further cooperative studies with the Corps and began developing more cost effective solutions on its own. The final cost of the joint Corps/ Department/ Bureau Arroyo Pasajero flood control study totaled $8.1 million.

Department and Department/Bureau Alternatives

Since the demise of the two candidate plans presented in the March 1999 draft Feasibility Report, the investigation has focused on a new alternative made possible by the availability of relatively low productivity farmland in the western Tulare Lakebed. This plan would rely on some increased storage in the existing West Side Detention Basin used in conjunction with a reservoir that would be constructed in the western Tulare Lakebed east of the Aqueduct near Kettleman City. It would fully utilize the design philosophy of the San Luis Canal by taking significant flood flows into the canal southward, and finally evacuating them from Pool 21 into a western Tulare Lakebed reservoir. This plan has the added benefit of addressing the largely unregulated drain inlet inflows to the canal that are upstream of the Arroyo Pasajero by providing a much needed emergency floodwater turnout from Pool 21.

The Department and the Bureau's version of the western Tulare Lakebed plan provides a lower, but acceptable, level of flood protection to the Aqueduct at considerably lower cost. This effort was in response to the State Water Contractors' proposal that the Department develop the least costly alternative that would provide a 100-year level of flood protection to the Aqueduct. And, to be consistent with other SWP flood protection facilities, this level of protection would be based on a single 4-day flood as opposed to the larger flood volume that would be expected from a series of six floods over 30 days that is used by the Corps.

By applying the lower and more traditional single flood volume to the flood control improvements needed at the Arroyo Pasajero, a 100-year level of flood protection can be achieved at an estimated cost of $51 million. Of this amount, about $13 million is estimated for specific improvements to the existing Aqueduct West Side Detention Basin such as raised embankments, drain inlet modifications, and facilities to protect adjacent non-SWP infrastructure. The remaining $38 million is the estimated

cost of a 45,000 acre-foot reservoir located in the western Tulare Lakebed as well as an Aqueduct floodwater turnout structure and chute connecting the Aqueduct to the proposed western Tulare Lakebed reservoir. The Department plans to finish its feasibility investigation into this more cost effective plan during 2003 and to proceed with final design, environmental documentation, and other procedural steps leading to construction during 2004.

The Department's feasibility investigation on the West Side Detention Basin improvements and western Tulare Lake reservoir plan is intended to work in conjunction with the interim flood control measures constructed at the Cantua and Salt Creek Detention Basins in 1999. In addition to these measures, the Department purchased flood easement on approximately 700 acres of land west of the Aqueduct near the Cantua and Salt Creek inlets. This easement purchase provides land for settlement basins at the newly-constructed Salt Creek and Cantua Creek inlet weirs. The settlement basins allow sediment-laden floodwaters to decant before entering the Aqueduct, thus reducing the amount of suspended solids entering the Aqueduct.

Related Activities

The Department, with the support of the State Water Contractors, continued during 2002 to provide funds and staff support to a Coordinated Resource Management Plan group called the *Stewards of the Arroyo Pasajero Watershed*. The mission of this group is "to improve the Arroyo Pasajero watershed through erosion and sediment control by implementing improved land management practices that will sustain and promote the aesthetics, environmental quality, and economic viability of the watershed." It is believed that this watershed management plan will increase watershed infiltration and decrease erosion, complementing any structural flood control improvements and reducing the threat Arroyo Pasajero poses to the California Aqueduct and surrounding communities.

Repairs and Modifications

Table 11-1 presents information, arranged chronologically, about significant scheduled and unscheduled outages at SWP pumping and power plants in 2002. The table includes information about incidents resulting in outages exceeding 14 days.

Table 11-1. Outages for Maintenance and Repair of Facilities in 2002, by Month

Month	Facility	Units Out of Service
January	Hyatt Power Plant	Unit 5 from January 2 to January 25 for annual maintenance and to replace governor
	Edmonston Pumping Plant	Units 2, 4, 6, 8, 10, 12, and 14 from January 2 to February 15 to repair discharge line and discharge valve
February	Hyatt Power Plant	Unit 3 from February 25 to March 15 for annual maintenance and to replace governor
	Banks Pumping Plant	Unit 1 from February 1 to February 22 to repair stator ground
	Dos Amigos Pumping Plant	Unit 3 from February 11 to March 7 to repair discharge line and install new speed control
	Pearblossom Pumping Plant	Units 5 and 6 from February 18 to March 9 to work on transformer KYB
	Warne Power Plant	Unit 2 from February 4 to March 1 for annual maintenance
March	Banks Pumping Plant	Unit 4 from March 4 to March 25 to replace discharge valve "O" ring
	South Bay Pumping Plant	Unit 9 from March 27 to April 13 to replace pump and motor
	Cordelia-Napa Pumping Plant	Unit 2 from March 5 to June 11 to overhaul pump and motor
	Gianelli Pumping-Generating Plant	Unit 1 from March 29 to April 29 to work on Unit 2 and penstock
		Unit 2 from March 11 to June 10 to overhaul unit, repair pump, replace field poles, rewind stator, repair butterfly valve, and work on penstock
	Dos Amigos Pumping Plant	Unit 6 from March 11 to April 11 for annual maintenance and to install speed switch
	Badger Hill Pumping Plant	Unit 6 from March 4 to April 11 to replace impeller and inspect rotor
	Chrisman Pumping Plant	Unit 5 from March 11 to April 19 to recoat pump case
	Devil Canyon Power Plant	Unit 2 from March 4 to April 1 for annual maintenance and to recoat turbine pit
	Oso Pumping Plant	Unit 1 from March 18 to June 7 for annual maintenance, to install automatic voltage regulator, and repair discharge line
April	Banks Pumping Plant	Units 1 through 3 from April 15 to May 31 for annual maintenance and to work on penstock gate, transformer KYA, and discharge line
	Del Valle Pumping Plant	Unit 2 from April 8 to April 29 to repair silicon controlled rectifier and replace cable
	Mojave Siphon Power Plant	Unit 3 from April 2 to April 18 for annual maintenance
May	Dos Amigos Pumping Plant	Unit 4 from May 22 to June 5 to install new speed switch
	Chrisman Pumping Plant	Unit 8 from May 13 to December 20 to repair pump, motor, discharge valve, and stay vane
	Edmonston Pumping Plant	Unit 10 from May 1 to expected completion date in 2003 to overhaul pump and repair disconnect switch
June	Dos Amigos Pumping Plant	Unit 1 from June 13 to July 15 to repair vane oil leak
	Chrisman Pumping Plant	Unit 4 from June 8 to June 26 to repair exciter and field poles
	Pearblossom Pumping Plant	Unit 6 from June 3 to June 20 to repair rotor
July	Oso Pumping Plant	Unit 2 from July 22 to October 16 for annual maintenance and to install automatic voltage regulator
August	Devil's Den Pumping Plant	Unit 3 from August 18 to September 6 to repair discharge valve
	Pearblossom Pumping Plant	Unit 1 from August 19 to expected completion date in 2003 to overhaul pump casing, repair discharge valve and motor, and install automatic voltage regulator
	Mojave Siphon Power Plant	Unit 2 from August 5 to August 29 for annual maintenance and to replace turbine shaft seal
September	South Bay Pumping Plant	Units 1, 2, and 4 from September 27 to November 2 for annual maintenance, to repair discharge valve power unit, and work on pipeline
		Unit 3 from September 27 to November 7 for annual maintenance, to replace pump, repair discharge valve power unit, and work on pipeline
	Gianelli Pumping-Generating Plant	Unit 1 from September 2 to expected completion date in 2003 to overhaul unit, replace field poles, rewind stator, overhaul butterfly valve, and work on penstock
	Dos Amigos Pumping Plant	Unit 5 from September 30 to November 15 for annual maintenance and to install speed equipment and relays
	Buena Vista Pumping Plant	Unit 4 from September 3 to December 12 for annual maintenance
	Teerink Pumping Plant	Unit 4 from September 3 to December 10 for annual maintenance and to inspect discharge line
	Devil Canyon Power Plant	Unit 1 from September 3 to September 26 for annual maintenance
	Pine Flat Power Plant	Units 1 through 3 from September 23 to expected completion date in 2003 to work on turbine bypass
October	Thermalito Power Plant	Unit 3 from October 7 to December 23 for annual maintenance and to modify governor and unit breaker

Table 11-1. Outages for Maintenance and Repair of Facilities in 2002, by Month

Month	Facility	Units Out of Service
	Banks Pumping Plant	Unit 6 from October 24 to expected completion date in 2003 for annual maintenance, to refurbish discharge valve, replace CO_2 system, and work on penstock gate, transformer KYC, and discharge line
		Unit 7 from October 24 to December 21 for annual maintenance, to refurbish discharge valve, replace CO_2 system, and work on penstock gate, transformer KYC, and discharge line
	South Bay Pumping Plant	Units 5, 6, 7, and 9 from October 31 to December 21 for annual maintenance and to work on pipeline
		Unit 8 from October 31 to expected completion date in 2003 for annual maintenance, to replace pump, motor, and packing box sleeve, and to work on pipeline
	Gianelli Pumping-Generating Plant	Unit 2 from October 1 to November 9 to work on Unit 1 and penstock
	Devil's Den Pumping Plant	Unit 5 from October 30 to November 25 to repair discharge valve leak
	Alamo Power Plant	Unit 1 from October 28 to November 16 for annual maintenance and to repair governor
	Pearblossom Pumping Plant	Unit 4 from October 29 to November 19 to repair rotor
	Warne Power Plant	Unit 1 from October 7 to November 1 for annual maintenance and to inspect Peace Valley Pipeline
November	Hyatt Power Plant	Unit 2 from November 18 to expected completion date in 2003 for annual maintenance and to replace governor
	Del Valle Pumping Plant	Units 1 through 4 from November 18 to expected completion date in 2003 to replace DC motor speed control and repair pipeline
	Devil Canyon Power Plant	Unit 3 from November 4 to November 22 for annual maintenance
December	South Bay Pumping Plant	Unit 3 from December 6 to December 26 to repair lower guide bearing and thrust bearing
	Buena Vista Pumping Plant	Unit 3 from December 30 to expected completion date in 2003 for annual maintenance
	Teerink Pumping Plant	Unit 9 from December 16 to expected completion date in 2003 for annual maintenance
	Pearblossom Pumping Plant	Unit 5 from December 28 to expected completion date in 2003 to repair stator
		Unit 6 from December 19 to expected completion date in 2003 to repair stator

Information for this chapter was provided by the Division of Operations and Maintenance and the Division of Safety of Dams.

Chapter 12
Engineering and Right of Way



Initial East Branch Extension delivery of water to the San Gorgonio Pass Water Agency's Noble Creek Spreading Basin

Significant Events in 2002

- Construction of the East Branch Extension, which started in February 1999, continued. All contracts were under construction and it is anticipated that the Extension will be fully operational in early 2003.
- Pipeline Reaches 1, 2, and 3 of the East Branch Extension were completed and used to supply water to the San Bernardino Valley Municipal Water District.
- Initial filling of Crafton Hills Reservoir on the East Branch Extension began on May 3 and finished in September.
- The Division of Engineering was involved with the design, construction contract administration, and inspection of numerous projects from Oroville to the Southern Field Division as requested by the Federal Energy Regulatory Commission under the State Water Project licensing permits.

Construction of the initial facilities of the State Water Project began in 1957 with the relocation of the Western Pacific Railroad yards and Highway 70 near Oroville. Following the start of the South Bay Aqueduct facilities in 1960, the first water delivery through the SWP was made in 1965. In 1963, work began on the California Aqueduct, and by 1968 the SWP was delivering water to long-term contractors in the San Joaquin Valley. The SWP delivered water to Lake Perris, its southernmost point, with the 1973 completion of its facilities.

SWP water was delivered to Napa County in 1968 through the first phase of the North Bay Aqueduct, and to Solano County in 1988 by the second phase. The first SWP water delivery through the Coastal Branch, Phase I into Kings and Kern Counties was made in 1968. With completion of the Phase II facilities, water was delivered to San Luis Obispo and Santa Barbara Counties in 1997.

Even before completion of the initial facilities in 1973, work had begun in the early 1970s on building power plants and adding pumping units and turbine-generators deferred from the initial construction of the SWP; enlarging or extending Aqueduct reaches; and providing facilities to ensure water quality in the Delta.

In the 1990s, design and construction activities focused on repairing and replacing components of existing facilities, constructing the Devil Canyon Second Afterbay, constructing Phase II of the Coastal Branch to deliver water to San Luis Obispo and Santa Barbara Counties, and extending the SWP to the San Gorgonio Pass Water Agency's service area through the East Branch Extension, which is scheduled to be fully operational in 2003.

Design Activities

From January 1, 2002, through December 31, 2002, DOE worked on 20 design projects that developed into construction projects. Table 12-1 lists these projects along with expected or actual design completion dates. Both Tables 12-1 and 12-2 (construction activities) can be found at the end of this chapter, organized geographically north to south according to construction division. Within each division, facilities in which design or construction activities occurred are listed alphabetically, and activities at each facility are listed chronologically.

In addition to designing projects, DOE staff worked with the Divisions of Operations and Maintenance, Flood Management, and Environmental Services; the Departments of Fish and Game, Boating and Water Ways, and Transportation; SWP contractors; California Water Districts; the U.S. Army Corps of Engineers; the Bureau of Reclamation; the Federal Energy Regulatory Commission, and other entities concerned with water resources activities. DOE staff prepared preliminary design and estimates and/or conducted special studies of dams, canal embankments, and other SWP facilities. Some of the studies and activities are new for this year and others are continuing projects. Some of the new studies and activities include

- West Stanislaus Flood Control Study
- Thermalito Power Plant Kaplan (turbine) runner refurbishment study
- Oroville Underground Storage Tank investigation
- NBA capacity study and pipeline inspection for possible enlargement

- Santa Clara Terminal Tank repair—geologic exploration and groundwater monitoring
- Seepage geological exploration from Milepost 88.7 to Milepost 89.5
- Second containment basin for power transformers for Gianelli Pumping-Generating Plant analysis
- Gianelli pump-turbine runner replacement feasibility study
- Capacity of cross-drainage structure between Buena Vista and Teerink Pumping Plants evaluated
- Hydrology and capacity of cross-drainage facilities at Buena Vista and Teerink Pumping Plants evaluated
- Pump refurbishing pilot program for Edmonston Pumping Plant developed
- Pearblossom Pumping Plant disposal area assessment study
- Castaic Dam Intake Tower analysis
- Warne Power Plant penstock cooling water transient study
- Aqueduct Spill Basin Check 66 study
- Hesperia Master Drainage Plan for Antelope Wash and adjacent area
- Castaic, Pyramid, and Perris Dams emergency release facilities study
- Castaic Dam and Perris Dam breach inundation study
- Horsethief Creek Crossing remediation
- Devil Canyon Second Afterbay Outlet Structure modification

DOE staff also completed the studies and activities listed below.

- FERC requirements pertaining to operation of the SWP
- FERC requirements for relicensing of the Oroville Facilities
- South Bay Aqueduct enlargement and rehabilitation activities
- Battle Creek Salmon and Steelhead Restoration Project
- presentation of potential locations for installation of small hydroelectric facilities along the SWP to the Governor's Office of Planning and Resources
- geologic exploration drilling contracts for Northern and Southern California
- discussion of NBA enlargement with O&M and NBA water contractors
- Byron Road Bridge deck deterioration study and analysis
- discussions with the Corps about American River levee remedial work and watershed issues
- exploration drilling conducted at Webb Track and Bacon Island as part of Delta Storage studies
- NBA pipeline Reach 6, Barker Slough to Travis Tank cleaning discussed
- Delta seismicity study program
- Medeiros Boating Facility estimate prepared for DBW
- Colusa Bypass Final Design and Construction Report prepared
- Clifton Court Forebay radial gate re-evaluation report prepared for O&M
- performed geological exploration drilling for new Clifton Court Forebay intake
- Frenchman Dam fault study
- inspection of previous erosion at Antelope Dam Spillway
- Tehachapi Second Afterbay and Dam geological exploration work
- East Branch Enlargement, Phase II study activities
- East Branch Extension, Phase II feasibility study
- Crafton Hills Reservoir inundation plan prepared
- SWP energy retrofit cost estimate, design, and construction schedule prepared
- Lokern Bridge at Milepost 229 damaged concrete inspected and repairs recommended
- Valley String Peaking Storage model and fatal flaw study
- Sites Reservoir Project workshop

- Site visit to Clough Dam Siphon on Mill Creek with Northern District representatives to discuss possible alignment study

Environmental Activities

Environmental issues have concerned the Department since the inception of the SWP. These issues have increased in magnitude with enactment of numerous laws at both federal and State levels. The Department has complied with these laws by incorporating environmental requirements into the design and construction phases of most projects. A specific section dealing with environmental requirements and protection has become an integral part of the contract specifications for construction contracts. Contracts are reviewed to ensure compliance with all requirements outlined in the environmental permits. Two contracts required continuing environmental review and are described below.

Byron Road Bridge Modification. Vernal pools containing several species of fairy shrimp were found in the project area. Although the shrimp were not a federally listed species, the pools were fenced and protected from potential encroachment. At the end of construction, the fencing was removed.

Paved Roads and Extended Lake Oroville Spillway Concrete Boat Ramp. The boat ramp was extended several hundred feet into the lake. Environmental controls were used to avoid potentially hazardous material, such as fuel spills, from entering the lake. Turbidity measurements were taken every 4 hours as required by the Regional Water Quality Control Board permit. All turbidity measurement criteria were within permit parameters.

Construction Activities

DOE worked on 58 construction contracts in 2002, listed in Table 12-2. This table shows contract title, specification number, date the contractor received the Notice to Begin Work, the expected or actual acceptance date (completion date discussed in text), and the actual or estimated contract cost (including change orders for added work). Resolution of contract claims may extend the actual contract closeout beyond the completion or acceptance date.

Oroville Division

Hyatt Power Plant. Refurbishment of turbine Units 1, 3, and 5, which started in February 1999 (Specification No. 98-22), continued throughout the year with approximately 40 percent of the work completed by the end of 2002. Estimated completion is April 2004.

Renovation of electrical controls for intake gantry cranes at Hyatt Power Plant began in April 2000 (Specification No. 00-02). The Department took advance possession of the recertified crane and its renovated control system in May 2001. This contract was accepted in October 2002.

Renovation of electrical controls for bridge cranes and an intake shutter gantry crane that started in December 2000, was completed in June 2002 (Specification No. 00-21), and accepted in August 2002.

Refurbishment of pump-turbine Units 2, 4, and 6 that started in November 2001 (Specification No. 01-11) is scheduled for completion in February 2007.

Hyatt Power Plant and Thermalito Pumping-Generating Plant. Furnishing governor replacements for the Hyatt Power and Thermalito Pumping-Generating Plants continued during 2002 (Specification No. 99-19). The work was approximately 95 percent complete by the end of 2002. Completion is expected by December 2003.

Lake Oroville. Construction of Lime Saddle Campground facilities began in September 2000 (Specification No. 00-14) and was completed and accepted in June 2002.

Oroville Dam. Work continued on a contract for radial gate rehabilitation (Specification

No. 00-11). Completion is expected in January 2003.

Oroville Dam and Thermalito Diversion Dam. Fabrication and rehabilitation of stop logs for these facilities started in January 2000 (Specification No. 99-30) and was completed in November 2000. This contract was accepted in August 2002.

Oroville Field Division. In August 2002, work started on a contract to pave roads at Oroville Field Division and extend the Lake Oroville spillway boat ramp (Specification No. 02-07). The contract is scheduled to be completed in April 2003.

Thermalito Pumping-Generating Plant. A contract to replace expansion joints on the pumping-generating plant roof and in the switchyard began in August 2000 (Specification No. 00-15). Due to asbestos in existing roofing materials, the roofing expansion joint work was amended by contract change order. The work was completed in April 2002.

Work on a contract to furnish spare coils and materials was started in September 2002 (Specification No. 02-08). Submittals were still in process at the end of 2002 and completion is estimated in February 2004.

Delta Facilities

Temporary Rock Barriers. Work that started in March 2001 (Specification No. 01-01) continued on this multiyear (2001 through 2003) contract for the installation and removal of seasonal temporary rock barriers in designated South Delta waterways (Middle River, Old River, and Grant Line Canal). These temporary barriers are installed to enhance water levels and circulation in the South Delta for local agricultural diversion, to assist fish migration, and to gather hydraulic data for the design of future permanent barriers.

Suisun Marsh Facilities

Morrow Island Distribution System. A contract to remove the existing intake structure and install a new intake structure in the Suisun Marsh (Specification No. 02-04) started in August 2002 and was completed in October 2002. Work included

- removing and disposing of existing structure and debris
- preparing the work site for the new structure
- constructing timber platforms, placing concrete footings and accessories
- placing and driving timber piles
- removing and replacing guard posts, entry gates, and fencing

North San Joaquin Division

Byron Road Bridge. An emergency contract to remove and repair damaged deck concrete on the Byron Road Bridge began in December 2002 with completion estimated in January 2003 (Specification No. 02-13). A second emergency contract will install structural supports for the girders and place new concrete slab on the bridge deck.

California Aqueduct. Work on an emergency canal repair at Milepost 4.25 started in June 2001 (Specification No. 01-19) and was completed in September 2001. Acceptance was in April 2002.

South Bay Aqueduct. Work on a contract to furnish combined valves and sluice gates was awarded and started in July 2001 (Specification No. 01-18). Approximately 90 percent of the original contract work was completed by the end of 2002. Due to a directive to furnish additional valves, estimated completion is in February 2004.

Work on two Altamont Pipeline contracts started in July 2001. Modification of the pipeline (Specification No. 01-08) was completed in March 2002. Lining the pipeline (Specification No. 01-09) was completed in April 2002. Actual

acceptance date for both contracts was September 2002.

Terminal tank seismic modifications (Specification No. 01-21) were started in September 2001, completed in March 2002, and accepted in October 2002.

Rehabilitation of access structures and valves was started in October 2001 (Specification No. 01-10) and completed in September 2002.

Phase II of the rehabilitation of access structures and valves was started in August 2002 (Specification No. 02-11). The work was approximately 40 percent complete at the end of 2002 with completion estimated in March 2004. The work includes

- placing stone slope protection for erosion control in Altamont Creek
- modifying and constructing access structures and equipment structures for existing buried pipeline appurtenances
- cleaning and refurbishing existing access structures
- installing valves, turnout piping valves, piping, sampling cocks, and manhole fasteners
- removing and disposing of asbestos-containing pipe coating
- installing soil anchors at the terminal tank, and backfilling and compacting to original grade

San Luis Division

Gianelli Pumping-Generating Plant. Work on a contract to furnish electrical field poles and materials for the generating unit at Gianelli began in September 2000 (Specification No. 00-17); approximately 65 percent of the work was completed by the end of 2002. Completion is estimated for August 2004.

South San Joaquin Division

California Aqueduct. A contract to rehabilitate the Lokern Road Bridge (Specification No. 01-22) was started in October 2001, completed in January 2002, and accepted in August 2002.

Tehachapi Division

Edmonston Pumping Plant. Work on furnishing 15 kV circuit breakers for this facility continued during 2002 (Specification No. 97-01). The completion date for this work was extended to May 2002 because breakers for Gianelli Pumping-Generating Plant and Devil Canyon Power Plant were added by contract change order. This contract was accepted in August 2002.

Work to repair landslide-caused damage to the Pastoria/Beartrap access road (Specification No. 01-12) was started in September 2001 and completed in December 2001. This contract was accepted in April 2002.

West Branch

Castaic Dam and Pastoria Siphon. A contract to recoat Castaic Dam outlet works and Pastoria Siphon (Specification No. 01-03) started in August 2001. Remedial warranty work has to be completed before the contract can be accepted.

Oso Pumping Plant. Work on a contract to furnish automatic voltage regulators began in May 2000. Although it was originally scheduled for completion in June 2002 (Specification No. 00-06), a contract change order to furnish and deliver six automatic voltage regulators for Pearblossom Pumping Plant extended the expected completion to June 2004.

Pyramid Dam. A minor contract to repair damaged concrete, construction joints, cracks, and weep holes on the Pyramid Dam Spillway began in April 2002 and was completed and accepted in June 2002 (Specification No. 02-02).

Mojave Division

Mojave Siphon Power Plant. Work on a contract to construct valve vaults and to furnish and install turbine shutoff valves for Units 1 and 2 at this facility began in April 1998, and was completed in December 1999 (Specification No. 97-25). Repair of the pipeline interfacing at

these facilities was added by contract change orders, extending contract closeout. Acceptance was in April 2002.

Pearblossom Pumping Plant. The contract to manufacture, furnish, install, and test three 375 cfs vertical centrifugal pump units at Pearblossom Pumping Plant (Specification No. 87-04) started in May 1987 and was completed in 1999. However, a large amount of remedial warranty work has to be performed before the units can be accepted. Acceptance is expected in December 2003.

Santa Ana Division

San Bernardino Tunnel Intake. The contract to reconstruct the San Bernardino Tunnel intake structure (Specification No. 95-07) started in July 1995 and work was essentially completed by July 1997. The Department took advance possession of the intake structure in January 1998; however, negotiations for remedial warranty work continue. Contract acceptance is expected by January 2003.

East Branch Extension

Construction of the East Branch Extension began with the issuance of a Notice to Begin Work on February 26, 1999, for pipeline Reaches 1 and 2. Phase I of the project is being constructed to convey 8,650 acre-feet of SWP water annually to the San Gorgonio Pass Water Agency service area, with provisions to provide San Bernardino deliveries to the Yucaipa Valley. Located in San Bernardino and Riverside Counties, the project facilities will consist of existing pipelines, three new pipeline reaches, three new pump stations, and a new reservoir. The official groundbreaking ceremony for site work took place in Yucaipa on August 23, 1999. Below are brief descriptions of the remaining construction contracts.

Crafton Hills Reservoir. A contract to construct a 125 acre-foot capacity reservoir and dam was awarded in February 2000 (Specification No. 99-31). Work began in March 2000, was completed in August 2001, and accepted in March 2002.

Pipeline Reaches. A contract for pipeline Reaches 1 and 2 (Specification No. 98-24) was awarded in February 1999 with expected completion in December 2002. This pipeline starts at Mill Creek in San Bernardino County and extends through the cities of Yucaipa and Calimesa to Garden Air Creek in Riverside County. Work was completed in September 2002.

Work on a contract for pipeline Reach 3 (Specification No. 99-32), Garden Air Creek to Noble Creek, started in March 2000, completed in March 2002, and accepted in May 2002.

Pump Stations. Work started in March 1999 on a contract to furnish power circuit breakers and switchyard equipment for Greenspot and Crafton Hills Pump Stations (Specification No. 98-16) and is scheduled for completion in December 2003.

A contract to furnish power transformers for these facilities (Specification No. 98-18) started in May 1999, with a scheduled completion date of December 2003.

Work began in October 1999 on a contract to design, manufacture, test, and deliver 5 kV switchgear for Greenspot and Crafton Hills Pump Stations (Specification No. 99-15). This contract also includes the design, manufacture, testing, and delivery of programmable logic controllers for the Cherry Valley Pump Station. The completion date is scheduled for December 2003.

Work started in November 1999 on a contract to design, manufacture, shop test, and deliver three 4,500 gpm and one 9,000 gpm vertical turbine pumps for Greenspot Pump Station, two 4,500 gpm and one 9,000 gpm vertical turbine pumps for the Crafton Hills Pump Station, and two 3,600 gpm vertical turbine pumps for the Cherry Valley Pump Station (Specification No. 99-17). It also calls for electric motors, variable frequency drives, appurtenant equipment, and associated training programs. Completion

of this contract was scheduled for December 2003, but may be extended due to the addition of pump units at Greenspot and Crafton Hills.

A contract to construct Greenspot, Crafton Hills, and Cherry Valley Pump Stations (Specification No. 99-27) was awarded in May and work started in June 2000; completion is scheduled for December 2003.

An October 2001 contract to furnish and install the control and communications systems (Specification No. 01-05) is expected to be completed in December 2003.

Valve Facilities. A contract to construct new valve facilities at Carter Street and enlarge and reconstruct an existing valve facility in the Morton Canyon (Specification No. 00-07) was started in November 2000. Completion of the work is scheduled for June 2003.

Valves. Three separate contracts were awarded to furnish different types of valves. In October 1999, work began on a contract to furnish ANSI ball valves (Specification No. 99-20) and on a contract to furnish AWWA butterfly valves (Specification No. 99-22). The contract to furnish ANSI butterfly valves began in November 1999 (Specification No. 99-23). The ANSI ball valve contract will not be completed until December 2003; the ANSI and AWWA butterfly valve contracts are scheduled for completion in December 2003.

East Branch Enlargement

Devil Canyon Power Plant Second Afterbay. A contract to provide the Inland Feeder Connection at Devil Canyon Power Plant Second Afterbay was started in January 2001 (Specification No. 00-22). Work is scheduled to be completed in February 2003.

Construction Activities in Multiple Divisions

The contract to furnish butterfly valves for Mojave Siphon and Devil Canyon Power Plants started in August 1991, was completed in September 2001 (Specification No. 91-15), and accepted in September 2002.

Electrical equipment work continues on a contract to furnish spare coils and associated materials for Pearblossom and Oso Pumping Plants (Specification No. 98-27). This work was started in March 1999; a contract change order to furnish additional coils for Pearblossom extended the expected completion to September 2004.

Work continues on a contract for revegetation of disturbed areas at Mojave Siphon Power Plant and Devil Canyon Second Afterbay (Specification No. 99-21). This work, which started in November 1999, fulfills FERC permit requirements and is scheduled for completion in July 2005.

Work on a contract to furnish spare coils for Banks Pumping Plant and Gianelli Pumping-Generating Plant (Specification No. 00-19) began in September 2000 and was completed in August 2002.

In July 2001 work started on a contract to apply an asphalt seal coat and asphalt slurry seal to the paved roads and parking areas at the San Joaquin and Southern Field Divisions (Specification No. 01-04). The contract was completed in June 2002 and accepted in July 2002.

Roof replacement work started in August 2001 on various buildings at the Oroville, San Joaquin, and Southern Field Divisions (Specification No. 01-06). Work was completed in December 2001 and accepted in June 2002.

A contract to furnish spare coils for Warne and Devil Canyon Power Plants (Specification No. 01-13) started in October 2001, with completion scheduled for January 2005.

A contract to add stairs at the Gianelli Pumping-Generating Plant, an atrium enclosure at the San Joaquin Field Division O&M Administration Building, and various Americans with Disabilities Act modifications at the San Luis and San Joaquin Field Divisions started in November 2001 (Specification No. 01-20). Completion is estimated for January 2003.

Miscellaneous Construction Activities

The following non-SWP construction activities are categorized as "Miscellaneous."

Phase III of the salmon habitat enhancement project at Robinson Reach on the Merced River (Specification No. 01-02) was started in July 2001, completed in February 2002, and accepted in September 2002.

A contract to raise the levee along the Willow Slough Bypass (Specification No. 02-01) for the Division of Flood Management started in March 2002, was completed in July 2002, and accepted in September 2002. Work included:

- placing aggregate base and asphalt concrete on the levees along the Willow Slough Bypass
- pavement recycling by the in-place recycling method
- traffic striping and pavement markings

A minor contract to modify Division of Planning and Local Assistance offices in Red Bluff started in May 2002 and was completed and accepted in June 2002 (Specification 02-03). Work included providing and installing

- heating and air conditioning equipment
- interior wall, door and associated hardware
- an electrical panel and circuit breakers

A contract (Specification No. 02-05) to construct a reinforced concrete fish barrier to replace an existing gabion fish barrier on the South Fork Kern River started in June 2002. The contractor mobilized, set up camp, and was ready to start the in-stream work when a forest fire began in the Sequoia National Forest. All personnel evacuated and work was postponed until spring 2003. Completion is estimated in October 2003.

A contract to remove a dam and install a siphon on Mill Creek was started in August 2002 (Specification No. 02-06). Completion is estimated in April 2003. Work includes

- installing siphon and parshall flume
- destruction of three monitoring wells
- demolition of dam and fish ladder

Land and Right of Way Activities

The Department has spent a net total of $247 million to acquire rights of way, recreation, and mitigation land for the SWP from its inception to December 31, 2002. From January 1 through December 31, 2002, the Department

(1) acquired one parcel (.10 acres easement) for a cost of $700 for the South Bay Aqueduct;

(2) acquired 2 fee parcels (46.53 acres) and one easement (.61 acres) for a total of $140,147 for East Branch Extension Mitigation Land;

(3) obtained 219 temporary permits:
   - 49 for North of Delta Offstream Storage
   - 36 for South Bay Aqueduct
   - 31 for South Delta Improvement Program
   - 18 for DeValle seismicity reevaluation
   - 10 for East Branch Extension—Construction Reach 1
   - 8 for East Branch Extension—Construction Reach 3
   - 8 for Mendocino County Dry Year Groundwater Program
   - 7 for Local Groundwater Assistance Fund
   - 6 for California Irrigation Management Information System
   - 6 for York Creek Dam
   - 5 for South Delta temporary fish barriers—Old River
   - 4 for Arroyo Pasajero flood control
   - 4 for Byron Bridge Road Relocation Program
   - 3 for Deer Creek Monitoring Program
   - 3 for Byron Tract tide stations
   - 3 for Fresno groundwater recharge monitoring wells
   - 2 for Groundwater Transfer Monitoring Program
   - 2 for Suisun Marsh monitoring (Site S-49)

- 2 for temporary barriers—emergency pump
- 2 for South Delta interim facilities
- 1 each for 10 separate miscellaneous projects

(1) processed 44 Encroachment Permit applications and issued 20 permits;

(2) collected fees of $173,079 for review and inspection costs related to encroachment permit applications;

(3) received 12 encroachment reviews where applicant had prior property rights; completed 9;

(4) coordinated review of 16 tentative tract map developments within 1 mile of the Aqueduct; and

(5) completed four appraisals, two lease updates, and nine appraisal reviews.

Table 12-1. Design Activities, January 1, 2002, through December 31, 2002, by Division

Construction Division and Facility	Design Activity	Date Design Began	Design Actual/ Estimated Completion Date
Oroville Division			
Thermalito Pumping-Generating Plant	Furnish spare stator coils	September 2001	March 2002
Suisun Marsh Facilities			
Morrow Island Distribution System	Intake structure reconstruction	January 2002	March 2002
Delta Facilities			
Temporary Rock Barrier	Temporary rock barriers—Middle River, Old River, and Grant Line Canal	August 2002	October 2002
North San Joaquin Division			
North Bay Aqueduct	Pipeline cleaning from Barker Slough Pumping Plant to Travis Surge Tank	March 2002	June 2002
South Bay Aqueduct	Pipeline rehabilitation, access structure and valves, Phase II	March 2002	May 2002
Banks Intake Channel	New Byron Road Bridge, Banks Pumping Plant Intake Channel	April 2002	February 2003
Clifton Court Forebay	Sediment removal	September 2001	March 2002
Banks Pumping Plant	Automatic voltage regulators, Units 1 through 7	April 2002	November 2002
San Luis Division			
Gianelli Pumping-Generating Plant	Automatic voltage regulator, Units 1 through 8	April 2000	November 2002
South San Joaquin Division			
Edmonston Pumping Plant	Replacement of pumps, Units W2, W4, W6, and W8	August 2001	November 2002
West Branch			
Pyramid Dam and Piru Creek	Pyramid Dam Bridge repair and Piru Creek repairs	October 2000	February 2003
	Pyramid Dam spillway repairs	August 1999	March 2002
Warne Power Plant	Soffit and fascia replacement	January 2001	November 2002
Multiple Divisions			
Mojave Division and West Branch	Coat bulkhead gates and radial gates, Oso and Pearblossom Pumping Plants and Check 59	January 2002	June 2003
Miscellaneous Activities			
Sacramento River	Willow Slough Bypass levee raising	November 1999	January 2002
Battle Creek	Salmon and steelhead restoration project—Eagle Canyon	September 2000	May 2002
	Salmon and steelhead restoration project—Inskip Diversion Dam	September 2000	March 2002
Kern River	Schaeffer Fish Barrier, South Fork	October 2000	May 2002
Mill Creek	Dam removal and siphon installation	July 2001	March 2002
Castaic Lake	Recreation facilities renovation/improvements	October 1998	May 2002

Table 12-2. Construction Activities, January 1, 2002, through December 31, 2002, by Division

Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW[a])	Acceptance Date (Expected or Actual)	Contract Costs (in Thousands of dollars)
Oroville Division				
Hyatt Power Plant	Refurbish turbine Units 1, 3, and 5 (98-22)	February 1999	June 2004	10,150
	Renovate electrical controls for intake gate gantry cranes (00-02)	April 2000	October 2002	261
	Renovate electrical controls for bridge cranes and intake shutter gantry crane (00-21)	December 2000	August 2002	1,482
	Refurbish pump-turbine Units 2, 4, and 6 (01-11)	November 2001	April 2007	13,466
Hyatt Power Plant and Thermalito Pumping-Generating Plant	Furnish governor replacement (99-19)	November 1999	January 2004	1,512
Lake Oroville	Construct Lime Saddle Campground (00-14)	September 2000	June 2002	5,929
Oroville Dam	Rehabilitate radial gate (00-11)	January 2001	March 2003	3,108
Oroville Dam and Thermalito Diversion Dam	Fabricate/rehabilitate stop logs (99-30)	January 2000	August 2002	1,760
Oroville Field Division	Pave roads and extend concrete boat ramp (02-07)	August 2002	June 2003	1,204
Thermalito Pumping-Generating Plant	Replace expansion joint (00-15)	August 2000	March 2003	767
	Furnish spare coils and materials (02-08)	September 2002	April 2004	1,316
Delta Facilities				
Temporary Rock Barriers	Construct temporary rock barriers: Middle and Old Rivers and Grant Line Canal (01-01)	March 2001	February 2004	7,533
Suisun Marsh Facilities				
Morrow Island Distribution System	Reconstruct intake structure (02-04)	August 2002	January 2003	229
North San Joaquin Division				
Byron Road Bridge	Emergency deck repair (02-13)	December 2002	April 2003	139
California Aqueduct	Emergency repair, Milepost 4.25 (01-19)	June 2001	April 2002	5,509
South Bay Aqueduct	Furnish valves and sluice gates (01-18)	July 2001	April 2004	1,744
	Modify Altamont Pipeline (01-08)	July 2001	September 2002	2,789
	Line Altamont Pipeline (01-09)	July 2001	September 2002	3,805
	Seismic modifications to terminal tank (01-21)	September 2001	October 2002	662
	Rehabilitate pipeline access structures and valves (01-10)	October 2001	January 2003	5,501
	Rehabilitate pipeline access structures and valves, Phase II (02-11)	August 2002	May 2004	7,792
San Luis Division				
Gianelli Pumping-Generating Plant	Furnish field poles and materials (00-17)	September 2000	October 2004	4,666

[a]Notice to Begin Work

Table 12-2. Construction Activities, January 1, 2002, through December 31, 2002, by Division

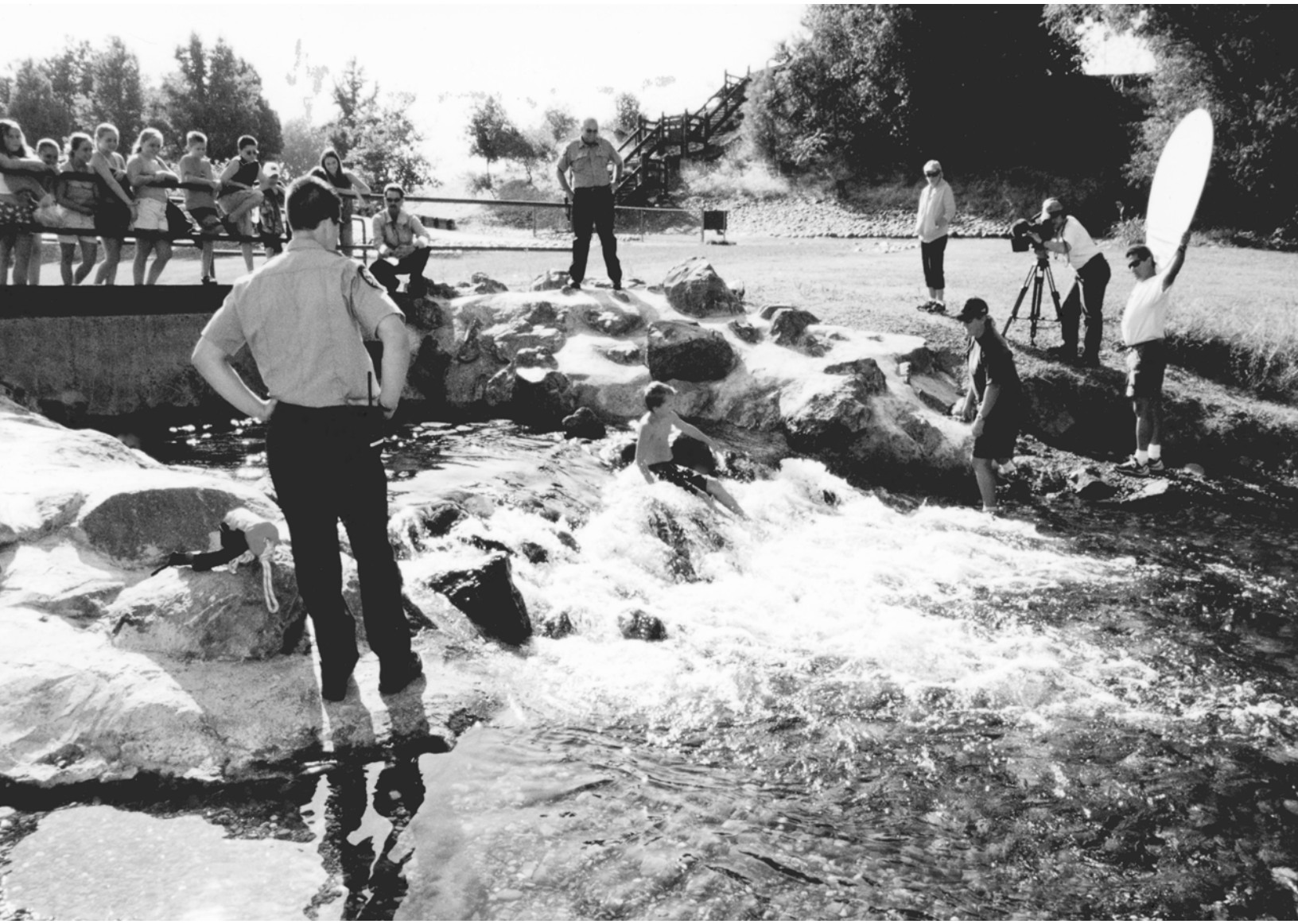
Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW[a])	Acceptance Date (Expected or Actual)	Contract Costs (in Thousands of dollars)
South San Joaquin Division				
California Aqueduct	Rehabilitate Lokern Road bridge, Milepost 222.91 (01-22)	October 2001	August 2002	280
Tehachapi Division				
Edmonston Pumping Plant	Furnish 15kV circuit breakers (circuit breakers for Gianelli and Devil Canyon added by contract change order) (97-01)	April 1997	August 2002	10,675
	Repair Pastoria/Beartrap access road landslide (01-12)	September 2001	April 2002	360
West Branch				
Castaic Dam and Pastoria Siphon	Recoat Castaic Dam outlet works and Pastoria Siphon pipelines (01-03)	August 2001	January 2007	2,353
Oso Pumping Plant	Furnish automatic voltage regulators (00-06)	May 2000	August 2004	1,137
Pyramid Dam	Repair spillway (02-02)	April 2002	June 2002	82
Mojave Division				
Mojave Siphon Power Plant	Construct valve vaults (97-25)	April 1998	April 2002	2,758
Pearblossom Pumping Plant	Furnish and install vertical centrifugal pumps (87-04)	May 1987	December 2003	2,303
Santa Ana Division				
San Bernardino Tunnel	Reconstruct intake (95-07)	July 1995	January 2003	25,308
East Branch Extension				
Crafton Hills Reservoir	Construct reservoir (99-31)	March 2000	March 2002	5,128
Pipeline Reaches	Construct pipeline Reaches 1 and 2—Mill Creek to Garden Air Creek (98-24)	February 1999	June 2003	19,230
	Construct pipeline Reach 3, Garden Air Creek to Noble Creek (99-32)	March 2000	May 2002	12,555
Pump Stations				
Greenspot and Crafton Hills	Furnish power circuit breakers and switchgear equipment (98-16)	March 1999	February 2004	315
	Furnish power transformers (98-18)	May 1999	February 2004	631
Greenspot, Crafton Hills, and Cherry Valley	Furnish 5kV switchgear and furnish PLC cubicle, Cherry Valley Pump Station (99-15)	October 1999	February 2006	628
	Furnish pumps, motors, and variable frequency drives (99-17)	November 1999	February 2006	3,111
	Construct pump stations (99-27)	June 2000	February 2004	21,800
	Furnish and install supervisory control and communications systems (01-05)	October 2001	February 2004	5,500
Valve Facilities				
Carter Street and Morton Canyon	Construct valve facilities (00-07)	November 2000	June 2003	2,761

Table 12-2. Construction Activities, January 1, 2002, through December 31, 2002, by Division

Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW[a])	Acceptance Date (Expected or Actual)	Contract Costs (in Thousands of dollars)
Valves	Furnish ANSI ball valves (99-20)	October 1999	February 2006	1,200
	Furnish AWWA butterfly valves (99-22)	October 1999	February 2004	862
	Furnish ANSI butterfly valves (99-23)	November 1999	February 2004	1,460
East Branch Enlargement				
Devil Canyon Second Afterbay	Inland feeder connection (00-22)	January 2001	February 2003	1,087
Multiple Divisions				
Mojave Siphon and Devil Canyon Power Plants	Furnish butterfly valves (91-15)	August 1991	September 2002	6,473
Pearblossom and Oso Pumping Plants	Furnish spare coils and materials (98-27)	March 1999	November 2004	1,147
Mojave Siphon Power Plant and Devil Canyon Second Afterbay	Revegetation (99-21)	November 1999	September 2005	500
Banks Pumping Plant and Gianelli Pumping-Generating Plant	Furnish spare coils (00-19)	September 2000	January 2003	1,764
San Joaquin and Southern Field Divisions	Seal and pave roads and parking areas (01-04)	July 2001	July 2002	1,993
Oroville, San Joaquin, and Southern Field Divisions	Replace roofs (01-06)	August 2001	June 2002	1,442
Warne and Devil Canyon Power Plants	Furnish spare coils and materials (01-13)	October 2001	March 2005	1,130
San Luis and San Joaquin Field Divisions	Add stairs, ADA modifications, and enclose atrium (01-20)	November 2001	August 2003	1,699
Miscellaneous Activities				
Robinson Reach	Salmon habitat enhancement, Merced River (01-02)	July 2001	September 2002	3,757
Northern District	Raise levee at Willow Slough (02-01)	March 2002	September 2002	824
	Modify offices (02-03)	May 2002	June 2002	38
Kern River	Schaeffer Fish Barrier, South Fork (02-05)	June 2002	February 2004	1,647
Mill Creek	Remove dam and install siphon (02-06)	August 2002	June 2003	229

Information for this chapter was contributed by the Division of Engineering and the Division of Land and Right of Way.

Chapter 13
Recreation



Youths participating in the Aquatic Safety Program at Lake Oroville

Significant Events in 2002

- State Water Project facilities received 5.67 million recreation days of use, a 24 percent increase from 2001.
- The Department provided $2.2 million for development of Riverbend Park, a non-SWP recreational facility on the Feather River near Oroville, and supported the Riverbend Park Kick-off event celebrating initial park development. The Department will also provide up to $800,000 for operation and maintenance of the facility through January 31, 2007.
- The Department sponsored a recreation exhibit at the International Sportsmen's Exposition at Cal Expo in January, and at the Alameda County Fairgrounds in February. The exhibit provided interactive activities including a fish simulator. Hundreds of children received individual trophies for successfully catching a fish on the simulator at the two events.
- The Department co-sponsored an aquatic safety program for disadvantaged youth from the Oroville and Chico areas. The Feather River Recreation and Park District and the Chico Area Recreation and Park District brought about 40 children to Lake Oroville to train them in water safety, potential hazards of lakes and rivers, and the State Water Project. Central District and Public Affairs Office staff introduced and participated in the program.
- The Department sponsored an exhibit at the Association of California Water Agencies Spring Conference, staffed by Central District and Public Affairs Office personnel. The focus was on promoting use of the SWP's recreation facilities from Plumas County to Lake Perris.
- Central District staff and East Bay Regional Park District personnel coordinated the Disabled/At-risk Children's Fishing Derby (*Let's Go Fishing*).

The State Water Project is a multipurpose project that benefits millions of Californians. In addition to providing water supply, flood control, and habitat for fish and wildlife, the SWP offers extensive and varied recreational opportunities—tours, sightseeing, fishing, hunting, camping, boating, water skiing, bicycling, and swimming. These recreational opportunities, as well as fish and wildlife enhancement, are financed by appropriations from several legislative provisions and other funding sources.

Recreation Areas

The SWP has 37 developed recreation areas, or sites, throughout California, including 18 developed fishing access sites. Figure 13-1 shows the names and locations of each area.

Recreation Days

In 2002, SWP facilities received 5.67 million recreation days of use (Table 13-1), a 24 percent increase from the 4.57 million recreation days recorded in 2001. Recreational use at the fishing access sites and along the California Aqueduct Bikeway nearly equaled that of 2001. A recreation day is defined as one individual user visiting a recreation site along the SWP during a 1-day period.

Most SWP recreation and visitor use is concentrated at the major reservoirs. Fifty-six percent of the total SWP recreational use in 2002 occurred at the four major reservoirs in Southern California: Pyramid Lake, Castaic Lake, Silverwood Lake, and Lake Perris. Since the SWP began delivering water in 1962, more than 170 million recreation days have been recorded at SWP recreational facilities.

Facilities

Planning

During 2002, the Department of Boating and Waterways completed plans for the following projects:

San Luis Reservoir State Recreation Area

- Planning is underway for replacing boarding floats at the San Luis Creek area, O'Neill Forebay, and San Luis Reservoir SRA.
- A bidding and construction contract was awarded for parking renovation at the Basalt area of O'Neill Forebay.

Castaic Lake

- A bidding and construction contract was awarded for a boating instruction and safety center at Castaic Lake Lagoon.
- Construction drawings were completed for a boat storage building.
- Drawings were completed for a handrail installation at the west ramp administration dock.

Lake Perris

- Drawings were completed for boarding float replacements at ramps 5, 6, and 7.
- A bidding and construction contract was awarded for a new restroom at the marina.

Silverwood Lake

- Planning was completed for rehabilitation of boat-in campsites.
- Preliminary plans were completed for rehabilitation of the Cleghorn boat launch facility.



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. Access 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 accessible along the aqueduct)
20. Three Rocks Fishing Access Site
21. Huron Fishing Access Site
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. Access 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

Figure 13-1. Names and Locations of SWP Recreation Areas

Table 13-1. Recreation Days Recorded in 2002, by Field Division and Facility

Field Division	Number of Recreation Days
Oroville Field Division	
Frenchman Lake	240,000
Antelope Lake	70,000
Lake Davis	138,000
Lake Oroville and Thermalito Forebay	675,000
Thermalito Afterbay and Oroville Wildlife Area	273,000
Subtotal	*1,396,000*
Delta Field Division	
Lake Del Valle	330,500
Bethany Reservoir	26,700
Fishing Access Site	
Neils Hansen	100
California Aqueduct	
Walk-In Fishing	600
Bikeway	100
White Slough Wildlife Area	10,000
Subtotal	*368,000*
San Luis Field Division	
San Luis Reservoir, including O'Neill Forebay and Los Banos Reservoir	691,400
California Aqueduct	
Walk-In Fishing	12,000
Wildlife Areas	11,000
Subtotal	*714,400*
San Joaquin Field Division	
Fishing Access Sites	
Kettleman City	900
Lost Hills	800
Buttonwillow	900
California Aqueduct	
Walk-In Fishing	7,200
Subtotal	*9,800*
Southern Field Division	
Silverwood Lake	511,000
Lake Perris	1,638,400
Pyramid Lake	192,500
Castaic Lake	836,700
Fishing Access Sites	
Quail Lake	1,500
77th Street East	300
Longview Road	100
California Aqueduct	
Walk-In Fishing	3,000
Bikeway	1,100
Subtotal	*3,184,600*
Total	**5,672,800**

Lake Del Valle

- Drawings were completed for a boarding float replacement and marina dock rehabilitation.

Pyramid Lake

- Planning was completed for rehabilitation/repair of the walkway at Emigrant Landing.

New Facilities

Lake Davis

- Construction was completed on the combination restroom/shower building at Honker Cove.

Lake Oroville

- Construction was completed on the boat ramp extensions at the Lime Saddle and Bidwell Canyon areas.

Castaic Lake

- New boarding floats and an administration dock were installed.

Improvements to Facilities

Lake Davis

- Renovation of the boat boarding floats was completed at the boat launch areas. Also completed was the renovation of the parking and launch areas at Honker Cove.

Lake Oroville

- Construction was completed on the major renovation and reconfiguration of the spillway boat launching facility. New boarding floats were also installed.

Lake Del Valle

- New stainless steel countertops were installed in the campground restrooms and all flush toilets were converted to low-flow units. Four hundred 1-gallon shrubs were planted in the parking lot islands.

Pyramid Lake

- Boat boarding floats were renovated.

Oroville Recreation Plan

The Federal Energy Regulatory Commission Order 2100-052, issued on October 1, 1992, required the Department to prepare a revised recreation plan for Lake Oroville, replacing the original *Oroville Reservoir, Thermalito Forebay, and Thermalito Afterbay: Water Resources Recreation*

Report (Bulletin 117-06). Another plan, FERC Order 2100-054, submitted June 1, 1993, and approved September 22, 1994, included additional recreation facilities and addressed concerns raised by local residents regarding recreation and fishery-related issues.

In 1995, the Lake Oroville Recreation Advisory Committee was established. This committee, comprised of local government, citizens' groups, and State agencies, was formed to advise the Department on recreation plan implementation, including these projects

- Ten floating campsites were constructed and moored at various locations on the lake.
- An en route RV camping area was added at the North Thermalito Forebay area.
- Construction was completed on a duck brood pond and restroom and picnic facilities at Thermalito Afterbay.
- Buoys were deployed around the water-ski slalom course.
- Construction was completed on the 41-mile bike trail main loop.
- Construction was completed on the Lime Saddle Boat Ramp improvements, an equestrian campground at Loafer Creek Recreation area, and lighting on Oroville Dam.
- Fishery and fishing improvements were completed, including development of a fish management and stocking plan, stocking Chinook salmon, and development of fish shelters.

Most recreation and fish facilities have been completed; certain elements of the plan may require time extensions to complete.

Fish Plantings

In 2002, the Department of Fish and Game continued its fish-planting activities at 12 SWP facilities. Total plantings of trout and Chinook salmon decreased by more than 24 percent in 2002 (see Table 13-2).

Table 13-2. Fish Planted in 2002 (Thousands)

Location and Size	Eagle Lake Trout	Brook Trout	Rainbow Trout	Brown Trout	Coho Salmon	Total
Antelope Reservoir						
Catchables		11.1				11.1
Lake Davis						
Catchables	24.6					24.6
Frenchman Reservoir						
Subcatchables			No fish planted			
Fingerling						
Lake Oroville						
Fingerling					50.2	50.2
Yearlings					128.3	128.3
Thermalito Forebay						
Catchables		5.2	36.9			42.1
Lake Del Valle						
Catchables			No fish planted			
Los Banos Reservoir						
Catchables			13.6			13.6
Pyramid Lake						
Catchables			No fish planted			
Castaic Lake						
Catchable			43.5			43.5
Castaic Lake Lagoon						
Catchables			34.9			34.9
Silverwood Lake						
Catchables			42.5			42.5
Lake Perris						
Catchables			47.4			47.4
Lake Skinner[a]						
Catchables			No fish planted			
California Aqueduct			No fish planted			
Total	**24.6**	**16.3**	**218.8**		**178.5**	**438.2**

[a]Included in the SWP fish planting program, but not an SWP facility.

At the Feather River fish hatchery and the Thermalito Afterbay rearing ponds, 9,106,900 fish were produced in 2002—8,876,400 Chinook salmon and 230,500 steelhead trout. Of the Chinook salmon reared, 4,324,600 were fingerlings and 4,551,800 were advanced fingerlings. Of the steelhead reared, 3,800 were advanced fingerlings and 226,700 were yearlings.

Recreation Financing

Previously, the Department reported capital costs allocated to fish and wildlife enhancement and recreation in Appendix D to Bulletin 132, *Costs of Recreation and Fish and Wildlife Enhancement*. This report is no longer mandated by the Legislature, and these capital costs, starting with fiscal year 2000-01, are reported in this bulletin.

The financing of recreation and fish and wildlife enhancement in connection with the SWP was provided for by the Davis-Dolwig Act, Assembly Bill 12, and the Environmental Water Act, Assembly Bills 1441 and 1442. The Davis-Dolwig Act declared the Legislature's intent to provide the Department with General Fund appropriations for SWP fish and wildlife enhancement and recreation. For fiscal years 1983-84 through 2001-02, no funds were appropriated for these purposes.

AB 12 provided for a $5 million annual appropriation from tideland oil and gas revenues to be used for recreation, enhancement of fish and wildlife, and purchases of land for recreational uses. The Department received $90 million from these revenues; there have been no appropriations since 1985.

Legislation enacted in 1989 (AB 1441 and AB 1442) offset a portion of the amount owed by the State for fish and wildlife enhancement and recreational costs against the amount the SWP owed to the California Water Fund (see Chapter 14, *Financial Analysis*, for more details).

Capital Cost Allocations

Table 13-3 shows capital costs allocated to fish and wildlife enhancement and recreation and overall costs of lands acquired for recreation development through 2002. Costs have increased by $883,281 since last reported. These costs are budgeted by the Department from funds available for financing project construction costs. Recreation and enhancement costs not reported in this table are budgeted by several State departments and are financed by appropriations from a variety of funds.

Accrued Interest Charges

Table 13-4 details accrued interest charges included in the costs shown in Table 13-3, and reimbursements through December 2002. These interest accruals are calculated through December 31, 2002, on the portion of annual disbursements financed by the California Water Resources Development Bond Fund, and based on the weighted average interest costs of Burns-Porter and Water System Revenue bonds sold to date. The reimbursements were included in the Department's budget as appropriations from the General Fund and are used by the Department to pay for operations, maintenance, power, and replacement costs associated with operating the SWP for fish and wildlife enhancement and recreation.

For a more detailed discussion of these legislative provisions, and the Department's procedures for reporting and tabulating recreation and enhancement costs, please see the last Appendix D (Appendix D to Bulletins 132-98, 132-99, 132-00, and 132-01). This report is located on Web site wwwswpao.water.ca.gov/publications.html.

Table 13-3. Recreation and Enhancement Capital Costs of the State Water Project, 2002

Facility	Joint Costs Allocated to Recreation and Enhancement: 1952-2001	2002	Subtotal	Interest	Total Costs	B132-02 Costs	Difference
Frenchman Dam and Lake (78.5%)[a]							
California Water Resources Development Bond Fund	102,997	0	102,997	2,097	105,094	105,094	0
All Other Funds	2,729,072	682	2,729,754	0	2,729,754	2,729,335	419
Antelope Dam and Lake (100%)							
California Water Resources Development Bond Fund	1,033,261	0	1,033,261	113,788	1,147,049	1,147,049	0
All Other Funds	4,519,035	93,069	4,612,104	0	4,612,104	4,505,449	106,655
Grizzly Valley Dam and Lake Davis (99%)							
California Water Resources Development Bond Fund	4,003,092	0	4,003,092	486,754	4,489,846	4,489,846	0
All Other Funds	2,586,721	1,197	2,587,918	0	2,587,918	2,587,460	458
San Luis Dam and Reservoir, O'Neil Forebay, and Los Banos Reservoir (3.4%)							
California Water Resources Development Bond Fund	988,910	0	988,910	169,085	1,157,995	1,157,995	0
All Other Funds	3,492,726	862	3,493,588	0	3,493,588	3,497,979	(4,391)
California Aqueduct Delta to Dos Amigos Pumping Plant (3.4%)							
California Water Resources Development Bond Fund	4,467,667	0	4,467,667	897,406	5,365,073	5,365,073	0
All Other Funds	4,487,553	9,207	4,496,760	0	4,496,760	4,498,676	(1,916)
Oroville Division (2.9%)							
California Water Resources Development Bond Fund	5,725,216	0	5,725,216	1,790,491	7,515,707	7,515,707	0
All Other Funds	4,844,897	69,075	4,913,972	0	4,913,972	4,851,452	62,520
Del Valle Dam and Lake Del Valle (48%)							
California Water Resources Development Bond Fund	10,546,762	0	10,546,762	6,813,560	17,360,322	17,360,322	0
All Other Funds	3,249,196	74,021	3,323,217	0	3,323,217	3,255,082	68,135
California Aqueduct Dos Amigos Pumping Plant to Termini (5.7%)							
California Water Resources Development Bond Fund	48,382,162	0	48,382,162	75,353,773	123,735,935	123,735,935	0
All Other Funds	58,406,768	403,165	58,809,933	0	58,809,933	58,168,674	641,259
Subtotal	*159,566,035*	*651,278*	*160,217,313*	*85,626,954*	*245,844,267*	*244,971,128*	*873,139*
Specific Costs of Acquiring Land for Recreation Development							
Frenchman Dam and Lake							
California Water Resources Development Bond Fund	3,379	0	3,379	160	3,539	3,539	0
All Other Funds	49,947	0	49,947	0	49,947	49,950	(3)
Grizzly Valley Dam and Lake Perris							
California Water Resources Development Bond Fund	204,475	0	204,475	17,573	222,048	222,048	0
All Other Funds	554,260	0	554,260	0	554,260	553,246	1,014
Abbey Bridge Dam and Reservoir							
California Water Resources Development Fund	9	0	9	0	9	9	0
All Other Funds	9,921	0	9,921	0	9,921	9,921	0
San Luis Dam and Reservoir, O'Neil Forebay, and Los Banos Reservoir							
California Water Resources Development Bond Fund	395,284	0	395,284	33,467	428,751	428,751	0
All Other Funds	415,610	0	415,610	0	415,610	415,612	(2)
California Aqueduct Delta to Dos Amigos Pumping Plant							
California Water Resources Development Bond Fund	461,086	0	461,086	158,456	619,542	619,542	0
All Other Funds	(137,494)	0	(137,494)	0	(137,494)	(137,600)	106
Oroville Division							
California Water Resources Development Bond Fund	7,809,509	0	7,809,509	3,673,041	11,482,550	11,482,550	0
All Other Funds	3,103,259	6,091	3,109,350	0	3,109,350	3,100,324	9,026
Del Valle Dam and Lake Del Valle							
California Water Resources Development Bond Fund	519,425	0	519,425	448,292	967,717	967,717	0
All Other Funds	(32,200)	0	(32,200)	0	(32,200)	(32,202)	2
California Aqueduct Dos Amigos Pumping Plant to Termini							
California Water Resources Development Bond Fund	478,971	0	478,971	915,217	1,394,188	1,394,188	0
All Other Funds	398,349	0	398,349	0	398,349	398,327	22
Castaic Dam and Lake							
California Water Resources Development Bond Fund	1,954,297	0	1,954,297	3,856,203	5,810,500	5,810,500	0
All Other Funds	952,325	0	952,325	0	952,325	952,325	0
Cedar Spring Dam and Silverwood Lake							
California Water Resources Development Bond Fund	424,966	0	424,966	817,173	1,242,139	1,242,139	0
All Other Funds	370,137	0	370,137	0	370,137	370,163	(26)
Perris Dam and Lake Perris							
California Water Resources Development Bond Fund	1,022,313	0	1,022,313	2,033,799	3,056,112	3,056,112	0
All Other Funds	4,939,979	0	4,939,979	0	4,939,979	4,939,976	3
Subtotal	*23,897,807*	*6,091*	*23,903,898*	*11,953,381*	*35,857,279*	*35,847,137*	*10,142*
Total Recreation and Enhancement Costs							
California Water Resources Development Bond Fund	88,523,781	0	88,523,781	97,580,335	186,104,116	186,104,116	0
All Other Funds	94,940,061	657,369	95,597,430	0	95,597,430	94,714,149	883,281
Total	**183,463,842**	**657,369**	**184,121,211**	**97,580,335**	**281,701,546**	**280,818,265**	**883,281**

[a]Allocation percentages are based on percentages previously reported to the Legislature, as well as preliminary estimates for facilities not yet reported.

Table 13-4. Interest Accruals on California Water Resources Development Bond Fund Disbursements

Facility	1952-2001 Disbursements: WRD Bond Funds	1952-2001 Disbursements: All Other Funds	1952-2001 Reimbursements: WRD Bond Funds	1952-2001 Reimbursements: All Other Funds	1952-2001 Interest Accrual	2002 Disbursements: WRD Bond Funds	2002 Disbursements: All Other Funds	2002 Reimbursements: WRD Bond Funds	2002 Reimbursements: All Other Funds	2002 Interest Accrual	2003 Beginning of Year Balance to be Reimbursed: Disbursements: WRD Bond Funds	2003 Beginning of Year Balance to be Reimbursed: Disbursements: All Other Funds	2003 Beginning of Year Balance to be Reimbursed: Reimbursements: WRD Bond Funds	2003 Beginning of Year Balance to be Reimbursed: Reimbursements: All Other Funds	Interest Accruals 1992-2003
Joint Costs Allocated to Recreation and Enhancement															
Frenchman Dam and Lake	102,997	2,729,072	104,900	2,719,468	2,097	0	682	0	0	0	102,997	2,729,754	104,900	2,719,468	2,097
Antelope Dam and Lake	1,033,261	4,519,035	1,140,322	4,478,932	113,788	0	93,069	0	0	0	1,033,261	4,612,104	1,140,322	4,478,932	113,788
Grizzly Valley Dam and Lake Davis	4,003,092	2,586,721	4,444,594	2,568,667	486,754	0	1,197	0	0	0	4,003,092	2,587,918	4,444,594	2,568,667	486,754
Sisk Dam, San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir	988,910	3,492,726	1,938,244	2,725,578	169,085	0	862	0	0	0	988,910	3,493,588	1,938,244	2,725,578	169,085
California Aqueduct, Delta to Dos Amigos Pumping Plant	4,467,667	4,487,553	5,267,351	4,092,435	897,406	0	9,207	0	0	0	4,467,667	4,496,760	5,267,351	4,092,435	897,406
Oroville Division	5,725,216	4,844,897	7,324,529	4,570,269	1,790,491	0	69,075	0	0	0	5,725,216	4,913,972	7,324,529	4,570,269	1,790,491
Del Valle Dam and Lake Del Valle	10,546,762	3,249,196	16,463,934	3,130,016	6,813,560	0	74,021	0	0	0	10,546,762	3,323,217	16,463,934	3,130,016	6,813,560
California Aqueduct, Dos Amigos Pumping Plant to Termini	48,382,162	58,406,768	113,035,518	49,410,851	75,353,773	0	403,165	0	0	0	48,382,162	58,809,933	113,035,518	49,410,851	75,353,773
Subtotal	*75,250,067*	*84,315,968*	*149,719,392*	*73,696,216*	*85,626,954*	*0*	*651,278*	*0*	*0*	*0*	*75,250,067*	*84,967,246*	*149,719,392*	*73,696,216*	*85,626,954*
Specific Costs of Acquiring Land for Recreation Development															
Frenchman Dam and Lake	3,379	49,947	3,520	49,947	160	0	0	0	0	0	3,379	49,947	3,520	49,947	160
Grizzly Valley Dam and Lake Davis	204,475	554,260	220,423	554,244	17,573	0	0	0	0	0	204,475	554,260	220,423	554,244	17,573
Abbey Bridge Dam and Reservoir	9	9,921	9	9,921	0	0	0	0	0	0	9	9,921	9	9,921	0
Sisk Dam, San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir	395,284	415,610	425,700	415,610	33,467	0	0	0	0	0	395,284	415,610	425,700	415,610	33,467
California Aqueduct, Delta to Dos Amigos Pumping Plant	461,086	(137,494)	603,887	(137,494)	158,456	0	0	0	0	0	461,086	(137,494)	603,887	(137,494)	158,456
Oroville Division	7,809,509	3,103,259	11,028,039	649,733	3,673,041	0	6,091	0	0	0	7,809,509	3,109,350	11,028,039	649,733	3,673,041
Del Valle Dam and Lake Del Valle	519,425	(32,200)	917,078	(32,200)	448,292	0	0	0	0	0	519,425	(32,200)	917,078	(32,200)	448,292
California Aqueduct, Dos Amigos Pumping Plant to Termini	478,971	398,349	1,271,912	398,349	915,217	0	0	0	0	0	478,971	398,349	1,271,912	398,349	915,217
Castaic Dam and Lake	1,954,297	952,325	5,291,258	951,070	3,856,203	0	0	0	0	0	1,954,297	952,325	5,291,258	951,070	3,856,203
Cedar Spring Dam and Silverwood Lake	424,966	370,137	1,132,207	370,137	817,173	0	0	0	0	0	424,966	370,137	1,132,207	370,137	817,173
Perris Dam and Lake Perris	1,022,313	4,939,979	2,780,487	4,867,247	2,033,799	0	0	0	0	0	1,022,313	4,939,979	2,780,487	4,867,247	2,033,799
Subtotal	*13,273,714*	*10,624,093*	*23,674,520*	*8,096,564*	*11,953,381*	*0*	*6,091*	*0*	*0*	*0*	*13,273,714*	*10,630,184*	*23,674,520*	*8,096,564*	*11,953,381*
Total	**88,523,781**	**94,940,061**	**173,393,912**	**81,792,780**	**97,580,335**	**0**	**657,369**	**0**	**0**	**0**	**88,523,781**	**95,597,430**	**173,393,912**	**81,792,780**	**97,580,335**

Information for this chapter was contributed by the Division of Planning and Local Assistance, Central District, the Public Affairs Office, and the State Water Project Analysis Office.

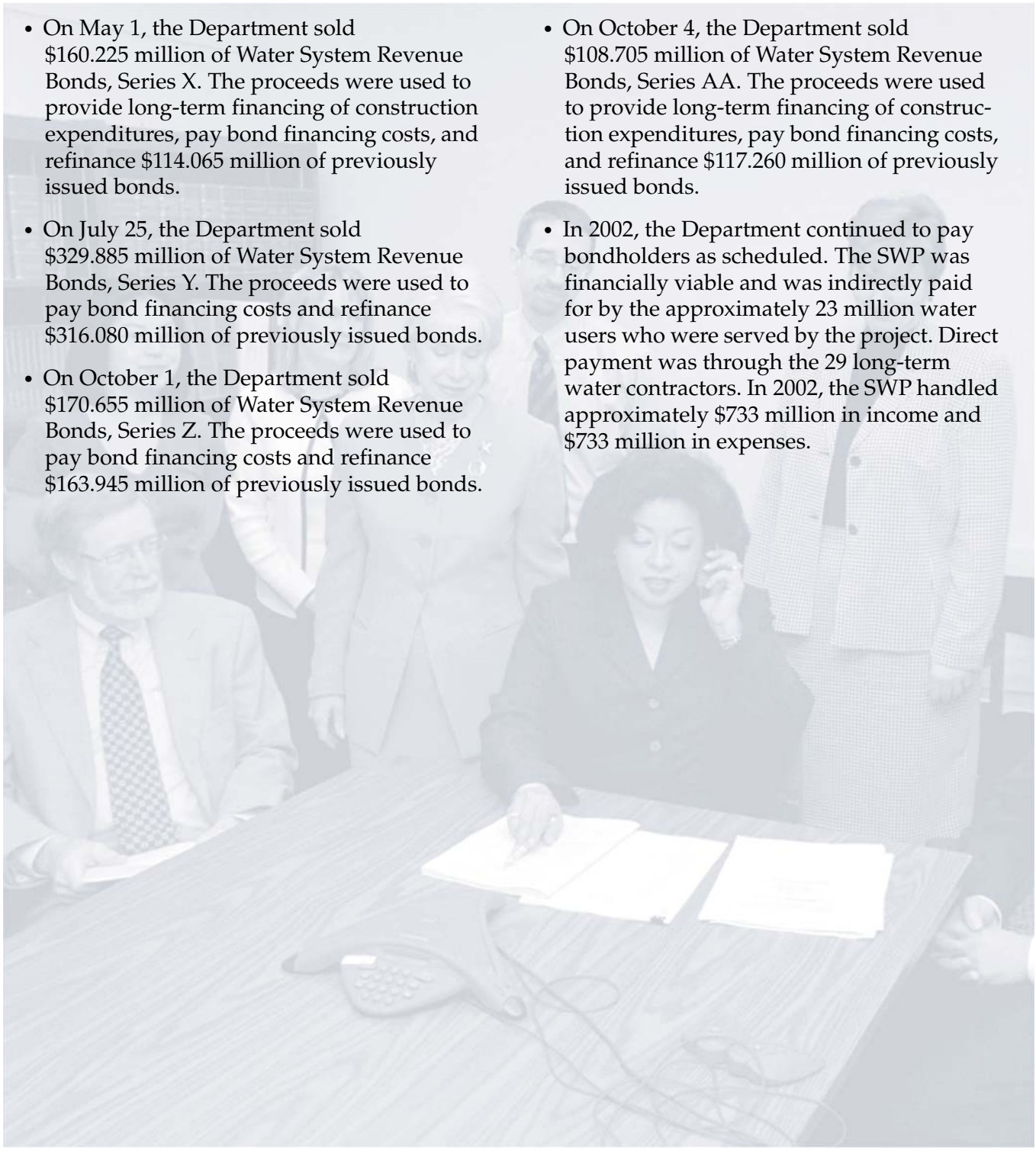
Chapter 14
Financial Analysis



Departmental staff and other participants at the closing of a revenue bond sale

Significant Events in 2002

- On May 1, the Department sold $160.225 million of Water System Revenue Bonds, Series X. The proceeds were used to provide long-term financing of construction expenditures, pay bond financing costs, and refinance $114.065 million of previously issued bonds.
- On July 25, the Department sold $329.885 million of Water System Revenue Bonds, Series Y. The proceeds were used to pay bond financing costs and refinance $316.080 million of previously issued bonds.
- On October 1, the Department sold $170.655 million of Water System Revenue Bonds, Series Z. The proceeds were used to pay bond financing costs and refinance $163.945 million of previously issued bonds.
- On October 4, the Department sold $108.705 million of Water System Revenue Bonds, Series AA. The proceeds were used to provide long-term financing of construction expenditures, pay bond financing costs, and refinance $117.260 million of previously issued bonds.
- In 2002, the Department continued to pay bondholders as scheduled. The SWP was financially viable and was indirectly paid for by the approximately 23 million water users who were served by the project. Direct payment was through the 29 long-term water contractors. In 2002, the SWP handled approximately $733 million in income and $733 million in expenses.



This chapter presents both a summary and a detailed explanation of State Water Project current financial analysis, capital costs and requirements, revenues and expenses, and bond activities for years 2003 through 2015.

The Department performs financial analysis annually to ensure that the SWP financing program will have sufficient funds to meet construction obligations; project operation, maintenance, power, and replacement costs; and debt service payments for bonds expended for construction. The results of the current financial analysis, dated December 31, 2002, are presented in Table 14-1 on page 203 and Table 14-2 on page 204, respectively.

Future contingencies may change the financial analysis, some of which are

- alterations in schedules of currently planned construction for future facilities;
- changes in economic conditions, including changes in interest rates and in SWP contractor Table A amounts due to changes in amounts of water needed, conserved, or reclaimed;
- completion of Delta transfer facilities;
- development of additional sources of water not foreseen at this time;
- deviations from the assumptions regarding actual rates of price escalations for future construction from those currently assumed for cost estimates;
- increases in capital costs related to additional conservation facilities; and
- outcome of lawsuits now pending before the courts.

Capital Requirements and Financing

In conducting the current analysis, the Department projected that future construction costs through the year 2015 plus reimbursement of interim financing for prior expenditures will total $289 million. Special capital requirements for revenue bond financing of these construction costs are projected at $35 million for a total capital requirement of $324 million. This projection includes construction and financing costs for the following significant SWP facilities planned for completion by 2015:

- Interim South Delta facilities;
- extension of the East Branch of the California Aqueduct; and
- construction of a new intake at Clifton Court Forebay.

Most of these capital requirements will be financed from the projected sale of $269 million of revenue bonds. The remaining $55 million will be financed from capital resources revenues and the transfer of excess revenues not needed for operation costs or debt service.

The analysis of capital requirements and financing presented in Table 14-1 does not include 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. Also, Table 14-1 does not include costs of associated work essential for realizing full benefits from the SWP but financed and constructed by local interests or State agencies other than the

Department. Those facilities include on-shore recreational developments at SWP facilities and local distribution facilities.

The allocation of capital expenditures for various SWP purposes is detailed in Table 14-3.

Capital Requirements

Lines 1 through 19 in Table 14-1 show actual and projected SWP capital requirements through 2015. Estimates of future capital expenditures include allowances for construction costs escalation of 1.5 percent per year for 2003 and 2 percent per year from 2004 through 2015. Right-of-way costs are escalated at 4 percent per year from 2003 through 2015. Capital expenditures for the SWP also include requirements other than those for construction, such as disbursements made as part of the Davis-Grunsky Act Program (Line 15) and special capital requirements under revenue bond financing (Line 16). The Department will decide whether to construct facilities only after examining alternatives and completing environmental documentation and other review processes.

Line 1, Initial Project Facilities, includes only those facilities completed before 1974 (see Bulletin 132-74, Chapter 2). Additional costs after 1973 and estimated costs of remaining work on the initial SWP facilities are not included.

Line 2, North Bay Aqueduct, consists of Phase II costs for 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 is connected with the Phase I facilities, which were completed in 1968 (Phase I costs are included in the initial project facilities discussed in Line 1). Phase II became operational in May 1988.

Line 3, Delta and Suisun Marsh Facilities, shows historical costs in Column 1 that include 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 four permanent barriers in the Delta.

Line 4, Final Four Units at Banks Pumping Plant, includes costs of the final four 1,067-cfs units, which became operational in spring 1992.

Line 5, Coastal Branch Aqueduct, includes all costs for the planning, design, and construction of Phase II of the Coastal Branch of the California Aqueduct. Phase II construction began in October 1993 and was completed in 1997. Water deliveries from Phase II facilities began in July 1997.

Line 6, West Branch Aqueduct, shows costs for all facilities on the West Branch except Warne Power Plant, whose costs are included in Line 10.

Line 7, East Branch Enlargement, includes 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 10.) East Branch Enlargement costs, by facility, are presented in Table 14-4. Costs for Alamo Power Plant 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.

Line 8, East Branch Improvements, shows all aqueduct costs on the East Branch not allocated to the enlargement project. Those costs include improvements constructed concurrently with the enlargement work and the reconstruction of

Table 14-3. Allocation of Capital Expenditures (Thousands of Dollars)

Facilities and Construction Divisions	Expenditures Incurred Through 2002	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 Division	17,967	0	17,967	1,412	0	16,555	0
Oroville Division	592,269	0	592,269	494,761	76,007	21,501	0
Delta Facilities Division	375,734	96,534	472,268	423,677	0	48,591	0
North Bay Aqueduct	94,121	5	94,126	94.126	0	0	0
South Bay Aqueduct	86,772	166	86,938	65,472	7,665	13,801	0
California Aqueduct							
North San Joaquin Division	272,965	459	273,424	264,128	0	9,296	0
San Luis Division	265,437	498	265,935	255,595	0	10,340	0
South San Joaquin Division	311,674	378	312,052	294,723	0	17,329	0
Tehachapi Division	327,129	397	327,526	309,236	0	18,290	0
Mojave Division	390,126	19,886	410,012	372,071	0	37,941	0
Santa Ana Division	239,560	158	239,718	208,322	0	31,396	0
West Branch	500,212	7	500,219	468,893	0	31,326	0
Coastal Branch	490,366	95	490,461	490,461	0	0	0
Subtotal, California Aqueduct	*2,797,469*	*21,878*	*2,819,347*	*2,663,429*	*0*	*155,918*	*0*
Other Project Facilities							
Small Hydroelectric Power Generating Facilities	104,198	0	104,198	104,198	0	0	0
Off-Aqueduct Power Generating Facilities	447,111	16,500	463,611	463,611	0	0	0
East Branch Enlargement	453,068	0	453,068	453,068	0	0	0
East Branch Extension	114,563	10,437	125,000	125,000	0	0	0
Coastal Power Allocation	30,708	0	30,708	30,708	0	0	0
San Joaquin Drainage Facilities	53,130	38,011	91,141	0	0	0	91,141
Planning and Preoperations	57,067	23,026	80,093	80,093	0	0	0
Unassigned/Miscellaneous	21,281	4,421	25,702	0	0	0	25,702
Subtotal, Project Construction Expenditures	*5,245,458*	*210,978*	*5,456,436*	*4,999,555*	*83,672*	*256,366*	*116,843*
Other Capital Expenditures							
Davis-Grunsky Act Program	130,000	0	130,000	0	0	0	130,000
Total Capital Expenditures	**5,375,458**	**210,978**	**5,586,436**	**4,999,555**	**83,672**	**256,366**	**246,843**

[a]Reflects the Department's allocation to this purpose, irrespective of federal payments.
[b]Includes costs currently unassigned to purpose, planning costs of deleted features of project facilities, initial costs of inventoried items, joint costs assigned to the federal government, and costs assigned to the Davis-Grunsky Act Program.

the San Bernardino Tunnel Intake. Costs for power plant construction at Alamo, Mojave Siphon, and Devil Canyon are not included in this line.

Line 9, East Branch Extension, shows expenditures for Phase I of the extension of the East Branch of the California Aqueduct. The East Branch Extension will extend the California Aqueduct east from the Devil Canyon Power Plant to a terminus at Noble Creek near Beaumont in Riverside County. The extension will provide water service to the San Gorgonio Pass Water Agency and the San Bernardino Valley Municipal Water District. Construction began in February 1999 and is scheduled for completion in 2003. All costs in Line 9 will be allocated to and repaid by the two participating contractors.

Line 10, Power Generation and Transmission Facilities, does not include the East Branch Enlargement share of costs for Alamo, Mojave Siphon, and Devil Canyon Power Plants shown in Line 7 of Table 14-1. The capital costs for facilities included in Line 10 are shown in Table 14-5.

Line 11, Additional Conservation Facilities, shows projected costs to plan and study additional conservation facilities. Specific planning activities and projected spending amounts for 2003 through 2015 are shown in Table 14-6. Expenditures for these items are being reviewed. Construction costs of additional conservation facilities are not included in the financial analysis.

Line 11 does not include CALFED program costs. CALFED expenditures for preliminary planning and environmental impact report preparation are currently financed by appropriations from the General Fund. The Department assumes that future costs of the CALFED program will continue to be financed from the General Fund.

Line 12, San Joaquin Drainage Facilities, includes projected costs of the San Joaquin Valley Drainage Monitoring Program. The activities in this program are monitoring, evaluating, reducing and treating drainage, and investigating evaporation ponds.

The Department assumes that future costs of the drainage program will be financed by revenue transfers (Line 31).

Line 13, Other Costs, includes 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.

Line 14, Total Project Construction Expenditures, is the total of Lines 1 through 13.

Line 15, Davis-Grunsky Act Program Costs, shows costs of the Davis-Grunsky Act Program, a financial assistance program to provide grants and loans to public agencies for constructing local water projects.

As of December 31, 2002, the Department had disbursed $130 million (including $8.5 million for administration) in grants and loans for local agencies throughout the State.

Line 16, Special Capital Requirements under Revenue Bond Financing, presents special capital requirements at the time revenue bonds are sold. The financial analysis assumes 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 presented in Table 14-7.

Line 17, Total Capital Requirements, is the total of Lines 14, 15, and 16.

Line 18, Power Facilities Capital Requirements, shows the total capital requirements for power facilities included in Line 17.

Table 14-4. East Branch Enlargement Capital Costs by Facility

Facility	Dollar Amounts (in millions)
Aqueduct and siphons	127.8
Pearblossom Pumping Plant	70.1
Alamo Power Plant	5.0
Mojave Siphon Power Plant	47.3
Devil Canyon Power Plant and Second Afterbay	202.9
Total	**453.1**

Table 14-5. Estimated Capital Costs for Power Generation and Transmission Facilities

Facility	Dollar Amounts (in millions)
Power Plants	
Reid Gardner, Unit 4	286.2
Bottle Rock	120.9
South Geysers	49.6
Devil Canyon	36.8
Warne	84.5
Alamo	44.9
Mojave Siphon	36.6
Thermalito Diversion Dam	14.1
Subtotal	*673.6*
Transmission Lines	
Midway-Wheeler Ridge	10.7
Geysers-Lakeville	6.9
Total	**691.2**

Table 14-6. Estimated Future Costs for Planning Additional Conservation Facilities

Activity	Dollar Amounts (in millions)
Bay-Delta Evaluation	10.3
Other Planning Costs	12.7
Total	**23.0**

Table 14-7. Application of Revenue Bond Proceeds (Millions of Dollars)

Bond Series[a]	Construction Expenditures	Other Capital Requirements					Total Principal Amount of Bonds
		Reimbursement of General Fund	*Capitalized Interest*	*Capitalized Operating Costs*	*Bond Financing and Refunding Costs*[b]	*Subtotal*	
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	237.9	239.5
Power Facilities Series H	22.2	0.0	0.0	0.0	184.5	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	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	8.6	9.0
Water System Facilities Series F	0.0	0.0	0.0	0.0	160.0	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	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	537.8	537.8
Water System Facilities Series M	166.3	0.0	9.9	0.0	13.8	23.7	190.0
Water System Facilities Series N	137.4	0.0	6.0	0.0	8.6	14.6	152.0
Water System Facilities Series O	156.5	0.0	8.4	0.0	170.1	178.5	335.0
Water System Facilities Series P	141.6	0.0	5.2	0.0	13.2	18.4	160.0
Water System Facilities Series Q	135.0	0.0	8.0	0.0	123.6	131.6	266.6
Water System Facilities Series R	0.0	0.0	0.0	0.0	20.7	20.7	20.7
Water System Facilities Series S	78.2	0.0	5.8	0.0	116.2	122.0	200.2
Water System Facilities Series T	0.0	0.0	0.0	0.0	135.7	135.7	135.7
Water System Facilities Series U	98.7	0.0	5.3	0.0	103.2	108.5	207.2
Water System Facilities Series V	0.0	0.0	0.0	0.0	20.6	20.6	20.6
Water System Facilities Series W	41.0	0.0	1.3	0	218.7	220.0	261.0
Water System Facilities Series X	0.0	0.0	0.0	0	0.0	0.0	160.2
Water System Facilities Series Y	0.0	0.0	0.0	0	329.9	329.9	329.9
Water System Facilities Series Z	0.0	0.0	0.0	0	170.7	170.7	170.7
Water System Facilities Series AA	0.0	0.0	0.0	0	108.7	108.7	108.7
Subtotal	*2,562.1*	*2.6*	*249.6*	*14.8*	*3,433.0*	*3,700.0*	*6,422.3*[c]
Future East Branch Extension Bonds	48.2	0.0	3.0	0.0	4.2	7.2	55.4
Future Water System Facilities Bonds	186.0	0.0	11.8	0.0	16.0	27.8	213.8
Total	**2,796.3**	**2.6**	**264.4**	**14.8**	**3,453.2**	**3,735.0**	**6,691.5**

[a]Actual bond issue for all except future water system facilities and future East Branch Enlargement bonds.
[b]Bond financing and refunding costs include funds applied to debt service reserve requirements.
[c]Includes $3,133 million of refunded principal, leaving a net principal obligation of $3,289 million.

Line 19, Water Facilities Capital Requirements, shows the total capital requirements for water facilities included in Line 17.

Capital Financing

The SWP was constructed with three general types of financing: Burns-Porter Act, revenue bonds, and capital resources. Lines 20 through 33 of Table 14-1 present specific information about those sources of financing.

Burns-Porter Act. Burns-Porter financing is derived from the sale of California Water Resources Development Bonds (general obligation bonds) and State Tideland Oil Revenues deposited in the California Water Fund as authorized by the Burns-Porter Act (California Water Code Sections 12930-12944), approved by voters in November 1960. The Burns-Porter Act authorized an issue of $1.75 billion of general obligation State bonds, which are repaid by revenues received according to the water supply contracts. Of that authorization, $130 million were reserved specifically for the Davis-Grunsky Act Program.

Proceeds from the sale of general obligation bonds were deposited in the California Water Resources Development Bond Fund-Bond Proceeds Account, from which monies were expended only for the construction of SWP facilities and for the Davis-Grunsky Act Program. Approximately 30 percent of the expenditures through 2002 for construction and the Davis-Grunsky Act Program were financed with general obligation bonds.

Monies deposited in the California Water Fund were appropriated for purposes outlined in the Burns-Porter Act. Such deposits were derived from a portion of the State Tideland Oil Revenues according to a continuing authorization. The California Water Fund was used to finance $508 million, or approximately 10 percent, of the construction expenditures through 2002.

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 funding the Debt Service Reserve Account, paying interest on bonds, and paying water system operating expenses during a specified period.

As of December 31, 2002, the Department had sold $6.4 billion of revenue bonds. That amount includes $3.1 billion of refunded bonds, leaving a total principal obligation of $3.3 billion.

Capital Resources. Capital resources financing is derived from payments and appropriations (including a portion of the State 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 interest on general obligation bonds and costs of constructing SWP facilities.

According to the Department's 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 revenue bonds, East Branch Enlargement bonds, East Branch Extension bonds, water system facilities bonds, initial project facilities bonds, proceeds from the Davis-Grunsky Act Program,

California Water Fund monies, and capital resources revenues.

Line 20, Power Revenue Bonds through Series H, includes the proceeds applied from power revenue bonds for Oroville, Devil Canyon, Castaic, Warne, Reid Gardner, Bottle Rock, Alamo, South Geysers, and small hydro projects.

No future power revenue bond sales are projected for the financial analysis.

Line 21, East Branch Enlargement, Current Bonds, shows that $485 million of Water System Revenue Bond proceeds have been applied to the East Branch Enlargement project through December 31, 2002. Of this total amount, $416 million were used for construction expenditures and $69 million for bond discounts, interest costs, and debt service reserves.

No future East Branch Enlargement revenue bond sales are projected for the financial analysis.

Line 22, East Branch Extension, Current Bonds, shows that $86 million of Water System Revenue Bond proceeds had been spent through December 31, 2002.

Line 23, East Branch Extension, Future Bonds, shows the Department's estimate of additional bonds required to complete construction of the East Branch Extension and to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Line 24, Water System Facilities, Current Bonds, shows that through December 31, 2002, $1.5 billion of proceeds from Water System Revenue Bonds, Series A through Series W, were applied to SWP projects other than the East Branch Enlargement and the East Branch Extension. Of this total amount, $1.3 billion were used to pay for construction expenditures and $0.2 billion to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Line 25, Water System Facilities, Future Bonds, shows that $214 million of future water revenue bonds are needed to provide $179 million for construction of SWP water system facilities and $35 million for bond discounts, interest costs, and debt service reserve requirements.

Line 26, Subtotal, Water Revenue Bonds, is the total of Lines 21 through 25.

Line 27, Initial Project Facilities Bond Proceeds, shows the amount of general obligation bonds sold to provide financing costs for initial SWP facilities and for costs of planning certain additional conservation facilities.

Financing initial facilities from general obligation bonds was completed in mid-1972 and totaled $1.444 billion—$1.750 billion 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 were used to finance planning studies of the Middle Fork Eel River Development. 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.

Line 28, Davis-Grunsky Act Program Bond Proceeds, shows, for simplification, the entire

$130 million of capital expenditures authorized for the Davis-Grunsky Act Program according to the Burns-Porter Act 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.

Line 29, Application of California Water Fund Monies, shows the amount of SWP costs financed under the Burns-Porter Act. The 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, 2002, was used to finance a total of $508 million of SWP costs.

Line 30, Interim Financing, shows the net annual amounts of funds flowing into and out of the Water Revenue Commercial Paper Notes program. The note program was established in March 1993 to provide an ongoing source of interim financing for Water System Projects prior to permanent financing from the sale of long-term revenue bonds. The Department has authority to issue up to $94.4 million of Water Revenue Commercial Paper Notes. A positive number indicates money borrowed from the program to finance construction costs. A negative number indicates money repaid into the program. The financial analysis assumes that all funds borrowed from the program will be repaid before the end of the analysis period.

Line 31, Application of Capital Resources Revenues to Construction, presents the Capital Resources Revenues applied for capital expenditures.

Line 32, Revenue Transfers Applied, shows monies assumed to be transferred to the California Water Fund according to provisions of the Burns-Porter Act and subsequently reappropriated to construction (see Line 37 in Table 14-2).

Projected amounts for 2003 through 2015 include funds to finance expenditures for San Joaquin drainage facilities, as indicated in Line 12 of Table 14-1, and expenditures for additional conservation facilities, as indicated in Line 11.

Line 33, Subtotal, Other Capital Financing, is the total of Lines 27 through 32.

Line 34, Total Financing of Capital Requirements, totals Lines 20, 26, and 33.

Annual Revenues and Expenditures

After 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 meet all repayment obligations on funds used to finance SWP construction and other authorized costs during the period 2003 through 2015. Data on annual revenues and expenditures are presented in Table 14-2. A detailed discussion of each line item is presented below.

Project Revenues

SWP revenues consist primarily of SWP contractor payments required under their individual long-term water supply contracts. Those revenues are deposited in two funds: the Central Valley Water Project Revenue Fund, where all revenues pledged to revenue bonds are placed, and the California Water Resources Development Bond Fund-Systems Revenue Account, where 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 deposited to a reserve for future SWP construction since the California Water Fund has been repaid (see Line 36).

Line 1, Capital Resources Revenues, includes

- federal payments for SWP capital expenditures;

- appropriations for capital costs allocated to recreation;
- appropriations for SWP capital expenditures prior to passage of the Burns-Porter Act and according to Senate Bill 261 (1968);
- payments from Los Angeles Department of Water and Power for Castaic power development;
- advances from water contractors for construction of requested work;
- investment earnings on the Capital Resources Account; and
- 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 have been appropriated by the California Legislature from the State Tideland Oil Revenues. There have been no appropriations since 1985, and no appropriations are indicated in the financial analysis for the period 2003-2015. Legislation enacted in 1989 offset a portion of the amount owed to the SWP by the State for costs allocated to recreation and fish and wildlife enhancement against the amount the SWP owed to the California Water Fund (see Line 36).

Lines 2 through 9, Water Contractor Payments, show amounts of the separate elements of water contractor payments.

Amounts in Line 4 also include revenues sufficient to cover costs associated with sales of excess power. Appendix B of this bulletin presents a detailed explanation of payments identified in Lines 2 through 9.

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 certain securities issued and loans obtained to finance SWP facilities, as described below.

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, 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 14-8).

Calculations for determining the Project Interest Rate do not include proceeds from the sale of revenue bonds for Off-Aqueduct Power Facilities, the East Branch Enlargement facilities, or water system facilities defined in the Water Revenue Bond Amendment. Table 14-9 lists all bond sales by date and presents basic information used in the calculation of the Project Interest Rate.

Information about contractor water charges in Appendix B is based on known conditions and substantiates the Department's determination of 2004 water charges to be billed July 1, 2003. However, information about significant differences between the sum of future charges included in Lines 2 through 9 of Table 14-2 and the substantiation of 2004 charges included in Appendix B are as described below.

Table 14-1. Capital Requirements and Financing, December 31, 2002 (Thousands of Dollars)

Line Number/Item	1952-2002	2003	2004	2005	Calendar Year 2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2003-2015	1952-2015
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	90,272	0	0	5	0	0	0	0	0	0	0	0	0	0	5	90,277
3. Delta and Suisun Marsh Facilities	237,716	24,938	23,868	23,959	5,145	4,656	4,656	4,656	4,656	0	0	0	0	0	96,534	334,250
4. Final 4 Units at Banks Pumping Plant	43,673	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43,673
5. Coastal Branch Aqueduct	506,907	61	27	7	0	0	0	0	0	0	0	0	0	0	95	507,002
6. West Branch Aqueduct	191,426	7	0	0	0	0	0	0	0	0	0	0	0	0	7	191,433
7. East Branch Enlargement	453,068	0	0	0		0	0	0	0	0	0	0	0	0	0	453,068
8. East Branch Improvements	299,974	2,672	9,762	7,609	0	0	0	0	0	0	0	0	0	0	20,043	320,017
9. East Branch Extension	114,563	8,000	2,437	0	0	0	0	0	0	0	0	0	0	0	10,437	125,000
10. Power Generation and Transmission Facilities	674,702	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	0	0	16,500	691,202
11. Additional Conservation Facilities	144,546	3,097	2,846	2,846	2,846	2,846	2,846	2,846	2,846	0	0	0	0	0	23,019	167,565
12. San Joaquin Drainage Facilities	53,130	2,743	2,939	2,939	2,939	2,939	2,939	2,939	2,939	2,939	2,939	2,939	2,939	2,939	38,011	91,141
13. Other Costs	233,165	4,161	1,482	684	0	0	0	0	0	0	0	0	0	0	6,327	239,492
14. Total Project Construction Expenditures	**5,245,458**	**47,179**	**44,861**	**39,549**	**12,430**	**11,941**	**11,941**	**11,941**	**11,941**	**4,439**	**4,439**	**4,439**	**2,939**	**2,939**	**210,978**	**5,456,436**
15. Davis-Grunsky Act Program Costs	130,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130,000
16. Special Capital Requirements Under Revenue Bond Financing	586,148	0	19,657	0	4,568	0	10,777	0	0	0	0	0	0	0	35,002	621,150
17. Total Capital Requirements	**5,961,606**	**47,179**	**64,518**	**39,549**	**16,998**	**11,941**	**22,718**	**11,941**	**11,941**	**4,439**	**4,439**	**4,439**	**2,939**	**2,939**	**245,980**	**6,207,586**
18. Power Facilities Capital Requirements	674,702	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	0	0	16,500	691,202
19. Water Facilities Capital Requirements	5,286,904	45,679	63,018	38,049	15,498	10,441	21,218	10,441	10,441	2,939	2,939	2,939	2,939	2,939	229,480	5,516,384
Financing of Capital Requirements																
Power Revenue Bond Proceeds																
20. Power Revenue Bonds through Series H	1,162,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,162,458
Water Revenue Bond Proceeds																
21. East Branch Enlargement, Current Bonds	485,274	0	0	0	0	0	0	0	0	0	0	0	0	0	0	485,274
22. East Branch Extension, Current Bonds	86,134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86,134
23. East Branch Extension, Future Bonds	0	0	55,425	0	0	0	0	0	0	0	0	0	0	0	55,425	55,425
24. Water System Facilities, Current Bonds	1,467,200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,467,200
25. Water System Facilities, Future Bonds	0	0	95,775		35,115	0	68,015	7,441	7,441	0	0	0	0	0	213,787	213,787
26. Subtotal, Water Revenue Bonds	*2,038,608*	*0*	*151,200*	*0*	*35,115*	*0*	68,015	*7,441*	*7,441*	*0*	*0*	*0*	*0*	*0*	*269,212*	*2,307,820*
Other Capital Financing																
27. Initial Project Facilities Bond Proceeds	1,452,452	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,452,452
28. Davis-Grunsky Act Program Bond Proceeds	130,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130,000
29. Application of California Water Fund Monies (Tideland Oil Revenues)	508,056	0	0	0	0	0	0	0	0	0	0	0	0	0	0	508,056
30. Interim Financing	78,427	42,679	(91,182)	35,049	(22,617)	7,441	(49,797)	0	0	0	0	0	0	0	(78,427)	(0)
31. Application of Capital Resources Revenues to Construction	535,415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	535,415
32. Revenue Transfers Applied	56,190	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,439	4,439	4,439	2,939	2,939	55,195	111,385
33. Subtotal, Other Capital Financing	*2,760,540*	*47,179*	*(86,682)*	*39,549*	*(18,117)*	*11,941*	*(45,297)*	*4,500*	*4,500*	*4,439*	*4,439*	*4,439*	*2,939*	*2,939*	*(23,232)*	*2,737,308*
34. Total Financing of Capital Requirements	**5,961,606**	**47,179**	**64,518**	**39,549**	**16,998**	**11,941**	**22,718**	**11,941**	**11,941**	**4,439**	**4,439**	**4,439**	**2,939**	**2,939**	**245,980**	**6,207,586**

Table 14-2. State Water Project Revenues and Expenditures, December 31, 2002 (Thousands of Dollars)

Line Number/Item	1952-2002	Calendar Year 2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2003-2015	1952-2015
Project Revenues																
1. Capital resources revenues	814,701	0	0	0	0	0	0	0	0	0	0	0	0	0	0	814,701
Water Contractor Payments																
2. Transportation capital	3,134,855	134,425	136,193	136,057	135,137	135,159	135,159	135,159	135,159	135,159	135,159	133,710	132,625	130,843	1,749,944	4,884,799
3. Transportation minimum	4,056,132	256,916	210,583	277,232	263,856	256,897	273,564	274,590	275,151	269,283	269,171	220,053	177,801	168,152	3,193,249	7,249,381
4. Transportation variable	2,508,504	174,270	281,193	389,973	296,111	286,826	255,713	268,819	296,578	291,161	315,942	364,778	395,991	408,150	4,025,505	6,534,009
5. Delta Water Charge	1,716,332	93,665	107,635	99,707	101,462	103,252	103,698	103,905	104,115	104,330	104,547	104,771	105,003	105,247	1,341,337	3,057,669
6. East Branch Enlargement	412,624	39,428	43,096	42,967	43,829	43,863	41,647	42,590	42,315	43,375	43,438	43,712	43,162	44,218	557,640	970,264
7. East Branch Extension	14,518	6,728	7,850	11,609	11,615	11,613	8,759	10,303	10,376	10,292	10,295	11,874	11,913	12,052	135,279	149,797
8. Coastal Extension	12,211	3,214	3,169	3,170	3,170	4,126	3,113	3,106	6,351	4,176	4,176	4,180	4,209	4,211	50,371	62,582
9. Water Revenue bond surcharge	286,920	57,692	61,217	62,911	62,550	62,975	57,455	59,605	56,835	64,226	64,308	66,831	67,960	71,043	815,608	1,102,528
10. Subtotal water contractor payments	*12,142,096*	*766,338*	*850,936*	*1,023,626*	*917,730*	*904,711*	*879,108*	*898,077*	*926,880*	*922,002*	*947,036*	*949,909*	*938,664*	*943,916*	*11,868,933*	*24,011,029*
11. Revenue bond cover adjustments	0	(38,037)	(42,455)	(44,169)	(44,166)	(44,320)	(46,595)	(47,153)	(48,141)	(45,892)	(45,957)	(40,982)	(40,971)	(39,526)	(568,364)	(568,364)
12. Rate management adjustments	(176,463)	(40,470)	(6,000)	(10,000)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(461,170)	(637,633)
Other Revenues																
13. Federal payments for project operating costs	194,910	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	156,000	350,910
14. 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
15. Davis-Grunsky loan repayments	47,813	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	18,200	66,013
16. Revenue bond proceeds	652,006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	652,006
17. Interest earnings on operating revenue	561,014	1,800	2,000	2,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	45,800	606,814
18. Oroville-Thermalito payments	249,279	0	0	0	0	0	0	0	0	0	0	0	0	0	0	249,279
19. Miscellaneous revenues	106,938	5,089	0	0	0	0	0	0	0	0	0	0	0	0	5,089	112,027
20. Subtotal, other revenues	*1,828,617*	*20,289*	*15,400*	*15,400*	*17,400*	*17,400*	*17,400*	*17,400*	*17,400*	*17,400*	*17,400*	*17,400*	*17,400*	*17,400*	*225,089*	*2,053,706*
21. Total operating revenues	13,794,250	708,120	817,881	984,857	850,494	837,321	809,443	827,854	855,669	853,040	878,009	885,857	874,623	881,320	11,064,488	24,858,738
22. Total operating revenues and capital resources revenues	14,608,951	708,120	817,881	984,857	850,494	837,321	809,443	827,854	855,669	853,040	878,009	885,857	874,623	881,320	11,064,488	25,673,439
Project Expenses																
23. Project operations, maintenance, and power costs	6,336,941	413,603	559,328	683,263	578,648	559,580	525,809	539,699	566,446	560,887	583,966	616,994	608,855	617,521	7,414,599	13,751,540
24. Deposits to replacement reserves	97,208	0	0	0	0		0	0	0	0	0	0	0	0	0	97,208
25. Deposits to special reserves	383,137	39,426	(3,806)	22,841	(6,310)	(2,868)	3,060	(1,996)	148	1,714	4,496	(4,113)	(2,350)	2,260	52,502	435,639
26. Capital resources expenditures	605,773	0	0	0	0	0	0	0	0	0	0	0	0	0	0	605,773
Payments of Debt Service																
27. Principal repayments on bonds sold through December 31, 2002 (current bonds)	1,652,740	95,925	102,374	113,590	118,750	124,510	130,665	140,520	146,155	154,565	161,465	153,120	155,420	156,295	1,753,354	3,406,094
28. Interest on bonds sold through December 31, 2002 (current bonds)	5,170,875	154,666	155,485	150,394	144,637	138,879	132,689	126,447	119,735	112,690	104,898	96,671	89,514	82,060	1,608,765	6,779,640
29. Future water bond principal repayments	0	0	0	1,953	2,060	2,693	2,841	4,403	4,645	4,901	5,170	5,454	5,754	6,071	45,945	45,945
30. Future water bond interest payments	0	0	0	8,316	8,209	10,027	9,879	14,281	14,040	13,783	13,514	13,231	12,930	12,613	130,823	130,823
31. Total principal	1,652,740	95,925	102,374	115,543	120,810	127,203	133,506	144,923	150,800	159,466	166,635	158,574	161,174	162,366	1,799,299	3,452,039
32. Total interest	5,170,875	154,666	155,485	158,710	152,846	148,906	142,568	140,728	133,775	126,473	118,412	109,902	102,444	94,673	1,739,588	6,910,463
33. *Subtotal debt service*	*6,823,615*	*250,591*	*257,859*	*274,253*	*273,656*	*276,109*	*276,074*	*285,651*	*284,575*	*285,939*	*285,047*	*268,476*	*263,618*	*257,039*	*3,538,887*	*10,362,502*
Net Revenues																
34. Total Operating Expenses and Debt Service	**14,246,674**	**703,620**	**813,381**	**980,357**	**845,994**	**832,821**	**804,943**	**823,354**	**851,169**	**848,540**	**873,509**	**881,357**	**870,123**	**876,820**	**11,005,988**	**25,252,662**
35. Net system revenues	362,277	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	58,500	420,777
Application of Net System Revenues																
36. California Water Fund repayment	296,287	0	0	0	0	0	0	0	0	0	0	0	0	0	0	296,287
37. Revenues used for capital expenditures	65,990	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	58,500	124,490

Table 14-10. Operations, Maintenance, Power, and Replacement Costs, by Facility, Composition, and Purpose (Thousands of Dollars)

Feature	1962-2002	2003	2004	2005	Calendar Year 2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016-2035	Total
Project Facility																
Feather River facilities	604,047	37,801	40,784	43,481	33,310	25,861	25,807	25,804	25,694	25,930	25,976	25,972	25,940	25,785	517,423	1,509,615
North Bay Aqueduct	32,504	3,070	4,008	4,620	3,658	3,590	3,469	3,519	3,572	3,606	3,670	3,812	3,933	3,964	81,868	162,863
Delta facilities	485	0	0	0	0	0	0	0	0	0	0	0	0	0	0	485
Suisun Marsh	20,315	939	1,010	1,094	2,747	2,707	2,700	2,700	2,689	2,182	2,186	2,185	2,180	2,167	43,493	91,294
South Bay Aqueduct	169,073	9,490	13,570	15,646	14,196	13,868	13,227	13,430	13,651	13,740	13,982	14,608	15,104	15,134	303,280	651,999
California Aqueduct																
Delta to Edmonston	2,291,736	137,945	195,725	244,713	206,934	201,581	191,482	192,818	207,787	204,625	209,363	235,463	242,607	249,092	5,177,580	10,189,451
Edmonston to Perris	1,969,451	134,243	213,013	272,103	237,921	234,041	211,591	224,162	235,218	235,506	251,412	276,594	299,519	301,506	6,352,760	11,449,040
West Branch	(57,738)	(1,313)	(1,895)	5,367	(9,393)	(11,319)	(10,917)	(11,441)	(11,162)	(10,719)	(8,938)	(10,182)	(10,376)	(10,130)	(184,137)	(344,293)
Coastal Branch	150,883	8,460	12,772	14,846	14,819	14,353	13,552	13,809	14,099	14,183	14,481	15,273	15,907	15,962	319,804	653,203
Off-Aqueduct power generating facilities	919,819	60,013	57,865	59,922	57,903	57,903	57,903	57,903	57,903	57,868	57,868	39,303	75	75	675	1,542,998
Recreation, planning, and CVP negotiations	1,249	683	683	683	683	683	683	683	683	683	683	683	683	683	13,669	23,797
Water quality monitoring	284,556	23,950	21,193	20,188	15,270	15,712	15,712	15,712	15,712	12,683	12,683	12,683	12,683	12,683	227,572	718,992
Davis-Grunsky Act Program	6,004	600	600	600	600	600	600	600	600	600	600	600	600	600	12,000	25,804
Subtotal	*6,392,384*	*415,881*	*559,328*	*683,263*	*578,648*	*559,580*	*525,809*	*539,699*	*566,446*	*560,887*	*583,966*	*616,994*	*608,855*	*617,521*	*12,865,987*	*26,675,248*
Payments to\credits from PG&E under Comprehensive Agreement	(55,443)	(2,278)	0	0	0	0	0	0	0	0	0	0	0	0	0	(57,721)
Total OMP&R Costs	*6,336,941*	*413,603*	*559,328*	*683,263*	*578,648*	*559,580*	*525,809*	*539,699*	*566,446*	*560,887*	*583,966*	*616,994*	*608,855*	*617,521*	*12,865,987*	*26,617,527*
Composition																
Salaries and expenses of headquarters personnel	1,568,882	77,573	84,901	99,343	94,361	83,556	83,699	85,051	83,353	80,406	85,486	82,122	81,227	78,252	1,580,396	4,248,608
Salaries and expenses of field personnel	2,519,391	86,279	92,365	118,838	113,387	106,588	107,165	108,887	106,721	102,745	111,443	106,959	105,715	101,811	2,766,250	6,654,544
Pumping power																
Used by pumping plants	2,126,334	246,134	395,833	476,820	377,917	379,173	344,809	356,517	387,976	391,348	399,621	461,017	495,782	511,792	10,676,535	18,027,608
Produced by generation plants	(729,242)	(54,395)	(71,913)	(71,937)	(65,197)	(67,917)	(68,044)	(68,936)	(69,784)	(71,757)	(70,729)	(72,684)	(74,221)	(74,686)	(2,163,409)	(3,794,851)
Payments to/credits from PG&E under Comprehensive Agreement	(55,443)	(2,278)	0	0	0	0	0	0	0	0	0	0	0	0	0	(57,721)
Off-Aqueduct power generating facilities requirement	919,819	60,013	57,865	59,922	57,903	57,903	57,903	57,903	57,903	57,868	57,868	39,303	75	75	675	1,542,998
Oroville-Thermalito insurance premiums	11,043	277	277	277	277	277	277	277	277	277	277	277	277	277	5,540	20,184
Less: Portion of costs incurred during construction	(121,051)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(121,051)
Subtotal	*6,239,733*	*413,603*	*559,328*	*683,263*	*578,648*	*559,580*	*525,809*	*539,699*	*566,446*	*560,887*	*583,966*	*616,994*	*608,855*	*617,521*	*12,865,987*	*26,520,319*
Deposits to replacement reserves	97,208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97,208
Total OMP&R Costs	*6,336,941*	*413,603*	*559,328*	*683,263*	*578,648*	*559,580*	*525,809*	*539,699*	*566,446*	*560,887*	*583,966*	*616,994*	*608,855*	*617,521*	*12,865,987*	*26,617,527*
Project Purpose																
Water supply and power generation	6,088,224	392,956	536,402	660,338	555,725	536,657	502,885	516,775	543,523	537,963	561,041	594,068	585,929	594,592	12,407,742	25,614,820
Payments to/credits from PG&E under Comprehensive Agreement	(55,443)	(2,278)	0	0	0	0	0	0	0	0	0	0	0	0	0	(57,721)
Recreation and fish and wildlife enhancement	117,858	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	200,000	447,858
Flood control	3,739	325	326	325	323	323	324	324	323	324	325	326	326	329	6,245	14,207
Miscellaneous purposes																
Federal share, San Luis, and Delta facilities	173,858	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	240,000	569,858
Other (Davis-Grunsky, drainage, City of Los Angeles)	8,705	600	600	600	600	600	600	600	600	600	600	600	600	600	12,000	28,505
Total OMP&R Costs	**6,336,941**	**413,603**	**559,328**	**683,263**	**578,648**	**559,580**	**525,809**	**539,699**	**566,446**	**560,887**	**583,966**	**616,994**	**608,855**	**617,521**	**12,865,987**	**26,617,527**

Table 14-11. Annual Debt Service on Bonds Sold through December 31, 2002 (Thousands of Dollars)

Calendar Year	Series A through Y Water Bonds		Oroville Revenue Bonds[a]		Pyramid Project Revenue Bonds[b]		Small Hydro Project Revenue Bonds[b]		Alamo Project Revenue Bonds[b]		Water System Facilities Water System Revenue Bonds		Subtotal		Devil Canyon-Castaic Project Revenue Bonds		Reid Gardner Project Revenue Bonds[b]		South Geysers Project Revenue Bonds[b]		Bottle Rock Project Revenue Bonds[b]		East Branch Enlargement Project Water System Revenue Bond		Coastal Extension Facilities Water System Revenue Bonds		East Branch Extension Facilities Water System Revenue Bonds		Grand Total	
	Principal	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*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	3,333	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	11,114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,114
1966	0	18,764	0	0	0	0	0	0	0	0	0	0	0	18,764	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,764
1967	0	26,911	0	0	0	0	0	0	0	0	0	0	0	26,911	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26,911
1968	0	37,761	0	3,876	0	0	0	0	0	0	0	0	0	41,637	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41,637
1969	0	47,460	0	10,448	0	0	0	0	0	0	0	0	0	57,908	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57,908
1970	0	53,290	0	13,145	0	0	0	0	0	0	0	0	0	66,435	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66,435
1971	0	63,035	0	13,145	0	0	0	0	0	0	0	0	0	76,180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76,180
1972	0	69,149	1,260	13,112	0	0	0	0	0	0	0	0	1,260	82,261	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,260	82,261
1973	1,200	69,347	1,330	13,042	0	0	0	0	0	0	0	0	2,530	82,389	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	2,530	90,097
1974	3,000	69,533	1,400	12,969	0	0	0	0	0	0	0	0	4,400	82,502	0	7,708	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	0	0	0	0	0	0	0	6,475	82,259	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	6,475	89,967
1976	7,000	69,657	1,555	12,811	0	0	0	0	0	0	0	0	8,555	82,468	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	8,555	90,176
1977	10,200	69,298	1,635	12,727	0	0	0	0	0	0	0	0	11,835	82,025	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	11,835	89,733
1978	12,700	69,286	5,775	12,537	0	0	0	0	0	0	0	0	18,475	81,823	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	18,475	89,531
1979	13,650	68,660	11,585	12,275	0	0	0	0	0	0	0	0	25,235	80,935	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	25,235	88,643
1980	16,050	67,941	3,265	11,739	0	7,900	0	0	0	0	0	0	19,315	87,580	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	19,315	95,288
1981	18,050	67,078	4,885	11,444	0	7,292	0	0	0	0	0	0	22,935	85,814	0	7,708	0	5,312	0	0	0	0	0	0	0	0	0	0	22,935	98,834
1982	19,250	66,130	17,920	10,968	0	7,292	0	0	0	0	0	0	37,170	84,390	0	7,708	0	14,347	0	0	0	0	0	0	0	0	0	0	37,170	106,445
1983	20,520	65,111	21,110	10,147	0	7,292	0	3,727	0	2,449	0	0	41,630	88,726	900	7,708	0	35,719	0	4,777	0	6,017	0	0	0	0	0	0	42,530	142,947
1984	21,785	64,036	10,005	9,013	640	7,292	0	3,727	0	4,198	0	0	32,430	88,266	955	7,647	0	35,719	0	5,647	0	10,315	0	0	0	0	0	0	33,385	147,594
1985	22,555	62,892	12,700	8,628	675	7,238	0	3,727	0	4,198	0	0	35,930	86,683	1,010	7,583	9,425	27,209	0	5,647	0	10,315	0	0	0	0	0	0	46,365	137,437
1986	23,830	61,705	11,435	7,859	715	7,377	0	3,537	0	4,263	0	0	35,980	84,741	1,070	7,515	3,805	32,882	0	5,516	1,240	10,315	0	4,021	0	0	0	0	42,095	144,990
1987	25,495	60,452	11,715	7,188	790	7,513	0	3,348	265	4,329	0	4,952	38,265	87,782	1,135	7,442	4,860	32,605	0	5,386	1,305	10,253	0	9,651	0	0	0	0	45,565	153,119
1988	26,770	59,120	6,685	6,664	830	7,447	345	3,348	280	4,314	710	11,037	35,620	91,930	1,205	7,366	5,065	32,295	580	5,521	1,390	10,849	995	9,875	0	0	0	0	44,855	157,836
1989	28,145	57,790	33,705	5,513	875	7,378	365	3,328	295	4,298	1,148	14,373	64,533	92,680	1,275	7,284	7,820	27,557	709	5,646	1,565	11,592	1,078	10,104	0	0	0	0	76,980	154,863
1990	29,385	56,436	10,385	4,301	930	7,305	405	3,304	320	4,279	1,227	19,555	42,652	95,180	1,355	7,198	6,675	29,781	761	5,596	1,678	11,491	1,134	10,048	0	0	0	0	54,255	159,294
1991	30,365	55,034	12,055	3,922	980	7,227	430	3,276	335	4,257	2,129	27,569	46,294	101,285	1,435	7,107	7,170	29,302	818	5,535	1,791	11,376	1,197	16,856	0	0	0	0	58,705	171,461
1992	31,745	54,193	14,135	2,985	2,395	5,308	960	2,553	1,260	3,086	5,108	28,411	55,603	96,537	1,520	7,010	8,950	27,188	1,934	4,136	4,575	7,942	2,583	22,241	0	0	0	0	75,165	165,054
1993	33,390	52,670	13,755	2,237	1,525	5,688	445	2,640	755	3,300	4,577	29,965	54,447	96,500	1,610	6,907	8,820	26,953	901	4,256	3,264	8,385	3,040	21,428	0	0	0	0	72,082	164,428
1994	35,075	51,231	35,225	934	1,580	5,634	695	2,569	780	3,274	5,910	38,223	79,265	101,865	1,705	6,799	77,105	26,273	1,588	4,072	3,374	8,270	4,567	20,752	0	0	0	0	167,604	168,032
1995	36,280	49,703	0	0	1,635	5,570	745	2,536	805	3,242	8,064	37,879	47,529	98,930	1,810	6,684	5,420	19,230	1,695	4,004	3,521	8,133	4,979	20,499	0	0	0	0	64,954	157,480
1996	37,520	48,024	0	0	2,320	5,486	3,135	2,464	1,055	3,203	10,459	58,170	54,489	117,347	1,920	6,561	49,465	18,130	3,043	3,908	3,682	7,974	4,771	23,240	0	0	0	0	117,370	177,160
1997	37,215	46,365	0	0	1,695	5,274	585	2,283	875	3,073	14,375	67,910	54,745	124,905	2,035	6,432	7,515	15,255	1,825	3,696	3,861	7,741	6,300	23,709	0	1,981	0	76	76,281	183,795
1998	37,295	44,736	0	0	1,770	5,237	625	2,258	910	3,059	16,754	68,585	57,354	123,875	2,155	6,295	5,045	16,144	1,935	3,637	4,030	7,508	6,760	23,967	0	1,829	0	229	77,279	183,484
1999	38,220	43,132	0	0	1,845	5,141	680	2,229	960	3,005	18,701	68,085	60,406	121,592	2,285	6,160	9,310	11,659	2,081	3,549	4,240	7,318	7,518	25,033	0	1,808	65	2,931	85,905	180,049
2000	39,510	41,469	0	0	1,925	5,045	610	2,197	1,010	2,955	19,536	66,902	62,591	118,568	2,420	6,040	9,870	11,194	1,950	3,448	4,470	7,096	8,974	24,652	0	1,808	915	2,927	91,190	175,733
2001	40,600	39,751	0	0	2,250	4,948	780	2,272	1,155	2,901	20,944	66,417	65,729	116,290	2,565	5,912	10,365	10,757	2,045	3,344	4,720	6,855	9,425	24,187	0	2,131	950	2,889	95,799	172,365
2002	41,740	37,984	0	0	2,460	4,651	950	2,213	1,280	2,763	23,918	62,846	70,348	110,457	2,720	5,773	11,185	10,131	2,225	3,115	5,265	6,378	9,817	23,100	335	2,319	1,245	3,481	103,140	164,753
2003	43,590	36,159	0	0	2,500	4,493	940	2,152	1,315	2,680	23,442	59,874	71,787	105,359	2,885	5,626	2,135	9,555	2,335	2,969	5,445	6,049	9,988	18,448	245	2,326	1,105	4,277	95,925	154,609
2004	45,730	34,244	0	0	2,500	4,355	970	2,101	1,330	2,606	26,396	60,963	76,926	104,269	3,055	5,470	2,210	9,443	2,425	2,838	5,610	5,744	9,883	21,171	220	2,315	2,045	4,235	102,374	155,484
2005	46,985	32,242	0	0	2,705	4,213	1,320	2,047	1,445	2,531	27,642	59,485	80,097	100,518	3,240	5,305	8,825	9,332	2,750	2,697	5,950	5,420	10,388	20,650	230	2,306	2,110	4,166	113,590	150,394
2006	48,275	30,186	0	0	2,865	4,058	1,370	1,973	1,525	2,447	28,635	57,930	82,670	96,593	3,435	5,130	9,340	8,827	2,920	2,535	6,325	5,067	11,625	20,103	240	2,296	2,195	4,086	118,750	144,637
2007	49,765	28,060	0	0	3,020	3,888	1,450	1,894	1,620	2,356	29,835	56,584	85,690	92,782	3,640	4,945	9,835	8,286	3,100	2,359	6,730	4,687	12,225	19,530	1,015	2,286	2,275	4,003	124,510	138,878
2008	51,755	25,871	0	0	3,145	3,711	1,395	1,811	1,650	2,261	22,745	55,080	80,690	88,734	3,860	4,749	25,227	7,711	3,209	2,173	6,247	4,285	11,077	18,905	260	2,230	95	3,900	130,665	132,688
2009	54,095	23,583	0	0	3,315	3,533	1,405	1,734	1,780	2,163	25,086	54,156	85,681	85,170	4,090	4,540	26,790	6,324	3,373	1,994	6,624	3,928	12,357	18,380	270	2,215	1,335	3,896	140,520	126,448
2010	55,785	21,206	0	0	3,915	3,347	1,635	1,657	2,130	2,057	21,905	53,023	85,370	81,290	4,335	4,319	28,379	4,940	3,714	1,807	7,297	3,552	12,735	17,782	2,880	2,201	1,445	3,844	146,155	119,735
2011	57,275	18,749	0	0	2,625	3,131	1,070	1,570	1,475	1,936	34,450	51,985	96,895	77,371	4,595	4,085	26,840	3,474	2,935	1,602	6,390	3,140	14,210	17,155	1,260	2,081	1,440	3,782	154,565	112,690
2012	58,615	16,199	0	0	2,790	2,949	1,085	1,500	1,585	1,833	36,270	50,293	100,345	72,775	4,875	3,837	28,465	1,987	3,135	1,399	6,870	2,695	14,955	16,460	1,315	2,026	1,505	3,720	161,465	104,898
2013	60,455	13,650	0	0	4,160	2,754	2,170	1,426	2,570	1,722	42,030	48,461	111,385	68,013	5,165	3,574	515	376	4,805	1,179	11,100	2,214	15,935	15,699	1,380	1,964	2,835	3,652	153,120	96,672
2014	57,985	11,222	0	0	5,425	2,532	2,240	1,307	3,755	1,588	45,884	46,367	115,289	63,016	5,475	3,303	215	350	4,485	917	9,180	1,624	16,311	14,883	1,470	1,897	2,995	3,524	155,420	89,513
2015	53,775	8,806	0	0	6,020	2,245	2,920	1,184	3,715	1,392	53,024	44,028	119,454	57,655	5,805	3,015	810	339	4,530	676	2,905	1,128	17,996	14,043	1,550	1,819	3,245	3,385	156,295	82,059
2016	46,215	6,588	0	0	6,405	1,919	3,310	1,024	3,750	1,193	57,290	41,270	116,970	51,994	6,150	2,710	1,020	295	2,560	431	3,270	974	19,105	13,108	1,630	1,736	3,435	3,226	154,140	74,475
2017	38,145	4,652	0	0	6,755	1,575	3,585	842	3,705	993	61,141	38,313	113,331	46,375	6,520	2,388	1,185	240	1,370	293	3,590	797	20,409	12,118	1,720	1,650	3,615	3,058	151,740	66,920
2018	25,435	3,011	0	0	5,015	1,211	2,550	645	2,950	795	52,557	35,139	88,507	40,801	6,910	2,045	50	175	725	220	1,295	605	20,543	11,061	1,810	1,559	3,575	2,878	123,415	59,344
2019	16,975	1,804	0	0	5,250	959	2,640	517	3,125	647	61,767	32,479	89,757	36,406	7,325	1,682	50	172	765	184	1,370	539	22,258	10,001	1,910	1,463	3,760	2,701	127,195	53,148
2020	17,405	956	0	0	5,505	683	2,760	376	3,320	485	58,742	29,355	87,732	31,855	7,765	1,298	55	170	810	146	1,455	470	22,383	8,855	2,005	1,361	3,945	2,513	126,150	46,667
2021	8,595	318	0	0	1,835	399	1,130	231	1,000	314	67,738	26,398	80,298	27,660	8,230	890	1,010	167	575	105	1,980	396	24,432	7,737	2,120	1,254	4,315	2,315	122,960	40,524
2022	1,885	60	0	0	4,780	306	1,180	174	4,645	264	65,014	22,976	77,504	23,780	8,725	458	1,060	117	600	76	2,075	298	25,811	6,514	2,230	1,140	4,540	2,100	122,545	34,483
2023	85	7	0	0	850	65	675	114	400	31	70,351	19,681	72,361	19,898	0	0	550	62	475	45	1,895	191	21,056	5,216	2,350	1,021	4,655	1,870	103,342	28,303
2024	35	3	0	0	430	21	440	79	200	10	70,655	16,048	71,760	16,161	0	0	310	34	340	19	1,450	84	23,031	4,157	2,470	896	4,850	1,635	104,211	22,986
2025	0	0	0	0	0	0	200	57	0	0	64,302	12,401	64,502	12,458	0	0	65	18	0	0	0	0	28,667	3,001	2,605	765	5,040	1,392	100,879	17,634
2026	0	0	0	0	0	0	210	46	0	0	51,667	9,175	51,877	9,221	0	0	70	15	0	0	0	0	9,787	1,564	2,745	626	5,295	1,140	69,774	12,565
2027	0	0	0	0	0	0	220	36	0	0	49,693	6,579	49,913	6,615	0	0	75	12	0	0	0	0	7,732	1,072	2,890	480	5,555	876	66,165	9,054
2028	0	0	0	0	0	0	230	24	0	0	40,554	4,100	40,784	4,124	0	0	80	8	0	0	0	0	6,881	692	3,160	327	5,830	598	56,735	5,749
2029	0	0	0	0	0	0	245	12	0	0	42,641	2,090	42,886	2,102	0	0	80	4	0	0	0	0	7,254	355	3,340	168	6,125	306	59,685	2,934
Total	**1,582,400**	**2,386,523**	**244,995**	**246,522**	**109,645**	**198,882**	**51,100**	**84,070**	**61,330**	**102,752**	**1,385,017**	**1,665,109**	**3,434,487**	**4,683,857**	**139,165**	**283,872**	**423,116**	**568,078**	**76,026**	**117,098**	**159,024**	**230,010**	**502,172**	**632,024**	**45,655**	**54,282**	**92,335**	**89,612**	**4,871,980**	**6,658,833**

[a]Principal and interest schedule adjusted to reflect early redemption of bonds.
[b]Allocated portions of Power Facilities Revenue Bonds and Water System Revenue Bonds.

Table 14-8. Effect of Revenue Bond Proceeds on Project Interest Rate (Millions of Dollars)

Project	Proceeds Included in Project Interest Rate					
	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*	*Total 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	0.0	0.0	75.9[b]	75.9	99.2[b]	77.0
Alamo Project	0.0	0.0	45.6[b]	45.6	57.1[b]	80.0
Small Hydro Project I	0.0	0.0	27.8[b]	27.8	38.8[b]	72.0
Water System Revenue Bonds (Series L)						
Facility						
Small Hydro Project I	0.0	0.0	1.5[b]	1.5	2.1[b]	71.0
Water System Revenue Bonds (Series Q)						
Facility						
Pyramid Project	0.0	0.0	3.0[b]	3.0	3.9[b]	77.0
Alamo Project	0.0	0.0	4.8[b]	4.8	6.0[b]	80.0
Water System Revenue Bonds (Series S)						
Facility						
Pyramid Project	0.0	0.0	8.0[b]	8.0	10.4[b]	77.0
Alamo Project	0.0	0.0	7.6[b]	7.6	9.5[b]	80.0
Water System Revenue Bonds (Series U)						
Facility						
Pyramid Project	0.0	0.0	2.4[b]	2.4	3.2[b]	75.0
Alamo Project	0.0	0.0	3.2[b]	3.2	4.0[b]	80.0
Water System Revenue Bonds (Series W)						
Facility						
Pyramid Project	0.0	0.0	27.7[b]	27.7	36.0[b]	77.0
Alamo Project	0.0	0.0	11.8[b]	11.8	14.7[b]	80.0
Small Hydro Project (construction)	3.4	0.0	0	3.4	3.7	92.0
Small Hydro Project (refunding)	0.0	0.0	16.3[b]	16.3	22.7[b]	71.7
Water System Revenue Bonds (Series X)						
Facility						
Pyramid Project	0.0	0.0	8.5[b]	8.5	11.0[b]	77.0
Alamo Project (Series H refunding)	0.0	0.0	0.3[b]	0.3	0.3[b]	100.0
Small Hydro Project (Series F refunding)	0.0	0.0	3.9[b]	3.9	4.9[b]	79.0
Small Hydro Project	0.0	0.0	4.6[b]	4.6	6.4[b]	72.0

[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.

Table 14-9. Actual Bond Sales and Project Interest Rates, by Date of Sale

Bond Sales	Date of Sale	Dollar-Years[a] (Thousands)	Interest Cost (Thousands)	Issue Interest Rate[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	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	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	12/1/81	24,266	2,305	9.499	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	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	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	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	4.621
$537,830,000 Series L Water System Revenue Bonds	5/19/93	11,414,859	640,518	5.611	4.620
$ 2,000,000 Series X Water Bonds	9/01/93	26,000	1,247	4.796	
$ 1,400,000 Series Y Water Bonds	11/30/94	19,483	1,249	6.411	
$190,000,000 Series M Water System Revenue Bonds	12/19/93	3,911,846	194,981	4.984	
$152,000,000 Series N Water System Revenue Bonds	3/03/95	2,241,606	122,658	5.472	
$335,000,000 Series O Water System Revenue Bonds	12/05/95	7,528,890	375,667	4.990	
$160,000,000 Series P Water System Revenue Bonds	5/07/96	3,553,823	204,524	5.755	
$266,630,000 Series Q Water System Revenue Bonds	11/05/96	5,481,815	299,846	5.470	
$ 20,700,000 Series R Water System Revenue Bonds	3/10/97	564,125	36,627	6.493	
$200,205,000 Series S Water System Revenue Bonds	7/30/97	4,093,110	203,755	4.978	4.615
$135,665,000 Series T Water System Revenue Bonds	7/30/97	1,310,620	66,942	5.108	
$207,180,000 Series U Water System Revenue Bonds	12/01/98	4,032,075	200,758	4.979	
$ 20,580,000 Series V Water System Revenue Bonds	12/01/98	525,100	32,819	6.250	
$260,995,000 Series W Water System Revenue Bonds	5/01/01	3,659,312	195,822	5.351	4.613
$160,225,000 Series X Water System Revenue Bonds	5/01/02	2,732,785	139,109	5,090	4.610
$329,885,000 Series Y Water System Revenue Bonds	7/25/02	4,422,973	222,654	5,034	
$170,655,000 Series Z Water System Revenue Bonds	10/01/02	1,706,132	75,696	4,437	
$108,705,000 Series AA Water System Revenue Bonds	10/04/02	2,114,341	104,220	4,929	
Total		**188,670,517**	**11,025,697**		
Portion allocated to Project Interest Rate		**63,903,487**	**2,945,789**	**4.610**	**4.610**

[a]A unit equivalent to one dollar of principal amount outstanding for 1 year.

[b]The total interest cost (without regard to discounts paid or premiums received) divided by the total dollar-years, expressed as a percent.

[c]Determined by dividing cumulative interest costs by cumulative dollar-years, expressed as a percent. Excludes Oroville Field Division bonds and revenue bonds for off-aqueduct power facilities, the East Branch Enlargement facilities, East Branch Extension facilities, or water system facilities as defined in the Water Revenue Bond Amendment.

- Future capital costs in Appendix B are based on the prevailing prices as of December 31, 2002. Those costs presented in the financial analysis include allowances for price escalation.
- Pre-2003 charges in Appendix B represent charges as they should have been according to currently known conditions. Pre-2003 charges included in Table 14-2 are those actually paid as part of previously determined bills.
- Charges in Appendix B are unadjusted for past overpayments or underpayments. Charges included in Table 14-2 for 2003 and thereafter have been adjusted for any apparent overpayments or underpayments of pre-2003 charges.
- Charges in Appendix B for East Branch Enlargement costs include the amounts for debt service and 25 percent cover for the East Branch Enlargement share of the Series A through Series W bonds. Charges in Table 14-2 also include amounts of the debt service and cover for assumed future bonds.
- The water revenue bond surcharge in Appendix B applies only to the Series B through Series W bonds. Surcharge values included in Table 14-2 apply to Series B through Series W bonds and to assumed future issues required to finance SWP construction costs included in Table 14-1.

Line 10, Subtotal, Water Contractor Payments, is the total of Lines 2 through 9.

Line 11, Revenue Bond Cover Adjustments, 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. If not needed to meet annual bond service, the cover is credited to the contractors in the following year. The annual charges for the following cost components include an amount for bond cover:

- minimum OMP&R component of the Transportation Charge for Off-Aqueduct Power Facilities;
- Water System Revenue Bond Surcharge;
- capital cost component of the Transportation Charge for East Branch Enlargement Facilities;
- capital cost component of the Transportation Charge for Coastal Branch Extension Facilities; and
- capital cost component of the Transportation Charge for East Branch Extension Facilities.

Line 12, Rate Management Adjustments, shows the projected amount of revenue reductions allocated to SWP contractors after repayment of the California Water Fund (see Line 36). Under provisions of the Monterey Amendment, the reduction amount allocated to agricultural contractors is deposited into a trust fund to stabilize payments in water-short years. The urban contractor allocation is applied as a direct reduction in charges.

Line 13, Federal Payments for Project Operating Costs, shows federal payments made according to the December 31, 1961, agreement between California and the United States providing for the Department to operate and maintain the San Luis Joint-Use Facilities. According to the January 12, 1972, supplement to the agreement, the Bureau of Reclamation initially paid 45 percent of OM&R costs for those activities. (The percentage does not apply to power costs; the Bureau and the Department provide their own power to pump water through the joint facilities.)

The percentage paid by the Bureau is periodically reviewed by the Bureau and the Department. The most recent review of the percentage paid by the Bureau was completed in 1987 and resulted in a federal share of 44.09 percent. The amounts in Line 13 are based on the assumption that the federal share will continue at this level for calendar years 2003 through 2015.

Line 14, Appropriations for Operating Costs Allocated to Recreation, shows appropriations made under the Davis-Dolwig Act. 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 to be paid by annual appropriations from the General Fund. Through fiscal year 1982-83, these appropriations totaled $16.657 million. There have been no additional appropriations since the 1982-83 fiscal year. No appropriations are indicated for 2003 through 2015.

Legislation enacted in 1989 offset a portion of the amount owed to the SWP by the State for costs allocated to recreation and to fish and wildlife enhancement against the amount the SWP owed to the California Water Fund (see line 36).

Line 15, Davis-Grunsky Loan Repayments, shows the repayments by local agencies for $52.5 million of loans disbursed as of December 31, 2002. Repayment on any future loans was assumed to be beyond the period covered by the financial analysis.

Line 16, Revenue Bond Proceeds, includes bond proceeds classified as special reserves according to the description of revenue bond financing in Line 16 of Table 14-1. Those proceeds, used for capitalized OMP&R costs, revenue bond debt service, and debt service reserves, are not classified as revenue but are included in this line to simplify the financial presentation.

Line 17, Interest Earnings on Operating Revenues, 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.

Line 18, Oroville-Thermalito Payments, shows payments from Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company for power generation at the Oroville facilities. Those utilities purchased all power generation from Hyatt and Thermalito Power Plants before April 1, 1983, according to a power sale contract dated November 29, 1967. The 1952-2002 entry includes amounts of final settlement of payments made according to the contract.

Line 19, Miscellaneous Revenues, includes all other operating revenues not included in Lines 2 through 18.

Line 20, Subtotal, Other Revenues, is the total of Lines 13 through 19.

Line 21, Total Operating Revenues, is the total of Lines 10, 11, 12, and 20.

Line 22, Total Operating Revenues and Capital Resources Revenues, is the total of Lines 1 and 21.

Project Expenses

Project expenses include

- operations, maintenance, and power costs
- deposits to replacement reserves
- deposits to special reserves
- capital resources expenditures
- debt service

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 operating costs and debt service attributable to projects financed by revenue bonds are deposited in the Central Valley Water Project Revenue Fund for appropriate disbursement. All other operating revenues are deposited in the California Water Resources Development Bond

Fund-Systems Revenue Account and are disbursed according to the following four priorities of use as specified in the Burns-Porter Act:

(1) SWP operations, maintenance, power, and replacement costs;
(2) general obligation bond debt service;
(3) repayment of expenditures from the California Water Fund; and
(4) deposits to a reserve for future SWP construction.

Project expenses are presented in Lines 23 through 33 of Table 14-2.

Line 23, Project Operations, Maintenance, and Power Costs, shows the OM&P portion of the historical and projected costs presented in Table 14-10 on page 205.

Table 14-10 and Line 23 of Table 14-2 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 listed in Lines 13 and 14.

Allowances for cost escalations are included in OM&P costs through 2005. 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 expenses for the SWP. Assumptions about future power sources and costs are discussed in Chapter 10. Line 23 also includes costs associated with power transactions that result in the sale of power not required for the delivery of water.

Line 24, Deposits to Replacement Reserves, shows funds set aside as required by contract for replacing existing SWP facilities. By December 31, 2002, $60.2 million had been spent for replacement costs; the balance of the replacement reserve as of that date was $20.1 million. Replacement reserve amounts are also included in Table 14-10.

Line 25, Deposits to Special Reserves Under Revenue Bond Financing, includes two significant components: special reserve deposits related to revenue bonds and capital resources revenue carryover from prior years used for construction in the current year. Special reserve deposits are the net of several income and expenditure items. Income items related to revenue bonds are 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 contractor payments or bond proceeds set aside for debt service reserves;
- water contractor payments for revenue bond cover requirements; and
- deposits to and withdrawals from operating reserves to meet day-to-day cash flow requirements.

The 1952-2002 column also includes 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 related to revenue bonds are as follows:

- debt service cover payments returned to water contractors;
- debt service reserve interest payments returned to water contractors;
- surplus account funds returned to water contractors or applied to meet expenses;
- total capitalized interest paid out; and
- 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 25 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.

Line 26, Capital Resources Expenditures, includes the amount of capital resources revenues applied to construction that is shown in Line 31 of Table 14-1. In Table 14-2, these expenditures are funded out of withdrawals from the reserves in Line 25 and do not affect net revenues shown in Line 35.

Lines 27 and 28, Payment of Debt Service on Bonds Sold through December 31, 2002, show the total principal and interest payments on bonds sold to date. Table 14-11 on page 206 summarizes payments on general obligation bonds (Series A through Y water bonds), power revenue bonds by project, and water system revenue bonds (Series A through W).

Lines 29 and 30, Payments on Projected Future Water Bonds, include the projected annual debt service amounts for future water revenue bonds included on Lines 23 and 25 of Table 14-1 for the East Branch Extension and other water system facilities. Assumptions about the service on these future bonds are that

- interest costs for the water revenue bonds average 5.5 percent; and
- bonds are to be repaid by the end of the project repayment period (2035) or sooner with maturities commencing in the year following the date of sale and with equal annual bond service for the principal repayment period.

Lines 31 and 32, Total Payments of Bond Debt Service, show the total of principal payments indicated on Lines 27 and 29 and the total of interest repayments indicated on Lines 28 and 30.

Line 33, Subtotal, Debt Service, is the total of Lines 31 and 32.

Line 34, Total Operating Expenses and Debt Service, is the total of Lines 23, 24, 25, 26, and 33.

Line 35, Net System Revenues, shows the annual amounts of revenues remaining after the payment of operating costs and bond debt service costs.

Line 36, California Water Fund Repayment, shows the total amount of repayments made to the California Water Fund to reimburse the fund for monies expended for construction of the State Water Resources Development System.

Repayment of the California Water Fund was completed in 1998 after reimbursements totaling $508 million. In addition to the $296 million of repayments shown in Line 36, $211 million of reimbursement were credited to the SWP as offsets for recreation and fish and wildlife enhancement expenditures.

Line 37, Revenues Used for Capital Expenditures, includes the amounts required annually for financing scheduled capital expenditures. Revenues not needed for operating costs or debt service are available for financing SWP capital expenditures.

Future Costs of Water Service

Estimates of future water costs are useful to SWP contractors for short-range and long-range planning of water needs, operations, and budgets. Unit water charges shown in Table 14-12 represent both unescalated and escalated costs of water according to service areas for years 2004 and 2009. The unit rates include costs of existing and future SWP facilities accounted for in Table 14-1 and Table 14-7. The unit charges are based on the assumption that in 2004 and 2009, the SWP will be able to deliver the entire amounts of water requested by contractors. The unit water charges included in Table 14-12 are listed both as unescalated 2002 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 1.5 percent per year for 2003 and at 2 percent per year for 2004 through 2015. The escalation rates for future power sources vary, depending on the source of energy.

Table 14-12. Estimated Unit Water Charges for 2004 and 2009, by Service Area (Dollars per Acre-Foot)

	2004		2009	
Service Area and Charge	*Unescalated*	*Escalated*	*Unescalated*	*Escalated*
Feather River Area				
Capital; OM&R	40	40	74	74
North Bay Area				
Capital; OM&R	161	161	149	151
Power	32	32	21	22
Total	**193**	**193**	**170**	**173**
South Bay Area				
Capital; OM&R	99	99	95	96
Power	49	49	44	46
Total	**148**	**148**	**139**	**142**
Coastal Area				
Capital; OM&R	509	509	492	494
Power	121	121	124	129
Total	**630**	**630**	**616**	**623**
San Joaquin Area				
Capital; OM&R	55	55	52	53
Power	22	22	21	22
Total	**77**	**77**	**73**	**75**
Southern California Area				
Capital; OM&R	158	158	141	143
Power	153	153	148	155
Total	**311**	**311**	**289**	**298**

Information for this chapter was provided by the State Water Project Analysis Office in conjunction with the Division of Fiscal Services.

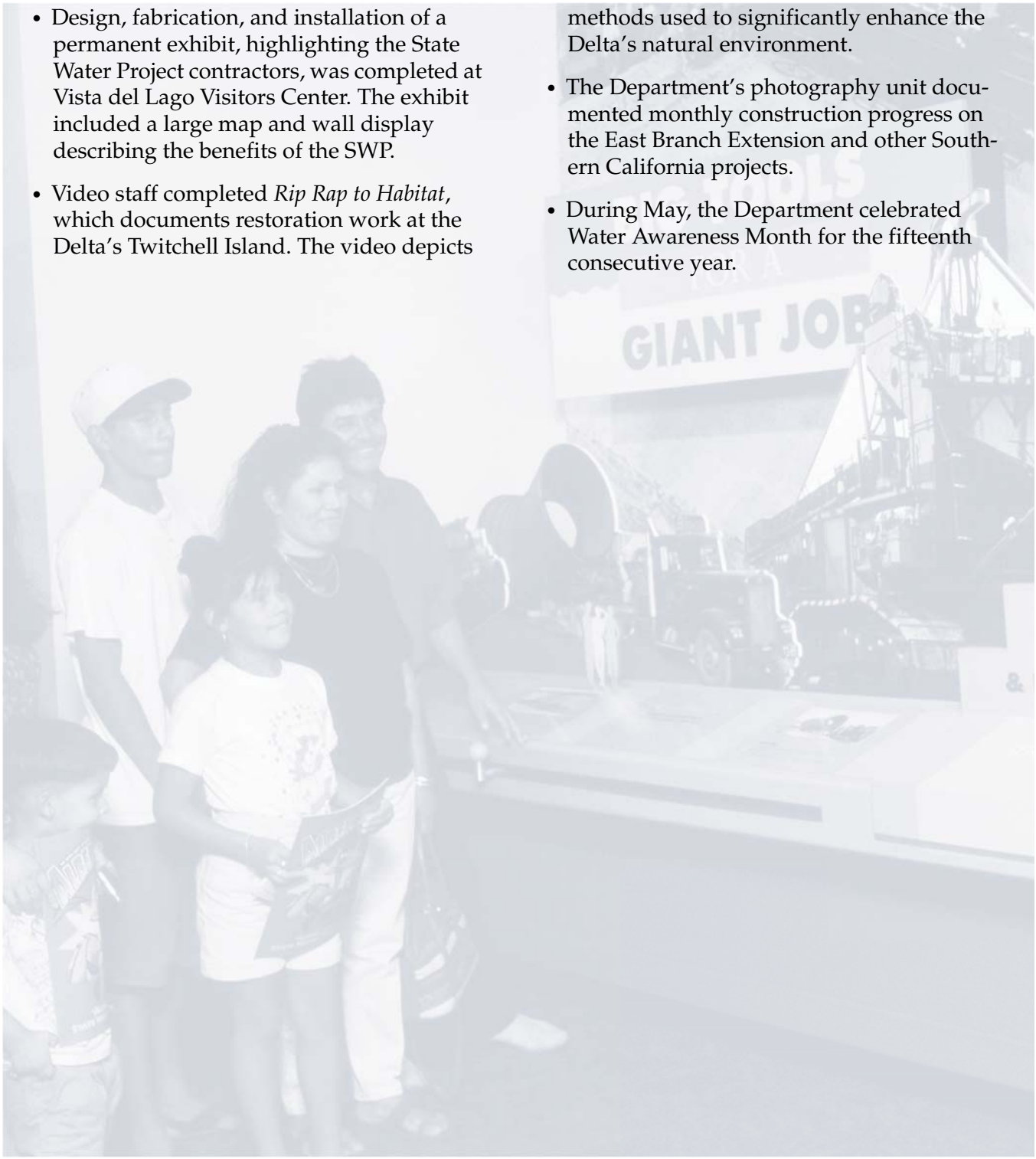
Chapter 15
SWP Education and Information



Tour of Vista del Lago Visitors Center

Significant Events in 2002

- Design, fabrication, and installation of a permanent exhibit, highlighting the State Water Project contractors, was completed at Vista del Lago Visitors Center. The exhibit included a large map and wall display describing the benefits of the SWP.
- Video staff completed *Rip Rap to Habitat*, which documents restoration work at the Delta's Twitchell Island. The video depicts methods used to significantly enhance the Delta's natural environment.
- The Department's photography unit documented monthly construction progress on the East Branch Extension and other Southern California projects.
- During May, the Department celebrated Water Awareness Month for the fifteenth consecutive year.



The Office of Water Education conducts information and education programs to inform the news media and educate the public about the value and operations of the SWP and other Departmental functions. These programs use an array of public outreach methods that include news media relations, videotapes, brochures, publications, exhibits, tours, Internet Web sites, SWP visitors centers, and special events.

Media Outreach

Flood Preparedness

OWE assisted in briefings and tours of the Department's Flood Center and publicized flood season meetings. A Web site provided the public and news media with information on flood preparedness and emergency work. The flood update site continued in 2002 with maps of the Sacramento and San Joaquin river systems and the State's hydrologic regions.

Snow Surveys

OWE continued to provide media outreach for the Division of Flood Management's Snow Surveys Section.

Living History Program

Begun in 2001, the Living History Program continued collecting video interviews from key Department retirees regarding their assignments and contributions during the Department's early years, particularly during construction of the SWP.

The Bulletin 200 series, published in the 1970s, documented the technical aspects of the SWP. However, the history of the individuals behind the project, their observations, perspectives, challenges, and accomplishments, remained untapped.

At the end of 2002, more than 150 in-depth interviews had been conducted and videotaped for posterity. The bulk of the interviewing has been completed, shifting the main focus of the project to hardcopy transcription and a cataloging, indexing, and cross-referencing database. This database, as well as a plan for distribution to repository libraries, should be in place by the end of 2004.

CALFED

OWE assisted CALFED in media and outreach activities, including providing public address system support for many public hearings, meetings, and conferences. staff helped CALFED establish a Web site, produce program brochures and signage, and present and display materials. In preparation for the restructuring of CALFED to the Bay-Delta Authority, the design group produced a comprehensive identity package.

The Graphic Services Branch also produced the CALFED 2002 *Annual Report*.

The video group taped significant CALFED projects, including the Mill Creek restoration project, the Delta Cross Channel fish migration studies, and the CALFED Science Conference.

Completed in 2002, the video *Robinson Reach* documents an unprecedented partnership between landowner, Department of Fish and Game, the U.S. Fish and Wildlife Service, CALFED, and other State, federal, and local agencies to restore salmon spawning and riparian wildlife habitat along the Merced River.

News Events

The Department notified news media of the following 2002 water-related highlights:

- Seventy percent of SWP allocations were met for most contractors during 2002. Deliveries totaled 62.9 million acre-feet since 1962.
- In October, the Department announced a reduction in the rate SWP contractors will pay for water deliveries, reflecting a power cost reduction.
- The Department announced a Summer Allocation Carryover Program for SWP contractors.
- In September, the Department announced that security was significantly increased at SWP facilities and throughout the Department.
- In August, the Department issued a draft of *The State Water Project Delivery Reliability Report, 2000* to assist SWP contractors in assessing the adequacy of their water supply.
- In July, a joint agreement was reached on the litigation over the Monterey Amendments.
- Also in July, a new Web site provided the public useful information on water transfers in California.
- In May, as part of Oroville's *Feather Fiesta Days*, the Department offered free bus tours of the Oroville facilities. Each tour had a guide on board the bus to provide information about Oroville Dam, Lake Oroville, and the SWP.
- From May 13-24, the Department (with the Bureau of Reclamation and the Agricultural Water Management Council) presented a series of workshops on agricultural water use efficiency milestones.
- In April, the Department announced it had sold the entire 45,252 acre-feet of water offered through 2002's Turn-Back Water Pool Program to SWP contractors.
- On January 28, the Department announced that it agreed with recommendations of an Oroville recreation work group to improve facilities in the Lake Oroville Recreation Area, moving forward on 15 of 23 projects under the Department's ongoing Oroville Facilities Relicensing process.

Community Relations

Oroville

OWE staff continued to assist in preparation and media outreach for Oroville community meetings for the Department's license renewal application to the Federal Energy Regulatory Commission. OWE maintained the Lake Oroville recreation Web site, www.lakeoroville.water.ca.gov, which provides information for tourists about the lake's recreational opportunities and other area facilities and attractions. In addition, the Department provided photography for the City of Oroville and the Oroville Area Chamber of Commerce for various community events.

The design group produced promotional and event materials for the Fourth of July community celebration and the September Salmon Festival in Oroville. These materials included posters, interactive educational displays, promotional displays, and informative handouts.

The video group provided public service announcements about the two events to local television stations in the Oroville and Chico areas.

The audio/visual group provided public address system support to many FERC public hearings held in Oroville.

Publications

New SWP Brochures. New SWP brochures included *Bicycling on the California SWP*, which describes Lake Oroville's 41-mile bike trail along with bicycling safety tips. The brochure is also available in Spanish.

The new *Lake Oroville Recreation* brochure was created and printed. In addition to the detailed map of Lake Oroville, this brochure describes

the variety of water sports available at Lake Oroville.

The *State Water Project Visitors Centers* brochure is an invitation to visit the three centers, where the public can learn about the SWP's development and management.

Watersheds: Working with Local Partnerships, produced for The Resources Agency and the State Water Resources Control Board, is a report to the Legislature addressing the need to protect California's watersheds.

Revised SWP Publications. In 2002, 4 of the more than 35 SWP brochures were revised and reprinted. *California's State Water Project*, *Water Safety Along the SWP*, and *SWP Recreation Facilities* brochures were revised and printed in English and Spanish. The *San Luis Joint-Use Complex* brochure, which now includes information about Bethany Reservoir, was revised and printed.

E-News. OWE continues to increase awareness of statewide and local water news through a daily e-mail distribution to Department employees of the *California Water News*, a compilation of major newspaper articles of interest to the Department. Distribution continues to widen and now includes nearly 4,000 individuals and agencies throughout the State, including SWP contractors, municipal and private water agencies, other government departments, and educators and librarians.

The Department also answered a wide range of questions from the public and government agencies through its Web-based "comment line."

OWE administered the *Recent News* at www.dwr.water.ca.gov/, posted news releases, news advisories, and new Web sites involving Proposition 13, the Governor's Advisory Drought Planning Panel, *DWR News* Online, flood updates, FERC relicensing of Oroville, Monterey Agreement, and water bonds.

DWR People. The Department's employee newsletter continued as a quarterly publication during 2002. Stories spotlight individual and team accomplishments, skills, awards, promotions, retirements, and other news items.

DWR News. The semi-annual *DWR News* was circulated to all elements of the California water community, including the SWP contractors and current and retired employees of the Department.

The *DWR News* Summer 2002 issue highlighted many of the Department's dynamic accomplishments in 2001, and ongoing projects. *DWR News* was also posted to the Department's Web site.

Video

In 2002, the video staff completed *Rip Rap to Habitat*, which documents restoration work at the Delta's Twitchell Island. The video depicts methods used to significantly enhance the Delta's natural environment.

A video was produced on the Governor's 2002 Environmental and Economic Leadership Awards presentation ceremony, describing the award recipients and their accomplishments.

As part of the Department's involvement in Oroville's Fourth of July celebration, a television public service announcement was produced, which aired on four Northern California stations.

Preliminary production began on the water safety video *Friends for Life*, which is aimed at school-aged children. Through 3-D animation and live action sequences, the importance of 10 key water safety tips is highlighted, including learning to swim and wearing a life jacket.

Photography

The Department's photography unit provided photographs documenting monthly construction progress on the East Branch Extension and other Southern California projects.

Digital and photographic services supported efforts in the FERC relicensing of the Oroville facilities.

Photographic contributions were made to *DWR News* and *DWR People* as well as to CALFED for its annual report.

The unit produced an ID system with database and provided ID cards for all Department employees in the Resources Building, and began producing new ID cards for Department employees outside of the building.

Photographic projects included Sacramento River levee photographs, salmon run at Feather River Fish Hatchery, paving of Lake Oroville equestrian trail, new boat launch facility at the Oroville spillway, aquatic program in Chico and Oroville, Fourth of July celebration at Oroville Dam, San Luis Reservoir, and Romero Visitors Centers, Central Valley farming and water use, and Delta waterway photographs.

Visitors

Tightened security procedures following the September 11, 2001, terrorist attacks reduced public access to many Department locations. Nevertheless, 572,839 people visited the SWP visitors centers and field division facilities in 2002.

Total visitor figures include boaters, bicyclists, anglers, and other recreationists. Figure 15-1 shows visitors centers on the SWP.

SWP Tours

During 2002, the Department welcomed 58 tours with 593 visitors, both foreign and domestic, to the SWP facilities. Tour groups came from all over the United States and 25 foreign countries: Argentina, Australia, Canada, China, Cyprus, Egypt, Germany, India, Japan, Kazakhstan, Morocco, Mexico, Netherlands, Niger, Nigeria, Norway, Oman, Romania, Russia, Saudi Arabia, South Korea, Sweden, Syria, Taiwan, and the United Kingdom.

Water Safety Education

Fatal incidents along the SWP increased during calendar year 2002, emphasizing a continuing need for water safety education. To that end, staff from the five field divisions gave more than 160 water safety presentations to approximately 14,000 people.

Water safety material incorporating the Department's water safety mascots, *Albert and Einstein*, was distributed to school children and at various events held in 2002. Those events included the Sportsmen's Exposition in Sacramento and the ACWA Spring Conference.

Several *Albert and Einstein* water safety theater billboards were developed and distributed to theaters in the Antelope Valley for showing during the spring months (billboards are slides that are projected just before the theater's scheduled feature films).

OWE staff participated in July's 2002 Aquatic Safety Program on water and boating for 40 Chico and Oroville area young people. Program sponsors included the Chico Area Recreation and Park District, Feather River Recreation and Park District, California Department of Parks and Recreation, the Department, and local boating groups. The program was open to all community youngsters, but the specific targets were "at-risk" youths between the ages of 10 and 15.

A 7-minute video, the *2002 Aquatic Adventure Camp* was produced to attract young people to future water safety programs and to bolster community involvement.

Displays and Exhibits

During 2002, the Graphic Services Branch provided the following water management and SWP-related exhibits and displays.



Figure 15-1. Visitors Centers on the SWP

- A traveling display and handout materials accompanied a public outreach effort to increase awareness regarding the threat of a reduced water supply and to encourage wise water use.
- The design group provided canvas backdrops and displays for the Riverbend Park Kick-off event, celebrating the Department's funding for initial park development and future enhancements.
- A display was created for use at Department headquarters depicting the history of the SWP.
- A permanent exhibit was designed and installed in the Vista del Lago Visitors Center, highlighting the SWP contractors. The exhibit included a large map and wall display, describing the benefits of the SWP.
- Three-dimensional life-sized castings of salmon and steelhead were produced to accompany informational display material at the Feather River Fish Hatchery.
- Also at the hatchery, the first display at the SWP visitors complex (other than signage) was created to include the visually handicapped. Designed for the self-guided hatchery tour, the audio display units include choices of English, Spanish, and Hmong languages.

School Education Program

The School Education Program's goal is to provide students and educators with a statewide perspective on water issues such as conservation, conveyance systems, and the water cycle. OWE develops and promotes high quality materials, which are provided free of charge to schools, educators, and water districts.

Program achievements for 2002 include

- a display of the Department's Children's Exhibit components at the Girl Scout 90th Anniversary event at Arco Arena, in Sacramento; the Sacramento Zoo's Earth Day observance; the Urban Creeks Council's Creek Week event held at the Sacramento Discovery Center; the American River Education Center's *Get Wet* event in Folsom; and the *Make a Splash* event at the American River Water Education Center in Folsom;
- providing curriculum materials and children's videos to California teachers and water agencies;
- layout and printing of the Teachers Guide and Student Passport for the Romero Visitors Center;
- presenting the Department's Education Program to the California Regional Environmental Education Community Conference at Lake Arrowhead;
- exhibiting the Department's educational materials at the California Association of Bilingual Educators Conference in San Jose;
- participating on the Water Awareness Education Subcommittee to review development of an educational unit on water sources in California for elementary students and printing 7,500 copies of the unit;
- participating and assisting at Water Education Committee meetings hosted by the Santa Clara Valley Water District and the Metropolitan Water District of Southern California; and
- participating on the Project Water Education for Teachers Advisory Board, the Creek Week Planning Committee, and the California Environmental Education Interagency Network.

The School Education Program also co-sponsored and provided support to

- the *Environmentality Campaign* for fifth grade students in conjunction with the State of California and the Walt Disney Corporation;
- the California Department of Education's *Regional Environmental Education Coordinators Network*; and
- the Aquatic Outreach Institute's Educator Conference on creeks, wetlands, and watersheds.

Water Awareness Month Activities

During May 2002, the Department celebrated Water Awareness Month for the fifteenth consecutive year.

The Department's news releases highlighted activities at SWP visitors centers, and public information officers answered media inquiries regarding Water Awareness Month and special events marking the annual observance.

Because the Department is a sponsoring agency, an OWE staff member is on the State Water Awareness Campaign Steering Committee.

The Department also hosted an educational event for Hopland Elementary School's 200 students at a groundwater monitoring well drilling site on school property.

Information for this chapter was contributed by the Offic of Water Education.

Appendix B
Data and Computations Used to Determine 2004 Water Charges

Appendix B

Data and Computations

Used to

Determine 2004 Water Charges

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Appendix B
Data and Computations
Used to
Determine 2004 Water Charges

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 performs an annual 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 supply 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 2004. The information is based on established data about the SWP, both known and projected, as of June 30, 2003.

The computational procedures and interrelationships between tabulations in this appendix are outlined in Figure B-1 and Figure B-2. All tables referenced in Figures B-1 and B-2 follow this text.

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

- Frenchman Dam and Lake
- Grizzly Valley Dam and Lake Davis
- Antelope Dam and Lake
- Oroville Dam and Lake Oroville
- Oroville power facilities
- Delta Facilities
- A portion of the California Aqueduct from the Delta to Dos Amigos Pumping Plant
- Sisk Dam, San Luis Reservoir, and 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 Power Plant, and South Geysers Power Plant)

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

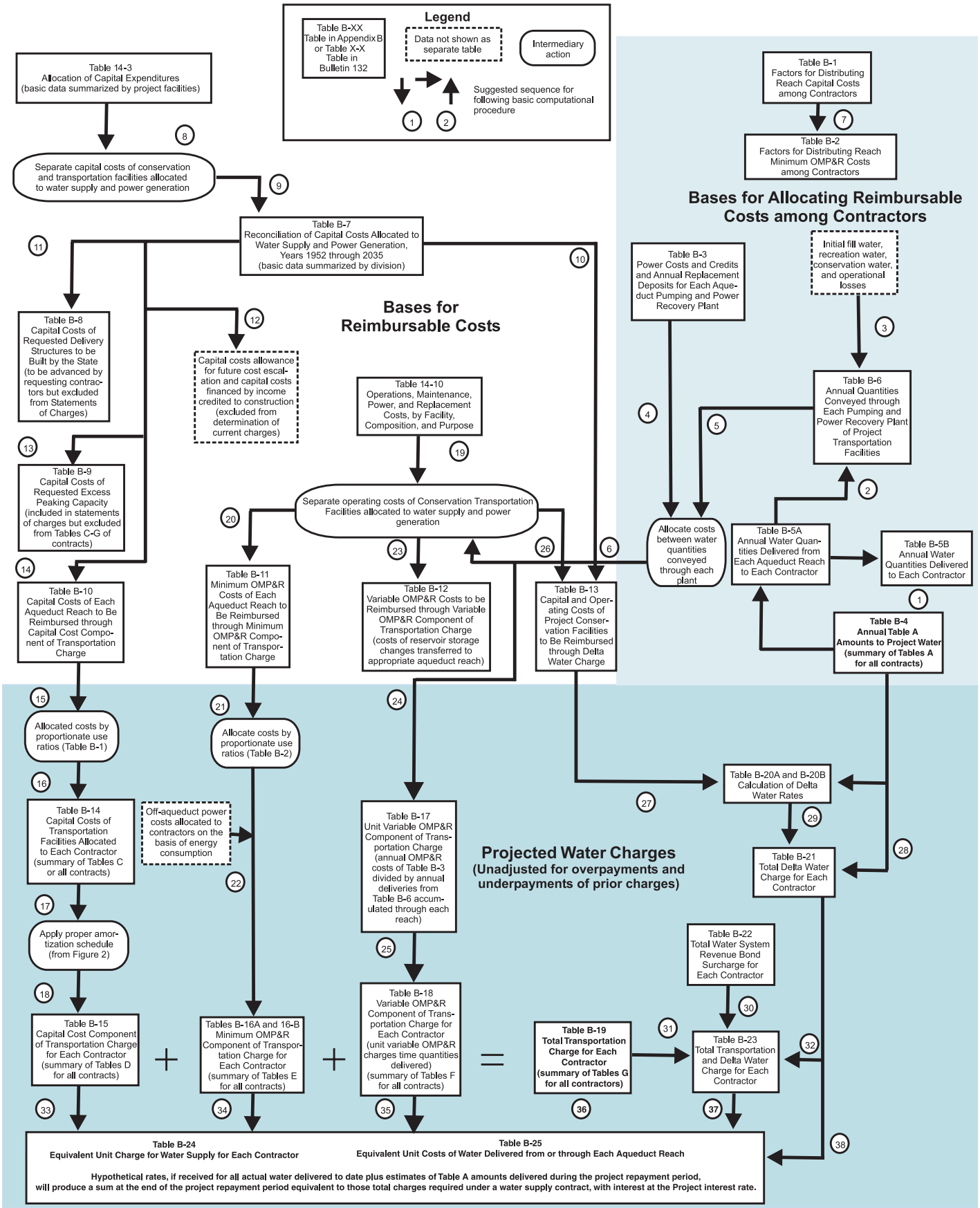


Figure B-1. Relationships of Data Used to Substantiate Statements of Charges

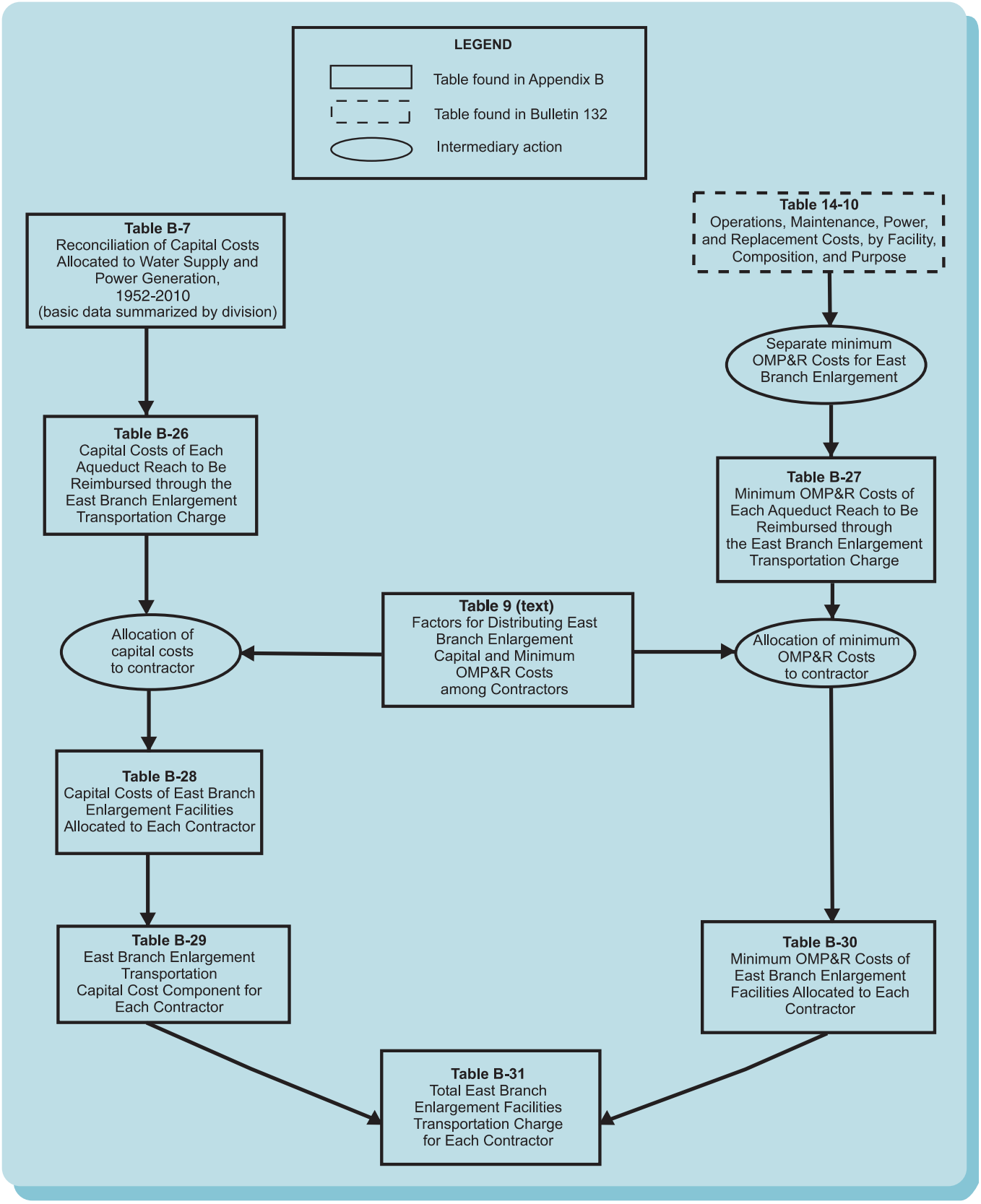


Figure B-2. Relationships of Data Used to Substantiate East Branch Enlargement Charges

are entitled to receive according to their contracts. The unit charge, if applied to each acre-foot of all such allocations 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 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 costs of the East Branch Enlargement.

Composition and Timing of Water Charges

As shown in Figure B-3, the Delta Water Charge and the Transportation Charge consist of the following three components:

(1) Conservation and Transportation capital cost components, which will return to the State all reimbursable capital costs;

(2) Conservation and Transportation minimum OMP&R components, which will 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 redetermined rate applies to all future allocations, such adjustments are amortized during the remainder of the project repayment period. This appendix includes a redetermination of the Delta Water Rate for 2004.

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 2002 included in those tables are the redetermined amounts and 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 under the Transportation capital cost component 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 Statements of Charges.

These redeterminations exclude four charges associated with water service other than the Delta Water Charge and the Transportation

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 operations
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 FERC 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 Gianelli Pumping-Generating Plant
7. Program costs (portion) to offset annual fish losses resulting from pumping at Banks 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" Transportation 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 Banks 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, Warne, and Castaic power generation credited at the power plant reach and charged to aqueduct pumping plants
3. Hyatt-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 Banks Pumping Plant (Department of Water Resources-Department of Fish and Game agreement)

Note: Excludes costs recovered under the East Branch Enlargement Transportation Charge.

Figure B-3. Composition of Delta Water Charge and Transportation Charge

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.

(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 on or before 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 on or before 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 charges are projected based on a unit charge per acre-foot established on or before 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

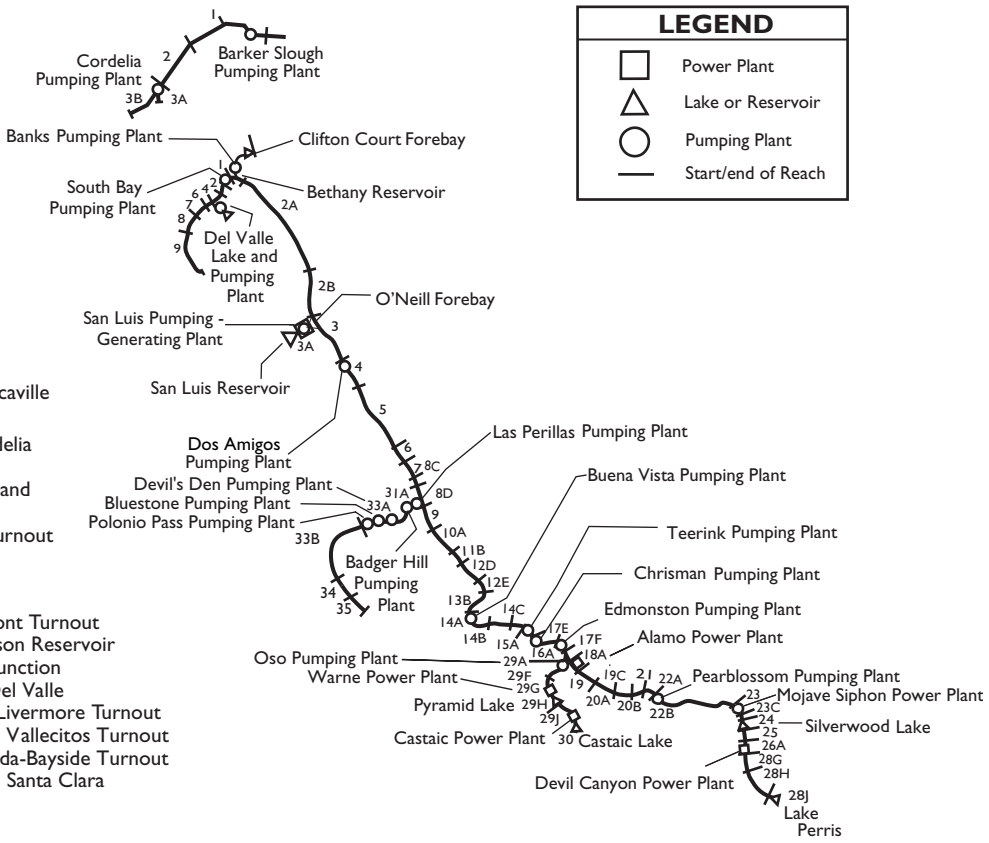
This section describes the procedures for allocating reimbursable costs of Project Transportation Facilities among contractors (see upper right portion of Figure B-1). Those costs do not include annual costs of Off-Aqueduct Power Facilities, which are explained in the section "Project Water Charges."

Capital and Minimum OMP&R Costs

Figure B-4 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.

The derivation of ratios that represent the proportionate maximum use of each aqueduct reach by the respective contractors was first



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 Napa Turnout 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 Roa
14C Old River Road to Teerink Pumping Plant
15A Teerink Pumping Plant to Chrisman Pumping Plant
16A Chrisman Pumping Plant to Edmonston Pumping Plant

Tehachapi Division

17E Edmonston Pumping Plant to Porter Tunnel
17F Porter Tunnel to Junction, West Branch, California Aqueduct

Mojave Division

18A Junction, West Branch, California Aqueduct through Alamo Power Plant
19 Alamo Power Plant 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
23C Mojave Siphon Power Plant
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 Power Plant
28G Devil Canyon Power Plant 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 Warne Power Plant
29H Pyramid Dam and Lake
29J Pyramid Lake through Castaic Power Plant
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 Tank 1
33B Tank 1 through Chorro Valley Turnout
34 Chorro Valley Turnout through Lopez Turnout
35 Lopez Turnout through Guadalupe Turnout

Figure B-4. Repayment Reaches and Descriptions

reported in Bulletin 132-70. The ratios in Bulletin 132-70 were subsequently revised for the North Bay Aqueduct, the South Bay Aqueduct, the California Aqueduct from the Delta to Castaic Lake, and 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 were last reported in Tables B-1 and B-2 of Bulletin 132-91. In 1998, under Article 53 of the Monterey Amendment, Kern County Water Agency began to permanently transfer some of their agricultural capacity to other state water contractors. In 1998, 25,000 acre-feet of capacity were transferred to Mojave. In 2000, Castaic Lake Water Agency acquired 41,000 acre-feet of capacity from the Delta to Castaic Lake, Palmdale Water District acquired 4,000 acre-feet from the Delta to Reach 20B, and Alameda County Flood Control and Water Conservation District—Zone 7 acquired 7,000 acre-feet and 15,000 acre-feet in two separate transfers for a total of 22,000 acre-feet of capacity from the Delta to Reach 10A and the South Bay Aqueduct. In 2001, the following three additional transfers went into effect; Alameda—Zone 7 purchased 10,000 acre-feet of capacity from Kern; Napa County Flood Control and Water Conservation District and Solano County Water Agency both acquired aqueduct capacity of 4,025 acre-feet and 5,756 acre-feet, respectively, from the Delta to Reach 11B and through the North Bay Aqueduct, starting 2003; and in two separate transfers outside of Monterey, Tulare Lake Basin Water Storage District transferred 3,000 acre-feet of capacity to Antelope Valley-East Kern Water Agency and 3,973 acre-feet to Dudley Ridge Water District. Effective 2003, Alameda—Zone 7 acquired 400 acre-feet of capacity from Tulare, from Reach 1 through 8D of the California Aqueduct.

Table B-1 presents the reach ratios currently applicable to reimbursable capital costs.

Table B-2 presents corresponding ratios for allocating 2003 and after reimbursable minimum OMP&R costs among contractors. 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 power costs and credits for each aqueduct pumping and power recovery 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
- Payments for replacement of major plant machinery components having economic lives shorter than the project repayment period. In 1997, the Department discontinued charging for a sinking fund for replacements. Replacement costs for 1999 and thereafter are to be paid on an annual basis as the costs are incurred.

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 allocated 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 were 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 charges for surplus and unscheduled water are effective from the date of the amendments and are not applied to past charges.

An interruptible water program was established in 1994. This program is based on individual annual contracts; costs for interruptible water actually delivered are included in Table B-3.

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 allocations as set forth in Table A and Article 6(a) of each water supply contract.

Table B-5A shows amounts of actual and projected allocated water quantities delivered from each aqueduct reach to each contractor. Projected deliveries for years 2003 through 2035 are based on contractors' requests for future water deliveries. The quantities included in Table B-5A also include non-project water delivered to contractors and surplus water deliveries prior to May 1, 1973, and actual interruptible water deliveries in 1994 and after.

Table B-5B presents a summary of actual and projected annual allocated water quantities delivered or to be delivered to each contractor. The quantities also include amounts of non-project water and surplus water delivered prior to May 1, 1973, and actual deliveries of interruptible water in 1994 and after.

Table B-6 summarizes the annual allocated 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 pre-consolidation water used during construction.
- *Deliveries-Recreation*. Water delivered to down-aqueduct recreation developments or used for fish and wildlife mitigation or enhancement.
- *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 the exception of Banks Pumping Plant, "Reservoir Storage Changes" also includes SWP water placed into Southern California groundwater storage 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). At Banks Pumping Plant, groundwater 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 water delivered from storage in 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, and actual deliveries of interruptible water in 1994 and after.

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 B-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 1. Those percentages may be subject to revision in the future.

The redeterminations in this appendix involve only the SWP costs that are allocated to water supply and power generation.

Capital Costs

Capital costs used in the redeterminations in this appendix reflect prices prevailing on December 31, 2002; 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 1. Project Purpose 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 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 Hyatt and Thermalito power plants and switchyards.
[b] Percentage indicated consists of 48.8 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.

Table B-9 lists costs and payments for excess capacity built into SWP Transportation Facilities according to amendments to contracts with Metropolitan Water District of Southern California, San Gabriel Valley Municipal Water District, and AVEK as follows:

- Additional costs incurred by the State for requested excess capacity;
- Advances by water contractors of funds for such costs; and
- Credits for advances in excess of costs, which were applied to respective contractors' installments of the capital cost component of the Transportation Charge in 1981.

Under Amendment 2 of Metropolitan's contract, 809 cfs of excess capacity was originally constructed in reaches of the West Branch at Metropolitan's request. That capacity was reclassified as basic capacity of SWP Transportation Facilities under Amendment 7. Metropolitan 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 Metropolitan's contract requires that additional costs for modifications to the Santa Ana Pipeline (required for enlargement of Lake Perris) will be allocated to Metropolitan and returned to the State through payments of the Transportation Charge. The additional costs to be repaid through Metropolitan's capital cost component for the aqueduct reach from Devil Canyon Power Plant 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 of the Transportation Charge and payment 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 the minimum OMP&R component of the Transportation Charge and allocated operating costs under the Devil Canyon-Castaic contract. The table includes the following seven types of operating costs incurred annually that 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;

(5) portions of the power and replacement costs of all up-aqueduct pumping plants and power plants that are allocable to the annual conveyance of water lost to evaporation and seepage from respective aqueduct reaches or 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 3 percent per year for 2003, 2004, and 2005.

Table B-12 shows the portions of variable OMP&R costs in Table B-3 that are allocable 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) Part 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. 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. The unit rate is equal to the variable OMP&R unit rate for the year the water is taken from storage.

(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 the Delta Water Charge, Oroville power sales, and 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 allocated 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 B-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 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's Amendment 7, are included as negative capital costs in Table B-14 and Table C of Metropolitan's Statement of Charges. Solano, Empire-West Side Irrigation District, and Crestline also prepaid capital costs (see Table B-14 footnotes). Table B-14 includes costs of the planned East Branch Extension to provide water service to San Bernardino Valley Municipal Water District and San Gorgonio Pass Water Agency.

Both Table B-14 and Table C of the six contractors for project water service below Devil Canyon Power Plant and Castaic Power Plant include the capital costs reimbursable under the Devil Canyon-Castaic contract.

Table B-15 summarizes capital cost components of the Transportation Charge for each contractor for each year of the project repayment period. By the year 2035, the capital cost components shown in Table B-15 will recover the costs shown in Table B-14, with interest at the Project Interest Rate of 4.610 percent per annum and based on the amortization schedules included in Table 2.

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 Power Plant and Castaic Power Plant 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 include the operating costs payable under the Devil Canyon-Castaic contract for the six

Table 2. 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
Metropolitan Water District of Southern California	1963
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
Santa Clara Valley Water District	1963
Solano County Water Agency	1973
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] For Yuba City and Butte County payments for Delta Water Charge only.
[d] Payment deferred for 1963 and added to 1964 payment with accrued interest.
[e] For Dudley Ridge, Empire, Kern (agricultural use), Oak Flat, and Tulare, according to 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 allocations (Table B-4) through the project repayment period.
[f] For San Luis Obispo and Santa Barbara County, all principal and interest payments for costs of the Coastal Stub were deferred until 1976.

contractors down-aqueduct from Devil Canyon Power Plant and Castaic Power Plant.

As part of operating agreements with the Department, Kern was billed from 1963 through 1987 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, a portion of minimum OMP&R costs of Reach 31A were assigned directly to Kern, as shown in Table 3, with the remaining reach costs allocated by application of the proportionate-use ratios. The Department purchased the last unit, Unit No. 6, at Las Perillas and Badger Hill Pumping Plants in early 1997 to provide pumping capacity for deliveries to Coastal Area contractors, which began in 1997.

Table 3. Minimum OMP&R Costs of Reach 31A Assigned Directly to Kern County Water Agency

Year	Direct Charges
1969	46,511
1970	46,302
1971	140,074
1972	95,017
1973	72,454
1974	100,692
1975	127,456
1976	138,504
1977	120,753
1978	157,652
1979	121,231
1980	150,728
1981	75,866
1982	82,805
1983	90,007
1984	107,468
1985	159,406
1986	137,241
1987	127,073
1988	130,924
1989	128,468
1990	138,234
1991	139,527
1992	185,370
1993	219,344
1994	364,196
1995	272,341
1996	322,123
Total	**3,997,767**

As a result of the Monterey Amendment Litigation, the costs related to this settlement are to be allocated among all SWP contractors in proportion to their maximum Table A. As costs are incurred, related charges will be included in the contractors' annual Statements of Charges as part of the minimum. It is estimated that between 2002 and 2010, the total Monterey

Amendment Litigation costs will be just under $16 million.

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.

Adopted October 1, 1979, the General Bond Resolution 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 year are refunded to the contractors in the next year.

Table 4 summarizes Off-Aqueduct Power Facility charges and credits related to deliveries for 2002.

Table 4. Summary of Off-Aqueduct Power Facility Charges and Credits

Charges by Item	
Reid Gardner Power Plant	$79,322,708
Bottle Rock Power Plant	$14,393,020
South Geysers Power Plant	$6,641,019
Subtotal	*$100,356,747*
Credits by Item	
Power sales	$23,161,323
Miscellaneous water (wheeling)	0
Subtotal	*$23,161,323*
Net Total Charge	**$77,195,424**

Table 5 shows projected charges for Off-Aqueduct Power Facilities and an amount equal to 25 percent of annual bond service for 2003 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 allocated water for the year. The initial allocation for the Statements of Charges is based on estimates of energy to pump requested allocated water deliveries.

Table 5. Projected Charges for Off-Aqueduct Facilities

Year	Total Annual Cost	25% Bond Service
2003	95,621,261	7,121,651
2004	93,201,947	7,067,483
2005	103,635,299	8,742,629
2006	101,670,755	8,753,524
2007	101,650,974	8,749,568
2008	118,967,731	12,212,919
2009	119,196,119	12,258,596
2010	120,011,968	12,421,766
2011	113,344,525	11,095,278
2012	113,552,617	11,136,897
2013	64,538,360	5,047,119
2014	21,039,273	4,192,855
2015	13,060,898	2,597,180
2016	10,761,555	2,137,312
2017	9,419,804	1,868,961
2018	3,913,453	767,691
2019	3,927,984	770,597
2020	3,958,137	776,628
2021	5,367,841	1,058,569
2022	5,357,528	1,056,506
2023	4,099,505	804,901
2024	2,871,954	559,391
2025	104,375	20,875
2026	106,563	21,313
2027	108,438	21,688
2028	110,000	22,000
2029	105,000	21,000

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. An additional adjustment is made the following year based on actual water deliveries and actual costs for the year.

The energy required to pump each contractor's water is calculated using the kilowatt-hour per acre-foot factors (shown in Table 6) for the pumping plants upstream from the delivery turnouts. 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

Table 6. Kilowatt-Hour Per Acre-Foot Factors for Allocating Off-Aqueduct Power Facility Costs

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
Banks	296	296
South Bay (including Del Valle)	869	1,165
Dos Amigos	138	434
Buena Vista	242	676
Teerink	295	971
Chrisman	639	1,610
Edmonston	2,236	3,846
Pearblossom	703	4,549
Oso	280	4,126
Las Perillas	77	511
Badger Hill	200	711
Devil's Den	705	1,416
Bluestone	705	2,121
Polonio Pass	705	2,826

[a] Includes transmission losses

aqueduct pumping plant and power plant for each year of the project repayment period. Those data are derived according to the following procedures 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.
- 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 shown in Tables 7 and 8 on pages B-249 and B-250.

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 Power Plant and Castaic Power Plant include amounts of debt service and operating cost payments due according to provisions of the Devil Canyon-Castaic contract.

Table 7. Extra Peaking Charges for Additional Power, by Pumping Plant (Dollars)

Year	Cordelia Napa	Cordelia Solano	Barker Slough	South Bay	Banks	Dos Amigos	Las Perillas and Badger Hill	Buena Vista	Teerink	Chrisman	Edmonston	Pearblossom	Oso	Total
1972	0	0	0	0	0	10,579	24,700	0	0	0	0	0	0	35,279
1973	0	0	0	0	0	0	6,016	0	0	0	0	0	0	6,016
1974	0	0	0	0	0	0	7,140	0	0	0	0	0	0	7,140
1975	0	0	0	0	0	494	6,397	0	0	0	0	0	0	6,891
1976	0	0	0	0	0	0	1,981	0	0	0	0	0	0	1,981
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	45,145	3,680	0	0	0	0	0	0	48,825
1979	0	0	0	0	0	0	3,306	0	0	0	0	0	0	3,306
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	12,126	0	0	0	0	0	0	0	12,126
1982	0	0	0	0	0	89,339	0	0	0	0	0	0	0	89,339
1983	0	0	0	35	7,594	3,534	152	0	0	0	0	0	0	11,315
1984	0	0	0	2,096	84,396	38,607	7,203	11,173	3,823	3,593	0	0	0	150,891
1985	0	0	0	1,480	19,612	8,841	763	4,488	4,412	8,929	28,353	0	0	76,878
1986	0	0	0	0	1,864	863	0	291	354	766	2,683	0	0	6,821
1987	0	0	0	604	17,129	7,838	835	2,295	1,806	3,460	11,058	0	0	45,025
1988	639	39	287	894	43,475	20,082	2,213	5,792	4,367	8,272	25,886	0	0	111,946
1989	2,491	566	1,483	70	40,251	18,642	1,935	3,401	1,531	2,058	3,793	0	0	76,221
1990	45	0	18	343	19,524	9,044	0	150	145	314	643	0	0	30,226
1991	903	0	281	0	21	8	0	15	17	39	139	41	0	1,464
1992	208	117	203	0	7,070	2,502	0	182	190	435	0	0	0	10,907
1993	0	681	889	4,483	123,080	54,741	0	8,898	5,458	10,900	35,068	11,139	0	255,337
1994	0	366	393	679	6,566	2,795	454	1,083	155	357	1,121	0	132	14,101
1995	0	0	0	1,717	24,464	9,422	27	1,865	3,475	782	1,104	400	0	43,256
1996	4	0	1	1,983	10,031	4,976	0	391	432	1,015	3,404	1,160	0	23,397
1997	0	1,780	2,152	3,107	337,357	165,774	1,753	34,604	12,296	15,910	21,028	0	0	595,761
1998	0	0	0	20,966	235,693	106,251	2,354	697	848	1,836	6,426	0	0	375,071
1999	0	0	0	0	63,196	26,235	0	3,394	4,136	8,959	31,350	7,740	0	145,010
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	4,290	3,549	5,707	38,457	1,041,323	637,838	70,909	78,719	43,445	67,625	172,056	20,480	132	2,184,530

Table 8. Extra Peaking Charges for Additional Power, by Contractor (Dollars)

Year	Napa	Solano	Alameda Zone 7	ACWD[a]	SCVWD[b]	Dudley Ridge	Empire West Side	Kern County	County of Kings	Oak Flat	Tulare	AVEK[c]	Castaic Lake	Coachella Valley	Desert Water Agency	LCID[d]	Palmdale	SGVMWD[e]	Total
1972	0	0	0	0	0	0	0	35,269	0	0	10	0	0	0	0	0	0	0	35,279
1973	0	0	0	0	0	0	0	6,016	0	0	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	0	0	7,140
1975	0	0	0	0	0	0	0	6,891	0	0	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	0	0	1,981
1977	0	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	0	0	48,825
1979	0	0	0	0	0	0	0	2,821	0	0	0	0	485	0	0	0	0	0	3,306
1980	0	0	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	11,951	0	0	0	0	0	0	0	175	0	0	12,126
1982	0	0	0	0	0	2,173	0	80,945	0	0	0	4,671	1,128	0	0	0	0	422	89,339
1983	0	0	0	0	48	9,511	0	0	1,365	0	0	0	391	0	0	0	0	0	11,315
1984	0	0	0	0	2,874	0	0	144,021	281	809	0	0	2,906	0	0	0	0	0	150,891
1985	0	0	0	2,029	0	0	64	25,664	0	98	0	48,767	256	0	0	0	0	0	76,878
1986	0	0	0	0	0	0	0	0	0	13	2,194	4,614	0	0	0	0	0	0	6,821
1987	0	0	229	0	599	313	84	24,141	0	95	0	18,207	545	0	0	812	0	0	45,025
1988	892	73	665	561	0	1,853	1,404	58,905	0	72	2,368	44,526	627	0	0	0	0	0	111,946
1989	3,478	1,062	96	0	0	13	403	55,085	0	239	8,278	0	1,043	0	0	1,035	5,489	0	76,221
1990	63	0	470	0	0	0	0	28,587	0	0	0	0	0	0	0	81	1,025	0	30,226
1991	1,184	0	0	0	0	0	0	0	0	0	0	0	0	0	0	280	0	0	1,464
1992	271	257	0	0	0	0	49	10,109	221	0	0	0	0	0	0	0	0	0	10,907
1993	0	1,570	6,122	0	0	0	3,757	97,812	504	0	74,577	0	0	24,983	41,156	0	4,856	0	255,337
1994	0	759	896	0	0	0	7	9,933	0	0	0	0	2,450	0	0	56	0	0	14,101
1995	0	0	2,353	0	0	10,197	0	28,085	310	0	0	0	27	0	0	0	2,284	0	43,256
1996	5	0	81	2,612	0	334	205	4,552	969	0	7,809	0	0	0	0	0	3,598	3,232	23,397
1997	0	3,932	3,999	0	.0	6,190	0	546,733	0	40	0	0	0	0	0	0	34,867	0	595,761
1998	0	0	19,666	8,442	0	22,631	1	312,626	0	651	0	0	0	0	0	0	11,054	0	375,071
1999	0	0	0	0	0	0	0	76,425	0	0	6,922	0	0	0	0	0	11,576	50,087	145,010
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5,893	7,653	34,577	13,644	3,521	55,250	5,974	1,620,176	3,692	2,017	102,158	123,049	9,858	24,983	41,156	2,439	74,749	53,741	2,184,530

[a] Alameda County Water Agency
[b] Santa Clara Valley Water District
[c] Antelope Valley East Kern Water Agency
[d] Littlerock Creek Irrigation District
[e] San Gabriel Valley Municipal Water District

Delta Water Charges

Table B-20A presents the calculation of the Delta Water Rate for the initial Conservation Facilities applicable in 2004 according to the amended Article 22(e) and 22(g) of all 29 contracts. The Delta Water Rate was calculated at a Project Interest Rate of 4.610 percent based on Conservation Facility costs shown in Table B-13. That Delta Water Rate is used to compute projected Delta Water Charges under Article 53(i) for the contractors who have executed the Monterey Amendment. Included in Table B-20A is the Delta Water Rate for the two contractors who have not executed the Monterey Amendment (Plumas County and Empire).

Table B-20B shows each component of the 2004 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 allocated 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 AA. This surcharge is levied according to an amendment to the water supply contracts for repaying WSRB Surcharge financing costs. All long-term water supply contractors signed that amendment.

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.

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 allocated water now projected for delivery to the respective contractors.

These equivalent charges would provide the same principal sum at the end of the project 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 allocated water delivered to date; all surplus water delivered prior to May 1, 1973; all interruptible water deliveries in 1994 and after; and all allocated 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 allocated 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 allocated water through respective aqueduct reaches of the Project Transportation Facilities.

Those unit costs provide the basis of charges assessed for extra service (such as for delivery of allocations down-aqueduct from a contractor's turnout) and for wheeling service to entities other than the long-term water supply contractors.

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 allocations are conveyed through a given reach. Table B-25 also includes surplus water delivered prior to May 1, 1973, and interruptible water deliveries in 1994 and after.

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:

- a reallocation of costs of constructing the present east branch facilities between Alamo Power Plant and Silverwood Lake;
- a reallocation of costs of Silverwood Lake to reflect additional use as a result of East Branch Enlargement operation;
- reallocation of costs of San Bernardino Tunnel to reflect redistribution of flow capacities necessary for the East Branch Enlargement facilities; and
- actual construction costs of the enlargement.

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 9).

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 shown in Table B-26.

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. The amounts shown in Table B-30 will recover the minimum OMP&R costs shown in Table B-27.

Table B-31 shows the annual East Branch Enlargement Transportation charges for each participating contractor (the sum of the corresponding amounts included in Tables B-29 and B-30).

Short-Term Agreements

The long-term water supply contractors and the Department have executed a short-term agreement that affects the contractors' charges. A 5-year agreement was executed in late 1997 between the Department and 16 Municipal and Industrial contractors, who agreed to pay their allocated shares of Municipal Water Quality Investigations costs. In 2002, an additional 3-year MWQI agreement was executed. The MWQI charges under this agreement are included in the Transportation minimum OMP&R components shown in Table B-16A.

Nine contractors executed a short-term agreement (1997 and 1998) to participate in the feasibility study for the American Basin conjunctive-use program. The costs of the feasibility study are included in Table B-16A.

Table 9. 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 Power Plant
19	Alamo Power Plant 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 Power Plant facilities)
23C	Mojave Siphon Power Plant 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 Power Plant
26B	Devil Canyon Power Plant 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

Table B-1

Factors for Distributing Reach Capital Costs Among Contractors

Reach No.	Reach Description	North Bay Area		South Bay Area				Total
		Napa County FC&WCD	Solano County Water Agency	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor	
	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	
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
								1.00000000
7	South Livermore Turnout thru Vallecitos Turnout			0.25176680	0.60218448	0.14604872		
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
								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		Southern California Area				
		San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	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 Wheeler Ridge Pumping Plant			0.04825217	0.01909545	0.00873768	0.00220973	0.01441013
15A	Wheeler Ridge 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 Power Plant 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	South Portal, San Bernardino Tunnel thru Devil Canyon Pwp.							
28G	Devil Canyon Power Plant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch, Calif. Aqueduct thru Oso Pumping P.				0.03544337			
29F	Oso Pumping Plant thru Quail Embankment				0.03544339			
29G	Quail Embankment thru Warne Power Plant				0.03544339			
29H	Pyramid Dam and Lake				0.02817144			
29J	Pyramid Lake thru Castaic Power Plant				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 Tank 1	0.10101221	0.89898779					
33B	Tank 1 through Chorro Valley Turnout	0.09912818	0.90087182					
34	Chorro Valley Turnout through Lopez Turnout	0.05479573	0.94520427					
35	Lopez Turnout through Guadalupe Turnout		1.00000000					

Note: Proportionate use factors **do not** reflect permanent water transfer as a result of the Monterey Amendment.

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		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
				Municipal and Industrial	Agricultural			
	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		0.5754619			

Reach No.	Southern California Area (Continued)								
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley 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	Total
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	
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									
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		
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		South Bay Area				Total
		Napa County FC&WCD	Solano County Water Agency	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor	
	North Bay Aqueduct							
1	Barker Slough thru Fairfield/Vacaville Turnout	0.29251728	0.70748272					1.00000000
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.42000793	0.57999207					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			0.33329231	0.19708223	0.46962546		1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.33328051	0.19708592	0.46963357		1.00000000
4	Patterson Reservoir to Del Valle Junction			0.30912175	0.20422670	0.48665155		1.00000000
5	Del Valle Junction thru Lake Del Valle			0.53312173	0.12972254	0.33715573		1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.31828010	0.20098800	0.48073190		1.00000000
7	South Livermore Turnout thru Vallecitos Turnout			0.14604872	0.25176680	0.60218448		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				0.00870734	0.02074922		N/A

Reach No.	Reach Description	Central Coastal Area		Southern California Area				
		San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency
	California Aqueduct							
1	Delta thru Bethany Reservoir	0.00531831	0.00981163	0.03024877	0.02544470	0.00527036	0.00133286	0.00869190
2A	Bethany Reservoir to Orestimba Creek	0.00557094	0.01027771	0.03168300	0.02660898	0.00551826	0.00139555	0.00910071
2B	Orestimba Creek to O'Neill Forebay	0.00557705	0.01028900	0.03171949	0.02666636	0.00552588	0.00139749	0.00911329
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557599	0.01028704	0.03171397	0.02666957	0.00552528	0.00139732	0.00911233
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557487	0.01028498	0.03170817	0.02667296	0.00552466	0.00139718	0.00911131
5	Panoche Creek to Five Points	0.00557347	0.01028242	0.03170090	0.02667718	0.00552389	0.00139699	0.00911004
6	Five Points to Arroyo Pasajero	0.00557137	0.01027854	0.03168992	0.02668357	0.00552272	0.00139669	0.00910810
7	Arroyo Pasajero to Kettleman City	0.00557069	0.01027730	0.03168640	0.02668562	0.00552235	0.00139659	0.00910747
8C	Kettleman City thru Milham Avenue	0.00551481	0.01017422	0.03136480	0.02635479	0.00546344	0.00138170	0.00901034
8D	Milham Avenue thru Avenal Gap	0.00562703	0.01038123	0.03200439	0.02691451	0.00557591	0.00141013	0.00919582
9	Avenal Gap thru Twisselman Road			0.03445407	0.02792623	0.00606718	0.00153438	0.01000602
10A	Twisselman Road thru Lost Hills			0.03499258	0.02838814	0.00616386	0.00155882	0.01016547
11B	Lost Hills to 7th Standard Road			0.03834527	0.03123672	0.00676378	0.00171053	0.01115484
12D	7th Standard Road thru Elk Hills Road			0.04020653	0.03283099	0.00709777	0.00179499	0.01170563
12E	Elk Hills Road thru Tupman Road			0.04025763	0.03288687	0.00710782	0.00179754	0.01172222
13B	Tupman Road to Buena Vista Pumping Plant			0.04356587	0.03568787	0.00769909	0.00194705	0.01269732
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04566837	0.03729760	0.00807686	0.00204261	0.01332033
14B	Santiago Creek thru Old River Road			0.04632133	0.03353190	0.00819710	0.00207301	0.01351863
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04750935	0.03231068	0.00841284	0.00212757	0.01387441
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04820545	0.03278404	0.00853905	0.00215950	0.01408255
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.04981626	0.03387945	0.00882974	0.00223302	0.01456195
17E	Edmonston Pumping Plant to Porter Tunnel			0.05182162	0.03524319	0.00919222	0.00232470	0.01515976
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05192618	0.03531429	0.00921085	0.00232941	0.01519047
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13485579		0.02392545	0.00605074	0.03945770
19	Alamo Power Plant to Fairmont			0.13485222		0.02392610	0.00605088	0.03945868
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847930		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		0.02754717	0.00696651	0.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608044
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	South Portal, San Bernardino Tunnel thru Devil Canyon Pwp.							
28G	Devil Canyon Power Plant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch, Calif. Aqueduct thru Oso Pumping P.			0.00296720	0.05726734			
29F	Oso Pumping Plant thru Quail Embankment			0.00296796	0.05726649			
29G	Quail Embankment thru Warne Power Plant				0.05742327			
29H	Pyramid Dam and Lake				0.03349572			
29J	Pyramid Lake thru Castaic Power Plant				0.05740996			
30	Castaic Dam and Lake				0.03248607			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560302	0.19482546		0.07364766			
33A	Devil's Den Pumping Plant thru San Luis Obispo Power Plant	0.10101221	0.89898779					
33B	Tank 1 through Chorro Valley Turnout	0.10101221	0.89898779					
34	Chorro Valley Turnout through Lopez Turnout	0.05271277	0.94728723					
35	Lopez Turnout through Guadalupe Turnout		1.00000000					

Note: Proportionate use factors reflect permanent water transfer as a result of the Monterey Amendment.

Table B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	North Bay Area		South Bay Area	San Joaquin Valley Area								
	Napa County FC&WCD	Solano County Water Agency	Alameda County FC&WCD-Zone 7	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	0.00101508	0.00145936	0.02271045	0.01822246	0.00088485	0.00254131	0.02735490	0.27521623	0.00090495	0.00166758	0.03279588
2A	0.00106174	0.00152637	0.00815620	0.01904003	0.00092455	0.00266203	0.02863336	0.28756046	0.00094725	0.00174236	0.03426733
2B	0.00106390	0.00152952	0.00817111	0.01909141	0.00092704	0.00266495	0.02867811	0.28833873	0.00094873		0.03435976
3	0.00106400	0.00152966	0.00817129	0.01909675	0.00092729	0.00266444	0.02867658	0.28841995	0.00094869		0.03436936
4	0.00106408	0.00152981	0.00817149	0.01910235	0.00092757	0.00266389	0.02867495	0.28850535	0.00094863		0.03437943
5	0.00106420	0.00152999	0.00817173	0.01910935	0.00092791	0.00266322	0.02867293	0.28861197	0.00094856		0.03439204
6	0.00106438	0.00153027	0.00817213	0.01911995	0.00092842	0.00266222	0.02866989	0.28877332	0.00094845		0.03441108
7	0.00106445	0.00153035	0.00817225	0.01912336	0.00092859	0.00266188	0.02866890	0.28882506	0.00094841		0.03441719
8C	0.00105155	0.00151171	0.00807697	0.01886317	0.00091597	0.00263520	0.02835152	0.28489040	0.00093790		0.03394900
8D	0.00107377	0.00154371	0.00824626	0.01927239	0.00000000	0.00268881	0.02893948	0.29107265			0.01564130
9	0.00080012	0.00110418	0.00730148				0.03150656	0.29388811			
10A	0.00081332	0.00112220	0.00742007				0.03201476	0.28269236			
11B	0.00065223	0.00095504	0.00290791				0.03516180	0.21892694			
12D							0.03691687	0.18536220			
12E							0.03697255	0.18424158			
13B							0.01417987	0.14250526			
14A							0.00601809	0.10970513			
14B							0.00610995	0.10098096			
14C							0.00627333	0.07966579			
15A							0.00636884	0.06599903			
16A							0.00658818	0.03445849			
17E							0.00201822				
31A	0.00629812	0.00979558	0.02622386			0.05046240		0.43995900			

Reach No.	Southern California Area (continued)								
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley 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	Total
1	0.00049058	0.01818479	0.00458599	0.02357115	0.00648777	0.00397421	0.43807777	0.00427960	1.00000000
2A	0.00051389	0.01903164	0.00480328	0.02467987	0.00679401	0.00416114	0.45885645	0.00448289	1.00000000
2B	0.00051445	0.01906331	0.00480891	0.02471393	0.00680270	0.00416688	0.45938018	0.00448782	1.00000000
3	0.00051436	0.01906286	0.00480810	0.02471127	0.00680178	0.00416643	0.45929872	0.00448697	1.00000000
4	0.00051427	0.01906238	0.00480726	0.02470849	0.00680080	0.00416595	0.45921309	0.00448608	1.00000000
5	0.00051415	0.01906178	0.00480620	0.02470502	0.00679958	0.00416537	0.45910614	0.00448497	1.00000000
6	0.00051395	0.01906086	0.00480460	0.02469976	0.00679773	0.00416449	0.45894432	0.00448327	1.00000000
7	0.00051388	0.01906058	0.00480408	0.02469807	0.00679714	0.00416421	0.45889244	0.00448274	1.00000000
8C	0.00050873	0.01884525	0.00475508	0.02443477	0.00672619	0.00411981	0.46572489	0.00443779	1.00000000
8D	0.00051907	0.01923768	0.00485215	0.02493773	0.00686409	0.00420460	0.47526920	0.00452809	1.00000000
9	0.00056431	0.01850174	0.00527629	0.02713476	0.00746655	0.00457502	0.51697022	0.00492278	1.00000000
10A	0.00057314	0.01878996	0.00535917	0.02756710	0.00758471	0.00464791	0.52514673	0.00499970	1.00000000
11B	0.00062807	0.02058540	0.00587475	0.03024992	0.00831877	0.00510025	0.57594907	0.00547871	1.00000000
12D	0.00065856	0.02158164	0.00607678	0.03174344	0.00872701	0.00535205	0.60420090	0.00574464	1.00000000
12E	0.00065941	0.02160853	0.00608451	0.03178836	0.00873891	0.00535964	0.60502251	0.00575192	1.00000000
13B	0.00071360	0.02338053	0.00658461	0.03443241	0.00946266	0.00580542	0.65511388	0.00622456	1.00000000
14A	0.00074805	0.02450567	0.00690246	0.03612176	0.00992421	0.00609023	0.68705368	0.00652495	1.00000000
14B	0.00075876	0.02485355	0.00700123	0.03665940	0.01006985	0.00618088	0.69712523	0.00661822	1.00000000
14C	0.00077822	0.02548811	0.00718087	0.03762404	0.01033245	0.00634353	0.71529087	0.00678794	1.00000000
15A	0.00078961	0.02586004	0.00728614	0.03818842	0.01048617	0.00643870	0.72592508	0.00688738	1.00000000
16A	0.00081599	0.02672140	0.00752970	0.03948832	0.01084079	0.00665787	0.75046133	0.00711751	1.00000000
17E	0.00084885	0.02779341	0.00783291	0.04110922	0.01128270	0.00693115	0.78103803	0.00740402	1.00000000
17F	0.00085056	0.02784944	0.00784871	0.04119251	0.01130553	0.00694519	0.78261790	0.00741896	1.00000000
18A	0.00220895	0.04946256	0.01657935	0.10699871	0.02936461	0.01804030	0.57305584		1.00000000
19	0.00220892	0.04946131	0.01657891	0.10700135	0.02936480	0.01804074	0.57305609		1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161799	0.01942666	0.61700971		1.00000000
20B	0.00249470	0.05586075	0.01872390	0.12087843	0.03316986	0.02038045	0.64729088		1.00000000
21	0.00254199	0.05692052		0.12319480	0.03380324	0.02077093	0.65963498		1.00000000
22A		0.05773081		0.12495766	0.03428605	0.02106816	0.66905054		1.00000000
22B		0.05842135		0.12645207	0.03469614	0.02132008	0.67705257		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							0.92702291	0.01274255	1.00000000
29F							0.92702302	0.01274253	1.00000000
29G							0.92979606	0.01278067	1.00000000
29H							0.95753173	0.00897255	1.00000000
29J							0.92980918	0.01278086	1.00000000
30							0.95895422	0.00855971	1.00000000
31A		0.09318490							1.00000000
33A									1.00000000
33B									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)

Calendar Year	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
	Barker Slough Pumping Plant (1)	Cordelia Pumping Plant Solano (2)	Cordelia Pumping Plant Napa[a] (3)	South Bay & Del Valle Pumping Plant (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	37,731	0	0	0	0	0	0
1963	0	0	0	56,414	0	0	0	0	0	0
1964	0	0	0	71,745	0	0	0	0	0	0
1965	0	0	0	138,653	0	0	0	0	0	0
1966	0	0	0	189,402	0	0	0	0	0	0
1967	0	0	0	220,327	28,554	0	0	0	0	0
1968	0	0	7,128	339,261	1,286,777	227,505	0	0	0	0
1969	0	0	8,557	274,851	817,304	119,303	0	0	0	0
1970	0	0	13,666	439,983	330,508	193,720	2,940	0	0	0
1971	0	0	10,626	413,657	559,946	205,206	134,340	7,921	0	0
1972	0	0	14,430	615,164	1,072,833	541,628	305,868	159,125	348,235	1,179,787
1973	0	0	14,453	477,134	880,234	469,676	469,104	472,187	829,325	2,961,697
1974	0	0	17,508	502,473	959,269	536,361	514,168	553,285	993,796	3,522,973
1975	0	0	14,801	373,706	1,315,916	536,495	607,981	664,738	1,340,518	4,675,938
1976	0	0	20,867	580,607	878,728	572,326	658,261	645,377	1,360,502	4,740,176
1977	0	0	22,640	534,087	631,578	178,904	139,856	138,714	291,196	977,258
1978	0	0	21,670	559,981	3,833,011	653,606	966,756	926,444	1,728,268	6,104,186
1979	0	0	16,240	614,117	3,394,344	994,921	805,839	788,539	1,612,105	5,564,009
1980	0	0	19,936	523,445	1,981,918	818,368	857,033	846,757	1,808,192	6,269,482
1981	0	0	23,863	639,976	1,975,220	1,640,814	1,197,553	1,189,437	2,731,775	9,388,367
1982	0	0	12,078	484,808	3,405,761	1,148,258	1,159,605	1,212,973	2,557,070	9,355,533
1983	0	0	2,339	77,394	1,264,426	140,742	276,289	264,076	545,887	1,827,188
1984	0	0	4,797	289,827	1,390,432	555,409	551,468	508,111	1,044,264	3,507,659
1985	0	0	10,220	456,051	2,830,593	1,283,981	1,336,378	1,378,587	2,994,227	10,459,919
1986	0	0	15,484	827,079	7,180,656	2,282,364	2,290,023	2,343,903	5,062,706	17,643,403
1987	0	0	27,223	901,077	7,543,259	1,996,638	1,851,663	1,885,638	4,119,308	14,361,151
1988	18,112	19,927	23,868	932,456	5,377,272	2,072,091	2,100,427	2,142,121	4,724,696	16,562,202
1989	30,783	45,783	26,501	1,211,118	10,887,880	3,334,006	3,427,675	3,553,496	7,936,397	27,756,045
1990	53,484	67,109	40,793	1,881,178	9,523,541	4,754,649	5,990,489	6,327,687	14,254,357	50,152,078
1991	11,254	10,442	5,983	365,808	3,463,154	723,518	1,263,736	1,445,729	3,363,863	12,019,190
1992	14,484	13,070	9,398	327,309	2,700,240	808,067	1,071,702	1,121,273	2,503,167	8,677,102
1993	(12,340)	(8,753)	(5,393)	(159,836)	(333,548)	(609,139)	(461,719)	(459,965)	(1,018,142)	(3,558,718)
1994	54,407	39,608	29,189	823,317	4,438,900	1,938,280	2,325,005	2,375,321	5,337,101	18,723,854
1995	20,699	20,620	11,791	253,482	4,009,296	1,076,372	924,147	887,105	1,948,905	6,847,537
1996	59,545	47,288	23,483	645,189	9,531,541	3,449,781	2,444,752	2,341,848	5,156,434	18,332,558
1997	69,837	52,935	21,955	963,877	7,625,930	3,064,281	2,847,907	2,788,387	6,217,434	22,057,503
1998	(11,058)	(9,488)	(4,554)	(124,695)	296,016	(362,362)	(316,705)	(304,065)	(673,122)	(2,350,976)
1999	30,068	25,250	10,007	516,066	5,133,734	2,284,581	1,551,337	1,239,433	3,227,958	12,549,543
2000	61,549	44,948	15,850	788,055	8,660,942	3,209,424	3,124,701	3,200,442	7,366,128	26,578,928
2001	355,728	251,058	214,831	3,664,283	23,326,235	10,296,470	14,726,902	15,136,167	34,063,766	125,742,394
2002	191,792	105,464	61,999	2,123,846	18,384,200	6,991,101	8,536,009	8,854,510	19,992,893	73,466,747
2003	837,017	136,751	88,370	3,432,621	29,655,124	10,180,381	12,901,036	14,881,738	32,018,621	114,199,046
2004	817,022	169,507	812,978	6,578,387	36,370,506	18,283,014	21,211,008	24,745,901	52,787,213	186,391,788
2005	973,308	201,935	968,454	7,825,784	49,373,913	21,722,161	25,223,963	29,422,866	62,772,140	221,664,673
2006	380,557	360,405	400,744	5,830,551	37,964,308	17,642,997	20,988,919	20,519,945	48,313,076	180,982,856
2007	376,148	353,564	400,452	5,720,502	35,993,620	17,601,459	21,200,004	20,758,470	48,902,317	183,253,993
2008	338,643	315,891	364,571	5,111,650	36,537,843	15,758,947	19,027,382	18,635,786	43,905,202	164,536,820
2009	355,184	328,698	386,217	5,319,525	32,719,963	16,487,985	19,985,317	19,583,340	46,146,205	172,953,762
2010	376,541	345,787	413,726	5,595,469	42,190,059	17,517,401	21,333,197	20,919,882	49,308,784	184,837,626
2011	379,588	345,931	421,401	5,597,805	38,371,326	17,777,419	21,782,400	21,382,301	50,417,793	189,038,150
2012	397,171	359,219	445,449	5,812,824	36,217,801	18,336,200	22,403,640	21,981,813	51,822,088	194,282,685
2013	443,065	398,221	500,944	6,443,945	48,321,778	20,675,728	25,442,369	24,993,122	58,947,195	221,053,555
2014	483,261	430,649	552,622	6,968,729	43,226,975	22,590,315	27,917,153	27,443,532	64,743,062	242,826,398
2015	498,300	437,766	582,047	7,083,852	48,931,701	23,050,300	28,526,283	28,049,452	66,178,739	248,224,947
2016	510,230	442,674	607,687	7,163,300	56,003,556	23,551,866	29,271,318	28,802,132	67,971,583	254,988,596
2017	508,392	435,665	616,960	7,049,872	50,024,302	23,242,076	28,918,901	28,460,568	67,169,841	251,991,203
2018	530,885	449,499	657,389	7,273,725	48,494,717	23,716,564	29,377,244	28,890,272	68,165,926	255,686,493
2019	551,770	461,660	696,946	7,470,521	58,196,314	25,345,214	31,891,359	31,443,843	74,260,003	278,703,292
2020	524,786	434,027	675,089	7,023,343	50,647,345	23,554,582	29,507,108	29,071,787	68,640,075	257,569,907
2021	525,046	433,243	677,147	7,010,682	49,704,945	23,615,775	29,633,213	29,204,237	68,959,709	258,785,203
2022	506,355	417,820	653,041	6,761,101	45,669,481	22,787,022	28,600,798	28,187,674	66,560,144	249,782,417
2023	509,677	420,561	657,324	6,805,449	49,318,286	22,953,095	28,816,216	28,401,219	67,065,585	251,681,666
2024	531,345	438,440	685,270	7,094,778	54,926,471	23,952,530	30,080,968	29,649,636	70,014,847	262,752,861
2025	528,590	436,165	681,716	7,057,988	45,273,312	23,718,937	29,735,322	29,300,371	69,182,951	259,614,599
2026	532,769	439,616	687,108	7,113,798	57,507,491	24,085,276	30,280,396	29,851,406	70,495,923	264,569,186
2027	523,513	431,977	675,169	6,990,191	50,708,232	23,591,398	29,624,467	29,199,192	68,950,669	258,758,143
2028	527,709	435,438	680,580	7,046,223	52,095,528	23,754,039	29,816,753	29,386,555	69,391,569	260,408,680
2029	519,959	429,045	670,586	6,942,751	49,285,806	23,418,446	29,401,094	28,977,811	68,427,242	256,791,889
2030	524,805	433,044	676,835	7,007,439	51,849,631	23,636,046	29,675,084	29,247,901	69,064,902	259,184,823
2031	516,518	426,207	666,148	6,896,800	45,363,409	22,731,334	28,279,006	27,830,243	65,681,708	246,407,035
2032	528,424	436,029	681,504	7,055,778	51,864,695	24,060,090	30,333,860	29,917,695	70,664,010	265,225,418
2033	559,077	461,324	721,036	7,465,075	53,062,562	24,791,290	30,934,624	30,458,845	71,898,269	269,758,309
2034	535,563	441,920	690,710	7,151,099	51,348,586	24,383,152	30,741,062	30,319,277	71,612,273	268,784,439
2035	522,971	431,530	674,469	6,982,959	50,696,637	23,634,347	29,710,199	29,288,930	69,166,963	259,579,992
Total	18,122,533	13,645,469	20,554,916	243,534,919	1,694,502,823	770,274,731	946,253,153	943,843,043	2,203,375,836	8,211,365,163

[a]Power costs for the period 1968 through 1987 are for an interim facility.
[b]The costs of Del Valle Pumping Plant are combined with those of South Bay Pumping Plant to simplify the cost allocations.

Table B-3

Power Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant

(Dollars)

Calendar Year	California Aqueduct (continued)									
	Reach 18A	Reach 22B	Reach 23	Reach 26A	Reach 29A	Reach 29G	Reach 29J	Reach 31A	Reach 33A	
	Alamo Power Plant (11)	Pearblossom Pumping Plant (12)	Mojave Siphon Power Plant (13)	Devil Canyon Power Plant (14)	Oso Pumping Plant (15)	Warne Power Plant (16)	Castaic Power Plant (17)	Las Perillas and Badger Hill Pumping Plants (18)	Devil's Den, Bluestone, and Polonio Pass Pumping Plants (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	37,731
1963	0	0	0	0	0	0	0	0	0	56,414
1964	0	0	0	0	0	0	0	0	0	71,745
1965	0	0	0	0	0	0	0	0	0	138,653
1966	0	0	0	0	0	0	0	0	0	189,402
1967	0	0	0	0	0	0	0	0	0	248,881
1968	0	0	0	0	0	0	0	118,578	0	1,979,249
1969	0	0	0	0	0	0	0	76,920	0	1,296,935
1970	0	0	0	0	0	0	0	134,749	0	1,115,566
1971	0	0	0	0	0	0	0	168,689	0	1,500,385
1972	0	81,484	0	(3,112)	157,005	0	(385,696)	213,251	0	4,300,002
1973	0	586,209	0	(956,197)	238,650	0	(1,193,216)	120,014	0	5,369,270
1974	0	566,546	0	(963,572)	286,640	0	(1,823,397)	119,505	0	5,785,555
1975	0	587,227	0	(1,125,945)	421,687	0	(2,835,302)	92,012	0	6,669,772
1976	0	871,540	0	(1,567,312)	278,869	0	(2,512,021)	146,530	0	6,674,450
1977	0	275,980	0	(1,262,960)	17,319	0	(1,701,284)	84,225	0	327,513
1978	0	1,758,473	0	(3,345,147)	215,573	0	(2,361,377)	190,745	0	11,252,189
1979	0	1,770,844	0	(3,381,969)	122,134	0	(2,752,003)	203,143	0	9,752,263
1980	0	1,769,468	0	(3,508,195)	86,893	0	(2,728,494)	182,996	0	8,927,799
1981	0	2,049,947	0	(3,743,153)	382,330	0	(2,854,192)	189,573	0	14,811,510
1982	0	1,614,895	0	(3,149,352)	444,009	(973,898)	(3,476,126)	182,427	0	13,978,041
1983	0	301,180	0	(5,905,161)	59,561	(1,314,237)	(3,904,690)	18,936	0	(6,346,070)
1984	0	633,223	0	(7,865,341)	135,658	(2,285,362)	844,120	117,585	0	(568,150)
1985	0	1,140,057	0	(10,664,136)	739,708	(8,476,552)	(19,162,735)	155,931	0	(15,517,771)
1986	(1,080,970)	2,482,042	0	(12,235,312)	1,037,512	(6,269,528)	(11,462,662)	317,622	0	10,434,322
1987	(1,062,392)	1,822,523	0	(10,871,342)	914,642	(6,757,040)	(11,630,562)	266,825	0	5,368,611
1988	(810,907)	2,373,442	0	(14,772,519)	951,580	(7,448,747)	(12,677,211)	237,272	0	1,826,082
1989	(822,973)	4,130,250	0	(19,098,882)	1,543,985	(8,790,866)	(14,657,167)	309,851	0	20,823,882
1990	(845,641)	6,810,694	0	(21,336,948)	3,032,334	(11,692,826)	(19,863,014)	466,262	0	49,616,226
1991	(351,262)	1,306,263	0	(5,781,948)	778,874	(5,250,121)	(8,731,129)	17,608	0	4,660,962
1992	(997,736)	1,116,809	0	(9,903,370)	541,093	(5,955,563)	(9,599,392)	111,742	0	(7,440,605)
1993	(84,856)	(370,935)	0	(7,956,659)	(244,261)	(4,607,075)	(9,740,511)	(122,190)	0	(29,754,040)
1994	(93,031)	2,529,462	0	(12,122,861)	1,039,474	(6,228,273)	(10,867,596)	226,378	(1,127)	10,567,408
1995	(1,297,179)	951,513	0	(10,256,635)	342,312	(3,827,718)	(7,403,219)	261,423	0	(5,229,549)
1996	(2,959,744)	2,725,712	(941,959)	(13,155,960)	908,180	(5,026,221)	(8,969,945)	321,137	0	14,933,619
1997	(2,876,697)	3,431,693	(1,932,337)	(13,519,660)	990,932	(5,184,788)	(9,027,058)	322,753	208,816	18,123,700
1998	(2,244,105)	(439,496)	(1,385,473)	(10,955,475)	(66,088)	(1,888,975)	(4,963,075)	(56,675)	(87,016)	(25,947,387)
1999	(2,811,928)	1,777,113	(2,482,354)	(14,772,635)	666,202	(5,526,541)	(9,954,674)	155,960	233,730	(6,147,150)
2000	(5,115,261)	4,050,888	(4,415,350)	(25,857,510)	1,284,930	(9,487,334)	(17,952,087)	243,850	401,530	(3,795,377)
2001	(3,279,765)	19,351,034	(3,625,917)	(19,515,323)	6,314,498	(7,785,701)	(13,652,669)	1,089,461	2,170,816	208,844,268
2002	(4,923,759)	11,112,707	(5,252,750)	(24,669,937)	3,857,333	(10,279,966)	(18,398,706)	546,208	1,353,554	92,053,245
2003	(3,970,167)	19,740,413	(8,868,458)	(29,915,687)	5,066,236	(9,528,371)	(16,762,311)	784,009	2,212,841	177,089,210
2004	(5,697,500)	32,578,098	(12,426,000)	(35,192,500)	8,285,543	(12,047,500)	(21,199,600)	1,736,039	5,065,929	309,269,833
2005	(5,692,200)	38,755,762	(12,445,000)	(35,210,000)	9,855,590	(12,047,500)	(21,192,100)	2,060,066	5,998,887	390,232,702
2006	(5,410,640)	28,367,874	(6,316,725)	(30,413,625)	8,828,078	(14,283,625)	(23,422,800)	1,912,754	5,423,964	298,069,613
2007	(5,487,109)	28,399,278	(6,395,700)	(30,960,225)	9,110,821	(15,137,525)	(24,586,100)	1,781,124	5,321,002	296,606,095
2008	(5,594,927)	25,888,975	(6,548,625)	(31,216,650)	8,041,755	(15,018,475)	(24,315,100)	1,591,337	4,754,023	262,115,048
2009	(5,599,674)	27,160,029	(6,526,500)	(31,566,025)	8,488,063	(15,241,625)	(24,652,550)	1,655,847	4,946,746	272,930,507
2010	(5,647,379)	29,137,268	(6,596,625)	(31,860,925)	9,054,401	(15,363,925)	(24,964,750)	1,741,936	5,203,931	303,542,404
2011	(5,693,157)	29,465,325	(6,650,250)	(32,188,175)	9,419,325	(15,968,250)	(25,907,400)	1,742,665	5,206,105	304,940,302
2012	(5,786,264)	30,920,219	(6,829,725)	(32,405,200)	9,426,454	(15,350,650)	(25,007,250)	1,809,601	5,406,075	314,242,150
2013	(5,775,031)	34,932,469	(6,846,000)	(32,831,750)	10,865,133	(15,930,550)	(25,950,950)	2,006,078	5,993,035	373,682,356
2014	(5,799,048)	37,750,703	(6,862,800)	(32,782,050)	12,197,844	(16,535,550)	(26,891,650)	2,169,448	6,481,097	406,910,690
2015	(5,888,677)	39,172,702	(7,063,725)	(33,390,200)	12,262,778	(16,379,725)	(26,613,550)	2,205,287	6,588,161	422,456,438
2016	(5,951,375)	40,419,307	(7,156,875)	(34,005,575)	12,561,492	(16,562,650)	(26,938,550)	2,230,020	6,662,056	440,570,792
2017	(5,906,866)	39,677,645	(7,174,350)	(33,978,600)	12,521,343	(16,738,275)	(27,262,450)	2,194,709	6,556,561	428,307,497
2018	(5,969,705)	41,043,869	(7,497,975)	(34,012,075)	12,379,061	(16,051,100)	(26,157,200)	2,264,397	6,764,753	436,006,739
2019	(6,016,799)	43,034,727	(7,434,300)	(34,727,425)	14,255,535	(17,748,700)	(29,161,650)	2,325,664	6,947,779	480,495,753
2020	(5,985,826)	40,565,527	(7,439,925)	(34,666,150)	12,845,558	(17,147,525)	(28,022,500)	2,186,451	6,531,891	436,515,550
2021	(6,012,334)	40,676,956	(7,505,625)	(34,811,350)	12,948,728	(17,287,900)	(28,281,650)	2,182,510	6,520,114	436,978,649
2022	(6,040,064)	39,128,388	(7,496,625)	(34,809,700)	12,549,562	(17,364,050)	(28,413,900)	2,104,812	6,287,996	415,872,272
2023	(6,055,527)	39,486,117	(7,534,575)	(34,804,325)	12,624,511	(17,354,700)	(28,398,200)	2,118,618	6,329,244	423,040,241
2024	(6,029,865)	41,270,226	(7,548,000)	(34,803,550)	13,164,943	(17,358,975)	(28,405,950)	2,208,690	6,598,325	449,222,990
2025	(6,001,712)	40,502,899	(7,450,050)	(34,514,225)	13,096,763	(17,359,025)	(28,406,000)	2,197,236	6,564,109	434,159,946
2026	(6,065,585)	41,727,244	(7,632,075)	(35,124,800)	13,200,282	(17,358,975)	(28,405,950)	2,214,611	6,616,019	454,733,740
2027	(6,023,520)	40,558,403	(7,471,275)	(34,768,475)	12,995,412	(17,391,000)	(28,457,150)	2,176,131	6,501,059	437,572,536
2028	(6,002,276)	40,883,128	(7,494,675)	(34,815,075)	13,050,502	(17,330,950)	(28,355,950)	2,193,573	6,553,171	442,224,522
2029	(6,012,193)	40,282,765	(7,507,125)	(34,810,950)	12,882,931	(17,358,950)	(28,406,000)	2,161,361	6,456,938	432,553,406
2030	(6,002,370)	40,658,147	(7,494,825)	(34,815,050)	13,003,011	(17,359,000)	(28,406,050)	2,181,500	6,517,102	439,582,975
2031	(6,005,989)	39,667,591	(7,813,125)	(34,452,000)	11,918,882	(16,250,975)	(26,531,150)	2,147,057	6,414,203	413,892,902
2032	(6,076,113)	41,006,884	(7,908,300)	(34,774,175)	13,561,139	(17,854,700)	(29,359,850)	2,196,547	6,562,055	448,120,990
2033	(6,041,803)	43,228,225	(7,942,800)	(34,611,900)	13,146,077	(16,440,850)	(26,994,600)	2,323,967	6,942,713	463,719,440
2034	(6,071,272)	41,497,824	(7,981,350)	(34,688,400)	13,765,051	(17,873,775)	(29,401,050)	2,226,222	6,650,707	454,132,038
2035	(6,073,246)	40,744,743	(7,716,375)	(35,001,675)	13,023,394	(17,376,700)	(28,533,900)	2,173,878	6,494,330	438,423,446
Total	(224,044,419)	1,297,498,517	(271,612,498)	(1,407,153,015)	407,875,766	(657,459,378)	(1,120,162,901)	74,435,441	204,353,224	13,369,203,323

Table B-4

Annual Table A Amounts to Project Water

(Acre-Feet)

Calendar Year	North Bay Area			South Bay Area[a]				Central Coastal Area		
	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	6,215	38,986	45,201
1998	11,710	38,710	50,420	46,000	42,000	100,000	188,000	6,215	38,986	45,201
1999	15,850	39,170	55,020	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2000	16,325	39,620	55,945	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2001	20,725	45,836	66,561	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2002	21,100	46,296	67,396	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2003	21,475	46,756	68,231	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2004	21,850	47,206	69,056	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2005	22,225	47,256	69,481	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2006	22,550	47,306	69,856	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2007	22,875	47,356	70,231	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2008	23,200	47,406	70,606	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2009	23,525	47,456	70,981	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2010	23,850	47,506	71,356	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2011	24,175	47,556	71,731	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2012	24,500	47,606	72,106	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2013	24,775	47,656	72,431	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2014	25,150	47,706	72,856	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2015	25,825	47,756	73,581	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2016	26,450	47,756	74,206	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2017	27,075	47,756	74,831	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2018	27,700	47,756	75,456	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2019	28,325	47,756	76,081	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2020	28,925	47,756	76,681	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2021	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2022	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2023	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2024	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2025	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2026	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2027	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2028	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2029	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2030	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2031	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2032	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2033	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2034	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2035	29,025	47,756	76,781	78,400	42,000	100,000	220,400	25,000	45,486	70,486
Total	1,048,440	2,049,856	3,098,296	3,649,807	2,459,248	6,510,783	12,619,838	1,189,430	2,218,494	3,407,924

[a]Table A quantities for the South Bay Area were supplied by non-Project water for the period June 1962 through November 1967. Actual delivery quantities of Project water are shown for 1967.

[b]District's Table A quantities exclude amounts during the period 1968 through 1987 that were supplied by non-Project water.

Table B-4

Annual Table A Amounts to Project Water

(Acre-Feet)

Calendar Year	San Joaquin Valley Area								
			Kern County Water Agency						
	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	3,770	9,548	867,118
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	820,246	933,646	3,700	5,100	97,200	1,091,946
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	28,850	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,313,450
1991	53,411	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,338,011
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	53,370	3,000	134,600	982,460	1,117,060	4,000	5,700	118,500	1,301,630
1997	53,370	3,000	134,600	978,130	1,112,730	4,000	5,700	118,500	1,297,300
1998	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
1999	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2000	53,370	3,000	134,600	886,130	1,020,730	4,000	5,700	118,500	1,205,300
2001	53,370	3,000	134,600	866,349	1,000,949	4,000	5,700	118,500	1,185,519
2002	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2003	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2004	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2005	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2006	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2007	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2008	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2009	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2010	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2011	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2012	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2013	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2014	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2015	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2016	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2017	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2018	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2019	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2020	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2021	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2022	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2023	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2024	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2025	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2026	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2027	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2028	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2029	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2030	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2031	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2032	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2033	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2034	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2035	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
Total	3,361,478	199,000	7,693,900	52,342,311	60,036,211	233,900	352,822	6,659,773	70,843,184

Table B-4

Annual Table A Amounts 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	75,800	17,300	102,600	28,800
1999	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2000	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2001	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2002	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2003	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2004	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2005	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2006	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2007	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2008	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2009	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2010	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2011	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2012	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2013	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2014	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2015	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2016	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2017	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2018	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2019	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2020	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2021	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2022	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2023	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2024	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2025	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2026	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2027	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2028	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2029	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2030	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2031	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2032	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2033	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2034	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2035	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
Total	7,432,000	4,545,098	1,286,111	321,556	2,107,600	127,210	3,760,043	1,127,720	5,909,177	1,641,322

Table B-4

Annual Table A Amounts to Project Water

(Acre-Feet)

Calendar Year	Southern California Area				Feather River Area					
	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	2,701,164
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	3,257,736
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	4,079,666
1991	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,080	11,880	0	4,126,567
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	0	2,011,500	20,000	2,492,900	9,600	1,200	1,300	12,100	0	4,111,341
1997	0	2,011,500	20,000	2,492,900	9,600	1,200	1,350	12,150	0	4,084,866
1998	0	2,011,500	20,000	2,517,900	9,600	1,200	1,400	12,200	0	4,086,021
1999	2,000	2,011,500	20,000	2,519,900	9,600	2,890	1,450	13,940	0	4,119,646
2000	3,000	2,011,500	20,000	2,565,900	9,600	2,890	1,510	14,000	0	4,121,631
2001	4,000	2,011,500	20,000	2,566,900	9,600	3,500	1,570	14,670	0	4,124,136
2002	4,000	2,011,500	20,000	2,569,900	9,600	3,500	1,630	14,730	0	4,125,031
2003	5,000	2,011,500	20,000	2,570,900	9,600	3,500	1,690	14,790	0	4,126,926
2004	6,000	2,011,500	20,000	2,571,900	9,600	3,500	1,750	14,850	0	4,128,811
2005	6,500	2,011,500	20,000	2,572,400	9,600	27,500	1,810	38,910	0	4,153,796
2006	7,000	2,011,500	20,000	2,572,900	9,600	27,500	1,880	38,980	0	4,154,741
2007	7,500	2,011,500	20,000	2,573,400	9,600	27,500	1,950	39,050	0	4,155,686
2008	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,020	39,120	0	4,165,931
2009	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,090	39,190	0	4,166,376
2010	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,160	39,260	0	4,166,821
2011	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,240	39,340	0	4,167,276
2012	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,320	39,420	0	4,167,731
2013	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,410	39,510	0	4,168,146
2014	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,500	39,600	0	4,168,661
2015	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,600	39,700	0	4,169,486
2016	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,170,211
2017	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,170,836
2018	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,171,461
2019	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,086
2020	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,686
2021	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2022	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2023	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2024	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2025	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2026	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2027	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2028	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2029	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2030	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2031	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2032	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2033	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2034	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2035	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
Total	747,200	112,360,272	988,000	142,353,309	449,900	905,180	112,820	1,467,900	0	233,790,451

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	Grizzly Valley Pipeline PC FC&WCD (1)	North Bay Aqueduct Reach 1 SCWA (2)	North Bay Aqueduct Reach 3A SCWA (3)	North Bay Aqueduct Reach 3B NC FC&WCD[a] (4)	North Bay Aqueduct Total (5)	South Bay Aqueduct Reach 1 ACWD (6)	South Bay Aqueduct Reach 1 AC FC&WCD (7)	South Bay Aqueduct Reach 2 AC FC&WCD (8)	South Bay Aqueduct Reach 4 AC FC&WCD (9)	South Bay Aqueduct Reach 5 ACWD (10)	South Bay Aqueduct Reach 5 AC FC&WCD (11)	South Bay Aqueduct Reach 6 AC FC&WCD (12)	South Bay Aqueduct Reach 7 ACWD (13)
1962	0	0	0	0	0	8,412	141	353	0	0	0	0	0
1963	0	0	0	0	0	10,914	814	917	0	0	0	0	0
1964	0	0	0	0	0	19,238	248	1,425	0	0	0	0	0
1965	0	0	0	0	0	15,280	637	1,830	138	0	0	0	1,127
1966	0	0	0	0	0	0	2,475	2,537	499	0	0	0	14,864
1967	0	0	0	0	0	0	1,527	2,391	862	0	0	0	12,882
1968	0	0	0	1,214	1,214	0	1,608	3,799	721	0	5	0	24,817
1969	0	0	0	2,687	2,687	0	1,165	3,459	1,851	0	160	0	813
1970	70	0	0	3,618	3,618	0	1,345	4,558	3,182	0	164	0	0
1971	64	0	0	2,521	2,521	0	546	1,908	2,403	0	160	0	5,961
1972	505	0	0	3,647	3,647	0	1,066	4,605	2,041	1,489	2,777	0	26,182
1973	679	0	0	3,792	3,792	0	430	1,123	1,193	0	229	0	2,521
1974	648	0	0	4,870	4,870	0	177	0	975	0	162	0	0
1975	405	0	0	6,840	6,840	0	137	1,783	1,864	0	120	714	393
1976	382	0	0	7,122	7,122	0	265	7,204	3,384	0	817	5,461	13,774
1977	303	0	0	8,226	8,226	0	210	4,491	2,213	0	524	5,206	11,284
1978	278	0	0	6,034	6,034	0	422	2,426	3,754	0	2,034	2,348	854
1979	329	0	0	6,561	6,561	0	197	4,283	5,567	0	3,937	5,341	3,430
1980	295	0	0	6,707	6,707	0	77	3,883	6,686	1,508	0	6,144	2,824
1981	355	0	0	9,001	9,001	0	1,250	4,648	5,273	5,752	1,157	7,262	7,595
1982	305	0	0	1,213	1,213	0	473	3,043	4,406	0	630	4,571	1,776
1983	262	0	0	2,287	2,287	0	179	2,712	1,714	0	50	111	0
1984	272	0	0	2,923	2,923	0	165	4,219	2,219	0	55	126	0
1985	254	0	0	4,039	4,039	0	213	5,199	2,060	0	63	7,537	11,203
1986	317	1,400	0	3,519	4,919	0	200	6,052	2,062	0	212	2,083	5,311
1987	452	1,550	0	7,693	9,243	0	218	7,538	2,372	0	285	12,993	15,488
1988	523	1	9,725	5,392	15,118	0	222	8,302	4,681	0	189	12,436	24,259
1989	486	10	17,246	6,195	23,451	0	222	8,051	6,562	0	418	10,974	17,340
1990	548	3,275	15,856	6,940	26,071	0	256	8,160	8,347	0	593	15,678	22,149
1991	420	3,117	3,855	1,380	8,352	0	162	3,676	3,269	0	359	1,945	9,155
1992	485	5,553	9,220	4,001	18,774	0	217	5,177	2,188	0	154	6,933	12,621
1993	444	14,709	14,471	5,286	34,466	0	190	5,843	8,430	1,650	5,964	13,208	1,792
1994	492	10,343	14,913	6,792	32,048	0	132	4,482	5,427	0	822	9,679	3,379
1995	308	5,452	15,893	5,182	26,527	0	278	6,236	7,195	0	955	15,427	21
1996	360	12,930	17,069	4,893	34,892	0	277	6,151	5,119	0	388	6,968	1,871
1997	231	16,029	17,501	4,341	37,871	0	138	6,647	6,501	1,323	1,582	12,654	1,876
1998	0	11,562	18,204	5,359	35,125	0	106	3,748	2,493	0	1,277	8,347	3,817
1999	0	15,191	19,562	5,304	40,057	0	148	3,048	8,227	0	1,444	13,133	5,326
2000	0	15,490	21,525	4,958	41,973	0	110	7,464	9,761	0	946	16,396	4,498
2001	0	14,849	19,737	7,094	41,680	0	105	7,822	4,879	0	3,010	13,593	0
2002	0	18,841	19,719	6,875	45,435	0	93	7,758	11,619	0	2,446	17,058	5,112
2003	0	19,060	12,938	16,563	48,561	0	211	8,589	24,431	0	4,801	16,923	8,247
2004	1,750	27,106	20,100	19,245	66,451	0	255	15,213	34,490	0	2,602	16,527	6,810
2005	1,810	27,156	20,100	19,923	67,179	0	325	15,672	33,974	0	2,652	17,709	4,962
2006	1,880	27,206	20,100	20,648	67,954	0	375	16,259	33,409	0	2,552	18,666	4,000
2007	1,950	27,256	20,100	21,433	68,789	0	375	16,717	33,132	0	2,552	19,706	4,000
2008	1,950	27,306	20,100	21,754	69,160	0	375	15,717	33,132	0	2,552	19,706	4,000
2009	1,950	27,356	20,100	22,081	69,537	0	375	15,717	33,132	0	2,552	19,706	4,000
2010	1,950	27,406	20,100	22,412	69,918	0	375	15,717	33,132	0	2,552	19,706	4,000
2011	1,950	27,456	20,100	22,748	70,304	0	375	15,717	33,132	0	2,552	19,706	4,000
2012	1,950	27,506	20,100	23,089	70,695	0	375	15,717	33,132	0	2,552	19,706	4,000
2013	1,950	27,556	20,100	23,436	71,092	0	375	15,717	33,132	0	2,552	19,706	4,000
2014	1,950	27,606	20,100	23,787	71,493	0	375	15,717	33,132	0	2,552	19,706	4,000
2015	1,950	27,656	20,100	24,144	71,900	0	375	15,717	33,132	0	2,552	19,706	4,000
2016	1,950	27,656	20,100	24,606	72,362	0	375	15,717	33,132	0	2,552	19,706	4,000
2017	1,950	27,656	20,100	24,874	72,630	0	375	15,717	33,132	0	2,552	19,706	4,000
2018	1,950	27,656	20,100	25,247	73,003	0	375	15,717	33,132	0	2,552	19,706	4,000
2019	1,950	27,656	20,100	25,626	73,382	0	375	15,717	33,132	0	2,552	19,706	4,000
2020	1,950	27,656	20,100	26,010	73,766	0	375	15,717	33,132	0	2,552	19,706	4,000
2021	1,950	27,656	20,100	26,400	74,156	0	375	15,717	33,132	0	2,552	19,706	4,000
2022	1,950	27,656	20,100	26,796	74,552	0	375	15,717	33,132	0	2,552	19,706	4,000
2023	1,950	27,656	20,100	27,198	74,954	0	375	15,717	33,132	0	2,552	19,706	4,000
2024	1,950	27,656	20,100	27,606	75,362	0	375	15,717	33,132	0	2,552	19,706	4,000
2025	1,950	27,656	20,100	28,020	75,776	0	375	15,717	33,132	0	2,552	19,706	4,000
2026	1,950	27,656	20,100	28,441	76,197	0	375	15,717	33,132	0	2,552	19,706	4,000
2027	1,950	27,656	20,100	28,867	76,623	0	375	15,717	33,132	0	2,552	19,706	4,000
2028	1,950	27,656	20,100	29,025	76,781	0	375	15,717	33,132	0	2,552	19,706	4,000
2029	1,950	27,656	20,100	29,025	76,781	0	375	15,717	33,132	0	2,552	19,706	4,000
2030	1,950	27,656	20,100	29,025	76,781	0	375	15,717	33,132	0	2,552	19,706	4,000
2031	1,950	27,656	20,100	29,025	76,781	0	375	15,717	33,132	0	2,552	19,706	4,000
2032	1,950	27,656	20,100	29,025	76,781	0	375	15,717	33,132	0	2,552	19,706	4,000
2033	1,950	27,656	20,100	29,025	76,781	0	375	15,717	33,132	0	2,552	19,706	4,000
2034	1,950	27,656	20,100	29,025	76,781	0	375	15,717	33,132	0	2,552	19,706	4,000
2035	1,950	27,656	20,100	29,025	76,781	0	375	15,717	33,132	0	2,552	19,706	4,000
Total	72,462	1,051,054	890,634	1,007,660	2,949,348	53,844	30,882	691,477	1,239,269	11,722	120,703	875,625	416,334

[a]For the period 1968 through 1987, deliveries are non-Project water pumped through an interim facility.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	South Bay Aqueduct[b] (continued)			California Aqueduct												
				North San Joaquin Division					San Luis Division							
	Reach 8	Reach 9		Reach 2A					Reach 3				Reach 4			
											KCWA		KCWA			
Calendar Year	ACWD (14)	SCVWD (15)	Total (16)	Reach 1 AC FC&WCD (17)	OFWD[c] (18)	KCWA (M&I) (19)	TLBWSD (20)	SCVWD (21)	MWDSC (22)	DRWD (23)	(M&I) (24)	(Ag) (25)	(M&I) (26)	(Ag) (27)	DRWD (28)	TLBWSD (29)
1962	0	0	8,906	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	12,645	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	20,911	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	15,014	34,026	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	34,538	54,913	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	39,101	56,763	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	70,105	101,055	0	3,084	0	0	0	0	0	0	0	0	0	0	0
1969	0	62,264	69,712	0	3,016	0	0	0	0	0	0	0	0	0	0	0
1970	0	80,311	89,560	0	5,911	0	0	0	0	0	0	0	0	0	0	0
1971	0	87,606	98,584	0	7,212	0	0	0	0	0	0	0	0	0	0	0
1972	0	100,266	138,426	0	8,166	0	0	0	0	0	0	0	0	0	0	0
1973	0	88,582	94,078	0	3,214	0	0	0	0	0	0	0	0	0	0	0
1974	4	88,000	89,318	0	3,471	0	0	0	0	0	0	0	0	0	0	0
1975	593	88,000	93,604	0	3,576	0	0	0	0	0	0	0	0	0	0	0
1976	7,526	88,000	126,431	0	4,112	0	0	0	0	0	0	0	0	0	0	0
1977	7,556	76,220	107,704	0	1,472	0	0	0	0	0	0	0	0	0	0	0
1978	5,009	95,727	112,574	0	3,906	0	0	0	0	0	0	0	0	0	0	0
1979	7,444	91,991	122,190	0	6,149	0	0	0	0	0	0	0	0	0	0	0
1980	6,702	88,000	115,824	0	5,700	0	0	0	0	0	0	0	0	0	0	0
1981	8,570	88,000	129,507	0	4,300	0	0	0	0	0	0	0	0	0	0	0
1982	4,540	88,000	107,439	0	3,838	0	0	0	0	0	0	0	0	0	0	0
1983	3,157	86,733	94,656	0	3,822	0	0	0	0	0	0	0	0	0	0	0
1984	3,338	88,000	98,122	0	5,700	0	0	0	0	0	0	0	0	0	0	0
1985	7,813	88,000	122,088	0	5,433	0	0	0	0	0	0	0	0	0	0	0
1986	7,068	88,000	110,988	0	5,107	0	0	0	0	0	0	0	0	0	0	0
1987	9,902	88,000	136,796	0	5,625	0	0	0	0	0	0	0	0	0	0	0
1988	9,205	87,961	147,255	0	4,412	0	0	0	0	0	0	0	0	0	0	0
1989	8,702	90,000	142,269	0	6,091	0	300	0	0	602	0	0	0	0	1,898	0
1990	9,554	91,800	156,537	0	2,922	0	0	200	0	0	0	0	0	1,500	0	1,500
1991	3,493	28,200	50,259	0	141	0	0	0	0	0	0	0	0	0	0	0
1992	6,532	42,839	76,661	0	2,239	0	0	0	0	0	0	0	0	0	0	0
1993	6,829	62,065	105,971	0	2,858	0	0	0	0	0	0	0	0	0	0	0
1994	19,532	57,115	100,568	0	3,071	0	0	0	0	0	0	0	0	0	0	0
1995	17,772	28,756	76,640	0	5,169	0	0	0	0	0	0	0	0	0	14,446	0
1996	11,591	44,850	77,215	0	4,904	0	0	0	0	0	0	0	1,125	0	0	0
1997	10,864	60,601	102,186	0	5,238	0	0	0	11,100	0	0	0	0	0	0	0
1998	11,478	39,610	70,876	0	4,401	0	0	0	(11,100)	0	0	0	0	0	0	0
1999	16,226	52,945	100,497	0	4,871	0	0	0	0	0	0	0	0	1,300	0	1,300
2000	18,100	78,258	135,533	0	4,508	0	0	0	0	0	3,320	68,960	1,517	0	0	0
2001	18,004	47,922	95,335	0	2,212	638	0	0	0	0	14,621	125,621	0	0	0	0
2002	20,616	58,875	123,577	0	4,101	773	0	0	0	0	21,050	50,346	0	0	0	0
2003	14,257	89,945	167,404	0	4,818	1,033	0	0	0	0	0	0	0	0	0	0
2004	24,190	100,000	200,087	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2005	29,538	100,000	204,832	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2006	30,500	100,000	205,761	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2007	30,500	100,000	206,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2008	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2009	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2010	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2011	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2012	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2013	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2014	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2015	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2016	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2017	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2018	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2019	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2020	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2021	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2022	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2023	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2024	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2025	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2026	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2027	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2028	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2029	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2030	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2031	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2032	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2033	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2034	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
2035	30,500	100,000	205,982	50	5,700	0	0	0	0	0	2,118	0	0	0	0	0
Total	1,250,705	5,970,200	10,660,761	1,600	337,170	2444	300	200	0	602	106,767	244,927	2,642	21,187	16,344	2,800

[b] For the period June 1962 through November 1967, deliveries were supplied by non-Project water.
[c] Includes 425 AF of 1988 advance Table A amount and 141 AF of 1992 advance Table A amount.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)																	
	San Luis Division (continued)																	
	Reach 5							Reach 6				Reach 7						
		KCWA						KCWA				KCWA						
Calendar Year	DRWD (30)	(M&I) (31)	(Ag) (32)	MWDSC (33)	CLWA (34)	TLBWSD (35)	OFWD (36)	(M&I) (37)	(Ag) (38)	MWDSC (39)	TLBWSD (40)	(M&I) (41)	(Ag) (42)	CLWA (43)	DRWD (44)	TLBWSD (45)	MWD (46)
1962	0	0	0	0	0	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	0	0	0	0	0
1964	0	0	0	0	0	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	0	0	0	0	0
1966	0	0	0	0	0	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	0	0	0	0	0
1968	0	0	0	0	0	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	0	0	0	0	0
1970	0	0	0	0	0	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	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	1,550	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	18,831	0	0	0	0	0	8,260	0	0	0	5,262	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	10,823	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	27,200	0	28,200	0	5,095	1,624	2,000	0	31,200	0	0	18,157	10,043	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	2,100	0	0	0
1995	0	0	21,776	0	0	0	0	0	3,932	0	0	10,875	20,595	0	0	0	0
1996	0	1,125	81,507	0	0	4,000	0	0	0	0	0	3,424	69,704	0	0	0	0
1997	0	9,080	154,940	0	0	3,500	0	0	0	0	0	27,079	32,463	0	0	0	0
1998	0	0	0	0	0	0	0	20,400	33,340	0	3,000	3,998	62,081	0	200	0	0
1999	0	0	0	21,500	0	8,000	0	0	33,776	11,000	23,000	7,923	19,500	0	0	4,470	500
2000	0	8,130	57,647	0	0	0	0	1,457	35,847	0	3,000	0	45,137	1,200	0	20,500	20,000
2001	0	0	0	0	0	2,457	0	0	0	0	600	0	0	0	0	0	0
2002	0	0	0	0	0	3,000	0	0	0	0	0	0	0	0	0	12,067	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	38,023	18,335	362,901	21,500	5,095	24,131	2,000	21,857	146,355	11,000	29,600	71,456	264,785	3,300	200	37,037	20,500

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)													
	South San Joaquin Division													
	Reach 8C						*Reach 8D*							
	KCWA						*KCWA*							
Calendar Year	*(M&I) (47)*	*(Ag) (48)*	*DRWD (49)*	*TLBWSD (50)*	*EWSID (51)*	*CK (52)*	*(M&I) (53)*	*(Ag) (54)*	*DRWD (55)*	*CK (56)*	*SBC FC&WCD (57)*	*SGVMWD (58)*	*SLOC FC&WCD (59)*	*TLBWSD (60)*
1962	0	0	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	0	0
1964	0	0	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	0	0
1966	0	0	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	0	0
1968	0	0	0	25,100	1,978	900	0	0	26,360	0	0	0	0	0
1969	0	0	0	7,081	56	100	0	0	31,375	0	0	0	0	0
1970	0	0	0	0	3,942	0	0	0	40,407	0	0	0	0	3,408
1971	0	0	0	80,906	5,990	3,700	0	0	41,053	0	0	0	0	41,579
1972	0	0	0	144,843	5,795	1,400	0	0	42,443	0	0	0	0	113,550
1973	0	0	0	26,317	3,000	1,500	0	1,500	22,057	0	0	0	0	24,147
1974	0	0	0	32,603	3,000	1,500	0	0	33,390	0	0	0	0	39,686
1975	0	0	0	41,536	3,000	1,600	0	0	40,555	0	0	0	0	44,722
1976	0	0	0	26,595	3,000	1,600	0	0	41,421	0	0	0	0	32,216
1977	0	0	0	12,984	738	1,530	0	0	11,153	0	0	0	0	5,097
1978	0	0	0	3,934	454	2,070	0	0	51,747	0	0	0	0	8,119
1979	0	0	0	74,758	1,739	2,000	0	0	38,544	0	0	0	0	80,363
1980	0	0	0	35,140	894	2,200	0	0	41,000	0	0	0	0	40,304
1981	0	0	0	50,888	5,859	2,300	0	0	41,000	0	0	0	0	32,550
1982	0	0	0	4,405	361	1,536	0	0	41,000	214	0	0	0	14,146
1983	0	0	0	1,001	0	3,550	0	0	42,900	0	0	0	0	5
1984	0	0	0	3,677	0	3,100	0	0	45,100	0	0	0	0	2,066
1985	0	0	0	68,638	5,197	3,400	0	0	46,251	0	0	0	0	41,153
1986	0	0	0	40,017	1,170	3,700	0	0	50,249	0	0	0	0	39,338
1987	0	0	0	30,359	2,525	4,000	0	0	46,288	0	0	0	0	62,725
1988	0	0	0	46,281	3,475	4,000	0	0	47,994	0	0	0	0	48,035
1989	0	0	2,391	63,703	3,000	4,000	0	0	52,158	0	0	0	0	63,947
1990	0	0	0	23,504	1,279	2,000	0	161	36,296	0	0	0	0	32,066
1991	0	0	0	1,697	221	0	0	0	927	0	0	0	0	483
1992	0	0	280	15,982	1,354	1,806	0	0	12,667	0	0	0	0	30,746
1993	0	0	0	57,112	2,741	4,000	0	0	23,221	0	0	0	0	65,732
1994	0	0	0	21,510	1,666	2,116	0	1,726	28,793	0	0	0	0	40,852
1995	989	10,527	0	40,934	1,631	4,000	2,959	27,270	45,240	0	0	0	0	57,435
1996	0	1,500	95	84,130	1,868	4,000	0	1,455	52,722	0	0	0	100	148,745
1997	0	1,500	0	9,467	0	0	0	0	57,496	0	0	0	100	9,402
1998	0	1,000	90	8,956	542	15	0	20,000	49,435	0	0	0	0	8,721
1999	0	400	86	90,334	3,176	4,000	0	9,000	58,290	0	0	0	0	162,631
2000	0	400	166	65,098	1,799	3,600	0	0	57,920	0	0	0	0	119,696
2001	0	0	14	23,300	1,360	1,560	0	6,089	25,169	0	0	4,174	0	57,050
2002	0	0	0	34,014	1,405	2,849	0	7,522	42,254	0	745	0	0	47,426
2003	0	0	0	43,249	2,887	3,634	0	363	53,543	0	0	0	0	62,342
2004	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2005	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2006	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2007	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2008	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2009	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2010	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2011	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2012	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2013	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2014	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2015	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2016	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2017	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2018	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2019	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2020	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2021	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2022	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2023	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2024	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2025	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2026	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2027	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2028	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2029	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2030	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2031	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2032	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2033	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2034	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
2035	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	0	0	66,916
Total	989	15,327	3,122	2,767,605	173,102	211,266	2,959	75,086	3,253,394	214	745	4,174	200	3,721,795

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 9				Reach 10A										Reach 11B		
		KCWA				KCWA			AC						KCWA		
Calendar Year	DRWD (61)	(M&I) (62)	(Ag) (63)	TLBWSD (64)	MWDSC (65)	(M&I) (66)	(Ag) (67)	DRWD (68)	FC&WCD (69)	CLWA (70)	SCVWD (71)	ACWD (72)	MWDSC (73)	TLBWSD (74)	(M&I) (75)	(Ag) (76)	DRWD (77)
1962	0	0	0	0	0	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	0	0	0	0	0
1964	0	0	0	0	0	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	0	0	0	0	0
1966	0	0	0	0	0	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	0	0	0	0	0
1968	0	0	30,951	0	0	0	0	0	0	0	0	0	0	0	0	24,776	0
1969	0	0	24,489	0	0	0	0	0	0	0	0	0	0	2,842	0	64,682	0
1970	0	0	46,114	1,855	0	0	158	0	0	0	0	0	0	4,315	0	72,279	0
1971	0	0	58,356	0	0	0	9,973	0	0	0	0	0	0	0	0	63,773	0
1972	0	0	75,464	0	0	0	5,876	0	0	0	0	0	0	0	0	72,358	0
1973	0	0	54,583	0	0	0	22,948	0	0	0	0	0	0	0	0	67,544	0
1974	0	0	63,814	0	0	10,019	22,719	0	0	0	0	0	0	0	0	87,476	0
1975	0	0	50,021	0	0	2,791	72,121	0	0	0	0	0	0	0	0	85,675	0
1976	0	0	53,465	0	0	74	50,444	0	0	0	0	0	0	0	0	85,067	0
1977	0	0	24,668	0	0	201	34,451	0	0	0	0	0	0	0	3,981	29,603	0
1978	0	0	72,231	0	0	0	161,889	0	0	0	0	0	0	0	0	88,753	0
1979	0	0	74,524	0	0	285	153,245	0	0	0	0	0	0	0	484	108,379	0
1980	0	0	79,946	0	0	3,780	131,836	0	0	0	0	0	0	0	3,112	103,207	0
1981	0	0	76,508	0	0	341	133,500	0	0	0	0	0	0	0	494	104,395	0
1982	0	0	76,877	0	0	4,700	164,832	0	0	0	0	0	0	0	798	99,081	0
1983	0	2,217	84,573	0	0	0	146,493	0	0	0	0	0	0	0	2,069	94,117	0
1984	0	4,100	85,732	0	0	6,910	150,302	0	0	0	0	0	0	0	2,349	124,819	0
1985	0	0	67,696	0	0	6,495	153,473	0	0	0	0	0	0	0	10,666	118,646	0
1986	0	0	79,943	0	0	5,065	198,099	0	0	0	0	0	0	0	8,673	124,836	0
1987	0	0	97,732	0	0	900	226,521	0	0	0	0	0	0	0	13,074	111,877	0
1988	0	1,100	83,858	0	0	9,529	212,495	0	0	0	0	0	0	0	13,509	114,031	0
1989	0	0	91,134	0	0	21,038	251,979	0	0	0	0	0	0	0	9,986	127,058	0
1990	0	0	83,108	0	0	25,189	47,472	0	0	0	0	0	0	0	9,319	104,107	0
1991	0	13,683	601	0	0	1,142	6,820	0	0	0	0	0	0	0	6,099	118	0
1992	0	28	40,183	0	0	3,685	89,390	0	0	0	0	0	0	0	7,419	35,093	0
1993	197	5,945	53,597	0	0	775	233,862	0	0	0	0	0	44,496	0	2,696	72,645	0
1994	0	0	44,994	0	0	5,227	126,792	0	0	0	0	0	0	0	3,506	71,202	0
1995	0	0	64,076	0	0	366	229,448	0	0	0	0	0	50,000	0	1,154	97,072	0
1996	0	2,236	89,291	0	0	6,666	199,854	0	0	0	45,000	6,200	95,000	0	1,185	96,250	0
1997	4,900	0	72,013	0	0	3,577	157,385	900	0	0	35,000	10,000	125,000	0	1,111	104,823	0
1998	0	0	57,530	0	0	2,603	163,587	0	1,970	0	23,800	3,780	39,500	0	1,311	72,646	0
1999	0	0	72,734	0	0	1,657	190,787	0	22,910	0	30,000	16,100	75,850	0	2,127	92,262	0
2000	0	2,000	71,562	0	0	7,672	274,000	0	23,940	0	23,730	13,380	9,208	0	3,793	89,623	1,500
2001	0	0	45,335	0	0	6,396	93,284	0	5,000	0	0	0	0	0	676	72,693	0
2002	0	0	60,957	0	0	7,645	163,998	0	14,287	24,000	3,311	2,083	0	0	1,457	91,123	0
2003	0	0	95,398	0	0	152	203,959	0	6,500	0	0	18,800	0	0	1,733	96,516	0
2004	0	0	124,000	0	0	150	219,060	0	9,863	0	0	11,000	0	0	2,000	106,727	0
2005	0	0	124,000	0	0	150	219,060	0	8,618	0	0	7,500	0	0	2,000	106,727	0
2006	0	0	124,000	0	0	150	219,060	0	7,689	0	0	7,500	0	0	2,000	106,727	0
2007	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2008	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2009	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2010	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2011	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2012	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2013	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2014	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2015	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2016	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2017	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2018	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2019	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2020	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2021	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2022	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2023	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2024	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2025	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2026	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2027	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2028	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2029	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2030	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2031	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2032	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2033	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2034	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
2035	0	0	124,000	0	0	150	219,060	0	6,468	0	0	7,500	0	0	2,000	106,727	0
Total	5,097	31,309	6,272,058	1,855	-	149,680	11,493,912	900	288,349	24,000	160,841	313,843	439,054	7,157	176,781	6,483,869	1,500

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 12E				Reach 13B					Reach 14A		Reach 14B	
	KCWA				KCWA					KCWA		KCWA	
Calendar Year	(M&I) (78)	(Ag) (79)	DRWD (80)	MWDSC (81)	(M&I) (82)	Ag) (83)	MWDSC (84)	DRWD (85)	TLBWSD (86)	(M&I) (87)	(Ag) (88)	(M&I) (89)	(Ag) (90)
1962	0	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	0
1964	0	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	0
1966	0	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	0
1968	0	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	0
1970	0	9,279	0	0	0	4,891	0	0	0	0	0	0	3
1971	0	28,056	0	0	0	0	0	0	0	0	23,844	0	49,929
1972	0	62,342	0	0	0	17,388	0	0	0	0	26,621	0	77,034
1973	0	13,082	0	0	0	9,297	0	0	0	0	15,328	0	47,040
1974	2,651	4,248	0	0	8,038	4,246	0	0	0	0	7,794	0	32,356
1975	0	10,787	0	0	8,538	7,059	0	0	0	0	10,306	0	27,736
1976	37,519	20,555	0	0	5,626	8,855	0	0	0	0	268	0	35,296
1977	20,280	1,737	0	0	0	5,024	0	0	0	0	8,299	0	13,539
1978	47,133	15,011	0	0	21,773	7,601	0	0	0	0	34,029	0	72,351
1979	50,740	61,567	0	0	5,663	17,766	0	0	0	3,012	27,356	0	59,413
1980	32,039	22,252	0	0	0	22,515	0	0	0	4,312	16,876	0	40,513
1981	59,917	58,470	0	0	7,844	14,037	0	0	0	4,511	13,007	8	42,753
1982	36,139	75,587	0	0	0	25,553	0	0	0	3,735	24,240	184	57,739
1983	0	10,950	0	0	0	3,491	0	0	0	1,168	20,302	0	57,922
1984	63,941	39,929	0	0	12,117	26,178	0	0	0	137	35,369	10	79,179
1985	69,839	84,117	0	0	0	67,711	0	0	0	206	33,103	0	72,855
1986	62,109	51,540	0	0	0	66,551	0	0	0	180	26,384	0	70,864
1987	95,297	86,223	0	0	5,609	40,374	0	0	0	610	30,098	9	67,710
1988	86,390	123,249	0	0	9,298	47,167	0	0	0	622	32,778	19	75,968
1989	83,965	146,544	0	0	5,504	57,114	0	0	0	721	29,292	7	82,201
1990	82,164	38,973	0	0	7,645	20,423	0	0	0	673	26,800	13	81,076
1991	8,842	303	0	0	0	0	0	0	0	768	0	0	
1992	47,181	57,048	0	0	789	17,449	0	0	0	673	16,238	464	41,143
1993	84,822	285,554	0	5,504	12,798	88,157	0	0	0	629	17,832	0	62,493
1994	66,188	77,839	0	0	2,494	33,148	0	0	0	2,513	16,760	3,000	54,011
1995	107,130	181,097	1,000	0	8,751	110,685	0	0	3,500	3	21,234	0	67,391
1996	89,257	134,138	4,131	0	28,063	64,849	0	0	0	0	26,978	0	85,936
1997	32,061	128,329	8,012	1,486	43,803	49,312	0	0	0	0	23,035	0	79,790
1998	28,258	88,998	5,925	24,234	29,444	40,085	5,500	0	0	0	15,706	0	58,132
1999	110,161	255,343	1,321	62,162	12,969	92,998	0	0	0	0	21,153	0	67,576
2000	71,306	86,702	953	159,731	4,066	98,136	0	0	0	0	19,264	0	70,585
2001	20,226	33,335	0	0	4,044	29,824	0	1,733	0	1	12,451	0	49,602
2002	32,464	102,182	0	0	15,951	55,493	0	736	0	0	11,161	0	52,762
2003	101,363	126,227	0	0	7,651	41,319	0	0	0	0	14,438	0	53,871
2004	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2005	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2006	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2007	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2008	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2009	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2010	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2011	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2012	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2013	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2014	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2015	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2016	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2017	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2018	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2019	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2020	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2021	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2022	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2023	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2024	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2025	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2026	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2027	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2028	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2029	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2030	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2031	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2032	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2033	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2034	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
2035	105,092	159,962	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000
Total	4,992,326	7,640,377	21,342	253,117	505,278	2,532,296	5,500	2,469	3,500	24,474	1,240,744	3,714	3,806,769

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	South San Joaquin Division (continued)							Mojave Division				
	Reach 14C		Reach 15A		Reach 16A			Reach 18A	Reach 19			
	KCWA		KCWA		KCWA							
	(M&I) (91)	(Ag) (92)	(M&I) (93)	(Ag) (94)	(M&I) (95)	(Ag) (96)	AVEKWA (97)	AVEKWA (98)	MWA (99)	MWA (100)	AVEKWA (101)	AVEKWA (102)
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	24,187	0	3,552	0	0	0	0	0	0	0	0
1972	0	35,016	0	6,064	0	4,768	0	0	0	0	0	0
1973	0	19,043	0	19,916	0	1,961	0	0	0	0	0	0
1974	0	12,601	0	18,000	3,000	1,564	0	0	0	0	0	1,223
1975	0	12,783	0	35,420	3,200	9,867	0	0	0	0	0	7,622
1976	0	9,005	0	39,551	3,500	11,667	0	3,808	0	0	0	23,063
1977	0	3,757	0	6,158	3,420	685	0	1,231	0	0	0	8,927
1978	0	24,542	0	31,148	7,989	1,655	0	1,321	0	0	0	36,333
1979	0	22,372	0	38,602	2,813	15,808	0	2,098	0	0	0	49,910
1980	0	19,953	0	37,817	2,700	16,145	0	2,610	0	0	0	61,534
1981	7	18,729	0	39,033	2,636	18,156	0	2,340	0	0	0	65,690
1982	0	26,479	0	47,782	1,921	16,577	0	1,669	0	0	0	41,127
1983	0	26,613	0	37,426	1,400	17,907	0	43	0	0	0	26,377
1984	2	34,996	0	49,848	1,338	24,246	0	90	0	0	0	22,462
1985	0	31,758	0	44,078	1,309	16,820	0	8	0	0	0	23,440
1986	0	34,566	0	42,461	1,213	15,559	0	8	0	0	0	16,898
1987	10	31,019	0	34,748	1,665	10,170	0	0	0	0	0	15,958
1988	1	37,165	16	41,978	1,925	8,987	0	0	0	0	0	13,471
1989	5	37,800	2	43,239	2,668	8,649	0	0	0	0	0	18,007
1990	9	34,174	6	36,347	2,819	8,608	0	0	0	0	0	17,281
1991	0	0	0	0	2,588	343	2,000	0	0	0	0	728
1992	0	18,084	0	24,243	2,087	8,275	0	0	0	0	0	7,238
1993	0	28,103	0	27,997	2,494	9,167	0	0	0	0	0	13,340
1994	1,000	22,624	0	29,511	3,011	13,877	0	0	0	0	0	19,122
1995	0	31,285	0	26,134	3,188	15,042	0	0	0	0	0	20,222
1996	0	38,879	0	36,186	2,573	18,142	0	0	0	0	0	23,919
1997	0	33,512	0	36,281	3,997	17,048	0	0	64	0	0	28,834
1998	0	23,097	0	28,712	3,751	17,032	0	0	1,345	0	0	22,466
1999	0	31,489	0	36,801	3,316	24,071	0	0	1,439	0	0	30,944
2000	0	33,716	0	40,063	3,015	20,919	0	0	1,361	0	0	34,786
2001	0	23,557	0	31,192	2,308	13,062	0	0	1,385	0	0	18,710
2002	0	27,138	0	41,552	4,227	14,520	0	0	1,370	0	0	14,297
2003	0	23,978	0	35,259	3,301	18,351	0	0	1,474	0	0	20,260
2004	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	22,604
2005	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	23,734
2006	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	24,922
2007	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	26,170
2008	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2009	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2010	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2011	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2012	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2013	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2014	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2015	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2016	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2017	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2018	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2019	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2020	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2021	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2022	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2023	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2024	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2025	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2026	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2027	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2028	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2029	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2030	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2031	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2032	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2033	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2034	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
2035	0	26,500	0	36,000	4,840	18,600	0	0	1,500	0	0	38,329
Total	1,034	1,680,020	24	2,199,099	240,252	994,848	2,000	15,226	56,438	0	0	1,874,831

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)								
	Mojave Division (continued)								
	Reach 20A			Reach 20B		Reach 21		Reach 22A	Reach 22B
	PWD (103)	MWA (104)	AVEKWA (105)	PWD (106)	AVEKWA (107)	LCID (108)	PWD (109)	AVEKWA (110)	MWDSC[d] (111)
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	0	0	0	0	0	338	0	0	0
1973	0	0	0	0	0	290	0	0	(14,800)
1974	0	0	0	0	0	400	0	0	(16,400)
1975	0	0	420	0	0	520	0	0	(18,000)
1976	0	0	471	0	416	589	0	0	(19,600)
1977	0	0	773	0	271	111	0	0	
1978	0	0	5,549	0	934	208	0	0	(25,384)
1979	0	0	7,555	0	930	133	0	0	(25,063)
1980	0	0	7,605	0	655	191	0	3	(27,884)
1981	0	0	10,333	0	966	1,270	0	46	(31,105)
1982	0	0	7,313	0	8	0	0	174	(34,326)
1983	0	0	6,253	0	20	38	0	268	(37,547)
1984	0	0	9,558	0	2	1	0	550	(40,768)
1985	1,510	0	11,613	32	217	0	16	1,786	(43,989)
1986	3,041	0	13,808	45	0	163	10	1,735	(47,210)
1987	2,389	0	15,493	1,624	151	1,080	1,366	2,273	(50,931)
1988	366	0	17,117	1,261	281	419	143	3,210	(54,652)
1989	381	0	23,481	7,848	112	971	780	3,591	(58,373)
1990	282	0	25,843	8,292	84	1,747	34	3,988	(61,200)
1991	84	1,391	4,282	3,830	131	522	0	2,427	(18,360)
1992	185	1,310	18,518	3,850	650	251	0	3,859	(27,624)
1993	164	1,514	23,662	7,597	996	734	0	5,098	0
1994	299	1,399	25,250	8,119	124	1,098	0	4,657	0
1995	328	1,227	22,385	6,633	0	480	0	4,679	0
1996	354	1,316	26,979	11,080	0	494	0	5,458	0
1997	313	1,272	27,999	11,548	0	444	0	5,549	0
1998	195	0	25,985	8,557	0	404	0	4,468	0
1999	377	0	32,409	12,901	36	342	0	5,684	0
2000	0	0	37,819	9,060	80	0	0	10,892	0
2001	0	0	22,599	10,427	250	0	0	4,563	0
2002	0	0	36,311	8,796	1,662	0	0	5,404	0
2003	0	0	48,816	16,016	1,067	0	0	7,521	0
2004	351	0	50,221	20,949	920	2,300	0	7,562	0
2005	351	0	52,733	20,949	965	2,300	0	7,942	0
2006	351	0	55,369	20,949	1,012	2,300	0	8,340	0
2007	351	0	58,138	20,949	1,065	2,300	0	8,757	0
2008	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2009	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2010	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2011	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2012	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2013	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2014	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2015	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2016	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2017	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2018	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2019	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2020	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2021	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2022	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2023	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2024	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2025	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2026	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2027	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2028	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2029	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2030	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2031	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2032	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2033	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2034	0	0	88,822	21,300	1,569	2,300	0	12,680	0
2035	0	0	88,822	21,300	1,569	2,300	0	12,680	0
Total	11,672	9,429	3,219,676	817,712	57,937	86,838	2,349	475,524	(653,216)

[d] In accordance with the Exchange Agreement between the noted agencies, MWD 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 provides for compliance with provisions for the repayment of costs under the agreement in 1993 and after the exchange takes place in Reach 26A.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)								
	Mojave Division (continued)								Santa Ana Division
	Reach 22B					Reach 23	Reach 24		Reach 26A
	CVWD[e] (112)	AVEKWA[f] (113)	SCWA (114)	DWA[d] (115)	MWA (116)	MWA (117)	CLAWA (118)	MWA (119)	MWDSC[e] (120)
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	0	0	0	0	55	0	464	0	0
1973	5,800	0	0	9,000	0	0	389	0	444
1974	6,400	0	0	10,000	0	14	627	0	84,981
1975	7,000	0	0	11,000	0	0	825	0	169,960
1976	7,600	0	0	12,000	0	0	1,002	0	215,312
1977	0	0	0	0	22	58	1,109	0	64,823
1978	10,084	0	0	15,300	0	0	1,209	0	297,708
1979	10,063	0	0	15,000	4,000	0	1,260	0	260,903
1980	10,884	0	0	17,000	4,000	0	1,239	0	300,345
1981	12,105	0	0	19,000	4,000	0	1,485	0	395,678
1982	13,326	0	0	21,000	10,500	0	1,238	0	214,566
1983	14,547	0	0	23,000	0	0	911	0	175,288
1984	15,768	0	0	25,000	0	0	1,128	0	122,311
1985	16,989	0	0	27,000	0	0	1,422	0	147,599
1986	18,210	0	0	29,000	0	0	1,506	0	215,265
1987	19,431	214	0	31,500	17	0	1,849	0	175,012
1988	20,652	0	0	34,000	9	0	2,006	0	247,101
1989	21,873	89	0	36,500	0	200	2,170	0	326,217
1990	23,100	10	0	38,100	0	0	1,827	0	399,387
1991	6,930	0	0	11,430	0	0	849	2,032	107,182
1992	10,427	0	0	17,197	42	0	519	9,334	219,524
1993	0	0	0	0	0	0	439	10,000	98,291
1994	0	0	0	0	14,634	0	785	819	192,979
1995	0	0	0	0	7,495	0	409	0	107,299
1996	0	0	0	0	6,111	0	485	0	73,438
1997	0	0	0	0	9,038	0	651	0	157,215
1998	0	0	0	0	2,580	0	187	0	36,770
1999	0	0	0	0	6,705	0	1,132	0	139,752
2000	0	0	0	0	10,019	0	1,194	0	332,113
2001	0	0	0	0	3,048	0	1,057	0	253,720
2002	0	497	0	0	2,976	0	2,189	0	303,127
2003	0	0	0	0	17,094	0	2,400	0	612,606
2004	0	0	0	0	13,500	0	2,600	0	611,912
2005	0	0	0	0	18,500	0	2,800	0	611,912
2006	0	0	0	0	23,500	0	3,000	0	611,912
2007	0	0	0	0	28,500	0	3,150	0	611,912
2008	0	0	0	0	26,500	0	3,300	0	611,912
2009	0	0	0	0	30,500	0	3,450	0	611,912
2010	0	0	0	0	32,000	0	3,600	0	611,912
2011	0	0	0	0	33,500	0	3,750	0	611,912
2012	0	0	0	0	35,000	0	3,900	0	611,912
2013	0	0	0	0	36,500	0	4,050	0	611,912
2014	0	0	0	0	38,500	0	4,200	0	611,912
2015	0	0	0	0	40,500	0	4,350	0	611,912
2016	0	0	0	0	43,000	0	4,500	0	611,912
2017	0	0	0	0	45,500	0	4,650	0	611,912
2018	0	0	0	0	48,000	0	4,800	0	611,912
2019	0	0	0	0	51,500	0	4,925	0	611,912
2020	0	0	0	0	54,000	0	5,050	0	611,912
2021	0	0	0	0	55,600	0	5,150	0	611,912
2022	0	0	0	0	57,200	0	5,250	0	611,912
2023	0	0	0	0	59,000	0	5,325	0	611,912
2024	0	0	0	0	60,700	0	5,400	0	611,912
2025	0	0	0	0	62,500	0	5,450	0	611,912
2026	0	0	0	0	64,300	0	5,500	0	611,912
2027	0	0	0	0	66,200	0	5,550	0	611,912
2028	0	0	0	0	68,200	0	5,600	0	611,912
2029	0	0	0	0	70,200	0	5,650	0	611,912
2030	0	0	0	0	72,300	0	5,700	0	611,912
2031	0	0	0	0	74,300	0	5,725	0	611,912
2032	0	0	0	0	74,300	0	5,750	0	611,912
2033	0	0	0	0	74,300	0	5,775	0	611,912
2034	0	0	0	0	74,300	0	5,800	0	611,912
2035	0	0	0	0	74,300	0	5,800	0	611,912
Total	251,189	810	0	402,027	1,709,045	272	185,462	22,185	26,028,100

[e] In accordance with the Exchange Agreement between the noted agencies, MWD 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 provides for compliance with provisions for the repayment of costs under the agreement. In 1993 and after the exchange takes place in Reach 26A

[f] 1988 advance allocation.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	Santa Ana Division (continued)											
	Reach 26A					Reach 28G	Reach 28H			Reach 28J		
	SBVMWD[g] (121)	SGVMWD (122)	SGPWA (123)	CVWD[e] (124)	DWA[e] (125)	MWDSC (126)	CVWD (127)	DWA (128)	MWDSC (129)	CVWD (130)	DWA (131)	MWDSC (132)
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	1,275	0	0	0	0	0	0	0	0	0	0	0
1973	32,426	0	0	0	0	18,942	0	0	0	0	0	0
1974	16,605	612	0	0	0	0	0	0	0	0	0	0
1975	13,865	5,450	0	0	0	0	0	0	0	0	0	251
1976	12,273	6,071	0	0	0	0	0	0	55	0	0	2,000
1977	24,833	8,996	0	0	0	0	0	0	43	0	0	2,442
1978	4,055	7,771	0	0	0	0	0	0	48	0	0	64,054
1979	18	290	0	0	0	0	0	0	1,290	0	0	94,353
1980	0	1,085	0	0	0	0	0	0	3,013	0	0	91,532
1981	16,021	3,619	0	0	0	0	0	0	4,365	0	0	149,405
1982	8,409	12,599	0	0	0	0	0	0	3,961	0	0	155,629
1983	5,994	734	0	0	0	0	0	0	6,645	0	0	41,616
1984	5,556	7,656	0	0	0	0	0	0	109,743	0	0	5,672
1985	7,390	5,028	0	0	0	0	0	0	182,781	0	0	6,538
1986	6,421	9,454	0	0	0	0	0	0	131,439	0	0	30,071
1987	18,751	10,630	0	0	0	0	0	0	144,743	0	0	26,315
1988	21,386	8,948	0	0	0	0	0	0	199,641	0	0	22,209
1989	20,782	12,839	0	0	0	0	0	0	247,430	0	0	51,462
1990	18,831	16,649	0	0	0	0	0	0	257,796	0	0	36,060
1991	3,661	5,399	0	0	0	0	0	0	38,832	0	0	5,958
1992	3,358	7,908	0	0	0	0	0	0	85,341	0	0	12,223
1993	4,361	14,397	0	23,100	38,100	0	0	0	61,841	0	0	4,588
1994	9,135	15,230	0	14,102	23,257	0	0	0	134,262	0	0	4,725
1995	696	12,922	0	23,100	38,100	0	0	0	117,762	0	0	21,099
1996	6,064	15,989	0	62,219	102,622	0	0	0	144,906	0	0	12,418
1997	9,654	18,175	0	58,100	53,100	0	0	0	107,853	0	0	47,777
1998	1,878	9,310	0	78,100	58,100	0	6,582	7,708	77,473	1,027	4,839	50,411
1999	12,874	21,729	0	50,480	58,100	0	0	0	206,689	0	0	8,163
2000	18,399	15,140	0	42,323	58,234	0	0	0	379,713	0	0	7,864
2001	26,488	2,360	0	9,100	15,010	0	0	0	258,738	0	0	33,414
2002	63,468	24,851	0	16,755	27,640	0	0	0	340,635	0	0	41,552
2003	94,184	16,000	2,500	20,984	34,611	0	0	0	315,306	0	0	31,744
2004	102,600	16,000	3,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2005	102,600	16,000	4,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2006	102,600	16,000	5,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2007	102,600	18,000	6,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2008	102,600	28,800	7,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2009	102,600	28,800	8,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2010	102,600	28,800	9,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2011	102,600	28,800	10,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2012	102,600	28,800	11,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2013	102,600	28,800	12,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2014	102,600	28,800	13,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2015	102,600	28,800	14,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2016	102,600	28,800	15,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2017	102,600	28,800	16,500	23,100	38,100	0	0	0	434,278	0	0	3,600
2018	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2019	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2020	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2021	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2022	102,600	30,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2023	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2024	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2025	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2026	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2027	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2028	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2029	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2030	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2031	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2032	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2033	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2034	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
2035	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278	0	0	3,600
Total	3,772,311	1,172,241	453,900	1,137,563	1,726,074	18,942	6,582	7,708	17,459,240	1,027	4,839	1,176,745

[g]Includes 1,650 AF recaptured from groundwater storage in 1982, 10,000 AF in 1987, and 8,749 AF in 1988. This water was stored under DWR's Groundwater Demonstration Program.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)										
	West Branch									Coastal Branch	
	Reach 29F	Reach 29H	Reach 30							Reach 31A	
	AVEKWA (133)	VCFCD (134)	CVWD (135)	DWA (136)	MWDSC[h] (137)	VCFCD (138)	SBVMWD[g] (139)	CLWA (140)	SBCFC&WCD (141)	KCWA (M&I) (142)	KCWA (Ag) (143)
1962	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	71,657
1969	0	0	0	0	0	0	0	0	0	0	52,094
1970	0	0	0	0	0	0	0	0	0	0	71,910
1971	0	0	0	0	0	0	0	0	0	0	98,481
1972	53	0	0	0	71,938	0	0	0	0	0	107,850
1973	20	0	0	0	155,297	0	0	0	0	0	69,227
1974	36	0	0	0	209,136	0	0	0	0	0	68,474
1975	26	0	0	0	374,280	0	0	0	0	0	74,516
1976	24	0	0	0	420,684	0	0	0	0	0	78,358
1977	0	0	0	0	122,447	0	0	0	0	0	35,504
1978	0	0	0	0	171,139	0	0	0	0	0	81,242
1979	0	0	0	0	145,591	0	0	7	0	0	104,017
1980	0	0	0	0	164,721	0	0	1,210	0	0	97,497
1981	0	0	0	0	277,503	0	0	5,761	0	0	97,054
1982	0	0	0	0	351,362	0	0	9,516	0	0	83,076
1983	0	0	0	0	157,519	0	0	9,476	0	0	87,859
1984	0	0	0	0	260,624	0	0	11,477	0	0	119,098
1985	0	0	0	0	390,696	0	0	12,401	0	0	110,124
1986	0	0	0	0	379,275	0	0	13,928	0	0	118,298
1987	0	0	0	0	417,285	0	0	16,167	0	0	116,259
1988	0	0	0	0	488,265	0	0	18,904	0	0	109,435
1989	0	0	0	0	589,962	0	0	21,719	0	0	102,156
1990	0	4,836	0	0	764,380	0	0	22,139	0	0	103,362
1991	0	988	0	0	257,835	0	0	3,846	1,240	0	780
1992	0	0	0	0	420,849	0	0	14,812	0	0	73,748
1993	6	0	0	0	437,470	0	0	13,787	0	0	90,764
1994	0	0	0	0	475,900	0	0	14,919	0	200	77,536
1995	0	0	0	0	139,882	0	0	17,747	0	0	85,050
1996	0	0	0	0	267,618	0	0	18,448	0	0	100,578
1997	11	0	10,240	16,890	271,379	1,850	0	22,842	0	0	97,020
1998	7	0	0	0	187,277	1,850	0	19,782	0	0	86,879
1999	0	0	0	0	327,001	1,850	0	28,813	0	0	92,095
2000	0	2,200	0	0	632,991	1,850	0	31,085	0	0	85,215
2001	0	0	0	0	411,337	1,850	0	30,701	0	0	63,448
2002	0	3,148	0	0	723,605	1,850	8,601	42,080	0	0	65,055
2003	0	3,150	0	0	802,459	1,850	0	18,090	0	0	64,809
2004	0	3,150	0	0	761,710	1,850	0	55,000	0	0	68,500
2005	0	3,150	0	0	761,710	1,850	0	55,000	0	0	68,500
2006	0	3,150	0	0	761,710	1,850	0	57,750	0	0	68,500
2007	0	3,150	0	0	761,710	1,850	0	57,750	0	0	68,500
2008	0	3,150	0	0	761,710	1,850	0	67,000	0	0	68,500
2009	0	3,150	0	0	761,710	1,850	0	73,700	0	0	68,500
2010	0	3,150	0	0	761,710	1,850	0	81,070	0	0	68,500
2011	0	3,150	0	0	761,710	1,850	0	89,177	0	0	68,500
2012	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2013	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2014	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2015	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2016	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2017	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2018	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2019	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2020	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2021	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2022	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2023	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2024	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2025	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2026	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2027	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2028	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2029	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2030	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2031	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2032	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2033	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2034	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
2035	0	3,150	0	0	761,710	1,850	0	95,200	0	0	68,500
Total	183	115,122	10,240	16,890	35,642,427	72,150	8,601	3,240,904	1,240	200	5,232,525

[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)

Calendar Year	California Aqueduct (continued)						Grand Total (150)
	Coastal Branch (continued)					Total (149)	
	Reach 31A	Reach 33A	Reach 34	Reach 35			
	CLWA (144)	SLOCFC&WCD (145)	SLOCFC&WCD (146)	SLOCFC&WCD (147)	SBCFC&WCD (148)		
1962	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	56,763
1968	7,382	0	0	0	0	192,188	294,457
1969	9,970	0	0	0	0	195,705	268,104
1970	11,739	0	0	0	0	276,211	369,459
1971	12,490	0	0	0	0	553,081	654,250
1972	13,905	0	0	0	0	895,006	1,037,584
1973	9,418	0	0	0	0	638,930	737,479
1974	9,700	0	0	0	0	783,984	878,820
1975	10,700	0	0	0	0	1,129,728	1,230,577
1976	11,700	0	0	0	0	1,245,662	1,379,597
1977	5,075	0	0	0	0	465,442	581,675
1978	11,362	0	0	0	0	1,339,268	1,458,154
1979	19,138	0	0	0	0	1,537,075	1,666,155
1980	13,882	0	0	0	0	1,413,363	1,536,189
1981	12,700	0	0	0	0	1,779,479	1,918,342
1982	12,700	0	0	0	0	1,641,571	1,750,528
1983	12,659	0	0	0	0	1,089,626	1,186,831
1984	12,741	0	0	0	0	1,489,814	1,591,131
1985	12,099	0	0	0	0	1,863,544	1,989,925
1986	13,301	0	0	0	0	1,882,290	1,998,514
1987	11,821	0	0	0	0	1,984,565	2,131,056
1988	11,534	0	0	0	0	2,221,538	2,384,434
1989	14,645	0	0	0	0	2,686,838	2,853,044
1990	6,440	0	0	0	0	2,398,121	2,581,277
1991	716	0	0	0	0	489,489	548,520
1992	5,887	0	0	0	0	1,374,775	1,470,695
1993	4,157	0	0	0	0	2,173,352	2,314,233
1994	9,422	0	0	0	0	1,727,504	1,860,612
1995	9,486	0	0	0	0	1,926,835	2,030,310
1996	14,052	0	0	0	0	2,429,928	2,542,395
1997	4,870	0	1,099	0	7,439	2,263,966	2,404,254
1998	311	0	3,592	0	18,618	1,657,381	1,763,382
1999	4,086	0	0	3,743	20,137	2,755,025	2,895,579
2000	8,395	0	0	3,962	22,741	3,397,080	3,574,586
2001	1,238	0	0	4,283	14,977	1,898,287	2,035,302
2002	2,737	0	0	4,355	27,636	2,725,196	2,894,208
2003	37,440	0	0	4,392	37,660	3,233,118	3,449,083
2004	40,200	0	0	25,000	45,486	3,491,425	3,759,713
2005	40,200	0	0	25,000	45,486	3,496,947	3,770,768
2006	37,450	0	0	25,000	45,486	3,506,487	3,782,082
2007	37,450	0	0	25,000	45,486	3,517,903	3,795,624
2008	28,200	0	0	25,000	45,486	3,575,123	3,852,215
2009	21,500	0	0	25,000	45,486	3,580,273	3,857,742
2010	14,130	0	0	25,000	45,486	3,582,923	3,860,773
2011	6,023	0	0	25,000	45,486	3,585,573	3,863,809
2012	0	0	0	25,000	45,486	3,588,223	3,866,850
2013	0	0	0	25,000	45,486	3,590,873	3,869,897
2014	0	0	0	25,000	45,486	3,594,023	3,873,448
2015	0	0	0	25,000	45,486	3,597,173	3,877,005
2016	0	0	0	25,000	45,486	3,600,823	3,881,117
2017	0	0	0	25,000	45,486	3,604,473	3,885,035
2018	0	0	0	25,000	45,486	3,607,923	3,888,858
2019	0	0	0	25,000	45,486	3,611,548	3,892,862
2020	0	0	0	25,000	45,486	3,614,173	3,895,871
2021	0	0	0	25,000	45,486	3,615,873	3,897,961
2022	0	0	0	25,000	45,486	3,619,573	3,902,057
2023	0	0	0	25,000	45,486	3,619,448	3,902,334
2024	0	0	0	25,000	45,486	3,621,223	3,904,517
2025	0	0	0	25,000	45,486	3,623,073	3,906,781
2026	0	0	0	25,000	45,486	3,624,923	3,909,052
2027	0	0	0	25,000	45,486	3,626,873	3,911,428
2028	0	0	0	25,000	45,486	3,628,923	3,913,636
2029	0	0	0	25,000	45,486	3,630,973	3,915,686
2030	0	0	0	25,000	45,486	3,633,123	3,917,836
2031	0	0	0	25,000	45,486	3,635,148	3,919,861
2032	0	0	0	25,000	45,486	3,635,173	3,919,886
2033	0	0	0	25,000	45,486	3,635,198	3,919,911
2034	0	0	0	25,000	45,486	3,635,223	3,919,936
2035	0	0	0	25,000	45,486	3,635,223	3,919,936
Total	595,051	0	4,691	820,735	1,604,760	172,920,821	186,603,392

Table B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	North Bay Area			South Bay Area[b]				Central Coastal Area		
	Napa County FC&WCD[a] (1)	Solano County WA (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	88,000	107,439	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	6,195	17,256	23,451	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	4,001	14,773	18,774	14,669	19,153	42,839	76,661	0	0	0
1993	5,286	29,180	34,466	33,635	10,271	62,065	105,971	0	0	0
1994	6,792	25,256	32,048	20,542	22,911	57,115	100,568	0	0	0
1995	5,182	21,345	26,527	30,091	17,793	28,756	76,640	0	0	0
1996	4,893	29,999	34,892	18,903	19,662	89,850	128,415	100	0	100
1997	4,341	33,530	37,871	27,522	24,063	95,601	147,186	1,199	7,439	8,638
1998	5,359	29,766	35,125	17,941	19,075	63,410	100,426	3,592	18,618	22,210
1999	5,304	34,753	40,057	48,910	37,652	82,945	169,507	3,743	20,137	23,880
2000	4,958	37,015	41,973	58,617	35,978	101,988	196,583	3,962	22,741	26,703
2001	7,094	34,586	41,680	34,409	18,004	77,922	130,335	4,283	14,977	19,260
2002	6,875	38,560	45,435	53,261	27,811	63,111	144,183	4,355	28,381	32,736
2003	16,563	31,998	48,561	61,455	41,304	89,945	192,704	4,392	37,660	42,052
2004	19,245	47,206	66,451	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2005	19,923	47,256	67,179	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2006	20,648	47,306	67,954	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2007	21,433	47,356	68,789	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2008	21,754	47,406	69,160	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2009	22,081	47,456	69,537	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2010	22,412	47,506	69,918	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2011	22,748	47,556	70,304	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2012	23,089	47,606	70,695	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2013	23,436	47,656	71,092	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2014	23,787	47,706	71,493	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2015	24,144	47,756	71,900	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2016	24,606	47,756	72,362	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2017	24,874	47,756	72,630	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2018	25,247	47,756	73,003	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2019	25,626	47,756	73,382	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2020	26,010	47,756	73,766	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2021	26,400	47,756	74,156	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2022	26,796	47,756	74,552	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2023	27,198	47,756	74,954	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2024	27,606	47,756	75,362	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2025	28,020	47,756	75,776	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2026	28,441	47,756	76,197	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2027	28,867	47,756	76,623	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2028	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2029	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2030	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2031	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2032	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2033	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2034	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2035	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
Total	1,007,660	1,941,688	2,949,348	3,247,905	2,046,448	6,162,166	11,456,519	825,626	1,606,745	2,432,371

[a]For the period 1968 through 1987, deliveries are non-Project water pumped through an interim facility.
[b]For the period June 1962 through November 1967, deliveries were supplied by non-Project water.

Table B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	San Joaquin Valley Area								
			Kern County Water Agency						
	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	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	75,444	759,738
1981	41,000	5,859	75,758	615,642	691,400	2,300	4,300	83,438	828,297
1982	41,000	361	47,477	697,823	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	769,696	860,600	3,100	5,700	5,743	920,243
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	117,174	852,731	969,905	4,000	5,625	93,084	1,121,427
1988	47,994	3,475	122,409	887,111	1,009,520	4,000	4,412	95,866	1,165,267
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	62,326	420,894	483,220	1,806	2,239	46,728	559,117
1993	50,618	2,741	128,316	1,039,614	1,167,930	4,000	4,858	124,468	1,354,615
1994	28,793	1,666	87,139	570,020	657,159	2,116	3,071	62,362	755,167
1995	60,686	1,631	135,415	1,016,114	1,151,529	4,000	5,169	101,869	1,324,884
1996	56,948	1,868	135,654	1,049,409	1,185,063	4,000	4,904	236,875	1,489,658
1997	71,308	0	120,708	987,451	1,108,159	0	5,238	22,369	1,207,074
1998	55,650	542	89,765	768,825	858,590	15	4,401	20,677	939,875
1999	59,697	3,176	138,153	1,039,985	1,178,138	4,000	4,871	289,735	1,539,617
2000	60,539	1,799	106,276	1,098,654	1,204,930	3,600	4,508	208,294	1,483,670
2001	26,916	1,360	48,910	599,493	648,403	1,560	2,212	83,407	763,858
2002	42,990	1,405	83,567	743,809	827,376	2,849	4,101	96,507	975,228
2003	53,543	2,887	115,233	774,488	889,721	3,634	4,818	105,591	1,060,194
2004	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2005	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2006	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2007	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2008	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2009	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2010	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2011	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2012	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2013	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2014	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2015	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2016	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2017	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2018	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2019	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2020	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2021	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2022	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2023	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2024	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2025	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2026	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2027	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2028	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2029	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2030	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2031	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2032	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2033	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2034	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2035	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
Total	3,342,993	173,102	6,352,521	50,707,085	57,059,606	211,480	339,170	6,595,780	67,722,131

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	34,089	27,988	19,431	1,849	31,500	1,085	17	5,379	18,751	10,630
1988	34,079	30,438	20,652	2,006	34,000	419	9	1,770	21,386	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	849	11,430	522	3,423	3,914	3,661	5,399
1992	30,265	20,699	10,427	519	17,197	251	10,686	4,035	3,358	7,908
1993	43,102	23,039	23,100	439	38,100	734	11,514	7,761	4,361	14,397
1994	49,153	26,441	14,102	785	23,257	1,098	16,852	8,418	9,135	15,230
1995	47,286	27,233	23,100	409	38,100	480	8,722	6,961	696	12,922
1996	56,356	32,500	62,219	485	102,622	494	7,427	11,434	6,064	15,989
1997	62,393	27,712	68,340	651	69,990	444	10,374	11,861	9,654	18,175
1998	52,926	20,093	85,709	187	70,647	404	3,925	8,752	1,878	9,310
1999	69,073	32,899	50,480	1,132	58,100	342	8,144	13,278	12,874	21,729
2000	83,577	40,680	42,323	1,194	58,234	0	11,380	9,060	18,399	15,140
2001	46,122	31,939	9,100	1,057	15,010	0	4,433	10,427	26,488	6,534
2002	58,171	68,817	16,755	2,189	27,640	0	4,346	8,796	72,069	24,851
2003	77,664	55,530	20,984	2,400	34,611	0	18,568	16,016	94,184	16,000
2004	81,307	95,200	23,100	2,600	38,100	2,300	15,000	21,300	102,600	16,000
2005	85,374	95,200	23,100	2,800	38,100	2,300	20,000	21,300	102,600	16,000
2006	89,643	95,200	23,100	3,000	38,100	2,300	25,000	21,300	102,600	16,000
2007	94,130	95,200	23,100	3,150	38,100	2,300	30,000	21,300	102,600	18,000
2008	141,400	95,200	23,100	3,300	38,100	2,300	28,000	21,300	102,600	28,800
2009	141,400	95,200	23,100	3,450	38,100	2,300	32,000	21,300	102,600	28,800
2010	141,400	95,200	23,100	3,600	38,100	2,300	33,500	21,300	102,600	28,800
2011	141,400	95,200	23,100	3,750	38,100	2,300	35,000	21,300	102,600	28,800
2012	141,400	95,200	23,100	3,900	38,100	2,300	36,500	21,300	102,600	28,800
2013	141,400	95,200	23,100	4,050	38,100	2,300	38,000	21,300	102,600	28,800
2014	141,400	95,200	23,100	4,200	38,100	2,300	40,000	21,300	102,600	28,800
2015	141,400	95,200	23,100	4,350	38,100	2,300	42,000	21,300	102,600	28,800
2016	141,400	95,200	23,100	4,500	38,100	2,300	44,500	21,300	102,600	28,800
2017	141,400	95,200	23,100	4,650	38,100	2,300	47,000	21,300	102,600	28,800
2018	141,400	95,200	23,100	4,800	38,100	2,300	49,500	21,300	102,600	28,800
2019	141,400	95,200	23,100	4,925	38,100	2,300	53,000	21,300	102,600	28,800
2020	141,400	95,200	23,100	5,050	38,100	2,300	55,500	21,300	102,600	28,800
2021	141,400	95,200	23,100	5,150	38,100	2,300	57,100	21,300	102,600	28,800
2022	141,400	95,200	23,100	5,250	38,100	2,300	58,700	21,300	102,600	30,800
2023	141,400	95,200	23,100	5,325	38,100	2,300	60,500	21,300	102,600	28,800
2024	141,400	95,200	23,100	5,400	38,100	2,300	62,200	21,300	102,600	28,800
2025	141,400	95,200	23,100	5,450	38,100	2,300	64,000	21,300	102,600	28,800
2026	141,400	95,200	23,100	5,500	38,100	2,300	65,800	21,300	102,600	28,800
2027	141,400	95,200	23,100	5,550	38,100	2,300	67,700	21,300	102,600	28,800
2028	141,400	95,200	23,100	5,600	38,100	2,300	69,700	21,300	102,600	28,800
2029	141,400	95,200	23,100	5,650	38,100	2,300	71,700	21,300	102,600	28,800
2030	141,400	95,200	23,100	5,700	38,100	2,300	73,800	21,300	102,600	28,800
2031	141,400	95,200	23,100	5,725	38,100	2,300	75,800	21,300	102,600	28,800
2032	141,400	95,200	23,100	5,750	38,100	2,300	75,800	21,300	102,600	28,800
2033	141,400	95,200	23,100	5,775	38,100	2,300	75,800	21,300	102,600	28,800
2034	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2035	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
Total	5,646,187	3,868,350	1,406,601	185,462	2,157,538	86,843	1,797,369	831,733	3,780,912	1,176,415

[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)

Calendar Year	Southern California Area (continued)				Feather River Area					
	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	1,536,456
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	1,750,862
1983	0	343,521	0	443,841	0	325	262	587	0	1,187,156
1984	0	457,582	0	569,571	108	177	272	557	0	1,591,416
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	863,143	88	459	452	999	0	2,131,608
1988	0	902,564	0	1,056,271	303	385	523	1,211	0	2,385,122
1989	0	1,156,698	0	1,342,686	403	300	486	1,189	0	2,853,747
1990	0	1,396,423	4,836	1,585,906	494	380	548	1,422	0	2,582,151
1991	0	391,447	988	442,693	265	328	420	1,013	0	549,113
1992	0	710,313	0	815,658	642	117	485	1,244	0	1,471,454
1993	0	652,190	0	818,737	746	256	444	1,446	0	2,315,235
1994	0	807,866	0	972,337	1,035	329	492	1,856	0	1,861,976
1995	0	436,042	0	601,951	910	203	308	1,421	0	2,031,423
1996	0	593,380	0	888,970	820	257	360	1,437	0	2,543,472
1997	0	721,810	1,850	1,003,254	1,005	185	231	1,421	0	2,405,444
1998	0	410,065	1,850	665,746	1,054	527	0	1,581	0	1,764,963
1999	0	852,617	1,850	1,122,518	1,096	286	0	1,382	0	2,896,961
2000	0	1,541,620	4,050	1,825,657	901	586	0	1,487	0	3,576,073
2001	0	957,209	1,850	1,110,169	1,065	513	0	1,578	0	2,066,880
2002	0	1,408,919	4,998	1,697,551	1,181	419	0	1,600	0	2,896,733
2003	2,500	1,762,115	5,000	2,105,572	1,600	1,211	0	2,811	0	3,451,894
2004	3,500	1,811,500	5,000	2,217,507	9,600	1,232	1,750	12,582	0	3,770,545
2005	4,500	1,811,500	5,000	2,227,774	9,600	1,255	1,810	12,665	0	3,781,623
2006	5,500	1,811,500	5,000	2,238,243	9,600	1,280	1,880	12,760	0	3,792,962
2007	6,500	1,811,500	5,000	2,250,880	9,600	1,311	1,950	12,861	0	3,806,535
2008	7,500	1,811,500	5,000	2,308,100	9,600	2,500	1,950	14,050	0	3,864,315
2009	8,500	1,811,500	5,000	2,313,250	9,600	2,500	1,950	14,050	0	3,869,842
2010	9,500	1,811,500	5,000	2,315,900	9,600	2,500	1,950	14,050	0	3,872,873
2011	10,500	1,811,500	5,000	2,318,550	9,600	2,500	1,950	14,050	0	3,875,909
2012	11,500	1,811,500	5,000	2,321,200	9,600	2,500	1,950	14,050	0	3,878,950
2013	12,500	1,811,500	5,000	2,323,850	9,600	2,500	1,950	14,050	0	3,881,997
2014	13,500	1,811,500	5,000	2,327,000	9,600	2,500	1,950	14,050	0	3,885,548
2015	14,500	1,811,500	5,000	2,330,150	9,600	2,500	1,950	14,050	0	3,889,105
2016	15,500	1,811,500	5,000	2,333,800	9,600	2,500	1,950	14,050	0	3,893,217
2017	16,500	1,811,500	5,000	2,337,450	9,600	2,500	1,950	14,050	0	3,897,135
2018	17,300	1,811,500	5,000	2,340,900	9,600	2,500	1,950	14,050	0	3,900,958
2019	17,300	1,811,500	5,000	2,344,525	9,600	2,500	1,950	14,050	0	3,904,962
2020	17,300	1,811,500	5,000	2,347,150	9,600	2,500	1,950	14,050	0	3,907,971
2021	17,300	1,811,500	5,000	2,348,850	9,600	2,500	1,950	14,050	0	3,910,061
2022	17,300	1,811,500	5,000	2,352,550	9,600	2,500	1,950	14,050	0	3,914,157
2023	17,300	1,811,500	5,000	2,352,425	9,600	2,500	1,950	14,050	0	3,914,434
2024	17,300	1,811,500	5,000	2,354,200	9,600	2,500	1,950	14,050	0	3,916,617
2025	17,300	1,811,500	5,000	2,356,050	9,600	2,500	1,950	14,050	0	3,918,881
2026	17,300	1,811,500	5,000	2,357,900	9,600	2,500	1,950	14,050	0	3,921,152
2027	17,300	1,811,500	5,000	2,359,850	9,600	2,500	1,950	14,050	0	3,923,528
2028	17,300	1,811,500	5,000	2,361,900	9,600	2,500	1,950	14,050	0	3,925,736
2029	17,300	1,811,500	5,000	2,363,950	9,600	2,500	1,950	14,050	0	3,927,786
2030	17,300	1,811,500	5,000	2,366,100	9,600	2,500	1,950	14,050	0	3,929,936
2031	17,300	1,811,500	5,000	2,368,125	9,600	2,500	1,950	14,050	0	3,931,961
2032	17,300	1,811,500	5,000	2,368,150	9,600	2,500	1,950	14,050	0	3,931,986
2033	17,300	1,811,500	5,000	2,368,175	9,600	2,500	1,950	14,050	0	3,932,011
2034	17,300	1,811,500	5,000	2,368,200	9,600	2,500	1,950	14,050	0	3,932,036
2035	17,300	1,811,500	5,000	2,368,200	9,600	2,500	1,950	14,050	0	3,932,036
Total	453,900	80,422,909	187,272	102,001,491	321,306	86,689	72,462	480,457	0	187,042,317

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	North Bay Aqueduct											
	Barker Slough Pumping Plant				Cordelia Pumping Plant Solano County Water Agency				Cordelia Pumping Plant Napa County FC&WCD			
	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)	3,519	3,515
1987	0	0	0	0	0	0	0	0	0	0	7,693	7,693
1988	1	283	15,118	15,402	0	0	9,725	9,725	1	(1)	5,392	5,392
1989	0	758	23,451	24,209	0	0	17,246	17,246	0	(4)	6,195	6,191
1990	0	3	26,071	26,074	0	(634)	15,856	15,222	0	3	6,940	6,943
1991	0	667	8,352	9,019	0	124	3,855	3,979	0	198	1,380	1,578
1992	0	1,643	18,774	20,417	0	0	9,220	9,220	0	0	4,001	4,001
1993	0	1,153	34,466	35,619	0	0	14,471	14,471	0	0	5,286	5,286
1994	0	780	32,048	32,828	0	(6)	14,913	14,907	0	0	6,792	6,792
1995	0	908	26,527	27,435	0	0	15,893	15,893	0	0	5,182	5,182
1996	0	1,354	34,892	36,246	0	0	17,069	17,069	0	0	4,893	4,893
1997	0	1,422	37,871	39,293	0	0	17,501	17,501	0	0	4,341	4,341
1998	0	1,343	35,125	36,468	0	0	18,204	18,204	0	0	5,359	5,359
1999	0	2,522	40,057	42,579	0	0	19,562	19,562	0	0	5,304	5,304
2000	0	1,853	41,973	43,826	0	(88)	21,525	21,437	0	88	4,958	5,046
2001	0	51	41,680	41,731	0	0	19,737	19,737	0	5	7,094	7,099
2002	0	496	45,435	45,931	0	0	19,719	19,719	0	0	6,875	6,875
2003	0	51	48,561	48,612	0	0	12,938	12,938	0	5	16,563	16,568
2004	0	51	66,451	66,502	0	0	20,100	20,100	0	5	19,245	19,250
2005	0	51	67,179	67,230	0	0	20,100	20,100	0	5	19,923	19,928
2006	0	51	67,954	68,005	0	0	20,100	20,100	0	5	20,648	20,653
2007	0	51	68,789	68,840	0	0	20,100	20,100	0	5	21,433	21,438
2008	0	51	69,160	69,211	0	0	20,100	20,100	0	5	21,754	21,759
2009	0	51	69,537	69,588	0	0	20,100	20,100	0	5	22,081	22,086
2010	0	51	69,918	69,969	0	0	20,100	20,100	0	5	22,412	22,417
2011	0	51	70,304	70,355	0	0	20,100	20,100	0	5	22,748	22,753
2012	0	51	70,695	70,746	0	0	20,100	20,100	0	5	23,089	23,094
2013	0	51	71,092	71,143	0	0	20,100	20,100	0	5	23,436	23,441
2014	0	51	71,493	71,544	0	0	20,100	20,100	0	5	23,787	23,792
2015	0	51	71,900	71,951	0	0	20,100	20,100	0	5	24,144	24,149
2016	0	51	72,362	72,413	0	0	20,100	20,100	0	5	24,606	24,611
2017	0	51	72,630	72,681	0	0	20,100	20,100	0	5	24,874	24,879
2018	0	51	73,003	73,054	0	0	20,100	20,100	0	5	25,247	25,252
2019	0	51	73,382	73,433	0	0	20,100	20,100	0	5	25,626	25,631
2020	0	51	73,766	73,817	0	0	20,100	20,100	0	5	26,010	26,015
2021	0	51	74,156	74,207	0	0	20,100	20,100	0	5	26,400	26,405
2022	0	51	74,552	74,603	0	0	20,100	20,100	0	5	26,796	26,801
2023	0	51	74,954	75,005	0	0	20,100	20,100	0	5	27,198	27,203
2024	0	51	75,362	75,413	0	0	20,100	20,100	0	5	27,606	27,611
2025	0	51	75,776	75,827	0	0	20,100	20,100	0	5	28,020	28,025
2026	0	51	76,197	76,248	0	0	20,100	20,100	0	5	28,441	28,446
2027	0	51	76,623	76,674	0	0	20,100	20,100	0	5	28,867	28,872
2028	0	51	76,781	76,832	0	0	20,100	20,100	0	5	29,025	29,030
2029	0	51	76,781	76,832	0	0	20,100	20,100	0	5	29,025	29,030
2030	0	51	76,781	76,832	0	0	20,100	20,100	0	5	29,025	29,030
2031	0	51	76,781	76,832	0	0	20,100	20,100	0	5	29,025	29,030
2032	0	51	76,781	76,832	0	0	20,100	20,100	0	5	29,025	29,030
2033	0	51	76,781	76,832	0	0	20,100	20,100	0	5	29,025	29,030
2034	0	51	76,781	76,832	0	0	20,100	20,100	0	5	29,025	29,030
2035	0	51	76,781	76,832	0	0	20,100	20,100	0	5	29,025	29,030

[a]For the period 1968 through 1987, deliveries are non-SWP water pumped through an interim facility.

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	South Bay Aqueduct						California Aqueduct							
	South Bay Pumping Plant						North San Joaquin Division							
							Banks Pumping Plant							
				Deliveries			Transportation Water							
	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)	Deliveries: Water Supply (22)	Deliveries: Recreation (23)	Deliveries: 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	2,299	(1,850)	110,988	130	111,567	0	90,799	20,177	1,993,278	3,865	2,108,119	200,298	2,308,417
1987	0	2,625	(584)	136,796	137	138,974	0	91,427	(23,116)	2,121,366	7,672	2,197,349	(458,725)	1,738,624
1988	0	2,884	(698)	147,255	142	149,583	0	107,249	(35,484)	2,368,793	4,889	2,445,447	(303,583)	2,141,864
1989	0	2,673	3,296	142,269	152	148,390	0	117,603	(38,058)	2,829,107	8,135	2,916,787	421,131	3,337,918
1990	0	894	1,982	156,537	168	159,581	0	99,059	(290,965)	2,554,658	9,262	2,372,014	(374,027)	1,997,987
1991	0	2,637	(4,532)	50,259	150	48,514	0	80,106	(79,038)	539,748	4,879	545,695	554,904	1,100,599
1992	0	2,881	756	76,661	147	80,445	0	91,391	(218,170)	1,451,436	2,605	1,327,262	61,343	1,388,605
1993	0	1,940	(20,051)	105,971	143	88,003	0	149,372	(273,789)	2,279,323	2,609	2,157,515	849,249	3,006,764
1994	0	1,981	1,714	100,568	168	104,431	0	148,712	(120,985)	1,828,072	3,803	1,859,602	(324,640)	1,534,962
1995	0	1,188	(12,333)	76,640	146	65,641	0	173,074	(397,605)	2,003,475	2,575	1,781,519	293,159	2,074,678
1996	0	981	(1,990)	77,215	150	76,356	0	123,502	78,123	2,507,143	3,902	2,712,670	288,576	3,001,246
1997	0	1,575	5,016	102,186	155	108,932	527	135,106	(98,334)	2,366,152	2,594	2,406,045	(50,000)	2,356,045
1998	0	1,551	3,595	70,876	114	76,136	0	91,319	(346,039)	1,728,257	2,107	1,475,644	120,886	1,596,530
1999	0	2,166	12,313	100,497	139	115,115	0	135,809	(17,569)	2,855,522	4,301	2,978,063	(307,839)	2,670,224
2000	0	942	(7,436)	135,533	145	129,184	0	78,467	3,746	3,532,613	4,361	3,619,187	(190,240)	3,428,947
2001	0	3,296	(1,066)	95,335	400	97,965	0	201,961	57,102	2,023,622	8,660	2,291,345	0	2,291,345
2002	0	2,534	(6,923)	123,577	146	119,334	0	233,859	(325,962)	2,849,698	4,672	2,762,267	0	2,762,267
2003	0	3,193	36	167,404	400	171,033	0	111,145	(7,925)	3,400,522	8,660	3,512,402	0	3,512,402
2004	0	3,439	0	200,087	400	203,926	0	129,916	76,561	3,691,512	8,660	3,906,649	195,999	4,102,648
2005	0	3,351	0	204,832	400	208,583	0	128,606	(59,387)	3,701,779	8,660	3,779,658	(121,668)	3,657,990
2006	0	3,351	0	205,761	400	209,512	0	127,993	(36,988)	3,712,248	8,660	3,811,913	(253,589)	3,558,324
2007	0	3,351	0	206,982	400	210,733	0	129,168	22,514	3,724,885	8,660	3,885,227	(77,232)	3,807,995
2008	0	3,351	0	205,982	400	209,733	0	128,939	6,985	3,781,105	8,660	3,925,689	222,755	4,148,444
2009	0	3,351	0	205,982	400	209,733	0	129,619	(15,186)	3,786,255	8,660	3,909,348	(140,708)	3,768,640
2010	0	3,351	0	205,982	400	209,733	0	128,523	4,288	3,788,905	8,660	3,930,376	182,970	4,113,346
2011	0	3,351	0	205,982	400	209,733	0	128,364	64,678	3,791,555	8,660	3,993,257	137,242	4,130,499
2012	0	3,351	0	205,982	400	209,733	0	128,100	(67,943)	3,794,205	8,660	3,863,022	(260,827)	3,602,195
2013	0	3,351	0	205,982	400	209,733	0	128,264	9,749	3,796,855	8,660	3,943,528	145,525	4,089,053
2014	0	3,351	0	205,982	400	209,733	0	130,280	16,625	3,800,005	8,660	3,955,570	(186,678)	3,768,892
2015	0	3,351	0	205,982	400	209,733	0	130,445	32,003	3,803,155	8,660	3,974,263	(31,516)	3,942,747
2016	0	3,351	0	205,982	400	209,733	0	128,415	(28,401)	3,806,805	8,660	3,915,479	205,134	4,120,613
2017	0	3,351	0	205,982	400	209,733	0	128,602	61,309	3,810,455	8,660	4,009,026	119,885	4,128,911
2018	0	3,351	0	205,982	400	209,733	0	128,369	(80,817)	3,813,905	8,660	3,870,117	(194,534)	3,675,583
2019	0	3,351	0	205,982	400	209,733	0	128,613	50,179	3,817,530	8,660	4,004,982	77,224	4,082,206
2020	0	3,351	0	205,982	400	209,733	0	128,690	(366)	3,820,155	8,660	3,957,139	(8,687)	3,948,452
2021	0	3,351	0	205,982	400	209,733	0	128,769	10,725	3,821,855	8,660	3,970,009	(1,095)	3,968,914
2022	0	3,351	0	205,982	400	209,733	0	128,846	(3,483)	3,825,555	8,660	3,959,578	(185,907)	3,773,671
2023	0	3,351	0	205,982	400	209,733	0	128,818	(18,971)	3,825,430	8,660	3,943,937	115,791	4,059,728
2024	0	3,351	0	205,982	400	209,733	0	128,625	11,289	3,827,205	8,660	3,975,779	79,858	4,055,637
2025	0	3,351	0	205,982	400	209,733	0	130,380	(12,518)	3,829,055	8,660	3,955,577	(247,205)	3,708,372
2026	0	3,351	0	205,982	400	209,733	0	128,700	24,308	3,830,905	8,660	3,992,573	246,850	4,239,423
2027	0	3,351	0	205,982	400	209,733	0	128,692	(17,799)	3,832,855	8,660	3,952,408	(12,304)	3,940,104
2028	0	3,351	0	205,982	400	209,733	0	128,783	12,291	3,834,905	8,660	3,984,639	15,430	4,000,069
2029	0	3,351	0	205,982	400	209,733	0	128,671	(9,046)	3,836,955	8,660	3,965,240	(10,778)	3,954,462
2030	0	3,351	0	205,982	400	209,733	0	128,777	20,756	3,839,105	8,660	3,997,298	124,586	4,121,884
2031	0	3,351	0	205,982	400	209,733	0	128,134	(97,726)	3,841,130	8,660	3,880,198	(259,831)	3,620,367
2032	0	3,351	0	205,982	400	209,733	0	128,005	84,999	3,841,155	8,660	4,062,819	138,527	4,201,346
2033	0	3,351	0	205,982	400	209,733	0	127,876	(94,652)	3,841,180	8,660	3,883,064	(184,372)	3,698,692
2034	0	3,351	0	205,982	400	209,733	0	127,725	69,593	3,841,205	8,660	4,047,183	120,375	4,167,558
2035	0	3,351	0	205,982	400	209,733	0	127,379	(242,659)	3,841,205	8,660	3,734,585	(587,531)	3,147,054

[b]For the period June 1962 through November 1967, deliveries were supplied by non-SWP water.

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	San Luis Division						South San Joaquin Division					
	Dos Amigos Pumping Plant						Buena Vista Pumping Plant					
				Deliveries						Deliveries		
	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	51,963	19,989	1,877,183	3,426	1,952,561	0	36,751	37,546	1,014,294	3,285	1,091,876
1987	0	64,827	(25,707)	1,978,945	7,121	2,025,186	0	30,495	(25,522)	1,027,361	6,937	1,039,271
1988	0	72,679	(34,592)	2,217,126	4,490	2,259,703	0	38,804	(29,747)	1,244,196	4,360	1,257,613
1989	0	90,090	(29,411)	2,679,845	7,652	2,748,176	0	29,594	(60,826)	1,532,625	7,490	1,508,883
1990	0	115,074	(11,323)	2,394,999	8,922	2,507,672	0	46,865	(15,092)	1,769,991	8,879	1,810,643
1991	0	92,227	9,325	489,348	4,605	595,505	0	39,274	96,506	446,916	4,560	587,256
1992	0	118,796	(225,603)	1,372,536	2,079	1,267,808	0	28,138	(98,271)	920,978	1,995	852,840
1993	0	136,432	(220,537)	2,170,494	1,864	2,088,253	0	14,186	(128,363)	908,200	1,676	795,699
1994	0	152,414	(78,957)	1,724,433	3,098	1,800,988	0	35,083	(88,211)	1,107,122	2,918	1,056,912
1995	0	137,937	(12,473)	1,921,666	1,711	2,048,841	0	33,963	(16,431)	706,742	1,669	725,943
1996	0	45,591	14,927	2,425,024	2,998	2,488,540	0	31,304	15,438	988,612	2,928	1,038,282
1997	527	107,033	(66,814)	2,247,628	2,090	2,290,464	0	42,670	40,852	1,054,461	2,076	1,140,059
1998	0	95,185	(338,076)	1,664,080	1,589	1,422,778	0	41,910	(106,487)	753,731	1,585	690,739
1999	0	95,262	(2,778)	2,750,154	3,285	2,845,923	0	48,502	(2,807)	1,131,826	3,279	1,180,800
2000	0	125,056	11,514	3,320,292	4,216	3,461,078	0	32,999	11,485	1,814,685	4,216	1,863,385
2001	0	165,136	10,844	1,755,195	7,210	1,938,385	0	135,674	10,844	1,236,930	7,010	1,390,458
2002	0	91,091	44,147	2,648,926	3,968	2,788,132	0	41,565	44,147	1,822,174	3,961	1,911,847
2003	0	75,292	(376)	3,227,267	7,210	3,309,393	0	45,830	(376)	2,217,330	7,010	2,269,794
2004	0	71,062	76,561	3,483,557	7,210	3,638,390	0	41,600	76,561	2,341,447	7,010	2,466,618
2005	0	70,341	(59,387)	3,489,079	7,210	3,507,243	0	40,879	(59,387)	2,351,714	7,010	2,340,216
2006	0	69,959	(36,988)	3,498,619	7,210	3,538,800	0	40,497	(36,988)	2,364,933	7,010	2,375,452
2007	0	70,076	22,514	3,510,035	7,210	3,609,835	0	40,614	22,514	2,377,570	7,010	2,447,708
2008	0	70,205	6,985	3,567,255	7,210	3,651,655	0	40,743	6,985	2,444,040	7,010	2,498,778
2009	0	70,102	(15,186)	3,572,405	7,210	3,634,531	0	40,640	(15,186)	2,455,890	7,010	2,488,354
2010	0	70,198	4,288	3,575,055	7,210	3,656,751	0	40,736	4,288	2,465,910	7,010	2,517,944
2011	0	70,389	64,678	3,577,705	7,210	3,719,982	0	40,927	64,678	2,476,667	7,010	2,589,282
2012	0	70,279	(67,943)	3,580,355	7,210	3,589,901	0	40,817	(67,943)	2,485,340	7,010	2,465,224
2013	0	70,217	9,749	3,583,005	7,210	3,670,181	0	40,755	9,749	2,487,990	7,010	2,545,504
2014	0	70,525	16,625	3,586,155	7,210	3,680,515	0	41,063	16,625	2,491,140	7,010	2,555,838
2015	0	70,654	32,003	3,589,305	7,210	3,699,172	0	41,192	32,003	2,494,290	7,010	2,574,495
2016	0	70,354	(28,401)	3,592,955	7,210	3,642,118	0	40,892	(28,401)	2,497,940	7,010	2,517,441
2017	0	70,586	61,309	3,596,605	7,210	3,735,710	0	41,124	61,309	2,501,590	7,010	2,611,033
2018	0	70,740	(80,817)	3,600,055	7,210	3,597,188	0	41,278	(80,817)	2,505,040	7,010	2,472,511
2019	0	70,564	50,179	3,603,680	7,210	3,731,633	0	41,102	50,179	2,508,665	7,010	2,606,956
2020	0	70,628	(366)	3,606,305	7,210	3,683,777	0	41,166	(366)	2,511,290	7,010	2,559,100
2021	0	70,711	10,725	3,608,005	7,210	3,696,651	0	41,249	10,725	2,512,990	7,010	2,571,974
2022	0	70,705	(3,483)	3,611,705	7,210	3,686,137	0	41,243	(3,483)	2,516,690	7,010	2,561,460
2023	0	70,696	(18,971)	3,611,580	7,210	3,670,515	0	41,234	(18,971)	2,516,565	7,010	2,545,838
2024	0	70,575	11,289	3,613,355	7,210	3,702,429	0	41,113	11,289	2,518,340	7,010	2,577,752
2025	0	70,638	(12,518)	3,615,205	7,210	3,680,535	0	41,176	(12,518)	2,520,190	7,010	2,555,858
2026	0	70,650	24,308	3,617,055	7,210	3,719,223	0	41,188	24,308	2,522,040	7,010	2,594,546
2027	0	70,563	(17,799)	3,619,005	7,210	3,678,979	0	41,101	(17,799)	2,523,990	7,010	2,554,302
2028	0	70,703	12,291	3,621,055	7,210	3,711,259	0	41,241	12,291	2,526,040	7,010	2,586,582
2029	0	70,630	(9,046)	3,623,105	7,210	3,691,899	0	41,168	(9,046)	2,528,090	7,010	2,567,222
2030	0	70,694	20,756	3,625,255	7,210	3,723,915	0	41,232	20,756	2,530,240	7,010	2,599,238
2031	0	70,566	(97,726)	3,627,280	7,210	3,607,330	0	41,104	(97,726)	2,532,265	7,010	2,482,653
2032	0	70,168	84,999	3,627,305	7,210	3,789,682	0	40,706	84,999	2,532,290	7,010	2,665,005
2033	0	70,373	(94,652)	3,627,330	7,210	3,610,261	0	40,911	(94,652)	2,532,315	7,010	2,485,584
2034	0	69,865	69,593	3,627,355	7,210	3,774,023	0	40,403	69,593	2,532,340	7,010	2,649,346
2035	0	69,205	(242,659)	3,627,355	7,210	3,461,111	0	39,743	(242,659)	2,532,340	7,010	2,336,434

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	South San Joaquin Division (continued)											
	Teerink Pumping Plant						Chrisman Pumping Plant					
				Deliveries						Deliveries		
	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	38,747	37,546	882,300	3,285	961,878	0	41,421	37,546	839,839	3,285	922,091
1987	0	47,815	(25,522)	897,905	6,937	927,135	0	33,195	(25,522)	863,157	6,937	877,767
1988	0	53,815	(29,747)	1,097,643	4,360	1,126,071	0	39,775	(29,747)	1,055,649	4,360	1,070,037
1989	0	49,088	(60,826)	1,382,599	7,490	1,378,351	0	42,307	(60,826)	1,339,358	7,490	1,328,329
1990	0	66,868	(15,092)	1,627,246	8,879	1,687,901	0	56,663	(15,092)	1,590,893	8,879	1,641,343
1991	0	40,564	105,176	446,148	4,560	596,448	0	34,016	105,176	446,148	4,560	589,900
1992	0	31,820	(92,123)	844,376	1,995	786,068	0	34,477	(92,123)	820,133	1,995	764,482
1993	0	27,158	(127,738)	799,143	1,676	700,239	0	28,614	(127,738)	771,146	1,676	673,698
1994	0	50,802	(88,211)	1,007,214	2,918	972,723	0	57,203	(88,211)	977,703	2,918	949,613
1995	0	48,705	(16,431)	586,829	1,669	620,772	0	36,309	(16,431)	560,695	1,669	582,242
1996	0	58,437	15,438	836,819	2,928	913,622	0	43,710	15,438	800,633	2,928	862,709
1997	0	73,656	40,852	918,124	2,076	1,034,708	0	62,275	40,852	881,843	2,076	987,046
1998	0	61,137	(106,487)	656,796	1,585	613,031	0	47,523	(106,487)	628,084	1,585	570,705
1999	0	77,334	(2,807)	1,011,608	3,279	1,089,414	0	55,514	(2,807)	974,807	3,279	1,030,793
2000	0	82,569	11,485	1,691,120	4,216	1,789,390	0	45,175	11,485	1,651,057	4,216	1,711,933
2001	0	132,044	10,844	1,151,319	7,010	1,301,217	0	131,794	10,844	1,120,127	7,010	1,269,775
2002	0	108,309	44,147	1,731,113	3,961	1,887,530	0	69,443	44,147	1,689,561	3,961	1,807,112
2003	0	42,200	(376)	2,125,043	7,010	2,173,877	0	41,950	(376)	2,089,784	7,010	2,138,368
2004	0	37,970	76,561	2,236,747	7,010	2,358,288	0	37,720	76,561	2,200,747	7,010	2,322,038
2005	0	37,249	(59,387)	2,247,014	7,010	2,231,886	0	36,999	(59,387)	2,211,014	7,010	2,195,636
2006	0	36,867	(36,988)	2,260,233	7,010	2,267,122	0	36,617	(36,988)	2,224,233	7,010	2,230,872
2007	0	36,984	22,514	2,272,870	7,010	2,339,378	0	36,734	22,514	2,236,870	7,010	2,303,128
2008	0	37,113	6,985	2,339,340	7,010	2,390,448	0	36,863	6,985	2,303,340	7,010	2,354,198
2009	0	37,010	(15,186)	2,351,190	7,010	2,380,024	0	36,760	(15,186)	2,315,190	7,010	2,343,774
2010	0	37,106	4,288	2,361,210	7,010	2,409,614	0	36,856	4,288	2,325,210	7,010	2,373,364
2011	0	37,297	64,678	2,371,967	7,010	2,480,952	0	37,047	64,678	2,335,967	7,010	2,444,702
2012	0	37,187	(67,943)	2,380,640	7,010	2,356,894	0	36,937	(67,943)	2,344,640	7,010	2,320,644
2013	0	37,125	9,749	2,383,290	7,010	2,437,174	0	36,875	9,749	2,347,290	7,010	2,400,924
2014	0	37,433	16,625	2,386,440	7,010	2,447,508	0	37,183	16,625	2,350,440	7,010	2,411,258
2015	0	37,562	32,003	2,389,590	7,010	2,466,165	0	37,312	32,003	2,353,590	7,010	2,429,915
2016	0	37,262	(28,401)	2,393,240	7,010	2,409,111	0	37,012	(28,401)	2,357,240	7,010	2,372,861
2017	0	37,494	61,309	2,396,890	7,010	2,502,703	0	37,244	61,309	2,360,890	7,010	2,466,453
2018	0	37,648	(80,817)	2,400,340	7,010	2,364,181	0	37,398	(80,817)	2,364,340	7,010	2,327,931
2019	0	37,472	50,179	2,403,965	7,010	2,498,626	0	37,222	50,179	2,367,965	7,010	2,462,376
2020	0	37,536	(366)	2,406,590	7,010	2,450,770	0	37,286	(366)	2,370,590	7,010	2,414,520
2021	0	37,619	10,725	2,408,290	7,010	2,463,644	0	37,369	10,725	2,372,290	7,010	2,427,394
2022	0	37,613	(3,483)	2,411,990	7,010	2,453,130	0	37,363	(3,483)	2,375,990	7,010	2,416,880
2023	0	37,604	(18,971)	2,411,865	7,010	2,437,508	0	37,354	(18,971)	2,375,865	7,010	2,401,258
2024	0	37,483	11,289	2,413,640	7,010	2,469,422	0	37,233	11,289	2,377,640	7,010	2,433,172
2025	0	37,546	(12,518)	2,415,490	7,010	2,447,528	0	37,296	(12,518)	2,379,490	7,010	2,411,278
2026	0	37,558	24,308	2,417,340	7,010	2,486,216	0	37,308	24,308	2,381,340	7,010	2,449,966
2027	0	37,471	(17,799)	2,419,290	7,010	2,445,972	0	37,221	(17,799)	2,383,290	7,010	2,409,722
2028	0	37,611	12,291	2,421,340	7,010	2,478,252	0	37,361	12,291	2,385,340	7,010	2,442,002
2029	0	37,538	(9,046)	2,423,390	7,010	2,458,892	0	37,288	(9,046)	2,387,390	7,010	2,422,642
2030	0	37,602	20,756	2,425,540	7,010	2,490,908	0	37,352	20,756	2,389,540	7,010	2,454,658
2031	0	37,474	(97,726)	2,427,565	7,010	2,374,323	0	37,224	(97,726)	2,391,565	7,010	2,338,073
2032	0	37,076	84,999	2,427,590	7,010	2,556,675	0	36,826	84,999	2,391,590	7,010	2,520,425
2033	0	37,281	(94,652)	2,427,615	7,010	2,377,254	0	37,031	(94,652)	2,391,615	7,010	2,341,004
2034	0	36,773	69,593	2,427,640	7,010	2,541,016	0	36,523	69,593	2,391,640	7,010	2,504,766
2035	0	36,113	(242,659)	2,427,640	7,010	2,228,104	0	35,863	(242,659)	2,391,640	7,010	2,191,854

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	Tehachapi Division						Mojave Divsion					
	Edmonston Pumping Plant						Alamo Power Plant					
	Initial Fill Water (51)	Operational Losses (52)	Reservoir Storage Changes (53)	Deliveries: Water Supply (54)	Deliveries: Recreation (55)	Total (56)	Initial Fill Water (57)	Operational Losses (58)	Reservoir Storage Changes (59)	Deliveries: Water Supply (60)	Deliveries: 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	36,918	37,546	823,067	3,285	900,816	0	14,735	12,258	429,864	1,508	458,365
1987	0	29,580	(25,522)	851,322	6,937	862,317	0	11,665	(15,270)	417,870	1,239	415,504
1988	0	42,017	(29,747)	1,044,737	4,360	1,061,367	0	21,696	1,101	537,568	971	561,336
1989	0	32,270	(60,826)	1,328,041	7,490	1,306,975	0	4,686	(20,363)	716,360	1,407	702,090
1990	0	42,198	(15,092)	1,579,466	8,879	1,615,451	0	8,898	(5,916)	788,111	1,388	792,481
1991	0	33,999	105,176	441,217	4,560	584,952	0	17,908	34,422	177,308	394	230,032
1992	0	23,121	(92,123)	809,771	1,995	742,764	0	14,873	(17,115)	374,110	423	372,291
1993	0	11,946	(127,738)	759,485	1,676	645,369	0	9,304	(3,455)	308,222	443	314,514
1994	0	40,808	(88,211)	960,815	2,918	916,330	0	21,837	3,395	469,996	430	495,658
1995	0	36,001	(16,431)	542,465	1,669	563,704	0	14,139	(30,761)	384,836	427	368,641
1996	0	37,357	15,438	779,918	2,928	835,641	0	7,247	(11,410)	493,852	565	490,254
1997	0	51,475	40,852	860,798	2,076	955,201	0	20,725	38,960	537,586	507	597,778
1998	0	48,601	(106,487)	607,301	1,585	551,000	0	21,456	16,361	398,385	363	436,565
1999	0	52,726	(2,807)	947,420	3,279	1,000,618	0	26,644	(8,486)	589,756	396	608,310
2000	0	38,557	11,485	1,627,123	4,216	1,681,381	0	5,833	(8,059)	958,997	449	957,220
2001	0	130,244	10,844	1,104,757	7,010	1,252,855	0	113,003	14,768	660,869	1,630	790,270
2002	0	60,037	44,147	1,670,814	3,961	1,778,959	0	15,190	8,597	891,530	490	915,807
2003	0	40,400	(376)	2,068,132	7,010	2,115,166	0	23,004	(447)	1,242,583	1,630	1,266,770
2004	0	36,170	76,561	2,177,307	7,010	2,297,048	0	21,266	20,133	1,355,597	1,630	1,398,626
2005	0	35,449	(59,387)	2,187,574	7,010	2,170,646	0	21,116	(11,777)	1,365,864	1,630	1,376,833
2006	0	35,067	(36,988)	2,200,793	7,010	2,205,882	0	20,801	(25,870)	1,376,333	1,630	1,372,894
2007	0	35,184	22,514	2,213,430	7,010	2,278,138	0	20,894	25,284	1,388,970	1,630	1,436,778
2008	0	35,313	6,985	2,279,900	7,010	2,329,208	0	21,000	(934)	1,446,190	1,630	1,467,886
2009	0	35,210	(15,186)	2,291,750	7,010	2,318,784	0	20,905	(9,404)	1,451,340	1,630	1,464,471
2010	0	35,306	4,288	2,301,770	7,010	2,348,374	0	21,001	3,921	1,453,990	1,630	1,480,542
2011	0	35,497	64,678	2,312,527	7,010	2,419,712	0	20,971	26,001	1,456,640	1,630	1,505,242
2012	0	35,387	(67,943)	2,321,200	7,010	2,295,654	0	20,962	(41,797)	1,459,290	1,630	1,440,085
2013	0	35,325	9,749	2,323,850	7,010	2,375,934	0	20,835	4,742	1,461,940	1,630	1,489,147
2014	0	35,633	16,625	2,327,000	7,010	2,386,268	0	21,002	2,759	1,465,090	1,630	1,490,481
2015	0	35,762	32,003	2,330,150	7,010	2,404,925	0	21,066	22,604	1,468,240	1,630	1,513,540
2016	0	35,462	(28,401)	2,333,800	7,010	2,347,871	0	20,829	(21,084)	1,471,890	1,630	1,473,265
2017	0	35,694	61,309	2,337,450	7,010	2,441,463	0	20,895	33,266	1,475,540	1,630	1,531,331
2018	0	35,848	(80,817)	2,340,900	7,010	2,302,941	0	20,998	(50,078)	1,478,990	1,630	1,451,540
2019	0	35,672	50,179	2,344,525	7,010	2,437,386	0	20,924	31,508	1,482,615	1,630	1,536,677
2020	0	35,736	(366)	2,347,150	7,010	2,389,530	0	20,947	(3,398)	1,485,240	1,630	1,504,419
2021	0	35,819	10,725	2,348,850	7,010	2,402,404	0	20,946	(1,117)	1,486,940	1,630	1,508,399
2022	0	35,813	(3,483)	2,352,550	7,010	2,391,890	0	20,940	(3,434)	1,490,640	1,630	1,509,776
2023	0	35,804	(18,971)	2,352,425	7,010	2,376,268	0	20,939	(18,638)	1,490,515	1,630	1,494,446
2024	0	35,683	11,289	2,354,200	7,010	2,408,182	0	20,881	21,309	1,492,290	1,630	1,536,110
2025	0	35,746	(12,518)	2,356,050	7,010	2,386,288	0	20,965	(11,624)	1,494,140	1,630	1,505,111
2026	0	35,758	24,308	2,357,900	7,010	2,424,976	0	20,930	13,030	1,495,990	1,630	1,531,580
2027	0	35,671	(17,799)	2,359,850	7,010	2,384,732	0	20,861	(6,161)	1,497,940	1,630	1,514,270
2028	0	35,811	12,291	2,361,900	7,010	2,417,012	0	20,961	4,006	1,499,990	1,630	1,526,587
2029	0	35,738	(9,046)	2,363,950	7,010	2,397,652	0	20,955	(913)	1,502,040	1,630	1,523,712
2030	0	35,802	20,756	2,366,100	7,010	2,429,668	0	20,930	8,528	1,504,190	1,630	1,535,278
2031	0	35,674	(97,726)	2,368,125	7,010	2,313,083	0	20,956	(31,057)	1,506,215	1,630	1,497,744
2032	0	35,276	84,999	2,368,150	7,010	2,495,435	0	20,865	43,953	1,506,240	1,630	1,572,688
2033	0	35,481	(94,652)	2,368,175	7,010	2,316,014	0	20,854	(37,929)	1,506,265	1,630	1,490,820
2034	0	34,973	69,593	2,368,200	7,010	2,479,776	0	20,769	28,588	1,506,290	1,630	1,557,277
2035	0	34,313	(242,659)	2,368,200	7,010	2,166,864	0	20,892	(49,219)	1,506,290	1,630	1,479,593

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	Mojave Division (continued)											
	Pearblossom Pumping Plant						Mojave Siphon Power Plant					
				Deliveries						Deliveries		
	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	30,876	12,258	394,156	1,508	438,798	0	0	0	0	0	0
1987	0	27,552	(15,270)	377,531	1,239	391,052	0	0	0	0	0	0
1988	0	32,209	1,101	501,300	971	535,581	0	1,977	1,101	501,291	971	505,340
1989	0	31,500	(20,363)	661,189	1,407	673,733	0	29,110	(20,363)	661,100	1,407	671,254
1990	0	32,672	(5,916)	730,560	1,388	758,704	0	23,692	(5,916)	730,550	1,388	749,714
1991	0	15,209	34,774	163,913	394	214,290	0	(543)	34,774	163,913	394	198,538
1992	0	13,989	(17,451)	338,249	423	335,210	0	(13,193)	(17,451)	338,207	423	307,986
1993	0	9,779	(3,455)	255,117	443	261,884	0	(11,922)	(3,455)	255,117	443	240,183
1994	0	150	3,395	409,928	430	413,903	0	1,601	3,395	395,294	430	400,720
1995	0	6,820	(29,282)	328,882	427	306,847	0	10,458	(29,282)	321,387	427	302,990
1996	0	9,514	(11,410)	424,252	565	422,921	0	(5,577)	(11,410)	418,141	565	401,719
1997	0	(1,124)	38,960	461,563	507	499,906	0	5,171	38,960	452,525	507	497,163
1998	0	(2,087)	16,361	334,965	363	349,602	0	11,496	16,361	332,385	363	360,605
1999	0	(1,154)	(8,486)	505,624	396	496,380	0	11,065	(8,486)	498,919	396	501,894
2000	0	(26,504)	(8,059)	864,999	449	830,885	0	1,688	(8,059)	854,980	449	849,058
2001	0	107,653	14,768	602,935	1,430	726,786	0	104,183	14,768	599,887	1,430	720,268
2002	0	3,810	8,597	823,690	490	836,587	0	9,300	8,597	820,217	490	838,604
2003	0	17,654	(447)	1,147,429	1,430	1,166,066	0	14,184	(447)	1,130,335	1,430	1,145,502
2004	0	15,916	20,133	1,249,190	1,430	1,286,669	0	12,446	20,133	1,235,690	1,430	1,269,699
2005	0	15,766	(11,777)	1,255,390	1,430	1,260,809	0	12,296	(11,777)	1,236,890	1,430	1,238,839
2006	0	15,451	(25,870)	1,261,590	1,430	1,252,601	0	11,981	(25,870)	1,238,090	1,430	1,225,631
2007	0	15,544	25,284	1,269,740	1,430	1,311,998	0	12,074	25,284	1,241,240	1,430	1,280,028
2008	0	15,650	(934)	1,279,690	1,430	1,295,836	0	12,180	(934)	1,253,190	1,430	1,265,866
2009	0	15,555	(9,404)	1,284,840	1,430	1,292,421	0	12,085	(9,404)	1,254,340	1,430	1,258,451
2010	0	15,651	3,921	1,287,490	1,430	1,308,492	0	12,181	3,921	1,255,490	1,430	1,273,022
2011	0	15,621	26,001	1,290,140	1,430	1,333,192	0	12,151	26,001	1,256,640	1,430	1,296,222
2012	0	15,612	(41,797)	1,292,790	1,430	1,268,035	0	12,142	(41,797)	1,257,790	1,430	1,229,565
2013	0	15,485	4,742	1,295,440	1,430	1,317,097	0	12,015	4,742	1,258,940	1,430	1,277,127
2014	0	15,652	2,759	1,298,590	1,430	1,318,431	0	12,182	2,759	1,260,090	1,430	1,276,461
2015	0	15,716	22,604	1,301,740	1,430	1,341,490	0	12,246	22,604	1,261,240	1,430	1,297,520
2016	0	15,479	(21,084)	1,305,390	1,430	1,301,215	0	12,009	(21,084)	1,262,390	1,430	1,254,745
2017	0	15,545	33,266	1,309,040	1,430	1,359,281	0	12,075	33,266	1,263,540	1,430	1,310,311
2018	0	15,648	(50,078)	1,312,490	1,430	1,279,490	0	12,178	(50,078)	1,264,490	1,430	1,228,020
2019	0	15,574	31,508	1,316,115	1,430	1,364,627	0	12,104	31,508	1,264,615	1,430	1,309,657
2020	0	15,597	(3,398)	1,318,740	1,430	1,332,369	0	12,127	(3,398)	1,264,740	1,430	1,274,899
2021	0	15,596	(1,117)	1,320,440	1,430	1,336,349	0	12,126	(1,117)	1,264,840	1,430	1,277,279
2022	0	15,590	(3,434)	1,324,140	1,430	1,337,726	0	12,120	(3,434)	1,266,940	1,430	1,277,056
2023	0	15,589	(18,638)	1,324,015	1,430	1,322,396	0	12,119	(18,638)	1,265,015	1,430	1,259,926
2024	0	15,531	21,309	1,325,790	1,430	1,364,060	0	12,061	21,309	1,265,090	1,430	1,299,890
2025	0	15,615	(11,624)	1,327,640	1,430	1,333,061	0	12,145	(11,624)	1,265,140	1,430	1,267,091
2026	0	15,580	13,030	1,329,490	1,430	1,359,530	0	12,110	13,030	1,265,190	1,430	1,291,760
2027	0	15,511	(6,161)	1,331,440	1,430	1,342,220	0	12,041	(6,161)	1,265,240	1,430	1,272,550
2028	0	15,611	4,006	1,333,490	1,430	1,354,537	0	12,141	4,006	1,265,290	1,430	1,282,867
2029	0	15,605	(913)	1,335,540	1,430	1,351,662	0	12,135	(913)	1,265,340	1,430	1,277,992
2030	0	15,580	8,528	1,337,690	1,430	1,363,228	0	12,110	8,528	1,265,390	1,430	1,287,458
2031	0	15,606	(31,057)	1,339,715	1,430	1,325,694	0	12,136	(31,057)	1,265,415	1,430	1,247,924
2032	0	15,515	43,953	1,339,740	1,430	1,400,638	0	12,045	43,953	1,265,440	1,430	1,322,868
2033	0	15,504	(37,929)	1,339,765	1,430	1,318,770	0	12,034	(37,929)	1,265,465	1,430	1,241,000
2034	0	15,419	28,588	1,339,790	1,430	1,385,227	0	11,949	28,588	1,265,490	1,430	1,307,457
2035	0	15,542	(49,219)	1,339,790	1,430	1,307,543	0	12,072	(49,219)	1,265,490	1,430	1,229,773

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 Power Plant						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	9,486	8,339	392,650	1,378	411,853	0	22,387	25,288	393,203	1,777	442,655
1987	0	7,923	(11,335)	375,451	1,118	373,157	0	18,164	(10,252)	433,452	5,698	447,062
1988	0	11,090	2,238	499,285	861	513,474	0	20,461	(30,848)	507,169	3,389	500,171
1989	0	13,116	(5,487)	658,730	1,301	667,660	0	27,914	(40,463)	611,681	6,083	605,215
1990	0	13,439	(4,622)	728,723	1,281	738,821	0	33,666	(9,176)	791,355	7,491	823,336
1991	0	10,836	18,308	161,032	340	190,516	0	16,460	70,754	263,909	4,166	355,289
1992	0	9,157	(9,084)	328,354	371	328,798	0	8,238	(75,008)	435,661	1,572	370,463
1993	0	5,602	5,593	244,678	364	256,237	0	2,674	(124,283)	451,263	1,233	330,887
1994	0	10,915	(11,045)	393,690	357	393,917	0	18,688	(91,606)	490,819	2,488	420,389
1995	0	11,268	2,331	320,978	358	334,935	0	21,775	14,330	157,629	1,242	194,976
1996	0	9,496	13,015	417,656	494	440,661	0	30,121	26,848	286,066	2,363	345,398
1997	0	8,087	(19,685)	451,874	416	440,692	0	30,468	1,892	323,212	1,569	357,141
1998	0	6,700	16,643	332,198	310	355,851	0	26,851	(122,848)	208,916	1,222	114,141
1999	0	9,784	(4,177)	497,787	341	503,735	0	25,690	5,679	357,664	2,883	391,916
2000	0	3,935	(11,040)	853,786	375	847,056	0	32,293	19,544	668,126	3,767	723,730
2001	0	100,001	13,768	598,830	1,250	713,849	0	17,191	(3,924)	443,888	5,380	462,535
2002	0	10,315	9,682	818,028	413	838,438	0	44,692	35,550	779,284	3,471	862,997
2003	0	10,002	(447)	1,127,935	1,250	1,138,740	0	17,346	71	825,549	5,380	848,346
2004	0	8,752	4,466	1,233,090	1,250	1,247,558	0	14,854	56,428	821,710	5,380	898,372
2005	0	8,561	(16,027)	1,234,090	1,250	1,227,874	0	14,283	(47,610)	821,710	5,380	793,763
2006	0	8,512	(9,315)	1,235,090	1,250	1,235,537	0	14,216	(11,118)	824,460	5,380	832,938
2007	0	8,531	6,931	1,238,090	1,250	1,254,802	0	14,240	(2,770)	824,460	5,380	841,310
2008	0	8,481	(2,332)	1,249,890	1,250	1,257,289	0	14,263	7,919	833,710	5,380	861,272
2009	0	8,508	3,506	1,250,890	1,250	1,264,154	0	14,255	(5,782)	840,410	5,380	854,263
2010	0	8,504	10,523	1,251,890	1,250	1,272,167	0	14,255	367	847,780	5,380	867,782
2011	0	8,519	1,352	1,252,890	1,250	1,264,011	0	14,476	38,677	855,887	5,380	914,420
2012	0	8,482	(22,894)	1,253,890	1,250	1,240,728	0	14,375	(26,146)	861,910	5,380	855,519
2013	0	8,499	16,733	1,254,890	1,250	1,281,372	0	14,440	5,007	861,910	5,380	886,737
2014	0	8,522	(4,585)	1,255,890	1,250	1,261,077	0	14,581	13,866	861,910	5,380	895,737
2015	0	8,499	2,964	1,256,890	1,250	1,269,603	0	14,646	9,399	861,910	5,380	891,335
2016	0	8,483	(1,269)	1,257,890	1,250	1,266,354	0	14,583	(7,317)	861,910	5,380	874,556
2017	0	8,502	9,828	1,258,890	1,250	1,278,470	0	14,749	28,043	861,910	5,380	910,082
2018	0	8,484	(19,777)	1,259,690	1,250	1,249,647	0	14,800	(30,739)	861,910	5,380	851,351
2019	0	8,492	17,408	1,259,690	1,250	1,286,840	0	14,698	18,671	861,910	5,380	900,659
2020	0	8,483	(17,305)	1,259,690	1,250	1,252,118	0	14,739	3,032	861,910	5,380	885,061
2021	0	8,486	(398)	1,259,690	1,250	1,269,028	0	14,823	11,842	861,910	5,380	893,955
2022	0	8,486	13,735	1,261,690	1,250	1,285,161	0	14,823	(49)	861,910	5,380	882,064
2023	0	8,482	(8,417)	1,259,690	1,250	1,261,005	0	14,815	(333)	861,910	5,380	881,772
2024	0	8,462	689	1,259,690	1,250	1,270,091	0	14,752	(10,020)	861,910	5,380	872,022
2025	0	8,489	4,591	1,259,690	1,250	1,274,020	0	14,731	(894)	861,910	5,380	881,127
2026	0	8,475	(3,819)	1,259,690	1,250	1,265,596	0	14,778	11,278	861,910	5,380	893,346
2027	0	8,479	745	1,259,690	1,250	1,270,164	0	14,760	(11,638)	861,910	5,380	870,412
2028	0	8,481	(5,355)	1,259,690	1,250	1,264,066	0	14,800	8,285	861,910	5,380	890,375
2029	0	8,481	2,909	1,259,690	1,250	1,272,330	0	14,733	(8,133)	861,910	5,380	873,890
2030	0	8,480	296	1,259,690	1,250	1,269,716	0	14,822	12,228	861,910	5,380	894,340
2031	0	8,475	(1,976)	1,259,690	1,250	1,267,439	0	14,668	(66,669)	861,910	5,380	815,289
2032	0	8,449	18,821	1,259,690	1,250	1,288,210	0	14,361	41,046	861,910	5,380	922,697
2033	0	8,449	(23,419)	1,259,690	1,250	1,245,970	0	14,577	(56,723)	861,910	5,380	825,144
2034	0	8,443	21,651	1,259,690	1,250	1,291,034	0	14,154	41,005	861,910	5,380	922,449
2035	0	8,451	(31,434)	1,259,690	1,250	1,237,957	0	13,371	(193,440)	861,910	5,380	687,221

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	West Branch, California Aqueduct (continued)											
	Warne Power Plant						Castaic Power Plant					
	Initial Fill Water (87)	Operational Losses (88)	Reservoir Storage Changes (89)	Deliveries: Water Supply (90)	Deliveries: Recreation (91)	Total (92)	Initial Fill Water (93)	Operational Losses (94)	Reservoir Storage Changes (95)	Deliveries: Water Supply (96)	Deliveries: 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	21,579	25,288	393,203	1,777	441,847	0	(6,664)	21,520	393,203	623	408,682
1987	0	20,885	(10,252)	433,452	5,698	449,783	0	(519)	(6,241)	433,452	2,734	429,426
1988	0	23,253	(31,453)	507,169	3,389	502,358	0	12,650	(28,498)	507,169	1,359	492,680
1989	0	27,131	(40,463)	611,681	6,083	604,432	0	634	(40,154)	611,681	3,161	575,322
1990	0	34,208	(9,176)	791,355	7,491	823,878	0	(14,012)	(15,101)	786,519	3,419	760,825
1991	0	16,908	70,754	263,909	4,166	355,737	0	(871)	89,637	262,921	2,283	353,970
1992	0	9,638	(75,008)	435,661	1,572	371,863	0	(609)	(71,795)	435,661	1,543	364,800
1993	0	1,922	(124,283)	451,257	1,233	330,129	0	21,959	(77,428)	451,257	1,211	396,999
1994	0	23,151	(91,606)	490,819	2,488	424,852	0	5,205	(95,738)	490,819	2,465	402,751
1995	0	15,860	14,330	157,629	1,242	189,061	0	20,400	75,863	157,629	1,223	255,115
1996	0	21,191	26,848	286,066	2,363	336,468	0	(5,621)	19,088	286,066	2,362	301,895
1997	0	23,437	1,892	323,201	1,569	350,099	0	11,119	(1,802)	323,201	1,566	334,084
1998	0	26,864	(122,848)	208,909	1,222	114,147	0	24,544	(57,726)	208,909	1,222	176,949
1999	0	21,822	8,120	357,664	2,883	390,489	0	(3,670)	6,280	357,664	2,865	363,139
2000	0	27,218	18,198	668,126	3,767	717,309	0	(19,637)	9,320	665,926	1,556	657,165
2001	0	15,281	(3,924)	443,888	5,380	460,625	0	9,628	(1,924)	443,888	2,330	453,922
2002	0	35,058	35,550	779,284	3,471	853,363	0	10,071	34,221	776,136	305	820,733
2003	0	15,436	71	825,549	5,380	846,436	0	9,711	71	822,399	2,330	834,511
2004	0	12,944	56,428	821,710	5,380	896,462	0	6,659	56,428	818,560	2,330	883,977
2005	0	12,373	(47,610)	821,710	5,380	791,853	0	6,088	(47,610)	818,560	2,330	779,368
2006	0	12,306	(11,118)	824,460	5,380	831,028	0	6,021	(11,118)	821,310	2,330	818,543
2007	0	12,330	(2,770)	824,460	5,380	839,400	0	6,045	(2,770)	821,310	2,330	826,915
2008	0	12,353	7,919	833,710	5,380	859,362	0	6,068	7,919	830,560	2,330	846,877
2009	0	12,345	(5,782)	840,410	5,380	852,353	0	6,060	(5,782)	837,260	2,330	839,868
2010	0	12,345	367	847,780	5,380	865,872	0	6,060	367	844,630	2,330	853,387
2011	0	12,566	38,677	855,887	5,380	912,510	0	6,281	38,677	852,737	2,330	900,025
2012	0	12,465	(26,146)	861,910	5,380	853,609	0	6,180	(26,146)	858,760	2,330	841,124
2013	0	12,530	5,007	861,910	5,380	884,827	0	6,245	5,007	858,760	2,330	872,342
2014	0	12,671	13,866	861,910	5,380	893,827	0	6,386	13,866	858,760	2,330	881,342
2015	0	12,736	9,399	861,910	5,380	889,425	0	6,451	9,399	858,760	2,330	876,940
2016	0	12,673	(7,317)	861,910	5,380	872,646	0	6,388	(7,317)	858,760	2,330	860,161
2017	0	12,839	28,043	861,910	5,380	908,172	0	6,554	28,043	858,760	2,330	895,687
2018	0	12,890	(30,739)	861,910	5,380	849,441	0	6,605	(30,739)	858,760	2,330	836,956
2019	0	12,788	18,671	861,910	5,380	898,749	0	6,503	18,671	858,760	2,330	886,264
2020	0	12,829	3,032	861,910	5,380	883,151	0	6,544	3,032	858,760	2,330	870,666
2021	0	12,913	11,842	861,910	5,380	892,045	0	6,628	11,842	858,760	2,330	879,560
2022	0	12,913	(49)	861,910	5,380	880,154	0	6,628	(49)	858,760	2,330	867,669
2023	0	12,905	(333)	861,910	5,380	879,862	0	6,620	(333)	858,760	2,330	867,377
2024	0	12,842	(10,020)	861,910	5,380	870,112	0	6,557	(10,020)	858,760	2,330	857,627
2025	0	12,821	(894)	861,910	5,380	879,217	0	6,536	(894)	858,760	2,330	866,732
2026	0	12,868	11,278	861,910	5,380	891,436	0	6,583	11,278	858,760	2,330	878,951
2027	0	12,850	(11,638)	861,910	5,380	868,502	0	6,565	(11,638)	858,760	2,330	856,017
2028	0	12,890	8,285	861,910	5,380	888,465	0	6,605	8,285	858,760	2,330	875,980
2029	0	12,823	(8,133)	861,910	5,380	871,980	0	6,538	(8,133)	858,760	2,330	859,495
2030	0	12,912	12,228	861,910	5,380	892,430	0	6,627	12,228	858,760	2,330	879,945
2031	0	12,758	(66,669)	861,910	5,380	813,379	0	6,473	(66,669)	858,760	2,330	800,894
2032	0	12,451	41,046	861,910	5,380	920,787	0	6,166	41,046	858,760	2,330	908,302
2033	0	12,667	(56,723)	861,910	5,380	823,234	0	6,382	(56,723)	858,760	2,330	810,749
2034	0	12,244	41,005	861,910	5,380	920,539	0	5,959	41,005	858,760	2,330	908,054
2035	0	11,461	(193,440)	861,910	5,380	685,311	0	5,176	(193,440)	858,760	2,330	672,826

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)							
	Coastal Branch, California Aqueduct							
	Las Perillas and Badger Hill Pumping Plants				Devil's Den, Bluestone, and Polonio Pass Pumping Plants			
	Initial Fill Water (99)	Operational Losses (100)	Water Supply Delivery (101)	Total (102)	Initial Fill Water (103)	Operational Losses (104)	Water Supply Delivery (105)	Total (106)
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	210	873	79,039	80,122	0	0	0	0
1969	0	1,042	62,064	63,106	0	0	0	0
1970	0	638	83,649	84,287	0	0	0	0
1971	0	3,455	110,971	114,426	0	0	0	0
1972	0	1,745	121,755	123,500	0	0	0	0
1973	0	5,479	78,645	84,124	0	0	0	0
1974	0	7,344	78,174	85,518	0	0	0	0
1975	0	5,819	85,216	91,035	0	0	0	0
1976	0	6,562	90,058	96,620	0	0	0	0
1977	0	5,777	40,579	46,356	0	0	0	0
1978	0	9,085	92,604	101,689	0	0	0	0
1979	0	10,896	123,155	134,051	0	0	0	0
1980	0	9,449	111,379	120,828	0	0	0	0
1981	0	13,232	109,754	122,986	0	0	0	0
1982	0	7,984	95,776	103,760	0	0	0	0
1983	0	5,710	100,518	106,228	0	0	0	0
1984	0	5,740	126,387	132,127	0	0	0	0
1985	0	7,563	120,823	128,386	0	0	0	0
1986	0	8,719	131,599	140,318	0	0	0	0
1987	0	11,363	128,080	139,443	0	0	0	0
1988	0	12,831	120,969	133,800	0	0	0	0
1989	0	11,454	116,801	128,255	0	0	0	0
1990	0	13,022	109,802	122,824	0	0	0	0
1991	0	5,802	1,496	7,298	0	0	0	0
1992	0	7,893	79,635	87,528	0	0	0	0
1993	0	9,282	94,921	104,203	0	0	0	0
1994	0	8,515	87,158	95,673	0	0	0	0
1995	0	6,986	94,536	101,522	0	0	0	0
1996	0	9,663	114,630	124,293	0	0	0	0
1997	527	8,343	110,428	119,298	527	0	8,538	9,065
1998	0	8,415	109,400	117,815	0	0	22,210	22,210
1999	0	2,453	120,061	122,514	0	303	23,880	24,183
2000	0	(429)	120,313	119,884	0	0	26,703	26,703
2001	0	802	83,946	84,748	0	212	19,260	19,472
2002	0	638	99,783	100,421	0	(151)	31,991	31,840
2003	0	802	144,301	145,103	0	212	42,052	42,264
2004	0	802	179,186	179,988	0	212	70,486	70,698
2005	0	802	179,186	179,988	0	212	70,486	70,698
2006	0	802	176,436	177,238	0	212	70,486	70,698
2007	0	802	176,436	177,238	0	212	70,486	70,698
2008	0	802	167,186	167,988	0	212	70,486	70,698
2009	0	802	160,486	161,288	0	212	70,486	70,698
2010	0	802	153,116	153,918	0	212	70,486	70,698
2011	0	802	145,009	145,811	0	212	70,486	70,698
2012	0	802	138,986	139,788	0	212	70,486	70,698
2013	0	802	138,986	139,788	0	212	70,486	70,698
2014	0	802	138,986	139,788	0	212	70,486	70,698
2015	0	802	138,986	139,788	0	212	70,486	70,698
2016	0	802	138,986	139,788	0	212	70,486	70,698
2017	0	802	138,986	139,788	0	212	70,486	70,698
2018	0	802	138,986	139,788	0	212	70,486	70,698
2019	0	802	138,986	139,788	0	212	70,486	70,698
2020	0	802	138,986	139,788	0	212	70,486	70,698
2021	0	802	138,986	139,788	0	212	70,486	70,698
2022	0	802	138,986	139,788	0	212	70,486	70,698
2023	0	802	138,986	139,788	0	212	70,486	70,698
2024	0	802	138,986	139,788	0	212	70,486	70,698
2025	0	802	138,986	139,788	0	212	70,486	70,698
2026	0	802	138,986	139,788	0	212	70,486	70,698
2027	0	802	138,986	139,788	0	212	70,486	70,698
2028	0	802	138,986	139,788	0	212	70,486	70,698
2029	0	802	138,986	139,788	0	212	70,486	70,698
2030	0	802	138,986	139,788	0	212	70,486	70,698
2031	0	802	138,986	139,788	0	212	70,486	70,698
2032	0	802	138,986	139,788	0	212	70,486	70,698
2033	0	802	138,986	139,788	0	212	70,486	70,698
2034	0	802	138,986	139,788	0	212	70,486	70,698
2035	0	802	138,986	139,788	0	212	70,486	70,698

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] (5)	Capital Cost Component of Transportation Water Charge[f] (6)	Water Supply and Power Total (7)		
Conservation Facilities									
Upper Feather Division									
Frenchman Dam and Lake	180	0	0	0	604	0	784	2,888	3,672
Grizzly Valley Dam and Lake Davis	65	0	0	0	39	0	104	7,378	7,482
Antelope Dam and Lake	1	0	0	0	0	0	1	5,534	5,535
Abbey Bridge Dam and Reservoir	0	0	0	0	0	0	0	519	519
Dixie Refuge Dam and Reservoir	0	0	0	0	0	0	0	236	236
Total, Upper Feather Division	246	0	0	0	643	0	889	16,555	17,444
Oroville Division									
Multipurpose Facilities	20,954	0	0	0	367,547	0	388,501	90,795	479,296
Specific Power Facilities	5,002	0	0	0	101,121	0	106,123	6,850	112,973
Total, Oroville Division	25,956	0	0	0	468,668	0	494,624	97,645	592,269
California Aqueduct									
North San Joaquin Division	1,210	0	0	0	79,303	0	80,513	2,880	83,393
San Luis Division	13,152	0	0	0	104,610	0	117,762	3,827	121,589
Total, California Aqueduct	14,362	0	0	0	183,913	0	198,275	6,707	204,982
Delta Facilities	37,311	0	0	0	282,670	0	319,981	42,268	362,249
Planning and Pre-operation	5,302	0	0	0	82,651	0	87,953	0	87,953
Total, Conservation Facilities	83,177	0	0	0	1,018,545	0	1,101,722	163,175	1,264,897
Transportation Facilities									
Upper Feather Division									
Grizzly Valley Pipeline	1	0	181	0	0	341	523	0	523
North Bay Aqueduct	266	0	681	0	0	93,179	94,126	0	94,126
South Bay Aqueduct	(1,894)	0	1,728	0	0	65,638	65,472	21,466	86,938
California Aqueduct									
North San Joaquin Division	6,529	0	57	0	0	177,028	183,614	6,417	190,031
San Luis Division	5,839	0	0	0	0	131,994	137,833	6,513	144,346
South San Joaquin Division	870	0	3,630	2,093	0	288,130	294,723	17,329	312,052
Tehachapi Division	54	0	0	5,230	0	303,952	309,236	18,290	327,526
Mojave Division	88,992	0	761	0	0	282,318	372,071	37,941	410,012
Santa Ana Division	(11,471)	0	5,982	5,331	0	208,480	208,322	31,396	239,718
West Branch	(653)	0	440	37	0	469,069	468,893	31,326	500,219
Coastal Branch	134	0	93	0	0	490,234	490,461	0	490,461
Total, California Aqueduct	90,294	0	10,963	12,691	0	2,351,205	2,465,153	149,212	2,614,365
Total, Transportation Facilities	88,667	0	13,553	12,691	0	2,510,363	2,625,274	170,678	2,795,952
East Branch Enlargement	(391)	0	0	0	0	453,459	453,068	0	453,068
East Branch Extension	0	0	0	0	0	125,000	125,000	0	125,000
Coastal Branch Extension	0	0	0	0	0	30,708	30,708	0	30,708
San Joaquin Drainage Facilities	0	0	0	0	0	0	0	91,141	91,141
Off-Aqueduct Power Generation Facilities	0	0	0	0	0	463,611	463,611	0	463,611
Small Hydro Power Generation Facilities	0	0	0	0	14,095	90,103	104,198	0	104,198
Land Purchase - Kern Water Bank	0	0	0	0	34,686	0	34,686	0	34,686
Unassigned/Miscellaneous	0	0	0	0	19,326	0	19,326	6,383	25,709
Davis - Grunsky	0	0	0	0	0	0	0	130,000	130,000
Total through 2015	171,453	0	13,553	12,691	1,086,652	3,673,244	4,957,593	561,377	5,518,970

[a] Miscellaneous project receipts that are 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, 2002.
[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. Planning and Preoperation total includes $50,534,000 of planning costs financed from Systems Revenues and not included in Table 14-3. Planning and Preoperation total does **not** include $16,389,000 of projected costs that are included in Table 14-3. Delta Facilities total does **not** include $49,814,000 of projected costs that are included in Table 14-3. Unassigned/Miscellaneous total does **not** include $18,174,000 of costs that are included in Table 14-3.
[f] See Table B-10. Mojave Division total reduced by $90,103,000 for costs included in Small-Hydro Power Generation Facilities line.

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
	1952-2000 (1)	2001 (2)	2002 (3)	2003 (4)	2004 (5)	2005 (6)	(7)
Feather River Area							
County of Butte	136,546	0	0	0	0	0	136,546
Plumas County Flood Control and Water Conservation District	645	0	0	0	0	0	645
Thermalito Irrigation District[b]	43,939	0	0	0	0	0	43,939
Subtotal	181,130	0	0	0	0	0	181,130
North Bay Area							
Napa County Flood Control and Water Conservation District	13,590	0	0	0	0	5,000	18,590
Solano County Water Agency	662,113	0	0	0	0	0	662,113
Subtotal	675,703	0	0	0	0	5,000	680,703
South Bay Area							
Alameda County Flood Control and Water Conservation District, Zone 7	283,247	27,234	62,668	9,210	13,000	0	395,359
Alameda County Water District	232,484	0	7,095	2,000	3,000	0	244,579
Santa Clara Valley Water District	21,500	0	0	0	0	0	21,500
San Francisco Water Department[b]	1,066,680	0	0	0	0	0	1,066,680
Subtotal	1,603,911	27,234	69,763	11,210	16,000	0	1,728,118
Central Coastal Area							
San Luis Obispo County Flood Control and Water Conservation District	26,204	0	0	0	0	0	26,204
Santa Barbara County Flood Control and Water Conservation District	67,058	0	0	0	0	0	67,058
Subtotal	93,262	0	0	0	0	0	93,262
San Joaquin Valley Area							
Castaic Lake Water Agency	82,567	0	0	0	0	0	82,567
Dudley Ridge Water District	304,541	0	0	0	0	0	304,541
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	2,867,454	106,187	33,381	20,805	14,000	0	3,041,827
Oak Flat Water District	46,882	0	0	0	0	0	46,882
Tracy Golf and Country Club[c]	4,687	2,245	0	0	0	0	6,932
Tulare Lake Basin Water Storage District	277,483	0	0	0	0	0	277,483
Veterans Administration Cemetery[b]	3,342	0	0	0	0	0	3,342
Subtotal	3,598,606	108,432	33,381	20,805	14,000	0	3,775,224
Southern California Area							
Antelope Valley-East Kern Water Agency	402,882	0	0	2,000	13,000	10,000	427,882
Castaic Lake Water Agency	354,745	0	0	0	0	0	354,745
Coachella Valley Water District	14,206	0	0	0	0	0	14,206
Crestline-Lake Arrowhead Water Agency	25,298	0	0	0	0	0	25,298
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	211,765	0	0	0	0	0	211,765
Palmdale Water District	34,173	0	0	0	0	0	34,173
San Bernardino Valley Municipal Water District	952,254	0	8,431	2,000	3,000	0	965,685
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
The Metropolitan Water District of Southern California	4,813,456	622	0	0	0	0	4,814,078
Ventura County Flood Control District	79,699	0	0	0	0	0	79,699
Subtotal	7,133,230	622	8,431	4,000	16,000	10,000	7,172,283
Total	13,285,842	136,288	111,575	36,015	46,000	15,000	13,630,720

[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.

Table B-9

Capital Costs of Requested Excess Peaking Capacity

(Dollars)

Calendar Year	Total Advance Payments and Credits for Excess Capacity (1)	Incremental Costs for Excess Capacity (2)	Overpayment (+) or Underpayment (-)[a] (3)	Annual Surplus Money Investment Fund Interest Rate[b]		Net Over or Underpayment With Interest[c] (6)
				Jan-Jun (4)	Jul-Dec (5)	
	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.
[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.

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	1,086,045	(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			25,730	44,053	38,075	17,959	5,900	6,835						138,552
25 — 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			0	184,422	49,052	44,911	61,588	(20,263)	(180,465)				(86,133)[h]	53,112
Antelope Valley-East Kern Water Agency														
Incremental Costs				1,645	6,326	13,376	10,048	2,018	308	96		190		34,007
						1,700	1,700							3,400
29A — Total Unadjusted Incremental Costs for Past Payments														
29F				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				85,495	52,625	101,648	34,062	(12,794)	(205,354)	0		0	(134,869)[h]	(79,187)

[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					South Bay Aqueduct			
		Reach 1 (2)	Reach 2 (3)	Reach 3A (4)	Reach 3B (5)	Total (6)	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	430,992	147,295	(10,752)	43,157	610,692	(145,428)	3,600	6,533	12,448
1982	11	934,812	357,720	(7,165)	134,408	1,419,775	(44,778)	18,971	7,451	37,824
1983	19	1,091,091	1,076,627	2,628	517,615	2,687,961	429,225	73,925	38,185	72,415
1984	26	1,875,968	2,317,661	3,290	1,068,363	5,265,282	506,951	36,354	9,610	92,846
1985	29	2,248,491	7,849,886	27,815	3,416,370	13,542,562	34,103	2,822	5,034	27,138
1986	31	16,420,238	10,020,277	1,309,599	1,819,349	29,569,463	85,732	14,715	17,144	13,982
1987	32	11,873,826	7,214,307	1,628,932	1,670,596	22,387,661	126,377	15,693	27,881	32,931
1988	55	3,287,756	1,648,431	1,015,971	686,821	6,638,979	290,505	36,744	51,786	25,078
1989	44	1,056,583	950,985	224,567	374,886	2,607,021	130,609	16,848	35,518	12,582
1990	63	493,522	537,881	145,694	71,938	1,249,035	275,732	32,387	99,251	40,263
1991	54	76,599	17,130	24,846	70,542	189,117	1,153,109	26,900	53,613	21,889
1992	42	56,492	6,525	18,333	37,778	119,128	401,906	53,036	61,799	51,386
1993	30	104,317	24,579	40,129	82,032	251,057	313,476	55,679	79,149	39,293
1994	14	68,065	13,463	27,107	45,909	154,544	(211,712)	29,017	362,585	36,350
1995	3	26,002	5,920	7,337	20,617	59,876	265,751	42,516	48,189	21,436
1996	0	14,790	3,334	6,614	14,606	39,344	139,573	13,049	25,751	10,677
1997	3	67,264	35,545	38,585	(13,571)	127,823	203,476	31,135	36,986	16,906
1998	7	15,410	6,392	6,797	10,396	38,995	67,974	6,120	14,731	4,616
1999	2	71,942	35,374	33,949	32,609	173,874	162,803	25,320	35,680	24,362
2000	24	30,282	8,069	12,010	4,333	54,694	103,578	15,672	24,079	19,744
2001	20	9,262	2,371	3,925	927	16,485	322,118	4,416	87,132	4,304
2002	14	11,676	7,631	6,338	4,393	30,038	2,978,724	3,739	322,072	41,589
2003	0	3,740	2,051	990	1,089	7,870	22,468	2,525	4,321	6,946
2004	0	3,740	2,051	990	1,089	7,870	22,468	2,525	4,321	6,946
2005	0	3,740	2,051	990	1,634	8,415	33,702	3,787	6,482	10,419
2006	0	0	0	0	0	0	23,151	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	341,125	41,834,659	33,034,282	4,598,795	13,710,816	93,178,552	22,395,441	1,800,079	5,731,789	11,281,513

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	1,462	1,398	5,077	(114,602)	(502,921)	1,487,516	38,451	1,023,046
1982	716	1,561	1,746	6,074	29,565	700,738	46,501	22,308	769,547
1983	407	5,721	8,143	23,367	651,388	706,104	84,435	211,619	1,002,158
1984	269	1,853	1,667	13,301	662,851	1,559,539	41,352	48,478	1,649,369
1985	402	1,657	2,129	6,750	80,035	677,955	24,812	19,404	722,171
1986	1,119	2,744	3,313	12,234	150,983	398,788	63,830	35,420	498,038
1987	1,496	3,081	3,560	21,842	232,861	799,672	88,945	41,659	930,276
1988	5,706	6,689	7,603	33,728	457,839	2,898,156	(128,051)	(56,448)	2,713,657
1989	2,641	3,878	4,755	14,489	221,320	6,898,872	346,589	173,993	7,419,454
1990	5,092	19,899	36,584	87,796	597,004	13,483,785	112,002	2,446,232	16,042,019
1991	1,942	5,059	7,357	31,682	1,301,551	13,914,632	133,121	114,981	14,162,734
1992	1,184	2,042	2,250	35,464	609,067	6,260,482	241,456	239,437	6,741,375
1993	3,618	6,028	8,873	42,200	548,316	2,542,869	257,330	200,072	3,000,271
1994	2,897	4,781	5,346	89,991	319,255	1,145,666	148,396	88,357	1,382,419
1995	11,556	3,635	14,769	24,750	432,602	1,462,211	217,940	131,995	1,812,146
1996	3,092	2,271	2,699	12,522	209,634	874,227	74,153	41,215	989,595
1997	1,454	4,141	3,655	20,589	318,342	2,064,446	146,851	84,303	2,295,600
1998	363	1,134	(6,005)	5,776	94,709	729,475	33,695	16,670	779,840
1999	1,530	3,283	12,698	31,555	297,231	2,214,578	88,790	90,527	2,393,895
2000	2,400	4,907	5,279	10,611	186,270	(681,921)	57,209	39,982	(584,730)
2001	72,881	49,886	290,627	856,426	1,687,790	363,930	90,595	8,388	462,913
2002	228,522	452,941	1,107,464	2,971,921	8,106,972	115,043	24,261	20,419	159,723
2003	260	660	1,091	2,337	40,608	99,271	17,513	13,629	130,413
2004	260	660	1,091	2,337	40,608	99,271	17,513	13,629	130,413
2005	390	990	1,636	3,506	60,912	99,271	17,513	13,629	130,413
2006	0	0	0	0	23,151	177,357	0	0	177,357
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	867,817	4,390,390	6,324,691	12,846,090	65,637,810	110,930,084	42,642,915	23,454,783	177,027,782

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)								
	San Luis Division						South San Joaquin Division		
	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	28,491	(2,244,127)	(44,017)	(15,456)	918,984	(1,356,125)	1,151	9,642	9,541
1982	100,629	(1,616,569)	20,184	10,359	3,525,738	2,040,341	2,469	8,283	6,956
1983	75,639	33,881	11,785	6,638	1,811,638	1,939,581	7,955	13,782	11,090
1984	31,748	87,083	26,712	12,754	3,053,662	3,211,959	26,489	9,959	6,268
1985	53,251	56,732	13,685	6,934	582,910	713,512	7,220	9,762	7,688
1986	73,979	201,509	50,668	19,223	1,282,469	1,627,848	8,902	25,011	20,503
1987	(7,829)	116,268	40,009	15,946	518,349	682,743	12,744	18,927	56,042
1988	(149,385)	224,154	(406,398)	(137,353)	923,622	454,640	9,833	(119,741)	(60,639)
1989	39,652	594,894	232,852	80,090	575,855	1,523,343	5,279	91,501	278,061
1990	39,270	259,895	79,589	29,606	461,219	869,579	5,814	41,345	2,016,434
1991	4,916,134	397,959	98,847	35,860	511,519	5,960,319	4,588	43,140	41,348
1992	(757,001)	545,729	211,854	74,544	396,398	471,524	3,546	103,695	109,225
1993	110,233	724,929	186,271	70,815	720,283	1,812,531	15,016	101,634	90,929
1994	1,151,976	288,018	63,862	27,812	710,770	2,242,438	6,770	42,455	40,696
1995	285,776	441,479	130,761	58,640	1,914,186	2,830,842	12,548	49,963	43,251
1996	31,942	(110,471)	34,529	12,219	588,712	556,931	6,444	29,863	27,050
1997	73,224	513,793	(277,781)	42,881	5,016,215	5,368,332	11,497	49,111	43,799
1998	19,692	304,115	34,319	16,542	2,819,556	3,194,224	2,562	11,115	8,955
1999	6,251	76,606	85,589	36,333	1,688,286	1,893,065	5,706	25,138	23,475
2000	101,618	387,339	77,891	36,152	1,138,277	1,741,277	3,922	23,516	29,216
2001	(9,390)	(62,068)	519,484	(3,308)	57,559	502,277	2,282	16,694	21,033
2002	(7,228)	(26,058)	6,068,442	64	(2,488,006)	3,547,214	4,908	20,035	17,372
2003	8,402	52,003	11,150	6,773	9,265	87,593	997	3,349	4,074
2004	8,402	52,003	11,150	6,773	9,265	87,593	997	3,349	4,074
2005	12,603	78,004	16,725	10,160	13,897	131,389	1,495	5,023	6,111
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	20,825,329	31,349,506	28,863,612	5,951,990	45,003,281	131,993,718	865,722	13,042,964	11,119,295

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	10,309	14,885	26,473	20,972	25,515	(1,076,221)	27,551	33,674	(1,142,721)
1982	8,237	6,608	7,680	8,346	16,339	(745,914)	9,886	29,393	(804,147)
1983	14,488	9,792	14,174	13,050	35,872	419,650	17,389	24,933	115,983
1984	7,533	27,613	87,907	49,271	22,732	54,590	75,453	63,060	63,537
1985	9,215	6,949	5,263	8,013	8,875	(49,408)	9,523	5,867	54,782
1986	22,335	16,664	16,014	25,031	20,483	140,642	25,960	13,913	154,089
1987	16,704	13,512	12,369	20,023	15,435	101,453	20,411	8,581	227,047
1988	(159,357)	(73,648)	(151,040)	(51,401)	(120,104)	161,077	(75,276)	(75,307)	144,369
1989	70,153	65,216	63,382	120,925	73,037	2,778,880	119,559	36,660	2,952,046
1990	34,841	29,230	27,269	49,082	34,048	715,031	44,187	14,537	440,017
1991	36,888	32,195	30,146	55,119	34,144	423,235	50,345	12,116	353,596
1992	103,321	99,765	98,178	192,455	97,638	991,603	185,311	9,210	387,615
1993	90,291	70,131	63,247	118,440	80,530	687,462	109,792	38,960	942,211
1994	65,737	29,221	26,997	50,234	35,154	400,534	44,481	17,426	324,942
1995	435,909	32,487	25,516	49,885	41,733	524,524	48,740	29,125	450,952
1996	253,433	19,489	15,020	30,202	29,333	403,125	26,945	16,405	253,622
1997	73,458	30,890	25,368	48,767	40,900	451,910	47,815	29,878	809,848
1998	14,618	7,107	5,773	10,697	9,676	288,667	10,799	6,819	119,562
1999	47,323	16,974	13,322	34,382	31,525	263,925	24,603	14,842	268,114
2000	43,393	21,100	32,408	40,128	25,095	183,453	15,186	11,034	166,965
2001	42,777	14,096	22,116	34,928	7,804	60,816	4,286	3,935	56,507
2002	51,555	12,144	7,016	36,708	23,077	199,303	14,792	11,911	200,568
2003	5,428	2,901	1,445	3,926	6,042	35,990	4,359	2,415	30,792
2004	5,428	2,901	1,445	3,926	6,042	35,990	4,359	2,415	30,792
2005	8,142	4,351	2,167	5,889	9,063	53,985	6,538	3,622	46,188
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	10,364,893	12,568,405	11,221,560	8,314,016	16,114,094	66,046,922	9,094,637	7,157,189	46,922,637

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 (contd.)		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	626,615	339,536	10,831	37,085
1980	3,772,498	7,372,362	17,433,610	6,046	17,439,656	1,130,429	1,073,430	3,604	308,188
1981	(2,527,211)	(4,566,440)	(3,848,206)	6,908	(3,841,298)	1,218,824	845,702	4,498	48,625
1982	(1,850,736)	(3,296,600)	11,370,112	6,054	11,376,166	6,968,683	746,900	3,920	33,869
1983	166,232	864,390	8,862,914	8,269	8,871,183	10,909,386	64,660	2,596	40,793
1984	119,387	613,799	3,227,937	31,701	3,259,638	8,340,371	309,491	3,124	17,505
1985	82,117	165,866	1,926,289	10,460	1,936,749	5,264,156	227,986	3,885	68,422
1986	186,348	675,895	1,381,955	33,788	1,415,743	2,049,111	2,069,663	4,261	2,331,707
1987	194,936	718,184	671,183	13,807	684,990	1,347,722	(6,453)	4,684	562,540
1988	262,334	(308,900)	1,408,760	(49,734)	1,359,026	847,954	(104,961)	13,409	(159,892)
1989	5,955,356	12,610,055	504,715	64,660	569,375	376,980	207,150	50,953	31,173
1990	640,283	4,092,118	783,219	25,218	808,437	202,065	(402,573)	61,192	(637,062)
1991	774,129	1,890,989	691,578	33,405	724,983	273,021	22,218	81,545	(188,732)
1992	731,512	3,113,074	741,986	24,369	766,355	620,962	384,568	86,644	225,398
1993	857,038	3,265,681	1,223,402	35,370	1,258,772	1,131,166	248,287	72,746	110,869
1994	853,328	1,937,975	806,213	16,681	822,894	998,126	164,096	60,147	51,340
1995	628,941	2,373,574	1,538,497	19,443	1,557,940	390,433	157,481	45,990	92,925
1996	388,064	1,498,995	2,571,039	10,797	2,581,836	91,593	69,281	22,188	35,656
1997	481,458	2,144,699	1,009,249	18,265	1,027,514	135,402	92,607	13,590	65,433
1998	440,746	937,096	925,574	6,843	932,417	47,486	36,170	4,164	29,900
1999	369,447	1,138,776	688,726	12,023	700,749	113,032	145,935	5,329	171,867
2000	407,110	1,002,526	523,522	14,073	537,595	119,903	89,985	936	83,355
2001	148,989	436,263	183,556	8,992	192,548	64,914	186,338	2,223	343,377
2002	291,256	890,645	134,912	2,686	137,598	24,971	(153,113)	1,374	(40,111)
2003	44,687	146,405	92,341	1,422	93,763	11,064	4,903	0	6,873
2004	44,687	146,405	92,341	1,422	93,763	11,064	4,903	0	6,873
2005	67,031	219,605	138,512	2,133	140,645	16,596	7,354	0	10,310
2006	0	0	0	201,133	201,133	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	75,297,924	288,130,258	249,168,361	54,783,600	303,951,961	50,754,211	23,733,743	759,941	18,394,948

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)								
	Mojave Division (continued)							Santa Ana Division	
	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	1,754,670	29,960	80,482
1980	284,545	133,526	121,171	2,239,224	60,229	559,963	5,914,309	31,462	181,638
1981	32,214	13,223	6,466	(774,614)	138,917	203,941	1,737,796	5,864	69,031
1982	77,988	13,158	14,459	432,274	346,905	79,819	8,717,975	9,224	159,280
1983	58,714	25,900	10,363	451,428	2,029,405	58,989	13,652,234	4,304	528,764
1984	35,378	845,423	6,052	(83,811)	1,290,740	34,764	10,799,037	3,850	270,455
1985	(232,549)	(481,017)	1,945,477	608,583	966,160	51,634	8,422,737	5,555	62,571
1986	(2,046,222)	(1,334,975)	3,260,280	1,097,122	230,510	51,994	7,713,451	9,927	114,561
1987	(344,829)	55,519	64,264	3,631,282	146,850	91,223	5,552,802	4,908	27,208
1988	(147,290)	(70,564)	351,489	552,546	558,557	197,761	2,039,009	7,358	161,957
1989	60,657	30,217	534,658	4,161,037	1,496,776	433,072	7,382,673	8,092	(2,297,399)
1990	(403,413)	(635,623)	(97,841)	8,794,258	1,394,698	344,367	8,620,068	176,854	(1,657,576)
1991	(18,809)	(147,369)	(17,234)	7,985,326	3,624,824	139,105	11,753,895	202,286	(1,316,160)
1992	338,098	(263,897)	75,210	4,849,560	8,364,426	127,829	14,808,798	333,934	(1,878,502)
1993	180,598	133,941	49,144	2,094,764	15,390,366	159,211	19,571,092	1,506,787	3,979,221
1994	114,273	65,260	26,546	933,021	8,082,401	81,869	10,577,079	2,104,588	2,493,097
1995	121,499	66,503	30,918	1,096,953	5,924,175	123,653	8,050,530	3,310,564	500,791
1996	48,699	44,953	17,787	1,736,686	2,181,669	96,339	4,344,851	19,019,751	(100,474)
1997	39,973	55,881	27,865	809,666	(342,563)	102,390	1,000,244	7,645,602	(662,524)
1998	27,626	20,285	12,816	273,139	3,392,776	36,135	3,880,497	993,619	1,613,505
1999	58,327	37,630	18,087	1,012,129	2,208,411	123,902	3,894,649	223,882	843,461
2000	75,113	44,803	20,567	746,795	1,251,238	84,653	2,517,348	128,725	1,285,316
2001	121,683	77,698	54,798	540,377	341,937	27,468	1,760,813	70,195	449,538
2002	(84,103)	(55,640)	(44,390)	61,328	249,443	49,286	9,045	31,586	1,681,970
2003	5,299	4,282	426	52,836	2,412	12,224	100,319	154	26,677
2004	5,299	4,282	426	52,836	2,412	12,224	100,319	154	26,677
2005	7,948	6,423	639	79,254	3,618	18,336	150,478	231	40,016
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	17,695,558	8,325,422	12,890,066	124,713,340	63,499,486	51,654,724	372,421,439	60,529,162	44,126,646

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)								
	Santa Ana Division (continued)				West Branch				
	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	390,637	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	28,815	22,654	61,349	187,713	(711,751)	2,699,873	19,806,531	94,944	28,852
1982	16,069	58,900	55,841	299,314	(465,217)	351,251	17,964,617	215,678	42,587
1983	18,213	89,581	(264,804)	376,058	100,394	180,971	6,751,649	220,029	24,295
1984	14,462	12,259	49,547	350,573	71,759	68,930	2,870,259	335,942	17,285
1985	17,816	11,481	54,070	151,493	142,244	25,386	2,126,670	102,366	21,971
1986	31,564	25,037	86,794	267,883	133,914	62,294	274,660	141,894	36,149
1987	17,141	8,005	45,528	102,790	13,936	453,949	711,773	192,511	27,931
1988	41,892	21,113	90,784	323,104	427,544	118,010	1,660,959	203,130	95,930
1989	28,708	12,619	51,556	(2,196,424)	207,067	430,662	584,186	241,811	97,472
1990	27,478	12,817	55,408	(1,385,019)	197,428	355,480	386,882	813,211	54,269
1991	142,139	15,524	62,794	(893,417)	219,321	344,386	453,336	1,132,520	55,176
1992	34,185	13,422	69,479	(1,427,482)	541,026	295,312	464,421	4,402,524	47,182
1993	44,300	27,047	162,854	5,720,209	464,987	320,182	643,189	3,361,457	74,198
1994	16,351	11,673	54,581	4,680,290	203,666	231,527	362,717	306,148	33,758
1995	35,402	28,202	164,254	4,039,213	344,358	392,647	536,253	468,656	34,007
1996	76,723	73,629	344,747	19,414,376	150,901	161,394	427,223	203,201	15,357
1997	50,662	20,720	268,293	7,322,753	298,002	71,310	432,940	276,180	50,095
1998	10,268	8,970	479,138	3,105,500	346,973	21,003	2,028,979	181,951	49,377
1999	84,563	45,203	324,045	1,521,154	298,681	37,791	1,080,369	125,121	50,944
2000	63,878	41,167	113,901	1,632,987	221,700	34,019	238,107	116,129	12,752
2001	19,930	12,977	87,039	639,679	38,577	6,097	102,926	108,940	7,178
2002	17,456	33,895	183,362	1,948,269	93,018	12,558	169,167	(2,926)	17,871
2003	4,074	3,808	10,774	45,487	30,229	3,919	27,154	13,406	2,116
2004	4,074	3,808	10,774	45,487	30,229	3,919	27,154	13,406	2,116
2005	6,111	5,712	16,161	68,231	45,343	5,878	40,731	20,109	3,174
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	24,377,624	23,743,345	55,703,641	208,480,418	36,965,498	31,908,809	125,267,972	63,463,942	75,158,283

[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)											Grand Total (76)
	West Branch (continued)		Coastal Branch								Total (75)	
	Reach 30 (65)	Subtotal (66)	Reach 31A (67)	Reach 33A (68)	Reach 33B (69)	Reach 34 (70)	Reach 35 (71)	Reach 37 (72)	Reach 38 (73)	Subtotal (74)		
1952	1,408	5,655	0	0	0	0	0	0	0	0	98,857	99,353
1953	4,346	17,457	0	0	0	0	0	0	0	0	309,387	311,812
1954	5,743	23,074	0	0	0	0	0	0	0	0	394,688	402,143
1955	1,943	7,809	0	0	0	0	0	0	0	0	159,842	169,342
1956	2,077	8,348	0	0	0	0	0	0	0	0	255,679	351,551
1957	7,684	30,877	0	0	0	0	0	0	0	0	708,753	1,464,452
1958	13,931	55,142	0	0	0	0	0	0	0	0	1,331,616	2,286,623
1959	44,384	134,727	28,046	49,114	0	7,441	8,236	0	0	92,837	2,096,392	2,967,412
1960	84,703	255,409	34,404	70,450	0	8,507	14,265	0	0	127,626	2,937,049	4,660,833
1961	123,330	239,953	13,801	17,868	0	1,501	3,931	0	0	37,101	4,650,264	8,545,244
1962	348,366	671,447	10,121	7,798	0	524	1,689	0	0	20,132	5,827,774	8,875,171
1963	521,491	1,167,566	20,470	14,299	0	880	2,943	0	0	38,592	18,981,487	24,610,278
1964	1,372,464	2,232,275	315,418	26,963	0	1,687	5,639	0	0	349,707	31,550,813	41,736,060
1965	3,383,950	4,943,858	747,023	36,178	0	2,118	7,060	0	0	792,379	57,936,405	62,664,743
1966	9,364,753	14,872,117	2,258,915	35,864	0	1,736	5,764	0	0	2,302,279	124,748,128	129,110,330
1967	17,618,827	53,187,979	6,310,419	38,331	0	1,891	6,213	0	0	6,356,854	187,465,580	194,146,365
1968	15,736,691	57,595,765	2,707,580	30,784	0	1,324	4,369	0	0	2,744,057	192,593,079	197,978,911
1969	16,228,175	34,690,908	423,797	26,549	0	907	2,905	0	0	454,158	182,530,023	184,473,490
1970	22,330,328	50,497,652	269,194	24,368	0	851	2,787	0	0	297,200	206,720,774	207,082,650
1971	16,890,503	40,115,145	164,446	32,230	0	1,315	3,804	0	0	201,795	158,414,033	158,624,739
1972	3,818,001	2,874,264	131,332	17,601	0	522	1,660	0	0	151,115	68,228,670	68,362,291
1973	13,426,222	25,999,878	182,493	16,154	0	542	1,758	0	0	200,947	45,110,823	45,263,853
1974	2,988,318	4,334,592	190,866	18,799	0	463	1,405	0	0	211,533	24,036,199	24,402,166
1975	1,808,235	4,782,778	64,582	36,012	0	2,255	6,656	0	0	109,505	21,065,768	21,318,838
1976	1,253,067	4,931,230	198,266	68,898	0	5,088	14,988	0	0	287,240	17,183,961	17,492,910
1977	345,023	7,238,418	918,473	81,305	0	1,834	5,387	0	0	1,006,999	15,165,801	15,544,382
1978	763,445	11,312,134	52,994	83,300	0	1,302	3,852	0	0	141,448	18,661,117	19,119,151
1979	282,145	24,133,453	38,182	108,951	0	1,505	4,433	0	0	153,071	31,202,118	31,857,362
1980	2,055,206	32,733,044	189,070	376,036	0	1,152	3,449	0	0	569,707	73,891,101	74,986,833
1981	275,460	22,193,909	19,897	(157,537)	0	1,427	4,261	0	0	(131,952)	15,246,649	15,742,773
1982	351,376	18,460,292	(16,381)	(96,449)	0	588	1,787	0	0	(110,455)	38,256,580	39,705,931
1983	566,545	7,843,883	85,496	67,106	0	794	2,398	0	0	155,794	34,705,281	38,044,649
1984	1,118,954	4,483,129	28,568	54,074	0	986	2,959	0	0	86,587	24,454,091	30,382,250
1985	284,243	2,702,880	36,834	54,314	0	2,111	6,263	0	0	99,522	14,914,930	28,537,556
1986	213,353	862,264	82,358	223,134	0	17,458	51,279	0	0	374,229	13,435,351	43,155,828
1987	158,313	1,558,413	53,817	1,061,939	0	92,506	272,968	0	0	1,481,230	11,711,428	34,331,982
1988	222,068	2,727,641	183,853	1,141,272	0	99,456	293,612	0	0	1,718,193	11,026,370	18,123,243
1989	148,674	1,709,872	84,678	893,765	0	77,283	228,038	0	0	1,283,764	30,302,112	33,130,497
1990	119,438	1,926,708	133,868	1,100,167	0	103,785	277,889	0	0	1,615,709	32,589,619	34,435,721
1991	229,315	2,434,054	164,610	1,635,283	0	123,603	363,889	0	0	2,287,385	38,320,942	39,811,664
1992	206,495	5,956,960	183,240	1,220,510	1,495,646	566,230	240,553	102,051	74,162	3,882,392	34,312,996	35,041,233
1993	296,349	5,160,362	344,928	5,274,657	5,052,431	1,345,211	688,935	268,937	358,367	13,333,466	53,122,384	53,921,787
1994	168,426	1,306,242	282,150	15,905,886	21,341,196	8,915,445	2,363,238	678,753	1,315,559	50,802,227	73,751,564	74,225,377
1995	304,983	2,080,904	1,196,326	45,172,271	62,947,362	23,975,738	20,849,939	7,029,108	7,117,197	168,287,941	191,033,090	191,525,571
1996	98,522	1,056,598	948,730	42,987,442	54,300,990	26,475,298	18,790,572	7,213,823	6,616,310	157,333,165	187,776,347	188,025,325
1997	233,956	1,362,483	562,583	11,209,633	13,893,576	10,456,863	4,149,105	545,378	798,606	41,615,744	62,137,369	62,583,537
1998	67,874	2,696,157	248,671	2,355,322	4,159,441	3,368,320	952,615	192,567	280,779	11,557,715	27,083,446	27,217,157
1999	117,470	1,710,376	288,569	2,913,855	4,398,199	2,617,503	357,331	36,680	51,648	10,663,785	23,916,449	24,387,556
2000	186,940	809,647	134,039	245,152	2,964,598	2,747,116	19,662	0	0	6,110,567	13,767,217	14,008,205
2001	18,081	281,799	102,982	12,628	559,917	3,801	0	0	0	679,328	4,955,620	6,659,915
2002	46,609	336,297	65,429	108,370	96,896	73,588	11,065	0	0	355,348	7,384,139	15,521,163
2003	13,227	90,051	24,478	53	0	0	0	0	0	24,531	718,562	767,040
2004	13,227	90,051	24,478	53	0	0	0	0	0	24,531	718,562	767,040
2005	19,841	135,076	36,717	79	0	0	0	0	0	36,796	1,012,633	1,081,960
2006	0	0	20,494	0	0	0	0	0	0	20,494	398,984	422,135
2007	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0
Total	136,304,498	469,069,002	20,591,304	134,600,831	171,210,252	81,110,455	50,041,551	16,067,297	16,612,628	490,234,318	2,441,308,896	2,600,466,383

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					South Bay Aqueduct			
		Reach 1 (2)	Reach 2 (3)	Reach 3A (4)	Reach 3B (5)	Total (6)	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	81,769	81,769	1,128,840	212,974	242,118	110,786
1981	3,847	0	0	0	101,340	101,340	884,763	130,126	167,118	204,772
1982	11,075	0	0	0	191,987	191,987	1,156,605	141,718	249,447	96,020
1983	1,928	0	0	0	80,215	80,215	1,258,144	84,360	373,875	152,255
1984	3,765	0	0	0	139,121	139,121	1,998,984	113,797	340,344	34,461
1985	2,888	0	0	0	259,515	259,515	2,044,121	207,478	427,930	247,308
1986	2,787	0	0	0	229,508	229,508	1,834,838	285,908	305,149	159,054
1987	2,388	0	0	0	310,683	310,683	2,119,014	163,754	400,669	283,785
1988	545	0	(94)	0	330,156	330,062	2,068,655	186,275	299,934	370,212
1989	1,800	473,408	178,069	237,480	373,427	1,262,384	2,164,688	163,481	320,734	497,038
1990	788	556,610	244,897	123,144	427,257	1,351,908	2,233,036	251,434	355,022	571,415
1991	3,654	651,307	302,327	205,516	428,470	1,587,620	1,806,699	152,509	95,745	93,986
1992	647	443,912	189,330	265,462	280,505	1,179,209	2,064,907	405,932	409,435	363,964
1993	3,630	435,240	294,416	213,267	289,206	1,232,129	3,925,050	621,712	480,832	399,558
1994	2,279	430,112	198,322	206,594	365,646	1,200,674	4,673,275	302,115	404,709	408,066
1995	2,906	428,313	282,898	151,703	295,326	1,158,240	3,849,620	316,905	566,447	330,706
1996	8,007	796,526	272,743	240,106	260,001	1,569,376	3,526,989	254,075	664,485	493,300
1997	7,449	504,476	210,763	213,211	315,374	1,243,824	3,010,809	189,269	591,540	230,371
1998	798	405,029	227,562	204,964	251,183	1,088,738	2,965,468	426,872	532,042	303,325
1999	416	669,569	323,123	315,688	273,882	1,582,262	3,710,593	468,942	423,636	404,419
2000	505	916,217	250,855	850,431	219,140	2,236,643	3,804,136	541,468	439,939	580,652
2001	319	1,073,211	233,475	456,875	181,216	1,944,777	3,221,974	590,036	630,997	595,991
2002	3,627	1,505,303	360,480	352,947	417,641	2,636,371	3,267,244	421,130	549,461	329,526
2003	3,950	1,222,836	292,646	596,876	295,045	2,407,403	3,473,809	611,321	595,239	184,574
2004	4,005	1,253,219	297,084	613,696	307,652	2,471,651	3,607,287	621,250	606,406	632,322
2005	4,061	1,289,243	305,896	631,214	315,968	2,542,321	3,706,484	639,692	624,101	599,342
2006	4,555	1,082,073	301,935	540,588	455,837	2,380,433	4,789,946	559,503	902,887	779,087
2007	4,549	1,081,026	301,575	540,071	455,358	2,378,030	4,784,430	558,852	901,862	778,436
2008	4,551	1,081,520	301,669	540,320	455,541	2,379,050	4,786,046	559,038	902,177	778,861
2009	4,548	1,081,280	301,556	540,205	455,415	2,378,456	4,784,381	558,840	901,873	778,761
2010	4,549	1,080,971	301,591	540,039	455,353	2,377,954	4,784,580	558,872	901,885	778,350
2011	4,547	1,085,127	302,614	542,110	456,894	2,386,745	4,800,179	560,820	905,084	784,417
2012	4,548	1,085,425	302,660	542,264	456,999	2,387,348	4,801,026	560,916	905,254	784,691
2013	4,548	1,086,381	302,679	542,761	457,268	2,389,089	4,802,038	561,015	905,500	785,762
2014	4,546	1,087,153	302,512	543,180	457,380	2,390,225	4,800,462	560,805	905,294	786,913
2015	4,549	1,087,961	302,748	543,582	457,724	2,392,015	4,804,179	561,240	905,992	787,479
2016	4,545	1,086,477	302,429	542,832	457,152	2,388,890	4,798,838	560,622	904,963	786,260
2017	4,546	1,087,100	302,542	543,149	457,381	2,390,172	4,800,800	560,848	905,346	786,804
2018	4,547	1,088,221	302,565	543,735	457,695	2,392,216	4,801,991	560,965	905,638	788,064
2019	4,542	1,086,585	302,284	542,900	457,103	2,388,872	4,797,037	560,399	904,663	786,607
2020	4,547	1,087,478	302,602	543,342	457,518	2,390,940	4,801,884	560,969	905,562	787,148
2021	4,551	1,087,864	302,837	543,523	457,750	2,391,974	4,805,231	561,371	906,164	787,230
2022	4,546	1,087,947	302,520	543,594	457,596	2,391,657	4,801,170	560,871	905,477	787,815
2023	4,545	1,086,533	302,469	542,857	457,192	2,389,051	4,799,392	560,689	905,063	786,261
2024	4,545	1,087,137	302,466	543,174	457,351	2,390,128	4,799,843	560,729	905,187	786,962
2025	4,551	1,088,225	302,815	543,714	457,833	2,392,587	4,805,226	561,360	906,190	787,680
2026	4,541	1,086,265	302,199	542,740	456,971	2,388,175	4,795,669	560,239	904,405	786,370
2027	4,557	1,089,674	303,251	544,436	458,464	2,395,825	4,812,060	562,163	907,472	788,679
2028	4,540	1,086,236	302,121	542,732	456,921	2,388,010	4,794,629	560,112	904,224	786,458
2029	4,548	1,087,481	302,661	543,335	457,549	2,391,026	4,802,647	561,063	905,692	787,058
2030	4,545	1,086,332	302,433	542,754	457,117	2,388,636	4,798,761	560,614	904,938	786,087
2031	4,556	1,090,253	303,186	544,742	458,582	2,396,763	4,811,684	562,102	907,453	789,447
2032	4,538	1,085,642	301,936	542,437	456,659	2,386,674	4,791,752	559,774	903,687	786,058
2033	4,549	1,087,476	302,789	543,324	457,621	2,391,210	4,804,317	561,267	905,978	786,853
2034	4,548	1,087,907	302,694	543,558	457,680	2,391,839	4,803,410	561,147	905,855	787,500
2035	4,538	1,085,780	301,988	542,504	456,725	2,386,997	4,792,539	559,869	903,834	786,138
Total	220,507	45,640,061	13,537,118	22,159,676	21,379,767	102,716,622	220,667,459	26,097,622	39,636,053	32,915,036

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	South Bay Aqueduct (continued)					California Aqueduct			
						North San Joaquin Division			
	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	1,913,643	292,380	196,564	2,402,587
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	1,850,865	2,365,292	472,660	247,608	3,085,560
1981	4,038	20,109	17,586	98,143	1,526,655	2,649,730	435,226	154,191	3,239,147
1982	2,236	22,870	21,919	202,590	1,893,405	3,192,710	599,793	244,664	4,037,167
1983	(2,047)	48,781	45,573	216,434	2,177,375	4,244,937	802,908	273,081	5,320,926
1984	4,449	44,017	23,563	455,054	3,014,669	4,373,157	808,917	290,728	5,472,802
1985	13,097	74,565	57,920	238,067	3,310,486	4,717,323	629,825	189,199	5,536,347
1986	11,614	31,084	46,864	363,350	3,037,861	5,217,491	929,919	359,365	6,506,775
1987	15,273	25,182	37,949	416,375	3,462,001	5,292,382	962,127	362,845	6,617,354
1988	30,207	41,047	49,156	335,408	3,380,894	5,329,317	822,300	360,336	6,511,953
1989	9,740	54,881	114,203	179,323	3,504,088	5,753,966	851,745	907,609	7,513,320
1990	31,161	69,416	119,309	247,781	3,878,574	6,788,986	1,066,314	883,822	8,739,122
1991	22,434	(18,690)	99,577	262,052	2,514,312	6,796,247	1,067,078	585,008	8,448,333
1992	26,787	332,012	98,670	186,640	3,888,347	9,415,121	1,419,603	673,833	11,508,557
1993	24,845	181,592	94,169	316,045	6,043,803	10,274,070	1,371,074	900,996	12,546,140
1994	28,383	90,791	80,942	416,061	6,404,342	8,451,199	1,325,511	802,217	10,578,927
1995	29,298	64,012	80,278	373,657	5,610,923	10,406,784	2,386,507	959,685	13,752,976
1996	(1,020)	60,610	11,672	312,097	5,322,208	10,246,985	2,604,651	628,177	13,479,813
1997	18,428	95,321	15,691	335,566	4,486,995	10,429,338	1,098,381	2,084,859	13,612,578
1998	26,323	54,255	611,290	658,090	5,577,665	11,410,436	1,449,411	5,364,368	18,224,215
1999	49,240	33,618	424,526	2,026,803	7,541,777	11,660,191	1,348,823	1,287,036	14,296,050
2000	135,601	86,992	184,649	638,474	6,411,911	12,590,307	911,933	646,451	14,148,691
2001	111,273	185,313	161,719	987,220	6,484,523	18,433,134	1,739,835	925,240	21,098,209
2002	136,906	180,816	580,627	2,997,259	8,462,969	13,455,208	1,344,274	1,064,970	15,864,452
2003	293,318	190,924	430,029	1,585,707	7,364,921	14,029,389	1,226,507	868,155	16,124,051
2004	297,689	193,769	436,436	1,609,334	8,004,493	14,948,442	1,286,364	893,803	17,128,609
2005	306,605	199,573	449,509	1,657,540	8,182,846	15,322,172	1,320,896	919,354	17,562,422
2006	106,156	98,369	119,571	586,749	7,942,268	13,264,258	2,526,793	842,230	16,633,281
2007	106,030	98,252	119,429	586,048	7,933,339	13,254,123	2,525,194	841,682	16,620,999
2008	106,063	98,282	119,466	586,229	7,936,162	13,257,690	2,526,096	841,971	16,625,757
2009	106,022	98,244	119,421	586,007	7,933,549	13,254,875	2,525,792	841,862	16,622,529
2010	106,035	98,257	119,435	586,078	7,933,492	13,254,130	2,525,043	841,637	16,620,810
2011	106,393	98,592	119,840	588,059	7,963,384	13,297,325	2,534,824	844,511	16,676,660
2012	106,409	98,606	119,858	588,147	7,964,907	13,299,316	2,535,389	844,693	16,679,398
2013	106,413	98,612	119,864	588,177	7,967,381	13,303,617	2,537,445	845,325	16,686,387
2014	106,352	98,554	119,794	587,836	7,966,010	13,304,145	2,539,475	845,917	16,689,537
2015	106,435	98,630	119,888	588,296	7,972,139	13,311,296	2,540,785	846,357	16,698,438
2016	106,324	98,528	119,763	587,678	7,962,976	13,299,987	2,538,152	845,499	16,683,638
2017	106,363	98,565	119,806	587,896	7,966,428	13,304,389	2,539,300	845,868	16,689,557
2018	106,370	98,570	119,813	587,929	7,969,340	13,309,438	2,541,718	846,610	16,697,766
2019	106,271	98,479	119,703	587,390	7,960,549	13,298,118	2,538,678	845,636	16,682,432
2020	106,383	98,583	119,831	588,011	7,968,371	13,306,926	2,540,011	846,094	16,693,031
2021	106,467	98,660	119,924	588,469	7,973,516	13,312,275	2,540,388	846,249	16,698,912
2022	106,354	98,554	119,795	587,840	7,967,876	13,307,544	2,541,202	846,447	16,695,193
2023	106,337	98,542	119,778	587,754	7,963,816	13,300,837	2,538,192	845,517	16,684,546
2024	106,335	98,538	119,775	587,744	7,965,113	13,303,326	2,539,529	845,925	16,688,780
2025	106,457	98,652	119,913	588,421	7,973,899	13,313,418	2,541,227	846,501	16,701,146
2026	106,242	98,452	119,670	587,223	7,958,270	13,295,414	2,538,140	845,459	16,679,013
2027	106,611	98,794	120,087	589,271	7,985,137	13,326,457	2,543,556	847,283	16,717,296
2028	106,214	98,427	119,637	587,069	7,956,770	13,294,042	2,538,233	845,473	16,677,748
2029	106,404	98,603	119,854	588,126	7,969,447	13,307,872	2,539,892	846,068	16,693,832
2030	106,325	98,529	119,764	587,684	7,962,702	13,299,427	2,537,825	845,400	16,682,652
2031	106,588	98,773	120,059	589,137	7,985,243	13,327,842	2,544,951	847,698	16,720,491
2032	106,149	98,366	119,565	586,709	7,952,060	13,288,607	2,537,295	845,157	16,671,059
2033	106,450	98,645	119,905	588,381	7,971,796	13,309,910	2,539,627	846,009	16,695,546
2034	106,416	98,613	119,865	588,185	7,970,991	13,310,172	2,540,768	846,342	16,697,282
2035	106,167	98,383	119,586	586,811	7,953,327	13,290,017	2,537,495	845,225	16,672,737
Total	4,887,453	5,482,438	8,035,505	35,621,621	373,343,187	642,818,342	109,672,950	50,302,732	802,794,024

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)								
	San Luis Division						South San Joaquin Division		
	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	1,176,463	222,942	127,625	281,860	2,052,397	57,726	274,848	185,155
1981	265,766	1,065,358	193,048	90,533	1,612,157	3,226,862	80,121	198,256	144,187
1982	279,250	1,241,285	209,371	114,421	1,433,180	3,277,507	59,424	269,086	233,494
1983	214,468	1,949,017	339,809	131,377	2,143,678	4,778,349	49,448	383,476	223,078
1984	241,273	2,233,969	335,166	163,858	2,111,386	5,085,652	42,062	458,489	300,924
1985	322,068	2,882,583	360,431	176,577	1,603,532	5,345,191	58,820	495,500	213,368
1986	416,027	2,996,792	472,551	252,188	601,250	4,738,808	90,730	478,786	596,800
1987	405,274	3,084,454	392,463	225,069	423,952	4,531,212	114,270	430,728	463,977
1988	365,209	2,954,186	456,864	231,754	639,242	4,647,255	96,728	379,073	417,991
1989	263,171	3,182,472	393,589	332,986	633,419	4,805,637	83,282	389,698	400,853
1990	397,353	4,011,110	579,073	464,639	729,132	6,181,307	111,019	436,849	515,611
1991	256,473	4,388,184	543,760	728,156	765,765	6,682,338	104,414	496,794	465,940
1992	302,021	3,792,401	795,587	363,134	815,590	6,068,733	118,315	511,982	417,871
1993	439,725	4,337,616	1,008,394	551,849	734,796	7,072,380	230,338	745,885	490,159
1994	282,579	4,376,461	816,129	396,768	492,860	6,364,797	125,398	602,404	572,557
1995	107,995	5,026,076	1,066,971	440,006	1,356,668	7,997,716	185,681	657,282	432,072
1996	1,003,229	4,738,221	931,944	683,323	1,034,376	8,391,093	112,062	416,294	472,350
1997	859,665	5,761,996	924,289	254,934	646,209	8,447,093	128,190	449,316	728,436
1998	690,845	5,522,567	1,242,589	534,931	654,538	8,645,470	115,748	457,845	429,433
1999	685,809	5,789,411	1,201,957	520,626	654,646	8,852,449	103,266	391,162	402,717
2000	456,749	5,848,108	1,026,183	524,376	866,963	8,722,379	103,938	468,647	514,646
2001	207,498	6,130,199	925,862	374,827	695,073	8,333,459	60,115	562,539	606,427
2002	547,484	5,550,311	901,247	330,806	580,586	7,910,434	84,173	594,389	469,613
2003	1,623,516	6,180,918	1,118,876	472,469	803,851	10,199,630	87,751	547,095	535,655
2004	1,723,453	6,667,551	1,186,127	495,652	836,203	10,908,986	89,346	569,883	557,339
2005	1,767,793	6,826,092	1,220,307	510,068	860,708	11,184,968	92,014	586,562	573,668
2006	944,401	5,341,207	1,144,360	538,792	735,809	8,704,569	319,600	1,214,254	995,857
2007	944,167	5,337,102	1,142,991	538,336	735,167	8,697,763	319,226	1,213,112	994,954
2008	944,749	5,340,240	1,143,345	538,623	735,551	8,702,508	319,328	1,213,689	995,453
2009	944,887	5,339,790	1,142,912	538,552	735,434	8,701,575	319,211	1,213,444	995,275
2010	943,947	5,336,345	1,143,049	538,278	735,098	8,696,717	319,238	1,213,035	994,875
2011	953,880	5,366,888	1,148,921	541,552	739,512	8,750,753	320,335	1,217,993	999,037
2012	954,295	5,368,941	1,149,096	541,738	739,755	8,753,825	320,387	1,218,347	999,348
2013	956,415	5,377,585	1,149,153	542,454	740,661	8,766,268	320,425	1,219,545	1,000,462
2014	959,275	5,387,480	1,148,487	543,211	741,588	8,780,041	320,276	1,220,606	1,001,537
2015	959,709	5,391,297	1,149,386	543,606	742,127	8,786,125	320,525	1,221,509	1,002,273
2016	958,199	5,382,458	1,148,178	542,771	741,016	8,772,622	320,178	1,219,792	1,000,812
2017	958,965	5,386,510	1,148,602	543,142	741,504	8,778,723	320,303	1,220,526	1,001,445
2018	961,459	5,396,653	1,148,669	543,982	742,570	8,793,333	320,349	1,221,931	1,002,755
2019	959,354	5,385,768	1,147,616	542,994	741,271	8,777,003	320,039	1,220,004	1,001,082
2020	959,480	5,389,092	1,148,827	543,375	741,809	8,782,583	320,370	1,220,971	1,001,836
2021	958,927	5,388,987	1,149,724	543,443	741,938	8,783,019	320,609	1,221,338	1,002,070
2022	961,093	5,394,794	1,148,495	543,816	742,349	8,790,547	320,297	1,221,605	1,002,470
2023	958,083	5,382,337	1,148,328	542,773	741,027	8,772,548	320,220	1,219,840	1,000,839
2024	959,523	5,388,053	1,148,308	543,245	741,618	8,780,747	320,229	1,220,607	1,001,562
2025	959,916	5,392,726	1,149,630	543,743	742,310	8,788,325	320,594	1,221,805	1,002,519
2026	959,131	5,384,124	1,147,290	542,832	741,050	8,774,427	319,948	1,219,641	1,000,782
2027	960,619	5,399,396	1,151,291	544,439	743,269	8,799,014	321,053	1,223,420	1,003,826
2028	959,549	5,385,082	1,146,990	542,886	741,102	8,775,609	319,871	1,219,646	1,000,822
2029	959,115	5,388,176	1,149,054	543,318	741,747	8,781,410	320,429	1,220,941	1,001,781
2030	957,836	5,381,045	1,148,193	542,656	740,871	8,770,601	320,179	1,219,609	1,000,636
2031	962,374	5,405,827	1,151,030	544,945	743,897	8,808,073	321,000	1,224,182	1,004,573
2032	959,301	5,382,448	1,146,287	542,608	740,716	8,771,360	319,676	1,218,988	1,000,292
2033	958,305	5,386,097	1,149,551	543,188	741,610	8,778,751	320,554	1,220,872	1,001,654
2034	959,918	5,391,656	1,149,171	543,615	742,129	8,786,489	320,469	1,221,466	1,002,258
2035	959,303	5,382,925	1,146,486	542,663	740,798	8,772,175	319,729	1,219,136	1,000,406
Total	44,349,420	277,500,264	55,516,470	26,647,520	48,288,543	452,302,217	12,661,973	50,764,474	42,819,976

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)								
Calendar Year	*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	1,988,619	189,132	238,607	1,437,614
1981	199,927	76,965	33,322	113,202	171,669	1,741,488	163,934	161,182	1,799,832
1982	264,947	158,178	142,631	224,170	224,051	1,793,867	195,086	15,768	1,933,859
1983	308,801	136,350	124,724	203,733	217,324	2,421,794	199,708	181,879	2,550,842
1984	396,448	163,331	108,212	188,724	245,764	3,312,127	329,490	204,332	3,215,901
1985	298,337	198,368	154,995	194,327	360,308	3,463,178	237,127	180,068	3,427,049
1986	422,493	248,170	242,660	346,410	349,369	3,781,427	320,984	360,156	3,574,451
1987	507,868	345,785	342,891	481,362	341,682	3,710,776	456,263	238,813	4,104,631
1988	532,489	290,881	220,658	374,653	318,253	3,451,893	411,110	313,806	3,746,920
1989	733,030	268,025	207,487	595,433	380,883	3,512,884	333,996	220,978	3,751,081
1990	651,465	363,652	225,171	480,738	677,729	4,021,727	439,953	212,851	4,381,643
1991	716,328	328,683	269,873	371,312	433,313	4,309,082	424,704	273,169	4,566,702
1992	574,145	334,579	270,768	409,314	423,717	4,734,368	729,211	571,412	4,270,793
1993	723,450	413,722	278,375	496,851	594,201	5,182,830	664,063	423,780	5,266,124
1994	703,493	346,600	239,873	482,301	445,909	4,012,614	414,899	254,393	3,727,019
1995	881,902	405,045	242,253	622,654	507,102	4,607,154	309,283	315,905	3,973,757
1996	984,784	367,570	238,622	519,560	604,736	4,892,967	214,773	187,784	4,331,630
1997	1,864,113	309,696	254,080	516,115	429,771	5,094,202	261,221	275,610	4,011,366
1998	1,011,284	295,927	170,556	384,226	484,072	4,753,508	309,440	248,178	4,695,541
1999	1,117,129	368,726	168,929	392,914	493,875	5,179,395	343,430	227,750	4,908,342
2000	924,691	406,634	331,537	651,465	568,273	5,915,104	334,203	135,700	5,371,374
2001	874,233	417,325	896,692	523,733	657,836	4,724,128	(126,961)	(88,410)	6,006,824
2002	1,126,075	370,601	337,936	629,559	731,704	5,406,695	192	93,595	5,939,720
2003	996,580	406,189	529,433	1,538,816	658,602	6,240,377	174,546	123,989	6,092,733
2004	1,026,136	420,349	550,451	1,570,209	680,396	6,781,338	189,793	135,091	6,597,390
2005	1,056,481	432,724	566,589	1,617,018	700,457	6,939,633	196,342	139,769	6,749,115
2006	1,012,784	758,017	688,430	1,071,456	1,126,139	6,965,524	950,387	656,503	6,636,210
2007	1,011,573	757,278	687,883	1,070,354	1,125,046	6,958,310	949,546	655,936	6,628,928
2008	1,011,885	757,626	688,278	1,070,805	1,125,560	6,961,190	950,031	656,277	6,631,401
2009	1,011,504	757,457	688,208	1,070,521	1,125,309	6,959,327	949,877	656,181	6,629,339
2010	1,011,626	757,242	687,795	1,070,329	1,124,990	6,958,164	949,462	655,873	6,628,974
2011	1,015,040	760,274	690,885	1,074,437	1,129,496	6,982,032	953,487	658,687	6,650,563
2012	1,015,195	760,484	691,143	1,074,699	1,129,805	6,983,703	953,792	658,903	6,651,926
2013	1,015,244	761,153	692,198	1,075,411	1,130,792	6,988,148	954,923	659,730	6,654,645
2014	1,014,657	761,689	693,384	1,075,810	1,131,585	6,990,468	956,055	660,583	6,654,494
2015	1,015,450	762,256	693,877	1,076,622	1,132,426	6,995,741	956,754	661,061	6,659,587
2016	1,014,383	761,216	692,760	1,075,238	1,130,883	6,986,837	955,333	660,065	6,651,688
2017	1,014,758	761,653	693,270	1,075,800	1,131,531	6,990,428	955,955	660,502	6,654,731
2018	1,014,817	762,437	694,506	1,076,636	1,132,691	6,995,645	957,285	661,472	6,657,917
2019	1,013,886	761,290	693,145	1,075,181	1,130,990	6,986,324	955,636	660,305	6,650,123
2020	1,014,958	761,919	693,591	1,076,130	1,131,923	6,992,544	956,341	660,780	6,656,467
2021	1,015,750	762,186	693,605	1,076,633	1,132,325	6,995,892	956,530	660,884	6,660,439
2022	1,014,665	762,243	694,276	1,076,391	1,132,404	6,994,078	957,003	661,274	6,656,618
2023	1,014,516	761,253	692,751	1,075,317	1,130,940	6,987,350	955,356	660,072	6,652,326
2024	1,014,498	761,678	693,448	1,075,754	1,131,567	6,990,066	956,090	660,611	6,653,857
2025	1,015,666	762,440	694,058	1,076,870	1,132,698	6,997,366	956,990	661,227	6,661,084
2026	1,013,600	761,067	692,936	1,074,867	1,130,657	6,984,287	955,351	660,105	6,648,205
2027	1,017,132	763,457	694,925	1,078,339	1,134,211	7,006,924	958,227	662,077	6,670,383
2028	1,013,333	761,046	693,042	1,074,772	1,130,625	6,983,617	955,406	660,157	6,647,136
2029	1,015,157	761,916	693,484	1,076,187	1,131,924	6,992,954	956,270	660,721	6,657,219
2030	1,014,396	761,113	692,587	1,075,138	1,130,733	6,986,198	955,155	659,931	6,651,348
2031	1,016,903	763,859	695,700	1,078,699	1,134,805	7,009,088	959,003	662,651	6,671,057
2032	1,012,713	760,630	692,700	1,074,165	1,130,006	6,979,662	954,908	659,816	6,643,251
2033	1,015,597	761,915	693,248	1,076,306	1,131,925	6,993,823	956,114	660,589	6,658,842
2034	1,015,261	762,217	693,914	1,076,527	1,132,367	6,995,105	956,749	661,068	6,658,733
2035	1,012,887	760,726	692,762	1,074,315	1,130,150	6,980,647	955,013	659,887	6,644,273
Total	51,204,091	31,819,580	28,797,589	47,769,344	47,292,176	331,396,388	37,808,867	26,614,957	318,495,623

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	2,231,456	7,463,378	4,749,245	54,806	4,804,051	116,487	446,175	0	290,719
1981	2,762,773	7,646,858	5,485,957	64,886	5,550,843	316,590	585,003	0	325,112
1982	2,961,383	8,475,944	6,349,080	55,997	6,405,077	447,739	638,615	0	275,763
1983	4,302,165	11,303,322	14,153,033	96,397	14,249,430	345,229	564,698	0	368,139
1984	5,077,824	14,043,628	18,448,383	77,201	18,525,584	267,497	563,588	0	413,443
1985	5,683,454	14,964,899	18,134,698	137,928	18,272,626	298,932	475,028	0	450,444
1986	5,780,666	16,593,102	19,297,129	109,938	19,407,067	703,413	350,906	0	347,690
1987	5,642,019	17,181,065	17,398,908	97,945	17,496,853	1,259,182	552,046	0	812,813
1988	5,150,238	15,704,693	17,697,838	138,405	17,836,243	1,242,139	560,911	0	585,014
1989	5,458,633	16,336,263	17,641,151	88,488	17,729,639	1,049,615	283,065	0	366,590
1990	6,440,643	18,959,051	19,995,760	99,868	20,095,628	1,298,537	229,083	0	469,502
1991	5,805,189	18,565,503	19,903,346	131,558	20,034,904	1,432,360	665,443	0	1,025,089
1992	6,471,964	19,838,439	18,194,788	279,610	18,474,398	1,167,898	738,238	0	666,181
1993	7,583,165	23,092,943	19,051,939	199,640	19,251,579	1,868,745	606,763	0	1,232,409
1994	7,142,378	19,069,838	17,354,702	204,963	17,559,665	1,699,479	763,493	0	1,145,700
1995	6,540,575	19,680,665	19,360,033	191,516	19,551,549	1,284,146	614,314	0	1,941,939
1996	7,065,052	20,408,184	19,041,451	237,846	19,279,297	1,163,708	576,674	0	1,335,804
1997	7,387,904	21,710,020	19,724,881	176,120	19,901,001	1,330,450	730,628	0	1,401,562
1998	7,531,886	20,887,644	23,229,552	182,754	23,412,306	1,513,824	309,052	0	7,568,901
1999	9,095,882	23,193,517	21,047,315	149,818	21,197,133	3,103,415	625,435	0	5,387,172
2000	12,438,885	28,165,097	23,083,384	241,390	23,324,774	1,869,059	752,198	0	1,390,417
2001	15,767,362	30,881,843	24,107,010	611,982	24,718,992	2,426,145	2,485,116	0	1,792,603
2002	11,291,506	27,075,758	18,557,769	447,747	19,005,516	1,539,116	742,993	0	1,736,158
2003	14,639,726	32,571,492	26,686,652	452,332	27,138,984	2,118,933	1,521,532	0	1,795,328
2004	15,829,569	34,997,290	30,594,614	459,071	31,053,685	2,162,836	1,636,434	0	1,881,332
2005	16,202,194	35,852,566	31,148,797	472,822	31,621,619	2,223,781	1,700,704	0	1,947,485
2006	9,580,485	31,975,646	27,173,942	398,752	27,572,694	2,292,118	1,222,018	0	1,841,954
2007	9,570,643	31,942,789	27,143,344	398,344	27,541,688	2,289,894	1,223,050	0	1,841,348
2008	9,574,648	31,956,171	27,152,970	398,513	27,551,483	2,290,935	1,225,000	0	1,842,929
2009	9,572,137	31,947,790	27,144,001	398,411	27,542,412	2,290,424	1,226,256	0	1,843,336
2010	9,570,427	31,942,030	27,143,884	398,335	27,542,219	2,289,787	1,222,128	0	1,840,813
2011	9,601,283	32,053,549	27,200,333	399,872	27,600,205	2,299,004	1,232,883	0	1,851,269
2012	9,603,615	32,061,347	27,205,498	399,967	27,605,465	2,299,634	1,234,474	0	1,852,453
2013	9,609,974	32,082,650	27,213,791	400,240	27,614,031	2,301,640	1,243,518	0	1,858,316
2014	9,613,536	32,094,680	27,208,810	400,396	27,609,206	2,303,231	1,256,547	0	1,866,075
2015	9,620,780	32,118,861	27,229,762	400,695	27,630,457	2,304,947	1,257,200	0	1,867,322
2016	9,608,454	32,077,639	27,198,531	400,182	27,598,713	2,301,815	1,252,638	0	1,863,278
2017	9,613,453	32,094,355	27,210,278	400,392	27,610,670	2,303,137	1,255,347	0	1,865,408
2018	9,620,908	32,119,349	27,220,016	400,705	27,620,721	2,305,482	1,265,821	0	1,872,197
2019	9,607,928	32,075,933	27,190,128	400,166	27,590,294	2,302,040	1,258,534	0	1,866,546
2020	9,616,413	32,104,243	27,216,871	400,515	27,617,386	2,303,935	1,257,275	0	1,866,851
2021	9,620,896	32,119,157	27,234,551	400,699	27,635,250	2,304,763	1,253,671	0	1,865,365
2022	9,618,738	32,112,062	27,215,044	400,618	27,615,662	2,304,915	1,264,806	0	1,871,387
2023	9,609,150	32,079,930	27,201,413	400,211	27,601,624	2,301,943	1,252,123	0	1,863,086
2024	9,613,053	32,093,020	27,205,727	400,377	27,606,104	2,303,216	1,258,326	0	1,867,048
2025	9,623,038	32,126,355	27,235,784	400,793	27,636,577	2,305,517	1,258,015	0	1,868,070
2026	9,605,135	32,066,581	27,182,337	400,050	27,582,387	2,301,369	1,258,203	0	1,866,032
2027	9,636,141	32,170,115	27,274,187	401,337	27,675,524	2,308,593	1,258,621	0	1,869,988
2028	9,604,286	32,063,759	27,177,172	400,015	27,577,187	2,301,292	1,260,288	0	1,867,097
2029	9,616,921	32,105,904	27,220,603	400,536	27,621,139	2,303,951	1,255,535	0	1,865,946
2030	9,607,549	32,074,572	27,197,635	400,143	27,597,778	2,301,529	1,251,334	0	1,862,450
2031	9,639,338	32,180,858	27,274,376	401,475	27,675,851	2,309,796	1,266,549	0	1,874,844
2032	9,598,864	32,045,671	27,161,061	399,790	27,560,851	2,300,035	1,260,212	0	1,866,398
2033	9,617,988	32,109,427	27,228,727	400,576	27,629,303	2,303,955	1,251,408	0	1,863,751
2034	9,619,963	32,116,097	27,225,816	400,665	27,626,481	2,304,843	1,258,734	0	1,868,109
2035	9,600,202	32,050,133	27,165,385	399,846	27,565,231	2,300,340	1,260,182	0	1,866,559
Total	503,153,412	1,530,598,450	1,327,511,799	17,892,395	1,345,404,194	103,831,014	58,650,499	0	94,186,027

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)								
	Mojave Division (continued)							Santa Ana Division	
	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	2,670,387	147,009	688,605	4,870,700	72,651	1,532,535
1981	292,081	181,062	119,602	3,030,407	134,895	47,750	5,032,502	35,662	1,575,444
1982	330,502	186,109	125,429	3,248,883	299,712	623,755	6,176,507	26,852	1,822,250
1983	326,767	219,943	140,523	3,899,769	223,626	384,292	6,472,986	19,017	1,663,599
1984	329,933	266,919	146,866	4,783,997	59,337	1,104,149	7,935,729	11,319	2,325,661
1985	388,327	799,514	125,780	5,330,501	261,135	811,346	8,941,007	17,764	2,707,662
1986	315,566	242,158	178,847	6,190,812	156,053	515,945	9,001,390	31,012	2,768,728
1987	352,377	294,680	233,595	5,764,245	151,796	725,723	10,146,457	19,362	2,845,320
1988	400,005	331,099	149,876	6,910,472	253,833	970,052	11,403,401	36,576	3,087,873
1989	345,614	194,047	138,825	5,963,386	349,544	1,242,144	9,932,830	30,881	3,190,809
1990	202,412	273,748	49,174	6,905,442	436,785	1,891,053	11,755,736	25,518	3,330,913
1991	516,257	478,555	231,223	7,488,366	263,723	1,561,051	13,662,067	32,172	3,847,589
1992	696,623	585,072	168,251	7,076,997	317,042	622,116	12,038,418	55,819	4,043,878
1993	818,675	509,309	207,818	7,765,751	359,632	1,708,915	15,078,017	72,464	5,638,325
1994	957,350	873,215	241,679	7,691,548	1,220,795	1,245,936	15,839,195	105,373	5,139,991
1995	2,411,412	355,198	179,930	6,994,639	842,041	746,371	15,369,990	96,781	4,357,648
1996	1,713,145	790,618	136,397	8,590,347	889,842	(78,782)	15,117,753	156,395	4,051,744
1997	2,043,179	640,177	189,241	8,138,580	1,586,227	3,355,446	19,415,490	177,217	4,585,198
1998	508,030	297,621	115,100	8,888,912	1,925,089	1,134,837	22,261,366	142,703	4,857,213
1999	1,640,237	1,379,642	189,435	10,012,144	2,191,138	1,323,732	25,852,350	187,818	5,915,594
2000	1,446,136	979,036	176,604	9,577,114	1,706,482	1,576,959	19,474,005	347,589	4,181,969
2001	1,475,574	1,041,528	457,561	7,517,949	1,896,726	864,064	19,957,266	295,647	2,547,464
2002	650,673	799,436	304,167	10,083,061	1,802,646	973,761	18,632,011	317,528	3,434,213
2003	1,338,785	1,032,753	362,838	10,970,455	2,169,891	1,198,203	22,508,718	336,632	4,369,719
2004	1,417,987	1,081,633	394,522	12,060,742	2,841,628	934,759	24,411,873	341,648	4,553,050
2005	1,470,260	1,119,570	410,685	12,385,695	2,273,336	1,664,463	25,195,979	351,882	4,612,165
2006	1,078,514	811,388	446,823	9,703,530	2,104,808	1,094,345	20,595,498	79,826	7,110,189
2007	1,078,822	811,320	447,001	9,698,594	2,103,996	2,563,118	22,057,143	79,730	7,102,257
2008	1,080,167	812,145	447,585	9,705,837	2,105,753	1,886,119	21,396,470	79,756	7,104,822
2009	1,080,861	812,460	447,908	9,706,766	2,106,134	2,533,685	22,047,830	79,725	7,102,524
2010	1,078,246	811,006	446,742	9,696,362	2,103,335	2,071,746	21,560,165	79,735	7,102,366
2011	1,086,212	816,168	450,176	9,741,190	2,109,984	2,608,843	22,195,729	80,005	7,124,492
2012	1,087,280	816,798	450,645	9,746,388	2,111,226	2,227,999	21,826,897	80,016	7,125,886
2013	1,093,104	820,098	453,223	9,771,024	2,117,587	1,174,288	20,832,798	80,020	7,128,322
2014	1,101,305	824,618	456,881	9,802,503	2,126,069	3,072,668	22,809,897	79,974	7,127,429
2015	1,101,955	825,147	457,145	9,809,210	2,127,433	1,167,710	20,918,069	80,036	7,132,904
2016	1,098,714	823,100	455,741	9,790,062	2,122,830	3,349,439	23,057,617	79,952	7,124,621
2017	1,100,563	824,220	456,550	9,799,694	2,125,156	1,956,138	21,686,213	79,982	7,127,763
2018	1,107,309	828,046	459,537	9,828,347	2,132,609	2,305,254	22,104,602	79,986	7,130,625
2019	1,102,357	825,060	457,373	9,802,676	2,126,236	3,331,368	23,072,190	79,914	7,122,609
2020	1,101,855	824,990	457,116	9,806,107	2,126,709	2,037,647	21,782,485	79,997	7,129,540
2021	1,099,772	823,971	456,170	9,801,399	2,125,152	905,442	20,635,705	80,060	7,134,035
2022	1,106,612	827,621	459,233	9,824,430	2,131,512	2,130,274	21,920,790	79,974	7,129,291
2023	1,098,423	822,963	455,609	9,789,366	2,122,491	3,290,480	22,996,484	79,963	7,125,350
2024	1,102,398	825,206	457,372	9,805,932	2,126,797	1,949,368	21,695,663	79,961	7,126,665
2025	1,102,540	825,516	457,397	9,812,589	2,128,102	2,168,135	21,925,881	80,053	7,134,490
2026	1,102,060	824,836	457,252	9,799,854	2,125,537	3,410,723	23,145,866	79,891	7,120,563
2027	1,103,354	826,273	457,716	9,823,506	2,130,337	1,756,631	21,535,019	80,169	7,144,515
2028	1,103,326	825,496	457,819	9,803,879	2,126,751	943,848	20,689,796	79,870	7,119,287
2029	1,100,801	824,434	456,641	9,802,601	2,125,654	3,219,936	22,955,499	80,013	7,130,455
2030	1,097,878	822,631	455,369	9,786,431	2,121,754	3,349,367	23,048,743	79,953	7,124,340
2031	1,108,381	829,065	459,950	9,843,374	2,135,563	263,654	20,091,176	80,151	7,144,805
2032	1,103,094	825,244	457,734	9,799,755	2,125,943	3,190,790	22,929,205	79,821	7,115,086
2033	1,098,273	823,093	455,508	9,794,228	2,123,282	1,680,418	21,393,916	80,049	7,132,444
2034	1,102,884	825,635	457,565	9,811,908	2,128,056	1,440,840	21,198,574	80,021	7,131,912
2035	1,103,125	825,297	457,744	9,800,600	2,125,968	4,927,668	24,667,483	79,835	7,116,204
Total	56,590,174	40,627,579	19,653,869	496,674,838	89,065,357	98,506,717	1,057,786,074	6,082,592	313,987,690

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)								
	Santa Ana Division (continued)				West Branch				
	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	3,013,554	1,698,215	224,472	455,619	874,259	288,303
1981	160,053	111,722	333,550	2,216,431	1,783,405	123,264	615,047	2,305,110	8,794
1982	205,350	135,463	1,518,759	3,708,674	1,919,979	190,500	702,265	2,208,264	414,230
1983	244,720	124,651	412,806	2,464,793	2,739,814	149,333	888,475	745,939	579,882
1984	240,496	190,924	769,068	3,537,468	3,463,038	81,260	2,358,495	537,207	719,282
1985	451,600	182,242	871,492	4,230,760	3,866,946	295,836	3,047,591	975,729	614,735
1986	439,048	256,526	982,332	4,477,646	3,791,427	457,604	2,893,171	1,480,015	1,032,216
1987	278,094	218,717	1,114,961	4,476,454	3,422,234	209,868	2,933,342	974,372	459,398
1988	271,868	200,811	1,176,659	4,773,787	3,447,403	255,113	3,017,463	883,714	446,468
1989	230,953	281,861	1,130,035	4,864,539	4,025,641	405,583	2,738,143	1,398,165	865,738
1990	437,812	308,144	1,538,449	5,640,836	4,088,481	383,655	3,232,445	3,153,869	777,713
1991	843,388	632,912	1,630,321	6,986,382	3,862,056	304,143	3,550,063	639,527	763,037
1992	281,864	5,636,464	1,102,519	11,120,544	4,286,050	327,802	3,892,480	1,014,551	872,953
1993	382,195	570,563	994,721	7,658,268	3,969,075	343,304	4,515,385	1,670,952	852,208
1994	617,136	415,603	1,022,412	7,300,515	3,649,861	293,376	3,359,381	1,879,417	872,624
1995	1,308,828	704,154	894,338	7,361,749	4,137,046	883,315	4,750,275	1,588,080	754,904
1996	1,001,063	1,041,697	1,316,493	7,567,392	4,511,858	966,044	3,593,671	4,208,195	877,111
1997	493,841	949,188	953,590	7,159,034	4,543,506	1,030,809	2,429,066	3,755,901	1,597,361
1998	379,997	991,426	(67,444)	6,303,895	4,872,244	464,376	3,474,463	2,398,630	1,996,114
1999	486,317	1,959,174	826,454	9,375,357	4,847,690	4,333,320	4,880,644	1,374,694	995,056
2000	839,288	1,000,770	1,124,870	7,494,486	5,435,204	793,301	4,257,300	2,409,578	163,440
2001	1,667,878	810,714	5,410,952	10,732,655	5,907,261	1,461,986	5,144,958	4,784,669	412,817
2002	983,568	748,789	2,255,781	7,739,879	4,865,371	1,403,415	3,778,973	3,799,150	705,957
2003	1,215,676	1,014,007	3,238,281	10,174,315	6,036,426	1,086,650	5,448,947	3,792,157	2,946,368
2004	1,233,790	1,152,716	4,034,476	11,315,680	6,414,773	1,102,841	5,561,507	4,162,924	3,518,052
2005	1,270,747	1,215,137	4,296,829	11,746,760	6,576,791	1,135,875	5,707,592	4,324,436	3,278,492
2006	741,196	1,240,239	1,906,310	11,077,760	7,182,980	761,900	3,503,177	4,224,811	847,580
2007	740,309	1,238,755	2,529,897	11,690,948	7,174,920	763,707	3,499,786	4,228,908	846,566
2008	740,538	1,239,136	2,295,022	11,459,274	7,177,480	765,672	3,501,386	4,236,227	846,827
2009	740,259	1,238,669	2,356,939	11,518,116	7,175,126	767,221	3,500,612	4,241,095	846,507
2010	740,347	1,238,820	2,729,502	11,890,770	7,175,059	762,650	3,499,617	4,225,818	846,610
2011	742,723	1,243,003	2,245,978	11,436,201	7,196,532	772,449	3,512,016	4,265,652	848,416
2012	742,836	1,243,191	2,458,396	11,650,325	7,197,913	773,998	3,512,980	4,271,065	848,546
2013	742,873	1,243,251	2,767,238	11,961,704	7,200,190	783,693	3,516,066	4,304,363	848,588
2014	742,442	1,242,531	2,317,730	11,510,106	7,199,002	798,208	3,518,555	4,353,210	848,096
2015	743,024	1,243,502	2,611,810	11,811,276	7,204,542	798,382	3,521,166	4,355,020	848,758
2016	742,242	1,242,197	2,240,202	11,429,214	7,196,246	793,950	3,516,364	4,337,976	847,867
2017	742,518	1,242,656	2,950,779	12,143,698	7,199,381	796,632	3,518,380	4,347,746	848,181
2018	742,559	1,242,729	2,390,281	11,586,180	7,202,054	807,989	3,522,000	4,386,606	848,231
2019	741,879	1,241,587	2,975,183	12,161,172	7,194,091	800,485	3,516,709	4,359,181	847,452
2020	742,663	1,242,900	2,097,868	11,292,968	7,201,144	798,604	3,519,595	4,354,008	848,347
2021	743,243	1,243,869	2,463,425	11,664,632	7,205,778	794,259	3,520,845	4,340,484	849,010
2022	742,449	1,242,541	3,421,899	12,616,154	7,200,732	806,726	3,521,103	4,381,602	848,103
2023	742,341	1,242,360	2,395,477	11,585,491	7,197,008	793,196	3,516,535	4,335,095	847,979
2024	742,326	1,242,337	2,767,610	11,958,899	7,198,210	799,879	3,518,492	4,357,953	847,963
2025	743,181	1,243,766	2,013,762	11,215,252	7,206,146	798,988	3,522,003	4,356,291	848,939
2026	741,669	1,241,238	3,329,496	12,512,857	7,192,032	800,162	3,515,670	4,357,379	847,212
2027	744,254	1,245,564	1,700,107	10,914,609	7,216,291	798,783	3,526,708	4,357,802	850,167
2028	741,475	1,240,911	2,673,517	11,855,060	7,190,686	802,727	3,515,582	4,366,388	846,991
2029	742,809	1,243,143	2,525,326	11,721,746	7,202,108	796,468	3,519,594	4,346,671	848,515
2030	742,252	1,242,212	2,601,484	11,790,241	7,196,006	792,358	3,515,890	4,331,999	847,879
2031	744,087	1,245,282	3,470,501	12,684,826	7,216,415	807,416	3,528,571	4,387,260	849,974
2032	741,021	1,240,151	1,909,902	11,085,981	7,186,434	803,014	3,513,658	4,366,418	846,472
2033	743,130	1,243,683	2,810,223	12,009,529	7,204,213	791,742	3,519,584	4,331,302	848,881
2034	742,884	1,243,271	2,546,483	11,744,571	7,203,520	799,938	3,520,981	4,359,397	848,602
2035	741,149	1,240,367	3,377,006	12,554,561	7,187,570	802,584	3,514,097	4,364,448	846,618
Total	39,368,663	58,706,239	121,022,979	539,168,163	332,505,002	44,235,060	194,295,690	191,519,860	52,678,482

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)									Grand Total (74)
	West Branch (cont'd.)		Coastal Branch						Total (73)	
	Reach 30 (65)	Subtotal (66)	Reach 31A[a] (67)	Reach 33A (68)	Reach 33B (69)	Reach 34 (70)	Reach 35 (71)	Subtotal (72)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	42,918
1963	0	0	0	0	0	0	0	0	0	168,358
1964	0	0	0	0	0	0	0	0	0	184,729
1965	0	0	0	0	0	0	0	0	0	378,874
1966	0	0	0	0	0	0	0	0	0	408,397
1967	0	0	0	0	0	0	0	0	0	634,505
1968	0	0	0	0	0	0	0	0	2,160,548	2,745,160
1969	0	0	509,728	0	0	0	0	509,728	3,324,718	4,074,939
1970	0	0	609,988	0	0	0	0	609,988	3,983,062	4,676,282
1971	0	0	699,052	0	0	0	0	699,052	5,614,013	6,185,714
1972	420,789	1,820,832	697,576	0	0	0	0	697,576	12,353,356	12,998,869
1973	621,431	2,248,000	641,626	0	0	0	0	641,626	14,590,688	15,194,233
1974	723,949	2,223,720	669,279	0	0	0	0	669,279	16,598,762	17,372,561
1975	841,991	3,140,708	806,429	0	0	0	0	806,429	19,569,999	20,517,423
1976	(650,944)	1,710,546	840,927	0	0	0	0	840,927	19,002,859	20,027,213
1977	634,581	2,923,325	872,169	0	0	0	0	872,169	23,267,885	24,213,489
1978	3,088,954	5,306,854	934,119	0	0	0	0	934,119	24,818,739	26,012,786
1979	958,068	3,897,207	871,688	0	0	0	0	871,688	23,421,881	24,675,598
1980	222,549	3,763,417	1,047,396	4,790	0	30	75	1,052,291	30,105,348	32,038,398
1981	1,093,897	5,929,517	1,037,469	4,790	0	30	75	1,042,364	33,884,524	35,516,366
1982	978,624	6,413,862	1,015,555	4,790	0	30	75	1,020,450	39,515,188	41,611,655
1983	3,698,681	8,802,124	1,146,269	4,957	0	30	77	1,151,333	54,543,263	56,802,781
1984	755,136	7,914,418	1,427,192	5,051	0	31	78	1,432,352	63,947,633	67,105,188
1985	1,753,355	10,554,192	1,849,827	5,051	0	31	78	1,854,987	69,700,009	73,272,898
1986	1,338,657	10,993,090	1,714,723	5,051	0	31	78	1,719,883	73,437,761	76,707,917
1987	1,395,629	9,394,843	1,708,525	4,324	0	26	67	1,712,942	71,557,180	75,332,252
1988	1,452,589	9,502,750	1,964,428	4,509	0	28	70	1,969,035	72,349,117	76,060,618
1989	1,505,029	10,938,299	1,768,942	4,509	0	28	70	1,773,549	73,894,076	78,662,348
1990	847,500	12,483,663	2,274,772	0	0	0	0	2,274,772	86,130,115	91,361,385
1991	1,191,090	10,309,916	2,187,841	0	0	0	0	2,187,841	86,877,284	90,982,870
1992	2,259,032	12,652,868	2,465,364	0	0	0	0	2,465,364	94,167,321	99,235,524
1993	1,157,876	12,508,800	2,811,441	0	0	0	0	2,811,441	100,019,568	107,299,130
1994	1,674,576	11,729,235	3,894,639	0	0	0	0	3,894,639	92,336,811	99,944,106
1995	(421,879)	11,691,741	3,481,049	0	0	0	0	3,481,049	98,887,435	105,659,504
1996	1,574,098	15,730,977	5,144,684	0	0	0	0	5,144,684	105,119,193	112,018,784
1997	1,521,491	14,878,134	2,523,741	(33)	0	0	0	2,523,708	107,647,058	113,385,326
1998	1,291,185	14,497,012	4,303,206	1,878,551	1,386	160,400	88,026	6,431,569	120,663,477	127,330,678
1999	2,036,088	18,467,492	4,180,169	2,046,323	11,222	191,174	94,832	6,523,720	127,758,068	136,882,523
2000	1,489,493	14,548,316	2,875,512	2,701,177	2,833	276,164	133,968	5,989,654	121,867,402	130,516,461
2001	508,193	18,219,884	3,121,343	2,329,432	5,541	165,105	71,094	5,692,515	139,634,823	148,064,442
2002	3,460,682	18,013,548	3,436,163	2,684,413	23,546	222,431	117,644	6,484,197	120,725,795	131,828,762
2003	87,394	19,397,942	3,365,694	2,854,449	12,363	233,342	114,103	6,579,951	144,695,083	154,471,357
2004	315,620	21,075,717	3,474,462	2,990,756	12,547	236,819	115,803	6,830,387	157,722,227	168,202,376
2005	1,907,562	22,930,748	3,575,412	3,072,949	12,923	243,913	119,272	7,024,469	163,119,531	173,848,759
2006	2,698,374	19,218,822	4,680,442	2,268,441	0	1,869	4,971	6,955,723	142,733,993	153,061,249
2007	3,222,193	19,736,080	4,675,399	2,265,956	0	1,908	5,071	6,948,334	145,235,744	155,551,662
2008	3,411,051	19,938,643	4,677,204	2,266,804	0	1,936	5,142	6,951,086	144,581,392	154,901,155
2009	3,523,128	20,053,689	4,675,815	2,266,099	0	1,962	5,212	6,949,088	145,383,029	155,699,582
2010	3,415,684	19,925,438	4,675,389	2,265,970	0	1,890	5,022	6,948,271	145,126,420	155,442,415
2011	3,611,509	20,206,574	4,692,115	2,272,288	0	2,009	5,342	6,971,754	145,891,425	156,246,101
2012	3,410,666	20,015,168	4,693,128	2,272,754	0	2,032	5,402	6,973,316	145,565,741	155,922,544
2013	3,886,684	20,539,584	4,695,391	2,273,694	0	2,181	5,799	6,977,065	145,460,487	155,821,505
2014	3,519,639	20,236,710	4,695,823	2,273,664	0	2,412	6,408	6,978,307	146,708,484	157,069,265
2015	3,356,536	20,084,404	4,699,399	2,275,401	0	2,408	6,395	6,983,603	145,031,233	155,399,936
2016	4,007,167	20,699,570	4,693,695	2,272,698	0	2,346	6,238	6,974,977	147,293,990	157,650,401
2017	3,800,187	20,510,507	4,695,926	2,273,741	0	2,384	6,337	6,978,388	146,492,111	156,853,257
2018	3,694,999	20,461,879	4,698,581	2,274,845	0	2,559	6,804	6,982,789	146,366,619	156,732,722
2019	4,323,282	21,041,200	4,692,834	2,272,170	0	2,453	6,515	6,973,972	148,374,196	158,728,159
2020	4,094,942	20,816,640	4,697,217	2,274,339	0	2,412	6,412	6,980,380	146,069,716	156,433,574
2021	3,178,020	19,888,396	4,699,839	2,275,689	0	2,339	6,213	6,984,080	144,409,151	154,779,192
2022	3,203,070	19,961,336	4,697,620	2,274,399	0	2,541	6,754	6,981,314	146,693,058	157,057,137
2023	3,621,624	20,311,437	4,694,109	2,272,915	0	2,334	6,199	6,975,557	147,007,617	157,365,029
2024	4,525,200	21,247,697	4,695,431	2,273,446	0	2,436	6,473	6,977,786	147,048,696	157,408,482
2025	2,470,985	19,203,352	4,700,466	2,275,914	0	2,412	6,411	6,985,203	144,582,091	154,953,128
2026	4,558,168	21,270,623	4,691,479	2,271,516	0	2,450	6,509	6,971,954	149,003,708	159,354,694
2027	43,455	16,793,206	4,706,982	2,279,092	0	2,395	6,366	6,994,835	141,599,618	151,985,137
2028	8,260,027	24,982,401	4,690,821	2,271,157	0	2,489	6,619	6,971,086	149,592,646	159,941,966
2029	2,072,769	18,786,125	4,697,664	2,274,591	0	2,377	6,322	6,980,954	145,646,609	156,011,630
2030	3,644,204	20,328,336	4,693,393	2,272,580	0	2,321	6,171	6,974,465	147,267,388	157,623,271
2031	111,300	16,900,936	4,707,773	2,279,328	0	2,533	6,725	6,996,359	142,058,570	152,445,132
2032	8,239,630	24,955,626	4,688,109	2,269,828	0	2,501	6,648	6,967,086	150,986,839	161,330,111
2033	2,432,010	19,127,732	4,698,629	2,275,141	0	2,298	6,112	6,982,180	144,726,384	155,093,939
2034	3,543,508	20,275,946	4,698,855	2,275,113	0	2,431	6,459	6,982,858	145,428,298	155,795,676
2035	4,625,078	21,340,395	4,688,806	2,270,178	0	2,494	6,626	6,968,104	150,590,819	160,935,681
Total	150,238,055	965,472,149	216,736,733	88,785,590	82,361	1,798,755	1,039,162	308,442,601	7,001,967,872	7,478,248,188

[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)

Calendar Year	North Bay Aqueduct				South Bay Aqueduct	California Aqueduct			
	Reach 1	Reach 3A	Reach 3B		Reach 1	Reach 1	Reach 4	Reach 14A	Reach 15A
	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)	Wheeler Ridge 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	211,197	1	0
1971	0	0	10,609	10,609	381,662	574,015	225,188	115,801	2,564
1972	0	0	14,434	14,434	598,702	933,292	502,196	198,914	68,304
1973	0	0	14,449	14,449	493,490	688,030	381,232	263,468	236,623
1974	0	0	17,473	17,473	565,575	783,562	447,772	315,939	324,966
1975	0	0	14,779	14,779	349,758	1,341,019	518,816	508,060	552,952
1976	0	0	20,856	20,856	571,361	1,638,453	641,115	712,947	713,875
1977	0	0	22,635	22,635	512,996	1,013,307	284,828	267,467	303,107
1978	0	0	21,692	21,692	586,355	2,339,502	607,042	689,236	616,104
1979	0	0	16,237	16,237	605,136	3,428,517	969,893	714,268	678,887
1980	0	0	19,945	19,945	523,369	2,083,336	1,129,152	1,051,629	1,047,495
1981	0	0	23,842	23,842	567,692	3,952,931	1,939,189	1,336,867	1,319,739
1982	0	0	12,157	12,157	605,780	3,082,031	1,363,705	1,200,226	1,213,660
1983	0	0	2,342	2,342	82,222	879,916	343,597	341,584	304,715
1984	0	0	4,822	4,822	271,543	1,695,568	885,941	678,307	602,408
1985	0	0	10,188	10,188	451,020	3,171,920	1,613,745	1,397,490	1,397,098
1986	0	0	15,501	15,501	807,984	6,601,752	2,627,407	2,405,224	2,432,322
1987	0	0	27,223	27,223	886,956	9,371,788	2,523,544	2,240,552	2,223,371
1988	17,813	0	24,020	41,833	909,300	6,280,898	2,611,297	2,562,330	2,560,462
1989	29,819	43,846	26,519	100,184	1,161,160	9,748,180	3,910,492	3,964,188	3,974,290
1990	52,210	67,109	40,775	160,094	1,834,626	10,467,177	4,501,309	5,785,069	6,019,952
1991	10,429	10,118	5,252	25,799	378,966	1,923,595	490,766	903,923	1,031,345
1992	13,319	13,070	9,406	35,795	311,251	3,211,086	1,168,304	1,255,567	1,314,358
1993	(11,941)	(8,753)	(5,392)	(26,086)	(158,214)	532,899	345,215	(124,821)	(102,311)
1994	46,791	39,624	29,189	115,604	799,624	5,657,329	2,296,235	2,507,536	2,520,144
1995	20,014	20,620	11,791	52,425	247,645	4,017,881	1,513,362	919,965	841,178
1996	57,320	47,288	23,483	128,091	619,160	8,305,492	4,016,045	2,503,370	2,310,456
1997	67,416	52,935	21,955	142,306	986,312	7,010,228	2,870,194	2,637,433	2,469,147
1998	(10,647)	(9,488)	(4,554)	(24,689)	(125,142)	261,934	(341,279)	(297,413)	(275,129)
1999	31,572	25,250	10,553	67,375	513,529	5,464,636	2,313,609	1,585,155	1,293,396
2000	61,549	44,948	15,850	122,347	788,055	8,660,942	3,209,424	3,124,701	3,200,442
2001	355,728	251,058	214,831	821,617	3,664,283	23,326,235	10,296,470	14,726,902	15,136,167
2002	191,792	105,464	61,999	359,255	2,123,846	18,384,200	6,991,101	8,536,009	8,854,510
2003	836,139	136,751	88,343	1,061,233	3,359,787	28,642,710	9,926,369	12,600,301	14,544,374
2004	816,395	169,507	812,767	1,798,669	6,454,546	34,367,602	17,504,974	20,134,634	23,470,551
2005	972,570	201,935	968,211	2,142,716	7,685,051	47,525,280	21,215,525	24,661,984	28,783,374
2006	380,272	360,405	400,647	1,141,324	5,726,164	36,603,328	17,258,264	20,569,159	20,122,810
2007	375,869	353,564	400,359	1,129,792	5,618,678	34,482,514	17,101,330	20,568,536	20,143,732
2008	338,393	315,891	364,487	1,018,771	5,020,230	35,170,441	15,384,650	18,592,813	18,219,171
2009	354,924	328,698	386,130	1,069,752	5,224,387	31,533,269	16,121,356	19,574,455	19,192,286
2010	376,267	345,787	413,634	1,135,688	5,495,396	40,600,591	17,094,416	20,836,405	20,442,329
2011	379,313	345,931	421,308	1,146,552	5,497,690	36,433,165	17,097,492	20,835,023	20,443,004
2012	396,885	359,219	445,353	1,201,457	5,708,864	34,935,606	17,940,408	21,968,994	21,569,605
2013	442,747	398,221	500,837	1,341,805	6,328,697	46,377,598	20,117,077	24,747,665	24,317,577
2014	482,917	430,649	552,506	1,466,072	6,844,096	41,476,835	21,983,009	27,160,382	26,707,375
2015	497,947	437,766	581,926	1,517,639	6,957,160	46,824,995	22,365,696	27,637,584	27,178,510
2016	509,871	442,674	607,564	1,560,109	7,035,187	54,042,956	23,050,296	28,714,342	28,272,838
2017	508,035	435,665	616,836	1,560,536	6,923,788	47,546,549	22,376,621	27,706,748	27,257,270
2018	530,514	449,499	657,259	1,637,272	7,143,637	46,777,667	23,202,633	28,803,508	28,344,552
2019	551,387	461,660	696,810	1,709,857	7,336,913	55,472,453	24,476,158	30,688,948	30,252,586
2020	524,423	434,027	674,959	1,633,409	6,897,733	48,672,603	22,948,565	28,756,315	28,342,433
2021	524,685	433,243	677,019	1,634,947	6,885,298	47,836,056	23,042,331	28,940,754	28,534,825
2022	506,009	417,820	652,919	1,576,748	6,640,181	43,925,078	22,220,459	27,908,651	27,517,112
2023	509,330	420,561	657,203	1,587,094	6,683,736	47,599,146	22,465,920	28,270,145	27,881,388
2024	530,986	438,440	685,146	1,654,572	6,967,890	52,735,452	23,311,450	29,270,734	28,859,570
2025	528,234	436,165	681,594	1,645,993	6,931,758	43,629,392	23,187,665	29,121,305	28,712,012
2026	532,413	439,616	686,987	1,659,016	6,986,570	55,123,880	23,398,916	29,389,623	28,978,574
2027	523,165	431,977	675,052	1,630,194	6,865,174	48,936,488	23,087,902	29,057,841	28,659,299
2028	527,359	435,438	680,463	1,643,260	6,920,204	50,067,880	23,142,410	29,057,127	28,648,207
2029	519,614	429,045	670,471	1,619,130	6,818,582	47,542,698	22,906,239	28,816,020	28,418,535
2030	524,457	433,044	676,718	1,634,219	6,882,113	49,797,683	23,009,842	28,887,345	28,480,359
2031	516,175	426,207	666,033	1,608,415	6,773,453	43,764,150	22,241,234	27,730,957	27,308,831
2032	528,073	436,029	681,387	1,645,489	6,929,588	49,035,001	23,029,184	28,823,259	28,407,168
2033	558,706	461,324	720,912	1,740,942	7,331,565	51,196,780	24,258,536	30,338,218	29,891,361
2034	535,208	441,920	690,591	1,667,719	7,023,204	48,735,243	23,435,562	29,383,410	28,966,480
2035	522,624	431,530	674,353	1,628,507	6,858,071	48,849,920	23,112,544	29,115,686	28,722,068
Total	18,095,090	13,623,297	20,550,783	52,269,170	239,389,147	1,634,199,127	756,761,508	923,696,765	920,776,763

[a]Excludes 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.

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 Power Plant (12)	Pearblossom Pumping Plant (13)	Mojave Siphon Power Plant (14)	Silverwood Lake[d] (15)	Devil Canyon Power Plant (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	142,902	542,625	0	3,468	0	0	(3,024)	0	79,315
1973	387,198	1,548,428	0	202,289	0	0	(461,268)	0	122,787
1974	564,464	2,164,223	0	324,993	0	0	(546,156)	0	157,511
1975	1,095,331	4,010,395	0	575,061	0	0	(1,095,523)	0	314,636
1976	1,506,985	5,443,936	0	889,544	0	0	(1,566,056)	0	326,967
1977	657,108	2,360,624	0	315,128	0	0	(1,222,866)	0	75,335
1978	1,132,296	4,180,131	0	1,508,115	0	0	(3,085,094)	0	89,383
1979	1,374,154	4,910,139	0	1,644,213	0	160,215	(3,164,026)	393,867	88,211
1980	2,102,439	7,028,235	0	1,762,063	0	0	(3,318,152)	0	236,768
1981	2,838,773	9,351,931	0	2,296,771	0	0	(3,842,971)	0	444,280
1982	2,424,920	8,352,207	0	1,498,620	0	0	(2,736,072)	0	539,245
1983	540,330	1,582,582	0	341,957	0	384,275	(5,478,830)	0	71,197
1984	1,129,131	3,448,759	0	622,123	0	0	(7,326,265)	(10,080)	240,134
1985	2,781,953	9,261,674	0	1,195,768	0	0	(10,477,567)	(56,570)	874,069
1986	4,999,949	16,956,023	(1,013,756)	2,359,599	0	0	(11,484,996)	0	1,269,590
1987	4,456,059	14,684,476	(1,026,193)	1,831,238	0	131,606	(10,814,483)	53,242	1,325,936
1988	5,126,229	16,819,159	(744,374)	2,375,784	0	0	(14,495,967)	0	1,421,097
1989	8,369,623	28,090,313	(766,443)	4,102,557	0	686,468	(18,532,961)	89,890	2,013,335
1990	13,630,073	48,369,421	(834,673)	6,504,876	0	89,075	(20,911,839)	147,163	2,857,409
1991	2,426,220	8,641,086	(269,625)	996,352	0	0	(4,884,013)	0	534,818
1992	2,642,161	8,854,347	(934,311)	1,167,670	0	156,847	(9,513,281)	(61,233)	717,740
1993	(582,580)	(2,649,876)	(56,908)	(253,503)	0	(34,870)	(7,502,549)	0	68,719
1994	5,284,878	18,333,686	(58,712)	2,573,351	0	0	(11,662,318)	147,989	1,206,704
1995	1,677,210	5,571,517	(1,242,189)	1,025,717	0	467,095	(9,742,248)	0	247,869
1996	4,899,576	17,115,554	(2,811,564)	2,673,483	(923,213)	906,220	(12,358,465)	0	895,929
1997	5,545,919	19,859,875	(2,572,220)	3,156,995	(1,748,195)	0	(13,830,356)	0	902,690
1998	(618,940)	(2,151,963)	(2,016,390)	(413,861)	(1,253,110)	0	(10,183,555)	0	(62,855)
1999	3,322,280	12,874,693	(2,811,928)	1,793,112	(2,482,354)	0	(14,772,635)	0	676,333
2000	7,366,128	26,578,928	(5,115,261)	4,050,888	(4,415,350)	0	(25,857,510)	0	1,284,930
2001	34,063,766	125,742,394	(3,279,765)	19,351,034	(3,625,917)	0	(19,515,323)	0	6,314,498
2002	19,992,893	73,466,747	(4,923,759)	11,112,707	(5,252,750)	0	(24,669,937)	0	3,857,333
2003	31,284,461	111,635,519	(3,892,962)	19,417,339	(8,747,575)	0	(29,620,087)	(786,548)	4,930,095
2004	50,029,888	176,675,518	(5,522,215)	31,629,140	(12,093,168)	0	(34,784,371)	0	7,578,501
2005	61,392,439	216,894,786	(5,580,591)	38,096,538	(12,264,419)	0	(34,928,664)	1,005,811	9,611,449
2006	47,368,264	177,530,624	(5,322,238)	27,985,567	(6,247,607)	1,937,013	(30,173,326)	(56,085)	8,620,385
2007	47,436,645	177,826,046	(5,304,528)	27,484,569	(6,201,895)	0	(30,547,883)	0	8,898,350
2008	42,913,222	160,888,936	(5,503,343)	25,519,811	(6,470,985)	0	(30,975,043)	(773,116)	7,784,407
2009	45,215,395	169,543,145	(5,500,101)	26,729,414	(6,438,227)	1,239,755	(31,234,822)	0	8,292,967
2010	48,171,179	180,649,847	(5,520,916)	28,522,587	(6,471,566)	399,220	(31,353,095)	0	8,845,701
2011	48,175,320	180,664,404	(5,509,334)	28,513,818	(6,447,175)	0	(31,904,978)	0	8,816,384
2012	50,840,712	190,694,599	(5,695,489)	30,504,661	(6,754,338)	2,329,810	(32,151,021)	1,692,016	9,208,785
2013	57,335,978	215,092,107	(5,623,018)	34,040,046	(6,684,232)	1,435,127	(32,153,219)	0	10,560,929
2014	62,986,970	236,328,723	(5,682,420)	37,051,312	(6,750,132)	0	(32,528,024)	(836,054)	11,737,199
2015	64,100,028	240,507,026	(5,712,430)	38,011,967	(6,866,216)	0	(33,055,852)	0	11,857,956
2016	66,710,555	250,375,959	(5,860,650)	39,894,067	(7,080,221)	3,268,862	(33,744,213)	(1,490,242)	12,274,758
2017	64,295,004	241,255,689	(5,691,661)	38,211,102	(6,918,265)	0	(33,458,212)	0	11,858,570
2018	66,865,581	250,928,138	(5,876,644)	40,496,036	(7,414,888)	5,427,918	(33,747,141)	1,789,417	12,085,634
2019	71,412,769	268,085,086	(5,805,121)	41,504,858	(7,178,618)	0	(33,994,739)	0	13,642,220
2020	66,899,284	251,136,399	(5,840,662)	39,623,705	(7,279,653)	0	(34,396,682)	1,300,494	12,509,550
2021	67,362,530	252,896,083	(5,922,348)	40,158,704	(7,425,966)	(617,065)	(34,544,277)	(1,602,005)	12,484,564
2022	64,959,867	243,876,128	(5,894,821)	38,228,807	(7,336,456)	2,560,417	(34,173,968)	0	12,262,124
2023	65,826,527	247,147,035	(5,964,077)	38,977,938	(7,453,550)	1,251,343	(34,535,717)	(220,657)	12,335,375
2024	68,128,580	255,769,706	(5,857,853)	40,112,351	(7,345,929)	0	(34,518,538)	0	12,861,010
2025	67,780,027	254,463,514	(5,893,306)	39,845,524	(7,343,240)	2,469,578	(34,126,014)	0	12,797,840
2026	68,411,373	256,834,416	(5,909,512)	40,688,030	(7,452,528)	0	(34,854,897)	(1,036,522)	12,735,777
2027	67,663,747	254,046,154	(5,931,091)	40,023,978	(7,387,811)	633,641	(34,481,768)	0	12,694,718
2028	67,629,303	253,893,970	(5,876,646)	40,086,253	(7,360,703)	0	(34,547,063)	(752,155)	12,633,282
2029	67,093,886	251,901,960	(5,911,600)	39,688,386	(7,410,354)	(2,368)	(34,465,120)	0	12,586,424
2030	67,232,725	252,403,707	(5,880,827)	39,896,479	(7,366,358)	0	(34,540,142)	0	12,531,504
2031	64,439,076	241,860,014	(5,915,419)	39,157,838	(7,728,190)	4,931,275	(34,187,651)	(1,303,328)	11,625,796
2032	67,051,922	251,697,028	(5,819,390)	39,223,956	(7,564,987)	0	(34,004,301)	0	12,667,735
2033	70,545,656	264,809,159	(5,950,683)	42,673,142	(7,856,626)	2,313,445	(34,342,471)	2,572,846	12,828,125
2034	68,377,955	256,690,648	(5,872,492)	40,136,649	(7,725,163)	0	(33,846,228)	0	12,861,671
2035	67,814,047	254,629,693	(5,980,801)	40,215,873	(7,631,655)	3,054,082	(34,727,391)	4,131,978	12,668,047
Total	2,145,030,343	7,990,974,035	(218,503,260)	1,269,938,557	(266,399,585)	35,578,984	(1,385,703,224)	4,340,118	396,879,745

[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 from storage for Project Transportation Facilities. The allocation is determined annually by applying the following ratio, calculated from the data shown in Table B-6: "Reservoir Storage Changes" (withdrawals, as a positive value) conveyed through each plant, 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)

Calendar Year	California Aqueduct (continued)							
	Reach 29G	Reach 29H	Reach 29J	Reach 30	Reach 31A	Reach 33A		
	Warne Power Plant (19)	Pyramid Lake[d] (20)	Castaic Power Plant (21)	Castaic Lake[d] (22)	Las Perillas & Badger Hill Pumping Plants (23)	Devil's Den, Bluestone, & Polonio Pumping Plants (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	0	118,676	0	774,253	1,117,913
1969	0	0	0	0	78,350	0	507,516	773,646
1970	0	0	0	0	136,429	0	693,842	1,103,798
1971	0	0	0	0	166,296	0	1,083,864	1,476,135
1972	0	0	(211,144)	0	237,638	0	2,494,486	3,107,622
1973	0	0	(1,057,564)	0	120,913	0	2,432,136	2,940,075
1974	0	0	(1,547,884)	0	118,582	0	3,107,972	3,691,020
1975	0	0	(2,455,461)	0	94,848	0	5,460,134	5,824,671
1976	0	0	(2,827,557)	0	141,260	0	7,621,469	8,213,686
1977	0	0	(3,734,462)	0	71,311	0	390,887	926,518
1978	0	0	(1,542,479)	0	179,925	0	6,714,161	7,322,208
1979	0	0	(2,384,748)	(21,562)	192,126	0	8,984,154	9,605,527
1980	0	0	(3,408,863)	0	168,458	0	9,882,560	10,425,874
1981	0	0	(2,834,322)	0	169,177	0	16,972,365	17,563,899
1982	(783,626)	0	(3,463,971)	0	168,390	0	12,859,335	13,477,272
1983	(495,041)	65,741	(3,260,764)	(3,176,515)	17,920	0	(7,537,336)	(7,452,772)
1984	(2,027,345)	0	(2,336,089)	(2,151,129)	112,679	0	(4,435,858)	(4,159,493)
1985	(5,930,176)	0	(15,698,638)	0	146,843	0	(10,322,391)	(9,861,183)
1986	(5,579,301)	0	(11,072,448)	0	297,886	0	10,799,251	11,622,736
1987	(6,304,539)	68,410	(11,562,269)	(41,897)	245,082	0	9,405,923	10,320,102
1988	(6,993,235)	54,038	(12,292,638)	(211,526)	214,519	0	5,288,073	6,239,206
1989	(8,235,085)	14,390	(14,514,469)	126,791	282,180	0	23,323,739	24,585,083
1990	(11,011,065)	0	(20,116,506)	245,180	416,832	0	46,159,453	48,154,173
1991	(3,600,495)	439,068	(6,579,194)	0	3,610	0	2,057,456	2,462,221
1992	(5,508,780)	0	(9,493,502)	(935,650)	101,665	0	(5,857,012)	(5,509,966)
1993	(4,525,955)	(13,291)	(9,266,007)	(446,527)	(111,306)	0	(24,723,671)	(24,907,971)
1994	(5,813,538)	20,518	(10,547,914)	(86,993)	206,086	(1,127)	12,583,854	13,499,082
1995	(1,934,202)	0	(4,049,615)	0	243,434	0	(443,026)	(142,956)
1996	(4,248,531)	0	(8,457,232)	0	296,170	0	15,123,290	15,870,541
1997	(4,824,488)	0	(8,776,260)	0	298,483	208,816	13,208,261	14,336,879
1998	(1,797,479)	0	(4,644,120)	0	(51,634)	(87,016)	(23,932,810)	(24,082,641)
1999	(5,526,541)	0	(9,954,674)	0	159,124	233,730	(5,832,064)	(5,251,160)
2000	(9,487,334)	0	(17,952,087)	0	243,850	401,530	(4,705,779)	(3,795,377)
2001	(7,785,701)	0	(13,652,669)	0	1,089,461	2,170,816	204,358,368	208,844,268
2002	(10,279,966)	0	(18,398,706)	0	546,208	1,353,554	89,570,144	92,053,245
2003	(9,293,245)	0	(16,519,025)	0	779,676	2,201,741	167,103,143	171,524,163
2004	(11,042,912)	0	(19,630,765)	0	1,728,303	5,050,738	285,096,418	293,349,633
2005	(11,777,400)	0	(20,963,203)	5,641,191	2,050,887	5,980,898	377,345,885	387,173,652
2006	(13,979,640)	0	(23,183,834)	280,379	1,904,099	5,407,699	286,624,861	293,492,349
2007	(14,818,147)	0	(24,337,092)	(540,386)	1,773,064	5,305,046	279,269,901	286,018,371
2008	(14,570,173)	0	(23,846,615)	0	1,583,740	4,739,767	248,657,683	254,696,684
2009	(14,924,670)	0	(24,406,279)	(224,664)	1,647,613	4,931,912	261,292,804	267,586,943
2010	(15,042,903)	0	(24,708,575)	0	1,732,860	5,188,326	289,386,406	296,017,490
2011	(14,977,389)	0	(24,546,205)	0	1,733,080	5,190,494	284,517,103	291,161,345
2012	(15,029,739)	0	(24,754,241)	1,819,395	1,799,219	5,389,864	306,308,846	313,219,167
2013	(15,517,949)	0	(25,546,905)	0	1,994,569	5,975,064	356,468,414	364,138,916
2014	(15,945,094)	0	(26,202,624)	0	2,157,001	6,461,662	386,106,120	394,416,288
2015	(15,873,006)	0	(26,061,820)	0	2,192,635	6,568,405	399,675,478	408,150,277
2016	(16,220,008)	0	(26,665,519)	(204,080)	2,217,226	6,642,079	424,199,005	432,794,301
2017	(15,885,632)	0	(26,138,485)	0	2,182,117	6,536,900	401,134,315	409,618,639
2018	(15,705,869)	0	(25,877,956)	3,225,349	2,251,406	6,744,468	428,319,809	437,100,718
2019	(17,021,195)	0	(28,256,658)	0	2,312,321	6,926,945	452,518,013	461,564,783
2020	(16,735,103)	0	(27,639,304)	0	2,173,907	6,512,304	416,984,155	425,515,297
2021	(16,703,881)	0	(27,612,840)	0	2,169,988	6,500,562	415,498,015	424,018,260
2022	(17,003,158)	0	(28,120,549)	(1,194,628)	2,092,736	6,269,140	398,096,939	406,313,868
2023	(16,994,040)	0	(28,105,174)	(1,184,195)	2,106,463	6,310,265	405,714,135	413,984,965
2024	(16,995,441)	0	(28,111,599)	163,004	2,196,018	6,578,539	427,157,054	435,779,516
2025	(16,999,669)	0	(28,115,429)	(1,126,662)	2,184,630	6,544,425	417,131,592	425,709,343
2026	(16,784,014)	0	(27,753,417)	0	2,201,905	6,596,180	430,567,784	439,213,370
2027	(17,025,960)	0	(28,161,448)	388,299	2,163,646	6,481,564	420,849,199	429,344,567
2028	(16,812,952)	0	(27,798,529)	0	2,180,988	6,533,520	420,724,892	429,288,356
2029	(16,996,574)	0	(28,112,916)	(102,269)	2,148,961	6,437,576	414,539,484	422,977,196
2030	(16,765,344)	0	(27,722,164)	0	2,168,984	6,497,559	418,631,352	427,147,684
2031	(15,888,585)	0	(26,239,534)	7,941,350	2,134,739	6,394,969	408,267,522	416,649,390
2032	(16,713,034)	0	(27,758,460)	0	2,183,945	6,542,378	416,801,404	425,376,481
2033	(16,080,432)	0	(26,704,526)	7,472,577	2,310,634	6,921,894	457,197,635	466,270,142
2034	(16,735,397)	0	(27,805,005)	0	2,213,450	6,630,764	425,447,547	434,138,470
2035	(16,949,681)	0	(28,215,578)	27,667,384	2,161,406	6,474,856	455,112,478	463,599,056
Total	(628,500,659)	648,874	(1,093,716,529)	43,322,216	73,753,687	203,748,806	12,806,826,271	13,098,484,588

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)					Planning and Pre-operating Costs[a, f]	Total
				Application of Oroville Power Revenues to:			
	Capital Costs[a]	Capital Cost Credits[b]	Operating Costs[c]	Capital Costs[d]	Operating Costs[e]		
	(1)	(2)	(3)	(4)	(5)	(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	62,493,755	(751,330)	(14,000)	0	0	107,780	61,836,205
1965	70,920,988	(763,541)	(14,000)	0	0	551,850	70,695,297
1966	125,265,788	(748,649)	(14,000)	0	0	1,081,023	125,584,162
1967	94,374,172	(812,145)	(13,446)	0	0	1,189,212	94,737,793
1968	39,889,088	(431,574)	1,303,821	(951,000)	0	793,399	40,603,734
1969	5,279,981	(259,015)	2,890,772	(11,007,000)	0	601,867	(2,493,395)
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)	5,393,011	(14,650,000)	(1,500,000)	287,374	(6,096,952)
1973	3,985,414	(136,997)	6,135,774	(14,650,000)	(1,500,000)	203,384	(5,962,425)
1974	6,660,000	(137,503)	6,944,723	(17,950,000)	(1,500,000)	201,907	(5,780,873)
1975	8,084,450	(234,567)	7,697,390	(14,650,000)	(1,500,000)	146,188	(456,539)
1976	5,870,531	(204,944)	7,067,037	(14,650,000)	(1,500,000)	205,234	(3,212,142)
1977	21,285,849	(150,214)	10,547,977	(14,650,000)	(1,500,000)	857,419	16,391,031
1978	7,713,252	(64,566)	12,851,158	(14,650,000)	(1,500,000)	2,131,286	6,481,130
1979	9,030,801	0	9,547,014	(14,650,000)	(1,500,000)	2,131,884	4,559,699
1980	10,372,763	0	13,258,298	(14,650,000)	(1,500,000)	3,638,851	11,119,912
1981	11,194,479	0	10,326,538	(14,650,000)	(1,500,000)	4,597,474	9,968,491
1982	16,634,428	0	16,154,872	(14,650,000)	(1,500,000)	4,594,682	21,233,982
1983	12,037,206	0	22,253,515	(34,705,000)	(8,735,000)	3,751,993	(5,397,286)
1984	8,706,748	0	22,700,224	(14,650,000)	(10,348,000)	2,979,126	9,388,098
1985	11,921,382	0	23,464,019	(14,650,000)	(8,198,000)	2,069,024	14,606,425
1986	20,464,281	0	26,479,379	(14,650,000)	(9,107,000)	1,602,419	24,789,079
1987	30,814,266	0	22,740,939	(14,650,000)	(9,451,000)	1,762,179	31,216,384
1988	31,587,615	0	26,003,911	(14,650,000)	(8,677,000)	1,808,899	36,073,425
1989	10,125,424	0	28,442,946	(14,650,000)	(8,102,000)	2,678,007	18,494,377
1990	27,882,191	0	37,255,751	(14,650,000)	(8,498,000)	1,436,712	43,426,654
1991	35,966,870	0	76,428,061	(14,650,000)	(9,487,000)	1,727,664	89,985,595
1992	27,622,044	0	32,284,164	(14,650,000)	(8,526,000)	1,707,822	38,438,030
1993	21,156,123	0	36,071,890	(14,650,000)	(8,768,000)	1,708,490	35,518,503
1994	13,755,771	0	39,321,477	(14,650,000)	(7,484,000)	2,134,392	33,077,640
1995	14,253,704	0	44,519,764	(14,650,000)	(4,976,939)	2,042,481	41,189,010
1996	10,536,189	0	49,167,138	(14,650,000)	(5,503,289)	2,448,692	41,998,730
1997	13,959,817	0	50,303,842	(14,650,000)	(5,740,515)	1,699,730	45,572,874
1998	3,738,854	0	53,230,282	(14,650,000)	(8,155,000)	1,193,198	35,357,334
1999	5,652,987	0	53,822,780	(14,650,000)	(9,198,000)	9,686	35,637,453
2000	8,952,386	0	55,529,804	(14,650,000)	(9,251,342)	13,491	40,594,339
2001	7,674,843	0	77,788,196	(14,650,000)	(11,613,299)	23,866	59,223,606
2002	13,343,259	0	67,399,272	(14,650,000)	(19,216,868)	24,426	46,900,089
2003	1,048,378	0	78,716,972	(14,650,000)	(22,365,250)	3,679,000	46,429,100
2004	1,048,378	0	69,812,788	(14,650,000)	(22,365,250)	3,129,000	36,974,916
2005	1,048,378	0	76,047,241	(14,650,000)	(22,365,250)	3,129,000	43,209,369
2006	679,078	0	57,909,304	(14,650,000)	(7,365,250)	3,129,000	39,702,132
2007	679,078	0	56,723,114	(14,650,000)	(7,365,250)	3,129,000	38,515,942
2008	395,278	0	54,715,274	(14,650,000)	(7,365,250)	3,129,000	36,224,302
2009	395,278	0	54,699,804	(14,650,000)	(7,365,250)	3,129,000	36,208,832
2010	395,278	0	53,947,186	(14,650,000)	(7,365,250)	3,129,000	35,456,214
2011	395,278	0	53,035,447	(14,650,000)	(7,365,250)	0	31,415,475
2012	395,278	0	51,655,017	(14,650,000)	(7,365,250)	0	30,035,045
2013	395,278	0	54,512,231	(14,650,000)	(7,365,250)	0	32,892,259
2014	395,278	0	53,137,606	(14,650,000)	(7,365,250)	0	31,517,634
2015	395,278	0	51,313,762	(14,650,000)	(7,365,250)	0	29,693,790
2016	395,278	0	54,706,913	(14,650,000)	(7,365,250)	0	33,086,941
2017	395,278	0	53,952,720	(14,650,000)	(7,365,250)	0	32,332,748
2018	395,278	0	54,355,911	(14,650,000)	(7,365,250)	0	32,735,939
2019	395,278	0	53,307,422	(14,650,000)	(7,365,250)	0	31,687,450
2020	395,278	0	51,048,960	(14,650,000)	(7,365,250)	0	29,428,988
2021	395,278	0	54,867,127	(14,650,000)	(7,365,250)	0	33,247,155
2022	395,278	0	53,736,030	(14,650,000)	(7,365,250)	0	32,116,058
2023	395,278	0	51,010,978	(14,650,000)	(7,365,250)	0	29,391,006
2024	395,278	0	51,874,898	(14,650,000)	(7,365,250)	0	30,254,926
2025	395,278	0	56,025,829	(14,650,000)	(7,365,250)	0	34,405,857
2026	395,278	0	53,616,486	(14,650,000)	(7,365,250)	0	31,996,514
2027	395,278	0	50,624,901	(14,650,000)	(7,365,250)	0	29,004,929
2028	395,278	0	51,044,124	(14,650,000)	(7,365,250)	0	29,424,152
2029	395,278	0	56,579,089	(14,650,000)	(7,365,250)	0	34,959,117
2030	395,278	0	52,682,135	(14,650,000)	(7,365,250)	0	31,062,163
2031	395,278	0	50,956,925	(14,650,000)	(7,365,250)	0	29,336,953
2032	395,278	0	50,506,534	(14,650,000)	(7,365,250)	0	28,886,562
2033	395,278	0	55,109,988	(14,650,000)	(7,365,250)	0	33,490,016
2034	395,278	0	52,133,700	(14,650,000)	(7,365,250)	0	30,513,728
2035	395,278	0	52,632,800	(14,650,000)	(7,365,250)	0	31,012,828
Total	1,001,929,509	(11,528,320)	2,793,100,623	(1,002,213,000)	(486,589,502)	82,650,524	2,377,349,834

[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]Revenues credited 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 (2002) are reflected in the Delta Water Charge.

Table B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	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	122	224	346
1953	0	0	0	323	479	1,808	2,610	336	620	956
1954	0	0	0	819	1,306	5,150	7,275	421	777	1,198
1955	0	0	0	977	1,570	6,297	8,844	211	390	601
1956	0	0	0	8,844	14,459	63,816	87,119	227	418	645
1957	15,199	11,436	26,635	21,564	35,240	649,596	706,400	291	536	827
1958	33,420	16,591	50,011	67,764	71,717	733,414	872,895	720	1,328	2,048
1959	20,697	6,591	27,288	154,255	143,730	493,050	791,035	10,636	69,139	79,775
1960	9,097	8,830	17,927	296,492	275,610	1,018,661	1,590,763	15,255	99,794	115,049
1961	6,950	7,445	14,395	853,506	802,675	1,914,709	3,570,890	10,163	36,681	46,844
1962	(194)	(926)	(1,120)	545,123	615,141	1,686,041	2,846,305	17,281	39,570	56,851
1963	1,319	1,111	2,430	657,426	1,281,271	3,243,838	5,182,535	68,821	140,841	209,662
1964	38,393	35,466	73,859	712,650	1,747,783	7,251,800	9,712,233	138,614	282,003	420,617
1965	198,833	62,221	261,054	360,779	606,025	3,414,457	4,381,261	250,706	497,152	747,858
1966	461,619	49,917	511,536	592,714	592,598	2,245,215	3,430,527	587,951	1,117,486	1,705,437
1967	1,569,498	40,379	1,609,877	796,995	803,951	2,401,862	4,002,808	936,412	1,762,694	2,699,106
1968	859,613	61,691	921,304	736,470	696,075	1,997,924	3,430,469	351,131	675,220	1,026,351
1969	74,388	59,318	133,706	269,698	293,275	764,950	1,327,923	76,966	164,583	241,549
1970	43,361	67,877	111,238	58,676	61,200	135,569	255,445	47,891	109,224	157,115
1971	26,763	34,052	60,815	12,086	18,227	84,089	114,402	28,638	80,715	109,353
1972	19,643	18,905	38,548	12,293	12,763	63,610	88,666	19,289	50,230	69,519
1973	56,510	30,874	87,384	10,494	12,136	39,380	62,010	23,010	56,178	79,188
1974	165,830	65,832	231,662	15,722	24,402	73,119	113,243	25,037	61,383	86,420
1975	91,824	89,234	181,058	16,730	15,806	41,394	73,930	14,740	61,416	76,156
1976	57,765	83,651	141,416	34,004	34,663	109,610	178,277	33,638	130,440	164,078
1977	64,167	80,147	144,314	46,229	45,115	133,375	224,719	108,324	264,720	373,044
1978	69,319	81,717	151,036	71,234	66,008	174,898	312,140	21,415	103,822	125,237
1979	191,273	282,907	474,180	45,468	42,943	110,665	199,076	22,941	125,669	148,610
1980	264,433	386,006	650,439	134,522	124,352	304,614	563,488	103,258	462,895	566,153
1981	227,606	383,086	610,692	(33,738)	(29,856)	(65,637)	(129,231)	(15,416)	(135,240)	(150,656)
1982	549,164	870,611	1,419,775	7,876	8,321	27,065	43,262	4,102	(58,882)	(54,780)
1983	1,254,900	1,433,061	2,687,961	138,413	131,515	339,246	609,174	32,196	110,287	142,483
1984	2,547,878	2,750,040	5,297,918	152,992	140,971	351,921	645,884	35,448	107,723	143,171
1985	7,143,123	6,443,613	13,586,736	19,776	19,245	53,491	92,512	17,424	78,896	96,320
1986	10,565,937	16,926,630	27,492,567	32,034	31,581	88,070	151,685	44,135	306,452	350,587
1987	7,979,832	12,599,507	20,579,339	50,153	48,675	138,959	237,787	126,995	1,342,116	1,469,111
1988	2,312,909	4,343,513	6,656,422	116,181	112,294	302,461	530,936	156,473	1,479,545	1,636,018
1989	1,224,538	1,553,352	2,777,890	108,320	102,804	260,092	471,216	152,173	1,210,940	1,363,113
1990	443,002	824,055	1,267,057	224,283	224,188	625,213	1,073,684	222,208	1,559,457	1,781,665
1991	99,848	89,269	189,117	413,426	383,368	946,246	1,743,040	298,398	2,184,088	2,482,486
1992	57,045	62,083	119,128	182,231	169,968	442,055	794,254	361,210	3,328,542	3,689,752
1993	122,423	128,634	251,057	129,344	125,312	342,416	597,072	1,170,649	11,370,649	12,541,298
1994	71,274	83,270	154,544	46,042	58,050	229,649	333,741	4,260,734	44,407,284	48,668,018
1995	30,605	29,271	59,876	97,808	97,063	257,484	452,355	12,268,787	141,109,545	153,378,332
1996	20,275	19,069	39,344	49,854	48,056	127,493	225,403	11,284,548	131,579,277	142,863,825
1997	20,039	107,784	127,823	82,598	78,996	209,517	371,111	3,184,506	36,814,734	39,999,240
1998	17,309	21,447	38,756	27,114	23,949	62,646	113,709	883,014	10,089,836	10,972,850
1999	67,542	106,333	173,875	74,358	73,714	208,601	356,673	929,883	9,516,701	10,446,584
2000	16,417	38,277	54,694	28,337	29,632	82,079	140,048	490,091	5,545,958	6,036,049
2001	4,585	11,899	16,484	105,527	199,053	1,347,103	1,651,683	73,261	549,381	622,642
2002	10,788	19,250	30,038	777,311	1,163,473	5,807,879	7,748,663	52,279	316,428	368,707
2003	2,986	4,884	7,870	8,480	8,385	22,574	39,439	3,806	7,059	10,865
2004	2,986	4,884	7,870	8,480	8,385	22,574	39,439	3,806	7,059	10,865
2005	3,531	4,884	8,415	12,245	12,144	32,828	57,217	5,358	9,941	15,299
2006	0	0	0	6,925	6,332	15,088	28,345	3,110	5,737	8,847
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	39,136,262	50,439,978	89,576,240	9,400,310	11,716,252	41,440,434	62,556,996	38,963,623	409,239,661	448,203,284

Note: Allocated capital costs as a result of permanent water transfers under Monterey are not reflected on this Table.

[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									Total (20)
				Kern County Water Agency						
	Dudley Ridge Water District (11)	Empire West Side Irrigation District[b] (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Municipal and Industrial[c] (15)	Agricultural (16)	County of Kings (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	
1952	389	20	58	938	119	9,129	20	12	785	11,470
1953	1,076	53	161	2,887	345	27,383	55	33	2,157	34,150
1954	1,350	68	201	3,373	417	32,369	69	43	2,718	40,608
1955	677	34	101	1,497	197	14,721	35	23	1,371	18,656
1956	726	34	108	2,702	273	24,255	35	25	1,416	29,574
1957	932	38	139	6,048	494	49,932	39	29	1,707	59,358
1958	2,308	102	344	14,374	1,153	119,049	104	61	4,368	141,863
1959	7,384	364	2,517	26,218	2,597	253,891	372	381	14,757	308,481
1960	12,940	630	3,666	34,054	4,155	352,166	644	498	25,696	434,449
1961	21,848	1,063	3,954	51,407	6,500	538,707	1,087	598	43,377	668,541
1962	49,320	2,410	7,867	94,933	13,834	1,017,146	2,465	1,879	98,141	1,287,995
1963	208,757	10,687	32,172	364,014	55,715	3,934,636	10,932	5,990	425,330	5,048,233
1964	328,286	16,961	64,890	600,152	88,904	6,636,279	17,350	11,942	672,013	8,436,777
1965	538,215	27,481	117,996	1,098,999	152,930	11,999,892	28,116	21,802	1,095,126	15,080,557
1966	1,107,757	52,586	279,172	2,218,832	339,222	24,857,487	53,789	38,891	2,173,090	31,120,826
1967	852,537	39,537	445,562	2,012,744	286,990	23,629,026	40,444	34,775	1,653,429	28,995,044
1968	198,739	9,739	166,267	1,104,132	70,086	11,544,942	9,962	12,238	396,075	13,512,180
1969	94,436	4,793	35,473	616,516	27,216	6,416,147	4,903	7,302	191,574	7,398,360
1970	54,344	2,720	21,686	414,659	15,520	4,145,046	2,782	3,999	109,470	4,770,226
1971	25,462	1,291	12,094	190,552	7,114	1,622,274	1,320	540	51,618	1,912,265
1972	11,589	589	8,354	82,886	3,409	723,623	602	343	23,526	854,921
1973	6,657	335	10,201	39,973	1,980	458,527	343	221	13,448	531,685
1974	9,478	469	11,044	45,420	2,766	483,866	479	326	18,979	572,827
1975	13,329	677	5,246	36,467	3,710	382,743	692	425	27,048	470,337
1976	17,506	837	12,615	53,085	5,621	654,026	856	1,152	34,455	780,153
1977	9,672	436	47,790	36,478	3,753	886,672	446	494	18,497	1,004,238
1978	23,499	(30,406)	6,178	54,219	6,579	575,169	1,209	1,402	47,446	685,295
1979	25,051	1,295	5,664	53,866	6,610	559,746	1,325	1,862	51,293	706,712
1980	144,980	(4,617)	31,160	321,890	38,126	3,211,810	7,682	7,144	297,215	4,055,390
1981	(5,427)	(15,464)	200	(44,773)	(1,223)	(385,275)	(296)	1,752	(11,324)	(461,830)
1982	49,916	2,584	6,600	83,283	13,142	654,692	2,638	1,252	102,287	916,394
1983	52,429	(35,295)	12,125	110,465	13,872	1,073,500	2,769	1,327	107,337	1,338,529
1984	86,345	4,474	14,303	154,799	22,764	1,617,225	4,572	2,678	177,020	2,084,180
1985	25,435	1,311	5,649	47,055	6,766	484,485	1,341	1,176	52,013	625,231
1986	38,309	(41,067)	9,862	71,661	10,320	796,097	2,009	778	78,142	966,111
1987	28,769	1,476	7,004	55,537	7,969	616,845	1,509	1,491	58,679	779,279
1988	52,329	2,831	17,078	70,572	12,049	909,046	2,894	4,620	109,713	1,181,132
1989	156,099	8,019	27,551	352,103	42,943	3,834,481	8,201	12,134	318,604	4,760,135
1990	292,361	15,142	50,360	553,394	87,199	6,094,021	15,487	22,729	599,233	7,729,926
1991	349,413	18,103	60,419	580,572	91,765	6,447,565	18,515	23,486	716,292	8,306,130
1992	125,891	6,439	28,019	241,559	34,559	2,711,639	6,585	10,883	256,370	3,421,944
1993	86,113	4,375	30,245	174,630	23,840	2,059,168	4,474	4,698	174,772	2,562,315
1994	64,762	3,323	23,894	124,518	17,633	1,488,418	3,398	2,173	132,095	1,860,214
1995	82,969	(1,000)	72,734	167,698	24,390	2,472,332	4,355	2,824	169,318	2,995,620
1996	27,611	(61,913)	51,990	68,870	8,812	1,233,548	1,437	1,590	56,092	1,388,037
1997	136,503	7,041	48,721	241,400	36,417	2,951,687	7,195	3,706	279,205	3,711,875
1998	70,585	(121,012)	23,037	122,493	18,582	1,470,316	3,734	1,278	144,651	1,733,664
1999	82,290	4,249	26,824	144,882	21,945	1,736,415	4,343	3,856	168,404	2,193,208
2000	21,725	1,106	9,998	47,385	6,177	564,480	1,129	(1,040)	44,133	695,093
2001	17,304	883	7,776	34,846	4,936	420,925	903	766	35,192	523,531
2002	66,590	3,439	13,234	116,613	17,811	1,308,244	3,517	235	136,281	1,665,964
2003	3,895	199	1,816	7,932	1,084	98,388	204	196	7,930	121,644
2004	3,895	199	1,816	7,932	1,084	98,388	204	196	7,930	121,644
2005	4,717	240	2,556	10,091	1,332	127,692	246	196	9,585	156,655
2006	3,029	157	1,486	4,863	790	65,328	161	296	6,216	82,326
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	5,693,101	(49,935)	1,887,977	13,133,695	1,673,293	146,110,309	289,681	259,706	11,432,295	180,430,122

[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; $43,033 in 1986; $5,261 in 1995; $63,318 in 1996; and $124,667 in 1998 in accordance with letters of agreement with the district.
[c]Costs related to maximum annual Table A 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	3,158	1,042	850	254	1,402	70	1,695	418	6,079	1,550
1953	10,026	3,327	2,668	799	4,401	222	5,318	1,328	19,058	4,852
1954	12,742	4,193	3,465	1,031	5,714	285	6,908	1,691	24,608	6,290
1955	5,411	1,881	1,374	401	2,267	115	2,756	715	9,229	2,377
1956	9,775	3,590	2,196	612	3,622	191	4,449	1,267	13,138	3,438
1957	26,306	9,255	6,343	1,816	10,461	540	12,767	3,450	40,646	10,534
1958	49,204	17,599	11,581	3,290	19,099	991	23,360	6,414	72,708	18,898
1959	70,247	29,740	15,869	4,616	26,171	1,347	31,759	9,030	98,596	25,519
1960	84,552	38,760	22,068	6,797	36,395	1,547	43,260	10,772	147,170	37,469
1961	126,542	54,262	34,613	12,530	57,086	2,245	63,709	16,437	236,164	57,707
1962	198,558	85,352	43,719	13,861	72,102	3,344	84,709	24,943	253,435	64,330
1963	580,138	255,252	116,797	33,149	192,624	9,828	234,926	73,256	610,277	160,624
1964	1,094,365	501,858	209,462	55,445	345,446	18,442	429,605	137,769	1,026,066	276,118
1965	1,908,076	947,523	385,533	103,757	635,825	32,819	786,986	244,587	1,913,090	512,862
1966	3,960,302	2,150,972	812,655	215,858	1,340,235	69,325	1,664,584	517,269	3,943,586	1,062,417
1967	4,976,538	4,100,531	1,077,422	296,069	1,776,892	88,301	2,182,240	653,250	5,821,681	1,550,239
1968	5,924,474	3,998,942	1,350,742	368,156	2,227,646	107,350	2,738,009	783,940	7,982,824	2,122,940
1969	5,822,708	3,079,426	1,690,259	539,851	2,787,631	121,303	3,256,507	865,455	10,898,185	2,769,647
1970	5,032,959	3,277,778	2,050,788	695,345	3,382,251	106,381	3,872,367	736,775	13,795,809	3,457,109
1971	2,577,507	2,146,954	1,071,523	338,581	1,767,179	48,337	2,087,223	347,057	8,137,053	1,987,120
1972	973,436	283,257	331,759	92,079	547,138	19,134	668,550	134,360	2,691,137	697,957
1973	354,407	914,303	158,579	82,223	261,557	6,304	238,094	46,102	1,760,570	403,582
1974	451,450	280,861	259,175	74,113	427,433	8,143	518,453	59,145	1,617,394	425,927
1975	253,438	246,492	193,632	52,821	319,337	4,954	392,110	33,995	1,533,664	407,913
1976	237,539	255,238	136,751	37,235	225,529	4,245	277,807	31,002	962,280	255,901
1977	199,554	371,469	91,384	25,858	150,711	3,757	183,609	26,834	591,445	155,537
1978	302,111	470,176	78,573	22,226	129,584	5,233	157,815	38,654	428,989	111,769
1979	357,678	938,985	81,807	21,795	134,915	5,965	166,931	44,410	403,569	108,408
1980	1,867,517	1,777,294	423,755	113,166	698,855	32,435	864,104	240,899	2,040,757	548,085
1981	(158,728)	610,795	(47,102)	(8,865)	(77,678)	(2,576)	(102,568)	(19,588)	(143,875)	(43,557)
1982	1,557,934	861,928	298,770	78,903	492,728	26,237	613,587	196,672	1,421,407	388,261
1983	2,062,512	521,349	396,033	115,678	653,134	34,699	803,945	259,939	2,126,313	581,672
1984	1,518,361	295,783	297,559	85,097	490,731	27,272	606,124	188,562	1,546,628	423,408
1985	896,226	158,810	217,115	62,532	358,064	13,104	441,299	107,533	1,115,498	304,903
1986	841,555	104,860	221,194	58,152	364,790	9,038	454,702	93,309	1,048,625	286,302
1987	333,052	105,625	166,099	43,992	273,928	5,566	340,485	40,716	783,725	213,202
1988	259,234	174,155	65,831	22,723	108,570	3,384	128,339	26,743	429,498	113,644
1989	1,045,999	434,394	323,138	97,036	532,920	16,777	649,616	125,344	1,375,722	372,048
1990	678,053	374,313	332,566	97,789	548,468	7,335	672,344	67,179	1,509,745	409,710
1991	831,687	401,961	367,196	120,925	605,579	11,966	733,443	92,625	1,979,364	540,210
1992	633,272	356,952	270,826	131,328	446,647	9,556	501,634	76,760	2,093,387	573,386
1993	634,283	332,089	222,347	171,095	366,700	10,194	353,470	73,955	3,848,084	1,046,752
1994	467,409	165,607	132,599	93,839	218,685	7,255	218,494	53,209	2,347,599	637,733
1995	459,990	293,308	132,690	78,390	218,835	7,436	232,377	54,544	1,957,900	530,656
1996	299,764	206,742	110,520	44,965	182,270	4,885	211,872	35,808	3,627,189	972,829
1997	438,898	249,699	103,382	24,640	170,497	7,397	214,534	54,452	1,482,252	397,103
1998	231,375	201,318	61,853	40,974	102,009	3,938	104,688	29,174	1,114,856	302,471
1999	272,187	177,666	88,999	38,450	146,777	4,878	169,400	35,895	844,096	228,739
2000	149,328	82,425	57,292	24,539	94,486	2,837	108,343	20,439	648,679	174,150
2001	123,185	41,250	49,147	15,219	81,052	2,861	98,795	19,991	347,861	94,166
2002	140,608	85,632	23,199	8,192	38,261	1,992	45,612	16,010	401,963	107,479
2003	21,192	12,370	5,782	1,601	9,535	383	11,697	2,796	32,549	8,636
2004	21,192	12,370	5,782	1,601	9,535	383	11,697	2,796	32,549	8,636
2005	29,851	17,708	8,324	2,314	13,729	543	16,819	3,951	47,267	12,525
2006	15,955	8,041	2,886	730	4,760	267	5,978	2,004	12,908	3,545
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	51,275,092	32,533,462	14,579,369	4,665,573	24,044,520	920,760	28,647,336	6,752,042	99,110,996	25,935,728

[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	962	69,020	370	86,870	0	0	0	0	59	99,352
1953	3,011	217,634	1,187	273,831	0	0	0	0	264	311,811
1954	3,904	279,967	1,496	352,294	0	0	0	0	766	402,141
1955	1,474	111,602	670	140,272	0	0	0	0	969	169,342
1956	2,127	179,335	1,299	225,039	0	0	0	0	9,172	351,549
1957	6,526	516,050	3,367	648,061	0	0	0	0	23,172	1,464,453
1958	11,701	945,684	6,390	1,186,919	0	0	2	2	32,888	2,286,626
1959	15,815	1,364,298	9,894	1,702,901	0	0	14	14	57,918	2,967,412
1960	23,307	1,914,521	12,798	2,379,416	0	0	28	28	123,202	4,660,834
1961	36,153	3,212,125	18,770	3,928,343	0	0	10	10	316,220	8,545,243
1962	40,012	3,543,471	29,069	4,456,905	0	0	32	32	228,202	8,875,170
1963	99,266	11,185,928	86,807	13,638,872	0	0	51	51	528,496	24,610,279
1964	170,012	18,065,455	164,709	22,494,752	0	0	7,791	7,791	590,034	41,736,063
1965	316,082	33,763,577	307,475	41,858,192	0	0	3,139	3,139	332,680	62,664,741
1966	654,194	74,485,027	681,898	91,558,322	0	0	(48)	(48)	783,728	129,110,328
1967	958,406	130,599,417	1,279,076	155,360,062	0	0	47	47	1,479,421	194,146,365
1968	1,314,841	147,502,290	1,360,687	177,782,841	0	0	51,573	51,573	1,254,192	197,978,910
1969	1,726,891	140,096,646	1,085,026	174,739,535	0	0	234,232	234,232	398,183	184,473,488
1970	2,160,122	161,983,078	1,147,609	201,698,371	0	0	16,227	16,227	74,028	207,082,650
1971	1,237,573	133,903,316	738,822	156,388,245	0	0	27,204	27,204	12,457	158,624,741
1972	434,507	43,931,880	66,878	50,872,072	0	0	9	9	13,182	51,936,917
1973	256,711	39,723,010	290,020	44,495,462	0	0	25	25	8,099	45,263,853
1974	264,349	18,896,593	86,362	23,369,398	0	0	45	45	28,570	24,402,165
1975	253,838	16,732,939	83,975	20,509,108	0	0	21	21	8,226	21,318,836
1976	158,850	13,545,451	84,623	16,212,451	0	0	51	51	16,486	17,492,912
1977	96,517	11,769,352	110,833	13,776,860	0	0	28	28	21,181	15,544,384
1978	69,152	15,781,696	174,876	17,770,854	0	0	38	38	28,876	19,073,476
1979	66,847	27,627,424	343,361	30,302,095	0	0	23	23	26,668	31,857,364
1980	337,811	59,493,774	641,586	69,080,038	0	0	26	26	59,169	74,974,703
1981	-26,356	15,661,179	224,257	15,865,338	0	0	34	34	(6,746)	15,727,601
1982	238,792	30,873,857	316,107	37,365,183	0	0	11	11	16,086	39,705,931
1983	357,812	25,056,047	187,121	33,156,254	0	0	19	19	72,225	38,006,645
1984	260,327	16,317,441	103,160	22,160,453	0	0	26	26	83,252	30,414,884
1985	187,454	10,236,155	56,162	14,154,855	0	0	29	29	16,338	28,572,021
1986	176,057	8,365,310	34,777	12,058,671	0	0	31	31	16,248	41,035,900
1987	131,163	6,955,356	36,142	9,429,051	0	0	32	32	29,062	32,523,661
1988	70,260	6,626,545	57,117	8,086,043	0	0	55	55	50,083	18,140,689
1989	227,772	18,531,680	153,200	23,885,646	0	0	44	44	43,324	33,301,368
1990	251,185	17,430,869	125,376	22,504,932	0	0	63	63	96,419	34,453,746
1991	331,235	20,792,168	132,558	26,940,917	0	0	54	54	149,922	39,811,666
1992	351,492	21,196,762	116,999	26,759,001	0	0	42	42	80,900	34,865,021
1993	646,980	29,471,748	105,693	37,283,390	0	0	30	30	59,324	53,294,486
1994	394,936	16,392,019	50,941	21,180,325	0	0	14	14	34,208	72,231,064
1995	328,687	16,078,395	72,214	20,445,422	0	0	3	3	42,395	177,374,003
1996	610,055	23,237,696	49,282	29,593,877	0	0	0	0	21,388	174,131,874
1997	248,560	13,530,777	72,335	16,994,526	0	0	3	3	34,976	61,239,554
1998	187,556	11,234,515	65,270	13,679,997	0	0	7	7	11,162	26,550,145
1999	141,251	8,999,050	55,105	11,202,493	0	0	2	2	34,683	24,407,518
2000	108,052	5,568,861	25,626	7,065,057	0	0	0	0	17,238	14,008,179
2001	58,230	2,850,444	11,777	3,793,978	0	0	0	0	51,576	6,659,894
2002	67,178	4,380,494	27,957	5,344,577	0	0	0	0	363,198	15,521,147
2003	5,342	466,200	3,749	581,832	0	0	0	0	5,389	767,039
2004	5,342	466,200	3,749	581,832	0	0	0	0	5,389	767,039
2005	7,750	670,342	5,340	836,463	0	0	0	0	7,914	1,081,963
2006	2,176	238,693	2,330	300,273	0	0	0	0	2,344	422,135
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	16,090,249	1,443,069,363	10,914,277	1,758,538,767	0	0	341,067	341,067	7,794,805	2,547,441,281

[e] Costs from Table B-10 allocated to MWDSC are reduced herein by $16,425,374 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 WA (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	147,972	105,673	364,827	618,472	0	0	0
1964	0	0	0	208,371	170,929	530,036	909,336	6,696	21,667	28,363
1965	0	0	0	274,716	259,943	899,371	1,434,030	13,756	36,029	49,785
1966	18,063	0	18,063	310,034	290,808	1,073,270	1,674,112	26,524	61,349	87,873
1967	41,574	0	41,574	380,137	320,989	1,187,619	1,888,745	56,469	118,263	174,732
1968	121,489	(28)	121,461	498,195	361,935	1,309,946	2,170,076	104,160	208,037	312,197
1969	165,250	(58)	165,192	599,660	397,386	1,411,701	2,408,747	122,043	242,426	364,469
1970	169,029	(70)	168,959	633,712	412,322	1,450,660	2,496,694	125,963	250,808	376,771
1971	171,223	(93)	171,130	640,454	415,439	1,457,564	2,513,457	128,402	256,371	384,773
1972	172,553	(139)	172,414	641,657	416,368	1,461,847	2,519,872	129,861	260,482	390,343
1973	173,539	31,205	204,744	642,935	417,018	1,465,086	2,525,039	130,843	263,040	393,883
1974	176,404	32,758	209,162	643,866	417,636	1,467,092	2,528,594	132,015	265,901	397,916
1975	184,825	36,076	220,901	646,084	418,878	1,470,816	2,535,778	133,290	269,028	402,318
1976	189,491	40,604	230,095	647,342	419,683	1,472,924	2,539,949	134,041	272,155	406,196
1977	192,417	44,841	237,258	649,902	421,449	1,478,507	2,549,858	135,754	278,799	414,553
1978	195,666	48,895	244,561	653,326	423,747	1,485,299	2,562,372	141,271	292,281	433,552
1979	199,177	53,030	252,207	658,420	427,108	1,494,207	2,579,735	142,362	297,569	439,931
1980	208,899	67,410	276,309	662,078	429,296	1,499,843	2,591,217	143,530	303,969	447,499
1981	222,345	87,037	309,382	671,947	435,629	1,515,357	2,622,933	148,789	327,544	476,333
1982	233,917	106,517	340,434	669,841	434,108	1,512,014	2,615,963	148,004	320,657	468,661
1983	261,863	150,825	412,688	671,023	434,532	1,513,393	2,618,948	148,213	317,658	465,871
1984	325,760	223,790	549,550	681,782	441,230	1,530,671	2,653,683	149,853	323,275	473,128
1985	455,504	363,821	819,325	693,839	448,410	1,548,594	2,690,843	151,658	328,761	480,419
1986	819,284	691,965	1,511,249	695,649	449,390	1,551,318	2,696,357	152,545	332,779	485,324
1987	1,360,315	1,558,699	2,919,014	698,102	451,007	1,555,828	2,704,937	154,805	348,472	503,277
1988	1,771,260	2,207,550	3,978,810	702,169	453,514	1,562,985	2,718,668	161,346	417,591	578,937
1989	1,891,079	2,432,568	4,323,647	710,801	459,332	1,578,655	2,748,788	169,453	494,247	663,700
1990	1,954,910	2,513,539	4,468,449	718,703	464,692	1,592,216	2,775,611	177,387	557,384	734,771
1991	1,978,162	2,556,791	4,534,953	735,578	476,459	1,625,032	2,837,069	189,050	639,235	828,285
1992	1,983,440	2,561,509	4,544,949	765,481	496,722	1,675,047	2,937,250	204,822	754,678	959,500
1993	1,986,477	2,564,815	4,551,292	779,546	505,773	1,698,585	2,983,904	224,056	941,300	1,165,356
1994	1,993,047	2,571,718	4,564,765	789,717	512,498	1,716,961	3,019,176	286,878	1,585,162	1,872,040
1995	1,996,903	2,576,224	4,573,127	794,080	515,638	1,729,386	3,039,104	517,412	4,095,798	4,613,210
1996	1,998,574	2,577,821	4,576,395	801,771	520,936	1,743,439	3,066,146	1,187,010	12,569,247	13,756,257
1997	1,999,690	2,578,872	4,578,562	805,714	523,583	1,750,461	3,079,758	1,808,546	20,578,178	22,386,724
1998	2,000,805	2,584,866	4,585,671	812,283	527,976	1,762,113	3,102,372	1,985,645	22,700,288	24,685,933
1999	2,001,777	2,586,071	4,587,848	814,446	529,321	1,765,633	3,109,400	2,035,255	23,293,757	25,329,012
2000	2,005,613	2,592,109	4,597,722	971,794	533,508	1,777,480	3,282,782	2,088,064	23,839,244	25,927,308
2001	2,325,197	2,780,451	5,105,648	1,099,821	535,210	1,782,195	3,417,226	2,116,217	24,157,821	26,274,038
2002	2,325,503	2,781,179	5,106,682	1,110,359	546,783	1,860,516	3,517,658	2,120,476	24,189,762	26,310,238
2003	2,326,229	2,782,358	5,108,587	1,189,742	615,298	2,202,535	4,007,575	2,123,555	24,208,396	26,331,951
2004	2,326,433	2,782,663	5,109,096	1,190,657	615,799	2,203,882	4,010,338	2,123,782	24,208,817	26,332,599
2005	2,326,640	2,782,974	5,109,614	1,191,589	616,307	2,205,249	4,013,145	2,124,012	24,209,245	26,333,257
2006	2,326,888	2,783,289	5,110,177	1,192,962	617,053	2,207,267	4,017,282	2,124,342	24,209,856	26,334,198
2007	2,326,888	2,783,289	5,110,177	1,193,633	617,449	2,208,210	4,019,292	2,124,536	24,210,215	26,334,751
2008	2,326,888	2,783,289	5,110,177	1,193,633	617,449	2,208,210	4,019,292	2,124,536	24,210,215	26,334,751
2009	2,326,888	2,783,289	5,110,177	1,193,633	617,449	2,208,210	4,019,292	2,124,536	24,210,215	26,334,751
2010	2,326,888	2,783,289	5,110,177	1,193,633	617,449	2,208,210	4,019,292	2,124,536	24,210,215	26,334,751
2011	2,326,888	2,783,289	5,110,177	1,193,633	617,449	2,208,210	4,019,292	2,124,536	24,210,215	26,334,751
2012	2,326,888	2,783,289	5,110,177	1,193,633	617,449	2,208,210	4,019,292	2,124,536	24,210,215	26,334,751
2013	2,326,888	2,783,289	5,110,177	1,025,976	511,776	1,843,383	3,381,135	2,124,536	24,210,215	26,334,751
2014	2,326,888	2,783,289	5,110,177	958,048	446,520	1,678,174	3,082,742	2,117,840	24,188,548	26,306,388
2015	2,326,888	2,783,289	5,110,177	884,547	357,506	1,308,839	2,550,892	2,110,781	24,174,185	26,284,966
2016	2,306,316	2,783,289	5,089,605	846,414	326,641	1,134,941	2,307,996	2,098,012	24,148,865	26,246,877
2017	2,279,595	2,783,289	5,062,884	772,928	296,460	1,020,592	2,089,980	2,068,068	24,091,952	26,160,020
2018	2,188,783	2,783,289	4,972,072	651,796	255,514	898,264	1,805,574	2,020,376	24,002,178	26,022,554
2019	2,139,034	2,783,289	4,922,323	546,946	220,063	796,510	1,563,519	2,002,493	23,967,789	25,970,282
2020	2,134,710	2,783,289	4,917,999	511,428	205,127	757,551	1,474,106	1,998,573	23,959,406	25,957,979
2021	2,132,179	2,783,289	4,915,468	504,275	202,010	750,646	1,456,931	1,996,134	23,953,844	25,949,978
2022	2,130,618	2,783,289	4,913,907	502,930	201,081	746,364	1,450,375	1,994,675	23,949,733	25,944,408
2023	2,129,475	2,749,756	4,879,231	501,541	200,431	743,124	1,445,096	1,993,693	23,947,174	25,940,867
2024	2,126,195	2,748,123	4,874,318	500,506	199,813	741,118	1,441,437	1,992,521	23,944,313	25,936,834
2025	2,116,579	2,744,546	4,861,125	498,184	198,571	737,394	1,434,149	1,991,246	23,941,187	25,932,433
2026	2,111,236	2,739,791	4,851,027	496,745	197,766	735,286	1,429,797	1,990,495	23,938,059	25,928,554
2027	2,107,864	2,735,357	4,843,221	493,827	196,000	729,704	1,419,531	1,988,782	23,931,416	25,920,198
2028	2,104,125	2,731,098	4,835,223	489,927	193,702	722,911	1,406,540	1,983,265	23,917,934	25,901,199
2029	2,100,087	2,726,730	4,826,817	484,087	190,341	714,003	1,388,431	1,982,175	23,912,646	25,894,821
2030	2,088,931	2,711,268	4,800,199	480,005	188,154	708,367	1,376,526	1,981,006	23,906,246	25,887,252
2031	2,073,514	2,690,201	4,763,715	468,779	181,820	692,853	1,343,452	1,975,747	23,882,670	25,858,417
2032	2,060,217	2,669,257	4,729,474	471,231	183,341	696,196	1,350,768	1,976,532	23,889,558	25,866,090
2033	2,028,157	2,621,806	4,649,963	470,024	182,917	694,818	1,347,759	1,976,323	23,892,557	25,868,880
2034	1,955,061	2,545,189	4,500,250	458,070	176,219	677,540	1,311,829	1,974,684	23,886,940	25,861,624
2035	1,806,918	2,398,888	4,205,806	444,607	169,039	659,616	1,273,262	1,972,878	23,881,454	25,854,332
Total	108,638,800	132,479,086	241,117,886	52,122,876	28,872,821	101,584,881	182,580,578	85,686,206	960,427,485	1,046,113,691

[a]Unadjusted for prior overpayments or underpayments of charges.
[b]Determined at the current Project Interest Rate of 4.610 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)	Agricultural (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	2,725	0	0	0	0	0	0	2,725
1965	0	0	6,029	64,284	9,284	0	0	0	0	79,597
1966	0	0	12,039	120,256	17,073	0	0	0	0	149,368
1967	0	0	26,257	233,262	34,350	0	0	0	0	293,869
1968	76,813	1,718	48,950	335,771	48,966	420,548	8,504	4,682	64,766	1,010,718
1969	76,914	5,155	57,418	392,005	52,536	863,675	9,011	5,089	245,057	1,706,860
1970	84,313	5,155	59,224	423,404	53,922	1,050,483	9,261	5,293	181,347	1,872,402
1971	96,130	5,155	60,329	444,522	54,712	1,395,223	9,402	5,700	192,979	2,264,152
1972	107,338	5,155	60,945	454,227	55,075	2,089,228	9,469	10,924	595,327	3,387,688
1973	118,149	5,155	61,370	458,449	55,248	2,409,608	9,500	6,311	230,264	3,354,054
1974	179,312	5,155	61,890	460,485	55,349	2,698,402	9,518	7,066	382,200	3,859,377
1975	217,792	5,155	62,452	462,798	55,490	3,231,943	9,542	7,280	456,055	4,508,507
1976	166,059	5,155	62,719	464,655	55,679	3,484,010	9,577	8,222	326,251	4,582,327
1977	163,262	5,155	63,362	467,359	55,965	3,817,472	9,621	7,532	311,938	4,901,666
1978	174,540	0	65,796	469,216	56,156	4,243,441	9,644	7,939	334,673	5,361,405
1979	207,003	5,155	66,111	471,978	56,491	4,659,485	9,705	8,143	376,657	5,860,728
1980	220,197	5,155	66,399	474,721	56,828	5,084,548	9,773	11,604	379,084	6,308,309
1981	220,193	5,155	67,986	491,115	58,770	5,564,661	10,164	8,754	401,819	6,828,617
1982	220,189	5,155	67,996	488,835	58,708	6,007,784	10,149	9,161	424,025	7,292,002
1983	230,464	5,155	68,332	493,076	59,377	6,512,266	10,283	7,675	50,481	7,437,109
1984	242,231	5,155	68,950	498,702	60,083	6,835,549	10,424	9,772	331,031	8,061,897
1985	253,530	5,155	69,678	506,586	61,243	7,278,661	10,657	9,975	240,822	8,436,307
1986	264,763	5,155	69,966	508,983	61,587	7,397,360	10,725	10,382	513,906	8,842,827
1987	276,041	5,155	70,471	512,652	62,116	8,165,797	10,828	10,586	536,111	9,649,757
1988	287,319	5,155	70,832	515,513	62,526	8,583,646	10,906	10,993	558,316	10,105,206
1989	298,597	5,155	71,717	519,169	63,150	8,885,068	11,056	11,400	581,051	10,446,363
1990	154,878	5,155	73,153	537,527	65,389	9,198,234	11,483	11,604	626,520	10,683,943
1991	286,828	5,155	75,796	566,573	69,966	9,198,234	12,296	11,604	626,520	10,852,972
1992	309,870	5,155	78,990	597,260	74,817	9,198,234	13,275	11,604	626,520	10,915,725
1993	309,870	5,155	80,482	610,123	76,657	9,198,234	13,625	11,604	626,520	10,932,270
1994	309,870	5,155	82,105	619,494	77,936	9,198,234	13,866	11,604	626,520	10,944,784
1995	309,870	5,155	83,398	626,231	78,890	9,198,234	14,049	11,604	626,520	10,953,951
1996	286,568	5,155	87,367	635,384	80,221	8,881,691	14,287	11,604	626,520	10,628,797
1997	286,568	5,155	90,231	639,177	80,707	8,816,340	14,366	11,604	626,520	10,570,668
1998	286,567	5,155	92,940	652,602	82,732	8,563,593	14,766	11,604	626,520	10,336,479
1999	286,567	5,155	94,235	659,484	83,776	8,563,593	14,976	11,604	626,520	10,345,910
2000	286,567	5,155	95,758	667,712	85,022	7,922,207	15,223	11,604	626,520	9,715,768
2001	286,567	5,155	96,332	670,434	85,377	7,792,555	15,288	11,604	626,520	9,589,832
2002	308,428	5,155	96,784	672,460	85,664	7,792,555	15,340	11,604	588,219	9,576,209
2003	308,428	5,155	97,564	679,327	86,713	7,792,555	15,547	11,604	586,046	9,582,939
2004	331,731	5,155	97,672	679,801	86,778	8,164,530	15,559	11,604	586,046	9,978,876
2005	331,731	5,155	97,782	680,281	86,843	8,164,530	15,572	11,604	586,046	9,979,544
2006	331,731	5,155	97,939	680,902	86,925	8,164,530	15,587	11,604	586,046	9,980,419
2007	331,731	5,155	98,032	681,206	86,975	8,164,530	15,597	11,604	586,046	9,980,876
2008	331,731	5,155	98,032	681,206	86,975	8,164,530	15,597	11,604	586,046	9,980,876
2009	331,731	5,155	98,032	681,206	86,975	8,164,530	15,597	11,604	586,046	9,980,876
2010	331,731	5,155	98,032	681,206	86,975	8,164,530	15,597	11,604	586,046	9,980,876
2011	331,731	5,155	98,032	681,206	86,975	8,164,530	15,597	11,604	586,046	9,980,876
2012	331,731	5,155	98,032	681,206	86,975	8,164,530	15,597	11,604	586,046	9,980,876
2013	331,731	5,155	98,032	681,206	86,975	8,164,530	15,597	11,604	586,046	9,980,876
2014	331,731	5,155	95,308	681,206	86,975	8,164,530	15,597	11,604	586,046	9,978,152
2015	331,731	5,155	92,003	616,921	77,690	8,164,530	15,597	11,604	586,046	9,901,277
2016	331,731	5,155	85,993	560,949	69,901	8,164,530	15,597	11,604	586,046	9,831,506
2017	331,731	5,155	71,775	447,944	52,625	8,164,530	15,597	11,604	586,046	9,687,007
2018	331,731	5,155	49,082	345,435	38,008	8,164,530	7,093	11,604	586,046	9,538,684
2019	331,731	5,155	40,614	289,201	34,439	8,164,530	6,586	11,604	586,046	9,469,906
2020	331,731	5,155	38,808	257,802	33,053	8,164,530	6,336	11,604	586,046	9,435,065
2021	331,731	5,155	37,703	236,683	32,262	8,164,530	6,195	11,604	586,046	9,411,909
2022	331,731	5,155	37,087	226,978	31,900	8,164,530	6,127	11,604	586,046	9,401,158
2023	331,731	5,155	36,662	222,757	31,726	8,164,530	6,097	11,604	586,046	9,396,308
2024	331,731	5,155	36,142	220,721	31,626	8,164,530	6,079	11,604	586,046	9,393,634
2025	331,731	5,155	35,580	218,408	31,485	8,164,530	6,055	11,604	586,046	9,390,594
2026	331,731	5,155	35,313	216,550	31,296	8,164,530	6,020	11,604	586,046	9,388,245
2027	331,731	5,155	34,670	213,847	31,009	8,164,530	5,976	11,604	586,046	9,384,568
2028	331,731	5,155	32,236	211,989	30,818	8,164,530	5,953	11,604	586,046	9,380,062
2029	331,731	5,155	31,922	209,228	30,483	8,164,530	5,892	11,604	586,046	9,376,591
2030	331,731	5,155	31,633	206,484	30,147	8,164,530	5,824	11,604	586,046	9,373,154
2031	331,731	5,155	30,046	190,090	28,205	8,164,530	5,433	11,604	586,046	9,352,840
2032	331,731	5,155	30,036	192,371	28,267	8,164,530	5,448	11,604	586,046	9,355,188
2033	331,731	5,155	29,700	188,129	27,598	8,164,530	5,314	11,604	586,046	9,349,807
2034	331,731	5,155	29,082	182,503	26,891	8,164,530	5,173	11,604	586,046	9,342,715
2035	331,731	5,155	28,354	174,619	25,732	8,164,530	4,940	11,604	586,046	9,332,711
Total	18,813,987	341,948	4,644,444	32,686,052	4,146,058	483,258,311	740,932	718,267	35,160,137	580,510,136

[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)

	Southern California Area									
Calendar Year	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	33,321	0	0	0	0	0	0	0	51,729	0
1964	62,868	27,447	14,426	4,370	37,158	1,143	28,437	8,205	82,811	34,987
1965	118,604	53,007	25,094	7,194	40,770	2,082	50,317	15,222	135,068	35,344
1966	215,783	101,264	44,730	12,478	73,152	3,753	90,398	27,679	232,502	61,465
1967	417,481	210,814	86,118	23,472	141,411	7,284	175,176	54,023	433,350	115,574
1968	679,340	419,610	140,991	38,551	231,908	11,781	286,702	87,289	729,849	194,527
1969	986,589	623,230	209,785	57,301	345,362	17,249	426,541	127,211	1,136,415	302,649
1970	1,288,425	780,046	295,870	84,796	487,337	23,427	592,564	171,288	1,691,461	443,708
1971	1,549,420	946,947	400,317	120,210	659,595	28,845	790,101	208,808	2,395,028	619,778
1972	1,683,150	1,056,219	454,890	137,454	749,598	31,306	897,030	226,478	2,825,630	720,983
1973	1,733,706	1,070,612	471,786	142,143	777,464	32,281	931,368	233,318	2,963,053	756,530
1974	1,752,080	1,117,146	479,863	146,331	790,785	32,602	943,751	235,663	3,052,719	777,084
1975	1,775,499	1,131,395	493,063	150,105	812,554	33,017	970,641	238,671	3,135,093	798,777
1976	1,788,648	1,143,922	502,924	152,796	828,818	33,269	990,835	240,399	3,213,203	819,552
1977	1,800,950	1,156,886	509,889	154,692	840,304	33,485	1,005,288	241,975	3,262,212	832,585
1978	1,811,280	1,175,760	514,543	156,009	847,980	33,676	1,015,021	243,338	3,292,334	840,506
1979	1,826,923	1,199,662	518,545	157,141	854,580	33,943	1,023,432	245,304	3,314,183	846,199
1980	1,845,454	1,247,441	522,711	158,251	861,451	34,247	1,032,319	247,561	3,334,737	851,720
1981	1,942,222	1,337,907	544,293	164,015	897,044	35,899	1,076,767	259,826	3,438,673	879,634
1982	1,933,969	1,368,968	541,894	163,563	893,087	35,768	1,071,934	258,824	3,431,345	877,416
1983	2,014,895	1,412,813	557,111	167,582	918,182	37,104	1,103,643	268,835	3,503,738	897,190
1984	2,121,954	1,439,332	577,281	173,473	951,446	38,871	1,141,069	282,072	3,612,031	926,815
1985	2,200,705	1,454,350	592,435	177,807	976,439	40,260	1,172,341	291,672	3,690,801	948,379
1986	2,247,187	1,462,391	603,493	180,992	994,676	40,927	1,203,991	297,144	3,747,687	963,927
1987	2,290,962	1,467,715	614,820	183,970	1,013,355	41,390	1,218,899	301,918	3,801,384	978,588
1988	2,308,374	1,473,110	623,374	186,235	1,027,463	41,677	1,236,809	304,010	3,841,746	989,568
1989	2,321,981	1,482,102	626,785	187,412	1,033,088	41,852	1,243,735	305,394	3,863,999	995,456
1990	2,377,287	1,504,717	643,633	192,472	1,060,874	42,727	1,277,883	311,925	3,935,728	1,014,854
1991	2,413,085	1,524,364	661,088	197,604	1,089,661	43,112	1,313,172	315,451	4,014,970	1,036,359
1992	2,457,240	1,545,610	680,497	203,996	1,121,670	43,744	1,351,939	320,347	4,119,592	1,064,912
1993	2,491,307	1,564,617	694,918	210,989	1,145,453	44,253	1,378,650	324,434	4,231,061	1,095,444
1994	2,525,788	1,582,439	706,850	220,171	1,165,132	44,800	1,397,619	328,403	4,437,565	1,151,617
1995	2,551,400	1,591,399	714,024	225,248	1,176,964	45,193	1,409,441	331,282	4,564,586	1,186,123
1996	2,576,801	1,607,407	721,266	229,526	1,188,907	45,599	1,422,123	334,259	4,671,562	1,215,084
1997	2,593,567	1,618,794	727,354	232,003	1,198,947	45,868	1,433,793	336,231	4,891,356	1,268,666
1998	2,618,191	1,632,680	733,103	233,373	1,208,428	46,279	1,958,646	339,259	5,046,598	1,290,750
1999	2,631,315	1,643,991	736,578	235,675	1,214,159	46,500	1,965,458	340,898	5,250,216	1,307,744
2000	2,646,921	2,798,070	741,632	237,859	1,222,495	46,777	1,975,970	404,651	5,549,676	1,320,734
2001	2,655,621	2,804,418	744,923	239,269	1,227,923	46,940	1,982,929	405,943	6,333,605	1,330,738
2002	2,679,298	2,807,394	747,781	240,153	1,232,635	47,107	1,988,961	407,150	7,452,858	1,336,213
2003	2,687,619	2,813,375	749,147	240,636	1,234,888	47,224	1,992,144	408,172	8,148,992	1,342,542
2004	2,688,901	2,814,349	749,492	240,731	1,235,458	47,247	1,992,962	408,359	8,285,571	1,343,058
2005	2,690,202	2,815,338	749,842	240,828	1,236,035	47,270	1,993,792	408,548	8,287,542	1,343,581
2006	2,692,064	2,816,791	750,354	240,971	1,236,879	47,303	1,995,011	408,821	8,290,448	1,344,351
2007	2,693,075	2,817,496	750,534	241,016	1,237,177	47,320	1,995,502	408,966	8,291,255	1,344,572
2008	2,693,075	2,817,496	750,534	241,016	1,237,177	47,320	1,995,502	408,966	8,291,255	1,344,572
2009	2,693,075	2,817,496	750,534	241,016	1,237,177	47,320	1,995,502	408,966	8,291,255	1,344,572
2010	2,693,075	2,817,496	750,534	241,016	1,237,177	47,320	1,995,502	408,966	8,291,255	1,344,572
2011	2,693,075	2,817,496	750,534	241,016	1,237,177	47,320	1,995,502	408,966	8,291,255	1,344,572
2012	2,693,075	2,817,496	750,534	241,016	1,237,177	47,320	1,995,502	408,966	8,291,255	1,344,572
2013	2,659,753	2,817,496	750,534	241,016	1,223,811	47,320	1,995,502	408,966	8,239,525	1,331,471
2014	2,630,207	2,783,353	736,108	236,646	1,214,000	46,177	1,962,602	400,064	8,208,444	1,323,291
2015	2,574,471	2,752,532	725,440	233,822	1,196,407	45,238	1,937,075	392,469	8,156,186	1,309,228
2016	2,477,292	2,695,397	705,805	228,538	1,164,024	43,567	1,889,598	378,876	8,058,752	1,283,108
2017	2,275,594	2,561,500	664,416	217,544	1,095,766	40,036	1,790,084	350,437	7,857,905	1,228,999
2018	2,013,725	2,273,686	609,543	202,465	1,005,268	35,539	1,652,508	313,215	7,561,406	1,150,045
2019	1,706,453	1,977,646	540,750	183,715	891,814	30,071	1,475,179	267,107	7,154,840	1,041,923
2020	1,404,623	1,746,935	454,664	156,221	749,840	23,894	1,268,067	216,175	6,599,794	900,865
2021	1,143,628	1,499,856	350,218	120,807	577,581	18,476	1,035,585	172,785	5,896,227	724,794
2022	1,009,844	1,340,321	295,645	103,563	487,579	16,014	910,215	151,936	5,465,624	623,590
2023	959,337	1,332,596	278,748	98,873	459,713	15,039	868,986	143,899	5,328,202	588,043
2024	940,941	1,273,722	270,672	94,685	446,392	14,718	854,071	141,088	5,238,536	567,488
2025	917,513	1,255,858	257,472	90,911	424,623	14,303	824,272	137,512	5,156,161	545,796
2026	904,382	1,237,610	247,610	88,221	408,359	14,051	802,566	135,493	5,078,052	525,021
2027	892,082	1,219,099	240,646	86,324	396,872	13,835	786,975	133,680	5,029,043	511,988
2028	881,749	1,191,263	235,991	85,007	389,197	13,644	776,677	132,163	4,998,920	504,066
2029	866,101	1,152,950	231,990	83,875	382,597	13,377	767,157	129,951	4,977,072	498,374
2030	847,570	1,075,736	227,823	82,765	375,726	13,073	757,139	127,437	4,956,518	492,852
2031	750,798	932,682	206,241	77,002	340,133	11,421	701,750	113,275	4,852,582	464,938
2032	759,048	881,177	208,640	77,453	344,089	11,552	710,774	114,908	4,859,910	467,157
2033	678,172	808,626	193,424	73,435	318,995	10,216	675,627	104,242	4,787,517	447,383
2034	571,074	766,390	173,254	67,543	285,730	8,449	630,170	90,252	4,679,224	417,758
2035	492,337	744,669	158,099	63,209	260,737	7,060	597,521	80,356	4,600,454	396,194
Total	131,243,521	115,071,925	36,486,450	11,589,583	60,143,830	2,316,071	88,192,714	18,646,342	353,213,131	63,913,515

Table B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

	Southern California Area (continued)				Feather River Area					
Calendar Year	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)	South Bay Area Future Contractor (39)	Grand Total (40)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	690,812	0	775,862	0	0	0	0	0	1,394,334
1964	21,736	1,260,513	9,378	1,593,479	0	0	0	0	0	2,533,903
1965	21,866	2,180,589	17,767	2,702,924	0	0	405	405	0	4,266,741
1966	37,964	3,900,172	33,426	4,834,766	0	0	564	564	0	6,764,746
1967	71,283	7,693,703	68,155	9,497,844	0	0	562	562	0	11,897,326
1968	120,094	14,345,147	133,299	17,419,088	0	0	564	564	0	21,034,104
1969	187,059	21,857,456	202,599	26,479,446	0	0	3,191	3,191	0	31,127,905
1970	275,010	28,992,595	257,859	35,384,386	0	0	15,121	15,121	0	40,314,333
1971	385,025	37,259,904	316,307	45,680,285	0	0	15,947	15,947	0	51,029,744
1972	448,055	44,379,100	353,936	53,963,829	0	0	17,332	17,332	0	60,451,478
1973	470,185	46,623,272	357,342	56,563,060	0	0	17,333	17,333	0	63,058,113
1974	483,259	48,646,370	372,112	58,829,765	0	0	17,334	17,334	0	65,842,148
1975	496,722	49,608,775	376,511	60,020,823	0	0	17,336	17,336	0	67,705,663
1976	509,650	50,460,986	380,788	61,065,790	0	0	17,338	17,338	0	68,841,695
1977	517,741	51,150,857	385,098	61,891,962	0	0	17,340	17,340	0	70,012,637
1978	522,656	51,750,272	390,742	62,594,117	0	0	17,342	17,342	0	71,213,349
1979	526,178	52,554,036	399,649	63,499,775	0	0	17,344	17,344	0	72,649,720
1980	529,583	53,961,104	417,136	65,043,715	0	0	17,345	17,345	0	74,684,394
1981	546,787	56,991,129	449,812	68,564,008	0	0	17,346	17,346	0	78,818,619
1982	545,445	57,788,754	461,234	69,372,201	0	0	17,348	17,348	0	80,106,609
1983	557,607	59,361,164	477,333	71,277,197	0	0	17,348	17,348	0	82,229,161
1984	575,830	60,637,271	486,863	72,964,308	0	0	17,349	17,349	0	84,719,915
1985	589,089	61,468,320	492,117	74,094,715	0	0	17,351	17,351	0	86,538,960
1986	598,648	61,990,037	494,977	74,826,077	0	0	17,352	17,352	0	88,379,186
1987	607,664	62,418,401	496,758	75,435,824	0	0	17,354	17,354	0	91,230,163
1988	614,418	62,776,604	498,619	75,922,007	0	0	17,355	17,355	0	93,320,983
1989	618,059	63,119,928	501,579	76,341,370	0	0	17,358	17,358	0	94,541,226
1990	629,934	64,086,150	509,566	77,587,750	0	0	17,360	17,360	0	96,267,884
1991	643,118	65,001,046	516,147	78,769,177	0	0	17,364	17,364	0	97,839,820
1992	660,626	66,100,044	523,154	80,193,371	0	0	17,367	17,367	0	99,568,162
1993	679,343	67,228,732	529,384	81,618,585	0	0	17,369	17,369	0	101,268,776
1994	714,062	68,810,314	535,055	83,619,815	0	0	17,370	17,370	0	104,037,950
1995	735,431	69,697,231	537,812	84,766,134	0	0	17,371	17,371	0	107,962,897
1996	753,524	70,574,747	541,753	85,882,558	0	0	17,371	17,371	0	117,927,524
1997	813,156	71,854,644	544,467	87,558,846	0	0	17,371	17,371	0	128,191,929
1998	921,675	72,607,128	548,490	89,184,600	0	0	17,372	17,372	0	131,912,427
1999	1,115,573	73,238,314	552,157	90,278,578	0	0	17,372	17,372	0	133,668,120
2000	1,450,724	73,749,386	555,287	92,700,182	0	0	17,372	17,372	0	136,241,134
2001	2,428,042	74,069,278	556,759	94,826,388	0	0	17,372	17,372	0	139,230,504
2002	3,860,820	74,235,005	557,443	97,592,818	0	0	17,372	17,372	0	142,120,977
2003	4,739,379	74,492,966	559,090	99,456,174	0	0	17,372	17,372	0	144,504,598
2004	4,914,803	74,520,795	559,314	99,801,040	0	0	17,372	17,372	0	145,249,321
2005	4,915,127	74,549,026	559,541	99,836,672	0	0	17,372	17,372	0	145,289,604
2006	4,915,604	74,590,244	559,869	99,888,710	0	0	17,372	17,372	0	145,348,158
2007	4,915,740	74,605,161	560,015	99,907,829	0	0	17,372	17,372	0	145,370,297
2008	4,915,740	74,605,161	560,015	99,907,829	0	0	17,372	17,372	0	145,370,297
2009	4,915,740	74,605,161	560,015	99,907,829	0	0	17,372	17,372	0	145,370,297
2010	4,915,740	74,605,161	560,015	99,907,829	0	0	17,372	17,372	0	145,370,297
2011	4,915,740	74,605,161	560,015	99,907,829	0	0	17,372	17,372	0	145,370,297
2012	4,915,740	74,605,161	560,015	99,907,829	0	0	17,372	17,372	0	145,370,297
2013	4,907,587	73,914,349	560,015	99,097,345	0	0	17,372	17,372	0	143,921,656
2014	4,902,532	73,344,648	550,637	98,338,709	0	0	17,372	17,372	0	142,833,540
2015	4,893,873	72,424,572	542,248	97,183,561	0	0	16,967	16,967	0	141,047,840
2016	4,877,775	70,704,989	526,588	95,034,309	0	0	16,808	16,808	0	138,527,101
2017	4,844,457	66,911,458	491,859	90,330,055	0	0	16,810	16,810	0	133,346,756
2018	4,795,645	60,260,014	426,716	82,299,775	0	0	16,808	16,808	0	124,655,467
2019	4,728,680	52,747,705	357,416	73,103,299	0	0	14,181	14,181	0	115,043,510
2020	4,640,729	45,612,566	302,155	64,076,528	0	0	2,252	2,252	0	105,863,929
2021	4,530,714	37,345,257	243,707	53,659,635	0	0	1,425	1,425	0	95,395,346
2022	4,467,684	30,226,061	206,079	45,304,155	0	0	40	40	0	87,014,043
2023	4,445,555	27,981,889	202,673	42,703,553	0	0	39	39	0	84,365,094
2024	4,432,481	25,958,791	187,902	40,421,487	0	0	38	38	0	82,067,748
2025	4,419,017	24,996,386	183,504	39,223,328	0	0	36	36	0	80,841,665
2026	4,406,089	24,144,175	179,227	38,170,856	0	0	34	34	0	79,768,513
2027	4,397,999	23,454,304	174,917	37,337,764	0	0	32	32	0	78,905,314
2028	4,393,083	22,854,889	169,272	36,625,921	0	0	30	30	0	78,148,975
2029	4,389,561	22,051,125	160,366	35,704,496	0	0	29	29	0	77,191,185
2030	4,386,157	20,644,057	142,878	34,129,731	0	0	27	27	0	75,566,889
2031	4,368,952	17,614,032	110,202	30,544,008	0	0	26	26	0	71,862,458
2032	4,370,295	16,816,407	98,781	29,720,191	0	0	24	24	0	71,021,735
2033	4,358,133	15,243,997	82,682	27,782,449	0	0	24	24	0	68,998,882
2034	4,339,909	13,967,890	73,152	26,070,795	0	0	23	23	0	67,087,236
2035	4,326,651	13,136,841	67,898	24,932,026	0	0	21	21	0	65,598,158
Total	179,886,552	3,623,259,689	27,477,648	4,711,440,971	0	0	868,500	868,500	0	6,762,631,762

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	21,132	39,699	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	195,793	349,938	0	0	0
1966	0	0	0	79,753	78,779	218,543	377,075	0	0	0
1967	0	0	0	127,896	123,667	335,224	586,787	0	0	0
1968	130	0	130	126,058	120,563	333,506	580,127	11,800	21,770	33,570
1969	80,875	0	80,875	145,411	138,050	372,585	656,046	63,113	116,435	179,548
1970	94,872	0	94,872	128,993	120,245	320,664	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	79,196	146,107	225,303
1973	32,993	0	32,993	122,738	116,785	325,726	565,249	75,714	139,683	215,397
1974	46,498	0	46,498	154,435	146,929	403,080	704,444	76,530	141,189	217,719
1975	37,707	0	37,707	189,175	182,087	513,823	885,085	92,605	170,845	263,450
1976	60,786	0	60,786	203,064	193,435	524,813	921,312	94,935	175,144	270,079
1977	78,400	0	78,400	179,869	169,065	500,101	849,035	102,945	189,922	292,867
1978	56,318	0	56,318	239,301	228,855	647,828	1,115,984	104,060	191,978	296,038
1979	73,852	0	73,852	236,986	232,105	666,742	1,135,833	100,748	185,868	286,616
1980	81,769	0	81,769	389,575	372,185	1,010,830	1,772,590	126,328	233,105	359,433
1981	101,340	0	101,340	317,408	302,272	834,257	1,453,937	140,208	258,712	398,920
1982	191,987	0	191,987	386,742	369,633	1,098,844	1,855,219	142,045	262,101	404,146
1983	80,215	0	80,215	438,536	428,973	1,269,373	2,136,882	171,001	315,523	486,524
1984	106,485	0	106,485	591,243	565,721	1,817,629	2,974,593	201,768	372,284	574,052
1985	215,341	0	215,341	674,975	655,490	1,840,211	3,170,676	242,935	448,233	691,168
1986	203,704	0	203,704	613,273	583,077	1,784,056	2,980,406	233,000	429,904	662,904
1987	295,505	0	295,505	687,629	652,468	2,000,817	3,340,914	230,484	463,838	694,322
1988	312,677	(58)	312,619	676,847	655,274	1,910,092	3,242,213	258,807	561,030	819,837
1989	403,330	688,185	1,091,515	716,831	712,354	1,897,149	3,326,334	244,772	668,476	913,248
1990	658,942	674,944	1,333,886	782,589	780,305	2,129,966	3,692,860	310,222	677,025	987,247
1991	726,717	860,903	1,587,620	543,178	524,741	1,520,569	2,588,488	302,369	673,858	976,227
1992	483,580	712,313	1,195,893	796,058	855,050	2,253,496	3,904,604	346,220	736,477	1,082,697
1993	524,000	708,129	1,232,129	1,280,736	1,261,431	3,338,742	5,880,909	386,060	734,138	1,120,198
1994	573,815	658,277	1,232,092	1,368,651	1,312,740	3,560,294	6,241,685	481,022	888,288	1,369,310
1995	539,407	660,770	1,200,177	1,232,272	1,187,201	3,216,470	5,635,943	477,929	881,323	1,359,252
1996	604,992	1,011,298	1,616,290	1,185,220	1,124,968	3,007,330	5,317,518	649,161	1,197,179	1,846,340
1997	563,579	741,881	1,305,460	1,029,670	968,999	2,667,649	4,666,318	406,652	749,805	1,156,457
1998	461,929	661,478	1,123,407	1,064,804	1,174,966	3,502,898	5,742,668	810,178	2,963,766	3,773,944
1999	591,413	1,012,335	1,603,748	1,222,051	1,262,604	5,070,283	7,554,938	798,092	3,083,152	3,881,244
2000	577,483	1,679,031	2,256,514	2,188,923	1,294,582	3,750,188	7,233,693	727,852	3,622,102	4,349,954
2001	655,336	1,450,809	2,106,145	2,481,657	1,253,885	4,001,288	7,736,830	748,991	3,235,147	3,984,138
2002	1,069,540	1,724,775	2,794,315	2,178,061	1,258,978	6,039,057	9,476,096	794,804	3,677,396	4,472,200
2003	839,163	1,734,938	2,574,101	2,336,941	1,324,961	4,772,689	8,434,591	818,920	3,838,753	4,657,673
2004	865,284	1,779,555	2,644,839	2,659,533	1,424,971	5,047,553	9,132,057	853,831	4,005,086	4,858,917
2005	876,254	1,801,943	2,678,197	2,658,004	1,432,617	5,113,849	9,204,470	862,274	4,116,494	4,978,768
2006	958,716	1,570,241	2,528,957	3,077,711	1,534,742	4,272,717	8,885,170	869,941	3,228,064	4,098,005
2007	957,724	1,568,691	2,526,415	3,074,468	1,533,051	4,267,958	8,875,477	869,047	3,224,777	4,093,824
2008	958,114	1,569,378	2,527,492	3,075,597	1,533,581	4,269,416	8,878,594	869,381	3,226,092	4,095,473
2009	957,856	1,569,007	2,526,863	3,074,691	1,533,084	4,268,004	8,875,779	869,140	3,225,237	4,094,377
2010	957,708	1,568,627	2,526,335	3,074,477	1,533,082	4,268,060	8,875,619	869,040	3,224,709	4,093,749
2011	961,129	1,574,581	2,535,710	3,086,791	1,538,626	4,283,446	8,908,863	872,086	3,235,252	4,107,338
2012	961,354	1,574,993	2,536,347	3,087,421	1,538,911	4,284,222	8,910,554	872,275	3,236,013	4,108,288
2013	961,948	1,576,232	2,538,180	3,088,742	1,539,361	4,285,354	8,913,457	872,731	3,238,048	4,110,779
2014	962,238	1,577,133	2,539,371	3,088,838	1,539,074	4,284,358	8,912,270	872,885	3,239,116	4,112,001
2015	962,959	1,578,305	2,541,264	3,091,120	1,540,233	4,287,600	8,918,953	873,526	3,241,520	4,115,046
2016	961,748	1,576,215	2,537,963	3,087,532	1,538,508	4,282,832	8,908,872	872,481	3,237,456	4,109,937
2017	962,236	1,577,081	2,539,317	3,088,924	1,539,156	4,284,611	8,912,691	872,895	3,239,094	4,111,989
2018	962,931	1,578,539	2,541,470	3,090,478	1,539,685	4,285,942	8,916,105	873,430	3,241,484	4,114,914
2019	961,668	1,576,272	2,537,940	3,086,901	1,538,037	4,281,428	8,906,366	872,361	3,237,227	4,109,588
2020	962,525	1,577,602	2,540,127	3,089,724	1,539,520	4,285,604	8,914,848	873,136	3,240,064	4,113,200
2021	962,994	1,578,229	2,541,223	3,091,453	1,540,501	4,288,408	8,920,362	873,583	3,241,589	4,115,172
2022	962,721	1,578,159	2,540,880	3,089,880	1,539,411	4,285,191	8,914,482	873,251	3,240,770	4,114,021
2023	961,825	1,576,308	2,538,133	3,087,808	1,538,669	4,283,292	8,909,769	872,551	3,237,691	4,110,242
2024	962,183	1,577,085	2,539,268	3,088,568	1,538,902	4,283,856	8,911,326	872,823	3,238,931	4,111,754
2025	963,186	1,578,682	2,541,868	3,091,793	1,540,564	4,288,523	8,920,880	873,720	3,242,262	4,115,982
2026	961,391	1,575,812	2,537,203	3,086,040	1,537,607	4,280,228	8,903,875	872,117	3,236,301	4,108,418
2027	964,498	1,580,793	2,545,291	3,095,957	1,542,690	4,294,476	8,933,123	874,886	3,246,619	4,121,505
2028	961,295	1,575,732	2,537,027	3,085,589	1,537,319	4,279,387	8,902,295	872,012	3,235,996	4,108,008
2029	962,585	1,577,635	2,540,220	3,090,036	1,539,728	4,286,213	8,915,977	873,205	3,240,251	4,113,456
2030	961,667	1,576,029	2,537,696	3,087,360	1,538,460	4,282,718	8,908,538	872,418	3,237,168	4,109,586
2031	964,777	1,581,500	2,546,277	3,096,357	1,542,694	4,294,371	8,933,422	875,073	3,247,608	4,122,681
2032	960,751	1,574,863	2,535,614	3,083,852	1,536,428	4,276,888	8,897,168	871,528	3,234,194	4,105,722
2033	962,714	1,577,703	2,540,417	3,090,710	1,540,180	4,287,545	8,918,435	873,353	3,240,638	4,113,991
2034	962,872	1,578,205	2,541,077	3,090,753	1,540,013	4,286,966	8,917,732	873,436	3,241,233	4,114,669
2035	960,887	1,575,069	2,535,956	3,084,306	1,536,668	4,277,566	8,898,540	871,651	3,234,643	4,106,294
Total	42,096,892	65,836,207	107,933,099	125,441,865	72,122,920	209,106,905	406,671,690	38,885,731	137,955,591	176,841,322

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		County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
				Municipal and Industrial (14)	Agricultural (15)				
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	60,701	678,086	2,008	2,073	77,591	865,867
1969	45,479	2,235	30,158	80,554	1,197,126	2,286	2,085	90,773	1,450,696
1970	46,969	2,292	35,450	96,673	1,381,493	2,344	2,158	93,408	1,660,787
1971	47,997	2,314	35,366	106,654	1,643,163	2,366	2,288	94,874	1,935,022
1972	49,866	2,414	37,844	122,313	1,729,169	2,469	2,254	98,777	2,045,106
1973	50,006	2,385	36,180	125,553	1,719,873	2,440	2,310	98,330	2,037,077
1974	52,818	2,556	36,570	135,661	1,823,065	2,614	2,529	104,609	2,160,422
1975	66,963	3,243	44,251	162,738	2,235,242	3,317	3,191	132,663	2,651,608
1976	66,504	3,328	45,364	159,303	2,215,999	3,404	2,919	133,940	2,630,761
1977	75,595	3,812	49,192	189,661	2,522,290	3,898	3,708	152,838	3,000,994
1978	70,688	3,503	49,725	174,897	2,427,163	3,583	3,644	141,672	2,874,875
1979	68,879	3,436	48,142	173,677	2,378,315	3,514	3,492	138,493	2,817,948
1980	95,898	4,722	59,551	235,741	3,146,570	4,830	4,777	191,582	3,743,671
1981	118,448	5,965	66,183	266,353	3,440,557	6,099	5,187	239,323	4,148,115
1982	134,083	6,711	67,061	311,879	3,848,922	6,862	6,382	270,061	4,651,961
1983	184,902	9,242	80,869	426,485	5,030,031	9,450	8,494	372,182	6,121,655
1984	194,228	9,656	95,555	471,854	5,636,134	9,874	8,719	389,892	6,815,912
1985	200,694	9,957	115,227	486,162	6,042,593	10,182	8,982	402,457	7,276,254
1986	207,028	10,302	110,479	530,803	6,372,710	10,536	10,341	415,776	7,667,975
1987	205,002	10,259	109,401	533,451	6,378,437	10,493	10,517	412,889	7,670,449
1988	203,711	10,223	122,903	516,432	6,388,497	10,455	10,341	410,868	7,673,430
1989	224,049	11,269	116,197	564,169	6,747,046	11,526	11,102	452,406	8,137,764
1990	271,051	13,666	148,238	664,040	8,111,616	13,976	13,206	547,974	9,783,767
1991	275,748	13,854	144,486	662,755	8,111,610	14,168	13,218	556,474	9,792,313
1992	317,889	16,027	162,466	764,224	9,115,453	16,393	18,209	642,672	11,053,333
1993	359,879	17,989	184,477	831,662	10,372,245	18,399	19,560	724,397	12,528,608
1994	309,099	15,487	224,254	738,622	9,789,905	15,840	16,434	622,912	11,732,553
1995	395,441	19,918	220,899	898,339	11,190,121	20,373	21,551	799,070	13,565,712
1996	392,055	19,968	301,835	902,162	12,199,788	20,424	21,664	796,711	14,654,607
1997	396,222	20,154	186,450	942,987	10,974,350	20,613	19,344	806,084	13,366,204
1998	489,209	24,563	288,941	1,098,336	12,675,458	25,125	21,596	995,325	15,618,553
1999	413,233	21,091	272,571	975,597	11,444,283	21,572	21,838	840,655	14,010,840
2000	408,869	20,792	206,084	1,010,224	10,279,805	21,266	22,625	830,224	12,799,889
2001	521,715	26,564	235,322	1,243,755	12,112,826	27,169	33,772	1,060,038	15,261,161
2002	455,292	21,552	236,899	1,050,513	10,590,204	22,043	24,780	810,754	13,212,037
2003	502,637	23,895	239,943	1,212,168	11,694,418	24,439	25,532	894,202	14,617,234
2004	535,034	25,447	249,950	1,287,525	12,398,264	26,026	27,169	952,075	15,501,490
2005	548,634	26,092	256,941	1,237,807	12,719,894	26,686	27,852	976,234	15,820,140
2006	501,633	23,222	306,158	1,136,664	12,546,379	23,753	26,522	879,689	15,444,020
2007	501,248	23,204	305,850	1,135,692	12,535,380	23,735	26,502	879,018	15,430,629
2008	501,439	23,213	305,968	1,136,140	12,540,298	23,744	26,510	879,352	15,436,664
2009	501,355	23,209	305,886	1,135,913	12,537,671	23,740	26,504	879,205	15,433,483
2010	501,223	23,203	305,846	1,135,646	12,534,921	23,734	26,502	878,975	15,430,050
2011	503,400	23,304	306,994	1,140,231	12,585,717	23,837	26,591	882,798	15,492,872
2012	503,517	23,310	307,061	1,140,500	12,588,653	23,843	26,595	883,002	15,496,481
2013	503,908	23,328	307,230	1,141,342	12,597,577	23,861	26,606	883,683	15,507,535
2014	504,248	23,343	307,299	1,141,995	12,604,130	23,877	26,610	884,275	15,515,777
2015	504,550	23,357	307,522	1,142,739	12,612,463	23,891	26,625	884,802	15,525,949
2016	503,980	23,331	307,155	1,141,388	12,597,555	23,864	26,601	883,808	15,507,682
2017	504,222	23,342	307,301	1,141,952	12,603,737	23,876	26,611	884,230	15,515,271
2018	504,682	23,363	307,499	1,142,940	12,614,214	23,897	26,623	885,030	15,528,248
2019	504,044	23,334	307,120	1,141,463	12,598,042	23,867	26,599	883,919	15,508,388
2020	504,370	23,349	307,387	1,142,292	12,607,451	23,882	26,616	884,487	15,519,834
2021	504,497	23,354	307,537	1,142,663	12,611,846	23,888	26,626	884,710	15,525,121
2022	504,574	23,358	307,435	1,142,691	12,611,487	23,892	26,619	884,842	15,524,898
2023	503,997	23,332	307,178	1,141,441	12,598,193	23,865	26,603	883,838	15,508,447
2024	504,247	23,343	307,279	1,141,973	12,603,803	23,877	26,609	884,273	15,515,404
2025	504,649	23,361	307,590	1,142,977	12,615,109	23,896	26,629	884,974	15,529,185
2026	503,923	23,328	307,035	1,141,169	12,594,768	23,862	26,594	883,708	15,504,387
2027	505,190	23,386	307,994	1,144,314	12,630,120	23,921	26,655	885,917	15,547,497
2028	503,921	23,328	307,001	1,141,132	12,594,218	23,861	26,591	883,705	15,503,757
2029	504,363	23,348	307,408	1,142,301	12,607,667	23,882	26,617	884,475	15,520,061
2030	503,920	23,328	307,131	1,141,261	12,596,215	23,861	26,600	883,703	15,506,019
2031	505,437	23,397	308,068	1,144,812	12,635,244	23,932	26,659	886,346	15,553,895
2032	503,701	23,318	306,834	1,140,584	12,588,055	23,851	26,581	883,321	15,496,245
2033	504,344	23,347	307,454	1,142,316	12,608,085	23,881	26,620	884,442	15,520,489
2034	504,534	23,356	307,492	1,142,681	12,611,742	23,890	26,623	884,774	15,525,092
2035	503,751	23,320	306,876	1,140,713	12,589,521	23,853	26,583	883,408	15,498,025
Total	24,152,487	1,148,462	14,169,651	55,682,355	626,562,982	1,174,675	1,263,669	44,273,914	768,428,195

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	65,074	28,085	11,697	2,958	19,291	1,089	24,380	8,173	52,315	14,399
1969	86,339	70,342	15,522	3,925	25,598	1,445	32,348	10,844	69,419	19,106
1970	107,807	84,577	19,392	4,904	31,981	1,804	40,391	13,540	86,727	23,865
1971	178,820	105,979	32,228	8,150	53,151	2,992	66,999	22,459	144,136	39,636
1972	363,555	202,625	106,740	30,967	176,037	6,601	213,032	48,102	548,123	144,113
1973	404,661	222,765	121,341	34,674	200,116	7,346	243,320	53,975	724,535	190,156
1974	434,868	235,528	130,627	37,062	215,432	7,677	262,735	56,383	786,107	207,019
1975	504,791	289,501	151,031	43,176	249,082	9,082	303,108	65,580	905,424	238,842
1976	559,013	262,420	160,686	44,454	265,004	10,030	325,512	73,253	964,524	256,570
1977	675,504	335,749	184,813	47,743	304,792	11,890	381,161	87,355	1,069,446	289,793
1978	600,343	376,946	187,028	54,156	308,449	10,711	373,192	78,304	1,148,279	300,751
1979	661,123	349,072	196,264	52,211	323,677	12,124	401,469	87,126	1,125,452	302,508
1980	858,039	415,571	253,090	71,921	417,398	15,435	508,379	112,853	1,518,405	401,223
1981	1,001,503	511,087	284,970	73,534	469,970	18,046	588,024	131,992	1,548,350	420,523
1982	1,128,643	557,494	320,938	89,560	529,292	20,193	649,204	148,012	1,870,559	497,871
1983	1,744,932	832,687	450,049	119,275	742,218	30,643	922,072	225,793	2,373,149	639,682
1984	2,105,780	943,524	548,784	150,179	905,055	36,810	1,112,196	271,187	3,018,294	803,394
1985	2,157,936	1,055,744	584,697	157,841	964,282	38,972	1,191,309	277,250	3,230,403	860,780
1986	2,311,841	1,102,466	618,750	162,748	1,020,438	40,051	1,268,806	295,987	3,318,638	893,069
1987	2,366,343	1,032,918	628,222	167,262	1,036,061	41,773	1,283,836	307,844	3,400,838	913,933
1988	2,303,274	1,042,113	649,276	175,694	1,070,784	40,604	1,321,553	298,438	3,587,873	960,968
1989	2,280,051	1,088,176	613,266	169,993	1,011,401	39,501	1,240,888	292,775	3,499,964	932,519
1990	2,636,186	1,275,150	708,829	201,242	1,169,006	45,472	1,424,445	336,069	4,084,211	1,078,392
1991	2,737,441	1,454,172	763,989	210,644	1,259,974	48,936	1,546,583	358,165	4,348,900	1,150,633
1992	2,781,586	1,579,025	750,248	198,232	1,237,307	49,829	1,538,733	362,844	4,131,745	1,115,632
1993	3,109,819	1,689,775	850,589	234,719	1,402,796	56,125	1,722,415	411,539	5,023,595	1,338,111
1994	2,825,181	1,609,511	795,078	225,270	1,311,244	51,258	1,634,795	376,175	4,797,440	1,268,058
1995	3,121,440	1,720,649	848,101	231,718	1,398,686	58,749	1,766,297	444,998	4,828,432	1,272,345
1996	3,093,678	1,966,634	862,720	228,008	1,422,789	56,813	1,817,427	423,444	4,707,473	1,256,549
1997	3,250,394	1,810,292	918,428	281,067	1,514,687	59,547	1,853,224	446,127	5,705,741	1,477,757
1998	3,876,893	2,050,491	1,070,620	299,667	1,765,661	73,841	3,208,176	561,294	6,077,011	1,635,115
1999	3,872,448	2,120,170	1,135,882	318,790	1,873,292	76,470	3,273,728	554,389	6,570,322	1,768,422
2000	3,730,020	3,359,299	1,033,837	291,725	1,705,004	68,129	2,989,010	592,913	5,869,827	1,569,339
2001	4,482,302	3,870,752	1,116,015	307,549	1,840,528	81,012	3,288,247	702,838	5,940,880	1,591,447
2002	3,540,066	3,363,889	974,456	272,567	1,607,072	61,542	2,904,109	543,900	5,422,434	1,455,948
2003	4,521,658	4,068,586	1,198,574	334,437	1,976,688	79,462	3,492,086	696,536	6,670,780	1,790,534
2004	4,925,003	4,423,796	1,304,979	363,676	2,152,168	86,417	3,790,170	758,377	7,216,468	1,944,552
2005	4,956,124	4,504,788	1,343,493	373,018	2,215,690	88,567	3,839,465	763,708	7,394,398	1,979,614
2006	4,343,192	3,984,245	1,135,924	313,625	1,873,365	76,892	3,430,252	666,772	6,657,570	1,790,970
2007	4,339,281	3,997,723	1,150,145	331,793	1,896,828	76,828	3,427,401	666,188	6,979,217	1,853,340
2008	4,341,275	4,005,646	1,143,855	323,496	1,886,452	76,867	3,429,159	666,505	6,832,154	1,824,923
2009	4,340,446	4,008,530	1,150,409	331,583	1,897,264	76,856	3,428,682	666,389	6,975,517	1,852,844
2010	4,339,034	4,003,805	1,144,967	325,602	1,888,286	76,821	3,427,099	666,144	6,869,214	1,831,822
2011	4,354,350	4,023,997	1,154,981	333,514	1,904,806	77,110	3,440,146	668,547	7,013,183	1,861,801
2012	4,355,592	4,018,559	1,151,516	328,867	1,899,088	77,136	3,441,286	668,747	6,930,802	1,845,911
2013	4,359,774	4,037,700	1,142,528	316,183	1,884,257	77,230	3,445,580	669,449	6,705,706	1,802,730
2014	4,363,471	4,029,005	1,164,038	340,526	1,919,744	77,326	3,449,998	670,108	7,138,114	1,887,902
2015	4,366,591	4,026,498	1,145,313	316,895	1,888,851	77,381	3,452,453	670,586	6,718,977	1,806,482
2016	4,360,700	4,042,343	1,165,862	343,710	1,922,755	77,269	3,447,406	669,659	7,194,300	1,898,442
2017	4,363,238	4,037,876	1,152,431	326,503	1,900,594	77,319	3,449,670	670,064	6,888,953	1,839,227
2018	4,368,116	4,038,766	1,158,112	331,459	1,909,966	77,428	3,454,672	670,882	6,977,417	1,857,340
2019	4,361,492	4,053,239	1,166,399	343,692	1,923,641	77,297	3,448,731	669,824	7,193,629	1,898,584
2020	4,364,796	4,048,811	1,153,808	327,671	1,902,866	77,350	3,451,091	670,314	6,909,983	1,843,556
2021	4,366,041	4,020,183	1,142,172	313,481	1,883,669	77,362	3,451,596	670,476	6,658,498	1,794,509
2022	4,367,050	4,021,776	1,155,973	329,173	1,906,437	77,408	3,453,732	670,713	6,936,598	1,849,229
2023	4,360,904	4,029,970	1,165,258	342,970	1,921,758	77,271	3,447,495	669,686	7,181,254	1,895,901
2024	4,363,584	4,061,675	1,152,712	326,519	1,901,058	77,332	3,450,296	670,139	6,889,053	1,839,378
2025	4,367,672	3,998,632	1,155,890	329,503	1,906,301	77,401	3,453,372	670,756	6,943,295	1,850,384
2026	4,360,279	4,059,750	1,166,895	344,599	1,924,459	77,276	3,447,766	669,638	7,209,450	1,901,530
2027	4,373,216	3,924,754	1,153,035	324,714	1,901,590	77,497	3,457,666	671,599	6,859,711	1,834,683
2028	4,360,276	4,180,035	1,141,809	313,782	1,883,071	77,281	3,448,021	669,653	6,661,549	1,794,707
2029	4,364,714	3,983,025	1,165,743	342,416	1,922,558	77,345	3,450,815	670,289	7,172,172	1,894,642
2030	4,360,108	4,029,983	1,165,601	343,635	1,922,324	77,255	3,446,790	669,560	7,192,935	1,898,069
2031	4,375,896	3,929,297	1,139,091	306,409	1,878,582	77,563	3,460,681	672,065	6,534,392	1,771,755
2032	4,358,013	4,177,338	1,164,292	341,761	1,920,164	77,242	3,446,290	669,310	7,158,159	1,891,350
2033	4,364,454	3,994,501	1,149,531	323,019	1,895,811	77,330	3,450,108	670,218	6,827,788	1,827,294
2034	4,366,520	4,032,437	1,148,232	320,348	1,893,665	77,383	3,452,583	670,587	6,780,189	1,818,463
2035	4,358,574	4,060,344	1,182,215	363,532	1,949,735	77,252	3,446,709	669,395	7,545,240	1,966,923
Total	211,149,128	172,872,791	56,573,986	15,975,696	93,302,046	3,764,296	156,230,370	31,384,803	332,315,636	88,567,859

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	3,219	42,918
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	378,875
1966	0	0	0	0	0	0	0	0	31,321	408,396
1967	0	0	0	0	0	0	0	0	47,718	634,505
1968	8,821	972,734	9,504	1,218,520	0	0	0	0	46,945	2,745,159
1969	11,704	1,295,607	12,610	1,654,809	0	0	0	0	52,963	4,074,937
1970	14,623	1,624,569	15,746	2,069,926	0	0	0	0	69,744	4,676,285
1971	24,302	2,716,584	26,118	3,421,554	0	0	54	54	55,532	6,185,714
1972	89,131	8,038,463	68,369	10,035,858	0	0	40	40	80,412	12,998,870
1973	117,779	9,890,316	78,313	12,289,297	0	0	1	1	54,219	15,194,233
1974	128,169	11,581,491	83,453	14,166,551	0	0	143	143	76,783	17,372,560
1975	147,899	13,584,548	101,893	16,593,957	0	0	1,069	1,069	84,547	20,517,423
1976	158,664	12,862,489	94,799	16,037,418	0	0	139	139	106,717	20,027,212
1977	178,774	16,203,699	121,966	19,892,685	0	0	892	892	98,618	24,213,491
1978	186,384	17,811,770	132,435	21,568,748	0	0	39	39	100,786	26,012,788
1979	186,688	16,414,289	126,756	20,238,759	0	0	3,235	3,235	119,352	24,675,595
1980	248,399	20,926,898	154,096	25,901,707	0	0	416	416	178,812	32,038,398
1981	259,244	23,731,024	186,592	29,224,859	0	0	3,847	3,847	185,347	35,516,365
1982	307,955	27,994,510	209,141	34,323,372	0	0	11,075	11,075	173,894	41,611,654
1983	394,524	38,953,367	326,258	47,754,649	0	0	1,928	1,928	220,926	56,802,779
1984	496,808	45,597,671	382,104	56,371,786	0	0	3,765	3,765	225,959	67,072,552
1985	531,765	50,064,444	416,652	61,532,075	0	0	2,888	2,888	340,322	73,228,724
1986	551,066	52,858,915	442,334	64,885,109	0	0	2,787	2,787	279,227	76,682,112
1987	564,352	50,737,631	411,276	62,892,289	0	0	2,388	2,388	345,116	75,240,983
1988	593,787	51,262,231	406,248	63,712,843	0	0	545	545	365,207	76,126,694
1989	576,852	52,638,942	431,020	64,815,348	0	0	1,800	1,800	422,329	78,708,338
1990	667,687	61,053,824	494,721	75,175,234	0	0	788	788	474,284	91,448,066
1991	711,803	60,874,529	470,139	75,935,908	0	0	3,654	3,654	214,683	91,098,893
1992	688,558	67,460,598	502,131	82,396,468	0	0	647	647	443,676	100,077,318
1993	828,208	68,749,547	538,751	85,955,989	0	0	3,630	3,630	599,571	107,321,034
1994	784,017	63,928,225	474,133	80,080,385	0	0	2,279	2,279	609,932	101,268,236
1995	785,191	68,079,888	523,512	85,080,006	0	0	2,906	2,906	534,971	107,378,967
1996	773,653	72,757,439	561,100	89,927,727	0	0	8,007	8,007	571,857	113,942,346
1997	917,372	75,655,465	564,455	94,454,556	0	0	7,449	7,449	428,638	115,385,082
1998	1,000,665	80,549,464	608,366	102,777,264	0	0	798	798	465,140	129,501,774
1999	1,085,609	86,996,138	643,657	110,289,317	0	0	415	415	555,858	137,896,360
2000	963,050	82,104,830	631,836	104,908,819	0	0	505	505	0	131,549,374
2001	973,044	95,451,576	731,572	120,377,762	0	0	319	319	0	149,466,355
2002	889,585	81,824,272	625,854	103,485,694	0	0	3,627	3,627	0	133,443,969
2003	1,096,019	99,241,898	766,549	125,933,807	0	0	3,950	3,950	0	156,221,356
2004	1,190,257	108,816,592	838,615	137,811,070	0	0	4,005	4,005	0	169,952,378
2005	1,220,652	111,615,634	867,973	141,163,124	0	0	4,061	4,061	0	173,848,760
2006	1,106,171	95,980,388	741,175	122,100,541	0	0	4,555	4,555	0	153,061,248
2007	1,147,092	98,009,900	745,032	124,620,768	0	0	4,549	4,549	0	155,551,662
2008	1,128,433	97,552,620	746,997	123,958,382	0	0	4,551	4,551	0	154,901,156
2009	1,146,735	98,141,439	747,836	124,764,530	0	0	4,548	4,548	0	155,699,580
2010	1,133,000	98,059,678	746,641	124,512,113	0	0	4,549	4,549	0	155,442,415
2011	1,152,383	98,461,063	750,889	125,196,770	0	0	4,547	4,547	0	156,246,100
2012	1,141,946	98,257,493	749,385	124,866,328	0	0	4,548	4,548	0	155,922,546
2013	1,113,548	98,438,086	754,238	124,747,009	0	0	4,548	4,548	0	155,821,508
2014	1,169,243	99,023,977	751,846	125,985,298	0	0	4,546	4,546	0	157,069,263
2015	1,115,844	97,957,345	750,961	124,294,177	0	0	4,549	4,549	0	155,399,938
2016	1,176,209	99,527,230	755,515	126,581,400	0	0	4,545	4,545	0	157,650,399
2017	1,137,358	99,172,027	754,185	125,769,445	0	0	4,546	4,546	0	156,853,259
2018	1,149,107	98,879,978	754,196	125,627,439	0	0	4,547	4,547	0	156,732,723
2019	1,176,263	100,590,140	758,406	127,661,337	0	0	4,542	4,542	0	158,728,161
2020	1,140,163	98,693,632	756,975	125,341,016	0	0	4,547	4,547	0	156,433,572
2021	1,108,023	97,437,461	749,291	123,672,762	0	0	4,551	4,551	0	154,779,191
2022	1,143,812	99,296,624	749,786	125,958,311	0	0	4,546	4,546	0	157,057,138
2023	1,174,543	99,274,650	752,233	126,293,893	0	0	4,545	4,545	0	157,365,029
2024	1,137,437	99,696,532	760,470	126,326,185	0	0	4,545	4,545	0	157,408,482
2025	1,144,592	97,199,315	743,549	123,840,662	0	0	4,551	4,551	0	154,953,128
2026	1,178,212	101,196,209	760,208	128,296,271	0	0	4,541	4,541	0	159,354,695
2027	1,134,221	94,396,801	723,678	120,833,165	0	0	4,557	4,557	0	151,985,138
2028	1,108,204	102,456,020	791,930	128,886,338	0	0	4,540	4,540	0	159,941,965
2029	1,173,647	97,960,379	739,625	124,917,370	0	0	4,548	4,548	0	156,011,632
2030	1,175,979	99,522,362	752,285	126,556,886	0	0	4,545	4,545	0	157,623,270
2031	1,092,910	95,320,880	724,781	121,284,302	0	0	4,556	4,556	0	152,445,133
2032	1,171,564	103,123,953	791,387	130,290,823	0	0	4,538	4,538	0	161,330,110
2033	1,129,540	97,543,851	742,612	123,996,057	0	0	4,549	4,549	0	155,093,938
2034	1,123,689	98,255,909	752,552	124,692,557	0	0	4,548	4,548	0	155,795,675
2035	1,221,077	102,290,812	760,519	129,892,327	0	0	4,538	4,538	0	160,935,680
Total	54,704,005	4,774,638,865	36,640,230	6,028,119,711	0	0	220,506	220,506	8,720,126	7,496,934,649

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	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	2,696,450	3,737,556	0	0	0
1986	45,887	0	45,887	312,938	365,147	2,595,765	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	115,970	114,196	230,166	616,865	804,606	2,116,236	3,537,707	0	0	0
1989	64,584	138,240	202,824	407,353	396,069	1,389,347	2,192,769	0	0	0
1990	77,126	138,805	215,931	535,269	514,372	1,490,250	2,539,891	0	0	0
1991	35,178	245,181	280,359	355,578	477,883	1,065,488	1,898,949	0	0 165,930	165,930
1992	74,573	230,716	305,289	405,244	529,119	1,183,466	2,117,829	0	0	0
1993	89,214	247,977	337,191	841,383	256,930	1,552,562	2,650,875	0	0	0
1994	111,942	229,598	341,540	501,812	559,683	1,395,238	2,456,733	0	0	0
1995	96,842	235,605	332,447	833,227	492,578	796,524	2,122,329	0	0	0
1996	59,626	192,523	252,149	341,423	284,866	1,112,860	1,739,149	673	0	673
1997	48,518	193,255	241,773	455,751	294,951	1,220,497	1,971,199	44,788	298,986	343,774
1998	82,317	251,217	333,534	380,321	380,282	1,103,662	1,864,265	198,376	1,028,220	1,226,596
1999	57,952	195,342	253,294	559,271	446,154	1,038,405	2,043,830	147,039	791,057	938,096
2000	28,799	128,573	157,372	375,333	237,470	749,868	1,362,671	82,744	474,932	557,676
2001	82,268	158,353	240,621	399,258	234,921	870,921	1,505,100	135,565	599,676	735,241
2002	45,833	145,519	191,352	437,699	261,890	596,263	1,295,852	104,386	665,155	769,541
2003	120,120	117,648	237,768	616,753	317,184	966,839	1,900,776	114,521	981,982	1,096,503
2004	133,130	169,423	302,553	746,169	359,867	1,025,324	2,131,360	621,795	1,131,319	1,753,114
2005	152,559	187,650	340,209	834,832	423,277	1,134,973	2,393,082	688,291	1,252,303	1,940,594
2006	154,311	183,248	337,559	821,230	413,107	1,107,703	2,342,040	671,753	1,222,214	1,893,967
2007	159,315	182,365	341,680	825,244	410,880	1,101,732	2,337,856	668,132	1,215,626	1,883,758
2008	184,815	208,555	393,370	930,619	469,614	1,259,223	2,659,456	763,640	1,389,398	2,153,038
2009	187,162	208,195	395,357	928,477	468,533	1,256,324	2,653,334	761,882	1,386,199	2,148,081
2010	190,621	209,032	399,653	931,671	470,145	1,260,647	2,662,463	764,504	1,390,969	2,155,473
2011	182,073	196,823	378,896	876,748	442,429	1,186,329	2,505,506	719,435	1,308,968	2,028,403
2012	184,596	196,716	381,312	875,768	441,935	1,185,004	2,502,707	718,631	1,307,507	2,026,138
2013	106,375	111,746	218,121	497,199	250,900	672,761	1,420,860	407,988	742,309	1,150,297
2014	35,151	36,402	71,553	161,873	81,686	219,031	462,590	132,829	241,674	374,503
2015	22,120	22,581	44,701	100,358	50,643	135,794	286,795	82,351	149,832	232,183
2016	18,547	18,578	37,125	82,565	41,664	111,719	235,948	67,750	123,268	191,018
2017	16,386	16,237	32,623	72,163	36,415	97,643	206,221	59,215	107,737	166,952
2018	6,900	6,736	13,636	29,937	15,107	40,508	85,552	24,566	44,696	69,262
2019	7,019	6,751	13,770	30,004	15,141	40,598	85,743	24,620	44,795	69,415
2020	7,171	6,796	13,967	30,201	15,240	40,865	86,306	24,782	45,090	69,872
2021	9,864	9,209	19,073	40,928	20,654	55,380	116,962	33,585	61,105	94,690
2022	9,978	9,178	19,156	40,788	20,583	55,190	116,561	33,469	60,895	94,364
2023	7,749	7,023	14,772	31,211	15,750	42,232	89,193	25,611	46,597	72,208
2024	5,506	4,916	10,422	21,849	11,026	29,564	62,439	17,929	32,620	50,549
2025	203	179	382	793	400	1,074	2,267	651	1,185	1,836
2026	210	182	392	809	408	1,095	2,312	664	1,208	1,872
2027	217	185	402	823	415	1,114	2,352	675	1,229	1,904
2028	221	188	409	834	421	1,129	2,384	685	1,245	1,930
2029	211	179	390	796	401	1,077	2,274	653	1,188	1,841
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	3,204,280	4,961,821	8,166,101	18,574,576	12,696,370	41,214,878	72,485,824	8,144,178	18,317,114	26,461,292

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	59,322	1,053,957	11,978,046	38,810	42,297	1,253,257	14,953,641
1986	552,172	12,858	885,988	11,788,714	40,659	38,275	872,008	14,190,674
1987	450,941	24,936	1,192,388	10,448,063	39,134	37,538	911,938	13,104,938
1988	425,261	31,146	1,130,988	9,910,050	35,851	26,779	850,225	12,410,300
1989	331,852	17,226	607,908	7,400,983	22,959	24,306	754,007	9,159,241
1990	219,381	7,731	428,482	5,216,562	12,089	12,046	344,943	6,241,234
1991	13,048	3,111	570,942	146,276	0	1,354	30,685	765,416
1992	244,630	13,395	706,155	5,788,599	18,587	15,716	480,903	7,267,985
1993	471,706	25,543	1,202,455	11,405,212	37,276	36,803	1,159,908	14,338,903
1994	262,029	15,161	901,463	6,786,208	19,257	19,061	567,521	8,570,700
1995	626,214	16,830	1,486,494	12,489,555	41,275	36,377	1,051,178	15,747,923
1996	383,181	12,569	959,675	8,694,553	26,915	22,505	1,593,840	11,693,238
1997	423,144	(6)	794,476	7,471,645	(31)	22,025	137,304	8,848,557
1998	471,993	4,597	837,228	8,366,817	127	25,458	175,371	9,881,591
1999	360,150	19,161	887,752	7,701,427	24,132	20,042	1,747,960	10,760,624
2000	194,167	5,770	393,209	4,221,673	11,546	9,861	668,061	5,504,287
2001	219,309	6,611	244,564	2,922,752	7,583	11,908	411,845	3,824,572
2002	158,248	5,172	324,233	3,217,443	10,487	10,296	346,570	4,072,449
2003	214,409	11,561	495,946	3,846,916	14,552	13,159	422,832	5,019,375
2004	219,031	11,459	511,993	4,111,461	15,279	14,849	425,995	5,310,067
2005	242,454	12,684	566,746	4,551,145	16,913	16,437	471,552	5,877,931
2006	236,629	12,380	553,128	4,441,792	16,506	16,042	460,222	5,736,699
2007	235,353	12,313	550,147	4,417,852	16,417	15,956	457,741	5,705,779
2008	268,997	14,073	628,789	5,049,375	18,764	18,237	523,174	6,521,409
2009	268,377	14,041	627,342	5,037,751	18,721	18,195	521,970	6,506,397
2010	269,301	14,089	629,500	5,055,084	18,785	18,257	523,766	6,528,782
2011	253,425	13,258	592,390	4,757,078	17,678	17,181	492,889	6,143,899
2012	253,142	13,244	591,729	4,751,765	17,658	17,162	492,338	6,137,038
2013	143,716	7,519	335,941	2,697,714	10,025	9,743	279,515	3,484,173
2014	46,790	2,448	109,373	878,297	3,264	3,172	91,002	1,134,346
2015	29,009	1,518	67,808	544,523	2,024	1,967	56,419	703,268
2016	23,866	1,249	55,786	447,983	1,665	1,618	46,416	578,583
2017	20,859	1,091	48,758	391,542	1,455	1,414	40,568	505,687
2018	8,653	453	20,228	162,435	604	587	16,830	209,790
2019	8,673	454	20,273	162,795	605	588	16,867	210,255
2020	8,730	457	20,406	163,867	609	592	16,979	211,640
2021	11,830	619	27,654	222,070	825	802	23,009	286,809
2022	11,790	617	27,559	221,308	822	799	22,930	285,825
2023	9,022	472	21,088	169,345	629	612	17,546	218,714
2024	6,315	330	14,763	118,549	441	428	12,283	153,109
2025	229	12	536	4,305	16	16	446	5,560
2026	234	12	547	4,392	16	16	455	5,672
2027	238	12	556	4,466	17	16	463	5,768
2028	241	13	564	4,526	17	16	469	5,846
2029	230	12	538	4,317	16	16	447	5,576
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	9,675,630	427,523	21,978,914	200,236,925	620,927	643,773	18,845,981	252,429,673

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	3,749,257	1,572,025	2,032,672	170,137	3,230,451	0	0	157,601	884,188	601,583
1986	3,159,857	1,694,487	2,097,408	173,460	3,340,188	15,873	0	301,486	739,563	1,088,901
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	2,688,113	1,776,471	1,940,156	187,156	3,194,137	30,395	846	126,639	2,000,664	839,774
1989	2,357,669	1,348,806	1,326,863	132,076	2,218,516	50,948	13,206	493,424	1,257,332	792,087
1990	2,528,625	1,335,341	1,463,452	115,746	2,413,745	110,678	0	545,342	1,192,997	1,054,762
1991	1,048,414	531,160	1,022,405	125,256	1,686,304	65,111	473,291	488,207	540,119	796,531
1992	2,760,199	1,548,472	1,124,775	55,985	1,855,065	22,891	1,130,876	367,996	362,232	853,047
1993	3,559,487	1,332,392	2,256,338	29,498	3,721,492	60,615	1,101,799	640,919	425,969	1,406,255
1994	3,963,982	1,450,328	1,345,145	74,879	2,218,411	88,549	1,371,116	678,876	871,358	1,452,741
1995	4,324,009	1,901,361	2,498,462	44,237	4,120,837	43,892	881,146	636,541	75,278	1,397,623
1996	3,360,355	1,415,235	4,388,083	34,205	7,237,561	29,456	509,456	681,779	427,672	1,127,647
1997	3,411,379	1,468,949	4,294,703	42,135	4,319,206	24,319	891,191	648,652	625,340	1,175,556
1998	3,977,988	1,599,394	7,554,910	16,624	6,174,031	30,365	508,248	657,806	166,952	827,650
1999	3,692,823	1,692,949	3,192,098	71,582	3,673,948	18,284	500,923	709,877	814,086	1,374,031
2000	2,375,450	995,788	1,422,795	40,139	1,957,683	0	375,497	257,506	618,529	508,969
2001	2,700,630	1,428,619	463,644	53,854	764,758	0	214,956	449,155	1,349,560	120,242
2002	1,900,532	1,577,456	646,460	84,458	1,066,438	0	159,514	286,930	2,749,790	958,829
2003	2,756,008	934,299	880,756	100,734	1,452,718	0	769,789	568,348	3,953,161	671,564
2004	2,752,152	2,248,779	924,833	104,094	1,525,373	77,852	591,260	720,981	4,107,698	640,577
2005	3,198,855	2,489,266	1,023,735	124,089	1,688,498	86,178	876,078	798,084	4,546,979	709,081
2006	3,278,105	2,518,749	999,137	129,758	1,647,928	84,107	1,071,291	778,908	4,437,727	692,043
2007	3,423,636	2,505,174	993,752	135,512	1,639,046	83,654	1,280,615	774,710	4,413,809	774,352
2008	5,878,078	3,204,719	1,135,807	162,258	1,873,344	95,612	1,365,338	885,453	5,044,754	1,416,071
2009	5,864,546	3,444,082	1,133,192	169,243	1,869,031	95,392	1,558,419	883,415	5,033,140	1,412,811
2010	5,884,724	3,728,281	1,137,091	177,209	1,875,462	95,720	1,637,618	886,454	5,050,457	1,417,672
2011	5,537,809	3,790,415	1,070,058	173,711	1,764,900	90,078	1,610,561	834,196	4,752,724	1,334,098
2012	5,531,624	3,995,399	1,068,863	180,457	1,762,929	89,977	1,678,169	833,264	4,747,416	1,332,608
2013	3,140,463	2,268,304	606,824	106,391	1,000,866	51,082	992,150	473,068	2,695,245	756,560
2014	1,022,442	738,493	197,564	35,921	325,853	16,631	340,120	154,017	877,493	246,314
2015	633,890	457,848	122,485	23,065	202,021	10,311	221,471	95,487	544,025	152,709
2016	521,506	376,675	100,769	19,630	166,204	8,483	193,111	78,558	447,573	125,634
2017	455,801	329,218	88,073	17,729	145,264	7,414	178,313	68,660	391,183	109,806
2018	189,093	136,579	36,538	7,592	60,264	3,076	77,929	28,484	162,286	45,554
2019	189,513	136,882	36,619	7,807	60,398	3,083	83,650	28,548	162,646	45,655
2020	190,760	137,783	36,860	8,058	60,795	3,103	88,190	28,735	163,717	45,956
2021	258,516	186,722	49,952	11,137	82,389	4,205	122,974	38,942	221,867	62,278
2022	257,629	186,081	49,781	11,314	82,106	4,191	126,000	38,808	221,105	66,375
2023	197,138	142,390	38,093	8,781	62,828	3,207	99,384	29,696	169,190	47,492
2024	138,005	99,679	26,666	6,234	43,982	2,245	71,535	20,789	118,440	33,246
2025	5,012	3,620	968	228	1,597	82	2,673	755	4,301	1,207
2026	5,113	3,693	988	235	1,629	83	2,804	770	4,388	1,232
2027	5,198	3,755	1,004	241	1,657	85	2,934	783	4,461	1,252
2028	5,269	3,806	1,018	247	1,679	86	3,062	794	4,522	1,269
2029	5,025	3,630	971	238	1,602	82	3,004	757	4,313	1,211
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	109,636,167	61,972,139	54,817,833	3,501,035	78,981,302	1,604,716	23,182,293	17,438,919	70,074,149	30,334,168

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				Total State Water Project[a]
	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)	(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	77,446,523	0	89,844,437	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	79,936,309	0	92,720,660	0	0	0	0	108,898,833
1989	0	68,311,546	0	78,302,473	0	0	0	0	89,857,307
1990	0	83,964,409	277,885	95,002,982	0	0	0	0	104,000,038
1991	0	54,214,229	132,209	61,123,236	0	0	0	0	64,233,890
1992	0	72,401,054	0	82,482,592	0	0	0	0	92,173,695
1993	0	55,312,615	0	69,847,379	0	0	0	0	87,174,348
1994	0	72,838,621	0	86,354,006	0	0	0	0	97,722,979
1995	0	40,862,813	0	56,786,199	0	0	0	0	74,988,898
1996	0	34,033,111	0	53,244,560	0	0	0	0	66,929,769
1997	0	37,121,379	108,559	54,131,368	0	0	0	0	65,536,671
1998	0	30,341,609	149,170	52,004,747	0	0	0	0	65,310,733
1999	0	42,210,153	106,106	58,056,860	0	0	0	0	72,052,704
2000	0	44,039,432	123,491	52,715,279	0	0	0	0	60,297,285
2001	0	49,768,953	85,493	57,399,864	0	0	0	0	63,705,398
2002	0	51,764,401	174,907	61,369,715	0	0	0	0	67,698,909
2003	104,932	70,828,858	190,349	83,211,516	0	0	0	0	91,465,938
2004	140,126	69,689,560	181,566	83,704,851	0	0	0	0	93,201,945
2005	199,429	77,142,229	200,983	93,083,484	0	0	0	0	103,635,300
2006	237,890	75,288,695	196,154	91,360,492	0	0	0	0	101,670,757
2007	279,627	74,882,915	195,096	91,381,898	0	0	0	0	101,650,971
2008	368,769	85,587,269	222,985	107,240,457	0	0	0	0	118,967,730
2009	416,976	85,390,234	222,472	107,492,953	0	0	0	0	119,196,122
2010	467,635	85,684,036	223,237	108,265,596	0	0	0	0	120,011,967
2011	486,390	80,632,806	210,077	102,287,823	0	0	0	0	113,344,527
2012	532,118	80,542,755	209,842	102,505,421	0	0	0	0	113,552,616
2013	328,368	45,726,453	119,134	58,264,908	0	0	0	0	64,538,359
2014	115,460	14,887,189	38,786	18,996,283	0	0	0	0	21,039,275
2015	76,885	9,229,708	24,047	11,793,952	0	0	0	0	13,060,899
2016	67,616	7,593,340	19,783	9,718,882	0	0	0	0	10,761,556
2017	62,910	6,636,658	17,291	8,508,320	0	0	0	0	9,419,803
2018	27,364	2,753,280	7,173	3,535,212	0	0	0	0	3,913,452
2019	27,425	2,759,387	7,189	3,548,802	0	0	0	0	3,927,985
2020	27,605	2,777,552	7,237	3,576,351	0	0	0	0	3,958,136
2021	37,410	3,764,105	9,807	4,850,304	0	0	0	0	5,367,838
2022	37,282	3,751,179	9,773	4,841,624	0	0	0	0	5,357,530
2023	28,528	2,870,413	7,478	3,704,618	0	0	0	0	4,099,505
2024	19,971	2,009,408	5,235	2,595,435	0	0	0	0	2,871,954
2025	725	72,971	190	94,329	0	0	0	0	104,374
2026	740	74,443	194	96,312	0	0	0	0	106,560
2027	752	75,692	197	98,011	0	0	0	0	108,437
2028	762	76,718	200	99,432	0	0	0	0	110,001
2029	727	73,171	191	94,922	0	0	0	0	105,003
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	4,094,422	1,983,909,588	3,484,486	2,443,031,217	0	0	0	0	2,802,574,107

[a]Costs allocated to contractors in 1989 through 2002 are reduced by credits for Off-Aqueduct Power Facility costs allocated to the pumping of non-SWP water..

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

Calendar Year	North Bay Aqueduct						South Bay Aqueduct		California Aqueduct	
	Reach 1		Reach 3A		Reach 3B		Reach 1		Reach 1	
	Barker Slough Pumping Plant		Cordelia Pumping Plant Solano County Water Agency		Cordelia Pumping Plant Napa County FC&WCD[a]		South Bay and Del Valle Pumping Plants[b]		Banks Pumping Plant	
	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	4.1752198	0.2445431	0.2445431
1968	0	0	0	0	5.7570017	5.7570017	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	7.0944849	2.1420665	2.1420665
1980	0	0	0	0	2.9737588	2.9737588	4.5186576	5.8810391	1.3623815	1.3623815
1981	0	0	0	0	2.6488168	2.6488168	4.3834851	6.4541818	2.0706967	2.0706967
1982	0	0	0	0	10.0222589	10.0222589	5.6383622	7.4005197	1.7621575	1.7621575
1983	0	0	0	0	1.0240490	1.0240490	0.8686401	1.7143947	0.8457546	0.8457546
1984	0	0	0	0	1.6496750	1.6496750	2.7674018	3.9368186	1.1694168	1.1694168
1985	0	0	0	0	2.5224065	2.5224065	3.6942206	5.2987621	1.6045415	1.6045415
1986	0	0	0	0	4.4049446	4.4049446	7.2799222	10.5919299	3.3120077	3.3120077
1987	0	0	0	0	3.5386715	3.5386715	6.4837861	10.9334450	4.4496589	4.4496589
1988	1.1782643	1.1782643	0	1.1782643	4.4547478	5.6330121	6.1750026	8.8623075	2.6873049	2.6873049
1989	1.2715449	1.2715449	2.5423866	3.8139315	4.2807103	5.5522552	8.1617218	11.6840191	3.5222973	3.5222973
1990	2.0026083	2.0026083	4.2324041	6.2350124	5.8753602	7.8779685	11.7200790	15.8516543	4.1315753	4.1315753
1991	1.2486830	1.2486830	2.6246433	3.8733263	3.8057971	5.0544801	7.5402615	11.2354100	3.6951485	3.6951485
1992	0.7094386	0.7094386	1.4175705	2.1270091	2.3509123	3.0603509	4.0600958	6.3925273	2.3324315	2.3324315
1993	-0.3464574	-0.3464574	-0.6048649	-0.9513223	-1.0200530	-1.3665104	-1.4929934	-1.2571378	0.2358556	0.2358556
1994	1.4600287	1.4600287	2.6570107	4.1170394	4.2975560	5.7575847	7.9510779	11.2405895	3.2895116	3.2895116
1995	0.7544766	0.7544766	1.2974265	2.0519031	2.2753763	3.0298529	3.2312761	5.2610469	2.0297708	2.0297708
1996	1.6427835	1.6427835	2.7704025	4.4131860	4.7993051	6.4420886	8.0186492	11.3633990	3.3447498	3.3447498
1997	1.7801484	1.7801484	3.0246843	4.8048327	5.0575904	6.8377388	9.6521246	12.6148371	2.9627125	2.9627125
1998	-0.3031174	-0.3031174	-0.5212041	-0.8243215	-0.8497854	-1.1529028	-1.7656471	-1.6140875	0.1515596	0.1515596
1999	0.7881649	0.7881649	1.2907826	2.0789475	1.9896116	2.7777765	5.1098950	7.0236031	1.9137081	1.9137081
2000	1.4663953	1.4663953	2.0881826	3.5545779	3.1969423	4.6633376	5.8144866	8.2661965	2.4517099	2.4517099
2001	8.5347524	8.5347524	12.7201464	21.2548988	30.2834987	38.8182511	38.4358596	51.3612442	12.9253846	12.9253846
2002	4.2212460	4.2212460	5.3483224	9.5695684	9.0180087	13.2392547	17.1864215	23.7220989	6.5356774	6.5356774
2003	17.2183206	17.2183206	10.5697171	27.7880377	5.3337760	22.5520966	20.0699339	28.5129094	8.4429755	8.4429755
2004	12.2856756	12.2856756	8.4331841	20.7188597	42.2326234	54.5182990	32.2586968	41.5685954	9.3098986	9.3098986
2005	14.4772869	14.4772869	10.0465174	24.5238043	48.5976516	63.0749385	37.5188007	50.5818643	13.0630636	13.0630636
2006	5.5960150	5.5960150	17.9305970	23.5266120	19.4036702	24.9996852	27.8291983	37.7885830	9.9593847	9.9593847
2007	5.4640906	5.4640906	17.5902488	23.0543394	18.6795410	24.1436316	27.1457342	36.4099600	9.2642258	9.2642258
2008	4.8929072	4.8929072	15.7159702	20.6088774	16.7549520	21.6478592	24.3721780	33.6795488	9.3073708	9.3073708
2009	5.1040984	5.1040984	16.3531343	21.4572327	17.4869601	22.5910585	25.3633191	33.7329917	8.3696726	8.3696726
2010	5.3815404	5.3815404	17.2033333	22.5848737	18.4559040	23.8374444	26.6790109	37.4133679	10.7343570	10.7343570
2011	5.3953237	5.3953237	17.2104975	22.6058212	18.5206786	23.9160023	26.6901489	36.2991788	9.6090299	9.6090299
2012	5.6140418	5.6140418	17.8715920	23.4856338	19.2885165	24.9025583	27.7153524	37.0908623	9.3755099	9.3755099
2013	6.2278088	6.2278088	19.8119901	26.0397989	21.3704194	27.5982282	30.7245164	42.9779550	12.2534386	12.2534386
2014	6.7547383	6.7547383	21.4253234	28.1800617	23.2272192	29.9819575	33.2266692	44.1547971	10.9281279	10.9281279
2015	6.9255466	6.9255466	21.7794030	28.7049496	24.1023231	31.0278697	33.7755718	46.0877165	12.3121447	12.3121447
2016	7.0461105	7.0461105	22.0235821	29.0696926	24.6916826	31.7377931	34.1543772	48.4574947	14.3031175	14.3031175
2017	6.9948405	6.9948405	21.6748756	28.6697161	24.7984244	31.7932649	33.6135563	46.0914754	12.4779191	12.4779191
2018	7.2670217	7.2670217	22.3631343	29.6301560	26.0331459	33.3001676	34.6808800	47.2114358	12.5305558	12.5305558
2019	7.5139243	7.5139243	22.9681592	30.4820835	27.1915259	34.7054502	35.6191968	50.1501770	14.5309802	14.5309802
2020	7.1092838	7.1092838	21.5933831	28.7026669	25.9499904	33.0592742	33.4870669	46.2860474	12.7989805	12.7989805
2021	7.0754242	7.0754242	21.5543781	28.6298023	25.6446506	32.7200748	33.4266997	45.9468086	12.5201089	12.5201089
2022	6.7873276	6.7873276	20.7870647	27.5743923	24.3662923	31.1536199	32.2367057	43.7706320	11.5339263	11.5339263
2023	6.7952403	6.7952403	20.9234328	27.7186731	24.1636584	30.9588987	32.4481555	44.9529917	12.5048362	12.5048362
2024	7.0458011	7.0458011	21.8129353	28.8587364	24.8187317	31.8645328	33.8276666	47.6429393	13.8152727	13.8152727
2025	6.9709998	6.9709998	21.6997512	28.6707510	24.3252810	31.2962808	33.6522531	45.0976913	11.4454382	11.4454382
2026	6.9873177	6.9873177	21.8714428	28.8587605	24.1548197	31.1421374	33.9183533	48.3219700	14.4036167	14.4036167
2027	6.8277773	6.8277773	21.4913930	28.3191703	23.3849058	30.2126831	33.3289993	46.1587051	12.8297058	12.8297058
2028	6.8683491	6.8683491	21.6635821	28.5319312	23.4440234	30.3123725	33.5961580	46.6702478	13.0740898	13.0740898
2029	6.7674797	6.7674797	21.3455224	28.1130021	23.0997589	29.8672386	33.1028069	45.5322704	12.4294635	12.4294635
2030	6.8305524	6.8305524	21.5444776	28.3750300	23.3150190	30.1455714	33.4112371	46.3824069	12.9711698	12.9711698
2031	6.7226937	6.7226937	21.2043284	27.9270221	22.9468825	29.6695762	32.8837141	44.5747178	11.6910037	11.6910037
2032	6.8776551	6.8776551	21.6929851	28.5706402	23.4758526	30.3535077	33.6417159	46.4074077	12.7656918	12.7656918
2033	7.2766165	7.2766165	22.9514428	30.2280593	24.8376163	32.1142328	35.5932304	49.2583572	13.6651268	13.6651268
2034	6.9705722	6.9705722	21.9860697	28.9566419	23.7929728	30.7635450	34.0962033	46.7836914	12.6874881	12.6874881
2035	6.8066821	6.8066821	21.4691542	28.2758363	23.2335171	30.0401992	33.2945173	46.8694224	13.5749051	13.5749051

[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)

Calendar Year	California Aqueduct (continued)									
	Reach 4		Reach 14A		Reach 15A		Reach 16A		Reach 17E	
	Dos Amigos Pumping Plant		Buena Vista Pumping Plant		Teerink Pumping Plant		Chrisman Pumping Plant		Edmonston Pumping Plant	
	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	1.1407617	2.4341366	0.7218469	3.1559835	0	0	0	0
1972	0.5662758	1.4693754	0.8894941	2.3588695	0.8040021	3.1628716	1.8113853	4.9742569	7.3206022	12.2948591
1973	0.5996892	1.5383283	0.8469026	2.3852309	1.0302066	3.4154375	1.8458304	5.2612679	7.4512435	12.7125114
1974	0.5736894	1.4709300	0.8122890	2.2832190	0.9665911	3.2498101	1.7739395	5.0237496	6.9004732	11.9242228
1975	0.4606980	1.5569000	0.7554447	2.3123447	0.8894108	3.2017555	1.8682537	5.0700092	6.9962702	12.0662794
1976	0.5163828	1.7105096	0.9081491	2.6186587	0.9640628	3.5827215	2.1499640	5.7326855	7.9384515	13.6711370
1977	0.6138931	2.3818667	0.9835371	3.3654038	1.2303967	4.5958005	2.7357728	7.3315733	9.9990004	17.3305737
1978	0.4545898	2.0659924	0.9044582	2.9704506	0.9762058	3.9466564	1.8872449	5.8339013	7.0810192	12.9149205
1979	0.6587934	2.8008599	1.0519199	3.8527798	1.1976258	5.0504056	2.6012890	7.6516946	9.6345625	17.2862571
1980	0.8021465	2.1645280	1.3516057	3.5161337	1.5041463	5.0202800	3.1923433	8.2126233	10.9860288	19.1986521
1981	1.0923907	3.1630874	1.2409168	4.4040042	1.3219771	5.7259813	2.9592932	8.6852745	9.9649551	18.6502296
1982	0.8326785	2.5948360	1.2041660	3.7990020	1.3723736	5.1713756	2.8986491	8.0700247	10.2096358	18.2796605
1983	0.3647859	1.2105405	0.7590265	1.9695670	0.8857383	2.8553053	1.7623405	4.6176458	5.5086367	10.1262825
1984	0.6581523	1.8275691	1.0533611	2.8809302	1.2188270	4.0997572	2.5407768	6.6405340	8.2344665	14.8750005
1985	0.8726163	2.4771578	1.4204831	3.8976409	1.6516291	5.5492700	3.4695783	9.0188483	11.8181234	20.8369717
1986	1.3996542	4.7116619	2.3713282	7.0829901	2.7567970	9.8397871	5.9534613	15.7932484	20.6010240	36.3942724
1987	1.2912643	5.7409232	2.2344385	7.9753617	2.5459999	10.5213616	5.3141190	15.8354806	17.7628277	33.5983083
1988	1.1947837	3.8820886	2.1129991	5.9950877	2.4017135	8.3968012	5.0055748	13.4023760	16.6001692	30.0025452
1989	1.4935226	5.0158199	2.6947446	7.7105645	3.0084211	10.7189856	6.5499538	17.2689394	22.1795336	39.4484730
1990	1.8962463	6.0278216	3.3080372	9.3358588	3.7483036	13.0841624	8.6832678	21.7674302	31.0405219	52.8079521
1991	1.0437991	4.7389476	2.1132495	6.8521971	2.4154810	9.2676781	5.6823745	14.9500526	20.4744695	35.4245221
1992	0.9002103	3.2326418	1.4836761	4.7163179	1.7077297	6.4240476	3.5445788	9.9686264	12.0459599	22.0145863
1993	0.1605206	0.3963762	-0.1405164	0.2558598	-0.1312944	0.1245654	-0.7754796	-0.6509142	-3.5828989	-4.2338131
1994	1.4208578	4.7103694	2.5100856	7.2204550	2.8029168	10.0233718	6.0772944	16.1006662	21.5000984	37.6007646
1995	0.7974861	2.8272569	1.3474564	4.1747133	1.4945529	5.6692662	3.1250716	8.7943378	10.7461772	19.5405150
1996	1.6726383	5.0173881	2.5952092	7.6125973	2.8425227	10.4551200	6.3087407	16.7638607	22.6420778	39.4059385
1997	1.2769880	4.2397005	2.5012144	6.7409149	2.6893394	9.4302543	6.2890095	15.7192638	23.0714697	38.7907335
1998	-0.2050857	-0.0535261	-0.3945877	-0.4481138	-0.4188957	-0.8670095	-0.9854414	-1.8524509	-3.5434867	-5.3959376
1999	0.8412651	2.7549732	1.4005291	4.1555023	1.2785545	5.4340568	3.4081412	8.8421980	13.5892138	22.4314118
2000	0.9666089	3.4183188	1.7218972	5.1402160	1.8924985	7.0327145	4.4614621	11.4941766	16.3349223	27.8290989
2001	6.7023094	19.6276940	11.9121550	31.5398490	13.1468051	44.6866541	30.4106287	75.0972828	113.8190512	188.9163340
2002	2.6764017	9.2120791	4.6845192	13.8965983	5.1149231	19.0115214	11.8331882	30.8447096	43.9706319	74.8153415
2003	3.0762079	11.5191834	5.6837916	17.2029750	6.8457130	24.0486880	14.9733914	39.0220794	53.9905833	93.0126627
2004	5.0250287	14.3349273	8.5992270	22.9341543	10.4931633	33.4273176	22.7331392	56.1604568	81.1440545	137.3045113
2005	6.1935147	19.2565783	10.7784764	30.0350547	13.1829610	43.2180157	28.5895021	71.8075178	102.1192184	173.9267362
2006	4.9855875	14.9449722	8.8357580	23.7807302	9.0510987	32.8318289	21.6565881	54.4884170	82.0455745	136.5339915
2007	4.8759733	14.1401991	8.6611655	22.8013646	8.8734997	31.6748643	21.2330001	52.9078644	80.4402512	133.3481156
2008	4.3155629	13.6229337	7.6146749	21.2376086	7.7959387	29.0335473	18.6497491	47.6832964	70.6406727	118.3239691
2009	4.5364822	12.9061548	8.0315409	20.9376957	8.2282111	29.1659068	19.6888459	48.8547527	74.5881298	123.4428825
2010	4.7904276	15.5247846	8.4724668	23.9972514	8.6818395	32.6790909	20.7759046	53.4549955	78.7087687	132.1637642
2011	4.7788992	14.3879291	8.4125252	22.8004543	8.6185871	31.4190414	20.6232878	52.0423292	78.1242355	130.1665647
2012	5.1077175	14.4832274	9.0878719	23.5710993	9.3266023	32.8977016	22.3309081	55.2286097	84.6306477	139.8592574
2013	5.6334355	17.8868741	9.9950222	27.8818963	10.2549601	38.1368564	24.5518788	62.6887352	93.0385924	155.7273276
2014	6.1378136	17.0659415	10.9228961	27.9888376	11.2128467	39.2016843	26.8503254	66.0520097	101.7599021	167.8119118
2015	6.2312053	18.5433500	11.0803412	29.6236912	11.3737126	40.9974038	27.2350016	68.2324054	103.2152550	171.4476604
2016	6.4665302	20.7696477	11.6274097	32.3970574	11.9555023	44.3525597	28.6454129	72.9979726	108.6041763	181.6021489
2017	6.2215954	18.6995145	11.0756551	29.7751696	11.3719319	41.1471015	27.2333756	68.3804771	103.2131976	171.5936747
2018	6.5930844	19.1236402	11.8815423	31.0051825	12.2199916	43.2251741	29.2817639	72.5069380	111.0260719	183.5330099
2019	6.7919900	21.3229702	12.2331789	33.5561491	12.5844536	46.1406027	30.1578650	76.2984677	114.3451599	190.6436276
2020	6.3941390	19.1931195	11.5302677	30.7233872	11.8623074	42.5856946	28.4280416	71.0137362	107.7910330	178.8047692
2021	6.3884243	18.9085332	11.5215834	30.4301166	11.8540816	42.2841982	28.4089476	70.6931458	107.7192691	178.4124149
2022	6.1818164	17.7157427	11.1658187	28.8815614	11.4904934	40.3720548	27.5396975	67.9117523	104.4288897	172.3406420
2023	6.2533718	18.7582080	11.3189512	30.0771592	11.6517439	41.7289031	27.9293541	69.6582572	105.9146805	175.5729377
2024	6.4694097	20.2846824	11.6694577	31.9541401	12.0067109	43.9608510	28.7751326	72.7359836	109.1083901	181.8443737
2025	6.4444264	17.8898646	11.6341839	29.5240485	11.9714140	41.4954625	28.6914039	70.1868664	108.7943278	178.9811942
2026	6.4758892	20.8795059	11.6707879	32.5502938	12.0067629	44.5570567	28.7742454	73.3313021	109.1017750	182.4330771
2027	6.4124851	19.2421909	11.5978718	30.8400627	11.9376641	42.7777268	28.6135368	71.3912636	108.5061730	179.8974366
2028	6.4005339	19.4746237	11.5274726	31.0020963	11.8577752	42.8598715	28.4158527	71.2757242	107.7399202	179.0156444
2029	6.3431979	18.7726614	11.4524938	30.2251552	11.7849060	42.0100612	28.2448839	70.2549451	107.1014013	177.3563464
2030	6.3470960	19.3182658	11.4168399	30.7351057	11.7418632	42.4769689	28.1362626	70.6132315	106.6749955	177.2882270
2031	6.3014290	17.9924327	11.3906398	29.3830725	11.7213383	41.1044108	28.0922401	69.1966509	106.5275371	175.7241880
2032	6.3488414	19.1145332	11.3822901	30.4968233	11.7017982	42.1986215	28.0365454	70.2351669	106.2842422	176.5194091
2033	6.8668969	20.5320237	12.4456160	32.9776397	12.8126170	45.7902567	30.7125785	76.5028352	116.4752497	192.9780849
2034	6.4607852	19.1482733	11.6032644	30.7515377	11.9319505	42.6834882	28.5904045	71.2738927	108.3906123	179.6645050
2035	6.8285435	20.4034486	12.7160446	33.1194932	13.1452257	46.2647189	31.5563733	77.8210922	119.7952396	197.6163318

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

	California Aqueduct (continued)									
	Reach 18A		Reach 22B		Reach 23		Reach 26A		Reach 29A	
	Alamo Power Plant		Pearblossom Pumping Plant		Mojave Siphon Power Plant		Devil Canyon Power Plant		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	0	1.9331104	14.2279695	0	0	-2.3717647	11.8562048	1.1017349	13.3965940
1973	0	0	3.8751940	16.5877054	0	0	-8.9027252	7.6849802	0.7905574	13.5030688
1974	0	0	3.1602116	15.0844344	0	0	-5.3440968	9.7403376	0.7530214	12.6772442
1975	0	0	3.0210558	15.0873352	0	0	-5.7803309	9.3070043	0.8405850	12.9068644
1976	0	0	3.7579009	17.4290379	0	0	-6.6439666	10.7850713	0.7771828	14.4483198
1977	0	0	3.0796474	20.4102211	0	0	-12.0911833	8.3190378	0.6152458	17.9458195
1978	0	0	4.0233030	16.9382235	0	0	-8.2569506	8.6812729	0.5222831	13.4372036
1979	0	0	5.0776468	22.3639039	0	0	-9.7140035	12.6499004	0.7045701	17.9908272
1980	0	0	4.3918283	23.5904804	0	0	-8.3797007	15.2107797	1.4269064	20.6255585
1981	0	0	3.9973528	22.6475824	0	0	-6.7528590	15.8947234	1.5684309	20.2186605
1982	0	0	3.6829998	21.9626603	0	0	-6.9238898	15.0387705	1.4942585	19.7739190
1983	0	0	1.7205305	11.8468130	0	0	-23.7923457	-11.9455327	1.2818887	11.4081712
1984	0	0	2.4763871	17.3513876	0	0	-29.2940447	-11.9426571	1.7796296	16.6546301
1985	0	0	3.4967556	24.3337273	0	0	-30.7672356	-6.4335083	2.1683838	23.0053555
1986	-2.3583180	34.0359544	5.9864597	40.0224141	0	0	-29.2499580	10.7724561	3.2288411	39.6231135
1987	-2.5482255	31.0500828	5.0535029	36.1035857	0	0	-29.7006534	6.4029323	3.1272967	36.7256050
1988	-1.3847067	28.6178385	4.7392460	33.3570845	0	0	-29.0334518	4.3236327	2.9878581	32.9904033
1989	-1.1019487	38.3465243	6.4066114	44.7531357	0	0	-28.3706997	16.3824360	3.5262089	42.9746819
1990	-1.0673268	51.7406253	8.9787944	60.7194197	0	0	-28.8797266	31.8396931	3.6810660	56.4890181
1991	-1.5206590	33.9038631	6.0785417	39.9824048	0	0	-30.3294563	9.6529485	2.1853025	37.6098246
1992	-2.6080003	19.4065860	3.6219501	23.0285361	0	0	-29.7938993	-6.7653632	1.9048343	23.9194206
1993	-0.1885524	-4.4223655	-1.0192774	-5.4416429	0	0	-30.6629489	-36.1045918	0.1569728	-4.0768403
1994	-0.1279266	37.4728380	6.4513573	43.9241953	0	0	-30.4781656	13.4460297	3.0638504	40.6646150
1995	-3.4425314	16.0979836	3.3643070	19.4622906	0	0	-30.3517624	-10.8894718	1.5724835	21.1129985
1996	-5.9839345	33.4220040	6.6794995	40.1015035	-2.3423415	37.7591620	-29.5900574	8.1691046	3.1318961	42.5378346
1997	-4.7847600	34.0059735	6.8397922	40.8457657	-3.8632009	36.9825648	-30.6066647	6.3759001	2.7928728	41.5836063
1998	-5.0614104	-10.4573480	-1.2355351	-11.6928831	-3.7700558	-15.4629389	-30.6550762	-46.1180151	-0.3008626	-5.6968002
1999	-4.7679511	17.6634607	3.5463358	21.2097965	-4.9754645	16.2343320	-29.6766184	-13.4422864	1.8909725	24.3223843
2000	-5.3339698	22.4951291	4.6831126	27.1782417	-5.1642729	22.0139688	-30.2857039	-8.2717351	1.9231854	29.7522843
2001	-4.9628066	183.9535274	32.0947271	216.0482545	-6.0443334	210.0039211	-32.5890871	177.4148340	14.2254309	203.1417649
2002	-5.5228192	69.2925223	13.4913708	82.7838931	-6.4040979	76.3797952	-30.1578149	46.2219803	4.9498426	79.7651841
2003	-3.1340867	89.8785760	16.9290701	106.8076461	-7.7419839	99.0656622	-26.2708669	72.7947953	5.9718983	98.9845610
2004	-4.0736408	133.2308705	25.3197194	158.5505899	-9.7865715	148.7640184	-28.2091093	120.5549091	9.2228420	146.5273533
2005	-4.1342705	169.7924657	30.7388050	200.5312707	-10.0456960	190.4855747	-28.6755807	161.8099940	12.4162880	186.3430242
2006	-3.9410472	132.5929443	22.6471750	155.2401193	-5.1538554	150.0862639	-24.6157137	125.4705502	10.5987216	147.1327131
2007	-3.8190375	129.5290781	21.6458242	151.1749023	-4.9965313	146.1783710	-24.6733947	121.5049763	10.8293269	144.1774425
2008	-3.8115542	114.5124149	19.9785891	134.4910040	-5.1732371	129.3177669	-24.8285398	104.4892271	9.3370677	127.6610368
2009	-3.8236838	119.6191987	21.0148466	140.6340453	-5.1861376	135.4479077	-24.9700788	110.4778289	9.9361239	133.3790064
2010	-3.8143997	128.3493645	22.2678228	150.6171873	-5.1818625	145.4353248	-25.0446089	120.3907159	10.4339581	142.5977223
2011	-3.7822204	126.3843443	22.1013365	148.4856808	-5.1304869	143.3551939	-25.4651067	117.8900872	10.3008738	140.4674385
2012	-4.0180017	135.8412557	24.3843577	160.2256134	-5.5545864	154.6710270	-26.1178921	128.5531349	11.0184040	150.8776614
2013	-3.8780799	151.8492477	26.5223207	178.3715684	-5.3604692	173.0110992	-25.6223407	147.3887585	12.2529375	167.9802651
2014	-3.8907225	163.9211893	28.6330517	192.5542410	-5.3764275	187.1778135	-25.9952802	161.1825333	13.6176623	181.4295741
2015	-3.8906649	167.5569955	29.2008901	196.7578856	-5.4440201	191.3138655	-26.2997173	165.0141482	13.7577656	185.2054260
2016	-4.0395822	177.5625667	31.0627429	208.6253096	-5.7038482	202.9214614	-26.8531351	176.0683263	14.3632792	195.9654281
2017	-3.8573411	167.7363336	29.1901711	196.9265047	-5.4753032	191.4512015	-26.5775497	164.8736518	13.7584778	185.3521525
2018	-4.1126700	179.4203399	32.0783039	211.4986438	-6.1057434	205.3929004	-27.2173462	178.1755542	14.5404904	198.0735003
2019	-3.9154611	186.7281665	31.5358900	218.2640565	-5.6765245	212.5875320	-26.9865912	185.6009408	15.8278938	206.4715214
2020	-3.9788290	174.8259402	30.4461654	205.2721056	-5.8356976	199.4364080	-27.6860088	171.7503992	14.5137544	193.3185236
2021	-3.9859043	174.4265106	30.4388719	204.8653825	-5.8762612	198.9891213	-27.4315066	171.5576147	14.4847649	192.8971798
2022	-4.0006359	168.3400061	29.2499271	197.5899332	-5.8702398	191.7196934	-27.0858671	164.6338263	14.2274960	186.5681380
2023	-4.0520213	171.5209164	29.8595254	201.3804418	-5.9801727	195.4002691	-27.6004655	167.7998036	14.3172056	189.8901433
2024	-3.9254122	177.9189615	30.2554331	208.1743946	-5.8066452	202.3677494	-27.4024066	174.9653428	15.0970308	196.9414045
2025	-3.9875544	174.9936398	30.3833801	205.3770199	-5.8796487	199.4973712	-27.0908031	172.4065681	14.8636496	193.8448438
2026	-3.9603449	178.4727322	30.6924040	209.1651362	-5.9082763	203.2568599	-27.7535643	175.5032956	14.7762256	197.2093027
2027	-3.9778375	175.9195991	30.2174033	206.1370024	-5.8711053	200.2658971	-27.3732172	172.8926799	14.9301848	194.8276214
2028	-3.9318270	175.0838174	30.1823634	205.2661808	-5.8421294	199.4240514	-27.5421339	171.8819175	14.6573096	193.6729540
2029	-3.9457542	173.4105922	29.8023951	203.2129873	-5.8741565	197.3388308	-27.3600009	169.9788299	14.7420511	192.0983975
2030	-3.9096307	173.3785963	29.8249060	203.2035023	-5.8214132	197.3820891	-27.4195568	169.9625323	14.5392256	191.8274526
2031	-4.0100237	171.7141643	29.9221321	201.6362964	-6.2608981	195.3753983	-27.1823733	168.1930250	14.6192111	190.3433991
2032	-3.8635209	172.6558882	29.2772894	201.9331776	-5.9781475	195.9550301	-26.9941819	168.9608482	14.6972831	191.2166922
2033	-4.0526710	188.9254139	32.7791996	221.7046135	-6.4003223	215.3042912	-27.7790798	187.5252114	15.9318580	208.9099429
2034	-3.8986462	175.7658588	29.9574178	205.7232766	-6.1044837	199.6187929	-26.8686959	172.7500970	14.9222895	194.5867945
2035	-4.1046734	193.5116584	31.1613025	224.6729609	-6.2746336	218.3983273	-28.2737405	190.1245868	18.9508091	216.5671409

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

Calendar Year	California Aqueduct (continued)							
	Reach 29G		Reach 29J		Reach 31A		Reach 33A	
	Warne Power Plant		Castaic Power Plant		Las Perillas and Badger Hill Pumping Plants		Devil's Den, Bluestone, and Polonio Pass Pumping Plants, and San Luis Obispo Power Plant	
	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	1.2624066	3.0719382	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	0	-2.9350830	10.4615110	1.9517720	3.4211474	0	0
1973	0	0	-6.8099448	6.6931240	1.5374531	3.0757814	0	0
1974	0	0	-7.4013274	5.2759168	1.5168982	2.9878282	0	0
1975	0	0	-6.5604921	6.3463723	1.1130304	2.6699304	0	0
						0.0000000		
1976	0	0	-6.7213324	7.7269874	1.5685447	3.2790543	0	0
1977	0	0	-30.4985994	-12.5527799	1.7573375	4.1392042	0	0
1978	0	0	-9.0130187	4.4241849	1.9429506	4.0089430	0	0
1979	0	0	-19.0478097	-1.0569825	1.5600341	4.3608940	0	0
1980	0	0	-20.5438586	0.0816999	1.5124754	3.6770034	0	0
1981	0	0	-10.0059379	10.2127226	1.5414199	4.7045073	0	0
1982	-2.1714430	17.6024760	-9.5987314	8.0037446	1.7581649	4.3530009	0	0
1983	-8.9130752	2.4950960	-39.8193120	-37.3242160	0.1782765	1.3888170	0	0
1984	-15.0246012	1.6300289	-17.3126964	-15.6826675	0.8546712	2.6822403	0	0
1985	-14.7115359	8.2938196	-38.9450629	-30.6512433	1.2014351	3.6785929	0	0
1986	-14.1893653	25.4337482	-28.1596224	-2.7258742	2.2635886	6.9752505	0	0
1987	-14.8696165	21.8559885	-27.0536484	-5.1976599	1.9135072	7.6544304	0	0
1988	-14.7032843	18.2871190	-25.6857024	-7.3985834	1.7733386	5.6554272	0	0
1989	-14.4231503	28.5515316	-25.3986130	3.1529186	2.4159040	7.4317239	0	0
1990	-14.1850383	42.3039798	-26.0776142	16.2263656	3.7962150	9.8240366	0	0
1991	-14.7118704	22.8979542	-25.0234633	-2.1255091	2.4131016	7.1520492	0	0
1992	-14.6199430	9.2994776	-25.1951357	-15.8956581	1.2766372	4.5092790	0	0
1993	-10.3386607	-14.4155010	-21.1218973	-35.5373983	-1.1726172	-0.7762410	0	0
1994	-14.7696788	25.8949362	-26.7437304	-0.8487942	2.3645104	7.0748798	0	0
1995	-12.2705974	8.8424011	-25.6907993	-16.8483982	2.5750402	5.4022971	0	0
1996	-14.8515762	27.6862584	-29.5639188	-1.8776604	2.5837041	7.6010922	0	0
1997	-14.9272063	26.6564000	-27.1541858	-0.4977858	2.7029648	6.9426653	24.4572499	31.3999152
1998	-8.6041243	-14.3009245	-22.2303491	-36.5312736	-0.4719744	-0.5255005	-3.9178748	-4.4433753
1999	-15.4517685	8.8706158	-27.8324731	-18.9618573	1.3253630	4.0803362	9.7876943	13.8680305
2000	-14.1999174	15.5523669	-26.9580809	-11.4057140	2.0267962	5.4451150	15.0369045	20.4820195
2001	-17.5397871	185.6019778	-30.7570130	154.8449648	12.9781144	32.6058084	112.7111059	145.3169143
2002	-13.1915528	66.5736313	-23.7055181	42.8681132	5.4739548	14.6860339	42.3104629	56.9964968
2003	-11.2570484	87.7275126	-20.0863871	67.6411255	5.4031205	16.9223039	52.3575857	69.2798896
2004	-13.4389411	133.0884122	-23.9820719	109.1063403	9.6453041	23.9802314	71.6559026	95.6361340
2005	-15.2143138	171.1287104	-27.1913910	143.9373194	11.4455742	30.7021525	84.8522872	115.5544397
2006	-17.1878986	129.9448145	-28.6152346	101.3295799	10.7920085	25.7369807	76.7201901	102.4571708
2007	-18.0337443	126.1436982	-29.7323183	96.4113799	10.0493348	24.1895339	75.2638264	99.4533603
2008	-17.4763080	110.1847288	-28.7114894	81.4732394	9.4729207	23.0958544	67.2440946	90.3399490
2009	-17.8818224	115.4971840	-29.3528864	86.1442976	10.2663992	23.1725540	69.9700982	93.1426522
2010	-17.7438755	124.8538468	-29.2537266	95.6001202	11.3172988	26.8420834	73.6078956	100.4499790
2011	-17.4992603	122.9681782	-28.7852004	94.1829778	11.9515332	26.3394623	73.6386461	99.9781084
2012	-17.9832335	132.8944279	-29.7307531	103.1636748	12.9453244	27.4285518	76.4671561	103.8957079
2013	-18.0041409	149.9761242	-29.7485963	120.2275279	14.3508599	32.2377340	84.7695126	117.0072466
2014	-18.4997209	162.9298532	-30.5121621	132.4176911	15.5195582	32.5854997	91.6729893	124.2584890
2015	-18.4160834	166.7893426	-30.3481994	136.4411432	15.7759393	34.3192893	93.1873745	127.5066638
2016	-18.9798040	176.9856241	-31.3180323	145.6675918	15.9528715	36.7225192	94.2325950	130.9551142
2017	-18.4307323	166.9214202	-30.4374743	136.4839459	15.7002676	34.3997821	92.7404028	127.1401849
2018	-18.8960740	179.1774263	-31.2527779	147.9246484	16.1987939	35.3224341	95.6852103	131.0076444
2019	-19.7482278	186.7232936	-32.9040218	153.8192718	16.6370790	37.9600492	98.2740530	136.2341022
2020	-19.4163003	173.9022233	-32.1851318	141.7170915	15.6411924	34.8343119	92.3914538	127.2257657
2021	-19.3800761	173.5171037	-32.1543158	141.3627879	15.6129997	34.5215329	92.2248720	126.7464049
2022	-19.7284225	166.8397155	-32.7473956	134.0923199	15.0571723	32.7729150	88.9416391	121.7145541
2023	-19.7243431	170.1658002	-32.7403194	137.4254808	15.1559361	33.9141441	89.5250785	123.4392226
2024	-19.9502765	176.9911280	-33.1215668	143.8695612	15.8002833	36.0849657	93.3311409	129.4161066
2025	-19.7437322	174.1011116	-32.7736832	141.3274284	15.7183449	33.6082095	92.8471668	126.4553763
2026	-19.4730469	177.7362558	-32.3180132	145.4182426	15.8426403	36.7221462	93.5814167	130.3035629
2027	-20.0241335	174.8034879	-33.2436739	141.5598140	15.5673663	34.8095572	91.9553453	126.7649025
2028	-19.5066210	174.1663330	-32.3705450	141.7957880	15.6921410	35.1667647	92.6924524	127.8592171
2029	-19.9075094	172.1908881	-33.0496396	139.1412485	15.4617063	34.2343677	91.3312682	125.5656359
2030	-19.4513855	172.3760671	-32.2816199	140.0944472	15.6057745	34.9240403	92.1822682	127.1063085
2031	-19.9795852	170.3638139	-33.1269182	137.2368957	15.3593799	33.3518126	90.7267957	124.0786083
2032	-19.3906951	171.8259971	-32.3238857	139.5021114	15.7134160	34.8279492	92.8181137	127.6460629
2033	-19.9710532	188.9388897	-33.2958783	155.6430114	16.6249392	37.1569629	98.2023961	135.3593590
2034	-19.4166407	175.1701538	-32.3780854	142.7920684	15.9257018	35.0739751	94.0720671	129.1460422
2035	-25.3559333	191.2112076	-42.4090329	148.8021747	15.5512490	35.9546976	91.8601658	127.8148634

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	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	121,141	192,606	0	0	0
1967	0	0	0	19,958	53,785	163,255	236,998	0	0	0
1968	6,989	0	6,989	29,899	120,985	341,768	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	49,687	0	431,443	481,130	0	0	0
1971	10,609	0	10,609	23,842	28,328	416,329	468,499	0	0	0
1972	14,434	0	14,434	54,838	144,669	524,208	723,715	0	0	0
1973	14,449	0	14,449	18,398	15,590	547,807	581,795	0	0	0
1974	17,473	0	17,473	9,499	29	636,186	645,714	0	0	0
1975	14,779	0	14,779	22,318	4,765	425,284	452,367	0	0	0
1976	20,856	0	20,856	97,874	121,693	502,769	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	652,860	767,757	0	0	0
1979	16,237	0	16,237	137,101	77,145	652,629	866,875	0	0	0
1980	19,945	0	19,945	98,743	64,891	517,531	681,165	0	0	0
1981	23,842	0	23,842	126,437	141,456	567,968	835,861	0	0	0
1982	12,157	0	12,157	97,117	46,742	651,246	795,105	0	0	0
1983	2,342	0	2,342	8,171	5,412	148,743	162,326	0	0	0
1984	4,822	0	4,822	26,707	13,141	349,314	389,162	0	0	0
1985	10,188	0	10,188	79,863	102,790	466,291	648,944	0	0	0
1986	15,501	0	15,501	112,370	131,118	932,090	1,175,578	0	0	0
1987	27,223	0	27,223	256,137	277,600	962,742	1,496,479	0	0	0
1988	31,265	11,533	42,798	229,578	297,129	779,537	1,306,244	0	0	0
1989	37,874	66,850	104,724	306,533	304,275	1,051,562	1,662,370	0	0	0
1990	54,736	105,421	160,157	524,114	502,545	1,456,008	2,482,667	0	0	0
1991	8,159	18,824	26,983	105,736	142,105	316,839	564,680	0	(2,636)	(2,636)
1992	12,515	23,808	36,323	93,772	122,436	273,849	490,057	0	0	0
1993	(7,223)	(17,293)	(24,516)	(36,162)	(12,912)	(78,024)	(127,098)	0	0	0
1994	39,106	77,257	116,363	231,800	257,533	642,006	1,131,339	0	0	0
1995	15,701	36,724	52,425	160,663	93,610	151,287	405,560	0	0	0
1996	31,526	96,570	128,096	214,883	186,694	735,431	1,137,008	502	0	502
1997	29,683	116,555	146,238	351,185	219,799	912,861	1,483,845	34,932	233,584	268,516
1998	(6,178)	(18,511)	(24,689)	(6,218)	(16,448)	(65,208)	(87,874)	(15,961)	(82,727)	(98,688)
1999	14,733	52,641	67,374	245,730	195,728	454,514	895,972	51,908	279,261	331,169
2000	23,121	99,227	122,348	368,481	232,537	728,013	1,329,031	81,150	465,782	546,932
2001	275,377	546,240	821,617	1,573,154	924,708	2,260,264	4,758,126	622,392	2,176,411	2,798,803
2002	91,020	268,235	359,255	1,056,158	629,511	1,433,185	3,118,854	248,220	1,582,018	1,830,238
2003	373,530	687,703	1,061,233	1,641,802	858,215	2,564,594	5,064,611	304,277	2,609,081	2,913,358
2004	1,049,205	749,465	1,798,670	3,013,700	1,446,311	4,156,860	8,616,871	2,390,903	4,350,105	6,741,008
2005	1,256,642	886,074	2,142,716	3,724,130	1,889,499	5,058,186	10,671,815	2,888,861	5,256,109	8,144,970
2006	516,194	625,130	1,141,324	2,808,262	1,415,793	3,778,858	8,002,913	2,561,429	4,660,367	7,221,796
2007	517,470	612,321	1,129,791	2,730,989	1,362,195	3,640,996	7,734,180	2,486,334	4,523,736	7,010,070
2008	470,928	547,844	1,018,772	2,496,060	1,264,116	3,367,955	7,128,131	2,258,499	4,109,203	6,367,702
2009	498,833	570,918	1,069,751	2,495,197	1,260,584	3,373,299	7,129,080	2,328,566	4,236,687	6,565,253
2010	534,245	601,442	1,135,687	2,775,333	1,407,197	3,741,337	7,923,867	2,511,249	4,569,068	7,080,317
2011	544,041	602,511	1,146,552	2,688,279	1,360,231	3,629,918	7,678,428	2,499,453	4,547,604	7,047,057
2012	574,975	626,481	1,201,456	2,745,475	1,388,259	3,709,086	7,842,820	2,597,393	4,725,800	7,323,193
2013	646,792	695,013	1,341,805	3,188,455	1,616,891	4,297,796	9,103,142	2,925,181	5,322,192	8,247,373
2014	713,181	752,891	1,466,072	3,267,202	1,651,335	4,415,480	9,334,017	3,106,462	5,652,022	8,758,484
2015	749,137	768,502	1,517,639	3,414,996	1,729,101	4,608,772	9,752,869	3,187,667	5,799,768	8,987,435
2016	780,940	779,168	1,560,108	3,598,892	1,827,556	4,845,749	10,272,197	3,273,878	5,956,624	9,230,502
2017	790,826	769,711	1,560,537	3,416,283	1,730,402	4,609,148	9,755,833	3,178,505	5,783,098	8,961,603
2018	840,729	796,543	1,637,272	3,499,086	1,772,222	4,721,144	9,992,452	3,275,191	5,959,014	9,234,205
2019	889,362	820,495	1,709,857	3,723,478	1,890,103	5,015,018	10,628,599	3,405,853	6,196,744	9,602,597
2020	859,872	773,538	1,633,410	3,433,400	1,740,817	4,628,605	9,802,822	3,180,644	5,786,991	8,967,635
2021	863,810	771,137	1,634,947	3,407,296	1,726,979	4,594,681	9,728,956	3,168,660	5,765,187	8,933,847
2022	834,792	741,956	1,576,748	3,243,974	1,642,955	4,377,063	9,263,992	3,042,864	5,536,308	8,579,172
2023	842,020	745,075	1,587,095	3,335,283	1,691,565	4,495,299	9,522,147	3,085,981	5,614,756	8,700,737
2024	879,652	774,919	1,654,571	3,537,505	1,795,817	4,764,294	10,097,616	3,235,403	5,886,621	9,122,024
2025	876,922	769,072	1,645,994	3,339,957	1,690,044	4,509,769	9,539,770	3,161,384	5,751,949	8,913,333
2026	885,714	773,302	1,659,016	3,589,920	1,823,704	4,832,197	10,245,821	3,257,589	5,926,988	9,184,577
2027	872,150	758,044	1,630,194	3,424,617	1,736,792	4,615,871	9,777,280	3,169,123	5,766,028	8,935,151
2028	879,817	763,443	1,643,260	3,462,698	1,756,183	4,667,025	9,885,906	3,196,480	5,815,804	9,012,284
2029	866,897	752,233	1,619,130	3,376,781	1,711,658	4,553,227	9,641,666	3,139,141	5,711,479	8,850,620
2030	874,975	759,244	1,634,219	3,441,106	1,745,080	4,638,241	9,824,427	3,177,658	5,781,558	8,959,216
2031	861,159	747,256	1,608,415	3,303,250	1,672,771	4,457,472	9,433,493	3,101,965	5,643,840	8,745,805
2032	881,011	764,478	1,645,489	3,441,565	1,744,415	4,640,741	9,826,721	3,191,152	5,806,109	8,997,261
2033	932,116	808,826	1,740,942	3,654,570	1,853,404	4,925,836	10,433,810	3,383,984	6,156,956	9,540,940
2034	892,912	774,807	1,667,719	3,468,677	1,757,649	4,678,369	9,904,695	3,228,651	5,874,337	9,102,988
2035	871,917	756,590	1,628,507	3,482,968	1,770,021	4,686,942	9,939,931	3,195,372	5,813,787	9,009,159
Total	26,672,503	25,610,213	52,282,716	113,095,030	59,600,020	165,523,242	338,218,292	97,118,895	181,547,613	278,666,508

Note: B-18 includes Extra Peaking Charges for additional power shown in Table 8.

Table B-18

Variable 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		County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
				Municipal and Industrial (14)	Agricultural (15)				
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	68,977	5,176	0	0	440,922	2,355	4,760	65,680	587,870
1969	56,774	101	0	0	321,387	181	3,338	17,956	399,737
1970	69,818	6,811	0	0	470,867	0	5,595	16,550	569,641
1971	53,097	7,747	0	0	731,754	4,785	6,353	158,419	962,155
1972	62,365	8,515	0	0	1,117,237	2,057	7,375	379,686	1,577,235
1973	33,931	4,615	0	0	751,373	2,307	3,017	77,630	872,873
1974	49,114	4,413	0	45,531	666,973	2,206	3,114	106,332	877,683
1975	63,140	4,671	0	33,862	838,135	2,491	3,920	134,295	1,080,514
1976	70,851	5,132	0	93,991	957,767	2,737	4,910	100,597	1,235,985
1977	26,565	1,758	0	83,339	493,847	3,644	2,602	43,067	654,822
1978	108,944	938	0	188,966	1,605,431	4,319	6,294	24,901	1,939,793
1979	107,956	4,871	0	193,260	2,356,542	5,602	13,172	434,472	3,115,875
1980	88,746	1,935	0	121,603	1,731,588	4,762	7,766	163,301	2,119,701
1981	129,687	18,533	0	263,077	2,398,339	7,275	8,904	263,922	3,089,737
1982	108,561	937	0	145,246	2,375,404	4,541	6,763	48,137	2,689,589
1983	61,443	0	0	13,954	929,183	5,662	3,232	1,218	1,014,692
1984	82,423	0	0	216,437	1,996,259	5,946	7,475	10,496	2,319,036
1985	114,571	12,938	0	242,645	2,567,184	8,422	8,815	271,970	3,226,545
1986	236,756	5,513	0	377,798	4,876,960	17,433	16,927	376,088	5,907,475
1987	266,049	14,580	0	704,045	5,685,550	22,964	25,124	534,388	7,252,700
1988	188,170	14,894	0	524,965	4,250,194	15,528	11,928	374,528	5,380,207
1989	285,261	15,450	0	681,238	6,158,648	20,063	21,693	649,604	7,831,957
1990	218,786	7,710	0	845,877	4,778,185	12,056	12,072	344,008	6,218,694
1991	4,393	1,047	0	185,013	47,869	0	521	10,331	249,174
1992	76,840	4,426	0	227,332	1,699,824	6,059	5,222	151,055	2,170,758
1993	20,064	4,843	0	78,585	340,588	2,090	1,467	123,913	571,550
1994	135,626	7,854	0	471,316	3,417,815	9,967	10,102	293,748	4,346,428
1995	181,772	4,611	0	409,656	3,437,735	11,619	10,492	288,010	4,343,895
1996	286,064	9,577	0	715,404	6,328,965	21,039	16,403	1,196,303	8,573,755
1997	308,515	0	0	650,416	5,627,735	0	15,559	94,838	6,697,063
1998	19,652	(28)	0	63,221	63,450	(1)	1,318	(1,107)	146,505
1999	164,464	8,750	0	477,218	3,400,677	11,020	9,322	805,134	4,876,585
2000	206,942	6,150	0	384,425	4,388,114	12,306	11,052	712,015	5,721,004
2001	525,316	26,694	0	985,756	11,623,094	30,619	28,591	1,637,087	14,857,157
2002	396,027	12,943	0	802,860	7,882,263	26,245	26,803	889,030	10,036,171
2003	616,772	33,256	0	1,414,999	10,742,664	41,861	40,678	1,216,322	14,106,552
2004	822,008	43,005	0	1,934,920	15,631,727	57,340	53,066	1,598,731	20,140,797
2005	1,104,230	57,770	0	2,582,829	20,685,840	77,026	74,459	2,147,628	26,729,782
2006	856,990	44,835	0	1,998,139	16,185,638	59,780	56,768	1,666,768	20,868,918
2007	810,841	42,421	0	1,896,756	15,381,700	56,561	52,806	1,577,014	19,818,099
2008	781,180	40,869	0	1,812,261	14,613,769	54,492	53,052	1,519,325	18,874,948
2009	740,078	38,718	0	1,733,771	14,147,160	51,625	47,707	1,439,385	18,198,444
2010	890,238	46,574	0	2,061,250	16,637,063	62,099	61,186	1,731,433	21,489,843
2011	825,047	43,164	0	1,921,698	15,664,974	57,552	54,771	1,604,643	20,171,849
2012	830,512	43,450	0	1,947,550	15,994,852	57,933	53,440	1,615,271	20,543,008
2013	1,025,687	53,661	0	2,379,953	19,320,632	71,548	69,845	1,994,869	24,916,195
2014	978,612	51,198	0	2,299,311	18,921,663	68,264	62,290	1,903,313	24,284,651
2015	1,063,331	55,630	0	2,482,169	20,279,402	74,173	70,179	2,068,084	26,092,968
2016	1,190,994	62,309	0	2,764,678	22,394,362	83,079	81,528	2,316,376	28,893,326
2017	1,072,286	56,099	0	2,501,139	20,410,668	74,798	71,124	2,085,501	26,271,615
2018	1,096,607	57,371	0	2,569,846	21,030,553	76,495	71,424	2,132,802	27,035,098
2019	1,222,723	63,969	0	2,844,569	23,086,765	85,292	82,827	2,378,087	29,764,232
2020	1,100,591	57,579	0	2,571,152	20,962,087	76,772	72,954	2,140,551	26,981,686
2021	1,084,272	56,726	0	2,536,384	20,707,718	75,634	71,365	2,108,812	26,640,911
2022	1,015,874	53,147	0	2,384,090	19,528,071	70,863	65,743	1,975,784	25,093,572
2023	1,075,652	56,275	0	2,514,110	20,491,973	75,033	71,278	2,092,047	26,376,368
2024	1,163,185	60,854	0	2,706,779	21,969,363	81,139	78,747	2,262,290	28,322,357
2025	1,025,859	53,670	0	2,414,876	19,848,766	71,559	65,239	1,995,203	25,475,172
2026	1,197,294	62,639	0	2,779,099	22,495,520	83,518	82,101	2,328,629	29,028,800
2027	1,103,405	57,727	0	2,578,670	21,018,515	76,969	73,129	2,146,024	27,054,439
2028	1,116,733	58,424	0	2,605,275	21,212,198	77,898	74,522	2,171,946	27,316,996
2029	1,076,481	56,318	0	2,518,495	20,560,041	75,091	70,848	2,093,659	26,450,933
2030	1,107,767	57,955	0	2,583,926	21,039,636	77,273	73,936	2,154,508	27,095,001
2031	1,031,740	53,977	0	2,422,362	19,850,775	71,970	66,639	2,006,642	25,504,105
2032	1,096,085	57,344	0	2,558,304	20,858,311	76,458	72,764	2,131,787	26,851,053
2033	1,177,368	61,596	0	2,753,049	22,447,032	82,128	77,891	2,289,875	28,888,939
2034	1,098,019	57,445	0	2,567,034	20,960,592	76,593	72,319	2,135,549	26,967,551
2035	1,169,995	61,210	0	2,744,498	22,337,356	81,614	77,377	2,275,535	28,747,585
Total	38,446,116	1,991,290	0	88,610,977	734,175,244	2,628,729	2,556,003	76,101,995	944,510,354

Table B-18

Variable 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	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	39,430	0	0	0	0	0	0	0	0
1971	0	34,871	0	0	0	0	0	0	0	0
1972	710	47,571	0	6,602	0	4,156	783	0	15,117	0
1973	270	28,968	96,209	6,453	149,289	3,687	0	0	249,193	0
1974	15,040	28,982	96,540	9,458	150,844	4,770	211	0	161,738	5,961
1975	97,373	28,568	105,611	12,447	165,961	6,274	0	0	129,042	50,723
1976	379,830	38,365	132,461	17,464	209,148	8,052	0	0	132,365	65,476
1977	194,137	21,006	0	22,635	0	1,924	1,633	0	206,587	74,838
1978	572,290	45,550	170,805	20,478	259,155	2,686	0	0	35,203	67,462
1979	1,045,698	83,936	225,048	28,179	335,459	2,299	89,456	0	228	3,668
1980	1,390,117	51,143	256,759	29,229	401,038	3,667	94,362	0	0	16,504
1981	1,480,362	118,583	274,149	33,632	430,304	23,861	90,590	0	254,649	57,523
1982	923,973	132,575	292,674	27,190	461,216	0	230,608	0	126,461	189,895
1983	333,772	(335,712)	172,336	10,792	272,477	385	0	0	(71,602)	(8,768)
1984	485,847	(142,910)	273,597	19,572	433,785	15	0	0	(66,353)	(91,433)
1985	821,069	(335,343)	413,406	34,603	657,011	0	0	32,464	(47,544)	(32,348)
1986	1,109,047	54,812	728,808	60,274	1,160,650	5,548	0	105,375	69,170	101,843
1987	1,077,755	6,997	701,529	66,756	1,137,263	34,501	614	167,018	120,061	68,063
1988	1,019,793	(74,006)	688,891	66,914	1,134,141	11,991	300	50,654	92,465	38,688
1989	1,736,901	178,359	978,885	97,114	1,633,489	38,269	8,951	350,953	340,460	210,334
1990	2,442,558	422,502	1,402,619	110,934	2,313,410	90,472	0	446,408	599,573	530,099
1991	286,485	(3,054)	277,078	33,945	456,999	17,978	128,405	132,700	35,339	52,116
1992	587,340	(208,900)	240,119	11,952	396,022	4,871	241,338	78,306	(22,718)	(53,500)
1993	(190,611)	(491,161)	(809,033)	(2,389)	(1,334,429)	(3,246)	(61,112)	(29,466)	(157,452)	(519,798)
1994	1,841,902	66,338	189,616	34,480	312,714	41,201	731,185	315,446	122,829	204,783
1995	761,209	(247,735)	(251,547)	7,960	(414,889)	7,727	165,622	114,342	(7,579)	(140,714)
1996	1,883,530	72,171	508,274	18,313	838,330	16,510	289,044	385,745	49,537	133,848
1997	2,121,818	22,440	365,342	24,076	330,153	15,099	414,596	438,212	61,553	115,882
1998	(553,432)	(722,825)	(3,952,729)	(2,892)	(3,258,099)	(4,225)	(44,233)	(80,469)	(86,610)	(429,359)
1999	1,220,068	(529,676)	(678,567)	18,377	(780,997)	6,041	167,629	246,111	(173,056)	(242,000)
2000	1,880,075	(304,733)	(350,085)	26,285	(481,696)	0	302,915	203,806	(152,192)	(125,234)
2001	8,484,305	4,794,261	1,614,475	221,974	2,662,997	0	913,291	1,918,083	4,699,364	500,625
2002	4,037,521	2,065,176	774,449	167,195	1,277,576	0	341,296	609,497	3,302,325	1,148,662
2003	6,980,330	1,857,199	1,527,526	237,758	2,519,501	0	1,958,251	1,439,495	6,856,105	1,164,717
2004	10,832,602	6,964,854	2,784,818	386,786	4,593,142	306,431	2,340,279	2,837,818	12,368,934	1,928,879
2005	14,495,862	9,150,779	3,737,811	533,360	6,164,961	390,523	3,964,517	3,616,580	16,601,705	2,588,960
2006	11,886,029	6,815,633	2,898,370	450,259	4,780,428	304,964	3,847,032	2,824,230	12,873,278	2,007,529
2007	12,192,572	6,473,655	2,806,765	460,462	4,629,340	297,917	4,502,778	2,758,969	12,466,411	2,187,090
2008	16,192,055	6,110,010	2,413,701	426,749	3,981,040	263,379	3,735,780	2,439,114	10,720,595	3,009,290
2009	16,914,155	6,847,045	2,552,038	467,295	4,209,205	275,124	4,468,767	2,547,889	11,335,025	3,181,761
2010	18,148,600	8,129,580	2,781,026	523,567	4,586,886	295,204	5,012,274	2,733,841	12,352,087	3,467,253
2011	17,870,746	8,557,598	2,723,261	537,582	4,491,612	290,684	5,163,847	2,691,987	12,095,523	3,395,235
2012	19,207,954	9,821,182	2,969,577	603,217	4,897,874	312,435	5,811,658	2,893,419	13,189,552	3,702,330
2013	21,471,484	11,445,661	3,404,680	700,695	5,615,512	349,253	6,738,336	3,234,389	15,122,087	4,244,796
2014	23,178,456	12,606,164	3,723,317	786,147	6,141,055	377,019	7,659,220	3,491,521	16,537,328	4,642,057
2015	23,692,559	12,989,197	3,811,827	832,215	6,287,039	385,381	8,220,030	3,568,964	16,930,452	4,752,407
2016	25,107,347	13,867,555	4,067,178	913,147	6,708,203	408,394	9,237,232	3,782,083	18,064,610	5,070,768
2017	23,717,918	12,993,272	3,808,581	890,248	6,281,686	385,794	9,211,760	3,572,784	16,916,037	4,748,361
2018	25,370,036	14,082,427	4,115,855	985,886	6,788,489	412,667	10,421,065	3,821,653	18,280,812	5,131,456
2019	26,403,363	14,643,595	4,287,382	1,046,994	7,071,396	429,475	11,520,691	3,977,310	19,042,657	5,345,307
2020	24,720,388	13,491,467	3,967,434	1,007,154	6,543,690	402,100	11,346,933	3,723,793	17,621,591	4,946,411
2021	24,663,909	13,457,737	3,962,981	1,024,794	6,536,345	401,181	11,652,155	3,715,285	17,601,811	4,940,859
2022	23,803,277	12,765,589	3,803,041	1,006,528	6,272,549	387,182	11,554,654	3,585,642	16,891,431	5,070,722
2023	24,253,058	13,082,906	3,876,175	1,040,506	6,393,173	394,498	12,138,727	3,653,396	17,216,260	4,832,634
2024	25,157,741	13,696,382	4,041,699	1,092,786	6,666,180	409,214	12,903,064	3,789,674	17,951,444	5,039,002
2025	24,744,101	13,454,371	3,982,592	1,087,261	6,568,690	402,485	13,098,554	3,727,365	17,688,914	4,965,309
2026	25,236,044	13,843,817	4,054,126	1,117,913	6,686,676	410,487	13,717,027	3,801,469	18,006,638	5,054,495
2027	24,875,031	13,476,494	3,993,821	1,111,476	6,587,211	404,615	13,910,149	3,747,087	17,738,789	4,979,309
2028	24,756,852	13,498,959	3,970,472	1,116,775	6,548,701	402,693	14,261,779	3,729,285	17,635,085	4,950,199
2029	24,520,258	13,246,247	3,926,511	1,114,964	6,476,193	398,844	14,525,668	3,693,646	17,439,828	4,895,390
2030	24,515,734	13,336,991	3,926,134	1,125,078	6,475,572	398,771	14,951,681	3,692,964	17,438,156	4,894,921
2031	24,280,383	13,064,952	3,885,259	1,118,524	6,408,154	394,943	15,239,148	3,657,512	17,256,604	4,843,959
2032	24,413,543	13,280,601	3,902,996	1,126,741	6,437,408	397,109	15,262,619	3,677,570	17,335,383	4,866,072
2033	26,714,054	14,817,215	4,331,832	1,243,382	7,144,711	434,528	16,756,041	4,024,111	19,240,087	5,400,726
2034	24,853,292	13,593,805	3,990,527	1,157,789	6,581,779	404,261	15,548,888	3,743,813	17,724,160	4,975,203
2035	27,362,549	14,165,967	4,391,878	1,266,710	7,243,747	445,077	16,983,468	4,121,798	19,506,783	5,475,588
Total	750,019,034	384,676,483	123,358,910	29,780,750	206,627,469	12,317,145	331,771,556	117,801,641	536,064,315	142,692,834

Table B-18

Variable 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	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	192,606
1967	0	0	0	0	0	0	0	0	0	236,998
1968	0	0	0	30,401	0	0	0	0	0	1,117,912
1969	0	0	0	30,627	0	0	0	0	0	773,646
1970	0	0	0	39,430	0	0	0	0	0	1,103,799
1971	0	0	0	34,871	0	0	0	0	0	1,476,134
1972	0	752,580	0	827,519	0	0	0	0	0	3,142,903
1973	0	942,905	0	1,476,974	0	0	0	0	0	2,946,091
1974	0	1,683,743	0	2,157,287	0	0	0	0	0	3,698,157
1975	0	3,687,903	0	4,283,902	0	0	0	0	0	5,831,562
1976	0	5,253,329	0	6,236,490	0	0	0	0	0	8,215,667
1977	0	(977,112)	0	(454,352)	0	0	0	0	0	926,519
1978	0	3,468,162	0	4,641,791	0	0	0	0	0	7,371,033
1979	0	3,795,878	0	5,609,849	0	0	0	0	0	9,608,836
1980	0	5,362,245	0	7,605,064	0	0	0	0	0	10,425,875
1981	0	10,862,932	0	13,626,585	0	0	0	0	0	17,576,025
1982	0	7,685,168	0	10,069,760	0	0	0	0	0	13,566,611
1983	0	(8,994,497)	0	(8,620,817)	0	0	0	0	0	(7,441,457)
1984	0	(7,633,741)	0	(6,721,621)	0	0	0	0	0	(4,008,601)
1985	0	(15,213,299)	0	(13,669,981)	0	0	0	0	0	(9,784,304)
1986	0	1,135,478	0	4,531,005	0	0	0	0	0	11,629,559
1987	0	(1,791,835)	0	1,588,722	0	0	0	0	0	10,365,124
1988	0	(3,407,929)	0	(378,098)	0	0	0	0	0	6,351,151
1989	0	9,488,536	0	15,062,251	0	0	0	0	0	24,661,302
1990	0	30,759,725	204,582	39,322,882	0	0	0	0	0	48,184,400
1991	0	184,870	22,623	1,625,484	0	0	0	0	0	2,463,685
1992	0	(9,471,028)	0	(8,196,198)	0	0	0	0	0	(5,499,060)
1993	0	(21,473,875)	0	(25,072,572)	0	0	0	0	0	(24,652,636)
1994	0	4,059,683	0	7,920,177	0	0	0	0	0	13,514,307
1995	0	(4,895,977)	0	(4,901,581)	0	0	0	0	0	(99,701)
1996	0	1,859,275	0	6,054,577	0	0	0	0	0	15,893,938
1997	0	2,428,729	(921)	6,336,979	0	0	0	0	0	14,932,641
1998	0	(14,440,371)	(67,583)	(23,642,827)	0	0	0	0	0	(23,707,573)
1999	0	(10,496,101)	(35,079)	(11,277,250)	0	0	0	0	0	(5,106,150)
2000	0	(12,526,946)	13,115	(11,514,690)	0	0	0	0	0	(3,795,375)
2001	0	159,512,725	286,463	185,608,563	0	0	0	0	0	208,844,266
2002	0	62,696,151	288,880	76,708,728	0	0	0	0	0	92,053,246
2003	181,987	124,137,192	401,478	149,261,539	0	0	0	0	0	172,407,293
2004	421,942	209,664,728	621,075	256,052,288	0	0	0	0	0	293,349,634
2005	728,145	279,505,009	805,339	342,283,551	0	0	0	0	0	389,972,834
2006	690,088	208,901,483	596,786	258,876,109	0	0	0	0	0	296,111,060
2007	789,782	200,992,221	575,714	251,133,676	0	0	0	0	0	286,825,816
2008	783,669	171,750,727	497,807	222,323,916	0	0	0	0	0	255,713,469
2009	939,062	181,595,493	523,183	235,856,042	0	0	0	0	0	268,818,570
2010	1,143,712	199,204,537	570,150	258,948,717	0	0	0	0	0	296,578,431
2011	1,237,846	195,499,951	561,588	255,117,460	0	0	0	0	0	291,161,346
2012	1,478,361	213,534,598	609,470	279,031,627	0	0	0	0	0	315,942,104
2013	1,842,359	246,305,755	694,846	321,169,853	0	0	0	0	0	364,778,368
2014	2,175,964	270,071,691	758,202	352,148,141	0	0	0	0	0	395,991,365
2015	2,392,705	277,158,786	777,803	361,799,365	0	0	0	0	0	408,150,276
2016	2,729,059	295,791,230	826,990	386,573,796	0	0	0	0	0	436,529,929
2017	2,720,415	277,043,897	778,298	363,069,051	0	0	0	0	0	409,618,639
2018	3,082,437	299,722,599	838,069	393,053,451	0	0	0	0	0	440,952,478
2019	3,210,896	312,007,689	872,744	409,859,499	0	0	0	0	0	461,564,784
2020	2,971,282	288,249,177	809,969	379,801,389	0	0	0	0	0	427,186,942
2021	2,967,947	287,776,918	808,100	379,510,022	0	0	0	0	0	426,448,683
2022	2,848,165	274,970,405	773,616	363,732,801	0	0	0	0	0	408,246,285
2023	2,902,937	280,832,919	790,259	371,407,448	0	0	0	0	0	417,593,795
2024	3,026,900	293,263,751	823,681	387,861,518	0	0	0	0	0	437,058,086
2025	2,982,634	288,641,207	809,874	382,153,357	0	0	0	0	0	427,727,626
2026	3,036,207	295,008,134	828,893	390,801,926	0	0	0	0	0	440,920,140
2027	2,991,043	289,328,532	812,517	383,956,074	0	0	0	0	0	431,353,138
2028	2,973,557	288,447,188	810,946	383,102,491	0	0	0	0	0	430,960,937
2029	2,940,634	284,427,356	799,813	378,405,352	0	0	0	0	0	424,967,701
2030	2,940,352	285,136,308	802,159	379,634,821	0	0	0	0	0	427,147,684
2031	2,909,739	281,102,071	790,534	374,951,782	0	0	0	0	0	420,243,600
2032	2,923,023	283,633,562	799,331	378,055,958	0	0	0	0	0	425,376,482
2033	3,244,186	315,416,930	883,097	419,650,900	0	0	0	0	0	470,255,531
2034	2,988,577	290,117,470	815,951	386,495,515	0	0	0	0	0	434,138,468
2035	3,289,155	312,934,994	877,599	418,065,313	0	0	0	0	0	467,390,495
Total	74,484,767	8,806,471,814	25,057,961	11,541,124,679	0	0	0	0	0	13,154,802,549

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	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	21,132	76,669	0	0	0
1963	0	0	0	193,920	190,272	447,723	831,915	0	0	0
1964	0	0	0	255,450	277,455	621,356	1,154,261	6,696	21,667	28,363
1965	0	0	0	364,163	404,324	1,158,090	1,926,577	13,756	36,029	49,785
1966	18,063	0	18,063	409,117	421,722	1,412,954	2,243,793	26,524	61,349	87,873
1967	41,574	0	41,574	527,991	498,441	1,686,098	2,712,530	56,469	118,263	174,732
1968	128,608	(28)	128,580	654,152	603,483	1,985,220	3,242,855	115,960	229,807	345,767
1969	254,676	(58)	254,618	776,930	539,340	2,083,254	3,399,524	185,156	358,861	544,017
1970	277,499	(70)	277,429	812,392	532,567	2,202,767	3,547,726	200,150	387,675	587,825
1971	227,411	(93)	227,318	777,367	552,113	2,169,897	3,499,377	202,413	392,912	595,325
1972	224,882	(139)	224,743	818,902	678,520	2,320,421	3,817,843	209,057	406,589	615,646
1973	220,981	31,205	252,186	784,071	549,393	2,338,619	3,672,083	206,557	402,723	609,280
1974	240,375	32,758	273,133	807,800	564,594	2,506,358	3,878,752	208,545	407,090	615,635
1975	237,311	36,076	273,387	857,577	605,730	2,409,923	3,873,230	225,895	439,873	665,768
1976	271,133	40,604	311,737	948,280	734,811	2,500,506	4,183,597	228,976	447,299	676,275
1977	293,452	44,841	338,293	912,349	713,558	2,476,400	4,102,307	238,699	468,721	707,420
1978	273,676	48,895	322,571	967,538	692,588	2,785,987	4,446,113	245,331	484,259	729,590
1979	289,266	53,030	342,296	1,032,507	736,358	2,813,578	4,582,443	243,110	483,437	726,547
1980	310,613	67,410	378,023	1,150,396	866,372	3,028,204	5,044,972	269,858	537,074	806,932
1981	347,527	87,037	434,564	1,115,792	879,357	2,917,582	4,912,731	288,997	586,256	875,253
1982	438,061	106,517	544,578	1,153,700	850,483	3,262,104	5,266,287	290,049	582,758	872,807
1983	354,490	150,825	505,315	1,165,203	900,363	3,795,446	5,861,012	319,214	633,181	952,395
1984	467,024	223,790	690,814	1,457,012	1,097,480	5,737,802	8,292,294	351,621	695,559	1,047,180
1985	735,742	363,821	1,099,563	1,907,104	1,789,369	6,551,546	10,248,019	394,593	776,994	1,171,587
1986	1,084,376	691,965	1,776,341	1,734,230	1,528,732	6,863,229	10,126,191	385,545	762,683	1,148,228
1987	1,773,428	1,558,699	3,332,127	2,263,897	2,055,186	6,825,466	11,144,549	385,289	812,310	1,197,599
1988	2,231,172	2,333,221	4,564,393	2,225,459	2,210,523	6,368,850	10,804,832	420,153	978,621	1,398,774
1989	2,396,867	3,325,843	5,722,710	2,141,518	1,872,030	5,916,713	9,930,261	414,225	1,162,723	1,576,948
1990	2,745,714	3,432,709	6,178,423	2,560,675	2,261,914	6,668,440	11,491,029	487,609	1,234,409	1,722,018
1991	2,748,216	3,681,699	6,429,915	1,740,070	1,621,188	4,527,928	7,889,186	491,419	1,476,387	1,967,806
1992	2,554,108	3,528,346	6,082,454	2,060,555	2,003,327	5,385,858	9,449,740	551,042	1,491,155	2,042,197
1993	2,592,468	3,503,628	6,096,096	2,865,503	2,011,222	6,511,865	11,388,590	610,116	1,675,438	2,285,554
1994	2,717,910	3,536,850	6,254,760	2,891,980	2,642,454	7,314,499	12,848,933	767,900	2,473,450	3,241,350
1995	2,648,853	3,509,323	6,158,176	3,020,242	2,289,027	5,893,667	11,202,936	995,341	4,977,121	5,972,462
1996	2,694,718	3,878,212	6,572,930	2,543,297	2,117,464	6,599,060	11,259,821	1,837,346	13,766,426	15,603,772
1997	2,641,470	3,630,563	6,272,033	2,642,320	2,007,332	6,551,468	11,201,120	2,294,918	21,860,553	24,155,471
1998	2,538,873	3,479,050	6,017,923	2,251,190	2,066,776	6,303,465	10,621,431	2,978,238	26,609,547	29,587,785
1999	2,665,875	3,846,389	6,512,264	2,841,498	2,433,807	8,328,835	13,604,140	3,032,294	27,447,227	30,479,521
2000	2,635,016	4,498,940	7,133,956	3,904,531	2,298,097	7,005,549	13,208,177	2,979,810	28,402,060	31,381,870
2001	3,338,178	4,935,853	8,274,031	5,553,890	2,948,724	8,914,668	17,417,282	3,623,165	30,169,055	33,792,220
2002	3,531,896	4,919,708	8,451,604	4,782,277	2,697,162	9,929,021	17,408,460	3,267,886	30,114,331	33,382,217
2003	3,659,042	5,322,647	8,981,689	5,785,238	3,115,658	10,506,657	19,407,553	3,361,273	31,638,212	34,999,485
2004	4,374,052	5,481,106	9,855,158	7,610,059	3,846,948	12,433,619	23,890,626	5,990,311	33,695,327	39,685,638
2005	4,612,095	5,658,641	10,270,736	8,408,555	4,361,700	13,512,257	26,282,512	6,563,438	34,834,151	41,397,589
2006	3,956,109	5,161,908	9,118,017	7,900,165	3,980,695	11,366,545	23,247,405	6,227,465	33,320,501	39,547,966
2007	3,961,397	5,146,666	9,108,063	7,824,334	3,923,575	11,218,896	22,966,805	6,148,049	33,174,354	39,322,403
2008	3,940,745	5,109,066	9,049,811	7,695,909	3,884,760	11,104,804	22,685,473	6,016,056	32,934,908	38,950,964
2009	3,970,739	5,131,409	9,102,148	7,691,998	3,879,650	11,105,837	22,677,485	6,084,124	33,058,338	39,142,462
2010	4,009,462	5,162,390	9,171,852	7,975,114	4,027,873	11,478,254	23,481,241	6,269,329	33,394,961	39,664,290
2011	4,014,131	5,157,204	9,171,335	7,845,451	3,958,735	11,307,903	23,112,089	6,215,510	33,302,039	39,517,549
2012	4,047,813	5,181,479	9,229,292	7,902,297	3,986,554	11,386,522	23,275,373	6,312,835	33,479,535	39,792,370
2013	4,042,003	5,166,280	9,208,283	7,800,372	3,918,928	11,099,294	22,818,594	6,330,436	33,512,764	39,843,200
2014	4,037,458	5,149,715	9,187,173	7,475,961	3,718,615	10,597,043	21,791,619	6,230,016	33,321,360	39,551,376
2015	4,061,104	5,152,677	9,213,781	7,491,021	3,677,483	10,341,005	21,509,509	6,254,325	33,365,305	39,619,630
2016	4,067,551	5,157,250	9,224,801	7,615,403	3,734,369	10,375,241	21,725,013	6,312,121	33,466,213	39,778,334
2017	4,049,043	5,146,318	9,195,361	7,350,298	3,602,433	10,011,994	20,964,725	6,178,683	33,221,881	39,400,564
2018	3,999,343	5,165,107	9,164,450	7,271,297	3,582,528	9,945,858	20,799,683	6,193,563	33,247,372	39,440,935
2019	3,997,083	5,186,807	9,183,890	7,387,329	3,663,344	10,133,554	21,184,227	6,305,327	33,446,555	39,751,882
2020	3,964,278	5,141,225	9,105,503	7,064,753	3,500,704	9,712,625	20,278,082	6,077,135	33,031,551	39,108,686
2021	3,968,847	5,141,864	9,110,711	7,043,952	3,490,144	9,689,115	20,223,211	6,071,962	33,021,725	39,093,687
2022	3,938,109	5,112,582	9,050,691	6,877,572	3,404,030	9,463,808	19,745,410	5,944,259	32,787,706	38,731,965
2023	3,941,069	5,078,162	9,019,231	6,955,843	3,446,415	9,563,947	19,966,205	5,977,836	32,846,218	38,824,054
2024	3,973,536	5,105,043	9,078,579	7,148,428	3,545,558	9,818,832	20,512,818	6,118,676	33,102,485	39,221,161
2025	3,956,890	5,092,479	9,049,369	6,930,727	3,429,579	9,536,760	19,897,066	6,027,001	32,936,583	38,963,584
2026	3,958,551	5,089,087	9,047,638	7,173,514	3,559,485	9,848,806	20,581,805	6,120,865	33,102,556	39,223,421
2027	3,944,729	5,074,379	9,019,108	7,015,224	3,475,897	9,641,165	20,132,286	6,033,466	32,945,292	38,978,758
2028	3,945,458	5,070,461	9,015,919	7,039,048	3,487,625	9,670,452	20,197,125	6,052,442	32,970,979	39,023,421
2029	3,929,780	5,056,777	8,986,557	6,951,700	3,442,128	9,554,520	19,948,348	5,995,174	32,865,564	38,860,738
2030	3,925,573	5,046,541	8,972,114	7,008,471	3,471,694	9,629,326	20,109,491	6,031,082	32,924,972	38,956,054
2031	3,899,450	5,018,957	8,918,407	6,868,386	3,397,285	9,444,696	19,710,367	5,952,785	32,774,118	38,726,903
2032	3,901,979	5,008,598	8,910,577	6,996,648	3,464,184	9,613,825	20,074,657	6,039,212	32,929,861	38,969,073
2033	3,922,987	5,008,335	8,931,322	7,215,304	3,576,501	9,908,199	20,700,004	6,233,660	33,290,151	39,523,811
2034	3,810,845	4,898,201	8,709,046	7,017,500	3,473,881	9,642,875	20,134,256	6,076,771	33,002,510	39,079,281
2035	3,639,722	4,730,547	8,370,269	7,011,881	3,475,728	9,624,124	20,111,733	6,039,901	32,929,884	38,969,785
Total	180,612,475	228,887,327	409,499,802	309,234,347	173,292,131	517,429,906	999,956,384	229,835,010	1,298,247,803	1,528,082,813

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								Total (19)
				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)	
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	2,725	0	0	0	0	0	2,725
1965	0	0	6,029	73,568	0	0	0	0	79,597
1966	0	0	12,039	137,329	0	0	0	0	149,368
1967	0	0	26,257	267,612	0	0	0	0	293,869
1968	183,596	8,857	54,589	445,438	1,539,556	12,867	11,515	208,037	2,464,455
1969	179,167	7,491	87,576	525,095	2,382,188	11,478	10,512	353,786	3,557,293
1970	201,100	14,258	94,674	573,999	2,902,843	11,605	13,046	291,305	4,102,830
1971	197,224	15,216	95,695	605,888	3,770,140	16,553	14,341	446,272	5,161,329
1972	219,569	16,084	98,789	631,615	4,935,634	13,995	20,553	1,073,790	7,010,029
1973	202,086	12,155	97,550	639,250	4,880,854	14,247	11,638	406,224	6,264,004
1974	281,244	12,124	98,460	697,026	5,188,440	14,338	12,709	593,141	6,897,482
1975	347,895	13,069	106,703	714,888	6,305,320	15,350	14,391	723,013	8,240,629
1976	303,414	13,615	108,083	773,628	6,657,776	15,718	16,051	560,788	8,449,073
1977	265,422	10,725	112,554	796,324	6,833,609	17,163	13,842	507,843	8,557,482
1978	354,172	4,441	115,521	889,235	8,276,035	17,546	17,877	501,246	10,176,073
1979	383,838	13,462	114,253	895,406	9,394,342	18,821	24,807	949,622	11,794,551
1980	404,841	11,812	125,950	888,893	9,962,706	19,365	24,147	733,967	12,171,681
1981	468,328	29,653	134,169	1,079,315	11,403,557	23,538	22,845	905,064	14,066,469
1982	462,833	12,803	135,057	1,004,668	12,232,110	21,552	22,306	742,223	14,633,552
1983	636,000	14,397	149,201	1,027,258	15,435,665	38,569	29,074	427,614	17,757,778
1984	908,400	14,811	164,505	2,063,179	23,563,451	53,018	59,542	781,020	27,607,926
1985	1,096,747	87,372	184,905	2,350,593	27,866,484	68,071	70,069	2,168,506	33,892,747
1986	1,260,719	33,828	180,445	2,365,159	30,435,744	79,353	75,925	2,177,778	36,608,951
1987	1,198,033	54,930	179,872	3,004,652	30,677,847	83,419	83,765	2,395,326	37,677,844
1988	1,104,461	61,418	193,735	2,750,424	29,132,387	72,740	60,041	2,193,937	35,569,143
1989	1,139,759	49,100	187,914	2,435,634	29,191,745	65,604	68,501	2,437,068	35,575,325
1990	864,096	34,262	221,391	2,541,315	27,304,597	49,604	48,928	1,863,445	32,927,638
1991	580,017	23,167	220,282	2,055,249	17,503,989	26,464	26,697	1,224,010	21,659,875
1992	949,229	39,003	241,456	2,369,788	25,802,110	54,314	50,751	1,901,150	31,407,801
1993	1,161,519	53,530	264,959	2,799,482	31,316,279	71,390	69,434	2,634,738	38,371,331
1994	1,016,624	43,657	306,359	2,808,831	29,192,162	58,930	57,201	2,110,701	35,594,465
1995	1,513,297	46,514	304,297	3,499,610	36,315,645	87,316	80,024	2,764,778	44,611,481
1996	1,347,868	47,269	389,202	3,292,846	36,104,997	82,665	72,176	4,213,374	45,550,397
1997	1,414,449	25,303	276,681	3,107,763	32,890,070	34,948	68,532	1,664,746	39,482,492
1998	1,267,421	34,287	381,881	2,734,119	29,669,318	40,017	59,976	1,796,109	35,983,128
1999	1,224,414	54,157	366,806	3,083,827	31,109,980	71,700	62,806	4,020,269	39,993,959
2000	1,096,545	37,867	301,842	2,540,592	26,811,799	60,341	55,142	2,836,820	33,740,948
2001	1,552,907	65,024	331,654	3,229,886	34,451,227	80,659	85,875	3,735,490	43,532,722
2002	1,317,995	44,822	333,683	2,935,730	29,482,465	74,115	73,483	2,634,573	36,896,866
2003	1,642,246	73,867	337,507	3,889,153	34,076,553	96,399	90,973	3,119,402	43,326,100
2004	1,907,804	85,066	347,622	4,501,017	40,305,982	114,204	106,688	3,562,847	50,931,230
2005	2,227,049	101,701	354,723	5,154,506	46,121,409	136,197	130,352	4,181,460	58,407,397
2006	1,926,983	85,592	404,097	4,455,758	41,338,339	115,626	110,936	3,592,725	52,030,056
2007	1,879,173	83,093	403,882	4,350,776	40,499,462	112,310	106,868	3,499,819	50,935,383
2008	1,883,347	83,310	404,000	4,345,371	40,367,972	112,597	109,403	3,507,897	50,813,897
2009	1,841,541	81,123	403,918	4,265,207	39,887,112	109,683	104,010	3,426,606	50,119,200
2010	1,992,493	89,021	403,878	4,594,577	42,391,598	120,215	117,549	3,720,220	53,429,551
2011	1,913,603	84,881	405,026	4,422,500	41,172,299	114,664	110,147	3,566,376	51,789,496
2012	1,918,902	85,159	405,093	4,447,960	41,499,800	115,031	108,801	3,576,657	52,157,403
2013	2,005,042	89,663	405,262	4,625,417	42,780,453	121,031	117,798	3,744,113	53,888,779
2014	1,861,381	82,144	402,607	4,318,860	40,568,620	111,002	103,676	3,464,636	50,912,926
2015	1,928,621	85,660	399,525	4,387,327	41,600,918	115,685	110,375	3,595,351	52,223,462
2016	2,050,571	92,044	393,148	4,592,702	43,604,430	124,205	121,351	3,832,646	54,811,097
2017	1,929,098	85,687	379,076	4,192,418	41,570,477	115,726	110,753	3,596,345	51,979,580
2018	1,941,673	86,342	356,581	4,116,457	41,971,732	108,089	110,238	3,620,708	52,311,820
2019	2,067,171	92,912	347,734	4,329,945	44,012,132	116,350	121,618	3,864,919	54,952,781
2020	1,945,422	86,540	346,195	4,024,705	41,897,935	107,599	111,766	3,628,063	52,148,225
2021	1,932,330	85,854	345,240	3,975,646	41,706,164	106,542	110,397	3,602,577	51,864,750
2022	1,863,969	82,277	344,522	3,813,218	40,525,396	101,704	104,765	3,469,602	50,305,453
2023	1,920,402	85,234	343,840	3,931,122	41,424,041	105,624	110,097	3,579,477	51,499,837
2024	2,005,478	89,682	343,421	4,115,862	42,856,245	111,536	117,388	3,744,892	53,384,504
2025	1,862,468	82,198	343,170	3,808,282	40,632,710	101,526	103,488	3,466,669	50,400,511
2026	2,033,182	91,134	342,348	4,168,661	43,259,210	113,416	120,315	3,798,838	53,927,104
2027	1,940,564	86,280	342,664	3,968,396	41,817,631	106,883	111,404	3,618,450	51,992,272
2028	1,952,626	86,920	339,237	3,989,778	41,975,472	107,729	112,733	3,642,166	52,206,661
2029	1,912,805	84,833	339,330	3,901,045	41,336,555	104,881	109,085	3,564,627	51,353,161
2030	1,943,418	86,438	338,764	3,961,818	41,800,381	106,958	112,140	3,624,257	51,974,174
2031	1,868,908	82,529	338,114	3,785,469	40,650,549	101,335	104,902	3,479,034	50,410,840
2032	1,931,517	85,817	336,870	3,919,526	41,610,896	105,757	110,949	3,601,154	51,702,486
2033	2,013,443	90,098	337,154	4,111,092	43,219,647	111,323	116,115	3,760,363	53,759,235
2034	1,934,284	85,956	336,574	3,919,109	41,736,864	105,656	110,546	3,606,369	51,835,358
2035	2,005,477	89,685	335,230	4,085,562	43,091,407	110,407	115,564	3,744,989	53,578,321
Total	91,088,220	3,909,223	18,814,095	203,104,356	2,044,233,462	5,165,263	5,181,712	174,382,027	2,545,878,358

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	33,321	0	0	0	0	0	0	0	51,729	0
1964	62,868	27,447	14,426	4,370	37,158	1,143	28,437	8,205	82,811	34,987
1965	118,604	53,007	25,094	7,194	40,770	2,082	50,317	15,222	135,068	35,344
1966	215,783	101,264	44,730	12,478	73,152	3,753	90,398	27,679	232,502	61,465
1967	417,481	210,814	86,118	23,472	141,411	7,284	175,176	54,023	433,350	115,574
1968	744,414	478,096	152,688	41,509	251,199	12,870	311,082	95,462	782,164	208,926
1969	1,072,928	724,199	225,307	61,226	370,960	18,694	458,889	138,055	1,205,834	321,755
1970	1,396,232	904,053	315,262	89,700	519,318	25,231	632,955	184,828	1,778,188	467,573
1971	1,728,240	1,087,797	432,545	128,360	712,746	31,837	857,100	231,267	2,539,164	659,414
1972	2,047,415	1,306,415	561,630	175,023	925,635	42,063	1,110,845	274,580	3,388,870	865,096
1973	2,138,637	1,322,345	689,336	183,270	1,126,869	43,314	1,174,688	287,293	3,936,781	946,686
1974	2,201,988	1,381,656	707,030	192,851	1,157,061	45,049	1,206,697	292,046	4,000,564	990,064
1975	2,377,663	1,449,464	749,705	205,728	1,227,597	48,373	1,273,749	304,251	4,169,559	1,088,342
1976	2,727,491	1,444,707	796,071	214,714	1,302,970	51,351	1,316,347	313,652	4,310,092	1,141,598
1977	2,670,591	1,513,641	694,702	225,070	1,145,096	47,299	1,388,082	329,330	4,538,245	1,197,216
1978	2,983,913	1,598,256	872,376	230,643	1,415,584	47,073	1,388,213	321,642	4,475,816	1,208,719
1979	3,533,744	1,632,670	939,857	237,531	1,513,716	48,366	1,514,357	332,430	4,439,863	1,152,375
1980	4,093,610	1,714,155	1,032,560	259,401	1,679,887	53,349	1,635,060	360,414	4,853,142	1,269,447
1981	4,424,087	1,967,577	1,103,412	271,181	1,797,318	77,806	1,755,381	391,818	5,241,672	1,357,680
1982	3,986,585	2,059,037	1,155,506	280,313	1,883,595	55,961	1,951,746	406,836	5,428,365	1,565,182
1983	5,177,480	2,321,035	1,745,294	333,081	2,827,449	69,382	2,025,715	494,628	6,038,419	1,556,652
1984	7,213,429	3,362,586	2,827,090	445,338	4,553,458	75,773	2,253,265	553,259	7,066,939	2,331,850
1985	8,928,967	3,746,776	3,623,210	540,388	5,828,183	79,232	2,363,650	758,987	7,757,848	2,378,394
1986	8,827,932	4,314,156	4,048,459	577,474	6,515,952	102,399	2,472,797	999,992	7,875,058	3,047,740
1987	8,902,819	4,202,328	3,936,412	608,137	6,417,103	213,658	2,505,135	1,035,499	9,274,082	3,052,275
1988	8,319,554	4,217,688	3,901,697	615,999	6,426,525	124,667	2,559,508	779,741	9,522,748	2,828,998
1989	8,696,602	4,097,443	3,545,799	586,595	5,896,494	170,570	2,506,780	1,442,546	8,961,755	2,930,396
1990	9,984,656	4,537,710	4,218,533	620,394	6,957,035	289,349	2,702,328	1,639,744	9,812,509	3,678,107
1991	6,485,425	3,506,642	2,724,560	567,449	4,492,938	175,137	3,461,451	1,294,523	8,939,328	3,035,639
1992	8,586,365	4,464,207	2,795,639	470,165	4,610,064	121,335	4,262,886	1,129,493	8,590,851	2,980,091
1993	8,970,002	4,095,623	2,992,812	472,817	4,935,312	157,747	4,141,752	1,347,426	9,523,173	3,320,012
1994	11,156,853	4,708,616	3,036,689	554,800	5,007,501	225,808	5,134,715	1,698,900	10,229,192	4,077,199
1995	10,758,058	4,965,674	3,809,040	509,163	6,281,598	155,561	4,222,506	1,527,163	9,460,717	3,715,377
1996	10,914,364	5,061,447	6,480,343	510,052	10,687,587	148,378	4,038,050	1,825,227	9,856,244	3,733,128
1997	11,377,158	4,920,475	6,305,827	579,281	7,362,993	144,833	4,592,804	1,869,222	11,283,990	4,037,861
1998	9,919,640	4,559,740	5,405,904	546,772	5,890,021	146,260	5,630,837	1,477,890	11,203,951	3,324,156
1999	11,416,654	4,927,434	4,385,991	644,424	5,980,402	147,295	5,907,738	1,851,275	12,461,568	4,208,197
2000	10,632,466	6,848,424	2,848,179	596,008	4,403,486	114,906	5,643,392	1,458,876	11,885,840	3,273,808
2001	18,322,858	12,898,050	3,939,057	822,646	6,496,206	127,952	6,399,423	3,476,019	18,323,409	3,543,052
2002	12,157,417	9,813,915	3,143,146	764,373	5,183,721	108,649	5,393,880	1,847,477	18,927,407	4,899,652
2003	16,945,615	9,673,459	4,356,003	913,565	7,183,795	126,686	8,212,270	3,112,551	25,629,038	4,969,357
2004	21,198,658	16,451,778	5,764,122	1,095,287	9,506,141	517,947	8,714,671	4,725,535	31,978,671	5,857,066
2005	25,341,043	18,960,171	6,854,881	1,271,295	11,305,184	612,538	10,673,852	5,586,920	36,830,624	6,621,236
2006	22,199,390	16,135,418	5,783,785	1,134,613	9,538,600	513,266	10,343,586	4,678,731	32,259,023	5,834,893
2007	22,648,564	15,794,048	5,701,196	1,168,783	9,402,391	505,719	11,206,296	4,608,833	32,150,692	6,159,354
2008	29,104,483	16,137,871	5,443,897	1,153,519	8,978,013	483,178	10,525,779	4,400,038	30,888,758	7,594,856
2009	29,812,222	17,117,153	5,586,173	1,209,137	9,212,677	494,692	11,451,370	4,506,659	31,634,937	7,791,988
2010	31,065,433	18,679,162	5,813,618	1,267,394	9,587,811	515,065	12,072,493	4,695,405	32,563,013	8,061,319
2011	30,455,980	19,189,506	5,698,834	1,285,823	9,398,495	505,192	12,210,056	4,603,696	32,152,685	7,935,706
2012	31,788,245	20,652,636	5,940,490	1,353,557	9,797,068	526,868	12,926,615	4,804,396	33,159,025	8,225,421
2013	31,631,474	20,569,161	5,904,566	1,364,285	9,724,446	524,885	13,171,568	4,785,872	32,762,563	8,135,557
2014	31,194,576	20,157,015	5,821,027	1,399,240	9,600,652	517,153	13,411,940	4,715,710	32,761,379	8,099,564
2015	31,267,511	20,226,075	5,805,065	1,405,997	9,574,318	518,311	13,831,029	4,727,506	32,349,640	8,020,826
2016	32,466,845	20,981,970	6,039,614	1,505,025	9,961,186	537,713	14,767,347	4,909,176	33,765,235	8,377,952
2017	30,812,551	19,921,866	5,713,501	1,452,024	9,423,310	510,563	14,629,827	4,661,945	32,054,078	7,926,393
2018	31,940,970	20,531,458	5,920,048	1,527,402	9,763,987	528,710	15,606,174	4,834,234	32,981,921	8,184,395
2019	32,660,821	20,811,362	6,031,150	1,582,208	9,947,249	539,926	16,528,251	4,942,789	33,553,772	8,331,469
2020	30,680,567	19,424,996	5,612,766	1,499,104	9,257,191	506,447	16,154,281	4,639,017	31,295,085	7,736,788
2021	30,432,094	19,164,498	5,505,323	1,470,219	9,079,984	501,224	16,262,310	4,597,488	30,378,403	7,522,440
2022	29,437,800	18,313,767	5,304,440	1,450,578	8,748,671	484,795	16,044,601	4,447,099	29,514,758	7,609,916
2023	29,770,437	18,587,862	5,358,274	1,491,130	8,837,472	490,015	16,554,592	4,496,677	29,894,906	7,364,070
2024	30,600,271	19,131,458	5,491,749	1,520,224	9,057,612	503,509	17,278,966	4,621,690	30,197,473	7,479,114
2025	30,034,298	18,712,481	5,396,922	1,507,903	8,901,211	494,271	17,378,871	4,536,388	29,792,671	7,362,696
2026	30,505,818	19,144,870	5,469,619	1,550,968	9,021,123	501,897	17,970,163	4,607,370	30,298,528	7,482,278
2027	30,145,527	18,624,102	5,388,506	1,522,755	8,887,330	496,032	18,157,724	4,553,149	29,632,004	7,327,232
2028	30,004,146	18,874,063	5,349,290	1,515,811	8,822,648	493,704	18,489,539	4,531,895	29,300,076	7,250,241
2029	29,756,098	18,385,852	5,325,215	1,541,493	8,782,950	489,648	18,746,644	4,494,643	29,593,385	7,289,617
2030	29,723,412	18,442,710	5,319,558	1,551,478	8,773,622	489,099	19,155,610	4,489,961	29,587,609	7,285,842
2031	29,407,077	17,926,931	5,230,591	1,501,935	8,626,869	483,927	19,401,579	4,442,852	28,643,578	7,080,652
2032	29,530,604	18,339,116	5,275,928	1,545,955	8,701,661	485,903	19,419,683	4,461,788	29,353,452	7,224,579
2033	31,756,680	19,620,342	5,674,787	1,639,836	9,359,517	522,074	20,881,776	4,798,571	30,855,392	7,675,403
2034	29,790,886	18,392,632	5,312,013	1,545,680	8,761,174	490,093	19,631,641	4,504,652	29,183,573	7,211,424
2035	32,213,460	18,970,980	5,732,192	1,693,451	9,454,219	529,389	21,027,698	4,871,549	31,652,477	7,838,705
Total	1,202,047,850	734,593,338	271,237,179	60,847,064	439,054,647	20,002,228	599,376,933	185,271,705	1,291,667,231	325,508,376

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	3,219	79,888
1963	0	690,812	0	775,862	0	0	0	0	12,626	1,620,403
1964	21,736	1,260,513	9,378	1,593,479	0	0	0	0	13,938	2,792,766
1965	21,866	2,180,589	17,767	2,702,924	0	0	405	405	28,937	4,788,225
1966	37,964	3,900,172	33,426	4,834,766	0	0	564	564	31,321	7,365,748
1967	71,283	7,693,703	68,155	9,497,844	0	0	562	562	47,718	12,768,829
1968	128,915	15,317,881	142,803	18,668,009	0	0	564	564	46,945	24,897,175
1969	198,763	23,153,063	215,209	28,164,882	0	0	3,191	3,191	52,963	35,976,488
1970	289,633	30,617,164	273,605	37,493,742	0	0	15,121	15,121	69,744	46,094,417
1971	409,327	39,976,488	342,425	49,136,710	0	0	16,001	16,001	55,532	58,691,592
1972	537,186	53,170,143	422,305	64,827,206	0	0	17,372	17,372	80,412	76,593,251
1973	587,964	57,456,493	435,655	70,329,331	0	0	17,334	17,334	54,219	81,198,437
1974	611,428	61,911,604	455,565	75,153,603	0	0	17,477	17,477	76,783	86,912,865
1975	644,621	66,881,226	478,404	80,898,682	0	0	18,405	18,405	84,547	94,054,648
1976	668,314	68,576,804	475,587	83,339,698	0	0	17,477	17,477	106,717	97,084,574
1977	696,515	66,377,444	507,064	81,330,295	0	0	18,232	18,232	98,618	95,152,647
1978	709,040	73,030,204	523,177	88,804,656	0	0	17,381	17,381	100,786	104,597,170
1979	712,866	72,764,203	526,405	89,348,383	0	0	20,579	20,579	119,352	106,934,151
1980	777,982	80,250,247	571,232	98,550,486	0	0	17,761	17,761	178,812	117,148,667
1981	806,031	91,585,085	636,404	111,415,452	0	0	21,193	21,193	185,347	131,911,009
1982	853,400	93,468,432	670,375	113,765,333	0	0	28,423	28,423	173,894	135,284,874
1983	952,131	102,111,392	803,591	126,456,249	0	0	19,276	19,276	220,926	151,772,951
1984	1,072,638	137,830,768	868,967	170,455,360	0	0	21,114	21,114	225,959	208,340,647
1985	1,120,854	173,765,988	908,769	211,801,246	0	0	20,239	20,239	340,322	258,573,723
1986	1,149,714	193,565,717	937,311	234,434,701	0	0	20,139	20,139	279,227	284,393,778
1987	1,172,016	180,303,392	908,034	222,530,890	0	0	19,742	19,742	345,116	276,247,867
1988	1,208,205	190,567,215	904,867	231,977,412	0	0	17,900	17,900	365,207	284,697,661
1989	1,194,911	193,558,952	932,599	234,521,442	0	0	19,158	19,158	422,329	287,768,173
1990	1,297,621	239,864,108	1,486,754	287,088,848	0	0	18,148	18,148	474,284	339,900,388
1991	1,354,921	180,274,674	1,141,118	217,453,805	0	0	21,018	21,018	214,683	255,636,288
1992	1,349,184	196,490,668	1,025,285	236,876,233	0	0	18,014	18,014	443,676	286,320,115
1993	1,507,551	169,817,019	1,068,135	212,349,381	0	0	20,999	20,999	599,571	271,111,522
1994	1,498,079	209,636,843	1,009,188	257,974,383	0	0	19,649	19,649	609,932	316,543,472
1995	1,520,622	173,743,955	1,061,324	221,730,758	0	0	20,277	20,277	534,971	290,231,061
1996	1,527,177	179,224,572	1,102,853	235,109,422	0	0	25,378	25,378	571,857	314,693,577
1997	1,730,528	187,060,217	1,216,560	242,481,749	0	0	24,820	24,820	428,638	324,046,323
1998	1,922,340	169,057,830	1,238,443	220,323,784	0	0	18,170	18,170	465,140	303,017,361
1999	2,201,182	191,948,504	1,266,841	247,347,505	0	0	17,787	17,787	555,858	338,511,034
2000	2,413,774	187,366,702	1,323,729	238,809,590	0	0	17,877	17,877	0	324,292,418
2001	3,401,086	378,802,532	1,660,287	458,212,577	0	0	17,691	17,691	0	561,246,523
2002	4,750,405	270,519,829	1,647,084	339,156,955	0	0	20,999	20,999	0	435,317,101
2003	6,122,317	368,700,914	1,917,466	457,863,036	0	0	21,322	21,322	0	564,599,185
2004	6,667,128	462,691,675	2,200,570	577,369,249	0	0	21,377	21,377	0	701,753,278
2005	7,063,353	542,811,898	2,433,836	676,366,831	0	0	21,433	21,433	0	812,746,498
2006	6,949,753	454,760,810	2,093,984	572,225,852	0	0	21,927	21,927	0	696,191,223
2007	7,132,241	448,490,197	2,075,857	567,044,171	0	0	21,921	21,921	0	689,398,746
2008	7,196,611	429,495,777	2,027,804	553,430,584	0	0	21,923	21,923	0	674,952,652
2009	7,418,513	439,732,327	2,053,506	568,021,354	0	0	21,920	21,920	0	689,084,569
2010	7,660,087	457,553,412	2,100,043	591,634,255	0	0	21,921	21,921	0	717,403,110
2011	7,792,359	449,198,981	2,082,569	582,509,882	0	0	21,919	21,919	0	706,122,270
2012	8,068,165	466,940,007	2,128,712	606,311,205	0	0	21,920	21,920	0	730,787,563
2013	8,191,862	464,384,643	2,128,233	603,279,115	0	0	21,920	21,920	0	729,059,891
2014	8,363,199	457,327,505	2,099,471	595,468,431	0	0	21,918	21,918	0	716,933,443
2015	8,479,307	456,770,411	2,095,059	595,071,055	0	0	21,516	21,516	0	717,658,953
2016	8,850,659	473,616,789	2,128,876	617,908,387	0	0	21,353	21,353	0	743,468,985
2017	8,765,140	449,764,040	2,041,633	587,676,871	0	0	21,356	21,356	0	709,238,457
2018	9,054,553	461,615,871	2,026,154	604,515,877	0	0	21,355	21,355	0	726,254,120
2019	9,143,264	468,104,921	1,995,755	614,172,937	0	0	18,723	18,723	0	739,264,440
2020	8,779,779	435,332,927	1,876,336	572,795,284	0	0	6,799	6,799	0	693,442,579
2021	8,644,094	426,323,741	1,810,905	561,692,723	0	0	5,976	5,976	0	681,991,058
2022	8,496,943	408,244,269	1,739,254	539,836,891	0	0	4,586	4,586	0	657,674,996
2023	8,551,563	410,959,871	1,752,643	544,109,512	0	0	4,584	4,584	0	663,423,423
2024	8,616,789	420,928,482	1,777,288	557,204,625	0	0	4,583	4,583	0	679,406,270
2025	8,546,968	410,909,879	1,737,117	545,311,676	0	0	4,587	4,587	0	663,626,793
2026	8,621,248	420,422,961	1,768,522	557,365,365	0	0	4,575	4,575	0	680,149,908
2027	8,524,015	407,255,329	1,711,309	542,225,014	0	0	4,589	4,589	0	662,352,027
2028	8,475,606	413,834,815	1,772,348	548,714,182	0	0	4,570	4,570	0	669,161,878
2029	8,504,569	404,512,031	1,699,995	539,122,140	0	0	4,577	4,577	0	658,275,521
2030	8,502,488	405,302,727	1,697,322	540,321,438	0	0	4,572	4,572	0	660,337,843
2031	8,371,601	394,036,983	1,625,517	526,780,092	0	0	4,582	4,582	0	644,551,191
2032	8,464,882	403,573,922	1,689,499	538,066,972	0	0	4,562	4,562	0	657,728,327
2033	8,731,859	428,204,778	1,708,391	571,429,406	0	0	4,573	4,573	0	694,348,351
2034	8,452,175	402,341,269	1,641,655	537,258,867	0	0	4,571	4,571	0	657,021,379
2035	8,836,883	428,362,647	1,706,016	572,889,666	0	0	4,559	4,559	0	693,924,333
Total	313,169,746	19,188,279,956	92,660,325	24,723,716,578	0	0	1,089,006	1,089,006	8,720,126	30,216,943,067

Table B-20A

Calculation of Delta Water Rates

Calculation in accordance with Article 53(i) of the Monterey Amendment

(Values in millions of dollars [$] or in millions of acre-feet [AF] discounted to 2003 at 4.610 percent per annum)

Procedure	*Capital Cost Component (1)*		*Minimum Operation Maintenance, Power and Replacement Component*[a] *(2)*		*Total Delta Water Rate (3)*	
Commencing in 2004						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Table A Amounts during the Project Repayment Period	$4,083.82[b]	259.53 AF	$2,685.64[c]	259.53 AF	$6,769.46	259.53 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period	(1,513.06)		($532.22)		(2,045.28)	
Less, Delta Water Charges Paid and Project Table A Amounts, Prior to 2004	(1,816.94)[d]	(190.54) AF	(1,280.91)	(190.54) AF	(3,097.85)	(190.54) AF
Total	$753.82	68.99 AF	$872.51	68.99 AF	$1,626.33	68.99 AF
Rate Applicable in 2004	$10.93	per acre-foot	$12.65	per acre-foot	$23.58	per acre-foot

Calculation under original provisions, without the Monterey Amendment

(for Plumas County and Empire)

Procedure	*Capital Cost Component (4)*		*Minimum Operation Maintenance, Power and Replacement Component*[a] *(5)*		*Total Delta Water Rate (6)*	
Commencing in 2004						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Table A Amounts during the Project Repayment Period	$4,072.92 [b]	259.53 AF	$2,672.32[c]	259.53 AF	$6,745.24	259.53 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period	(1,513.06)		(532.22)		(2,045.28)	
Less, Delta Water Charges Paid and Table A Amounts, Prior to 2004	(1,816.94)[d]	(190.54) AF	(1,280.91)	(190.54) AF	(3,097.85)	(190.54) AF
Total	$742.92	68.99 AF	$859.19	68.99 AF	$1,602.11	68.99 AF
Rate Applicable in 2004	$10.77	per acre-foot	$12.45	per acre-foot	$23.22	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 during the 1961 through 1978 period.

[c] Includes 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).

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]	36.59	20.36	56.95
Less, Oroville Power Revenues	-21.93	-7.71	-29.64
Subtotal	14.66	12.64	27.31
Delta Facilities[b]	9.42	9.08	18.51
California Aqueduct, portion			
Reach 1	2.32	3.76	6.08
Reach 2A	1.40	0.62	2.02
Reach 2B	0.71	0.34	1.05
Reach 3	0.50	0.20	0.71
Subtotal	4.92	4.93	9.85
San Luis Facilities	7.04	4.36	11.40
Planning and preoperating costs through 2002	2.04	0.00	2.04
45,000 AF relinquished costs	0.16	0.19	0.35
Less, Capital Cost Credits	-0.99	0.00	-0.99
Less, Delta Water Charges paid prior to 2004	-26.33	-18.57	-44.90
Rate applicable in 2004	10.93	12.65	23.58

Note: The OMP&R unit rates do not include amounts for conservation RAS.

[a]Includes revenue received from non-contractors.

[b]Includes (1) Delta Facility planning costs, (2) Delta Studies costs, and (3) Suisun Marsh Facilities costs.

Table B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	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	177,824	546,610	724,434	778,647	817,579	1,946,615	3,542,841	486,654	885,437	1,372,091
1995	203,738	713,497	917,235	874,946	874,946	2,083,205	3,833,097	520,801	947,567	1,468,368
1996	213,506	774,152	987,658	901,129	860,168	2,048,020	3,809,317	512,005	931,562	1,443,567
1997	250,558	866,141	1,116,699	1,041,633	951,056	2,264,420	4,257,109	566,105	1,029,994	1,596,099
1998	266,952	882,469	1,149,421	1,048,658	957,470	2,279,691	4,285,819	141,683	888,760	1,030,443
1999	290,688	923,459	1,214,147	1,084,480	990,178	2,357,566	4,432,224	589,391	1,072,362	1,661,753
2000	390,936	948,784	1,339,720	1,628,402	1,005,778	2,394,709	5,028,889	598,677	1,089,257	1,687,934
2001	496,412	1,097,880	1,594,292	1,868,283	1,005,998	2,395,234	5,269,515	598,809	1,089,496	1,688,305
2002	512,928	1,125,429	1,638,357	1,896,134	1,020,996	2,430,942	5,348,072	607,736	1,105,738	1,713,474
2003	511,059	1,112,692	1,623,751	1,856,232	999,510	2,379,785	5,235,527	594,946	1,082,469	1,677,415
2004	569,614	1,230,628	1,800,242	2,043,834	1,094,911	2,606,931	5,745,676	651,733	1,185,789	1,837,521
2005	523,876	1,113,894	1,637,770	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2006	531,537	1,115,072	1,646,609	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2007	539,198	1,116,251	1,655,449	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2008	546,858	1,117,430	1,664,288	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2009	554,519	1,118,608	1,673,127	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2010	562,180	1,119,787	1,681,967	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2011	569,841	1,120,965	1,690,806	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2012	577,501	1,122,144	1,699,645	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2013	583,983	1,123,322	1,707,305	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2014	592,823	1,124,501	1,717,324	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2015	608,733	1,125,680	1,734,413	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2016	623,466	1,125,680	1,749,146	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2017	638,198	1,125,680	1,763,878	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2018	652,930	1,125,680	1,778,610	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2019	667,662	1,125,680	1,793,342	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2020	681,805	1,125,680	1,807,485	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2021	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2022	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2023	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2024	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2025	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2026	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2027	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2028	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2029	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2030	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2031	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2032	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2033	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2034	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
2035	684,162	1,125,680	1,809,842	1,848,004	990,002	2,357,148	5,195,154	589,287	1,072,172	1,661,459
Total	24,402,034	47,459,944	71,861,978	80,452,367	50,762,277	127,282,685	258,497,329	27,190,612	50,090,449	77,281,060

Table B-21

Total Delta Water 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)	Municipl 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	1,714,679	12,925,113	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	2,734,129	20,694,874	81,252	115,784	2,407,089	27,266,127
1994	1,123,198	58,398	0	2,156,809	20,295,455	77,865	110,957	2,306,739	26,129,421
1995	1,202,009	62,497	0	2,803,995	21,223,694	83,328	118,743	2,468,598	27,962,864
1996	534,818	69,191	0	2,756,635	19,492,814	81,921	102,219	2,426,904	25,464,502
1997	1,208,521	67,162	0	3,047,908	22,148,973	90,576	129,072	2,683,338	29,375,550
1998	1,216,671	77,807	0	2,726,511	22,070,376	91,188	129,942	2,820,148	29,132,643
1999	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2000	1,278,056	70,943	0	3,223,279	21,220,235	95,788	136,498	2,837,730	28,862,529
2001	1,278,336	71,058	0	2,864,700	21,110,372	95,809	136,528	2,838,352	28,395,155
2002	1,393,975	72,121	0	3,272,056	21,060,431	97,237	138,564	2,711,156	28,745,540
2003	1,364,640	70,550	0	3,203,191	20,617,243	95,192	135,648	2,654,103	28,140,567
2004	1,494,893	77,810	0	3,508,929	22,585,122	104,277	148,595	2,897,004	30,816,631
2005	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2006	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2007	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2008	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2009	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2010	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2011	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2012	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2013	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2014	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2015	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2016	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2017	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2018	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2019	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2020	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2021	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2022	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2023	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2024	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2025	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2026	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2027	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2028	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2029	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2030	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2031	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2032	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2033	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2034	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
2035	1,351,659	70,317	0	3,172,721	20,421,128	94,286	134,357	2,619,428	27,863,896
Total	69,421,482	3,886,526	0	159,407,385	1,095,202,122	4,867,013	7,119,679	137,461,511	1,477,365,719

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 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	2,694,116	1,055,065	449,668	112,905	741,661	44,772	988,880	336,766	1,997,227	560,625
1995	2,883,156	1,129,097	481,220	120,826	793,702	47,914	1,058,269	360,394	2,137,369	599,963
1996	2,834,460	1,110,027	473,093	118,785	780,296	47,104	1,040,394	354,307	2,101,269	589,830
1997	3,133,957	1,227,316	523,081	131,336	862,744	52,082	1,150,325	391,745	2,323,295	652,153
1998	3,155,093	1,235,593	526,609	132,222	868,562	52,433	1,728,006	394,387	2,338,963	656,551
1999	3,262,870	1,277,800	544,598	136,739	898,233	54,224	1,787,034	407,859	2,418,863	678,979
2000	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	510,073	2,456,972	689,676
2001	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2002	3,437,351	2,314,256	561,548	140,995	926,188	55,912	1,842,654	517,791	2,494,146	700,112
2003	3,365,016	2,265,555	549,731	138,028	906,698	54,735	1,803,877	506,894	2,441,659	685,379
2004	3,686,201	2,481,798	602,201	151,202	993,241	59,959	1,976,054	555,276	2,674,711	750,796
2005	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2006	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2007	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2008	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2009	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2010	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2011	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2012	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2013	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2014	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2015	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2016	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2017	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2018	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2019	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2020	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2021	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2022	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2023	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2024	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2025	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2026	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2027	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2028	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2029	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2030	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2031	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2032	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2033	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2034	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
2035	3,333,007	2,244,005	544,501	136,715	898,073	54,214	1,786,718	502,073	2,418,434	678,859
Total	161,860,627	100,003,682	27,494,667	6,897,435	45,177,947	2,732,564	82,949,994	24,299,000	124,431,342	34,733,956

Table B-21

Total Delta Water 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)		
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	336,766	39,156,173	389,323	48,863,947	186,875	23,360	23,360	233,595	0	80,866,329
1995	360,394	41,903,674	416,641	52,292,619	199,987	24,999	26,040	251,026	0	86,725,209
1996	0	41,195,923	409,604	51,055,092	196,610	24,576	26,624	247,810	0	83,007,946
1997	0	45,548,810	447,746	56,444,590	214,918	27,173	30,223	272,314	0	93,062,361
1998	0	45,855,992	450,529	57,394,940	107,459	27,356	31,537	166,352	0	93,159,618
1999	47,152	47,422,430	466,491	59,403,272	226,327	28,291	33,820	288,438	0	96,994,387
2000	71,841	48,169,576	478,942	61,445,844	229,892	69,207	35,708	334,807	0	98,699,723
2001	95,809	48,180,135	479,047	61,483,264	229,942	83,833	37,187	350,962	0	98,781,493
2002	97,237	48,898,394	486,188	62,472,772	233,371	85,083	39,185	357,639	0	100,275,854
2003	118,989	47,869,376	475,957	61,181,894	228,460	83,293	39,743	351,496	0	98,210,650
2004	156,416	52,438,420	521,386	67,047,662	250,265	92,048	45,442	387,755	0	107,635,488
2005	153,215	47,414,032	471,430	60,635,276	226,286	654,544	42,479	923,308	0	97,916,863
2006	165,000	47,414,032	471,430	60,647,061	226,286	654,544	44,122	924,951	0	97,939,130
2007	176,786	47,414,032	471,430	60,658,847	226,286	654,544	45,764	926,594	0	97,961,399
2008	407,787	47,414,032	471,430	60,889,848	226,286	654,544	47,407	928,237	0	98,202,882
2009	407,787	47,414,032	471,430	60,889,848	226,286	654,544	49,050	929,880	0	98,213,363
2010	407,787	47,414,032	471,430	60,889,848	226,286	654,544	50,693	931,523	0	98,223,846
2011	407,787	47,414,032	471,430	60,889,848	226,286	654,544	52,570	933,400	0	98,234,563
2012	407,787	47,414,032	471,430	60,889,848	226,286	654,544	54,448	935,278	0	98,245,279
2013	407,787	47,414,032	471,430	60,889,848	226,286	654,544	56,560	937,390	0	98,255,051
2014	407,787	47,414,032	471,430	60,889,848	226,286	654,544	58,672	939,502	0	98,267,183
2015	407,787	47,414,032	471,430	60,889,848	226,286	654,544	61,019	941,849	0	98,286,619
2016	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,303,698
2017	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,318,430
2018	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,333,162
2019	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,347,894
2020	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,362,037
2021	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2022	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2023	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2024	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2025	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2026	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2027	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2028	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2029	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2030	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2031	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2032	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2033	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2034	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
2035	407,787	47,414,032	471,430	60,889,848	226,286	654,544	63,366	944,196	0	98,364,394
Total	16,223,603	2,403,037,215	22,177,969	3,052,020,002	10,163,665	21,223,293	2,461,622	33,848,580	0	4,970,874,669

Table B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	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	29,131	40,505	69,636	25,436	30,176	100,035	155,647	13,126	24,392	37,518
1989	48,804	69,621	118,425	43,343	51,681	170,303	265,327	26,828	49,634	76,462
1990	41,166	60,482	101,648	38,407	51,185	149,440	239,032	27,956	51,795	79,751
1991	63,389	92,401	155,790	62,470	81,991	235,712	380,173	44,887	83,709	128,596
1992	84,320	126,227	210,547	89,247	115,208	325,629	530,084	61,137	113,925	175,062
1993	90,152	137,473	227,625	98,432	125,174	347,457	571,063	67,725	126,662	194,387
1994	91,785	141,222	233,007	102,021	126,216	352,415	580,652	81,420	159,156	240,576
1995	108,311	181,787	290,098	126,000	149,378	416,955	692,333	131,674	270,727	402,401
1996	132,304	232,343	364,647	158,514	180,787	505,043	844,344	242,654	534,448	777,102
1997	135,556	237,492	373,048	171,263	187,162	522,127	880,552	141,810	846,616	988,426
1998	130,346	228,366	358,712	164,682	179,971	502,065	846,718	136,361	814,087	950,448
1999	182,507	316,416	498,923	227,072	248,031	691,830	1,166,933	188,835	1,124,110	1,312,945
2000	238,571	364,418	602,989	260,766	284,875	794,730	1,340,371	218,359	1,364,019	1,582,378
2001	234,773	358,616	593,389	561,965	280,341	782,078	1,624,384	214,883	1,342,304	1,557,187
2002	257,520	391,851	649,371	610,230	288,977	806,174	1,705,381	221,503	1,383,661	1,605,164
2003	431,225	656,165	1,087,390	1,021,847	483,901	1,349,962	2,855,710	370,913	2,316,979	2,687,892
2004	457,578	696,266	1,153,844	1,084,295	513,474	1,432,462	3,030,231	393,581	2,458,577	2,852,158
2005	456,460	694,563	1,151,023	1,081,644	512,218	1,428,960	3,022,822	392,618	2,452,565	2,845,183
2006	453,761	690,457	1,144,218	1,075,250	509,190	1,420,512	3,004,952	390,297	2,438,067	2,828,364
2007	453,058	689,387	1,142,445	1,073,584	508,401	1,418,311	3,000,296	389,693	2,434,289	2,823,982
2008	411,798	626,604	1,038,402	975,811	462,100	1,289,144	2,727,055	354,203	2,212,595	2,566,798
2009	418,599	636,953	1,055,552	991,927	469,732	1,310,435	2,772,094	360,053	2,249,138	2,609,191
2010	397,893	605,446	1,003,339	942,862	446,497	1,245,615	2,634,974	342,243	2,137,886	2,480,129
2011	453,133	689,502	1,142,635	1,073,762	508,486	1,418,547	3,000,795	389,757	2,434,693	2,824,450
2012	453,748	690,437	1,144,185	1,075,218	509,175	1,420,471	3,004,864	390,286	2,437,996	2,828,282
2013	472,605	719,130	1,191,735	1,119,902	530,336	1,479,503	3,129,741	406,505	2,539,314	2,945,819
2014	481,047	731,977	1,213,024	1,139,908	539,809	1,505,933	3,185,650	413,767	2,584,676	2,998,443
2015	504,094	767,045	1,271,139	1,194,520	565,671	1,578,080	3,338,271	433,590	2,708,506	3,142,096
2016	511,337	778,067	1,289,404	1,211,684	573,799	1,600,756	3,386,239	439,821	2,747,424	3,187,245
2017	515,626	784,592	1,300,218	1,221,846	578,612	1,614,181	3,414,639	443,509	2,770,467	3,213,976
2018	459,186	698,712	1,157,898	1,088,105	515,278	1,437,496	3,040,879	394,964	2,467,216	2,862,180
2019	490,628	746,555	1,237,183	1,162,611	550,561	1,535,926	3,249,098	422,008	2,636,154	3,058,162
2020	461,108	701,636	1,162,744	1,092,658	517,434	1,443,511	3,053,603	396,616	2,477,540	2,874,156
2021	490,096	745,746	1,235,842	1,161,351	549,964	1,534,261	3,245,576	421,551	2,633,297	3,054,848
2022	460,601	700,865	1,161,466	1,091,458	516,866	1,441,925	3,050,249	396,181	2,474,818	2,870,999
2023	470,396	715,769	1,186,165	1,114,668	527,857	1,472,588	3,115,113	404,606	2,527,446	2,932,052
2024	454,417	691,454	1,145,871	1,076,802	509,925	1,422,564	3,009,291	390,861	2,441,588	2,832,449
2025	406,423	618,426	1,024,849	963,075	456,069	1,272,318	2,691,462	349,580	2,183,717	2,533,297
2026	330,281	502,565	832,846	782,645	370,626	1,033,952	2,187,223	284,087	1,774,603	2,058,690
2027	308,343	469,184	777,527	730,661	346,008	965,276	2,041,945	265,217	1,656,732	1,921,949
2028	252,574	384,325	636,899	598,509	283,427	790,690	1,672,626	217,249	1,357,085	1,574,334
2029	252,941	384,883	637,824	599,379	283,839	791,839	1,675,057	217,564	1,359,057	1,576,621
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	13,577,591	20,795,931	34,373,522	30,485,830	15,520,408	43,357,211	89,363,449	11,890,478	71,201,670	83,092,148

Table B-22

Water System Revenue Bond Surcharge 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)
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	33,986	1,657	0	67,288	726,501	2,228	2,851	66,748	901,259
1989	59,273	2,785	0	116,689	1,251,452	3,733	4,927	116,736	1,555,595
1990	53,349	2,419	0	287,811	947,351	3,248	4,367	109,118	1,407,663
1991	82,252	3,731	0	359,380	1,564,983	5,035	6,771	168,217	2,190,369
1992	112,566	5,127	0	452,691	2,153,423	6,927	9,285	230,217	2,970,236
1993	119,670	5,459	0	272,449	2,491,672	7,381	9,894	244,813	3,151,338
1994	118,265	5,379	0	244,671	2,485,820	7,300	9,766	241,933	3,113,134
1995	139,227	6,339	0	317,885	2,894,182	8,598	11,490	284,798	3,662,519
1996	169,333	7,703	0	354,341	2,722,241	10,460	13,978	346,366	3,624,422
1997	165,364	7,980	0	366,285	2,673,847	10,826	14,465	357,986	3,596,753
1998	159,011	7,672	0	352,211	2,571,110	10,410	13,909	344,232	3,458,555
1999	218,784	10,373	0	485,897	3,371,115	14,376	19,166	476,017	4,595,728
2000	251,339	11,735	0	557,296	3,620,348	16,500	21,990	546,406	5,025,614
2001	247,338	11,547	0	548,424	3,461,158	16,238	21,640	537,707	4,844,052
2002	273,542	11,904	0	565,321	3,496,023	16,737	22,306	521,659	4,907,492
2003	458,053	19,933	0	946,646	5,854,187	28,027	37,352	873,531	8,217,729
2004	486,046	21,151	0	1,004,498	6,211,955	29,740	39,635	926,916	8,719,941
2005	484,858	21,099	0	1,002,042	6,196,766	29,667	39,538	924,649	8,698,619
2006	481,992	20,975	0	996,119	6,160,134	29,492	39,305	919,183	8,647,200
2007	481,245	20,942	0	994,575	6,150,589	29,446	39,244	917,759	8,633,800
2008	437,417	19,035	0	903,998	5,590,447	26,765	35,670	834,177	7,847,509
2009	444,642	19,349	0	918,928	5,682,778	27,207	36,259	847,955	7,977,118
2010	422,648	18,392	0	873,474	5,401,682	25,861	34,465	806,011	7,582,533
2011	481,325	20,946	0	994,740	6,151,610	29,451	39,250	917,911	8,635,233
2012	481,978	20,974	0	996,089	6,159,954	29,491	39,303	919,156	8,646,945
2013	502,008	21,846	0	1,037,485	6,415,949	30,717	40,937	957,355	9,006,297
2014	510,976	22,236	0	1,056,018	6,530,564	31,265	41,668	974,457	9,167,184
2015	535,456	23,301	0	1,106,611	6,843,437	32,763	43,664	1,021,142	9,606,374
2016	543,150	23,636	0	1,122,512	6,941,771	33,234	44,292	1,035,815	9,744,410
2017	547,705	23,834	0	1,131,927	6,999,990	33,513	44,663	1,044,502	9,826,134
2018	487,754	21,226	0	1,008,028	6,233,783	29,845	39,774	930,173	8,750,583
2019	521,152	22,679	0	1,077,051	6,660,631	31,888	42,498	993,865	9,349,764
2020	489,795	21,314	0	1,012,246	6,259,869	29,969	39,941	934,065	8,787,199
2021	520,587	22,654	0	1,075,883	6,653,410	31,854	42,452	992,787	9,339,627
2022	489,257	21,291	0	1,011,134	6,252,990	29,936	39,897	933,039	8,777,544
2023	499,661	21,744	0	1,032,636	6,385,964	30,573	40,745	952,880	8,964,203
2024	482,688	21,005	0	997,557	6,169,029	29,535	39,361	920,510	8,659,685
2025	431,708	18,787	0	892,199	5,517,482	26,415	35,204	823,290	7,745,085
2026	350,829	15,267	0	725,048	4,483,794	21,466	28,609	669,048	6,294,061
2027	327,526	14,253	0	676,889	4,185,976	20,041	26,708	624,609	5,876,002
2028	268,288	11,675	0	554,463	3,428,873	16,416	21,878	511,639	4,813,232
2029	268,678	11,692	0	555,268	3,433,856	16,440	21,910	512,382	4,820,226
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	14,640,721	643,046	0	31,052,703	195,388,696	901,014	1,201,027	28,311,759	272,138,966

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	64,266	57,111	27,032	7,656	44,492	2,154	55,996	16,240	151,182	39,907
1989	205,668	98,720	46,993	13,263	78,104	3,763	97,138	27,981	259,860	69,104
1990	185,010	87,808	42,449	11,905	69,970	3,385	87,327	24,956	231,650	61,851
1991	296,854	140,371	65,947	18,548	108,704	5,236	135,623	38,641	363,310	96,172
1992	402,015	234,421	89,358	25,192	147,297	7,053	183,813	52,160	491,537	130,372
1993	424,871	247,076	93,981	26,566	154,919	7,437	193,361	55,045	517,379	137,298
1994	424,023	247,222	94,502	26,865	155,776	7,431	194,191	54,968	525,394	139,422
1995	500,083	290,999	111,729	31,823	184,169	8,769	229,530	64,852	623,848	165,594
1996	606,387	353,131	135,428	38,635	223,236	10,640	278,178	78,696	760,333	201,821
1997	626,151	362,776	139,565	39,802	230,058	10,972	286,779	81,146	808,482	207,472
1998	602,091	348,838	134,202	38,273	221,218	10,550	275,761	78,028	777,418	199,501
1999	826,108	479,470	184,524	52,650	304,166	14,475	642,815	107,060	1,041,566	277,200
2000	940,325	1,150,965	210,453	60,212	346,906	16,486	736,157	121,898	1,191,538	316,860
2001	925,355	1,132,642	207,102	59,254	341,384	16,224	724,438	135,581	1,172,568	311,816
2002	974,814	1,167,539	213,483	61,079	351,902	16,724	746,758	139,071	1,208,696	321,423
2003	1,632,353	1,955,077	357,483	102,279	589,269	28,005	1,250,467	232,878	2,023,994	538,231
2004	1,732,111	2,074,558	379,330	108,530	625,281	29,716	1,326,887	247,110	2,147,687	571,124
2005	1,727,876	2,069,485	378,403	108,264	623,752	29,643	1,323,643	246,506	2,142,436	569,728
2006	1,717,662	2,057,252	376,166	107,624	620,065	29,468	1,315,818	245,049	2,129,771	566,360
2007	1,715,000	2,054,064	375,583	107,458	619,104	29,423	1,313,779	244,669	2,126,471	565,482
2008	1,558,813	1,866,997	341,378	97,671	562,721	26,743	1,194,132	222,387	1,932,810	513,983
2009	1,584,558	1,897,833	347,016	99,285	572,015	27,185	1,213,854	226,060	1,964,733	522,472
2010	1,506,179	1,803,957	329,851	94,373	543,721	25,840	1,153,811	214,878	1,867,548	496,628
2011	1,715,285	2,054,405	375,645	107,476	619,207	29,427	1,313,997	244,710	2,126,824	565,576
2012	1,717,612	2,057,191	376,155	107,621	620,047	29,467	1,315,780	245,041	2,129,709	566,343
2013	1,788,992	2,142,684	391,787	112,094	645,815	30,692	1,370,461	255,225	2,218,215	589,880
2014	1,820,951	2,180,961	398,786	114,096	657,351	31,240	1,394,943	259,784	2,257,841	600,417
2015	1,908,191	2,285,449	417,892	119,563	688,845	32,737	1,461,773	272,230	2,366,013	629,183
2016	1,935,610	2,318,288	423,896	121,281	698,743	33,207	1,482,777	276,142	2,400,010	638,223
2017	1,951,843	2,337,732	427,451	122,298	704,603	33,486	1,495,213	278,458	2,420,138	643,576
2018	1,738,198	2,081,847	380,663	108,911	627,478	29,821	1,331,550	247,978	2,155,234	573,131
2019	1,857,218	2,224,398	406,729	116,369	670,444	31,862	1,422,725	264,958	2,302,810	612,376
2020	1,745,472	2,090,559	382,256	109,367	630,104	29,945	1,337,122	249,016	2,164,253	575,530
2021	1,855,205	2,221,987	406,288	116,243	669,717	31,828	1,421,183	264,671	2,300,314	611,712
2022	1,743,553	2,088,262	381,836	109,247	629,412	29,912	1,335,652	248,742	2,161,875	574,897
2023	1,780,631	2,132,670	389,956	111,570	642,796	30,549	1,364,056	254,032	2,207,848	587,123
2024	1,720,142	2,060,222	376,709	107,780	620,960	29,511	1,317,718	245,402	2,132,846	567,178
2025	1,538,468	1,842,630	336,923	96,397	555,377	26,394	1,178,546	219,484	1,907,584	507,275
2026	1,250,239	1,497,417	273,801	78,337	451,328	21,449	957,748	178,364	1,550,202	412,238
2027	1,167,197	1,397,957	255,615	73,134	421,351	20,024	894,134	166,517	1,447,236	384,857
2028	956,090	1,145,114	209,383	59,906	345,142	16,403	732,415	136,400	1,185,480	315,249
2029	957,480	1,146,778	209,687	59,993	345,644	16,427	733,479	136,598	1,187,203	315,707
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	52,326,950	59,484,863	11,503,416	3,288,890	18,962,593	901,703	38,821,528	7,399,612	65,081,846	17,290,292

Table B-22

Water System Revenue Bond Surcharge 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)		
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	24,019	2,642,354	18,118	3,150,527	1,336	552	853	2,741	0	4,317,328
1989	42,040	4,587,641	34,565	5,564,840	0	918	1,454	2,372	0	7,583,021
1990	38,023	4,037,980	34,994	4,917,308	2,535	800	1,283	4,618	0	6,750,020
1991	59,122	6,259,893	54,115	7,642,536	9,945	1,243	2,027	13,215	0	10,510,679
1992	80,131	8,435,312	72,892	10,351,553	13,671	1,710	2,806	18,187	0	14,255,669
1993	84,371	8,885,273	76,858	10,904,435	14,608	1,827	3,026	19,461	0	15,068,309
1994	85,698	8,926,755	76,794	10,959,041	14,409	1,801	3,070	19,280	0	15,145,690
1995	101,792	10,539,433	90,436	12,943,057	16,957	2,119	3,704	22,780	0	18,013,188
1996	124,074	12,810,361	109,783	15,730,703	20,640	2,580	4,621	27,841	0	21,369,059
1997	28,259	13,168,230	112,960	16,102,652	21,382	2,674	4,872	28,928	0	21,970,359
1998	27,174	12,662,268	108,619	15,483,941	20,562	2,571	4,685	27,818	0	21,126,192
1999	53,545	17,454,651	149,123	21,587,353	28,348	3,543	6,765	38,656	0	29,200,538
2000	70,117	19,805,800	168,259	25,135,976	32,271	9,794	7,996	50,061	0	33,737,389
2001	69,001	19,490,499	165,580	24,751,444	31,757	9,638	7,869	49,264	0	33,419,720
2002	71,126	20,091,004	170,682	25,534,301	32,736	9,935	8,112	50,783	0	34,452,492
2003	119,103	33,642,945	285,812	42,757,896	54,816	16,636	13,583	85,035	0	57,691,652
2004	126,381	35,698,972	303,279	45,370,966	58,166	17,653	14,414	90,233	0	61,217,373
2005	126,072	35,611,689	302,537	45,260,034	58,024	17,609	14,378	90,011	0	61,067,692
2006	125,327	35,401,170	300,749	44,992,481	57,681	17,505	14,293	89,479	0	60,706,694
2007	125,133	35,346,313	300,283	44,922,762	57,592	17,478	14,271	89,341	0	60,612,626
2008	113,737	32,127,278	272,936	40,831,586	52,347	15,886	12,972	81,205	0	55,092,555
2009	115,615	32,657,892	277,443	41,505,961	53,211	16,149	13,186	82,546	0	56,002,462
2010	109,897	31,042,479	263,720	39,452,882	50,579	15,350	12,534	78,463	0	53,232,320
2011	125,154	35,352,181	300,333	44,930,220	57,601	17,481	14,274	89,356	0	60,622,689
2012	125,323	35,400,136	300,740	44,991,165	57,679	17,505	14,293	89,477	0	60,704,918
2013	130,532	36,871,290	313,238	46,860,905	60,076	18,232	14,887	93,195	0	63,227,692
2014	132,863	37,529,962	318,834	47,698,029	61,150	18,558	15,153	94,861	0	64,357,191
2015	139,229	39,327,991	334,109	49,983,205	64,079	19,447	15,879	99,405	0	67,440,490
2016	141,229	39,893,092	338,910	50,701,408	65,000	19,727	16,107	100,834	0	68,409,540
2017	142,414	40,227,673	341,752	51,126,637	65,545	19,892	16,242	101,679	0	68,983,283
2018	126,826	35,824,413	304,345	45,530,395	58,371	17,715	14,464	90,550	0	61,432,485
2019	135,510	38,277,433	325,184	48,648,016	62,368	18,928	15,455	96,751	0	65,638,974
2020	127,356	35,974,332	305,618	45,720,930	58,615	17,789	14,525	90,929	0	61,689,561
2021	135,363	38,235,936	324,831	48,595,278	62,300	18,907	15,438	96,645	0	65,567,816
2022	127,216	35,934,797	305,282	45,670,683	58,551	17,769	14,509	90,829	0	61,621,770
2023	129,922	36,698,975	311,774	46,641,902	59,796	18,147	14,817	92,760	0	62,932,195
2024	125,508	35,452,290	301,183	45,057,449	57,764	17,531	14,314	89,609	0	60,794,354
2025	112,252	31,707,965	269,373	40,298,668	51,664	15,679	12,802	80,145	0	54,373,506
2026	91,222	25,767,550	218,907	32,748,802	41,984	12,742	10,404	65,130	0	44,186,752
2027	85,163	24,056,039	204,369	30,573,593	39,196	11,895	9,713	60,804	0	41,251,820
2028	69,760	19,705,110	167,402	25,043,854	32,107	9,744	7,956	49,807	0	33,790,752
2029	69,861	19,733,748	167,646	25,080,251	32,153	9,758	7,968	49,879	0	33,839,858
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	4,192,460	1,083,297,105	9,204,367	1,371,755,625	1,749,572	503,417	431,974	2,684,963	0	1,853,408,673

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	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	21,132	76,669	0	0	0
1963	0	0	0	193,920	190,272	447,723	831,915	0	0	0
1964	0	0	0	255,450	277,455	621,356	1,154,261	6,696	21,667	28,363
1965	0	0	0	364,163	404,324	1,158,090	1,926,577	13,756	36,029	49,785
1966	18,063	0	18,063	409,117	421,722	1,412,954	2,243,793	26,524	61,349	87,873
1967	41,574	0	41,574	541,991	548,491	1,863,198	2,953,680	56,469	118,263	174,732
1968	128,608	(28)	128,580	673,308	633,184	2,178,465	3,484,957	115,960	229,807	345,767
1969	254,676	(58)	254,618	807,254	583,436	2,298,737	3,689,427	185,156	358,861	544,017
1970	277,499	(70)	277,429	893,300	640,297	2,787,967	4,321,564	200,150	387,675	587,825
1971	227,411	(93)	227,318	834,687	675,193	2,807,017	4,316,897	202,413	392,912	595,325
1972	224,882	(139)	224,743	918,570	822,397	3,027,749	4,768,716	209,057	406,589	615,646
1973	220,981	31,205	252,186	904,951	716,492	3,120,786	4,742,229	206,557	402,723	609,280
1974	240,375	32,758	273,133	945,484	746,933	3,325,022	5,017,439	208,545	407,090	615,635
1975	237,311	36,076	273,387	1,003,781	793,054	3,214,046	5,010,881	225,895	439,873	665,768
1976	271,133	40,604	311,737	1,116,769	943,463	3,362,542	5,422,774	228,976	447,299	676,275
1977	293,452	44,841	338,293	1,085,280	922,203	3,303,462	5,310,945	238,699	468,721	707,420
1978	273,676	48,895	322,571	1,173,916	935,819	3,712,581	5,822,316	245,331	484,259	729,590
1979	289,266	53,030	342,296	1,270,278	1,009,566	3,819,533	6,099,377	243,110	483,437	726,547
1980	310,613	85,735	396,348	1,423,113	1,173,798	4,119,071	6,715,982	282,254	540,553	822,807
1981	347,527	112,477	460,004	1,531,356	1,349,125	4,507,566	7,388,047	307,065	596,670	903,735
1982	438,061	141,434	579,495	1,611,688	1,369,536	4,941,393	7,922,617	328,215	682,546	1,010,761
1983	354,490	162,860	517,350	1,481,906	1,260,138	4,910,241	7,652,285	357,218	702,083	1,059,301
1984	467,024	246,243	713,267	1,791,599	1,478,394	6,870,250	10,140,243	409,530	801,057	1,210,587
1985	735,742	385,822	1,121,564	2,289,074	2,225,097	7,796,485	12,310,656	500,696	969,931	1,470,627
1986	1,119,734	713,732	1,833,466	2,157,608	2,014,104	8,193,844	12,365,556	536,751	1,038,030	1,574,781
1987	1,773,428	1,581,683	3,355,111	2,693,921	2,548,972	8,130,366	13,373,259	570,644	1,148,974	1,719,618
1988	2,349,181	2,524,192	4,873,373	2,715,009	2,774,430	7,830,285	13,319,724	673,071	1,439,620	2,112,691
1989	2,548,359	3,700,792	6,249,151	2,698,714	2,515,471	7,578,849	12,793,034	772,571	1,814,759	2,587,330
1990	2,899,603	3,848,323	6,747,926	3,133,869	2,929,775	8,355,392	14,419,036	933,367	2,046,370	2,979,737
1991	2,940,901	4,169,615	7,110,516	2,405,568	2,384,246	6,430,834	11,220,648	979,709	2,366,841	3,346,550
1992	2,797,307	4,144,381	6,941,688	2,879,347	2,927,114	7,656,940	13,463,401	1,118,807	2,526,860	3,645,667
1993	2,855,077	4,171,879	7,026,956	3,735,829	2,977,354	8,849,995	15,563,178	1,185,666	2,726,057	3,911,723
1994	2,987,519	4,224,682	7,212,201	3,772,648	3,586,249	9,613,529	16,972,426	1,335,974	3,518,043	4,854,017
1995	2,960,902	4,404,607	7,365,509	4,021,188	3,313,351	8,393,827	15,728,366	1,647,816	6,195,415	7,843,231
1996	3,040,528	4,884,707	7,925,235	3,602,940	3,158,419	9,152,123	15,913,482	2,592,005	15,232,436	17,824,441
1997	3,027,584	4,734,196	7,761,780	3,855,216	3,145,550	9,338,015	16,338,781	3,002,833	23,737,163	26,739,996
1998	2,936,171	4,589,885	7,526,056	3,464,530	3,204,217	9,085,221	15,753,968	3,256,282	28,312,394	31,568,676
1999	3,139,070	5,086,264	8,225,334	4,153,050	3,672,016	11,378,231	19,203,297	3,810,520	29,643,699	33,454,219
2000	3,264,523	5,812,142	9,076,665	5,793,699	3,588,750	10,194,988	19,577,437	3,796,846	30,855,336	34,652,182
2001	4,069,363	6,392,349	10,461,712	7,984,138	4,235,063	12,091,980	24,311,181	4,436,857	32,600,855	37,037,712
2002	4,302,344	6,436,988	10,739,332	7,288,641	4,007,135	13,166,137	24,461,913	4,097,125	32,603,730	36,700,855
2003	4,601,326	7,091,504	11,692,830	8,663,317	4,599,069	14,236,404	27,498,790	4,327,132	35,037,660	39,364,792
2004	5,401,244	7,408,000	12,809,244	10,738,188	5,455,333	16,473,012	32,666,533	7,035,625	37,339,693	44,375,317
2005	5,592,431	7,467,098	13,059,529	11,338,203	5,863,920	17,298,365	34,500,488	7,545,343	38,358,888	45,904,231
2006	4,941,407	6,967,437	11,908,844	10,823,419	5,479,887	15,144,205	31,447,511	7,207,049	36,830,740	44,037,789
2007	4,953,653	6,952,304	11,905,957	10,745,922	5,421,978	14,994,355	31,162,255	7,127,029	36,680,815	43,807,844
2008	4,899,401	6,853,100	11,752,501	10,519,724	5,336,862	14,751,096	30,607,682	6,959,546	36,219,675	43,179,221
2009	4,943,857	6,886,970	11,830,827	10,531,929	5,339,384	14,773,420	30,644,733	7,033,464	36,379,648	43,413,112
2010	4,969,535	6,887,623	11,857,158	10,765,980	5,464,372	15,081,017	31,311,369	7,200,859	36,605,019	43,805,878
2011	5,037,105	6,967,671	12,004,776	10,767,217	5,457,223	15,083,598	31,308,038	7,194,554	36,808,904	44,003,458
2012	5,079,062	6,994,060	12,073,122	10,825,519	5,485,731	15,164,141	31,475,391	7,292,408	36,989,703	44,282,111
2013	5,098,591	7,008,732	12,107,323	10,768,278	5,439,266	14,935,945	31,143,489	7,326,228	37,124,250	44,450,478
2014	5,111,328	7,006,193	12,117,521	10,463,873	5,248,426	14,460,124	30,172,423	7,233,070	36,978,208	44,211,278
2015	5,173,931	7,045,402	12,219,333	10,533,545	5,233,156	14,276,233	30,042,934	7,277,202	37,145,983	44,423,185
2016	5,202,354	7,060,997	12,263,351	10,675,091	5,298,170	14,333,145	30,306,406	7,341,229	37,285,809	44,627,038
2017	5,202,867	7,056,590	12,259,457	10,420,148	5,171,047	13,983,323	29,574,518	7,211,479	37,064,520	44,275,999
2018	5,111,459	6,989,499	12,100,958	10,207,406	5,087,808	13,740,502	29,035,716	7,177,814	36,786,760	43,964,574
2019	5,155,373	7,059,042	12,214,415	10,397,944	5,203,907	14,026,628	29,628,479	7,316,622	37,154,881	44,471,503
2020	5,107,191	6,968,541	12,075,732	10,005,415	5,008,140	13,513,284	28,526,839	7,063,038	36,581,263	43,644,301
2021	5,143,105	7,013,290	12,156,395	10,053,307	5,030,110	13,580,524	28,663,941	7,082,800	36,727,194	43,809,994
2022	5,082,872	6,939,127	12,021,999	9,817,034	4,910,898	13,262,881	27,990,813	6,929,727	36,334,696	43,264,423
2023	5,095,627	6,919,611	12,015,238	9,918,515	4,964,274	13,393,683	28,276,472	6,971,729	36,445,836	43,417,565
2024	5,112,115	6,922,177	12,034,292	10,073,234	5,045,485	13,598,544	28,717,263	7,098,824	36,616,245	43,715,069
2025	5,047,475	6,836,585	11,884,060	9,741,806	4,875,650	13,166,226	27,783,682	6,965,868	36,192,472	43,158,340
2026	4,972,994	6,717,332	11,690,326	9,804,163	4,920,113	13,239,906	27,964,182	6,994,239	35,949,331	42,943,570
2027	4,937,234	6,669,243	11,606,477	9,593,889	4,811,907	12,963,589	27,369,385	6,887,970	35,674,196	42,562,166
2028	4,882,194	6,580,466	11,462,660	9,485,561	4,761,054	12,818,290	27,064,905	6,858,978	35,400,236	42,259,214
2029	4,866,883	6,567,340	11,434,223	9,399,083	4,715,969	12,703,507	26,818,559	6,802,025	35,296,793	42,098,818
2030	4,609,735	6,172,221	10,781,956	8,856,475	4,461,696	11,986,474	25,304,645	6,620,369	33,997,144	40,617,513
2031	4,583,612	6,144,637	10,728,249	8,716,390	4,387,287	11,801,844	24,905,521	6,542,072	33,846,290	40,388,362
2032	4,586,141	6,134,278	10,720,419	8,844,652	4,454,186	11,970,973	25,269,811	6,628,499	34,002,033	40,630,532
2033	4,607,149	6,134,015	10,741,164	9,063,308	4,566,503	12,265,347	25,895,158	6,822,947	34,362,323	41,185,270
2034	4,495,007	6,023,881	10,518,888	8,865,504	4,463,883	12,000,023	25,329,410	6,666,058	34,074,682	40,740,740
2035	4,323,884	5,856,227	10,180,111	8,859,885	4,465,730	11,981,272	25,306,887	6,629,188	34,002,056	40,631,244
Total	218,592,100	297,143,202	515,735,302	420,172,544	239,574,816	688,069,802	1,347,817,162	268,916,100	1,419,539,922	1,688,456,021

Table B-23

Total Transportation and Delta Water 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		County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
				Municipal and Industrial (14)	Agricultural (15)				
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	2,725	0	0	0	0	0	2,725
1965	0	0	6,029	73,568	0	0	0	0	79,597
1966	0	0	12,039	137,329	0	0	0	0	149,368
1967	0	0	26,257	267,612	0	0	0	0	293,869
1968	224,291	19,326	54,589	445,438	1,705,078	16,044	19,588	306,645	2,790,999
1969	240,434	10,772	87,576	525,095	2,719,874	15,678	19,317	456,264	4,075,010
1970	305,505	34,208	94,674	573,999	3,867,758	20,250	30,336	519,400	5,446,130
1971	326,820	36,936	95,695	605,888	5,147,912	25,965	34,613	710,532	6,984,361
1972	380,325	40,197	98,789	631,615	7,111,469	25,248	63,684	1,978,847	10,330,174
1973	397,627	38,819	97,550	1,025,888	7,254,021	27,580	39,191	779,531	9,660,207
1974	505,446	40,033	98,460	1,143,571	7,970,035	28,292	42,479	1,038,279	10,866,595
1975	677,583	40,482	106,703	1,196,448	9,346,368	29,970	48,093	1,550,604	12,996,251
1976	717,659	43,003	108,083	1,323,177	10,589,561	31,391	52,017	1,437,939	14,302,830
1977	577,954	38,920	112,554	1,365,869	10,904,827	33,140	54,131	1,134,053	14,221,448
1978	696,380	36,029	115,521	1,564,174	13,226,994	37,552	58,942	1,167,762	16,903,354
1979	779,361	47,756	114,253	1,668,163	15,296,328	41,684	70,532	1,721,235	19,739,312
1980	960,182	49,491	125,950	1,770,264	16,946,732	46,637	94,805	1,667,448	21,661,509
1981	1,209,117	83,857	134,169	2,430,802	22,544,287	65,094	100,537	2,278,232	28,846,095
1982	1,245,229	70,051	135,057	2,523,661	24,935,546	69,259	108,179	2,272,666	31,359,648
1983	1,179,462	52,401	149,201	2,085,047	24,576,980	74,040	87,347	506,120	28,710,598
1984	1,488,779	28,383	164,505	3,396,379	33,305,074	92,911	121,312	1,537,152	40,134,495
1985	1,764,487	129,813	184,905	3,891,204	39,270,404	116,171	139,389	2,812,889	48,309,262
1986	2,006,166	79,190	180,445	4,079,838	43,360,857	135,299	153,040	3,647,503	53,642,338
1987	1,960,213	99,415	179,872	4,770,717	44,088,664	142,733	160,873	3,898,927	55,301,414
1988	1,966,116	109,486	193,735	4,734,502	44,566,651	136,850	146,432	3,894,365	55,748,137
1989	2,120,653	101,613	187,914	4,677,356	46,755,558	135,641	166,253	4,375,497	58,520,485
1990	1,881,733	86,817	221,391	4,827,892	45,528,907	119,700	148,554	3,952,946	56,767,940
1991	1,685,643	80,106	220,282	4,535,868	37,404,562	102,443	134,564	3,493,956	47,657,424
1992	2,231,094	104,925	241,456	5,550,167	48,601,658	142,302	175,547	4,532,786	61,579,935
1993	2,453,249	119,928	264,959	5,806,060	54,502,825	160,023	195,112	5,286,640	68,788,796
1994	2,258,087	107,434	306,359	5,210,311	51,973,437	144,095	177,924	4,659,373	64,837,020
1995	2,854,533	115,350	304,297	6,621,490	60,433,521	179,242	210,257	5,518,174	76,236,864
1996	2,052,019	124,163	389,202	6,403,822	58,320,052	175,046	188,373	6,986,644	74,639,321
1997	2,788,334	100,445	276,681	6,521,956	57,712,890	136,350	212,069	4,706,070	72,454,795
1998	2,643,103	119,766	381,881	5,812,841	54,310,804	141,615	203,827	4,960,489	68,574,326
1999	2,701,431	134,504	366,806	6,389,372	57,305,394	180,379	216,353	7,290,001	74,584,240
2000	2,625,940	120,545	301,842	6,321,167	51,652,382	172,629	213,630	6,220,956	67,629,091
2001	3,078,581	147,629	331,654	6,643,010	59,022,757	192,706	244,043	7,111,549	76,771,929
2002	2,985,512	128,847	333,683	6,773,107	54,038,919	188,089	234,353	5,867,388	70,549,898
2003	3,464,939	164,350	337,507	8,038,990	60,547,983	219,618	263,973	6,647,036	79,684,396
2004	3,888,743	184,027	347,622	9,014,444	69,103,059	248,221	294,918	7,386,767	90,467,801
2005	4,063,566	193,117	354,723	9,329,269	72,739,303	260,150	304,247	7,725,537	94,969,912
2006	3,760,634	176,884	404,097	8,624,598	67,919,601	239,404	284,598	7,131,336	88,541,152
2007	3,712,077	174,352	403,882	8,518,072	67,071,179	236,042	280,469	7,037,006	87,433,079
2008	3,672,423	172,662	404,000	8,422,090	66,379,547	233,648	279,430	6,961,502	86,525,302
2009	3,637,842	170,789	403,918	8,356,856	65,991,018	231,176	274,626	6,893,989	85,960,214
2010	3,766,800	177,730	403,878	8,640,772	68,214,408	240,362	286,371	7,145,659	88,875,980
2011	3,746,587	176,144	405,026	8,589,961	67,745,037	238,401	283,754	7,103,715	88,288,625
2012	3,752,539	176,450	405,093	8,616,770	68,080,882	238,808	282,461	7,115,241	88,668,244
2013	3,858,709	181,826	405,262	8,835,623	69,617,530	246,034	293,092	7,320,896	90,758,972
2014	3,724,016	174,697	402,607	8,547,599	67,520,312	236,553	279,701	7,058,521	87,944,006
2015	3,815,736	179,278	399,525	8,666,659	68,865,483	242,734	288,396	7,235,921	89,693,732
2016	3,945,380	185,997	393,148	8,887,935	70,967,329	251,725	300,000	7,487,889	92,419,403
2017	3,828,462	179,838	379,076	8,497,066	68,991,595	243,525	289,773	7,260,275	89,669,610
2018	3,781,086	177,885	356,581	8,297,206	68,626,643	232,220	284,369	7,170,309	88,926,299
2019	3,939,982	185,908	347,734	8,579,717	71,093,891	242,524	298,473	7,478,212	92,166,441
2020	3,786,876	178,171	346,195	8,209,672	68,578,932	231,854	286,064	7,181,556	88,799,320
2021	3,804,576	178,825	345,240	8,224,250	68,780,702	232,682	287,206	7,214,792	89,068,273
2022	3,704,885	173,885	344,522	7,997,073	67,199,514	225,926	279,019	7,022,069	86,946,893
2023	3,771,722	177,295	343,840	8,136,479	68,231,133	230,483	285,199	7,151,785	88,327,936
2024	3,839,825	181,004	343,421	8,286,140	69,446,402	235,357	291,106	7,284,830	89,908,085
2025	3,645,835	171,302	343,170	7,873,202	66,571,320	222,227	273,049	6,909,387	86,009,492
2026	3,735,670	176,718	342,348	8,066,430	68,164,132	229,168	283,281	7,087,314	88,085,061
2027	3,619,749	170,850	342,664	7,818,006	66,424,735	221,210	272,469	6,862,487	85,732,170
2028	3,572,573	168,912	339,237	7,716,962	65,825,473	218,431	268,968	6,773,233	84,883,789
2029	3,533,142	166,842	339,330	7,629,034	65,191,539	215,607	265,352	6,696,437	84,037,283
2030	3,295,077	156,755	338,764	7,134,539	62,221,509	201,244	246,497	6,243,685	79,838,070
2031	3,220,567	152,846	338,114	6,958,190	61,071,677	195,621	239,259	6,098,462	78,274,736
2032	3,283,176	156,134	336,870	7,092,247	62,032,024	200,043	245,306	6,220,582	79,566,382
2033	3,365,102	160,415	337,154	7,283,813	63,640,775	205,609	250,472	6,379,791	81,623,131
2034	3,285,943	156,273	336,574	7,091,830	62,157,992	199,942	244,903	6,225,797	79,699,254
2035	3,357,136	160,002	335,230	7,258,283	63,512,535	204,693	249,921	6,364,417	81,442,217
Total	175,150,423	8,438,795	18,814,095	393,564,444	3,334,824,280	10,933,290	13,502,418	340,155,297	4,295,383,043

Table B-23

Total Transportation and 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)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,321	0	0	0	0	0	0	0	51,729	0
1964	62,868	27,447	14,426	4,370	37,158	1,143	28,437	8,205	82,811	34,987
1965	118,604	53,007	25,094	7,194	40,770	2,082	50,317	15,222	135,068	35,344
1966	215,783	101,264	44,730	12,478	73,152	3,753	90,398	27,679	232,502	61,465
1967	417,481	210,814	86,118	23,472	141,411	7,284	175,176	54,023	433,350	115,574
1968	744,414	491,156	152,688	41,509	251,199	12,870	311,082	95,462	782,164	208,926
1969	1,072,928	742,003	225,307	61,226	370,960	18,694	458,889	138,055	1,205,834	321,755
1970	1,396,232	941,958	315,262	89,700	519,318	25,231	632,955	184,828	1,778,188	467,573
1971	1,728,240	1,136,305	432,545	128,360	712,746	31,837	857,100	231,267	2,539,164	659,414
1972	2,208,171	1,381,166	603,427	179,685	989,938	43,430	1,178,363	287,601	3,758,609	950,298
1973	2,360,844	1,429,508	740,888	190,549	1,206,863	45,891	1,269,792	313,424	3,991,689	961,024
1974	2,481,078	1,524,922	766,569	203,642	1,250,091	48,770	1,328,566	331,677	4,465,714	1,104,491
1975	2,697,485	1,615,771	813,669	218,978	1,328,112	53,125	1,414,471	355,240	4,649,292	1,208,047
1976	3,158,509	1,652,380	870,520	231,759	1,420,520	57,620	1,490,713	381,243	4,848,864	1,278,740
1977	3,140,513	1,740,143	773,846	244,149	1,267,276	54,160	1,577,930	406,585	5,078,655	1,336,313
1978	3,584,093	1,873,075	969,689	255,071	1,562,997	56,760	1,625,126	419,987	5,107,584	1,374,032
1979	4,253,917	1,952,747	1,054,890	267,367	1,685,186	60,255	1,798,997	449,715	5,154,320	1,342,135
1980	4,951,428	2,091,000	1,167,480	295,350	1,890,623	67,605	1,972,237	499,004	5,665,094	1,485,141
1981	5,779,187	2,560,208	1,322,125	328,818	2,140,610	100,752	2,290,194	603,214	6,479,330	1,688,324
1982	5,538,019	2,723,119	1,409,804	346,721	2,284,334	82,296	2,264,803	641,936	6,770,288	1,929,664
1983	6,288,474	2,793,556	1,929,577	380,840	3,118,816	88,384	2,460,232	658,553	6,982,194	1,808,748
1984	7,663,834	3,872,188	3,030,004	497,585	4,875,176	96,492	2,725,547	727,759	8,070,699	2,598,233
1985	9,494,848	4,338,122	3,863,554	601,928	6,210,153	103,706	2,915,384	959,592	8,910,831	2,686,799
1986	9,462,998	4,973,415	4,323,806	647,634	6,954,450	130,221	3,098,791	1,223,777	9,160,311	3,398,539
1987	9,555,269	4,878,504	4,224,543	681,241	6,884,198	242,722	3,153,137	1,264,153	10,593,811	3,417,054
1988	9,095,461	5,017,381	4,248,225	704,411	6,997,013	158,845	3,327,145	1,044,127	11,112,682	3,271,137
1989	10,985,863	5,026,616	3,955,357	691,191	6,579,619	210,634	3,407,850	1,746,682	10,829,479	3,453,680
1990	12,377,333	5,494,547	4,647,031	729,229	7,663,736	331,172	3,638,629	1,953,819	11,740,436	4,221,266
1991	9,236,957	4,608,311	3,200,211	688,866	5,277,388	221,166	4,498,068	1,639,999	11,122,363	3,642,611
1992	11,793,075	5,796,999	3,353,122	612,895	5,529,463	174,998	5,476,168	1,532,240	11,161,591	3,694,099
1993	12,206,191	5,443,663	3,556,023	617,198	5,864,156	211,904	5,367,013	1,753,886	12,124,665	4,042,324
1994	14,274,992	6,010,903	3,580,859	694,570	5,904,938	278,011	6,317,786	2,090,634	12,751,813	4,777,246
1995	14,141,297	6,385,770	4,401,989	661,812	7,259,469	212,244	5,510,305	1,952,409	12,221,934	4,480,934
1996	14,355,211	6,524,605	7,088,864	667,472	11,691,119	206,122	5,356,622	2,258,230	12,717,846	4,524,779
1997	15,137,266	6,510,567	6,968,473	750,419	8,455,795	207,887	6,029,908	2,342,113	14,415,767	4,897,486
1998	13,676,824	6,144,171	6,066,715	717,267	6,979,801	209,243	7,634,604	1,950,305	14,320,332	4,180,208
1999	15,505,632	6,684,704	5,115,113	833,813	7,182,801	215,994	8,337,587	2,366,194	15,921,997	5,164,376
2000	14,887,069	10,279,152	3,611,810	795,113	5,662,776	186,470	8,194,739	2,090,847	15,534,350	4,280,344
2001	22,563,217	16,310,955	4,699,458	1,020,824	7,750,174	199,266	8,939,448	4,121,785	21,953,487	4,544,695
2002	16,569,582	13,295,710	3,918,177	966,447	6,461,811	181,285	7,983,292	2,504,339	22,630,249	5,921,187
2003	21,942,984	13,894,091	5,263,217	1,153,872	8,679,762	209,426	11,266,614	3,852,323	30,094,691	6,192,967
2004	26,616,970	21,008,134	6,745,653	1,355,019	11,124,663	607,622	12,017,612	5,527,921	36,801,069	7,178,986
2005	30,401,926	23,273,661	7,777,785	1,516,274	12,827,009	696,395	13,784,213	6,335,499	41,391,494	7,869,823
2006	27,250,059	20,436,675	6,704,452	1,378,952	11,056,738	596,948	13,446,122	5,425,853	36,807,228	7,080,112
2007	27,696,571	20,092,117	6,621,280	1,412,956	10,919,568	589,356	14,306,793	5,355,575	36,695,597	7,403,695
2008	33,996,303	20,248,873	6,329,776	1,387,905	10,438,807	564,135	13,506,629	5,124,498	35,240,002	8,787,698
2009	34,729,787	21,258,991	6,477,690	1,445,137	10,682,765	576,091	14,451,942	5,234,792	36,018,104	8,993,319
2010	35,904,619	22,727,124	6,687,970	1,498,482	11,029,605	595,119	15,013,022	5,412,356	36,848,995	9,236,806
2011	35,504,272	23,487,916	6,618,980	1,530,014	10,915,775	588,833	15,310,771	5,350,479	36,697,943	9,180,141
2012	36,838,864	24,953,832	6,861,146	1,597,893	11,315,188	610,549	16,029,113	5,551,510	37,707,168	9,470,623
2013	36,753,473	24,955,850	6,840,854	1,613,094	11,268,334	609,791	16,328,747	5,543,170	37,399,212	9,404,296
2014	36,348,534	24,581,981	6,764,314	1,650,051	11,156,076	602,607	16,593,601	5,477,567	37,437,654	9,378,840
2015	36,508,709	24,755,529	6,767,458	1,662,275	11,161,236	605,262	17,079,520	5,501,809	37,134,087	9,328,868
2016	37,735,462	25,544,263	7,008,011	1,763,021	11,558,002	625,134	18,036,842	5,687,391	38,583,679	9,695,034
2017	36,097,401	24,503,603	6,685,453	1,711,037	11,025,986	598,263	17,911,758	5,442,476	36,892,650	9,248,828
2018	37,012,175	24,857,310	6,845,212	1,773,028	11,289,538	612,745	18,724,442	5,584,285	37,555,589	9,436,385
2019	37,851,046	25,279,765	6,982,380	1,835,292	11,515,766	626,002	19,737,694	5,709,820	38,275,016	9,622,704
2020	35,759,046	23,759,560	6,539,523	1,745,186	10,785,368	590,606	19,278,121	5,390,106	35,877,772	8,991,177
2021	35,620,306	23,630,490	6,456,112	1,723,177	10,647,774	587,266	19,470,211	5,364,232	35,097,151	8,813,011
2022	34,514,360	22,646,034	6,230,777	1,696,540	10,276,156	568,921	19,166,971	5,197,914	34,095,067	8,863,672
2023	34,884,075	22,964,537	6,292,731	1,739,415	10,378,341	574,778	19,705,366	5,252,782	34,521,188	8,630,052
2024	35,653,420	23,435,685	6,412,959	1,764,719	10,576,645	587,234	20,383,402	5,369,165	34,748,753	8,725,151
2025	34,905,773	22,799,116	6,278,346	1,741,015	10,354,661	574,879	20,344,135	5,257,945	34,118,689	8,548,830
2026	35,089,064	22,886,292	6,287,921	1,766,020	10,370,524	577,560	20,714,629	5,287,807	34,267,164	8,573,375
2027	34,645,731	22,266,064	6,188,622	1,732,604	10,206,754	570,270	20,838,576	5,221,739	33,497,674	8,390,948
2028	34,293,243	22,263,182	6,103,174	1,712,432	10,065,863	564,321	21,008,672	5,170,368	32,903,990	8,244,349
2029	34,046,585	21,776,635	6,079,403	1,738,201	10,026,667	560,289	21,266,841	5,133,314	33,199,022	8,284,183
2030	33,056,419	20,686,715	5,864,059	1,688,193	9,671,695	543,313	20,942,328	4,992,034	32,006,043	7,964,701
2031	32,740,084	20,170,936	5,775,092	1,638,650	9,524,942	538,141	21,188,297	4,944,925	31,062,012	7,759,511
2032	32,863,611	20,583,121	5,820,429	1,682,670	9,599,734	540,117	21,206,401	4,963,861	31,771,886	7,903,438
2033	35,089,687	21,864,347	6,219,288	1,776,551	10,257,590	576,288	22,668,494	5,300,644	33,273,826	8,354,262
2034	33,123,893	20,636,637	5,856,514	1,682,395	9,659,247	544,307	21,418,359	5,006,725	31,602,007	7,890,283
2035	35,546,467	21,214,985	6,276,693	1,830,166	10,352,292	583,603	22,814,416	5,373,622	34,070,911	8,517,564
Total	1,416,235,427	894,081,883	310,235,262	71,033,389	503,195,187	23,636,495	721,148,455	216,970,317	1,481,180,419	377,532,624

Table B-23

Total Transportation and Delta Water 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	3,219	79,888
1963	0	690,812	0	775,862	0	0	0	0	12,626	1,620,403
1964	21,736	1,260,513	9,378	1,593,479	0	0	0	0	13,938	2,792,766
1965	21,866	2,180,589	17,767	2,702,924	0	0	405	405	28,937	4,788,225
1966	37,964	3,900,172	33,426	4,834,766	0	0	564	564	31,321	7,365,748
1967	71,283	7,693,703	68,155	9,497,844	0	0	562	562	47,718	13,009,979
1968	128,915	15,317,881	142,803	18,681,069	0	1,050	1,439	2,489	46,945	25,480,806
1969	198,763	23,153,063	215,209	28,182,686	0	1,225	4,120	5,345	52,963	36,804,066
1970	289,633	30,617,164	273,605	37,531,647	0	3,848	17,116	20,964	69,744	48,255,303
1971	409,327	39,976,488	342,425	49,185,218	0	4,546	19,187	23,733	55,532	61,388,384
1972	537,186	55,213,354	422,305	67,753,533	0	4,929	21,150	26,079	80,412	83,799,303
1973	587,964	59,774,386	435,655	73,308,477	0	7,059	21,778	28,837	54,219	88,655,435
1974	611,428	66,143,537	455,565	80,716,050	0	8,336	22,408	30,744	76,783	97,596,379
1975	644,621	71,954,512	478,404	87,431,727	0	9,416	23,522	32,938	84,547	106,495,499
1976	668,314	74,998,971	475,587	91,533,740	0	7,004	23,257	30,261	106,717	112,384,334
1977	696,515	73,481,722	507,064	90,304,871	0	16,917	24,059	40,976	98,618	111,022,571
1978	709,040	82,046,593	523,177	100,107,224	0	12,635	24,225	36,860	100,786	124,022,701
1979	712,866	83,699,395	526,405	102,958,195	0	16,575	28,352	44,927	119,352	130,030,006
1980	862,276	93,353,043	583,628	114,883,909	0	19,834	26,562	46,396	178,812	144,705,763
1981	946,961	112,495,184	672,540	137,407,447	0	21,682	34,563	56,245	185,347	175,246,920
1982	1,021,329	117,466,992	727,623	143,206,928	0	16,117	43,117	59,234	173,894	184,312,577
1983	1,076,279	119,314,699	854,263	147,754,615	0	15,202	29,410	44,612	220,926	185,959,687
1984	1,211,620	156,597,226	933,311	192,899,674	20,590	15,442	31,795	67,827	225,959	245,392,052
1985	1,287,789	195,816,962	993,651	238,183,319	24,050	16,976	32,405	73,431	340,322	301,809,181
1986	1,344,770	218,655,375	1,058,276	264,432,363	31,753	18,145	33,596	83,494	279,227	334,211,225
1987	1,379,614	206,398,435	1,056,318	253,728,999	37,071	17,794	33,384	88,249	345,116	327,911,766
1988	1,465,828	221,990,807	1,124,101	269,557,163	48,058	19,117	33,605	100,780	365,207	346,077,075
1989	1,505,481	230,651,969	1,232,379	280,276,800	61,184	20,809	37,188	119,181	422,329	360,968,310
1990	1,624,763	277,518,457	1,855,990	333,796,408	66,041	20,855	36,812	123,708	474,284	415,309,039
1991	1,720,878	222,210,752	1,549,955	269,617,525	180,212	22,526	42,200	244,938	214,683	339,412,284
1992	1,779,902	245,689,309	1,503,480	298,097,341	208,216	26,028	43,517	277,761	443,676	384,449,469
1993	1,943,337	219,561,871	1,551,253	274,243,484	209,613	26,203	47,588	283,404	599,571	370,417,112
1994	1,920,543	257,719,771	1,475,305	317,797,371	201,284	25,161	46,079	272,524	609,932	412,555,491
1995	1,982,808	226,187,062	1,568,401	286,966,434	216,944	27,118	50,021	294,083	534,971	394,969,458
1996	1,651,251	233,230,856	1,622,240	301,895,217	217,250	27,156	56,623	301,029	571,857	419,070,582
1997	1,758,787	245,777,257	1,777,266	315,028,991	236,300	29,847	59,915	326,062	428,638	439,079,043
1998	1,949,514	227,576,090	1,797,591	293,202,665	128,021	29,927	54,392	212,340	465,140	417,303,171
1999	2,301,879	256,825,585	1,882,455	328,338,130	254,675	31,834	58,372	344,881	555,858	464,705,959
2000	2,555,732	255,342,078	1,970,930	325,391,410	262,163	79,001	61,581	402,745	0	456,729,530
2001	3,565,896	446,473,166	2,304,914	544,447,285	261,699	93,471	62,747	417,917	0	693,447,736
2002	4,918,768	339,509,227	2,303,954	427,164,028	266,107	95,018	68,296	429,421	0	570,045,447
2003	6,360,409	450,213,235	2,679,235	561,802,826	283,276	99,929	74,648	457,853	0	720,501,487
2004	6,949,925	550,829,067	3,025,235	689,787,877	308,431	109,701	81,233	499,365	0	870,606,138
2005	7,342,640	625,837,619	3,207,803	782,262,141	284,310	672,153	78,290	1,034,752	0	971,731,053
2006	7,240,080	537,576,012	2,866,163	677,865,394	283,967	672,049	80,342	1,036,357	0	854,837,047
2007	7,434,160	531,250,542	2,847,570	672,625,780	283,878	672,022	81,956	1,037,856	0	847,972,771
2008	7,718,135	509,037,087	2,772,170	655,152,018	278,633	670,430	82,302	1,031,365	0	828,248,089
2009	7,941,915	519,804,251	2,802,379	670,417,163	279,497	670,693	84,156	1,034,346	0	843,300,394
2010	8,177,771	536,009,923	2,835,193	691,976,985	276,865	669,894	85,148	1,031,907	0	868,859,276
2011	8,325,300	531,965,194	2,854,332	688,329,950	283,887	672,025	88,763	1,044,675	0	864,979,522
2012	8,601,275	549,754,175	2,900,882	712,192,218	283,965	672,049	90,661	1,046,675	0	889,737,760
2013	8,730,181	548,669,965	2,912,901	711,029,868	286,362	672,776	93,367	1,052,505	0	890,542,634
2014	8,903,849	542,271,499	2,889,735	704,056,308	287,436	673,102	95,743	1,056,281	0	879,557,817
2015	9,026,323	543,512,434	2,900,598	705,944,108	290,365	673,991	98,414	1,062,770	0	883,386,062
2016	9,399,675	560,923,913	2,939,216	729,499,643	291,286	674,271	100,826	1,066,383	0	910,182,223
2017	9,315,341	537,405,745	2,854,815	699,693,356	291,831	674,436	100,964	1,067,231	0	876,540,170
2018	9,589,166	544,854,316	2,801,929	710,936,120	284,657	672,259	99,185	1,056,101	0	886,019,767
2019	9,686,561	553,796,386	2,792,369	723,710,801	288,654	673,472	97,544	1,059,670	0	903,251,308
2020	9,314,922	518,721,291	2,653,384	679,406,062	284,901	672,333	84,690	1,041,924	0	853,494,177
2021	9,187,244	511,973,709	2,607,166	671,177,849	288,586	673,451	84,780	1,046,817	0	845,923,268
2022	9,031,946	491,593,098	2,515,966	646,397,422	284,837	672,313	82,461	1,039,611	0	817,661,160
2023	9,089,272	495,072,878	2,535,847	651,641,262	286,082	672,691	82,767	1,041,540	0	824,720,012
2024	9,150,084	503,794,804	2,549,901	663,151,922	284,050	672,075	82,263	1,038,388	0	838,565,018
2025	9,067,007	490,031,876	2,477,920	646,500,192	277,950	670,223	80,755	1,028,928	0	816,364,693
2026	9,120,257	493,604,543	2,458,859	651,004,015	268,270	667,286	78,345	1,013,901	0	822,701,054
2027	9,016,965	478,725,400	2,387,108	633,688,455	265,482	666,439	77,668	1,009,589	0	801,968,241
2028	8,953,153	480,953,957	2,411,180	634,647,884	258,393	664,288	75,892	998,573	0	801,317,024
2029	8,982,217	471,659,811	2,339,071	625,092,239	258,439	664,302	75,911	998,652	0	790,479,773
2030	8,910,275	452,716,759	2,168,752	601,211,286	226,286	654,544	67,938	948,768	0	758,702,237
2031	8,779,388	441,451,015	2,096,947	587,669,940	226,286	654,544	67,948	948,778	0	742,915,585
2032	8,872,669	450,987,954	2,160,929	598,956,820	226,286	654,544	67,928	948,758	0	756,092,721
2033	9,139,646	475,618,810	2,179,821	632,319,254	226,286	654,544	67,939	948,769	0	792,712,745
2034	8,859,962	449,755,301	2,113,085	598,148,715	226,286	654,544	67,937	948,767	0	755,385,773
2035	9,244,670	475,776,679	2,177,446	633,779,514	226,286	654,544	67,925	948,755	0	792,288,727
Total	333,585,809	22,674,614,276	124,042,661	29,147,492,205	11,913,237	21,726,710	3,982,602	37,622,549	8,720,126	37,041,226,409

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					Delta Water Charge (6)	Water System Revenue Bond Surcharge (7)	Total Equivalent Unit Charge (8)
	Capital Cost Component (1)	Minimum OMP&R Component (2)	Off-Aqueduct Component (3)	Variable OMP&R Component (4)	Total (5)			
Feather River Area								
City of Yuba City	0.00	0.00	0.00	0.00	0.00	32.75	4.30	37.05
County of Butte	0.00	0.00	0.00	0.00	0.00	14.80	1.94	16.74
Plumas County Flood Control and Water Conservation District	49.69	6.39	0.00	0.00	56.08	21.82	16.30	94.20
Feather River Area	6.68	0.86	0.00	0.00	7.54	18.62	4.25	30.41
North Bay Area								
Napa County Flood Control and Water Conservation District	114.54	41.42	4.10	16.95	177.02	16.54	33.13	226.69
Solano County Water Agency	81.62	34.24	4.35	10.82	131.03	24.58	25.29	180.90
North Bay Area	94.17	36.98	4.25	13.25	148.65	22.61	10.50	181.76
South Bay Area								
Alameda County Flood Control and Water Conservation District, Zone 7	15.05	35.52	8.08	24.22	82.86	18.51	6.50	107.87
Alameda County Water District	21.75	27.53	7.00	16.21	72.49	20.46	8.57	101.52
Santa Clara Valley Water District	19.79	20.93	6.53	13.35	60.60	15.04	7.32	82.96
South Bay Area	21.75	26.00	6.90	15.88	70.53	17.91	4.13	92.58
San Joaquin Valley Area								
County of Kings	4.62	4.43	3.68	6.96	19.68	19.00	3.74	42.42
Dudley Ridge Water District	5.15	5.01	3.10	5.96	19.22	15.98	3.49	38.69
Empire West Side Irrigation District	1.99	4.17	2.38	5.48	14.02	16.64	2.72	33.38
Kern County Water Agency	18.18	17.86	9.59	17.00	62.64	20.88	7.66	91.18
Oak Flat Water District	2.00	2.35	1.93	3.73	10.01	15.22	2.54	27.77
Tulare Lake Basin Water Storage District	5.32	4.94	3.04	6.17	19.47	16.31	3.58	39.36
San Joaquin Valley Area	8.97	9.04	4.50	6.06	28.58	16.51	2.27	47.35
Central Coastal Area								
San Luis Obispo County Flood Control and Water Conservation District	147.79	73.92	13.85	103.40	338.96	42.80	45.57	427.33
Santa Barbara County Flood Control and Water Conservation District	648.72	111.89	17.07	100.64	878.32	40.59	180.66	1,099.57
Central Coastal Area	486.22	99.58	15.98	101.57	703.35	44.39	38.21	785.95
Southern California Area								
Antelope Valley-East Kern Water Agency	43.68	41.47	26.93	81.69	193.77	28.41	15.54	237.72
Castaic Lake Water Agency	40.93	42.65	23.44	61.52	168.54	18.69	13.52	200.75
Coachella Valley Water District	37.24	34.65	50.71	47.50	170.10	16.85	12.28	199.23
Crestline-Lake Arrowhead Water Agency	118.51	100.08	25.80	86.86	331.25	34.92	36.62	402.79
Desert Water Agency	40.89	38.04	49.18	53.71	181.82	18.27	13.45	213.54
Littlerock Creek Irrigation District	55.94	51.81	26.48	93.79	228.01	33.41	19.51	280.93
Mojave Water Agency	116.28	137.77	17.07	109.15	380.28	38.46	36.48	455.22
Palmdale Water District	48.30	48.94	33.68	108.88	239.80	33.14	17.41	290.35
San Bernardino Valley Municipal Water District	135.85	114.13	26.52	104.33	380.83	43.89	42.48	467.20
San Gabriel Valley Municipal Water District	97.49	84.13	38.37	70.16	290.15	32.27	30.59	353.01
San Gorgonio Pass Water Agency	278.75	239.19	11.77	128.32	658.02	49.67	81.86	789.55
The Metropolitan Water District of Southern California	77.29	77.29	35.94	64.18	254.70	31.18	24.98	310.86
Ventura County Flood Control District	374.89	290.44	9.06	34.62	709.01	43.26	107.00	859.27
Southern California Area	76.25	61.67	32.06	61.57	231.55	30.86	9.81	272.22
All Areas	46.07	36.09	19.02	36.96	138.15	25.13	6.71	169.98

[a]Hypothetical charges, which, if assessed on all Table A water delivered to date, all surplus water delivered prior to May 1, 1973, and all Table A 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, 4.610 percent per annum.

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	39.22	10.59	12.35	1.31	3.80	67.27	39.22	10.59	12.35	1.31	3.80	67.27
2	41.74	11.27	5.40	0.00	0.00	58.41	80.96	21.86	17.75	1.31	3.80	125.68
3A	7.44	2.01	10.73	2.43	6.15	28.76	88.40	23.87	28.48	3.74	9.95	154.44
3B	47.86	12.92	24.27	3.14	13.65	101.84	128.82	34.78	42.02	4.45	17.45	227.52
South Bay Aqueduct												
1	6.85	1.85	14.48	5.36	14.23	42.77	8.77	2.37	17.33	7.11	20.88	56.46
2	0.65	0.18	1.64	0.00	0.00	2.47	9.42	2.55	18.97	7.11	20.88	58.93
4	2.16	0.58	2.79	0.00	0.00	5.53	11.58	3.13	21.76	7.11	20.88	64.46
5	4.53	1.22	2.19	0.00	0.00	7.94	16.11	4.35	23.95	7.11	20.88	72.40
6	0.26	0.07	0.23	0.00	0.00	0.56	16.37	4.42	24.18	7.11	20.88	72.96
7	2.01	0.54	0.42	0.00	0.00	2.97	18.38	4.96	24.60	7.11	20.88	75.93
8	2.72	0.73	0.70	0.00	0.00	4.15	21.10	5.69	25.30	7.11	20.88	80.08
9	5.63	1.52	2.63	0.00	0.00	9.78	26.73	7.21	27.93	7.11	20.88	89.86
California Aqueduct												
1	1.92	0.52	2.85	1.75	6.65	13.69	1.92	0.52	2.85	1.75	6.65	13.69
2A	1.22	0.33	0.56	0.00	0.00	2.11	3.14	0.85	3.41	1.75	6.65	15.80
2B	0.63	0.17	0.28	0.00	0.00	1.08	3.77	1.02	3.69	1.75	6.65	16.88
3	0.54	0.15	0.21	0.00	0.00	0.90	4.31	1.17	3.90	1.75	6.65	17.78
4	0.87	0.23	1.41	0.81	3.01	6.33	5.18	1.40	5.31	2.56	9.66	24.11
5	0.67	0.18	0.28	0.00	0.00	1.13	5.85	1.58	5.59	2.56	9.66	25.24
6	0.17	0.05	0.14	0.00	0.00	0.36	6.02	1.63	5.73	2.56	9.66	25.60
7	1.00	0.27	0.34	0.00	0.00	1.61	7.02	1.90	6.07	2.56	9.66	27.21
8C	0.02	0.01	0.06	0.00	0.00	0.09	7.04	1.91	6.13	2.56	9.66	27.30
8D	0.38	0.10	0.27	0.00	0.00	0.75	7.42	2.01	6.40	2.56	9.66	28.05
9	0.32	0.09	0.25	0.00	0.00	0.66	7.74	2.10	6.65	2.56	9.66	28.71
10A	0.34	0.09	0.33	0.00	0.00	0.76	8.08	2.19	6.98	2.56	9.66	29.47
11B	0.50	0.14	0.21	0.00	0.00	0.85	8.58	2.33	7.19	2.56	9.66	30.32
12D	0.47	0.13	0.19	0.00	0.00	0.79	9.05	2.46	7.38	2.56	9.66	31.11
12E	0.33	0.09	0.32	0.00	0.00	0.74	9.38	2.55	7.70	2.56	9.66	31.85
13B	0.72	0.19	0.37	0.00	0.00	1.28	10.10	2.74	8.07	2.56	9.66	33.13
14A	2.76	0.75	2.86	1.39	5.66	13.42	12.86	3.49	10.93	3.95	15.32	46.55
14B	0.43	0.12	0.35	0.00	0.00	0.90	13.29	3.61	11.28	3.95	15.32	47.45
14C	0.36	0.10	0.26	0.00	0.00	0.72	13.65	3.71	11.54	3.95	15.32	48.17
15A	2.05	0.55	2.98	1.67	6.15	13.40	15.70	4.26	14.52	5.62	21.47	61.57
16A	3.39	0.92	4.61	3.61	14.35	26.88	19.09	5.18	19.13	9.23	35.82	88.45
17E	11.43	3.09	12.96	12.63	52.98	93.09	30.52	8.27	32.09	21.86	88.80	181.54
17F	2.96	0.80	0.16	0.00	0.00	3.92	33.48	9.07	32.25	21.86	88.80	185.46
18A	2.66	0.72	1.55	0.00	-5.57	(0.64)	36.14	9.79	33.80	21.86	83.23	184.82
19	1.97	0.53	0.94	0.00	0.00	3.44	38.11	10.32	34.74	21.86	83.23	188.26
19C	2.14	0.58	0.00	0.00	0.00	2.72	40.25	10.90	34.74	21.86	83.23	190.98
20A	1.56	0.42	1.55	0.00	0.00	3.53	41.81	11.32	36.29	21.86	83.23	194.51
20B	1.90	0.51	1.02	0.00	0.00	3.43	43.71	11.83	37.31	21.86	83.23	197.94
21	0.96	0.26	0.71	0.00	0.00	1.93	44.67	12.09	38.02	21.86	83.23	199.87
22A	1.00	0.27	0.37	0.00	0.00	1.64	45.67	12.36	38.39	21.86	83.23	201.51
22B	9.80	2.65	10.03	4.08	17.47	44.03	55.47	15.01	48.42	25.94	100.70	245.54
23	2.69	0.73	0.69	0.00	-7.10	(2.99)	58.16	15.74	49.11	25.94	93.60	242.55
24	5.22	1.41	1.95	0.00	0.00	8.58	63.38	17.15	51.06	25.94	93.60	251.13
25	3.81	1.03	0.11	0.00	0.00	4.95	67.19	18.18	51.17	25.94	93.60	256.08
26A	4.16	1.12	6.50	0.00	-48.44	(36.66)	71.35	19.30	57.67	25.94	45.16	219.42
28G	7.75	2.09	2.46	0.00	0.00	12.30	79.10	21.39	60.13	25.94	45.16	231.72
28H	7.46	2.01	2.58	0.00	0.00	12.05	86.56	23.40	62.71	25.94	45.16	243.77
28J	83.68	22.59	35.84	0.00	0.00	142.11	170.24	45.99	98.55	25.94	45.16	385.88
West Branch												
29A	3.88	1.05	7.44	1.55	6.22	20.14	37.36	10.12	39.69	23.41	95.02	205.60
29F	2.83	0.76	0.89	0.00	0.00	4.48	40.19	10.88	40.58	23.41	95.02	210.08
29G	9.41	2.54	4.23	0.00	-22.40	(6.22)	49.60	13.42	44.81	23.41	72.62	203.86
29H	5.86	1.58	4.01	0.00	0.00	11.45	55.46	15.00	48.82	23.41	72.62	215.31
29J	9.82	2.65	1.15	0.00	-41.89	(28.27)	65.28	17.65	49.97	23.41	30.73	187.04
30	15.76	4.26	3.60	0.00	0.00	23.62	81.04	21.91	53.57	23.41	30.73	210.66
Coastal Branch												
31A	7.13	1.93	16.99	1.72	5.35	33.12	14.55	3.94	23.39	4.28	15.01	61.17
33A	266.32	71.91	32.05	14.61	69.97	454.86	280.87	75.85	55.44	18.89	84.98	516.03
34	190.28	51.38	0.89	0.00	0.00	242.55	471.15	127.23	56.33	18.89	84.98	758.58
35	0.00	0.00	0.00	0.00	0.00	0.00	471.15	127.23	56.33	18.89	84.98	758.58

[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 canal-side. Includes surplus water prior to May 1,1973.

[b]Hypothetical charges which, if assessed on all Table A water delivered to date, all surplus water delivered prior to May 1, 1973, and all Table A 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 4.610 percent per annum.

[c]The Water System Revenue Bond Surcharge equivalent unit rate is calculated by multiplying Column 1 by the ratio of the 2004 WSRB surcharge to the sum of the Transportation Capital and the Capital component of the Delta Water Charge.

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	435,000	75,000	544,000	859,000	703,000	970,000	146,000
1986	784,000	4,477,000	3,144,000	2,234,000	1,569,000	1,203,000	1,808,000	34,000
1987	11,000	951,000	1,076,000	666,000	399,000	47,000	16,421,000	43,000
1988	1,000	125,000	1,681,000	1,730,000	2,024,000	40,000	13,326,000	70,000
1989	0	206,000	2,089,000	2,174,000	2,510,000	61,000	11,242,000	229,000
1990	1,000	577,000	903,000	735,000	928,000	194,000	20,131,000	887,000
1991	1,000	280,000	413,000	333,000	422,000	93,000	20,702,000	1,215,000
1992	0	40,000	41,000	39,000	35,000	13,000	9,599,000	3,719,000
1993	0	19,000	16,000	19,000	12,000	6,000	2,319,000	19,654,000
1994	0	2,000	3,000	2,000	4,000	3,000	803,000	3,173,000
1995	0	0	0	0	0	0	223,000	1,465,000
1996	0	0	0	0	0	0	6,014,000	478,000
1997	0	0	0	0	0	0	404,000	1,327,000
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	7,112,000	9,441,000	8,476,000	8,762,000	2,363,000	104,758,000	38,830,000

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	3,825,000	0	528,000	89,000	617,000	4,442,000
1986	25,000	0	15,278,000	0	1,926,000	154,000	2,080,000	17,358,000
1987	178,000	0	19,792,000	0	3,699,000	437,000	4,136,000	23,928,000
1988	632,000	0	19,629,000	0	5,667,000	3,329,000	8,996,000	28,625,000
1989	1,130,000	0	19,641,000	0	40,879,000	1,650,000	42,529,000	62,170,000
1990	2,066,000	0	26,422,000	0	29,853,000	1,650,000	31,503,000	57,925,000
1991	4,980,000	0	28,439,000	0	26,027,000	999,000	27,026,000	55,465,000
1992	11,920,000	0	25,406,000	0	15,317,000	299,000	15,616,000	41,022,000
1993	16,303,000	0	38,348,000	0	4,878,000	0	4,878,000	43,226,000
1994	7,081,000	0	11,071,000	0	3,151,000	0	3,151,000	14,222,000
1995	5,350,000	0	7,038,000	0	2,137,000	0	2,137,000	9,175,000
1996	1,706,000	0	8,198,000	0	9,181,000	0	9,181,000	17,379,000
1997	1,905,000	0	3,636,000	0	175,000	0	175,000	3,811,000
1998	28,000	0	28,000	0	0	0	0	28,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	53,304,000	0	238,887,000	0	143,418,000	8,607,000	152,025,000	390,912,000

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

(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)
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	1,048,625	0
1995	0	0	0	0	0	0	953,814	0
1996	0	0	0	0	0	0	1,171,411	0
1997	0	0	0	0	0	0	1,110,038	0
1998	0	0	0	0	0	0	1,213,002	0
1999	1,229	517	646	409	383	169	668,466	0
2000	4,452	1,875	2,340	1,484	1,386	614	1,320,864	0
2001	347	146	183	116	108	48	1,022,844	0
2002	1,639	690	861	546	510	226	1,376,847	0
2003	0	0	0	0	0	0	1,495,971	0
2004	0	0	0	0	0	0	1,623,324	0
2005	0	0	0	0	0	0	1,657,407	0
2006	0	0	0	0	0	0	1,657,407	0
2007	0	0	0	0	0	0	1,657,407	0
2008	0	0	0	0	0	0	1,657,407	0
2009	0	0	0	0	0	0	1,657,407	0
2010	0	0	0	0	0	0	1,657,407	0
2011	0	0	0	0	0	0	1,657,407	0
2012	0	0	0	0	0	0	1,657,407	0
2013	0	0	0	0	0	0	1,657,407	0
2014	0	0	0	0	0	0	1,657,407	0
2015	0	0	0	0	0	0	1,657,407	0
2016	0	0	0	0	0	0	1,657,407	0
2017	0	0	0	0	0	0	1,657,407	0
2018	0	0	0	0	0	0	1,657,407	0
2019	0	0	0	0	0	0	1,657,407	0
2020	0	0	0	0	0	0	1,657,407	0
2021	0	0	0	0	0	0	1,657,407	0
2022	0	0	0	0	0	0	1,657,407	0
2023	0	0	0	0	0	0	1,657,407	0
2024	0	0	0	0	0	0	1,657,407	0
2025	0	0	0	0	0	0	1,657,407	0
2026	0	0	0	0	0	0	1,657,407	0
2027	0	0	0	0	0	0	1,657,407	0
2028	0	0	0	0	0	0	1,657,407	0
2029	0	0	0	0	0	0	1,657,407	0
2030	0	0	0	0	0	0	1,657,407	0
2031	0	0	0	0	0	0	1,657,407	0
2032	0	0	0	0	0	0	1,657,407	0
2033	0	0	0	0	0	0	1,657,407	0
2034	0	0	0	0	0	0	1,657,407	0
2035	0	0	0	0	0	0	1,657,407	0
Total	7,667	3,228	4,030	2,555	2,387	1,057	64,384,823	0

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

(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[a] (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	0	0	1,048,625	0	1,713,260	0	1,713,260	2,761,885
1995	0	0	953,814	0	1,452,549	0	1,452,549	2,406,363
1996	0	0	1,171,411	0	1,350,581	0	1,350,581	2,521,992
1997	679,826	0	1,789,864	0	1,528,509	0	1,528,509	3,318,373
1998	825,038	0	2,038,040	0	1,619,068	0	1,619,068	3,657,108
1999	382,178	0	1,053,997	0	956,229	0	956,229	2,010,226
2000	733,437	0	2,066,452	0	1,401,896	0	1,401,896	3,468,348
2001	814,134	0	1,837,926	0	848,779	0	848,779	2,686,705
2002	774,053	0	2,155,372	0	1,146,798	0	1,146,798	3,302,170
2003	929,953	0	2,425,924	0	1,456,753	0	1,456,753	3,882,677
2004	1,137,076	0	2,760,400	0	1,517,683	0	1,517,683	4,278,083
2005	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2006	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2007	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2008	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2009	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2010	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2011	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2012	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2013	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2014	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2015	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2016	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2017	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2018	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2019	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2020	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2021	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2022	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2023	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2024	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2025	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2026	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2027	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2028	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2029	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2030	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2031	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2032	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2033	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2034	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
2035	974,287	0	2,631,694	0	1,537,388	0	1,537,388	4,169,082
Total	36,478,592	0	100,884,339	0	62,651,133	0	62,651,133	163,535,472

[a]Units 3 and 4 at Devil Canyon Power Plant were operational in 1993. These minimum OMP&R costs for Reach 26A will be revised to reflect operational date of those units

Table B-28

Capital Costs of East Branch Enlargement Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total
	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)	(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	49,675	447,266	65,773	347,262	4,514	21,614	3,505,896	4,442,000
1986	185,353	1,757,633	236,324	1,363,586	41,900	78,842	13,694,362	17,358,000
1987	49,735	2,455,279	378,535	1,774,447	10,615	151,421	19,107,968	23,928,000
1988	124,534	2,689,959	500,466	1,712,431	13,783	231,982	23,351,845	28,625,000
1989	155,446	7,118,094	2,423,000	1,671,088	17,419	1,673,409	49,111,544	62,170,000
1990	62,786	6,459,229	1,943,918	2,234,452	8,680	1,222,053	45,993,882	57,925,000
1991	28,686	6,265,822	1,875,066	2,168,712	4,024	1,065,433	44,057,257	55,465,000
1992	2,911	4,826,764	1,610,921	1,359,335	471	627,012	32,594,586	41,022,000
1993	1,205	5,094,237	1,828,410	2,722,156	212	199,684	33,380,096	43,226,000
1994	273	1,726,376	631,816	478,543	27	128,988	11,255,977	14,222,000
1995	0	1,130,963	423,243	206,978	0	87,480	7,326,336	9,175,000
1996	0	2,025,987	645,296	606,205	0	375,830	13,725,682	17,379,000
1997	0	451,011	154,366	205,796	0	7,164	2,992,663	3,811,000
1998	0	3,551	1,293	0	0	0	23,156	28,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	660,604	43,735,629	13,025,499	18,184,774	121,366	5,870,912	309,313,216	390,912,000

Table B-29

Capital Cost Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total
	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)	(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	18,266	1,209,293	360,156	502,810	3,356	0	8,552,530	10,646,411
1989	19,175	1,269,524	378,094	527,854	3,523	0	8,978,505	11,176,675
1990	19,186	1,270,244	378,308	528,153	3,525	0	8,983,596	11,183,012
1991	19,187	1,270,261	378,314	528,160	3,525	0	8,983,718	11,183,165
1992	38,420	2,543,616	757,549	1,057,606	7,059	0	17,989,316	22,393,566
1993	40,029	2,650,136	789,273	1,101,896	7,354	0	18,742,663	23,331,351
1994	39,705	2,628,706	782,890	1,092,986	7,295	0	18,591,100	23,142,682
1995	39,632	2,623,828	781,438	1,090,958	7,281	0	18,556,604	23,099,741
1996	39,825	2,636,667	785,261	1,096,296	7,317	0	18,647,406	23,212,772
1997	41,743	2,763,629	823,074	1,149,085	7,669	0	19,545,322	24,330,522
1998	42,642	2,823,126	840,793	1,173,824	7,834	0	19,966,108	24,854,327
1999	44,738	2,961,888	882,120	1,231,519	8,219	0	20,947,476	26,075,960
2000	49,031	3,246,109	966,768	1,349,695	9,008	0	22,957,586	28,578,197
2001	49,048	3,247,263	967,111	1,350,175	9,011	0	22,965,748	28,588,356
2002	48,514	3,211,920	956,585	1,335,480	8,913	0	22,715,790	28,277,202
2003	49,944	3,394,200	1,022,459	1,374,837	9,176	0	23,930,038	29,780,654
2004	65,769	4,417,447	1,323,971	1,810,462	12,083	0	31,187,698	38,817,430
2005	65,740	4,415,343	1,323,321	1,809,660	12,078	0	31,172,972	38,799,114
2006	67,424	4,511,089	1,349,755	1,856,018	12,387	0	31,863,580	39,660,253
2007	67,244	4,517,348	1,354,025	1,851,053	12,354	0	31,892,292	39,694,316
2008	63,761	4,262,477	1,274,903	1,755,191	11,714	0	30,110,537	37,478,583
2009	65,377	4,369,421	1,306,754	1,799,656	12,011	0	30,866,879	38,420,098
2010	64,880	4,338,639	1,297,860	1,785,997	11,920	0	30,647,410	38,146,706
2011	66,672	4,459,288	1,334,065	1,835,303	12,249	0	31,498,915	39,206,492
2012	66,778	4,466,425	1,336,199	1,838,244	12,269	0	31,549,335	39,269,250
2013	67,414	4,495,699	1,343,223	1,855,745	12,386	0	31,767,328	39,541,795
2014	66,284	4,435,312	1,327,144	1,824,644	12,178	0	31,327,932	38,993,494
2015	68,069	4,555,328	1,363,129	1,873,785	12,506	0	32,175,161	40,047,978
2016	68,434	4,580,036	1,370,564	1,883,821	12,573	0	32,349,420	40,264,848
2017	69,071	4,625,346	1,384,476	1,901,346	12,690	0	32,667,163	40,660,092
2018	67,136	4,493,712	1,344,805	1,848,082	12,334	0	31,739,222	39,505,291
2019	68,566	4,586,437	1,372,158	1,887,463	12,597	0	32,396,702	40,323,923
2020	66,190	4,443,432	1,331,464	1,822,041	12,161	0	31,373,068	39,048,356
2021	68,143	4,575,856	1,371,316	1,875,802	12,519	0	32,306,941	40,210,577
2022	68,198	4,600,983	1,381,638	1,877,325	12,530	0	32,466,305	40,406,979
2023	55,232	3,741,172	1,125,384	1,520,397	10,147	0	26,386,604	32,838,936
2024	57,204	3,871,373	1,164,109	1,574,697	10,510	0	27,307,768	33,985,661
2025	66,816	4,507,348	1,353,465	1,839,291	12,276	0	31,805,930	39,585,126
2026	23,241	1,622,886	494,464	639,777	4,270	0	11,405,651	14,190,289
2027	18,156	1,257,350	381,787	499,779	3,336	0	8,845,099	11,005,507
2028	15,801	1,079,667	325,991	434,951	2,903	0	7,607,069	9,466,382
2029	15,873	1,084,754	327,542	436,951	2,916	0	7,642,811	9,510,847
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	2,122,558	142,064,578	42,513,705	58,428,815	389,962	0	1,003,413,298	1,248,932,916

[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 made via a letter of agreement signed June 1, 1987. In June 1999, $6,347,938 has been received from the San Bernardino Valley Municipal Water District.

Table B-30

Minimum OMP&R Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total
	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)	(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	320,415	101,486	95,075	0	70,133	2,174,775	2,761,884
1995	0	278,176	86,604	86,479	0	59,461	1,895,643	2,406,363
1996	0	287,293	82,991	106,208	0	55,287	1,990,213	2,521,992
1997	0	389,636	123,446	100,643	0	62,571	2,642,077	3,318,373
1998	0	429,772	135,927	109,979	0	66,278	2,915,152	3,657,108
1999	37	236,006	75,040	60,907	11	39,144	1,599,082	2,010,227
2000	132	402,986	121,024	120,844	40	57,388	2,765,935	3,468,349
2001	10	312,742	92,241	92,823	3	34,745	2,154,140	2,686,704
2002	49	381,019	109,561	125,234	15	46,945	2,639,348	3,302,171
2003	0	451,207	134,470	135,635	0	59,633	3,101,732	3,882,677
2004	0	497,933	148,424	147,181	0	62,127	3,422,418	4,278,083
2005	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2006	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2007	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2008	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2009	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2010	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2011	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2012	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2013	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2014	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2015	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2016	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2017	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2018	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2019	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2020	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2021	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2022	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2023	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2024	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2025	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2026	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2027	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2028	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2029	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2030	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2031	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2032	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2033	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2034	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2035	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
Total	228	18,966,137	5,621,429	5,839,440	69	2,564,666	130,543,504	163,535,473

Table B-31

Total East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total
	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 WaterDistrict (6)	Metropolitan Water District of Southern California (7)	(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	18,266	1,209,293	360,156	502,810	3,356	0	8,552,530	10,646,411
1989	19,175	1,269,524	378,094	527,854	3,523	0	8,978,505	11,176,675
1990	19,186	1,270,244	378,308	528,153	3,525	0	8,983,596	11,183,012
1991	19,187	1,270,261	378,314	528,160	3,525	0	8,983,718	11,183,165
1992	38,420	2,543,616	757,549	1,057,606	7,059	0	17,989,316	22,393,566
1993	40,029	2,650,136	789,273	1,101,896	7,354	0	18,742,663	23,331,351
1994	39,705	2,949,121	884,376	1,188,061	7,295	70,133	20,765,875	25,904,566
1995	39,632	2,902,004	868,042	1,177,437	7,281	59,461	20,452,247	25,506,104
1996	39,825	2,923,960	868,252	1,202,504	7,317	55,287	20,637,619	25,734,764
1997	41,743	3,153,265	946,519	1,249,729	7,669	62,571	22,187,399	27,648,895
1998	42,642	3,252,898	976,720	1,283,802	7,834	66,278	22,881,260	28,511,434
1999	44,774	3,197,893	957,159	1,292,426	8,230	39,144	22,546,558	28,086,184
2000	49,163	3,649,095	1,087,791	1,470,540	9,048	57,388	25,723,521	32,046,546
2001	49,059	3,560,005	1,059,352	1,442,998	9,014	34,745	25,119,888	31,275,061
2002	48,563	3,592,939	1,066,146	1,460,714	8,928	46,945	25,355,137	31,579,372
2003	49,944	3,845,406	1,156,929	1,510,471	9,176	59,633	27,031,771	33,663,330
2004	65,769	4,915,379	1,472,395	1,957,644	12,083	62,127	34,610,115	43,095,512
2005	65,740	4,898,535	1,465,586	1,959,932	12,078	62,934	34,503,391	42,968,196
2006	67,424	4,994,281	1,492,020	2,006,290	12,387	62,934	35,194,000	43,829,336
2007	67,244	5,000,540	1,496,290	2,001,325	12,354	62,934	35,222,711	43,863,398
2008	63,761	4,745,669	1,417,168	1,905,463	11,714	62,934	33,440,956	41,647,665
2009	65,377	4,852,613	1,449,019	1,949,927	12,011	62,934	34,197,299	42,589,180
2010	64,880	4,821,831	1,440,125	1,936,268	11,920	62,934	33,977,829	42,315,787
2011	66,672	4,942,480	1,476,330	1,985,575	12,249	62,934	34,829,334	43,375,574
2012	66,778	4,949,617	1,478,464	1,988,515	12,269	62,934	34,879,755	43,438,332
2013	67,414	4,978,891	1,485,488	2,006,017	12,386	62,934	35,097,748	43,710,878
2014	66,284	4,918,504	1,469,409	1,974,916	12,178	62,934	34,658,351	43,162,576
2015	68,069	5,038,520	1,505,394	2,024,056	12,506	62,934	35,505,580	44,217,059
2016	68,434	5,063,228	1,512,829	2,034,093	12,573	62,934	35,679,839	44,433,930
2017	69,071	5,108,538	1,526,741	2,051,617	12,690	62,934	35,997,582	44,829,173
2018	67,136	4,976,904	1,487,070	1,998,354	12,334	62,934	35,069,642	43,674,374
2019	68,566	5,069,629	1,514,423	2,037,734	12,597	62,934	35,727,121	44,493,004
2020	66,190	4,926,624	1,473,729	1,972,313	12,161	62,934	34,703,488	43,217,439
2021	68,143	5,059,047	1,513,581	2,026,073	12,519	62,934	35,637,360	44,379,657
2022	68,198	5,084,175	1,523,903	2,027,597	12,530	62,934	35,796,725	44,576,062
2023	55,232	4,224,364	1,267,649	1,670,669	10,147	62,934	29,717,023	37,008,018
2024	57,204	4,354,565	1,306,374	1,724,968	10,510	62,934	30,638,187	38,154,742
2025	66,816	4,990,539	1,495,730	1,989,563	12,276	62,934	35,136,350	43,754,208
2026	23,241	2,106,078	636,729	790,049	4,270	62,934	14,736,071	18,359,372
2027	18,156	1,740,542	524,052	650,051	3,336	62,934	12,175,519	15,174,590
2028	15,801	1,562,859	468,256	585,222	2,903	62,934	10,937,488	13,635,463
2029	15,873	1,567,946	469,807	587,222	2,916	62,934	10,973,231	13,679,929
2030	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2031	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2032	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2033	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2034	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
2035	0	483,192	142,265	150,272	0	62,934	3,330,419	4,169,082
Total	2,122,786	161,030,710	48,135,131	64,268,246	390,031	2,564,666	1,133,956,812	1,412,468,382