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MANAGEMENT OF THE
CALIFORNIA STATE WATER PROJECT

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BULLETIN 132-04

SEPTEMBER 2005



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Governor, State of California

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Bulletin 132-04

Management of the California State Water Project

Covers Activities during Calendar Year 2003



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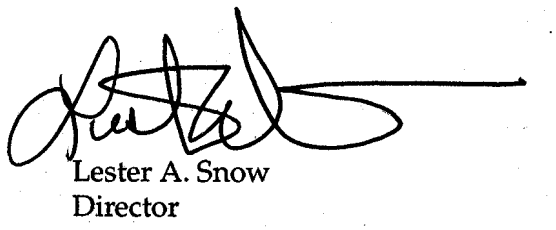
Foreword

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Bulletin 132-04, *Management of the California State Water Project*, continues the Bulletin 132 annual series begun in 1963. Bulletin 132-04 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 2005. 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, 2003, to December 31, 2003.

Bulletin 132-04 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 Authority; 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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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

ITRC Irrigation Training and Research Center

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

TDF through-Delta facilities

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

WET Water Education for Teachers

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 Watershed Protection 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
Pixley Irrigation District	Pixley
Rag Gulch Water District	Rag Gulch
Rosedale-Rio Bravo Water Storage District	Rosedale-Rio
Semitropic Water Storage District	Semitropic
South Feather Water and Power Agency	South Feather
United Water Conservation District	United
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



San Luis Reservoir and Clifton Court Forebay

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 132-04, *Management of the California State Water Project,* continues this series with the forty-first edition. It reports planning, construction, financing, managing, and operating activities of the SWP in 2003. The SWP is operated and maintained by the California Department of Water Resources.

2003 SWP Highlights

The SWP is one of the largest water and power systems in the world. It conveys an average annual 2.4 million acre-feet of water through its 17 pumping plants, 8 hydroelectric power plants, including 3 pumping-generating plants, 29 dams and reservoirs, and about 675 miles of aqueducts and pipelines.

In 2003, the SWP delivered 4,223,255 acre-feet of water to 27 long-term contractors and 26 other agencies. The project provides water for approximately 24 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 East Branch Extension became operational in 2003, and 116 acre-feet of Table A water were delivered to San Gorgonio Pass Water Agency.

The SWP facilitated the transfer or exchange of 66,677 acre-feet of approved Table A water among SWP long-term contractors and non-SWP agencies, conveyed 42,316 acre-feet of Central Valley Project water through SWP facilities, and provided 1,037,324 acre-feet to water rights holders within the SWP service area.

The Department continued to be its own energy scheduling coordinator with the California Independent Systems Operator and to schedule the purchase and sale of energy to operate the SWP.

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 2003, the SWP handled approximately $718 million each in income and expenses, with general fund contributions limited to recreation facilities.

Director Retires

Thomas M. Hannigan retired on June 1, 2003, having served as the Director of the Department since March 1, 1999. Michael J. Spear, formerly Deputy Secretary in the Resources Agency, was appointed the Department's Interim Director on June 9, 2003. He served until November 16, 2003. On November 17, 2003, Linda S. Adams was named by the Governor as the Department's Interim Director.

2003 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 2002-03

Water year 2002-03 was classified as *above normal* in the Sacramento Valley and *below normal* in the San Joaquin Valley. All regions of the State except the San Joaquin River Region were at or above normal rainfall. Statewide precipitation was 110 percent of average compared to 80 percent of average last year.

Mountain snowpack peaked at about 150 percent of average around May 10, about a month later than normal. The remainder of the year was characterized by below normal precipitation in the major basins.

The Northern Sierra 8 Station Precipitation Index finished with 59.7 inches for the water year (119 percent of average). Five months had less than 70 percent of average rainfall and three months had more than 150 percent.

Runoff

Statewide water year runoff totaled 100 percent of average in the 2002-03 water year, and was less than average in all months except December. Runoff in the Sacramento River and San Joaquin River Regions was 100 and 80 percent of average, respectively.

Storage

Water Year 2002-03. Storage in SWP reservoirs at the end of the 2002-03 water year was 3.61 million acre-feet, or 103 percent of average, compared to 2.47 million acre-feet or 71 percent of average at the end of water year 2001-02.

Average storage in major SWP reservoirs was 3.33 million acre-feet. End of water year storage on September 30, 2003, at Lake Oroville was 2.29 million acre-feet, about 890,000 acre-feet more than water year 2001-02.

Calendar Year 2003. Total storage in major SWP reservoirs was about 3.50 million acre-feet at the end of calendar year 2003, compared with 2.91 million acre-feet in 2002.

Precipitation in the First Quarter of Water Year 2003-04

Water year 2003-04 began hot and dry. There were hundreds of record daily high temperatures set from October 17 - 28, 2003, and river runoff was 60 percent of average statewide during October. Only 0.1 inches were recorded for the Northern Sierra 8 Station Precipitation Index. November precipitation improved to 85 percent of average statewide but by December 1, runoff for the water year to date was only about 45 percent of average.

Snowpack accumulation was also below an average rate. Percent of normal values were about 90 percent in the north but less than 60 percent in the south on December 1. December was characterized by much wetter conditions. During the last week of December, storms caused a flood stage on the Napa River near St. Helena. The series of systems boosted the statewide end-of-December snowpack to 135 percent of average and the December 31 reservoir storage to 105 percent of average.

2003 Water Supplies, Contracts, and Deliveries

Water Deliveries

On December 3, 2002, the Department initially approved 825,375 acre-feet of water for long term SWP contractors, or about 20 percent of their 2003 Table A allocations. As a result of improvements in water conditions, approved Table A amounts were increased to 1.86 million acre-feet (45 percent) on January 16, 2003; 2.06 million acre-feet (50 percent) on March 28; 2.89 million acre-feet (70 percent) on April 28; and finally to 3.71 million acre-feet (90 percent) on May 16.

In 2003, 4,223,255 acre-feet of water were conveyed to 27 of the 29 long-term contractors and 26 other agencies. That amount included:

- 2,901,041 acre-feet of approved Table A water delivered to long-term contractors;

59,653 acre-feet of Article 21 water; and 175 acre-feet of unscheduled water;

- 2,846 acre-feet of water for recreation, fish and wildlife; and
- 1,037,324 acre-feet of water delivered to satisfy water rights settlement agreements and agreements made with SWP contractors and other agencies, including the Bureau.

Table ES-1 shows SWP water deliveries by category for the years 1962-03.

Nonproject Transfers. In 2003, the Department conveyed 42,316 acre-feet of Central Valley Project water through SWP facilities for the Bureau.

Dry Year Water Purchase Program. In 2003, 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. Two SWP contractors and two private farmers participated in the program by signing an MOU with the Department. The cumulative amount of dry year water made available to all participants was 7,653 acre-feet. The Department obtained the water from Butte Water District, who made it available through groundwater substitution.

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.

The EWA consists of two primary elements: (1) assisting in fish population protection and recovery for at-risk native fish species; and (2) increasing water supply reliability by reducing uncertainty associated with fish protection and recovery actions. The EWA enables timely reductions in export pumping at the Sacramento-San Joaquin Delta pumps, operated by and the Bureau to improve survival of and reduce injury to at-risk native fish species. The EWA acquires water to replace the supplies that would have otherwise been diverted by the SWP and CVP so that water supplies delivered to their contractors are not interrupted or reduced because of the Delta export pumping changes.

Year 2003 was EWA's third year of operation. In July, the Department and the Bureau announced that a Draft Environmental Impact Report/Environmental Impact Statement had been released by the Department, the Bureau, California Department of Fish and Game, U.S. Fish and Wildlife Service, and NOAA Fisheries covering the operation of the CALFED Environmental Water Account Program.

The draft report describes the operation of the EWA, the environmental impacts it may have, and mitigation measures to reduce the impacts to less than significant levels.

Five federal and State agencies are involved in administering the EWA. The Department and the Bureau, the "Project Agencies," are responsible for acquiring water assets and for storing and conveying the assets through use of the SWP and CVP facilities. The three "Management Agencies," DFG, USFWS, and NOAA Fisheries, manage the EWA assets to protect and restore fish populations. All five EWA agencies are responsible for the day-to-day program management.

Power Resources

In 2003, energy used at the 25 SWP pumping and generating plants totaled 9.18 million MWh of energy. The Department sold 1.00 million MWh of energy to 21 utilities and 11 power marketers for total revenues of $56.02 million in 2003.

The Department also received $34.74 million in revenues for capacity sales and exchanges, including $23.35 million for transactions made through the California Independent System Operator.

Table ES-1. SWP Water Delivered by Category, 1962-03 (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	332,655	1,085,886	4,030	4,932,032
2001	1,162,897	383,845	1,546,742	10,261	33,174	477,835	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
2003	2,118,150	782,891	2,901,041	23,019	36,809	251,447	1,008,093	2,846	4,223,255
Total	**32,382,045**	**26,533,327**	**58,915,372**	**596,213**	**6,162,447**	**8,240,690**	**30,659,435**	**132,522**	**104,765,936**

[a]Includes water conveyed for SWP and non-SWP water contractors.
[b]Includes amounts of water diverted according to various water right agreements.

The Department purchased 2.81 million MWh of energy at a cost of $96.49 million. Other SWP power costs, including transmission, operation, maintenance, and ISO ancillary services, totaled $100.3 million. The sidebar below documents 2003 SWP power generation and consumption.

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 calendar year 2003, primary achievements included

- submitting the Final National Environmental Policy Act Scoping Document 2 and California Environmental Quality Act Revised Notice of Preparation to FERC;
- developing a Resource Action Identification (protection, mitigation and enhancement) form for stakeholders to submit proposed protection, mitigation, and enhancement measures;
- hosting operations modeling seminars for stakeholders to understand the relationship between proposed resource actions and operations modeling analysis, performing sensitivity analyses, and completing benchmark studies;
- developing negotiations protocols and obtaining consensus from stakeholders on the negotiations process;
- reviewing and categorizing numerous resource action proposals for either Preliminary Draft Environmental Assessment analysis or settlement consideration;
- initiating early consultation with NOAA Fisheries and the U. S. Fish and Wildlife Service on Endangered Species Act issues; and
- continuing field studies to support the Department's license application.

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.

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 Southern California Edison. This act created CERS, which manages long-term power contracts for the utilities.

State Water Project Power Generation and Consumption in 2003

Power Generation and Consumption	Millions of Megawatt Hours
Energy generation by SWP facilities	5.51
Energy purchased under long-term agreements	2.31
Energy sources under long-term agreements	2.36
Total energy available to the SWP	10.18
Energy sales	<1.00>
Net power consumption of the SWP	9.18

From January 17, 2001, through December 31, 2002, CERS purchased and scheduled electricity to meet the demands on the State's utilities.

Starting January 1, 2003, the investor owned utilities resumed full responsibility for meeting their customer demands along with scheduling and dispatching energy under the State long-term contracts. Management of the State's long-term contracts, however, was maintained by CERS, including renegotiating their terms and conditions when possible. CERS does not impact operation or financing of the State Water Project.

Project Development

East Branch Extension

On March 20, 2003, more than 150 people attended the East Branch Extension dedication at the Little San Gorgonio Creek spreading grounds in Cherry Valley, and at the Crafton Hills Pump Station in Mentone.

The event marked the completion of a 40-year plan and a 5-year project to bring water from the State Water Project to the communities of Redlands, Yucaipa, Banning, and Beaumont.

The East Branch Extension delivered 116 acre-feet of water to San Gorgonio in 2003.

The project includes three pump stations, miles of pipelines, major valve vaults, a reservoir, and earth fill dam.

It was 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. San Gorgonio is the last original contractor to receive SWP water.

Tours were given of the new project facilities, including the Cherry Valley Pump Station, the Crafton Hills Pump Station, and the Crafton Hills Dam and Reservoir.

Field operational testing is scheduled to be completed in early 2004. 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.

Monterey Amendment

The Monterey Amendment, based on Principles of Agreement released on December 16, 1994, was designed to increase the reliability of existing water supplies, provide stronger financial management for the SWP, and increase water management flexibility by providing more tools for local water agencies. The project Environmental Impact Report was prepared by the Central Coast Water Authority.

On December 27, 1995, the Planning and Conservation League filed a lawsuit against the Department and CCWA, challenging California Environmental Quality Act compliance. After a judgment in the Sacramento County Superior Court and an appeal to the Third District Court of Appeal, 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.

On May 5, 2003, the Monterey Settlement Agreement was formally executed and was approved by the court on May 20, 2003. This settlement agreement offered an alternative to further litigation and, with certain conditions, allows the SWP to continue to operate pursuant to the Monterey Agreement while the new EIR is being prepared. The Department and the contractors agree not to approve any new projects or activity in reliance on the 1995 EIR, which was not approved, initiated, or implemented prior to March 26, 2001, and the approval, initiation, or implementation of which would require a separate environmental document under CEQA. See Chapter 6, *Legislation and Litigation,* and Chapter 9, *Water Deliveries,* for more detail

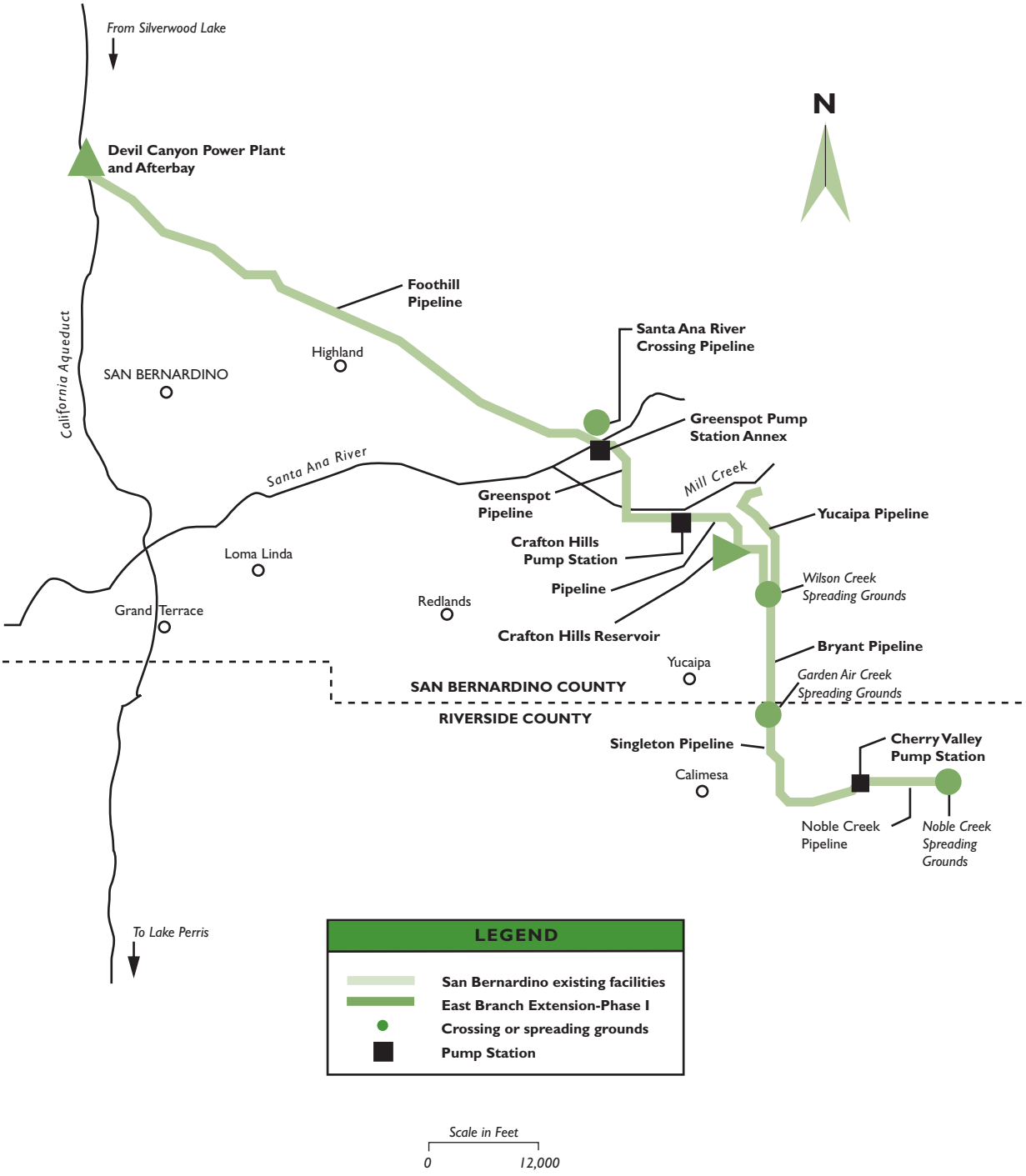


Figure ES-1. East Branch Extension, Phase I

on the Monterey litigation and settlement agreement.

Most long-term water supply contractors signed their Monterey Amendments between 1995 and 1999. No Monterey Amendments were signed during 2003.

Colorado River Quantification Settlement Agreement

The Colorado River Quantification Settlement Agreement, executed in late 2003, provides mechanisms for local California water agencies to live within their 4.4 million acre-feet share of water from the Colorado River. Stakeholders included seven states, two countries (the United States and Mexico), and several Native American tribes. Achieving QSA entailed 8 years of contentious negotiations, implementing legislation, and more than 40 contracts among local water agencies and their State and federal governments.

QSA legislation requires the State of California to restore the Salton Sea ecosystem and provides $20 million for a restoration study being prepared by the Department in coordination with the Department of Fish and Game. Legislation also directs the Department to carry out specified water transfers that could provided up to $300 million for restoration.

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.

California Bay-Delta Authority

The California Bay-Delta Act of 2003 established the California Bay-Delta Authority as a new governance structure. The Authority oversees the 23 State and federal agencies working cooperatively through the CALFED Bay-Delta Program to improve the quality and reliability. The Authority is charged with tracking and assessing the CALFED Bay-Delta Program progress, using sound science, providing accountability and ensuring balanced implementation of the program, assuring public involvement and outreach, and coordinating and integrating related government programs.

Surface Storage Investigation. The Department is the State lead agency for the Storage Program element, part of an ongoing evaluation of the appropriate role of storage, both groundwater conjunctive use and surface storage, in the CALFED Bay-Delta Program. In 2003 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. 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.

In 2003, EWA's third operational year, the first fish actions occurred in January and continued throughout the year. Management agencies required 316,216 acre-feet of curtailments for fish protection, which was achieved by reduction in pumping at Banks and Tracy Pumping Plants in the Delta. All fixed asset acquisitions in 2003 were made by the Department as single-

year transactions and environmental studies were carried out to ensure that the transactions complied with CEQA.

The third year of EWA ended even, i.e., without any credit from or debt to the SWP at year end.

North Delta Program. The North Delta Conveyance Program is comprised of studies related to the Delta Cross Channel, a potential screened through-Delta facility on the Sacramento River, and a project to improve flood management and the ecosystem along the Mokelumne River. In addition, the Department initiated the Franks Tract Project in 2003 as part of the North Delta conveyance improvement project to evaluate the feasibility of rehabilitating the Tract's remnant levees for water quality, ecosystem, and recreation improvements.

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. Due to funding issues and technical uncertainties, the Department decided to defer the original plan to increase diversions at Clifton Court Forebay up to 10,300 cfs and instead plan for an increase of 8,500 cfs. A Draft EIR/EIS for SDIP is scheduled for release in 2004 and a final EIR/EIS in 2005.

Bay-Delta Water Right Hearings

The State Water Resources Control Board dismissed Phase 8 on January 31, 2003, after a short-term settlement agreement, known as the Sacramento Valley Water Management Agreement (SVWMA), was signed in December 2002. Consultants were hired to work on the SVWMA EIS/EIR, and staff from the Department, the Bureau, upstream and downstream water users were major contributors. SVWMA avoided the adversarial issues of Phase 8 and was developed to promote better management of California's water resources.

Status of Threatened or Endangered Listings

In 2001, NOAA Fisheries was petitioned to list the North American green surgeon as either a threatened or endangered species under the federal Endangered Specifies Act. In January 2003, NOAA Fisheries issued a 12-month determination that listing of the species was not warranted.

USFWS listed splittail as threatened under FESA in 1999. In 2001, USFWS opened the ESA listing comment period on three separate occasions. In 2003, they revised the final rule and removed splittail from the list of threatened species.

Financial Analysis

In 2003, the Department continued to pay bondholders as scheduled. The SWP was financially viable and was indirectly paid for by the approximately 24 million water users who were served by the project. Direct payment was through the 29 long-term water contractors In 2003, the SWP handled approximately $718 million in income and $718 million in expenses. The sidebar below shows a 2003 income statement for the SWP.

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.

2003 Income Statement for the State Water Project

Revenues	Thousands of Dollars
Water contractor payments	775,278
Revenue bond cover adjustments	(37,049)
Rate management adjustments	(40,470)
Other revenue	20,289
Total operating revenues	**$718,048**
Expenses	
Project operations, maintenance, and power	425,343
Deposits to reserves	42,171
Water bond principal	95,925
Water bond interest	154,609
Total operating expenses and debt service	**$718,048**
Net system revenues	**0**

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."

In 2003, the Department began implementing the Integrated Regional Water Management Program under Proposition 50.

Flood Protection

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. By the end of 2003, the Department had almost finished its feasibility investigation into a more cost effective plan and was planning to proceed with final design, environmental documentation, and other procedural steps leading to construction.

Security Measures for the State Water Project after September 11, 2001

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.

The Department has taken a number of security measures to ensure the safety of the SWP system. Tours of the State Water Project facilities have been limited to the Visitor Centers and non-critical facilities such as the Delta Fish Facilities, Oroville Fish Hatchery and Administration Building Overlooks. All of the SWP recreational reservoirs are open to the public; however, boats are not allowed within 500 feet of the dam or any associated structure. Signs have been posted at each recreational reservoir warning the public of the zones not accessible to them.

SWP operations are monitored more closely now, and staff exercise vigilance in maintaining a secure environment. Security patrols are more frequent and planning is in-place to address potential or actual acts of terrorism. Improvements to existing security systems are ongoing and done in conjunction with the Bureau and other federal and State agencies.

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.

Start of Phase 2B of the 2000 Business Project

Phase 2B, Utility Operations Implementation, which started in 2003, involves the implementation of power scheduling, settlements, and analysis tools. Phase 2B will use automated technology to support the Department's power scheduling and reporting system so that it can handle changes from the California-Independent System Operator and assist the SWP with other critical management reporting needs. Phase 2B is described in more detail on the Web at pmoweb.water.ca.gov/phase_2b.asp.

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.

SWP Milestones through the Decades

Forty Years Ago - 1963

Construction began on San Luis Dam. The San Luis Reservoir was planned for joint use by SWP and the federal Central Valley Project.

Construction began on the Harvey O. Banks Pumping Plant in the South Delta, starting point of the California Aqueduct.

Thirty Years Ago - 1973

Initial facilities of the SWP were completed.

Twenty Years Ago - 1983

The Department became a bulk power agency to better manage its power needs, making the SWP the fifth largest electric utility in California. (The Department is also the twelfth largest publicly-owned electric system in the nation.)

Ten Years Ago - 1993

The Department began construction on the 100-mile Coastal Branch. This pipeline project allows SWP water to be transported to Santa Barbara and San Luis Obispo Counties.

Chapter 1
The State Water Project



Pyramid Lake and Dam

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 24 million of California's estimated 36 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 29 dams and reservoirs, 26 pumping and generating plants, and approximately 675 miles of aqueducts.

Existing long-term SWP water supply contracts call for the annual delivery of 4,128,811 acre-feet of Table A water during 2003 through SWP facilities, gradually increasing to a maximum of



Figure 1-1. Names and Locations of Primary Water Delivery Facilities, December 31, 2003

4,172,786 acre-feet by 2021. 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 2,901,041 acre-feet of approved Table A water to long-term contractors' service areas in 2003. 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 the California Aqueduct, which flows to 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.

The East Branch Extension, which started construction in February 1999, became operational in 2003; field operational testing is scheduled to be completed in early 2004.

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	2,040,500	12,700	65
SWP storage, 1,062,183 AF			
O'Neill Forebay	56,400	2,700	12
SWP storage, 29,500 AF			
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
SWP share					
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
East Branch Extension, Phase 1	0.0	0.0	13.0	0.0	13.0
Subtotal	*9.2*	*24.1*	*117.3*	*9.9*	*160.5*
Total	**15.7**	**417.5**	**218.4**	**23.2**	**674.8**

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 by 2021 totals 4,172,786 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, 2003, 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, 2003

Table 1-6. Long-Term Water Supply Contracting Agencies, by Area, as of December 31, 2003

Contracting Agency	Cumulative Deliveries through December 31, 2003 (Acre-Feet)[a]	Maximum Annual Table A (Acre-Feet)	Payments through December 31, 2003 (Dollars)	Gross Area as of December 31, 2003 (Acres)	Assessed Valuation 2003 (Dollars)[b]	Estimated Population December 31, 2003
Upper Feather River Area						
City of Yuba City	13,830	9,600	3,239,449	5,888	1,680,000,000	47,144
County of Butte	10,956	27,500	917,826	1,069,000	12,024,000,000	231,900
Plumas County Flood Control and Water Conservation District	10,472	2,700	1,349,805	1,676,056[c]	2,060,744,342	21,200
Subtotal	*35,258*	*39,800*	*5,507,080*	*2,750,944*	*15,764,744,342*	*300,244*
North Bay Area						
Napa County Flood Control and Water Conservation District	200,027	29,025	58,232,214	510,010	14,008,347,997	128,145
Solano County Water Agency	461,778	47,756	80,055,594	537,600	28,007,960,594	394,542
Subtotal	*661,805*	*76,781*	*138,287,808*	*1,047,610*	*42,016,308,591*	*522,687*
South Bay Area						
Alameda County Flood Control and Water Conservation District, Zone 7	1,013,068	78,400	102,544,257	275,900	27,798,501,949	184,150
Alameda County Water District	941,645	42,000	79,627,734	65,920	34,855,936,565	323,250
Santa Clara Valley Water District	3,169,290	100,000	245,483,040	849,000	147,074,863,200	1,715,374
Subtotal	*5,124,003*	*220,400*	*427,655,031*	*1,190,820*	*209,729,301,714*	*2,222,774*
San Joaquin Valley Area						
County of Kings	83,543	4,000	3,571,364	893,300	5,657,238,310	141,434
Castaic Lake Water Agency	439,779	12,700		8,700	20,389,000,000	190,000
Dudley Ridge Water District	1,851,464	57,343	58,230,462	37,568	45,390,000	36
Empire West Side Irrigation District	98,593	3,000	2,941,316	7,400		50
Kern County Water Agency	28,223,041	1,000,949	1,335,416,604	5,161,000	39,989,475,308	695,000
Oak Flat Water District	179,053	5,700	4,647,207	4,500		10
Tulare Lake Basin Water Storage District	4,114,658	111,127	119,505,461	189,519	152,288,305	23
Subtotal	*34,990,131*	*1,194,819*	*1,524,312,414*	*6,301,987*	*66,233,391,923*	*1,026,553*
Central Coastal Area						
San Luis Obispo County Flood Control and Water Conservation District	25,587	25,000	46,729,167	2,122,240	26,980,231,815	253,118
Santa Barbara County Flood Control and Water Conservation District	143,725	45,486	264,708,233	1,775,296	16,388,608,721	431,505
Subtotal	*169,312*	*70,486*	*311,437,400*	*3,897,536*	*43,368,840,536*	*684,623*
Southern California Area						
Antelope Valley-East Kern Water Agency	1,362,830	141,400	320,806,323	1,525,547	15,500,000,000	335,000
Castaic Lake Water Agency[e]	463,828	82,500	170,422,639	133,700	18,056,922,310	210,000
Coachella Valley Water District	668,439	23,100	145,703,863	639,857	30,958,377,409	229,065
Crestline-Lake Arrowhead Water Agency	41,326	5,800	18,728,463	55,100	1,500,527,807	25,000
Desert Water Agency	939,246	38,100	175,093,867	209,760	6,141,602,400	65,548
Littlerock Creek Irrigation District	18,995	2,300	4,887,719	10,000	266,368,755	2,900
Metropolitan Water District of Southern California	22,773,004	2,011,500	6,572,820,177	3,328,000[f]	1,461,178,994,688	17,800,000
Mojave Water Agency	188,581	75,800	154,589,573	3,160,400	15,016,435,808	343,700
Palmdale Water District	155,364	21,300	46,277,938	119,680	910,070,664	90,000
San Bernardino Valley Municipal Water District	420,980	102,600	346,424,821	210,000	18,600,410,518	600,000
San Gabriel Valley Municipal Water District	295,520	28,800	110,863,753	18,297	11,569,583,479	210,482
San Gorgonio Pass Water Agency	116	17,000	45,643,748	140,600	1,945,425,320	44,600
Ventura County Flood Control District	34,040	20,000	39,933,064	308,252	21,957,265,429	457,000
Subtotal	*27,362,269*	*2,570,500*	*8,152,195,948*	*9,856,936*	*1,603,601,984,587*	*20,413,295*
Total, State Water Project	**68,342,778**	**4,172,786**	**10,559,395,681**	**25,048,090[g]**	**1,980,714,571,693**	**25,170,176**

[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.

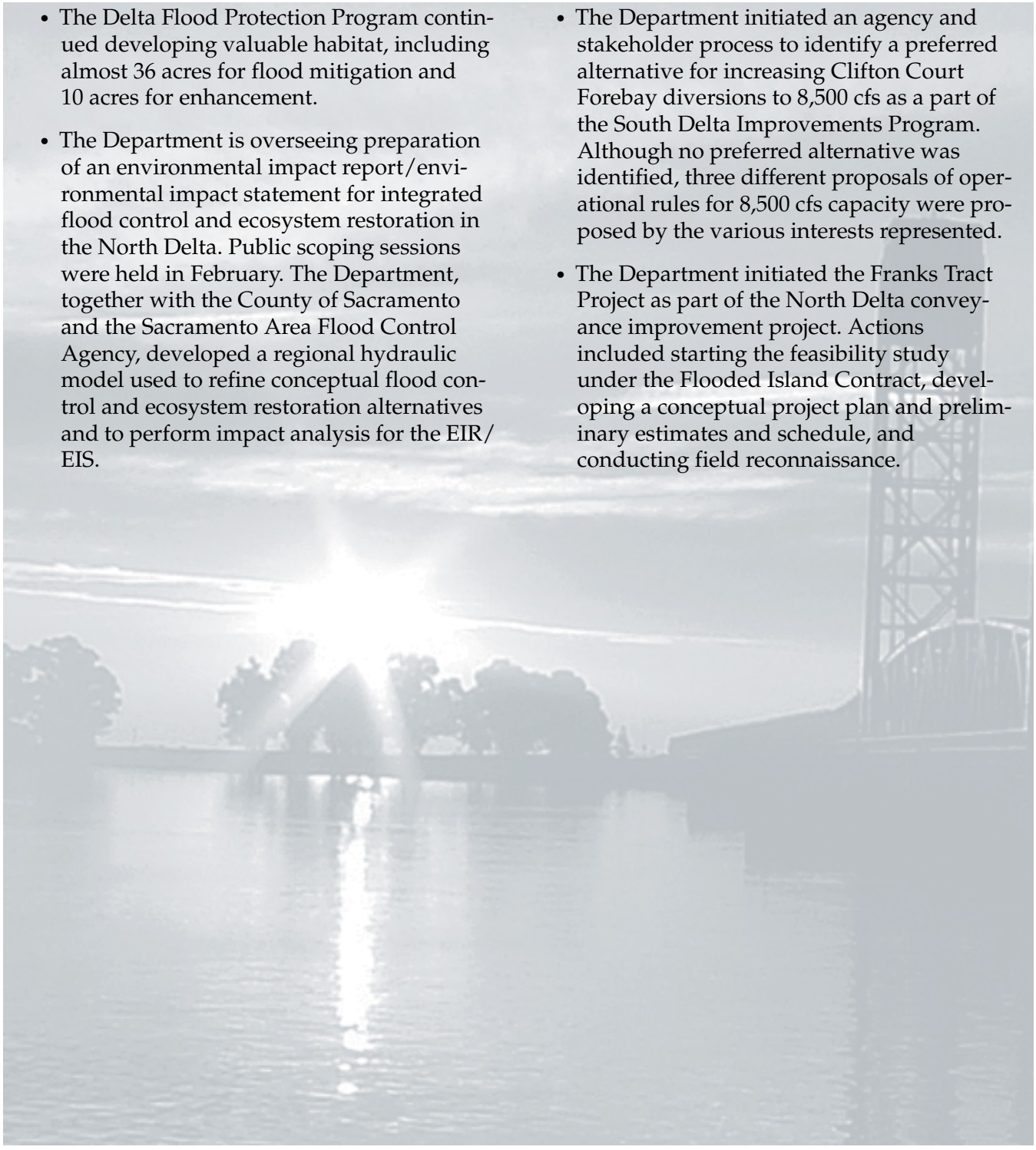
Chapter 2
Delta Resources



The Rio Vista Bridge crossing the historic Sacramento River is one of many draw-bridges designed by Joseph Strauss, the architect of the Golden Gate Bridge.

Significant Events in 2003

- 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. Public scoping sessions were held in February. The Department, together with the County of Sacramento and the Sacramento Area Flood Control Agency, developed a regional hydraulic model used to refine conceptual flood control and ecosystem restoration alternatives and to perform impact analysis for the EIR/EIS.
- 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.
- The Department initiated the Franks Tract Project as part of the North Delta conveyance improvement project. Actions included starting the feasibility study under the Flooded Island Contract, developing a conceptual project plan and preliminary estimates and schedule, and conducting field reconnaissance.



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 is slightly different from that of the former ISDP.

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 Head of Old River, 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

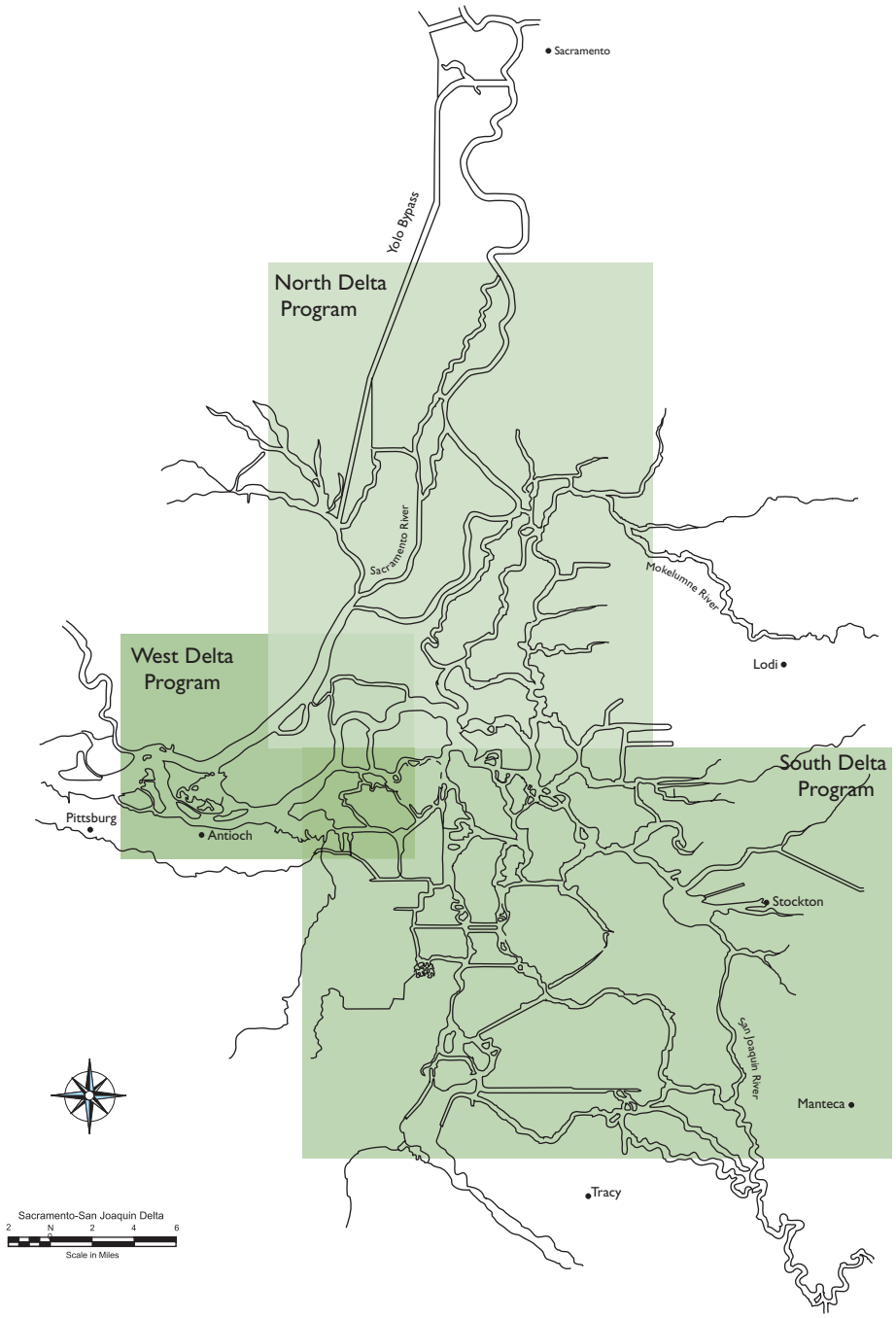


Figure 2-1. Boundaries of North, West, and South Delta Water Management Programs

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 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.

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.

Current Activity. 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.

Permanent Barrier Facilities. 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 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) Head of Old River, 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 Head of Old River 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 Head of Old River 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).

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 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

The Record of Decision for the CALFED Bay-Delta Final Programmatic Environmental Impact Statement and Report calls for modification in the North Delta's conveyance facilities to improve Delta water quality, fisheries, and water supply reliability; and other modifications to improve flood protection and ecosystem health. These modifications include (1) evaluation and implementation of improved operational procedures for the Delta Cross Channel to address fishery and water quality concerns; (2) evaluation of a screened through-Delta facility on the Sacramento River of up to 4,000 cfs; and (3) design and construction of floodway improvements to provide conveyance, flood control, and ecosystem health. In addition, the Department initiated the Franks Tract Project in 2003 as part of the North Delta conveyance improvement project to evaluate the feasibility of rehabilitating the Tract's remnant levees for water quality, ecosystem, and recreation improvements. The Department is the implementing agency for the Franks Tract Project, through-Delta facility evaluation, and the design and construction of floodway improvements. It is a participating agency on the DCC reoperation project.

In 2003, the Department became actively involved in the DCC reoperation and the through-Delta facilities studies. The Department took the lead in the management of the on-going DCC/TDF studies and management of the administration and funding of all DCC/TDF contracts. The DCC reoperation project involves evaluation of improved operational procedures for DCC that maintain high quality water in the Central Delta while reducing juvenile fish entrainment. The through-Delta facility is a diversion facility with a capacity of up to 4,000 cfs on the Sacramento River. Operation of the through-Delta facility is considered only after three separate assessments are satisfactorily completed: first, a thorough assessment of DCC operation strategies and confirmation of continued concern over water quality impacts from its operations; second, a thorough evaluation of the technical viability of a diversion facility; and third, satisfactory resolution of the fisheries concerns about a diversion facility.

The Franks Tract Project evaluates restoration of remnant levees and construction of tidal gates to inhibit salt trapping and mixing in Franks Tract, thereby improving water quality in the Delta. Other benefits of restoring Franks Tract include restoration of tidal marsh habitat and increased recreational opportunities. Actions include initiating the feasibility study under the Flooded Islands contract, developing a conceptual project plan and a preliminary estimate and schedule, and conducting field reconnaissance.

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, recreation, and agricultural land preservation 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. Public scoping sessions for the EIR/EIS were held in February 2003. The Department worked cooperatively with the County of Sacramento and Sacramento Area Flood Control Agency to develop a regional hydraulic model which was successfully peer reviewed by experts in the hydraulic modeling field. The model is being used to refine conceptual flood control and ecosystem restoration alternatives and perform impact analysis for the EIR/EIS. The Department convened a scientific panel to address project concerns such as mercury methylation, exotics, water quality, and sedimentation processes in fall 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 $160 million in appropriated funds and, combined with local funds, has realized $228 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 provides 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 are planned to be brought up to a base level of protection, provided there is sufficient funding.

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 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; 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, and 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;
- upgrading levees to the standards included in Bulletin 192-82, *Delta Levees Investigation*; and
- projects to achieve net long-term habitat improvement for fish and wildlife.

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 a habitat improvement program to ensure a net long-term habitat enhancement.

Levee restoration projects in 2003 include

- landside berms on Bradford Island to reduce seepage and stabilize foundations;
- levee restoration on Bethel Island;
- emergency levee work on Empire Tract;
- stability berms on Hotchkiss Tract;
- initiation of large scale rehabilitation projects on Bradford, Jersey, and Van Sickle Islands using material from Decker Island;
- initiation of a large scale rehabilitation project on New Hope Tract;
- improvements on Sherman Island, including stability berms to strengthen levees in critical areas and a setback levee along Mayberry Cut;
- beneficial reuse demonstration project on Van Sickle Island; and
- Hazard Mitigation Plan levee improvements on Twitchell 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 2003, the program continued to develop almost 36 acres of habitat for levee project mitigation and 10 acres for enhancement.

Completed mitigation and enhancement projects include

- Medford, Bethel, and Kimball Islands
- Terminous, Wright Elmwood, Palm, and Thornton-New Hope (Grizzly Slough) Tracts
- Twitchell Island setback levee
- Twitchell Island mitigation areas

- Staten Island berm and channel islands
- Canal Ranch attached berm
- 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 construction
- Construction of setback levee on Sherman Island, and construction at Sherman Island Parcel 11
- Dutch Slough Tidal Restoration planning and design concepts
- Bradford Island Tract 19 mitigation area design

Projects that have been proposed include

- study of the restoration of three flooded islands
- 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. Decker Island Habitat Restoration Area, opened in fall 2001, is targeted specifically for the needs of endangered Sacramento splittail and Delta smelt, providing 15 acres of tidal aquatic area. 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.

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 14 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 reevaluate the practicality of participating in this portion of the program. Based on the assumption that reuse will remain economically beneficial, the Department has worked 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

- beneficial reuse of approximately 200,000 yards of material on Bradford Island;
- 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 long-term project 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
- obtained Waste Discharge Requirements for the demonstration project on Sherman Island.

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 PL 84-99 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. The surface of organic soils in the Delta is now between 10 and 29 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;
- conversion of highly organic peat soils to carbon dioxide gas (oxidation) appears to be the recent primary cause of subsidence;
- permanently shallow flooded wetlands cultivation practices that raise soil temperature and lower the water table dramatically increase oxidation of the peat soils;
- decrease release of gaseous carbon by as much as 80 percent, thereby mitigating subsidence; and
- permanently shallow flooded wetlands also promote the growth of wetland vegetation that adds biomass back into the system.

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; 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 and the preliminary model for groundwater has 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 Oulton 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 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.

As discussed in the SDIP section, 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.

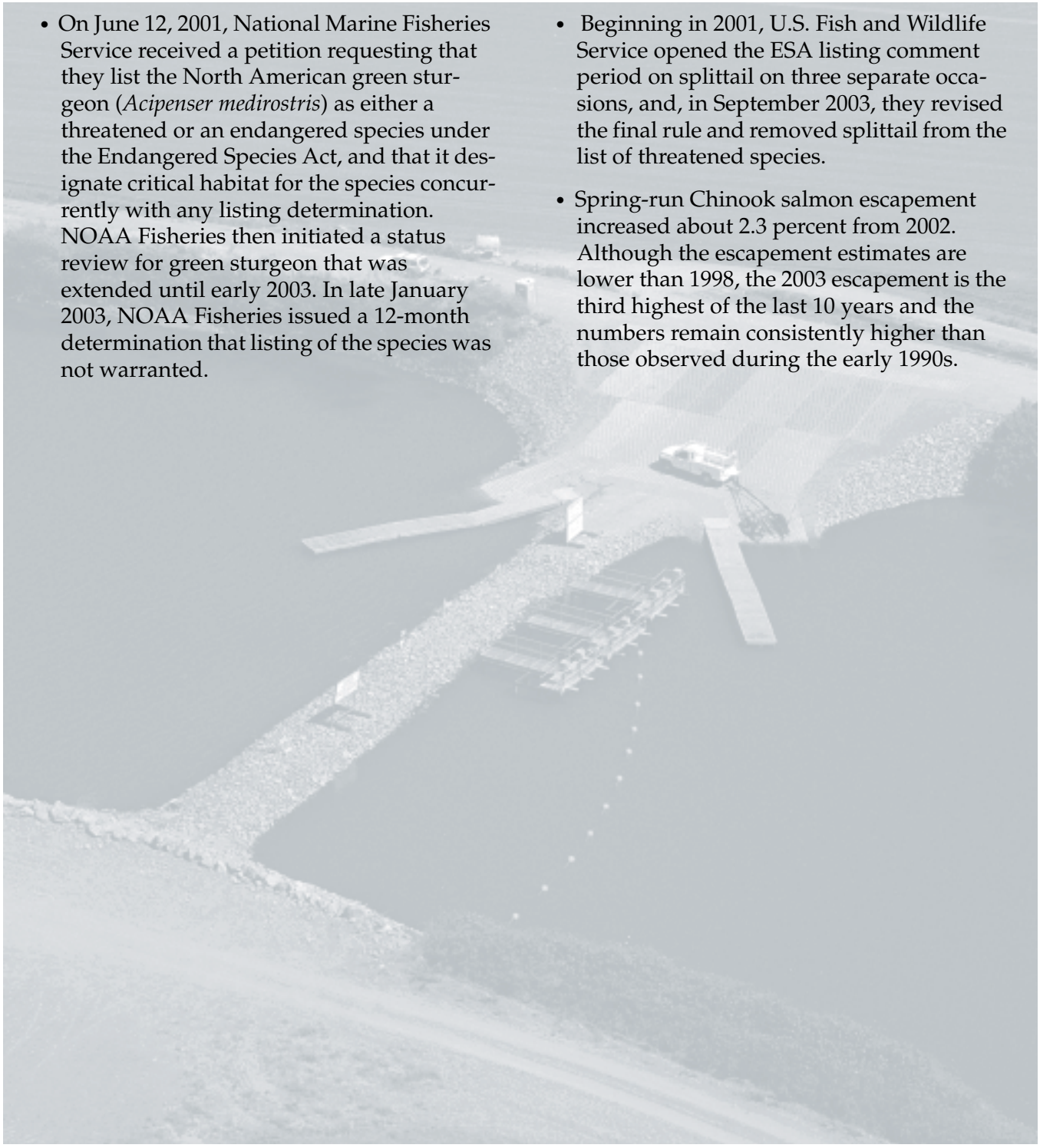
Chapter 3
Environmental Programs



Temporary rock barrier at Grant Line Canal

Significant Events in 2003

- On June 12, 2001, National Marine Fisheries Service received a petition requesting that they list the North American green sturgeon (*Acipenser medirostris*) as either a threatened or an endangered species under the Endangered Species Act, and that it designate critical habitat for the species concurrently with any listing determination. NOAA Fisheries then initiated a status review for green sturgeon that was extended until early 2003. In late January 2003, NOAA Fisheries issued a 12-month determination that listing of the species was not warranted.
- Beginning in 2001, U.S. Fish and Wildlife Service opened the ESA listing comment period on splittail on three separate occasions, and, in September 2003, they revised the final rule and removed splittail from the list of threatened species.
- Spring-run Chinook salmon escapement increased about 2.3 percent from 2002. Although the escapement estimates are lower than 1998, the 2003 escapement is the third highest of the last 10 years and the numbers remain consistently higher than those observed during the early 1990s.



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 or 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 that 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 a tool used by VAMP participating agencies, 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 2003, a temporary barrier was installed at the Head of Old River on April 21 and removed on June 3. The purpose of this spring season barrier was to improve conditions for juvenile Chinook salmon migrating out of the San Joaquin River Basin. It was installed again in the fall (September 18 through December 13) 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 Old River near Tracy and Middle River on April 22 and April 23, respectively, and the Grant Line Canal barrier was completed on June 17. 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 lack of 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 2003. 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, the gates were opened for one weekend due to high flows. The gates were again opened in early June and held open for most of the summer. The gates were closed in early December for the remainder of the year because fish sampling found young out-migrating Chinook salmon in the north Delta.

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 2003, approximately 21,200 Delta smelt were salvaged by SWP and about 16,600 by CVP, a decrease from the approximately 68,200 Delta smelt salvaged at both facilities in 2002. Salvage numbers on January 12 exceeded the yellow-light level, which triggered export reductions. By January 19, Delta smelt salvage dropped below the level of concern and a normal export schedule resumed. Salvage numbers for the SWP and CVP (almost 16,200) peaked in May 2003, but were 66 percent lower than the 2002 May salvage. From May 10 through 12 an experiment on Delta smelt salvage was conducted. The purpose of the experiment was to determine if an increase in Delta smelt salvage during the VAMP export reduction period in May might have been caused by an increase in the Delta smelt population growing in Clifton Court Forebay. Despite the drop in May salvage from 2002, in late May 2003 the yellow-light level was exceeded until Delta smelt salvage numbers declined in early June.

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 it 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. In late January 2003 NOAA Fisheries issued a 12-month determination that listing of the species was not warranted.

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. Beginning in 2001, USFWS opened the ESA listing comment period on three separate occasions. Finally, in September 2003 USFWS revised the final rule and removed splittail from the list of threatened species.

Fish Abundance Estimates

Figure 3-1 shows the abundance index for Delta smelt from 1967 through 2003, 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 2003 index was the fourth lowest index in the past 10 years, and the ninth lowest on record. Scientists are investigating what causes this variation in abundance.

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.

Figure 3-2 shows estimates of returning adult winter-run Chinook salmon from 1967 through 2003. The estimates are referred to as escapement estimates—the number of adults that escape mortality and return to spawn. The estimated escapement for 2003 was 9,800, which more than replaced the estimated 1,200 adults in the parent stock of 2000. 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, reduced commercial fishing losses, and changing ocean conditions are all thought to have benefited winter-run Chinook salmon.

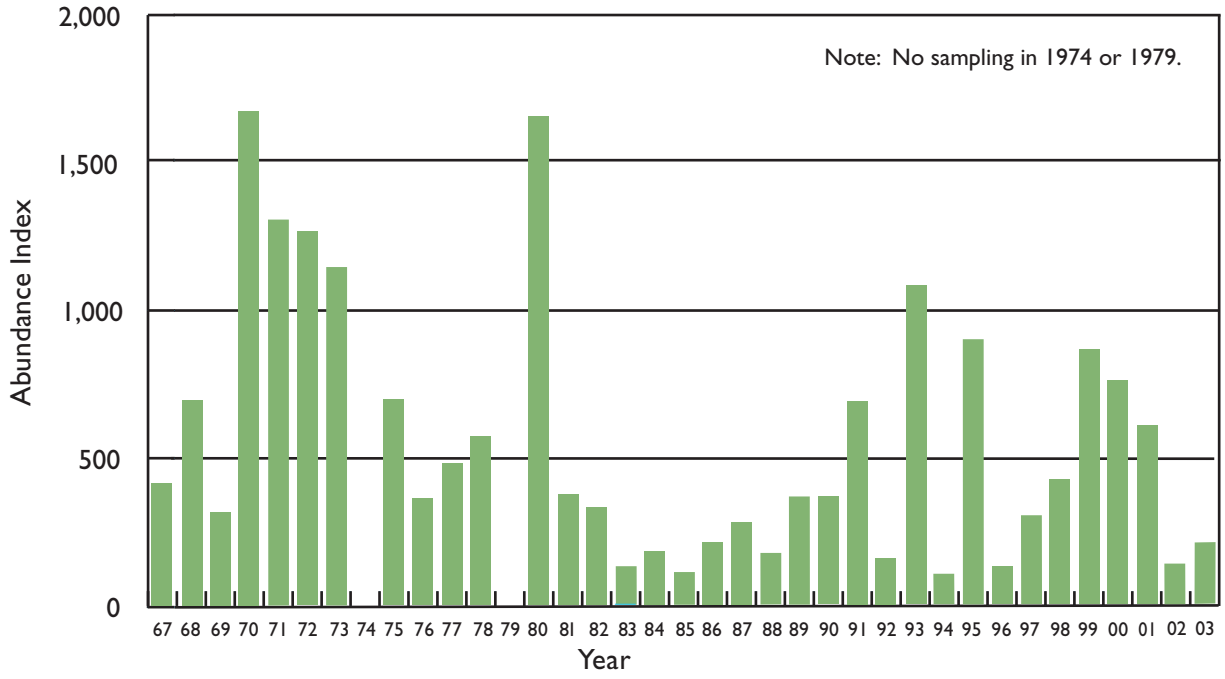


Figure 3-1. Delta Smelt Fall Midwater Trawl Sampling Abundance Index, 1967 through 2003

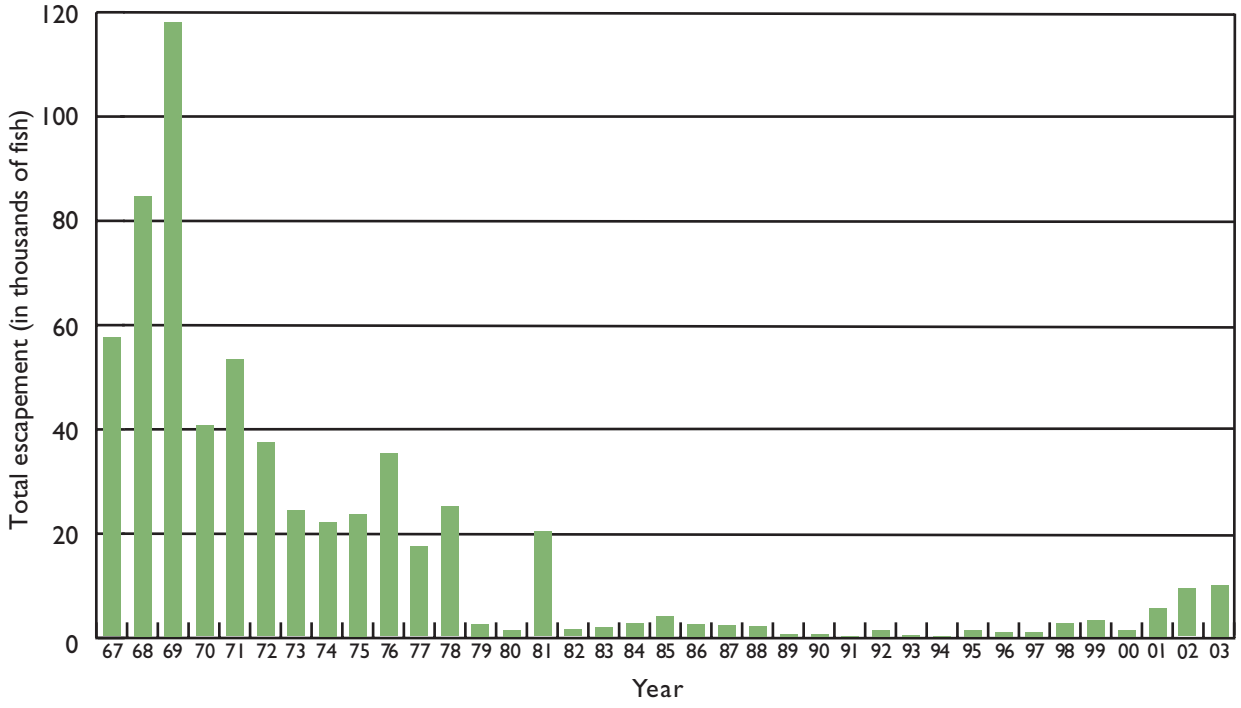


Figure 3-2. Estimated Total Adult Winter-Run Chinook Salmon Escapement, 1967 through 2003

Figure 3-3 shows estimates of returning adult spring-run Chinook salmon from 1990 through 2003. 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 2003 was 8,700 for the Feather River Hatchery and about 8,500 for the other streams combined. Overall, spring-run escapement in 2003 increased about 2.3 percent compared to 2002. Although the escapement estimates are lower than 1998, the 2003 escapement is the third highest over the last 10 years and the numbers remain consistently higher than those observed during the early 1990s. Like winter-run Chinook salmon, 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 2003. In comparison, the index for year 2003 was very low, but increased from a very low index in 2002. 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 and 2003. 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 since the mid-1990s in preparation for the Federal Energy Regulatory Commission relicensing of the SWP's Oroville-Thermalito Complex. Field program elements include operation of rotary screw traps, snorkeling, salmon spawning surveys, and radioelemetry.

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 used to identify the major habitats and to evaluate 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. *Radiotelemetry* gathers baseline information on migration and holding patterns of adult Chinook salmon within 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, indicating that flows do not 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 autumn 2003, more than 88,000 salmon spawned in the Feather River from the Fish Barrier Dam downstream to Gridley.

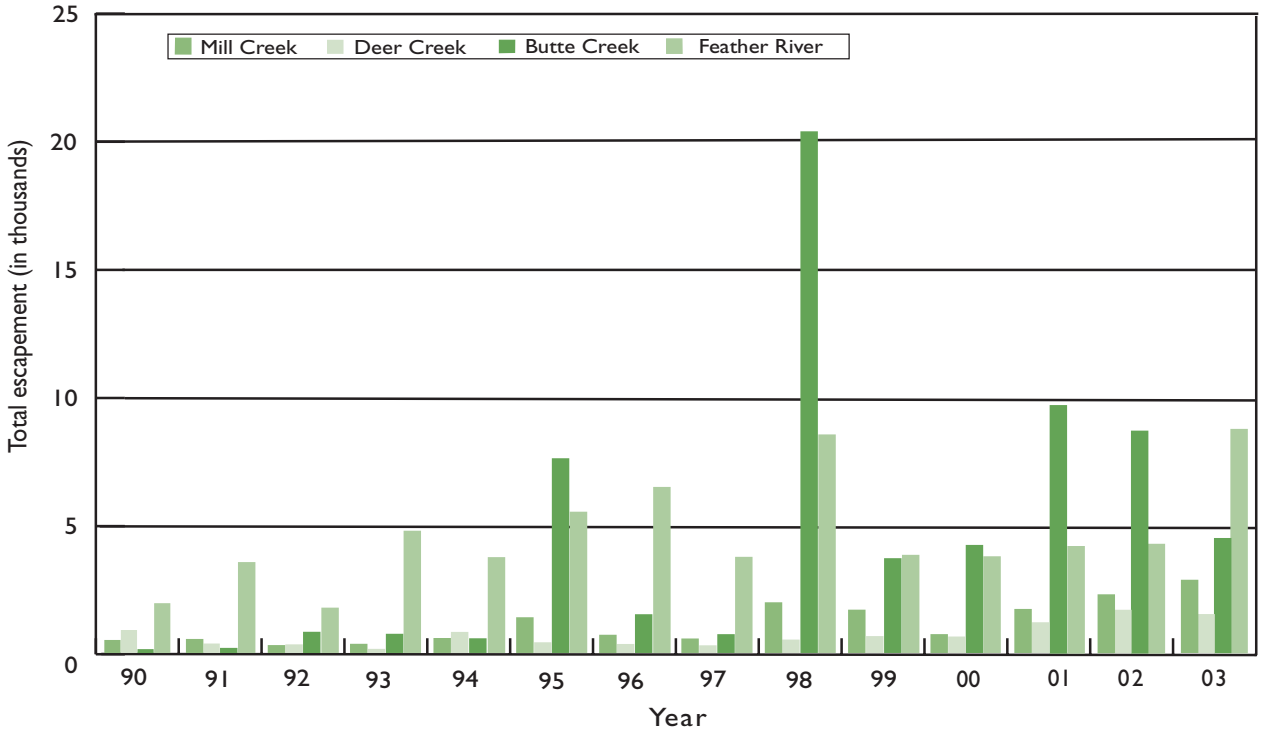


Figure 3-3. Estimated Spring-Run Chinook Salmon Escapement, 1990 through 2003

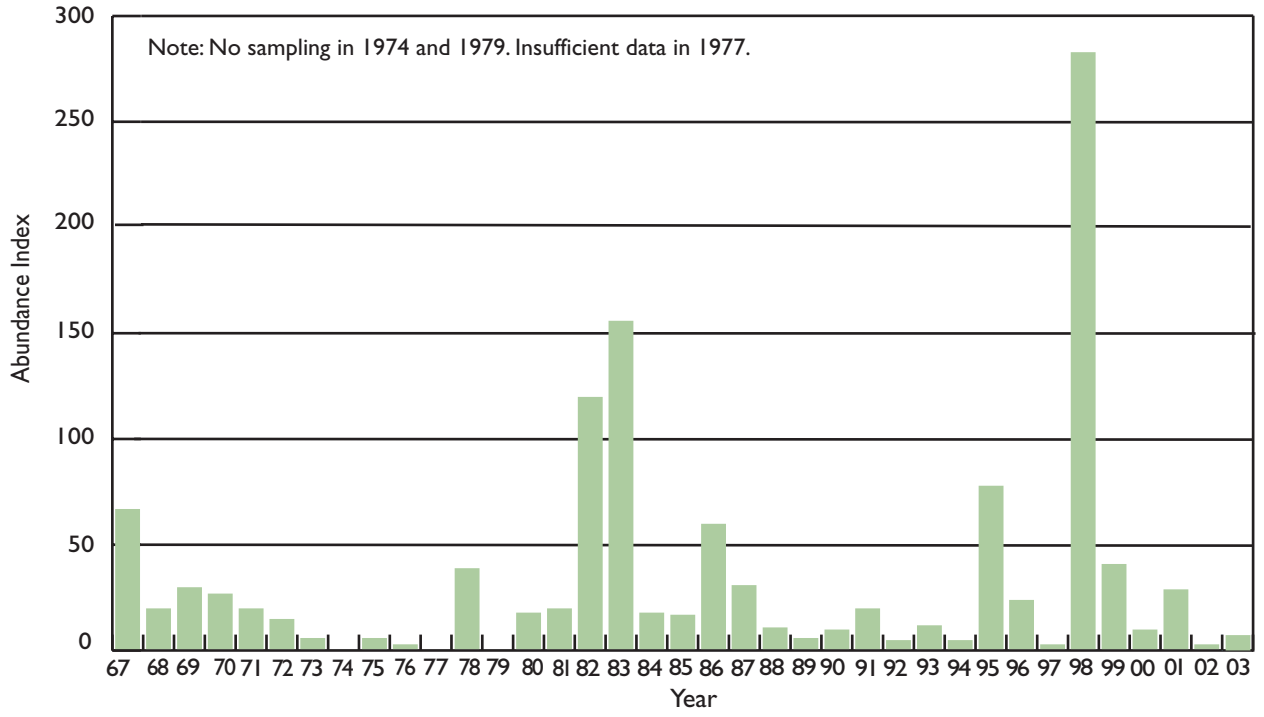


Figure 3-4. Young-of-the-Year Splittail Abundance Index, Fall Midwater Trawl, 1967 through 2003

The radiotelemetry study results indicated that more than 90 percent of the final fish locations and assumed areas of spawning occurred upstream of Gridley. It also suggested that the Thermalito Outlet may be a factor in the migration of Chinook salmon because of higher harvesting pressure coupled with the prolonged holding periods that occur in this area.

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 provided 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 $38 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;
- expanding the Merced River Fish Facility to increase salmon production and cost sharing in annual operating costs;
- 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 and in the San Joaquin Basin;
- 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.

Since this 5-year extension ends in December 2004 and about $3.6 million of the funds allocated in the previous two extensions still remain, the agreement is being amended with a 3-year extension through December 2007. Much of this funding is currently encumbered in contracts that will be completed by 2007 or earlier.

There were no mitigation projects approved in 2003 for implementation from the agreement's annual mitigation funds. No funding proposals or other issues requiring action by the Advisory Committee were brought forth in 2003.

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

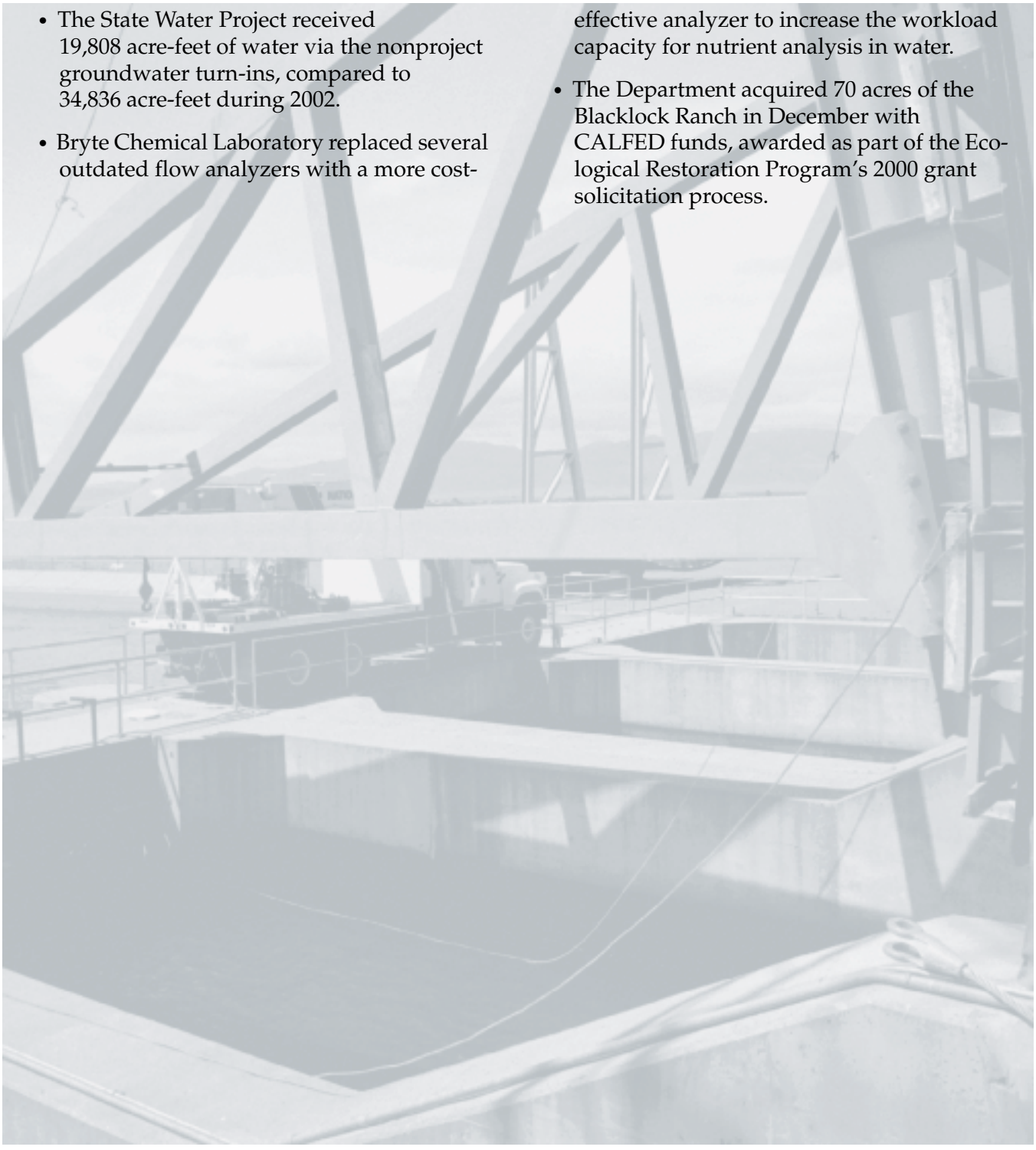
Chapter 4
Water Quality Programs



Department staff working on radial gate repair

Significant Events in 2003

- The State Water Project received 19,808 acre-feet of water via the nonproject groundwater turn-ins, compared to 34,836 acre-feet during 2002.
- Bryte Chemical Laboratory replaced several outdated flow analyzers with a more cost-effective analyzer to increase the workload capacity for nutrient analysis in water.
- The Department acquired 70 acres of the Blacklock Ranch in December with CALFED funds, awarded as part of the Ecological Restoration Program's 2000 grant solicitation process.



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 involved 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. SWRCB dismissed Phase 8 on 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 2002-03 was classified as *above normal* in the Sacramento Valley and *below normal* in the San Joaquin Valley under criteria set forth by SWRCB in D-1641. (For a detailed discussion of water year 2003, 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, 2003, was 7.23 million acre-feet (105 percent of average). The resulting Sacramento Valley 40-30-30 Index forecast was 8.0, resulting in the forecast classification of *above normal* for water year 2003. The forecast of the San Joaquin Valley 60-20-20 Index on May 1 was 2.8, resulting in the water year being classified as *below normal* in the San Joaquin Basin. The Eight River Index forecast on May 1 was 10.65 million acre-feet for April through July.

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

During 2003, 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 Central Valley Project were coordinated with various objectives of CALFED, the Bay-Delta Plan, Central Valley Project Improvement Act, and biological opinions for fish species listed under the federal and State Endangered Species Act. CALFED's Record of Decision mandates an Environmental Water Account managed by the

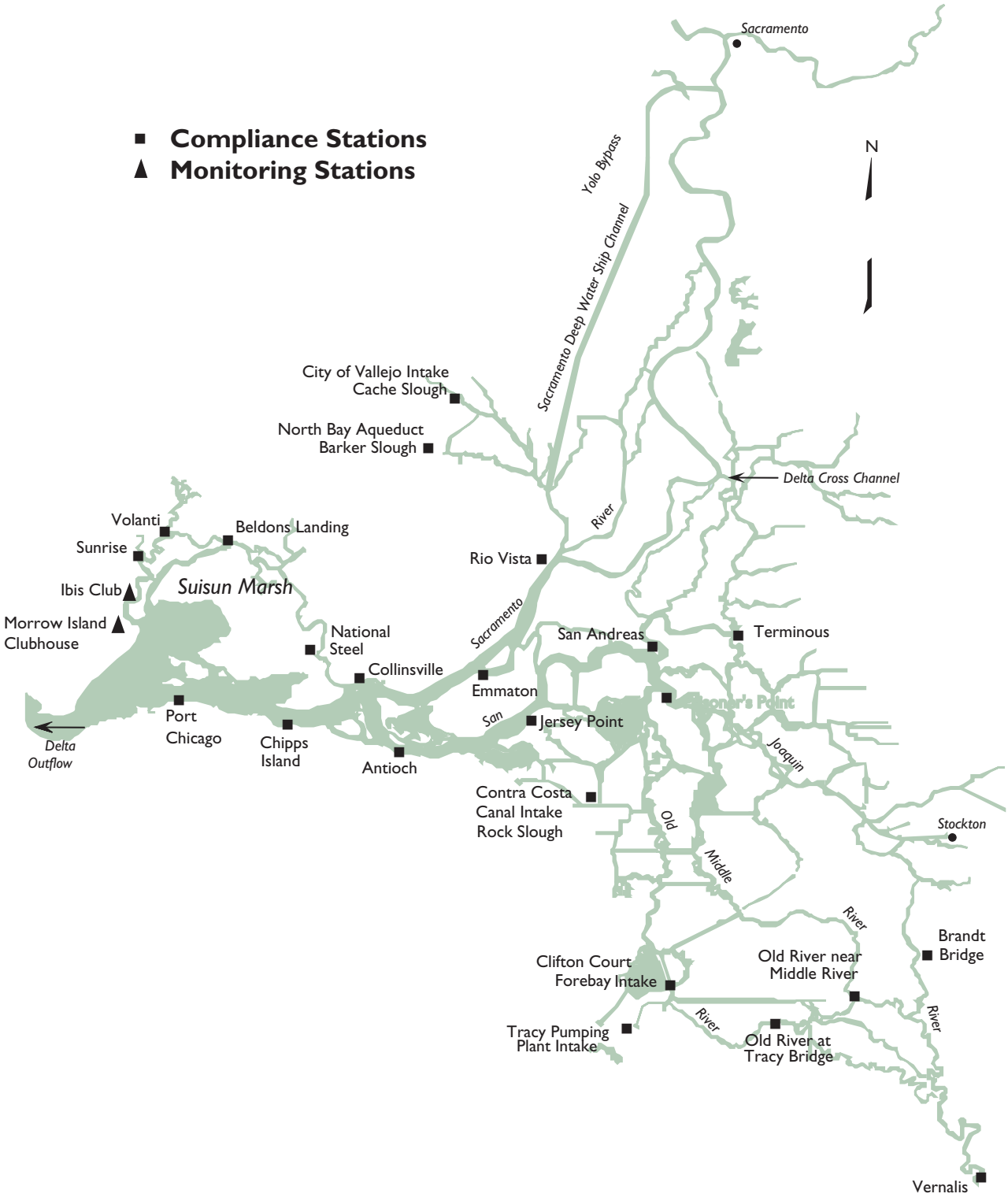


Figure 4-1. Decision 1641 Water Quality Compliance and Monitoring Stations in the Sacramento-San Joaquin Delta

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 ESA include the winter and spring runs of Chinook salmon, Delta smelt, and steelhead.

Real-time monitoring of fish movement and conditions in the estuary aids daily water management, and provides more timely protection of targeted fish species from entrainment at the Delta pumping facilities. (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 2003, the gates were open for 178 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.

During 2003, the gates remained closed until May 30. The gates were open on the weekends of May 31-June 1 and June 7-8 to allow for the passage of recreational boats, but closed again the following Mondays as required during high Sacramento River flows. On June 12, the gates were reopened and remained open until December 1 when they were closed for fishery protection 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 Objectives

D-1641 includes a year-round 250 mg/L chloride objective 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 2003.

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 dependent upon the water year classification. The above normal year requirement of 190 days was met on August 23, 2003.

Agricultural Objectives

D-1641 contains an agricultural 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 is also based on water year type, becoming less stringent under dryer conditions; all locations met the objective in 2003. 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—Tracy Road Bridge and the head of Middle River. Responsibility for meeting the salinity objective at the latter two sites was included in D-1641. The agricultural salinity objective was met at all four locations throughout 2003.

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 abundance of fish and biota.

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 2002 through May 2003, in acre-feet, was 3.24 million, 3.40 million, 1.66 million, 2.51 million, 3.26 million, and 4.76 million, respectively. On the last day of January 2003, 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 2003. 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.

Excess outflow conditions, as defined by the Coordinated Operation Agreement, allow greater flexibility in project operations. During 2003, Delta water 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 more than 34,000 cfs per day. January 2003 recorded a monthly average of NDOI (50,626 cfs) significantly more than the NDOI monthly average for January 2002 (37,812 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 above normal water years, July's NDOI objective of 8,000 cfs is the most stringent of all months. During 2003, monthly NDOI was highest in January at 50,626 cfs and monthly mean NDOI remained above 3,500 cfs during all months of the year. The lowest monthly mean NDOI occurred in September

with 3,510 cfs, and all NDOI standards were met in 2003.

Flow Standards

D-1641 includes minimum flow requirements 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 2003 was forecast to be above normal, 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 2003.

D-1641 contains minimum San Joaquin River base and pulse flows from the Winter-Run Salmon Biological Opinion that are also dependent upon water year type. These flows are measured at Vernalis on the San Joaquin River.

Above normal water year base flows are set at 3,420 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 base-flow objective is relaxed to 2,130 cfs when X2 is required to be east of Chipps Island. The X2 objective was met at Port Chicago during February and June and during March through May at Chipps Island. The Bureau did not meet the Vernalis flow requirement in February 2003, and subsequently notified SWRCB that equivalent water that would have been necessary to meet the objective would be available for a future discretionary release of B2 water (B2 water is an 800,000 acre-foot category of CVP water that must be set aside for environmental purposes).

D-1641 requires the San Joaquin River spring pulse flow for April 15 to May 15 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.The flow target for the spring 2003 VAMP period was 3,200 cfs. During October, D-1641 requires a pulse attraction flow of up to 2,000 cfs at Vernalis to benefit salmon.

Export Standards

D-1641 includes an export limitation for SWP and CVP, carried over from the Bay-Delta Accord, that conditions combined 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 typically used as an alternative to 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 2003, combined SWP and CVP exports averaged about 14 percent of Delta inflow, far below the 65 percent limitation.

Exports during the more restrictive February-through-June period (35 percent objective) averaged about 21 percent. In mid-February, concern over maintaining compliance with X2 and the corresponding Delta outflow requirement resulted in export curtailments and increased reservoir releases from Shasta, Folsom and Oroville. In mid-May, following the VAMP period, exports remained low for the protection of winter-run salmon and Delta smelt. During late June SWRCB allowed the export limit to be relaxed to 45 percent in order to pump water for the Environmental Water Account.

From July through the following January, the SWP and CVP are allowed to export at 65 percent of Delta inflow. During July-through-December 2003, the combined percent inflow diverted averaged 46 percent. During July, August, and most of September, exports at Clifton Court Forebay were allowed to increase 500 cfs above the usual 6,680 cfs U.S. Army Corps of Engineers limit. The additional water exported was for credit to EWA. Concerns over compliance with Delta outflow requirements restricted SWP exports during late September and October. Salinity increased at Emmaton and other Delta locations, causing export cuts during the last days of October and during November. On December 1, the Delta Cross Channel Gates were closed to protect salmon and water quality in the interior Delta degraded significantly. As a result, exports were severely curtailed to prevent further salinity intrusion.

Temporary Delta Barriers

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

These temporary seasonal barriers are designed to improve local water levels and circulation patterns, protect fishery resources, and improve water quality. They are placed across Middle River, Old River at Tracy, Grant Line Canal, and at Head of Old River.

The installation of the Middle River barrier was completed on April 23, 2003, and the Old River barrier near Tracy installation was completed on the previous day. The spring barrier at Head of Old River, which functions as part of VAMP, was operational by April 21 and helped prevent migrating juvenile salmon from straying from their migration routes into interior Delta channels. The spring barrier at the Head of Old River was removed by June 3. The Grant Line Canal barrier was partially installed in late April, and the complete installation finished on June 17. The Old River near Tracy, Middle River, and Grant Line Canal barriers were all removed by November 25.

The fall barrier placed at Head of Old River, which helps keep upstream migrating adult salmon from straying out of the San Joaquin River into interior Delta channels, was notched on September 16, 2003, and the installation completed 2 days later. Removal of the fall barrier at Head of Old River was completed on November 13.

Special Study and Biological Surveys

The Department conducts several special studies and biological surveys each year, one of which 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; low DO levels can potentially cause physiological stress to fish and block migration of salmon up the San Joaquin River. The Department also conducts 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, DO 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.

To help reduce the severity of these low DO conditions, in most years the Department installs a temporary rock barrier across the Head of Old River 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.

Relatively low San Joaquin River daily flows, averaging 1,383 cfs, were measured at Vernalis during September 2003. 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 September 15 and removed on November 13.

Methods. Monitoring of DO concentrations in the Stockton Ship Channel was conducted by boat on eight monitoring runs, from August 11 to December 10, 2003. During each of the 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. An exception to this standard protocol occurred during the November 14 sampling run, when Stations 1 through 9 were sampled at high water slack, due to a miscalculation of the boat departure schedule.

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.

Results. During the period of this study (August 11 to December 10), DO levels varied considerably between regions within the channel from a low of 3.0 mg/L to a high of 10.7 mg/L. In the western channel DO concentrations were relatively high and stable, ranging from 6.9 to 9.4 mg/L. The robustness of DO concentrations in this portion of the channel is apparently due to the greater tidal mixing, the absence of conditions creating BOD, and shorter hydrological residence time. In the central portion of the channel, DO concentrations were more variable than the concentrations observed in the western channel, ranging from 4.1 to 9.3 mg/L. In the eastern channel, the DO levels were the most variable and stratified, ranging from a low of 3.0 mg/L to a high of 10.7 mg/L. Changing inflows from the San Joaquin River into the eastern channel may partially account for the variability of the DO levels within that channel.

DO concentrations in the eastern and central Stockton Ship Channel fell below both the State's 5.0 mg/L and 6.0 mg/L objectives in August and September 2003, respectively, a period which coincided with relatively low net flows in the San Joaquin River past Stockton and warm water temperatures.

Conditions began to improve in late September and early October. Sampling on October 8 showed an improvement of DO conditions, with all stations showing levels above the 5.0 mg/L objective, and only the central channel

with levels slightly below the 6.0 mg/L objective. By October 28, DO levels had improved to 6.0 mg/L or greater throughout the channel, and remained above State objectives for the remainder of the sampling program.

The barrier was fully removed by November 13, and although flows past Stockton were subsequently reduced, DO levels remained within compliance. The fall sampling program was suspended after sampling on December 10.

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 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 was conducted at 10 sampling sites distributed throughout the major habitat types within the estuary. The sampling stations are

- Clifton Court Forebay Intake
- San Joaquin River at Buckley Cove
- San Joaquin River at Twitchell Island
- Old River opposite Rancho del Rio
- Sacramento River below the Rio Vista Bridge
- Sacramento River above Point Sacramento
- Suisun Bay at Bulls Head
- Grizzly Bay at Dolphin near Suisun Slough
- San Pablo Bay near Pinole Point
- San Pablo Bay near the mouth of the Petaluma River

Four bottom grab samples for benthic analysis and one sample for sediment analysis were collected monthly at each site from January to October 2003. In October, in an effort to free up resources for more in-depth analysis, the benthic monitoring program was revised from a monthly sampling schedule to quarterly sampling. The first quarterly sample was taken in October; no further sampling occurred in 2003. Samples were analyzed to identify organisms to the lowest possible identifiable taxon, and to enumerate all organisms collected.

The Department maintains a database of benthic organisms located within the upper estuary. The benthic database 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.

Seventeen new organisms were added to the benthic species list during 2003. These new organisms were found in 3 of the 10 sample areas. One species was found near the Clifton Court Forebay, a freshwater site in the south Delta. Five species were found near the City of Rio Vista, a freshwater site on the Sacramento River. Eleven species were found in San Pablo Bay, a saline-to-brackish water site west of the Delta. The new species and the months in which they were collected in 2003 are as follows:

- Diptera (*Tipula species A*), February
- Arachnid (*Hygrobates species A*), February
- Spionid (*Aricidea species A*), February
- Spionid (*Tharyx parva*), February
- Polychate (*Pholoides aspera*), February
- Diptera (*Psychoda species A*), March
- Diptera (*Neoplasta species A*), March
- Tubificid oligochaeta (*Arcteonais lomondi*), April
- Diptera (*Simulium species A*), May

- Decapod (*Callianassa species A*), May
- Decapod (*Pagurus samuelis*), May
- Crustacean (*Cancer magister*), May
- Ampithoidae amphipod (*Ampithoe valida*), July
- Corophiidae amphipod (*Monocorophium uenoi*), July
- Terebellidae polychaete (*Pista pacifica)*, September
- Gastropod (*Melanochlamys diomedea*), September
- Heterdonta bivalve (*Macoma species A*), September

A total of 180 species of benthic macrofauna were collected in 2003 at the 10 sampling sites. Of the 180 species, 10 species represented 90 percent of all organisms collected. The 10 dominant species were

- the amphipods: *Americorophium stimpsoni, Americorophium spinicorne, Corophium alienense, Monocorophium acherusicum, Ampelisca abdita*, and *Gammarus daiberi*;
- the cumacean crustacean: *Nippoleucon hinumensis*;
- the aquatic oligocheate: *Varichaetadrilus angustipenis;* and
- the Asian clams: *Potamocorbula amurensis* and *Corbicula fluminea*.

Of the 10 dominant species, four species, *Ampelisca abdita, Nippoleucon hinumensis, Monocorophium acherusicum*, 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, *Corophium alienense, 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 three species, *Gammarus daiberi, Varichaetadrilus angustipenis,* and *Corbicula fluminea,* are predominantly fresh water species and were collected at sites east of Suisun Bay.

Phytoplankton and Chlorophyll *a* Studies

Monthly sampling of chlorophyll *a* concentrations and phytoplankton was conducted in 2003 at 11 stations throughout the upper San Francisco Estuary. These stations are

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

Chlorophyll *a* is one of the main groups of pigments contained in the algal species that make up phytoplankton. Chlorophyll *a* concentration was measured for each of the 11 monitoring stations to estimate overall phytoplankton biomass in the estuary. Phytoplankton samples were collected and analyzed separately to determine which species were present in the estuary.

Monthly chlorophyll *a* concentrations throughout much of the estuary were low, with 90 percent of the 132 samples taken in 2003 having levels below 15 µg/L, and 78 percent of all samples having levels below 5 µg/L. Average chlorophyll *a* concentrations for all samples in 2003 were 5.7 µg/L, and the median value was 2.4 µg/L. The maximum chlorophyll *a* concentration for all monitoring locations in the estuary was 64.5 µg/L, recorded on May 23 at the San Joaquin River at Vernalis monitoring site. This maximum was well below the peaks of 119 µg/L (July 2001) and 118 µg/L (August 2002) recorded in previous years. Chlorophyll *a* concentrations for all stations reached seasonal maxima during the spring or summer, except in the San Joaquin River at Buckley Cove where the maximum was recorded in October. The minimum chlorophyll *a* concentration in the

estuary was 0.36 µg/L, recorded on January 9 at the Old River opposite Rancho Del Rio monitoring location. In general, chlorophyll *a* minima were recorded in late fall and winter.

The highest chlorophyll *a* concentrations were measured at Vernalis, Buckley Cove, and Disappointment Slough (stations C10, P8, and MD10), with average concentrations of 23.8, 12.9, and 8.2 µg/L, respectively. Average chlorophyll *a* concentrations in these areas were similar in 2002 with values of 36.3, 13.3, and 7.1 µg/L, respectively. Average yearly chlorophyll *a* concentrations recorded at the other estuary locations ranged from 1.7 µg/L in the San Joaquin River at Potato Point to 3.6 µg/L in San Pablo Bay near Pinole Point.

Phytoplankton biomass and resulting chlorophyll *a* concentrations in some areas of the estuary 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 in 2003 ranged from 23 percent to 94 percent of the total pigments measured, with an average of 70 percent and a median of 71.6 percent. In addition, 80 percent of the samples collected had chlorophyll *a* levels above 60 percent. This relatively high percentage of chlorophyll *a* is generally associated with healthy, growing populations.

Phytoplankton populations consisted of (families in order of abundance): Bacillariophyceae (diatoms), Chlorophyceae (green algae), Cyanophyceae (blue-green algae), Cryptophyceae (cryptomonads), Unidentified (flagellates), Dinophyceae (dinoflagellates), Euglenophyceae (euglenoids), and Chrysophyceae (yellow-brown algae). Of the genera identified the following were the 10 most common, in order of abundance: *Achnanthes, Rhodomonas, Cyclotella, Selenastrum, Aulacoseira, Synechococcus, Skeletonema, Thalassiosira, Oscillatoria*, and unidentified *flagellates*. Phytoplankton abundance and number of species was greatest in the San Joaquin River at Vernalis and Buckley Cove, while the monitoring locations in Suisun and San Pablo Bays tended to be the least abundant with fewer species.

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 2003.

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 2003, the SWP received 19,808 acre-feet of water via the nonproject groundwater turn-ins compared to 34,836 acre-feet during 2002.

Municipal Water Quality Investigations Program

The Sacramento-San Joaquin Delta provides drinking water for over 24 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.

Table 4-1. 2003 Mean Water Quality at Selected State Water Project Locations

Constituents	Units	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 as CaCO3	41	104	69	89	76	79	78	79	79
Antimony	mg/L	NR	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NR	NR
Arsenic	mg/L	<0.001	0.002	0.002	0.002	0.002	0.002	0.001	0.002	0.002
Beryllium	mg/L	NR	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L	<0.1	0.2	<0.1	0.2	0.1	0.2	0.2	0.1	0.2
Bromide	mg/L	<0.01	0.04	0.13	0.15	0.17	0.18	0.18	0.18	0.17
Calcium	mg/L	8	16	16	24	18	20	21	20	20
Carbon-Dissolved Organic	mg/L as C	NR	4.9	3.0	3.2	3.0	3.1	2.7	2.8	3.0
Carbon-Total Organic	mg/L as C	NR	7.2	3.8	4.4	3.8	3.9	3.5	3.6	3.7
Chloride	mg/L	<1	20	42	53	57	59	57	59	56
Chromium	mg/L	<0.001	0.002	0.002	0.003	0.002	0.002	0.001	0.003	0.002
Copper	mg/L	<0.001	0.003	0.003	0.002	0.002	0.002	0.001	0.002	0.003
Fluoride	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hardness	mg/L as CaCO3	34	93	82	115	93	98	95	98	96
Iron	mg/L	0.006	0.035	0.022	<0.005	0.009	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
Magnesium	mg/L	4	13	10	14	12	12	11	12	12
Manganese	mg/L	<0.005	0.015	0.011	<0.005	<0.005	<0.005	<0.005	<0.005	0.011
Nitrate + Nitrite	mg/L as N	0.02	0.29	0.46	NR	NR	0.70	NR	0.70	0.58
Phosphorus - Ortho	mg/L as P	<0.01	0.09	0.06	NR	NR	0.08	NR	0.07	0.06
Phosphorus - Total	mg/L	0.01	0.17	0.10	NR	NR	0.10	NR	0.09	0.07
Selenium	mg/L	NR	<0.001	<0.001	NR	NR	NR	<0.001	NR	NR
Sodium	mg/L	3	25	36	54	43	46	45	47	46
Specific Conductance	µS/cm	84	307	358	517	422	440	435	431	436
Sulfate	mg/L	2	24	20	43	32	35	34	34	31
Total Dissolved Soilds	mg/L	52	185	209	302	250	260	258	255	262
Turbidity	NTU	4	48	12	15	7	6	6	8	2
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

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

Because water quality concerns change rapidly with new drinking water regulations and waters quality issues, the MWQI Program must be flexible enough to adapt to changing requirement. 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 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 1623.* The paper appeared in the *Journal of Applied Environmental Microbiology.* Based on the findings, the MWQI Program is not supporting 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 near Vernalis.

In 2002, staff applied for and received a $515,000 CALFED grant to construct the continuous monitoring station near Vernalis for organic carbon and other key constituents. Completion of construction is expected in fall 2004.

The wet oxidation carbon analyzer can sample every 6 minutes and the combustion analyzers sample every 20 minutes, compared to the historical grab-sample organic carbon data, which 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 was established in 1951, and in 1990 it was certified by the California Department of Health Services's Environmental Laboratory Certification Program to perform drinking water and wastewater analyses. The laboratory has continued to perform the vast majority of chemical and other related analyses that are required to support the Department's water quality programs. Thousands of water samples every year are analyzed routinely for minerals, nutrients, metals, pesticides, volatile organic compounds, and many other chemical constituents.

In 2003, the continued monitoring requirements under FERC for the relicensing of Lake Oroville increased the laboratory's normal analytical workload by almost 60 percent. This additional workload requirement is scheduled to continue until late spring 2004.

FERC requires 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; construction started in late 2001. Since May 2003, the laboratory has been performing these analyses, with a cost savings of approximately $30,000 per month.

In 2003, the laboratory purchased and installed the Konelab 20, Wet Chemistry Discrete Photometric Analyzer to replace and increase

the workload capability for nutrient analyses in water. The new cost-effective system has replaced several outdated continuous flow analyzers used to perform Total Phosphorus, Total Kjehdahl Nitrogen, and Organic Nitrogen. The Konelab 20 is designed to operate unattended overnight and will perform multiple analyses simultaneously at a sample rate of 180 per hour with minimal reagent use and waste.

A Millipore Mill-Q water purification system was also purchased for use in the Class 100 clean room. The water purification system was required to meet EPA quality control performance objectives for the method water blank criteria of ultra low trace metals analysis. The Mill-Q system was the only system specifically designed to remove the trace metals from the laboratory's deionized water system.

The laboratory has continued to manage a variety of analytical contracts with other State agencies and several 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 2003, under the Department's master contract policy, Bryte Laboratory awarded a new 3-year contract for analysis of solid materials, such as soil and sediment, to Sequoia Analytical Laboratory.

The Field and Laboratory Information Management System, implemented in 1997, has continued to enhance the laboratory's data management capabilities. In 2003, the Field Module of FLIMS was upgraded to conform to requirements of the Department's Water Data Library data base.

Security and protection of the SWP has continued to be 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 and the California Association of Mutual Aid Laboratories. One of the group's objectives is to assist in the continued development of additional analytical methods to detect and quantify biochemical and chemical agents. Once the methods and procedures are validated, a mutual assistance network was 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 Association of 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 laboratory 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 2003, QA/QC staff performed data quality review for the 1998-2002 Natomas East Main Drainage Canal Urban Runoff Study. The review evaluated the quality of laboratory analyses performed for the project. Staff also assisted in the development of quality Assurance Project Plans for various Department programs. An interagency agreement with California State University, Sacramento, was drafted that will assist the Department in developing and presenting QA/QC classes. The Introduction to Quality Assurance/Quality Control in Environmental Monitoring Programs was presented in December 2003. This is the first class in the series of QA/QC classes. The class covers quality assurance and quality control concepts and practices for water quality as well as biological monitoring programs.

Staff continued providing performance evaluation samples to field programs. The samples were used to monitor the accuracy of online field organic carbon analyzers at Hood, Banks, and Field Unit headquarters, as well as at Bryte Chemical Laboratory. A report was drafted comparing high temperature combustion and chemical oxidation methods for the analysis of organic carbon in surface water.

The Water Data Library was established in 2001, completing the development of the Field and Laboratory Information Management System, established in 1998. All data from 1998 to date have been transferred into the data tables. Data from the defunct WDIS database, needed for FERC relicensing, have also been added. Data transfers from Bryte Laboratory are now conducted weekly, making it possible for a sample to be collected and results made available on the Internet within a week of analysis. Staff continue to work with other database administrators to improve data sharing and the user interface.

Suisun Marsh Activities

Suisun Marsh consists of approximately 59,000 acres of tidal and managed brackish water wetlands and 30,000 acres of bays and sloughs and 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 both SWP and CVP operations. In 1987, the Department, the Bureau, DFG, and SRCD signed the Suisun Marsh Preservation Agreement. 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.

Revised Suisun Marsh Preservation Agreement

In 2003, SMPA parties focused their energy on developing the revised SMPA. This agreement includes only those Amendment Three actions that would not cause any taking of listed species, as identified by the regulatory agencies. The revised SMPA includes the following actions originally included in Amendment Three—Water Manager Program, Individual Ownership Adaptive Management Habitat Plan updates, updating channel water salinity standards to be consistent with D-1641, drought response fund, portable pumps for drainage, replacing turnouts on the Roaring River Distribution System, and revisions to the Suisun Marsh Monitoring and Mitigation Agreements.

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 2003, the agencies initiated a formal NEPA/CEQA planning process for development of the Habitat, Management, Preservation, and Restoration Plan for the Suisun Marsh. A series of three scoping meetings were held in the fall. This plan addresses water quality, managed wetland enhancement, and levee and endangered species recovery needs; it proposes to address these needs equally, and to include scientific data throughout the process. The parties, with the assistance of a facilitator, are working through the complex and challenging process of developing a 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 and related permits and biological opinions. 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.

ECAT also provides support for the Charter Group. At their bimonthly meetings during 2003, discussions included Suisun Marsh monitoring efforts, maintenance of primary facilities, and selection and acquisition of a parcel for habitat restoration. Monitoring issues focused on Island Slough, the salt marsh harvest mouse, and the California clapper rail.

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 Negotiating 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.

Blacklock Habitat Restoration Project

The Department acquired 70 acres of the Blacklock Ranch in December 2003. This parcel was acquired with CALFED funds awarded as part of the Ecological Restoration Program's 2000 grant solicitation process. The grant funded acquisition, restoration plan development, and interim management of the parcel. Staff from the Department, DFG, USFWS, the Bureau, and SRCD are working collaboratively to prepare a plan to restore tidal action to this parcel.

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.

During 2003, the Department processed one cost-share application for the remaining funds in the cost-share program in the amount of $4,742.42. Since 1987, the Department and the Bureau have paid a total of $1,250,848.

Modeling and Delta Survey

RMA2/11 Model. SMPA 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 nonconservative 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 the 70-acre parcel of the Blacklock Ranch in the Suisun Marsh under a CALFED grant. The project is being coordinated through the Suisun Marsh Charter process. The Suisun Marsh monitoring network will provide stage, temperature, and salinity data. The RMA2/11 model will also take advantage of recent bathymetry surveys, and a Delta/marsh wide datum realignment.

Bay-Delta Datum Realignment. SMPA staff initiated the first comprehensive resurvey of the Delta and facilitated a multiagency 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 U. S. Geological Survey flow monitoring stations to facilitate leveling and correction of tidal measurements. The methods conformed to National Geodetic Survey standards and will be included in its database.

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 (control season) 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 2002-03 control season, the fall 2002 fish passage study continued with operational modifications to the boatlock in its second year as an alternative fish passage, instead of physical modifications to the flashboards as in previous years. The gates were operated for both the fish study and salinity control.

From September 25 through October 8, 2002, Phase I was in operation with gates opened to full-bore—flashboards installed, boatlock closed. In Phase II, October 9 through October 22, 2002, all three gates were held open with flashboards installed and boatlock closed. Phase III operations began October 23 and continued through November 6, 2002, with full-bore operations, flashboards installed, and boatlock open. Thereafter, normal gate operations resumed (full-bore operations, with flashboards installed, boatlock closed) to control salinity through December 30, 2002. From December 31, 2002, through May 15, 2003, three gates were held open due to very low water quality levels throughout the marsh; however, the flashboards were still in place if gate operation was needed again. As conditions continued to be favorable with no water quality concerns, the flashboards were removed on May 16, 2003. The gates remained open during the subsequent control season as part of the fish passage study.

Initial Facilities Maintenance. Several facilities, constructed by the Department and the Bureau, operate in the Suisun Marsh. These facilities, identified in the Plan of Protection for the Suisun Marsh and the 1987 SMPA, 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 2003, the Department's Delta Field Division performed the following routine maintenance on 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.

Station Maintenance, Repair, and Enhancements. Routine maintenance, repair, and enhancement activities for Suisun Marsh monitoring stations during water year 2002-03 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

This maintenance is 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.

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.

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, 2002, through May 31, 2003. See the Department's annual report to SWRCB, *Suisun Marsh Monitoring Program Data Summary: 2003 Water Year*, for details.

Vegetation. During 2003, the Department and DFG began a change detection analysis of the Suisun Marsh Vegetation Map. In 2001, a new vegetation map for Suisun Marsh was completed based on aerial photos taken in 1999. The first change detection analysis was conducted in 2001, using aerials taken in July 2000. The change detection analysis checks the overall percent of change of polygon boundaries and attributes between the 2 years. The 2001 change detection analysis showed that 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. Following the recommendation of DFG, aerial photos were taken in July 2003 for a new change detection analysis. In August and September, the Department and DFG staff conducted field surveys of randomly selected plots to revise the classifications and add more validation points to the map. In November 2003, the Department completed a digital mosaic of the marsh for use in the change detection. It is anticipated the change detection analysis will be completed in fall 2004.

Salt Marsh Harvest Mouse 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 11 areas totaling 2,200 acres 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.

The following eight areas of the marsh were surveyed in 2003:

- *six conservation areas*—Crescent, Hill Slough Area 9, Peytonia Slough, Ponds 15 and 16, Hill Slough Pond 4, and Hill Slough Ponds 1 and 2;
- *Blacklock Ranch*—the newly acquired 70-acre parcel for tidal marsh restoration; and



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

- *Rush Ranch*—a tidal marsh/upland complex owned by the Solano Land Trust.

Hill Slough Area 9, Ponds 15 and 16, Hill Slough Pond 4 and Rush Ranch were each surveyed three times (in spring, summer, and fall), Cres-

cent was surveyed twice, and the other three areas were each surveyed once during 2003.

Suisun Marsh Waterfowl Feeding Ecology Study

In September 2003, University of California, Davis, completed the report, *An Analysis of Food Habits of Green-Winged Teal, Northern Pintail, and Mallards Wintering in the Suisun Marsh to Develop Guidelines for Food Plant Management*. The study was funded by the Department and the Bureau.

The objective of the waterfowl feeding ecology study was to determine the food sources for mallards, northern pintail, and green-winged teal in the marsh. Over 700 ducks were collected and their esophageal contents analyzed. Seeds from over 30 plant species were found, as well as minor amounts of invertebrates and unidentifiable non-seed plant tissues. The seeds of just 10 plant species represented the bulk of the esophageal contents.

Aquatic Monitoring

In 2003, 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 gates and the NMFS 1993 Biological Opinion for Operation of the SWP and CVP.

The UC Davis fish sampling and DFG juvenile striped bass sampling have not led to definitive findings on the impact of the gates, since the control or background condition for an assessment (the absence of gates) no longer exists. The data analyses addressed the question indirectly by comparing data collected before and after 1988. Because the overall decline in fish abundance in the marsh began before installation of the gates, the decline seems independent of gate operation.

UC Davis has sampled for fish in the marsh since 1979, with Department and Bureau funding. Since then, fish catch has fluctuated considerably, and both native and introduced fish have declined from their historic levels of the early 1980s. The catch of introduced fish again outnumbered that of native fish in 2003, reversing a short-lived trend (2002) in native catch exceeding that of introduced fish. Since 1982, native fish catch has exceeded introduced fish catch only during times of exceptionally low introduced fish catch rather than during periods of exceptionally high native fish catch. Despite this change, it appears that current conditions are improving for native fish in the marsh as evidenced by their continued increase in abundance.

Native species' abundance has not fluctuated as widely as introduced species' abundance. Despite a prolonged decline in native species abundance from 1980-1994, there has been a considerable increase since 1995, which is driven primarily by increased catches of Sacramento splittail and, more recently (2001-2003), tule perch. This is encouraging since the two species have historically comprised the largest proportion of the native species catch. Although Delta smelt increased in abundance in 2001 with the third highest catch since 1980, its abundance in 2002 and 2003 decreased to nearly one-third the catch in 2001. Longfin smelt catch dropped by nearly 25 percent after doubling in 2002 and declining in 2000 and 2001. Since surveying began in 1994, the presence of eggs and larvae of Delta smelt and longfin smelt indicates that these species use the marsh for rearing and, most likely, spawning.

DFG and the IEP Environmental Monitoring Program have monitored *Neomysis mercedis* densities and chlorophyll *a* concentrations in Suisun Marsh since 1972 and 1976, respectively. The native mysid shrimp, *N. mercedis*, has undergone a general downtrend since sampling began and experienced a population collapse in all seasons after 1986. This was likely in response to predation and competition from the Asian clam, *Potamocorbula sinensis*. Mysid shrimp abundance has remained relatively low since then, and extremely low in 2002 and 2003. Chlorophyll *a* concentrations, which serve as an indicator of phytoplankton abundance, have shown an

overall decline in Suisun Marsh since 1987. This decline has been attributed, in part, to the efficient feeding habits of *P. amurensis*, a suspension-feeding clam that invaded the San Francisco Bay and estuary in 1986. Recently, the average monthly chlorophyll *a* concentration in Suisun Marsh has fluctuated slightly, but remains low compared to levels measured prior to 1992. In 2001, chlorophyll *a* concentrations dropped even further and remained low through 2002 and 2003. 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 the 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 because of consistently small fish, record low catches, and ultimately a boat breakdown. Despite this, the Summer Townet Survey striped bass total catch was the lowest recorded and represented a 70 percent drop from 2001 and 83 percent from 2000. The 2003 striped bass index for the Bay-Delta dropped further, but remained relatively unchanged in Suisun Marsh. 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 control gates.

Mitigation and Fulfillment of Permit Conditions

Suisun Marsh Salinity Control Gates Flashboard Modification and Boatlock Studies. 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 boatlock operational modifications were 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. Salt marsh harvest mice were not surveyed in 2003.

Recent vegetation monitoring in both Island Slough ponds determined that neither pond met the established criteria for percentage of pickleweed. A vegetation improvement plan has been developed and implemented to improve the vegetation to meet these criteria. In 2003, pickleweed was planted in Pond 4, and ditches were dug in Pond 7 to improve water circulation.

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 preparing documents 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 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).
- The report *An Analysis of Food Habits of Green-Winged Teal, Northern Pintail, and Mallards Wintering in the Suisun Marsh to Develop Guidelines for Food Plant Management* was completed by UC Davis in September 2003.

Suisun Marsh Expenditure History

Suisun Marsh expenditures and reimbursements administered by the Department for calendar years 1968 through December 2003 are summarized in Table 4-2. From 1968 through December 31, 2003, the Department disbursed more than $100 million SWP funds for planning, design, environmental documentation, construction, maintenance, monitoring, mitigation, permit compliance in support of implementing the plan of protection for Suisun Marsh through SMPA, and meeting standards set by SWRCB. The Bureau has reimbursed the Department about $42.5 million (about 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	Adjustment for General Fund Payment[a]	Interest Payment Credited to SWP Contractors[b]
1968	10,571	0	0	10,571	0	0
1969	34,182	0	0	34,181	0	0
1970	23,343	0	0	23,343	0	0
1971	1,042	0	0	1,042	0	0
1972	47	0	0	47	0	0
1973	0	0	0	0	0	0
1974	0	0	0	0	0	0
1975	2,709	0	0	2,709	0	0
1976	32,960	0	0	32,960	0	0
1977	37,475	0	0	37,475	0	0
1978	350,831	0	0	350,831	0	0
1979	3,660,099	0	0	3,660,099	0	0
1980	5,005,759	0	0	5,005,759	0	0
1981	2,964,974	0	0	2,964,974	0	0
1982	2,955,705	0	(2,500,000)	455,705	0	0
1983	2,754,094	0	0	2,754,094	0	0
1984	2,418,344	0	0	2,418,344	0	0
1985	2,332,773	0	0	2,332,773	0	0
1986	6,495,322	0	0	6,495,322	0	0
1987	13,600,701	0	0	13,600,701	0	0
1988	7,456,364	0	(17,368,725)[b]	(9,912,361)	0	(2,039,752)
1989	2,341,960	(9,478,000)	1,219,691)[b]	(8,355,731)	6,634,600	(283,857)
1990	3,030,010	0	(695,450)	2,334,560	0	0
1991	6,223,042	0	(2,925,429)	3,297,613	0	0
1992	2,737,259	0	(1,174,655)	1,562,604	0	0
1993	2,979,255	0	(238,130)	2,741,125	0	0
1994	3,192,213	0	(1,962,549)	1,229,664	0	0
1995	2,721,978	0	(647,138)	2,074,840	0	0
1996	3,391,678	0	(1,482,396)	1,909,282	0	0
1997	3,634,267	0	(1,520,219)	2,114,048	0	0
1998	5,342,834	0	(1,107,501)	4,235,333	0	0
1999	8,867,742	0	(2,696,200)	6,171,542	0	0
2000	2,857,534	0	(3,300,053)	(442,519)	0	0
2001	2,623,227	0	(444,009)	2,179,218	0	0
2002	3,752,486	0	(791,319)	2,961,167	0	0
2003	3,258,583	0	(2,389,979)	868,604	0	0
Total	**107,091,362**	**(9,478,000)**	**(42,463,443)**	**55,149,919**	**6,634,600**	**(2,323,609)**

[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. The remaining $6,634,500 represents the 14% recreational project share.
[b]Excludes interest payments made by the Bureau.

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

Chapter 5
Local Assistance



Irrigation of Delta fields

Significant Events in 2003

- On October 8, the Department published a *Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001* to help water suppliers, cities, and counties integrate water and land-use planning processes.
- The California Irrigation Management Information System database and the Web application were upgraded to increase performance and content enhancements in order to satisfy the growing demand for data and information.
- The Department produced recommendations to guide California's development of desalinization facilities, developed draft criteria, and created a proposal solicitation package based on Proposition 50 language, Assembly Bill 1747 Budget trailer bill, and the recommendations of the Desalination Task Force.
- The Department obligated all remaining grant funds for the Proposition 13 Urban Water Conservation Program.
- Proposition 13 Groundwater Recharge and Groundwater Storage Program funding cycles were initiated.
- The Department began implementing the Integrated Regional Water Management Program under the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50).
- The Department, the Bureau of Reclamation, and CALFED completed 15 of the 22 recommended subtasks in the Three-Way Cooperative Agreement.
- Recommendations were produced by the Recycled Water Task Force, Water Recycling and Desalination Branch of the Office of Water Use Efficiency.
- OWUE sponsored a Water Loss Control Workshop in collaboration with the Regional Water Authority and the California Urban Water Conservation Council. It was the first workshop in California to address the International Water Association's new concept for evaluating distribution system losses.
- In October, brush fires charred more than 750,000 acres over a five county area in Southern California. More than 3,600 homes were destroyed and there were several fatalities. The burn areas contributed to flooding problems and fatalities.
- In an investigation on reverse osmosis, the Department demonstrated the feasibility of this desalination technology for the treatment of saline agricultural subsurface drainage water and shallow saline groundwater for irrigation.

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 Act 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

CIMIS is a network of automated weather stations that collects weather data and transmits it to a central repository in Sacramento each day. After performing quality control and calculations, the data are made available to the public for such diverse purposes as irrigation scheduling, resource planning, research, and modeling.

The Department's CIMIS network expanded to 126 stations in 2003. 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 6,300 in 2003.

Due to the growing demand for data and information, the CIMIS database and the Web application were upgraded to increase performance and enhance content. More than 155,000 reports were generated from the database with more than 2,000,000 visits to the Web site (wwwcimis.water.ca.gov) for information in 2003. Users can register online, access archived data, download data files, and peruse content about the CIMIS program and other helpful meta-data and information. A separate but concurrently operating database and a Web application were developed to keep pace with the rapidly evolving program, and a Web administrative module was also created to make the Web site more dynamic. Work continues on a new Web application.

CIMIS is partnering with the California Urban Water Conservation Council to develop a non-ideal site station network, located primarily in urban environments, for determining ET_o rates to assist landscapers and urban water agencies with the use of ET_o controllers for irrigation scheduling.

CIMIS continues to actively pursue new partnerships and participate in outreach activities, especially in the urban sector. For example, CIMIS contracted with University of California, Davis, to hold irrigation scheduling workshops statewide in both agricultural and urban communities.

Ongoing activities include updating CIMIS brochures, ET_o calculation, other methods of data acquisition and dissemination, data quality refinements, and technical assistance. Currently, an investigation is underway to develop a methodology for using remotely sensed satellite data to map reference ET_o for the entire State.

Water Recycling and Desalination Branch

The Water Recycling and Desalination Branch of OWUE was established in 2001. The Branch's goal is to improve water use efficiency and to promote increased use of nonconventional water sources through planning, technical, and financial assistance. The objective of the Branch is to supplement the State's water resources with reliable and drought-proof nonconventional sources of water. As part of a balanced water portfolio, it will help meet existing and future water supply and environmental needs by increasing the safe and beneficial use of recycled water. It will also encourage economically and environmentally acceptable use of desalinated brackish and sea waters.

In 2003, the Branch

- provided technical and engineering advice on water recycling and desalination issues to other programs and the public;
- convened a statewide Recycled Water Task Force that provided recommendations to guide California's development of recycled water use to facilitate annual production of up to 1.2 million acre-feet of new water by 2030;
- helped implement several recommendations listed in the Recycled Water Task Force report, including setting a new framework for regulating incidental runoff associated with recycled water use. AB 334 (Goldberg, Chapter 172, Statutes of 2003) gives communities additional flexibility to regulate water softeners as a source-control measure;
- helped convene the statewide Desalination Task Force that provided recommendations to guide California's development of desalinated brackish and sea water;
- developed draft criteria and a proposal solicitation package based on Proposition 50, AB 1747 Budget trailer bill, and the recommendations of the Desalination Task Force;
- entered into three agreements with local agencies and universities to study various energy-saving techniques for recycled water use;
- participated in presentations at various meetings and conferences about desalination issues, responded to public inquiries, and published articles and essays in *Water Conservation News* and other media outlets; and
- participated in the Sustainable Buildings Task Force and development of the Sustainable Buildings Blueprint.

Agricultural Water Management Plans

By the end of 2002, 55 water districts, 3 environmental interest groups, and over 53 other interested groups had 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.

In 2003, the council endorsed an additional four Agricultural Water Management Plans that had been submitted in 2002 by agricultural water suppliers to the Council. Subsequently, these

plans have become the basis for the districts' water conservation efforts. The districts with endorsed Water Management Plans are expected to prepare and submit a biannual progress report to the Council from the date their plan was endorsed. Department staff provides technical review and evaluation of 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 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 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 activity, with a $1.2 million budget, is 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 the signatories of the 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 16 Urban Water Management Plans in 2003. 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 continues to make 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. Eight (22 sub tasks, 15 of which are complete) of the 17 tasks are funded by the Department. The council provided technical assistance to the signatories of MOU for the preparation of comprehensive and consistent Urban Water Management Plans and Best Management Practices reporting, and increased implementation and refinement of locally cost-effective urban water conservation BMPs.

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 also 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.

On October 8, 2003, the Department released a *Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001* to help water suppliers, cities, and counties integrate water and land-use planning. It provides a step-by-step procedure for preparation of the water assessment and written verification of water supply required by SB 610 and SB 221, respectively, and can be found at the Department's Web site at www.owue.water.ca.gov/Guidebook_101003.pdf.

Since the Department has no regulatory, permitting, or any other approval authority concerning water assessments or verifications of sufficient water supply, this guidebook is an assistance tool only and has no effect on existing state law.

Water and Energy Connection Education

OWUE entered into a contract with Central/West Basin Municipal Water Districts to create a new school curriculum that integrates water and energy topics for children in grades 6 through 8. This curriculum, to be titled *Conservation Connection*, will address water supply and demand, where water comes from, how much rain falls in California, and water use efficiency.

Mobile Irrigation Laboratory

OWUE collaborated with Irrigation Training and Research Center at California State University, San Luis Obispo to compile a database using information generated by the Mobile Lab programs throughout the State. The database, which is maintained by ITRC, is accessible to farmers and researchers in California. Its goal is to help improve on-farm irrigation practices.

Leak Detection Workshops

OWUE sponsored a Water Loss Control Workshop in collaboration with the Regional Water Authority and the California Urban Water Conservation Council. Thirty water agency representatives from the Sacramento, San Francisco, and Southern California areas attended the workshop. It was the first workshop in California to address the International Water Association's new concept for evaluating distribution system losses.

Landscape

OWUE worked with the Department of General Services, Capital Park Management Division to plant a water-efficient demonstration garden in the Capital Park grounds. It showcases water-efficient plants and irrigation system.

OWUE also developed a landscape irrigation scheduling program in collaboration with UC Davis. Although designed to help landscape professionals and homeowners determine irrigation schedules, it also helps horticulturists clarify research project methods and objectives to improve urban irrigation management.

Outreach

OWUE made presentations at nine workshops and exhibited at four expositions. The following are three examples.

(1) In collaboration with the University of Idaho and the University of California, OWUE staff taught a class at a special workshop entitled, *Applying the American Society of Civil Engineers Standardized Reference Evapotranspiration Equations*, during the 24th Annual International Irrigation Show in November 2003. The workshop was organized by the United States Commission on Irrigation and Drainage.

(2) Staff was invited by Pennsylvania State University to make presentations on California water conservation and management practices at a Water Conservation and Water Use In-service organized by the university for water managers, administrators, and consultants in Pennsylvania.

(3) 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 in 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 help define subsurface drainage problems and lead to implementation of drainage management plans that include 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
- BMPs to reduce or eliminate environmental impacts
- development of pilot treatment, drainage water reclamation, and disposal facilities

The Agricultural Drainage Program was divided into three major activities—participation in the multiagency San Joaquin Valley Drainage Implementation Program (discontinued), Proposition 204 (Drainage Management Subaccount), and the San Joaquin Valley Agricultural Drainage Program.

San Joaquin Valley Drainage Implementation Program

The San Joaquin Valley Drainage Implementation Program has been discontinued due to the lack of funding from participating agencies. However, the Department has continued to collaborate with the multiple agencies undertaking actions to solve the Valley's drainage problems. In addition, the CALFED Bay-Delta Program is fulfilling some of the duties formerly performed by SJVDIP through several of its programs.

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 an MOU that established 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 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 2003, four projects totaling $685,000 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;
- shallow groundwater level monitoring and collection of flow and water quality data for drainage water from westside San Joaquin Valley tile drain sumps;
- completion of draft and publishing an annual drainage report in July 2003, *The San Joaquin Valley Drainage Monitoring Program 2000 Report;*
- preparation of shallow groundwater and irrigation methods maps of drainage-impaired areas using drainage monitoring data in conjunction with land use and irrigation methods data;
- provision of assistance 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
- maintenance of a Web site (wwwdpla. water.ca.gov/sjd/ waterquality/ index.html) 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 completed an investigation on desalination technology for the treatment of saline agricultural subsurface drainage water for irrigation. The project was 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 was prepared in December 2003 and is available at the Department's San Joaquin District Web site (www.sjd.water.ca.gov).

Reverse Osmosis—Microfiltration Membrane Research—Kurts Update. 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. Under this contract, UCLA investigates the kinetics, mechanisms, and control of mineral scale formation and evaluation and ranking of antiscalants for inhibition of gypsum scale formation. A progress report has been submitted.

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 CRWQCB'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 third 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 also contributed 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. A report of the research results is available at the District.

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 investigating 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 in planning and developing 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 joint investigations with the Bureau to determine the feasibility of nanofiltration as a pretreament for desalination of subsurface drainage water using reverse osmosis technology and the feasibility of using a patent biotreatment process to remove selenium from agricultural subsurface drainage water.
- providing assistance to research projects for development of crops, including research 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.

The Department continues to work 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;
- 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 optimum weather parameters 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; and
- developing IFDM systems to manage drainage water and to separate and harvest salt from irrigated farmland. Because sodium sulfate is the major component of salt in the San Joaquin Valley, 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.

IFDM Manual. Department staff continues to help prepare and review 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 was incorporated into the *Drainage Water and Its Effect on Wildlife Resources* chapter. This chapter will help landowners identify techniques that reduce or avoid wildlife impacts during operation of an IFDM system. A landowner 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, 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 and preparing technical reports on the on-farm demonstrations projects and studies.

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, completed
- *Pond-Shafter-Wasco Irrigation Training Workshops*—irrigation training workshops project conducted in both English and Spanish for growers and field workers, completed
- *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, completed
- *Salinity Mobile Lab Mapping and Analysis*—mapping of the salinity profile in a given crop field to assess the performance of irrigation management, completed; designed to 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.
- *Development of Salinity Budget for the San Joaquin Basin*—completed

Following are new contracts that have been developed:

- *Suitability Assessment of Salt Tolerance Forages and a Halophyte for Sequential Drainage Water Re-Use System*
- *Educational and Training workshops for all prevalent irrigation systems in California*—workshops designed for staff from irrigation/water districts, farming communities, consultants, and the public

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 2003, 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 projects that involve the required biological monitoring activities in accordance with Waste Discharge Requirements permits;
- IFDM wildlife monitoring and development of BMPs;
- avian wildlife was monitored at the existing Red Rock Ranch IFDM terminal reuse areas, which include 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 USFWS, was initiated so that adequate long-term wildlife impact and avoidance assessments can be made, and BMPs for current and future IFDM projects generated. This information is crucial because IFDM systems that are not managed can result in selenium-induced avian teratogenesis (developmental defects). IDFM 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 BMPs, is expected by 2004; 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.

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 4,400 documents were screened by the Environmental Review Section; 575 were referred for detailed review. Of these referrals, 429 were made when the projects were at the Notice of Preparation or Early Consultation stage and 146 assignments were for negative declarations, environmental impact reports, and NEPA environmental assessments. O&M received 97 formal referrals and 5 for information. The State Water Project Analysis Office received 12 formal referrals and 14 for information. In addition to the information referrals made to O&M and SWPAO, 860 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 are not tracked by the Environmental Review Section. During 2003 over 20 documents involving tribal gaming issues were assigned to the districts for review. These projects are of special concern to the State and require a specific review process. While none of these projects affected the SWP in 2003, they have a potential for causing future concerns.

During 2003, 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. Although additional time was spent on preliminary screening, which reduced

the number of referrals needing more detailed review by about 120, the total number of documents submitted through the State Clearinghouse process increased slightly from 2002.

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 2003, 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.

Under these programs construction loans and grants are available with repayment of up to 20 years at reduced interest rates for most programs.

Propositions 25, 44, and 204. Funding is fully obligated.

Proposition 82. Water supply loan funding is still available.

Proposition 13. Agricultural water conservation loan funding is still available.

The second evaluation cycle for the Infrastructure Rehabilitation Grant Program was completed. To date the Department has awarded $32.6 million for 12 construction projects and 14 feasibility studies to assist disadvantaged communities in reaching long-term solutions to significant water delivery reliability and infrastructure needs.

Groundwater recharge and groundwater storage program funding cycles were initiated.

The Department obligated all remaining grant funds for the Urban Water Conservation Program.

Proposition 50. The Integrated Regional Water Management Grant Program is in the early implementation stages and provides grants for water management projects that support integrated regional water management efforts. This program will be launched as a joint process with SWRCB.

Among other approval criteria for most of the Water Conservation Bond Law programs, applicants must demonstrate that project benefits equal or exceed project costs. Typical projects fall under the following categories:

Agricultural Water Conservation

- improvements to, or replacement of, distribution and storage systems
- lining and piping ditches
- lining or covering reservoirs

- capital outlay features of agricultural water conservation programs

Local Water Supply

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

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 through December 2003.

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 conservation	54	28.00
	Groundwater recharge	20	19.00
	Infrastructure rehabilitation	26	32.60
	Groundwater storage	26	102.66
	Interim reliable water supply	13	169.31
	Subtotal	*152*	*352.75*
Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002	Local Groundwater Assistance	26	5.80
	Integrated Regional Water Management	0	0
	Subtotal	*26*	*5.8*
	All water conservation	107	86.87
	All groundwater recharge	43	93.44
	All local water supply	26	29.58
	All infrastructure rehabilitation	26	15.25
	All groundwater storage	26	102.66
	All interim reliable water supply	13	160.11
	All local groundwater assistance	26	5.8
	All integrated regional water management	0	0
	Total of all projects	**267**	**538.35**

[a]Construction project and feasibility study loan and grant commitments as of December 31, 2003.

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

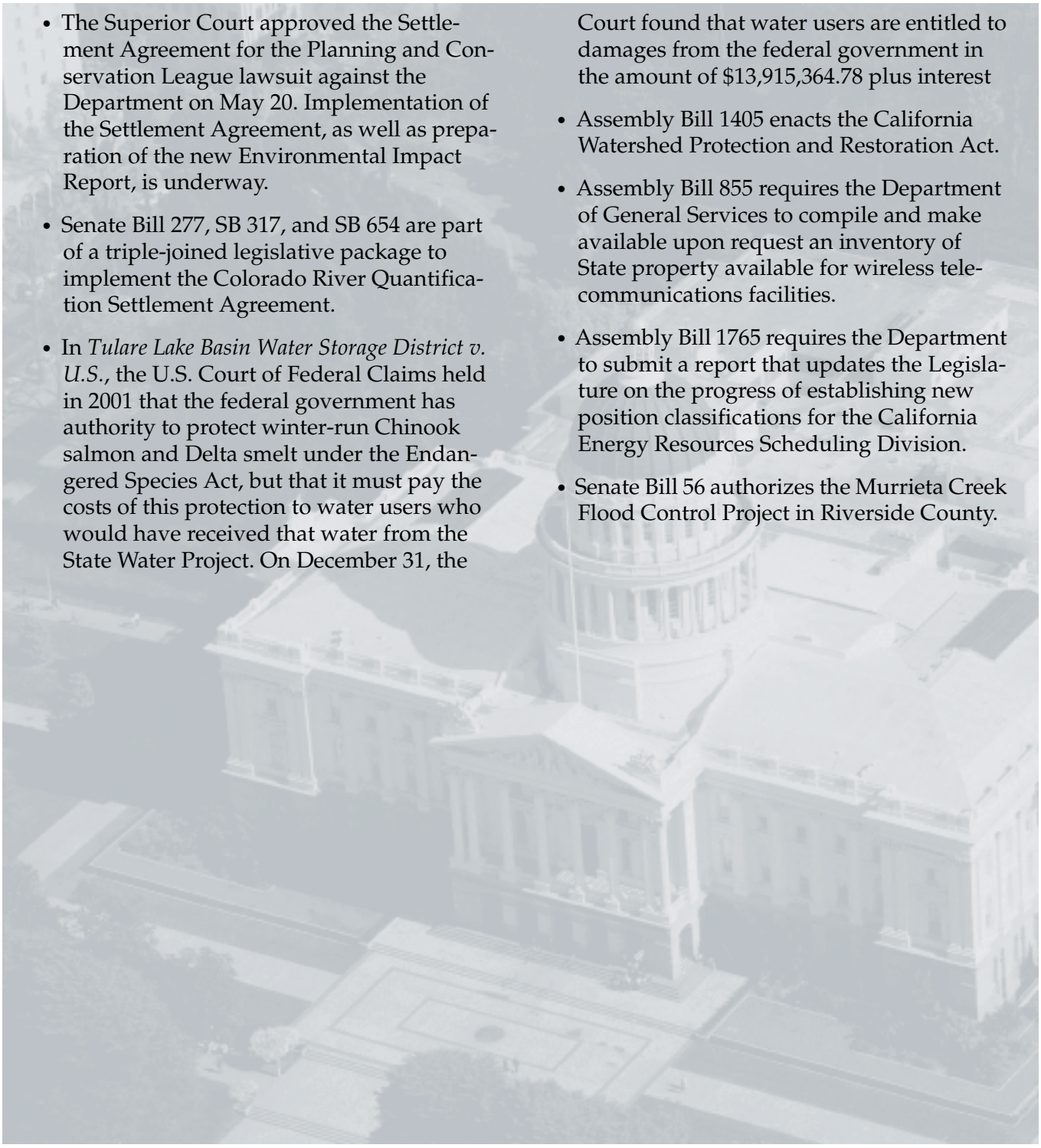
Chapter 6
Legislation and Litigation



Aerial view of the State Capitol

Significant Events in 2003

- The Superior Court approved the Settlement Agreement for the Planning and Conservation League lawsuit against the Department on May 20. Implementation of the Settlement Agreement, as well as preparation of the new Environmental Impact Report, is underway.
- Senate Bill 277, SB 317, and SB 654 are part of a triple-joined legislative package to implement the Colorado River Quantification Settlement Agreement.
- In *Tulare Lake Basin Water Storage District v. U.S.*, the U.S. Court of Federal Claims held in 2001 that the federal government has authority to protect winter-run Chinook salmon and Delta smelt under the Endangered Species Act, but that it must pay the costs of this protection to water users who would have received that water from the State Water Project. On December 31, the Court found that water users are entitled to damages from the federal government in the amount of $13,915,364.78 plus interest
- Assembly Bill 1405 enacts the California Watershed Protection and Restoration Act.
- Assembly Bill 855 requires the Department of General Services to compile and make available upon request an inventory of State property available for wireless telecommunications facilities.
- Assembly Bill 1765 requires the Department to submit a report that updates the Legislature on the progress of establishing new position classifications for the California Energy Resources Scheduling Division.
- Senate Bill 56 authorizes the Murrieta Creek Flood Control Project in Riverside County.



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 855 (Firebaugh) Telecommunications: access to State property (Chapter 820, Statutes of 2003). This bill requires the Department of General Services to compile and make available upon request an inventory of State property available for wireless telecommunications facilities; authorizes DGS to enter into agreements to lease State property to any provider of wireless telecommunications services for wireless telecommunication facilities; and sets aside 15 percent of the revenue from new leases to provide grants to nonprofit, community-based organizations for accessing e-government services.

AB 1405 (Walk) California Watershed Protection and Restoration (Chapter 693, Statutes of 2003). This bill enacts the California Watershed Protection and Restoration Act. This bill encourages the California Environmental Protection Agency and The Resources Agency to provide assistance and grants to those who choose to participate in watershed restoration and enhancements, and declares that local collaborative watershed partnerships are in the State's interest in terms of effectiveness, citizen involvement, and community responsibility. This bill authorizes, to the extent funds are available, certain State agencies to provide technical assistance to local watershed partnerships and requires that State guidelines adopted for use by local watershed partnerships provide flexible mechanisms to achieve quantifiable watershed objectives.

AB 1765 (Oropeza) 2003-04 Budget Act (Chapter 157, Statutes of 2003). As a result of AB 1765, the Department must submit to the Chairs of the Joint Legislative Budget Committee and the fiscal committees of both houses, a report that updates the Legislature on the progress of establishing new position classifications for the California Energy Resources Scheduling Division. The Department shall report on its ability to hire new civil service employees and terminate personal service contracts in the CERS division. The Department also shall report on expected cost savings in 2003-04 and 2004-05 budget years resulting from the replacement of personal service contracts with civil service employees performing work in the CERS division. This one-time report was due on or before December 1, 2003.

SB 56 (Hollingsworth) Water Development Projects: Murrieta Creek Project (Chapter 730, Statutes of 2003). This bill authorizes the Murrieta Creek Flood Control Project in Riverside County. This bill authorizes the entire project on the downstream reach and limits the upstream reach portions of the project to the fish, wildlife, and recreation enhancement elements. It is the legislative intent that no State funds be appropriated for this project until July 1, 2013.

SB 277 (Ducheny) Water: Salton Sea (Chapter 611, Statutes of 2003). This bill is part of a triple-joined legislative package to implement

the Colorado River Quantification Settlement Agreement. Specifically, this bill (1) enacts the Salton Sea Restoration Act; (2) establishes the Salton Sea Restoration Fund to fund various projects relating to the restoration of the Salton Sea; (3) authorizes the Department to buy and sell water made available through voluntary reduction or elimination of water used to achieve the goals of the Salton Sea Restoration Act; and (4) requires the Department of Food and Agriculture, if funds are appropriated for the activity, to review and report on the nature and extent of any economic impacts related to the Quantification Settlement Agreement in the Imperial Valley.

SB 317 (Kuehl) Resources (Chapter 612, Statutes of 2003). This bill is part of a triple-joined legislative package to implement the Colorado River Quantification Settlement Agreement. This bill provides the funding mechanisms for restoration of the Salton Sea ecosystem, in part through sale of transferred water, and directs The Resources Agency to develop a preferred alternative for restoration of the Salton Sea ecosystem.

SB 654 (Machado) Water: Salton Sea: Colorado River (Chapter 613, Statutes of 2003). This bill is part of a triple-joined legislative package to implement the Colorado River Quantification Settlement Agreement. This bill authorizes the Department of Fish and Game to enter into a joint powers agreement with QSA parties to provide for payment of environmental mitigation costs, and extends the completion date of the lining of the All-American Canal and the Coachella Branch of the All-American Canal to December 31, 2008.

Federal Legislation

There was no significant federal legislation in 2003.

Litigation

As of December 31, 2003, 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, including the transfer of the Kern Fan Element of KWB.

In its decision, the Court of Appeal held that 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 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 Superior Court approved the Settlement Agreement on May 20, 2003.

Implementation of the Settlement Agreement, as well as preparation of the new EIR, is underway. Upon completion of the new EIR, which analyzes the Monterey Amendments and the Settlement Agreement, the Department is required to file the new EIR with the Superior Court.

The Settlement Agreement provides possible total payments of $8 million to Plumas and an additional approximately $6 million to all plaintiffs, as well as attorneys' fees of up to $2 million.

The Settlement Agreement also provides that once certain conditions are met with regard to Table A amendments to the contracts and contractor memoranda on transfers and public participation in contract negotiations, the plaintiffs would file a request for dismissal without prejudice of the validation claim. As long as the conditions are met plaintiffs also agree not to refile the validation claim to challenge the validity of any Monterey Amendment or Kern Fan Element Transaction. The Department has complied with the conditions and plaintiffs filed a request for dismissal. See Chapter 9 for more information on the Monterey Settlement Agreement.

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 addressed 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. The Court issued its final decision in May 2003. The decision largely upheld D-1641, finding that it properly decided all CEQA, area of origin, joint point of diversion, reasonable use, due process, and salmon protection issues. The Court found two errors in D-1641: (1) it improperly limited the place of use for Westlands Water District, and (2) it improperly implemented the San Joaquin River flow objectives under the San Joaquin River Agreement. SWRCB, State Water Contractors,

Westlands Water District, South Delta Water Agency, and San Joaquin County have appealed the decision to the Third District Court of Appeal.

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 and included the following measures: fish macro and micro habitat enhancement, fish population studies, rough fish removal, annual fish stockings, and a one-time fish stocking if the fishery had not recovered by the end of 2002.

The Department and DFG agreed on a series of measures to settle this litigation. On March 12, 2003, the Department and DFG signed a Memorandum of Understanding providing $270,000 for Silverwood Reservoir fishery and fish habitat improvements over 3 years. MOU also sets forth ongoing operating criteria for Silverwood Reservoir under which DFG will be notified regarding defined events which could impact the fishery. Plaintiffs executed the settlement documents and they were approved on May 29, 2003, by the San Bernardino County Superior Court.

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 (collectively "El Dorado"), 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.

The trial was held in the Sacramento County Superior Court on March 17, 2003. The Court issued its final decision in December 2003, finding that SWRCB improperly included Term 91 in El Dorado's water right. SWRCB, State Water Contractors, and Westland Water District have decided to appeal the decision to the Third District Court of Appeal.

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 were 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 was 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 was made available for a 30 day public comment period. The parties filed briefs, and oral argument was heard May 12, 2003, in San Francisco's Ninth Circuit Court of Appeals. On June 3, 2003, the Ninth Circuit issued its decision. In its unpublished opinion, the Court affirmed the lower court's ruling with respect to four issues but found the court erred in concluding that DOI lacked discretion in how to allocate the 800,000 acre feet of CVP yield among fish and wildlife uses and water quality purposes. The Court found that DOI has discretion to allocate the 800,000 acre-feet among the various uses listed in the CVPIA (b)(2) as long as DOI's allocation follows the hierarchy of purposes established in the section, which provides that the primary purpose to which the 800,000 acre-feet should be dedicated is the implementation of fish, wildlife, and habitat restoration. The 800,000 acre-feet may also be used to help meet Endangered Species Act obligations and assist in meeting water quality standards. DOI does not believe that the Ninth Circuit's ruling changes its current policy and plan for implementing (b)(2).

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. On December 31, 2003, the Court filed its decision and found that the water users are entitled to damages from the federal government in the amount of $13,915,364.78 plus interest. After the parties file a joint statement proposing the amount due, consistent with the decision, a final judgment will be issued. Appeal of the final judgment is expected..

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

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.

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.

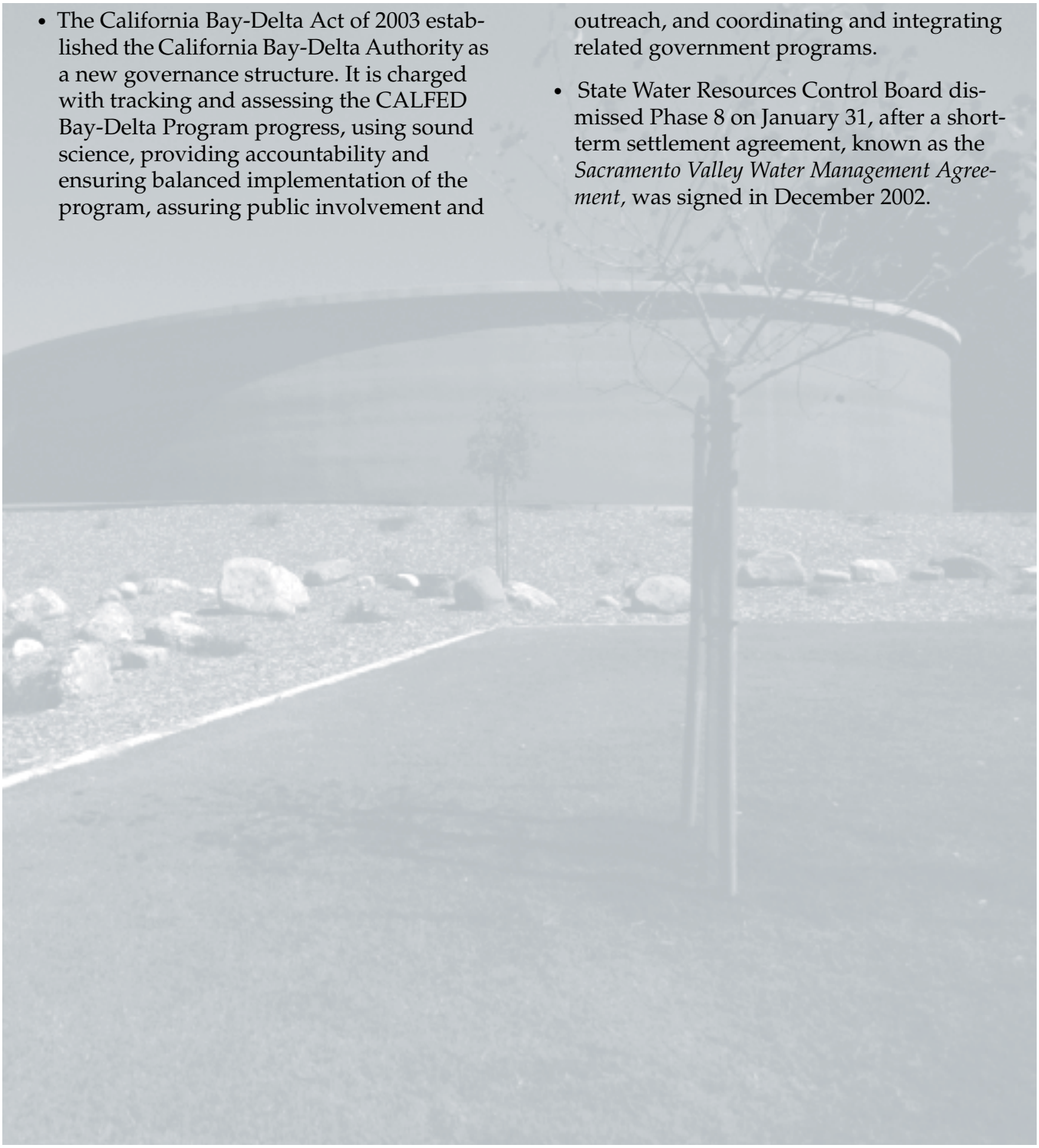
Chapter 7
Water Supply Development and Reliability



Water storage tank at Crafton Hills, East Branch Extension

Significant Events in 2003

- The California Bay-Delta Act of 2003 established the California Bay-Delta Authority as a new governance structure. It is charged with tracking and assessing the CALFED Bay-Delta Program progress, using sound science, providing accountability and ensuring balanced implementation of the program, assuring public involvement and outreach, and coordinating and integrating related government programs.
- State Water Resources Control Board dismissed Phase 8 on January 31, after a short-term settlement agreement, known as the *Sacramento Valley Water Management Agreement*, was signed in December 2002.



The Department of Water Resources is actively engaged in improving reliability of all State Water Project supplies for delivery of annual Table A water to the SWP contractors. To that end, there is ongoing planning to develop 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 the California Bay-Delta Authority.

Through 2003, 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 the CALFED 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 activities include

- developing programs to transfer water, such as the drought water bank, Dry Year Water Purchase Program, 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 section below).

Water Conveyance Through the SWP

The Department arranges for the temporary transfer of water through SWP facilities for the SWP long-term contractors and 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 the Department to tailor proposals to maximize benefits or minimize adverse effects to the SWP. The team monitors 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.

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 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 Annual 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 Internet at www.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. (*Groundwater substitution* refers to the use of groundwater as a substitute supply for crop irrigation or other purposes rather than using surface water allocations from reservoirs and river diversions, allowing the surface water to be used elsewhere, such as transferring it to willing buyers downstream.)

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 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 prevent 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 in order 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

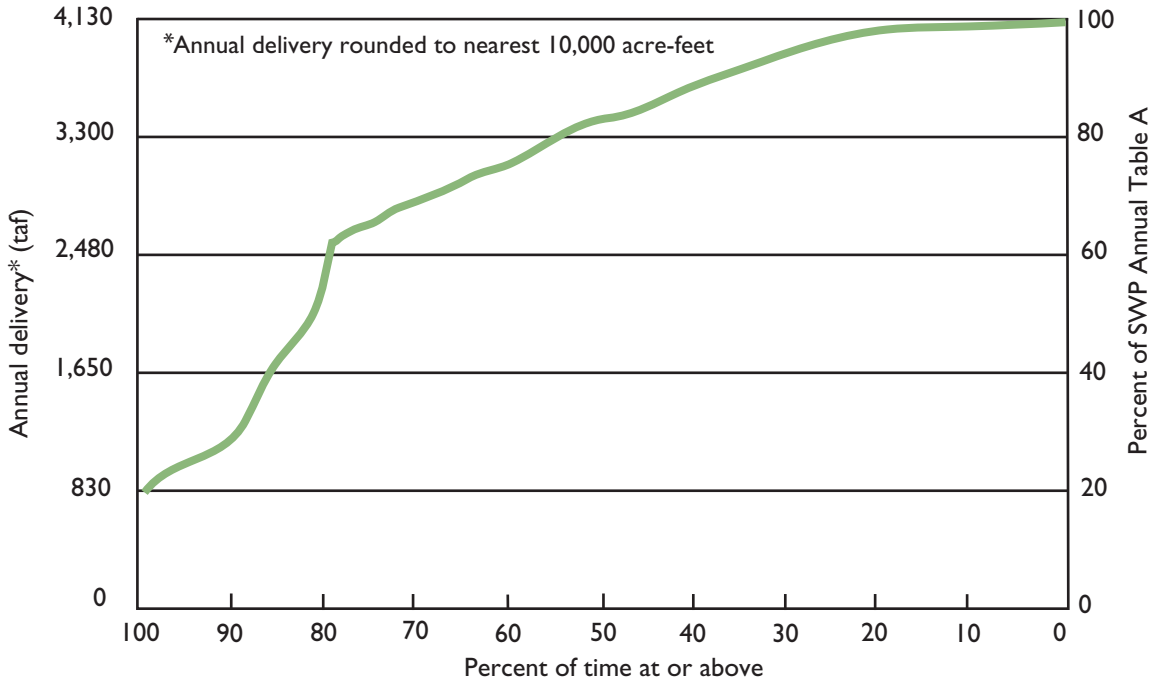


Figure 7-1. Projected SWP System Delivery Capability (Scenario 2021B, Annual Table A)

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 to study and develop alternatives, help alleviate local anxieties, and build consensus for local and regional conjunctive use.

The Sacramento Valley Groundwater Program involving local agencies in 2003 included the activities described below.

Yuba County. The Department, in cooperation with the Yuba County Water Agency, continued to develop and operate an adaptive long-term groundwater monitoring and measurement program. These activities focused on evaluating water level impacts and 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. The Department cancelled the development of a feasibility study for a 20,000 acre-foot conjunctive-use project that was adapted from originally proposed pre-feasibility projects. However, Reclamation District 108 decided to proceed; their 20,000 acre-foot conjunctive-use project is part of the Sacramento Valley Water Management Program.

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 Butte County; 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 provided technical assistance to the county to develop a new groundwater management ordinance. When implemented, the new ordinance will utilize the Basin Management Objectives approach to groundwater management. This ordinance

will not supersede or modify Measure G (Chapter 33 of the Butte County Code), which deals with water transfers, but it will improve overall groundwater management activities in the county.

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 groundwater level, groundwater quality, and subsidence monitoring networks in the county to facilitate future water transfers and the development of Sacramento Valley Water Management Program conjunctive-use projects that will benefit the SWP. These activities are 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 if the Department determines that the projects are structurally, economically, financially, and contractually feasible, as well as environmentally acceptable. SWP contractors benefit from increased water supplies or reduced demands resulting from these projects.

The Department conducts a feasibility study of local water supply projects only when conceptual and reconnaissance reports support the project and SWP contractors agree that the project is advantageous.

Should construction costs of a local project exceed available SWP funds, local participation in financing the construction will be required. In addition, SWP funding will not exceed actual construction costs, and a local project will not become a unit of the SWP until all participants sign an agreement.

For a project to be financed by the SWP, the Department must be assured that

- appropriate water supply contracts will be amended;
- yield developed by a local project as a unit of the SWP will become part of the SWP yield, whether for the life of the project or for a prescribed interim period; and
- the local project will not adversely affect the costs of water deliveries to nonparticipating SWP contractors.

In 2003, 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—2003 Activities

The Racanelli decision (May 1986) determined that the Porter-Cologne Water Quality Control Act requires setting water quality objectives for all beneficial uses of water, without regard to whether or to what degree the beneficial use so protected is supported by a water right.

Since the 1970s, the Department has participated in activities to help develop appropriate water quality standards for the Bay-Delta estuary and identify water sources to help meet those standards. During the 1990s SWRCB conducted hearings and workshops to obtain information for establishing Delta water quality objectives that would provide reasonable protection of municipal and industrial, agricultural, and fish and wildlife beneficial uses. The 1995 San Francisco Bay/Sacramento-San Joaquin Delta Estuary Water Quality Control Plan sets forth the current water quality objectives, including

- Suisun Marsh salinity objectives
- Delta salinity objectives
- dissolved oxygen objective in the lower San Joaquin River
- salmon protection narrative objective
- Delta outflow objectives
- export limit objective
- Delta cross channel gate operations objective

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, SWRCB heard 80 days of testimony, concluded Phases 1 through 7, and adopted the Final EIR and Water Right Decision 1641.

Following adoption of D-1641, SWRCB was scheduled to commence Phase 8 of the proceedings to consider potential responsibilities of water users to implement certain flow-dependent objectives of the 1995 Bay-Delta Water Quality Control Plan. During the Phase 8 hearing process SWRCB intended to determine which water rights could be conditioned with responsibility for meeting these water quality objectives. The parties of the proceeding anticipated that this process would be very adversarial and prolonged because of the controversy over which water users should be allocated responsibility for meeting the objectives.

To avoid the disputes anticipated in 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 could complete 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. On October 17, 2002, SWRCB adopted an order extending the automatic dismissal date to allow time for parties to sign a water management settlement agreement. The efforts of the agencies culminated in March 2003 when they signed a short-term settlement agreement, known as the *Sacramento Valley Water Management Agreement,* 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.* SWRCB dismissed Phase 8 on January 31, 2003.

Sacramento Valley Water Management Agreement

During 2003, the Department, the Bureau, Sacramento Valley upstream water users, and certain downstream water users negotiated a settlement in lieu of continuing with SWRCB Phase 8 hearings. 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 supplies for use by the sponsoring local agencies as well as water to the SWP and CVP for Delta water quality and 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. Consultants were hired to work on the EIR/EIS. The Department, the Bureau, and the upstream and downstream water users have been the major contributors to the preparation efforts.

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, 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 continue certain short-term projects and other projects that could meet the goals of the Phase 8 settlement.

Periodic Review of the 1995 San Francisco Bay / Sacramento-San Joaquin Delta Estuary Water Quality Control Plan

On December 10, 2003, SWRCB issued a notice of a public workshop to receive comments from agencies and members of the public regarding any elements of the 1995 Bay-Delta Water Quality Control Plan that SWRCB should consider amending. The notice included a list of potential issues to address which were prepared by SWRCB staff. The Department supported review of these issues to provide increased flexibility of certain objectives or to clarify the plan, including the Environmental Monitoring Program identified in Table 4 of the plan, the San Joaquin River Flow objectives near Vernalis, municipal and industrial chloride objectives near Rock Slough, western Suisun Marsh salinity objectives, and Delta outflow. The Department prepared comments on the issues to be presented at a workshop in early 2004.

CALFED Bay-Delta Program

The California Bay-Delta Authority oversees the implementation of the CALFED Bay-Delta Program for the 25 State and federal agencies working cooperatively to improve the quality and reliability of California's water supplies while restoring the Bay-Delta ecosystem.

The California Bay-Delta Act of 2003 established the Authority as the new governance structure and charged it with providing accountability, ensuring balanced implementation, tracking and assessing the CALFED Bay-Delta Program progress, using sound science, assuring public involvement and outreach, and coordinating and integrating related government programs.

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 both the public and the environment.

The CALFED Bay-Delta 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 the CALFED agencies to enhance storage as well as conjunctive-use programs that support local project development via loans and grants. The Storage Program is part of an ongoing evaluation of the appropriate role of storage, both groundwater conjunctive use and surface storage.

Surface Storage Investigations. The Surface Storage Investigations are developing environmental and feasibility engineering documentation for the five surface storage projects identified for further study in the CALFED ROD. In 2003, Congress provided federal feasibility study authority for the Los Vaqueros Reservoir Enlargement, North-of-the-Delta Offstream Storage, and Upper San Joaquin River Basin Storage investigations. Shasta Lake Enlargement had prior authorization (1980). The In-Delta Storage program has not received federal feasibility study authorization. Investigations of all five reservoir projects continued in 2003.

In-Delta Storage Program. Based on initial work completed during the Department's and the Bureau's May 2002 Joint Planning Study, the Bay-Delta Public Advisory Committee recommended that Bay-Delta agencies complete additional evaluations and address several outstanding issues before considering implementation of the In-Delta Storage Project. The Draft State Feasibility Study completed in December 2003 reported the findings of this additional work. The Department presented these findings as a neutral technical evaluator of the costs, benefits, impacts, and uncertainties associated with a publicly owned In-Delta Storage Project. The Draft State Feasibility Report summarized project evaluations conducted by the Department since June 2002, including

- studies of potential project benefits and effects
- project cost analyses
- engineering feasibility and risk analysis
- revised project operations that address drinking water quality concerns, especially organic carbon

Technical assistance through reviews of the State Feasibility Study draft reports was provided by the Bureau. The In-Delta Storage Project construction and operation meet State feasibility requirements with an acceptable level of risk of structural failure and minimal potential for loss-of-life.

Additional water quality field and modeling evaluations are necessary to refine project operations for organic carbon, dissolved oxygen, and temperature. The recent studies indicate that circulating fresh water through the reservoirs could be effective mitigation to resolve the organic carbon issue.

A final field investigation and modeling plan should be developed with recommendations from the CALFED Science Panel Review. The

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 California Bay-Delta Act of 2003 established the California Bay-Delta Authority as the new governance structure and charged it with providing accountability, ensuring balanced implementation, tracking and assessing the CALFED Bay-Delta Program progress, using sound science, assuring public involvement and outreach, and coordinating and integrating related government programs.

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.

Department estimates the equivalent annual cost for the In-Delta Storage Project at approximately $60 million. The benefits of the project are associated with water supply, recreation, flood damage reduction, and less levee maintenance work. In addition, the project might provide other benefits such as operational flexibility, water quality improvements, wildlife and habitat improvements, and seismic stability. Before total project benefits and cost can be compared, value must be assigned to these benefits. The Department will work with the Bay-Delta Public Advisory Committee and the California Bay-Delta Authority to gather input from interested parties before completing this benefits assessment.

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.

A preliminary assessment 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 EWA.

In 2003, work was completed on a draft planning report. The report presents a preliminary 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 State agencies from participating in actions that could have an adverse effect on the free-flowing condition of the McCloud River, or on its wild trout fishery, except when the Department is engaged in technical and economic feasibility studies.

In 2003, the Department, the Bureau, local partners, and other federal agencies continued studying project alternatives, water supply benefits, potential adverse effects, and mitigation strategies. To date, studies show no major impacts to existing flow conditions or other resources of the McCloud River. A break point analysis was completed that indicates that Shasta Dam could be raised 18.5 feet before major increases in reservoir area relocations and costs occur.

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

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 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 engineering feasibility reports were completed on Sites Reservoir and appurtenant structures, new roadways, and expansion or new construction of conveyance facilities.

Additionally, the Department and the Bureau are working with a Flow Regime Technical Advisory Group to consider 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 draft report documenting the findings of both completed and ongoing studies and describing the historical changes in the river flow regime will be completed in May 2004.

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 by 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.

In 2003, the Department and the Bureau completed the Phase 1 Investigation Report which presented preliminary analysis of potential

impacts, water supply benefits, and construction cost estimates for the 17 surface water storage options that could meet project objectives. An assessment of groundwater storage opportunities also continued in 2003 with stakeholder interviews to determine their interest in participating in regional conjunctive management and to more thoroughly define potential opportunities. The Department and the Bureau received a high level of interest in regional, cooperative conjunctive-use opportunities.

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:

- local 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 Bay-Delta 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 8,500 cfs.

For more information on the north and 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 the deferment of scheduled deliveries of SWP approved Table A amounts by one or more SWP contractors. 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 was operational starting in 2001.

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 use of EWA on both SWP and CVP operations through December 2007, and will allow for multiyear EWA contracts with willing water sellers. The Notice of Determination was not yet signed as of December 31, 2003. Between 2001 and 2003, 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 environment 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.

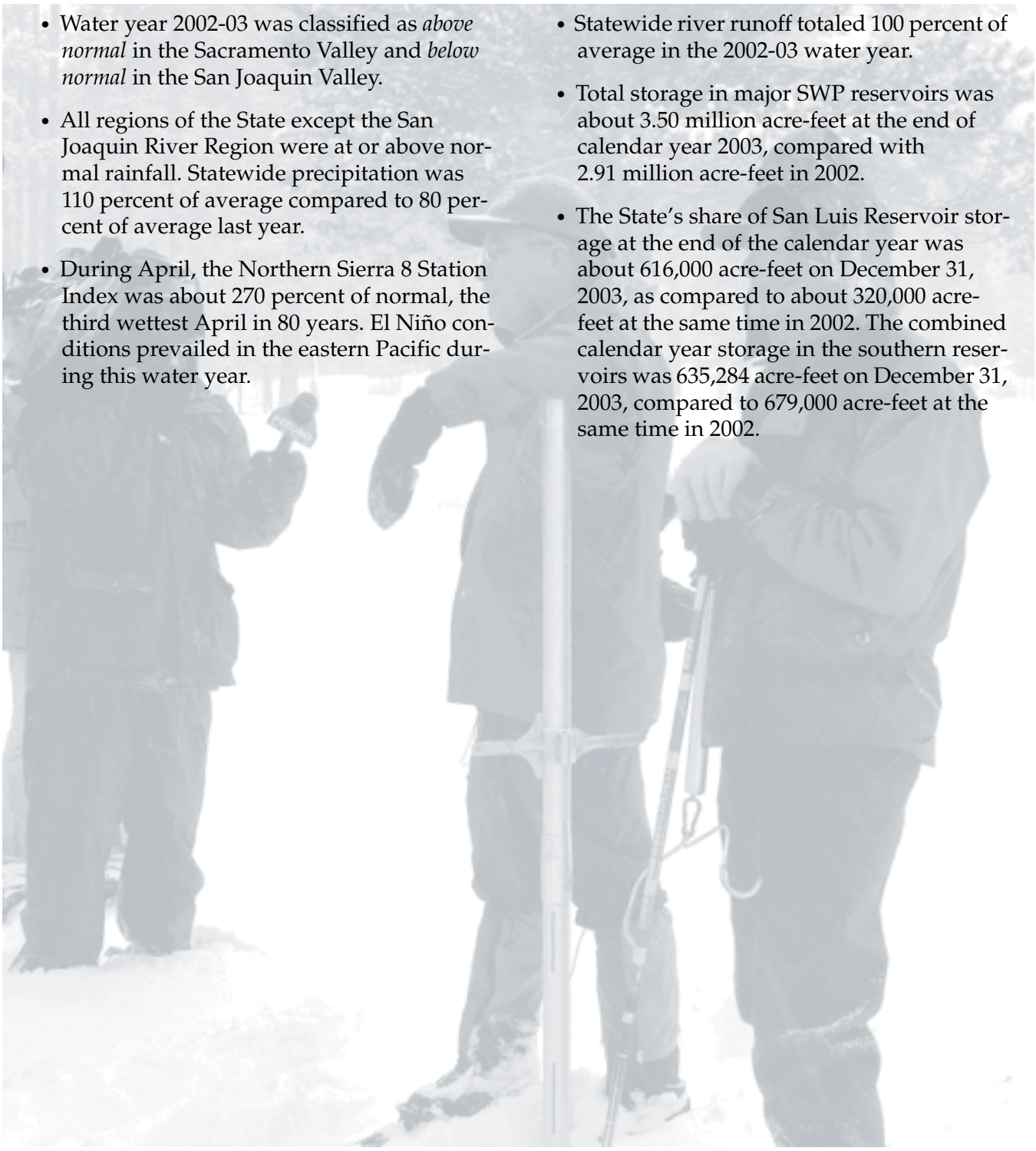
Chapter 8
Water Supply



Frank Gehrke and Dave Hart measure snowpack for depth and water content.

Significant Events in 2003

- Water year 2002-03 was classified as *above normal* in the Sacramento Valley and *below normal* in the San Joaquin Valley.
- All regions of the State except the San Joaquin River Region were at or above normal rainfall. Statewide precipitation was 110 percent of average compared to 80 percent of average last year.
- During April, the Northern Sierra 8 Station Index was about 270 percent of normal, the third wettest April in 80 years. El Niño conditions prevailed in the eastern Pacific during this water year.
- Statewide river runoff totaled 100 percent of average in the 2002-03 water year.
- Total storage in major SWP reservoirs was about 3.50 million acre-feet at the end of calendar year 2003, compared with 2.91 million acre-feet in 2002.
- The State's share of San Luis Reservoir storage at the end of the calendar year was about 616,000 acre-feet on December 31, 2003, as compared to about 320,000 acre-feet at the same time in 2002. The combined calendar year storage in the southern reservoirs was 635,284 acre-feet on December 31, 2003, compared to 679,000 acre-feet at the same time in 2002.



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 2002-03

Precipitation and Snowpack

All regions of the State except the San Joaquin River Region were at or above normal rainfall. Statewide precipitation was 110 percent of average compared to 80 percent of average last year. Mountain snowpack peaked at about 150 percent of average around May 10, about a month later than normal. The timing of the snow accumulation was unusual, with little gain from mid-January through March. However, during April, the Northern Sierra 8 Station Index was about 270 percent of normal, the third wettest April in 80 years. El Niño conditions prevailed in the eastern Pacific during water year 2003.

Over the northern Sierra, the water year began with near zero precipitation in October 2002. November and December were significantly above normal. Northern Sierra precipitation accumulation rose above average in mid-December and reached 175 percent of average on January 1, 2003. The statewide snowpack on New Year's Day was 165 percent of average for the date. The southern basins were near 150 percent of average.

The December storms brought at least 150 percent of normal runoff in the Sierra north of the San Joaquin Region. For the third year in a row, January precipitation was well below average in the northern Sierra (about 60 percent of average). The Northern Sierra 8 Station Index was 285 percent of average in December and 60 percent of average in January.

February was even drier than January. Several inches of precipitation fell during storms between February 12 and February 19, but the total for February was less than 40 percent of average and little snow accumulated. The gain in snow water content over the northern and southern parts of the State was only about 3 inches. During February, the statewide snowpack dropped from 103 percent to 83 percent of average.

As of April 1, statewide water year-to-date precipitation and snow accumulations were 100 percent and 70 percent of average, respectively. During April, however, more than 250 percent of average rainfall was recorded in the northern Sierra. Consequently, the May 1 statewide snowpack was 120 percent of average, a rise of 50 percent from April 1.

May began wetter and colder than average and the snowpack reached its highest level on May 10. The accumulated snow water content peaked over a month later than average in contrast to early peaks in many recent years. Snowmelt runoff began in earnest near mid-month, raising daily flow well above average in all mountain rivers. Many reservoirs in the northern portion of the State filled to near capacity.

The remainder of the water year was characterized by below normal precipitation in the major basins.

The Northern Sierra 8 Station Precipitation Index finished with 59.7 inches for the water year (119 percent of average). Five months had less than 70 percent of average rainfall and

3 months had more than 150 percent. Figure 8-1 shows statewide precipitation by hydrologic region.

Runoff and Storage

Statewide river runoff totaled 100 percent of average in the 2002-03 water year. Runoff in the Sacramento River and San Joaquin River Regions were 100 and 80 percent of average, respectively. Feather River unimpaired inflow to Lake Oroville was 4.7 million acre-feet (100 percent of average) for the water year compared to 3.1 million acre-feet (65 percent of average) last year.

The Sacramento River Index for water year 2002-03 was 19.2 million acre-feet (100 percent of average). The Sacramento Valley Water Year Hydrologic Classification (40-30-30 Index) was *above normal.* San Joaquin River system unimpaired runoff from the Stanislaus, Tuolumne, Merced, and San Joaquin Rivers was 4.9 million acre-feet (80 percent of average). The San Joaquin Valley Water Year Hydrologic Classification (60-20-20 Index) was *below normal.*

The water year began dry with statewide runoff about half of average in October. Above normal runoff in the San Joaquin and Tulare Lake Regions during November helped raise the statewide runoff to 60 percent of average for the first 2 months of the water year. Season to date statewide runoff totals rose to 130 percent of average by the end of December due to very wet conditions north of the American River. Reservoir storage statewide increased by 3.3 million acre-feet to 21.5 million acre-feet on December 31. During December, the percent of average storage in Shasta, Oroville, and Folsom increased 28, 17, and 18 percent of average, respectively. Statewide reservoir storage was 97 percent of average by the end of December.

A series of five strong storms in December brought high water throughout Northern California, with some short duration localized flooding. The first storms were centered on the North Coast, and the last storms on the Upper Sacramento River Basin. Two back-to-back storms from December 13 to 17 produced flood stage on the Eel River at Fernbridge, Navarro River at Navarro, Russian River at Guerneville, Napa River at Napa, and the Sacramento River at Tehema. Monitor stages at Colusa and Tisdale weirs caused the first overflow of the season into the Sutter Bypass. Minor renewed rises were produced throughout Northern California by a smaller storm December 20 to 22. Additional storms from December 27 to 31 caused flood stages on the Eel River at Fernbridge, Mad River at Arcata, Navarro River at Navarro, and the Sacramento River at Tehama and Vina-Woodson Bridge. For the first time this season, all Sacramento River weirs were spilling; overflow at Fremont Weir caused the first significant flow of the season into the Yolo Bypass on December 31.

During January 2003, statewide flows were about 115 percent of average. However, February was characterized by near 55 percent of average flows. Consequently, there were only a few days of overflow at Tisdale Weir, the Sacramento River inflow to the Delta was 90 percent of average, and the flow of the San Joaquin River at Vernalis was much below average (about 1,950 cubic feet per second).

During March, the precipitation in the northern Sierra was about 90 percent of average. Seventy-five percent of average prevailed in Central California. Statewide flows were 75 percent of average. By April 1, reservoir storage was at 100 percent of average statewide, the same as the previous year, and storage in most major reservoirs was well below winter flood control limits. April runoff in the Sacramento River Region was characterized by near normal runoff, while nearly 80 percent of average runoff occurred in the San Joaquin River Region, with lower percentages farther south. During April, however, the statewide snowpack increased from 70 percent to 120 percent of average and the Northern Sierra 8 Station Precipitation Index was about 270 percent of average. The final statewide water year flows were about normal. All major basins from the San Joaquin southward were below average.

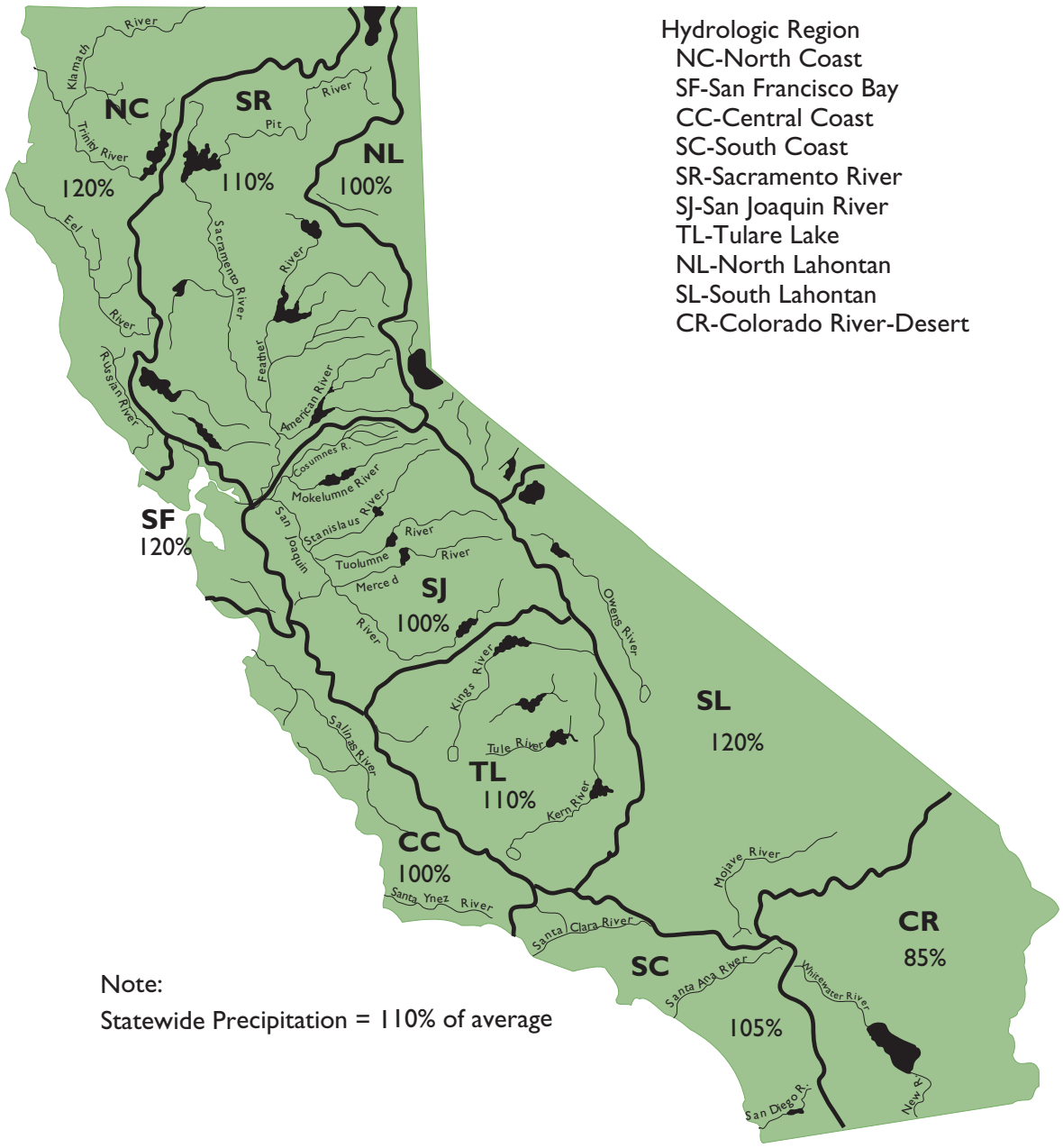


Figure 8-1. Statewide Precipitation by Hydrologic Region, 2002-03 Water Year, in Percentage of Average

First Quarter Water Year 2003-04

Water year 2003-04 began hot and dry. There were hundreds of record daily high temperatures set from October 17-28, 2003, and river runoff was 60 percent of average statewide during October. Only 0.1 inches were recorded for the Northern Sierra 8 Station Precipitation Index. November precipitation improved to 85 percent of average statewide but by December 1, runoff for the water year to date was only about 45 percent of average. Snowpack accumulation was also below an average rate. Percent of normal values were about 90 percent in the north but less than 60 percent in the south on December 1. December was characterized by much wetter conditions. During the last week of December, storms caused a flood stage on the Napa River near St. Helena. The series of systems boosted the statewide end-of-December snowpack to 135 percent of average and the December 31 reservoir storage to 105 percent of average.

SWP Storage

The SWP operates a complex system of 29 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 2002-03 Storage Totals

Storage in SWP reservoirs at the end of the 2002-03 water year was 3.61 million acre-feet or 103 percent of average, compared to 2.47 million acre-feet or 71 percent of average at the end of water year 2001-02. Average storage in major SWP reservoirs was 3.33 million acre-feet. End of water year storage on September 30, 2003, at Lake Oroville was 2.29 million acre-feet, about 890,000 acre-feet more than last year. The State's share of San Luis Reservoir storage at the end of the 2002-03 water year was 653,095 acre-feet, compared to 400,558 acre-feet last year. The combined storage in southern reservoirs was 664,436 acre-feet on September 30, compared to 663,495 acre-feet at the end of the 2001-02 water year.

Calendar Year 2003 Storage Totals

Total storage in major SWP reservoirs was about 3.50 million acre-feet at the end of calendar year 2003, compared with 2.91 million acre-feet in 2002. The State's share of San Luis Reservoir storage was 615,763 acre-feet on December 31, 2003, as compared to about 319,803 acre-feet at the same time in 2002. The combined storage in the southern reservoirs was 635,284 acre-feet on December 31, 2003, compared to 679,101 acre-feet at the same time in 2002.

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 2002-03 Inflow. Lake Oroville inflow for the 2002-03 water year totaled about 4.23 million acre-feet—90 percent of average. Maximum daily inflow occurred on December 28, 2002, at 73,360 acre-feet. Minimum daily inflow occurred October 19, 2002, at

1,266 acre-feet. See Figures 8-2 and 8-3 for monthly and cumulative inflow, respectively, into Lake Oroville.

Calendar Year 2003 Inflow. Total inflow into Lake Oroville during the calendar year was 4,052,922 acre-feet. Minimum storage occurred January 1, 2003, at 1,645,497 acre-feet—46 percent of its capacity. Maximum storage occurred June 9, 2003, at 3,530,154 acre-feet. End of year Lake Oroville storage was 2,248,197 acre-feet. Figure 8-4 compares end-of-month storage in Oroville Reservoir for the 2002 and 2003 calendar years.

2002-03 Water Year San Luis Reservoir Operations

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.

San Luis Reservoir reached its maximum water year total storage on April 13, 2003, at 1,978,742 acre-feet—98 percent of normal maximum operating capacity. At the beginning of the water year, San Luis Reservoir contained 688,435 acre-feet—34 percent of its capacity. The SWP share was 394,044 acre-feet. The highest end-of-month SWP share of storage during the water year was in March 2003, at 984,858 acre-feet (Figure 8-5).

2002-03 Water Year Lake Del Valle Operations

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 water year, Lake Del Valle held 32,278 acre-feet—about 42 percent of its maximum capacity of 77,106 acre-feet. Its highest storage during the water year occurred May 4, 2003, with 40,963 acre-feet. Its lowest storage occurred December 13, 2002, with 26,438 acre-feet.

By the end of the water year, on September 30, 2003, storage in Lake Del Valle was 30,865 acre-feet—40 percent of maximum capacity. Water year releases to Arroyo Valle and South Bay Aqueduct from Lake Del Valle totaled 25,890 acre-feet.

2002-03 Water Year Southern Reservoirs Operations

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 about 663,495 acre-feet—95 percent of combined normal maximum operating capacity of 701,321 acre-feet. At the end of the water year, they held 664,436 acre-feet—95 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 2003, the SWP diverted 3,547,838 acre-feet at Banks Pumping Plant, including a combined total of 5,600 acre-feet of Central Valley Project and Cross Valley Canal water wheeled by the Department. Figure 8-6 shows the amounts of water pumped each month in 2003 at Banks Pumping Plant; Figure 8-7 shows the monthly amounts of water diverted from the Delta by the SWP and CVP in 2003. CVP diverts water to similar areas from the Delta through Tracy Pumping Plant and Contra Costa Pumping Plant. CVP diverted about 2,781,989 acre-feet at Tracy Pumping Plant and 135,331 acre-feet at Contra Costa Pumping Plant in 2003. 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,

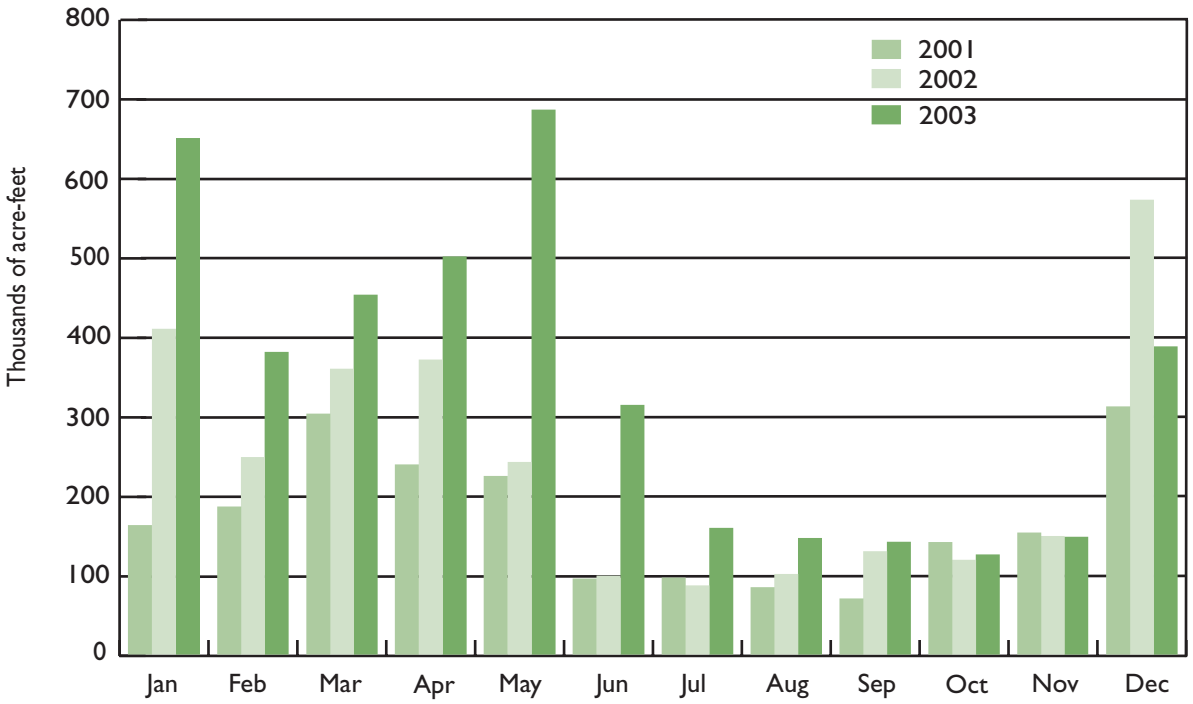


Figure 8-2. Monthly Lake Oroville Inflow, 2001-03

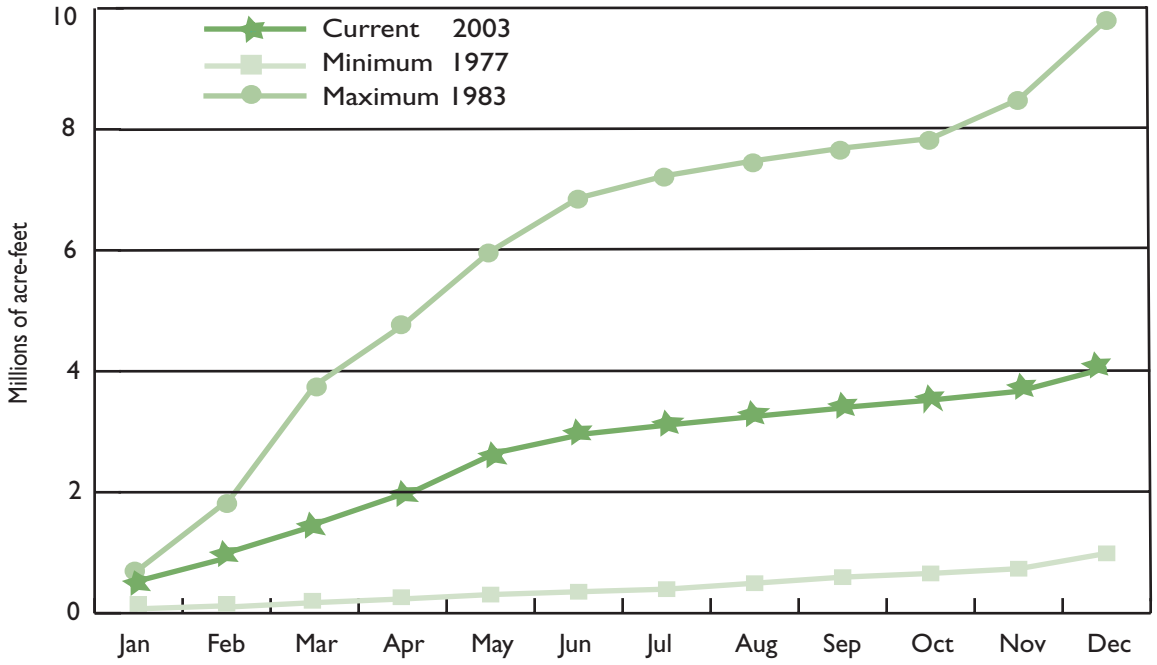


Figure 8-3. Historical Minimum, Maximum, and Current Cumulative Lake Oroville Inflow

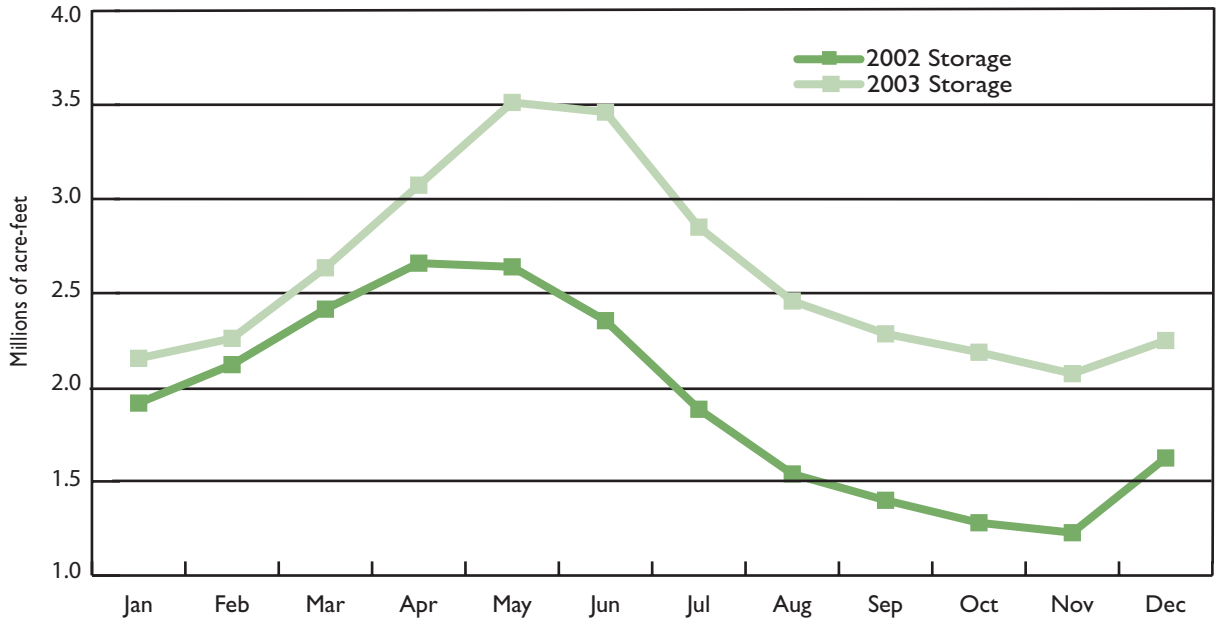


Figure 8-4. End-of-Month Storage in Lake Oroville, 2002 and 2003 Calendar Years

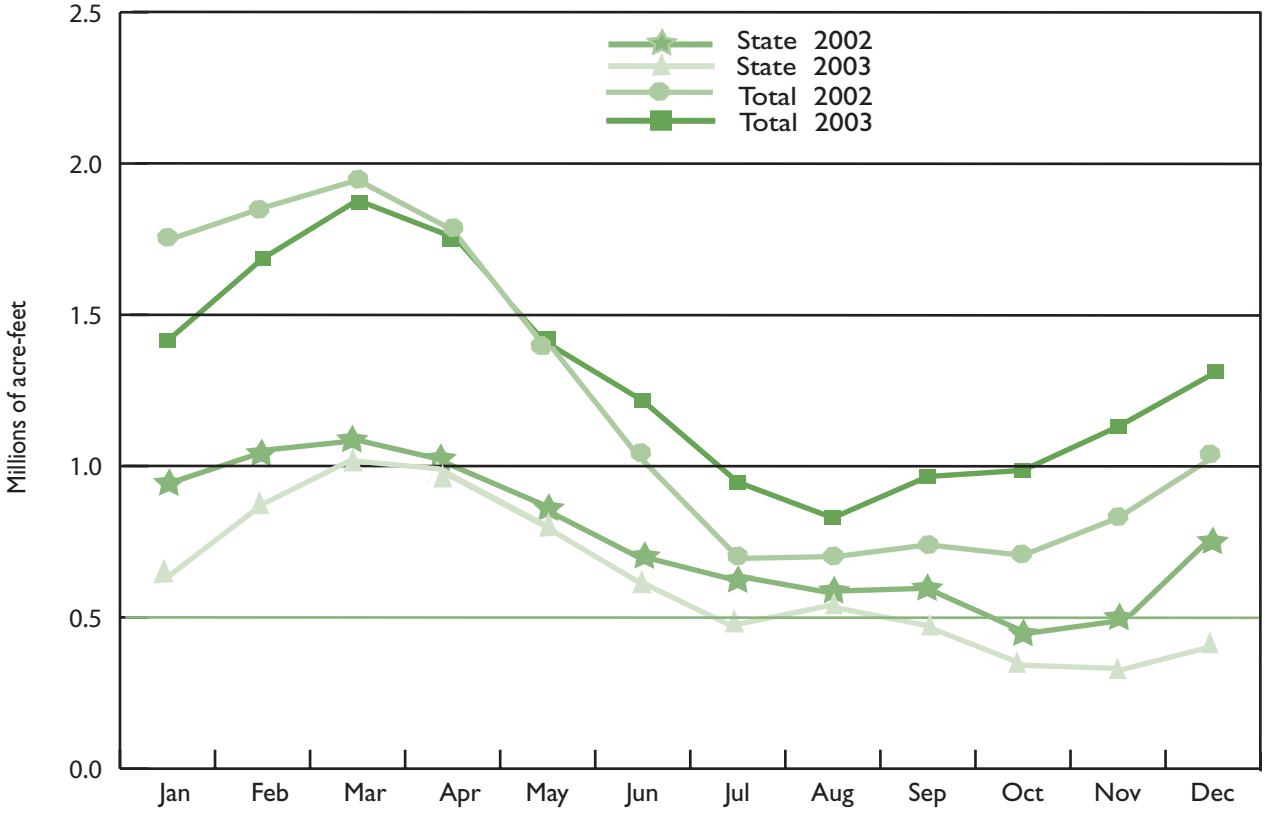


Figure 8-5. End-of-Month Storage in San Luis Reservoir, 2002 and 2003 Calendar Years

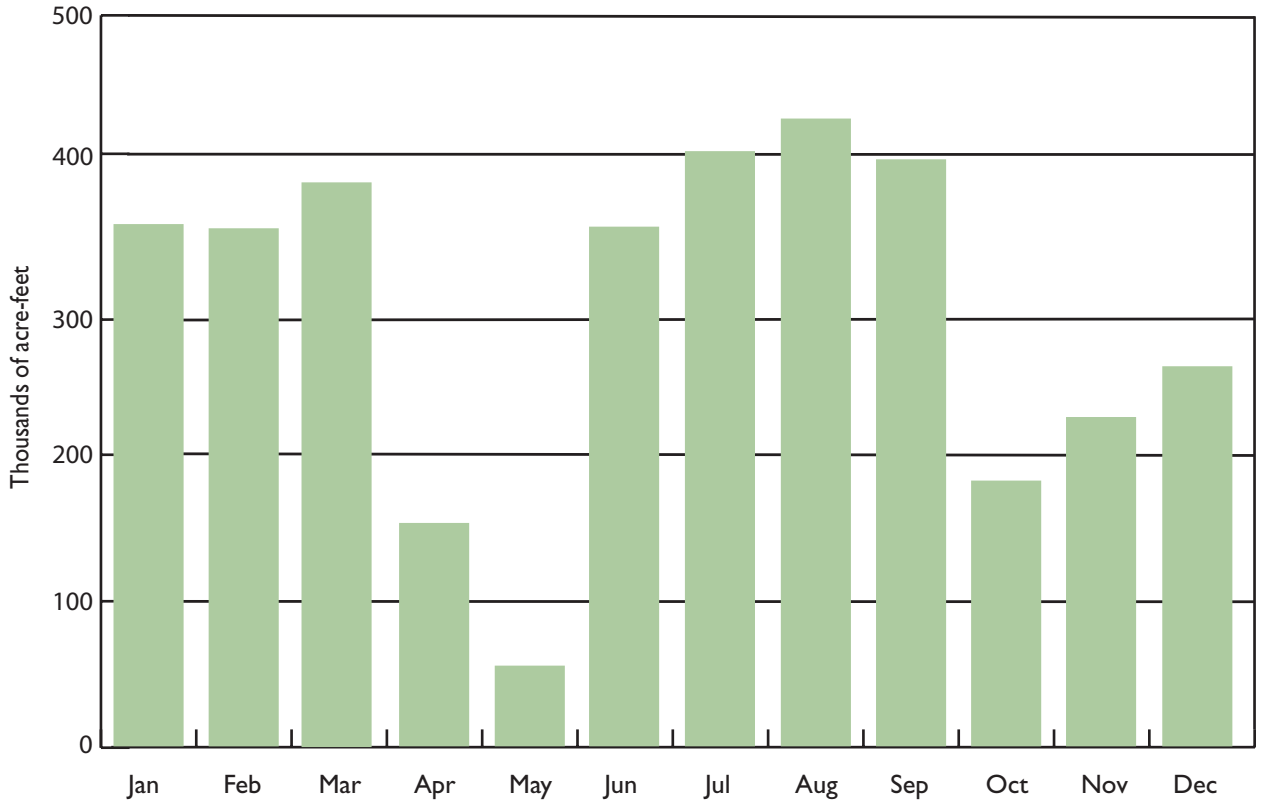


Figure 8-6. Water Pumped at Banks Pumping Plant, 2003 by month

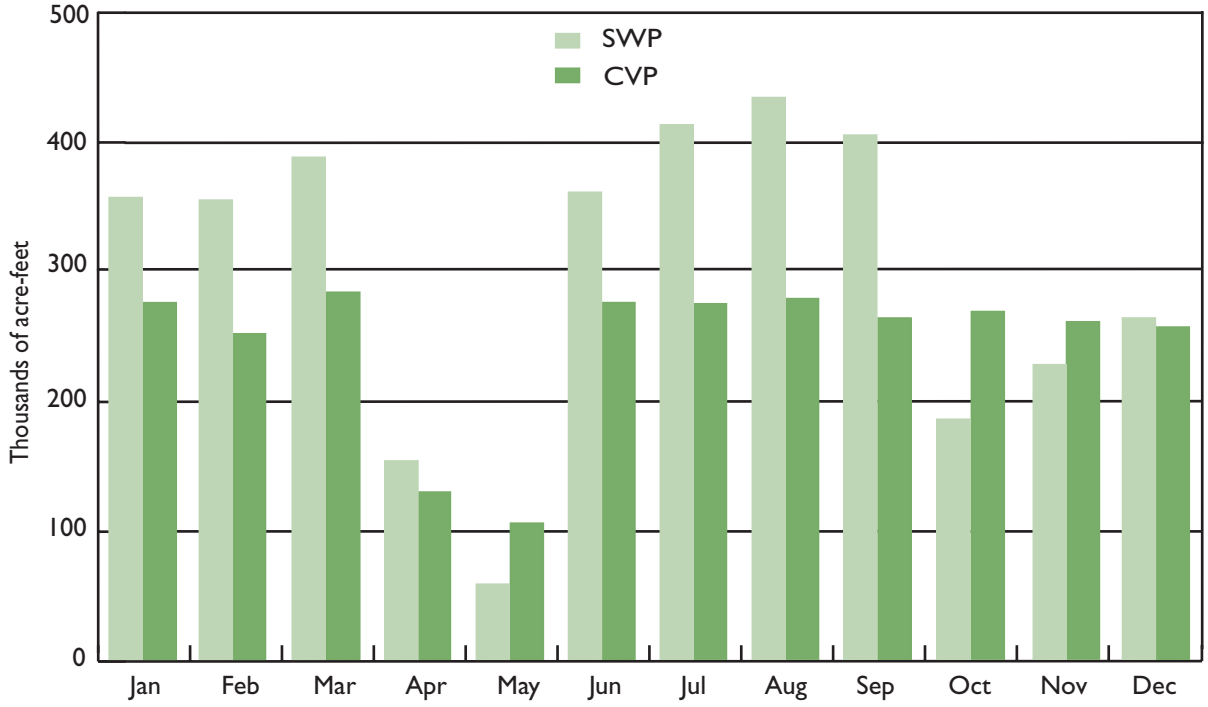


Figure 8-7. Sacramento-San Joaquin Delta Exports by State Water Project and Central Valley Project, 2003

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 45,561 acre-feet was diverted in 2003.

Maximum daily Delta exports occurred on February 19, 2003, at 23,110 acre-feet per day. Combined SWP and CVP monthly Delta exports in 2003 varied from a low of 146,672 acre-feet in May to a high of 691,775 acre-feet in August. Delta exports totaled about 6.33 million acre-feet for 2003.

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 2003, water pumped through Dos Amigos Pumping Plant to the San Joaquin Valley was 4,036,823 acre-feet. Included in that amount is 1,099,951 acre-feet pumped for the Bureau. Figure 8-8 shows the amount of water pumped each month at Dos Amigos Pumping Plant.

In 2003, water pumped through Edmonston Pumping Plant for delivery to Southern California totaled 1,778,216 acre-feet. Figure 8-9 shows the amount of water pumped each month.

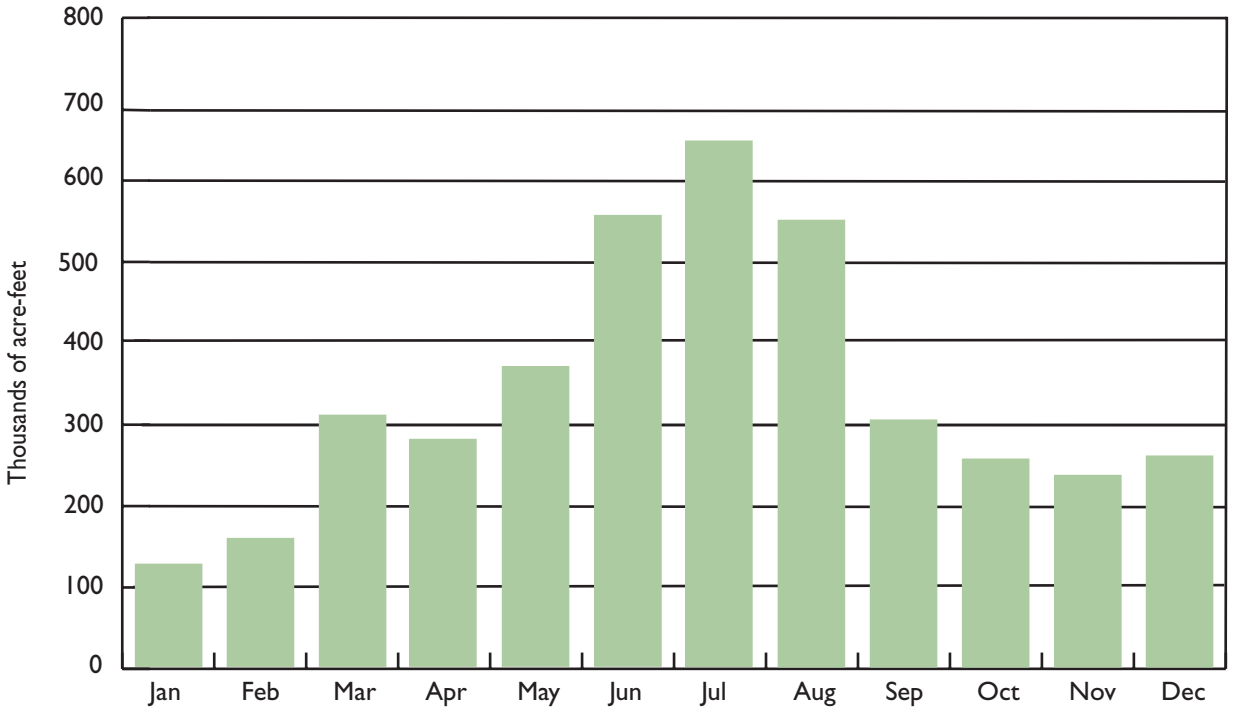


Figure 8-8. Water Pumped at Dos Amigos Pumping Plant, 2003 by Month

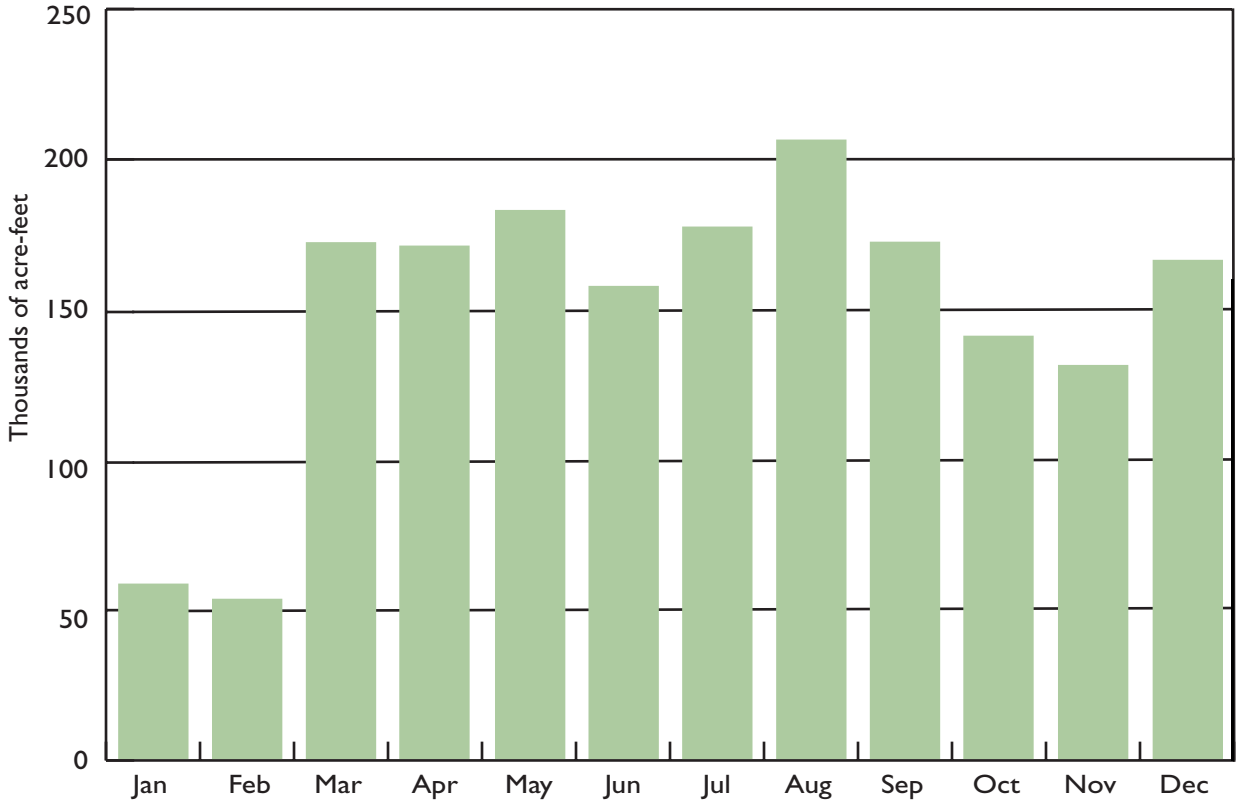


Figure 8-9. Water Pumped at Edmonston Pumping Plant, 2003 by Month

Information in 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



San Luis Reservoir

Significant Events in 2003

- On May 5, 2003, the Monterey Settlement Agreement was formally executed and was approved by the court on May 20, 2003. This settlement agreement offered an alternative to further litigation and, with certain conditions, allows the State Water Project to continue to operate pursuant to the Monterey Agreement while the new EIR is being prepared.
- The Department executed 39 long-term water supply contract amendments, 18 water conveyance/exchange agreements, 1 turn-in agreement, 10 turnout agreements, 34 Turnback Water Pool Program agreements, and 16 Article 21 Water Program agreements, with State Water Project contractors.
- The SWP approved delivery of 90 percent of SWP contractors' Table A requests, and conveyed 4,223,255 acre-feet to 27 long-term contractors and 26 other agencies.
- In 2003, 29,770 acre-feet of water were sold and purchased under the Turnback Water Pool Program.
- Implementation of the 2003 Colorado River Quantification Settlement Agreement resulted in a 2003 Exchange Agreement, pending execution, among Coachella Valley Water District, Metropolitan Water District of Southern California, and Desert Water District, which provides for the transfer of 88,100 acre-feet of Metropolitan's Table A amounts to Coachella, and 11,900 acre-feet of Metropolitan's Table A amounts to Desert.

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 in accordance with 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 contractors; under certain

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.

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 2003, 39 amendments were executed, 27 of which were related to the Monterey Settlement Agreement. A number of long-term consolidated contracts, with the amendments integrated into the contract, are available online at www.swpao.water.ca.gov/wsc/index.cfm.

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 to approve the construction, operation, and maintenance of turnouts along SWP facilities. During 2003, the Department executed 18 water conveyance/exchange agreements, 1 turn-in agreement, 10 turnout agreements, 34 Turnback Water Pool Program agreements, and 16 Article 21 Water Program agreements with SWP contractors. The Department also delivered water pursuant to 11 miscellaneous agreements executed prior to 2003 with the SWP contractors. Pending execution are 3 water conveyance/exchange agreements (including one unscheduled water program agreement) and 8 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.

The following long-term SWP Water Supply Contracts were amended during 2003.

Alameda County Flood Control and Water Conservation District-Zone 7. The Department executed Amendment No. 23 to the Water Supply Contract between Alameda-Zone 7 and the Department on August 1, 2003. The Amendment provided for the permanent transfer of 400 acre-feet of SWP Table A amounts from Tulare Lake Basin Water Storage District to Alameda-Zone 7, and set forth conditions for the transfer. The transfer is effective January 1, 2003. (SWPAO #03001)

Alameda County Flood Control and Water Conservation District-Zone 7. The Department executed Amendment No. 24 to the Water Supply Contract between Alameda-Zone 7 and the Department on November 7, 2003. This Amendment set forth the terms and conditions for the financing and repayment of costs attributable to the South Bay Aqueduct Enlargement. (SWPAO #03013)

Alameda County Flood Control and Water Conservation District-Zone 7. The Department executed Amendment No. 25 to the Water Supply Contract between Alameda-Zone 7 and the Department on October 31, 2003. The Amendment provided for the permanent transfer of 2,219 acre-feet of SWP Table A amounts from Kern County Water Agency to Alameda-Zone 7, and set forth conditions for the transfer. The transfer becomes effective January 1, 2004. (SWPAO #04002)

Coachella Valley Water District. The Department executed Amendment No. 18 to the Water Supply Contract between Coachella and the Department on October 10, 2003. The amendment provided for the permanent transfer of 88,100 acre-feet of SWP Table A amounts from Metropolitan Water District of Southern California to Coachella, and set forth conditions for the transfer. This amendment is a result of the 2003 Exchange Agreement pending execution, among Coachella, Metropolitan, and Desert Water Agency, which will provide for the transfer of 88,100 acre-feet of Metropolitan's Table A amounts to Coachella, and 11,900 acre-feet of Metropolitan's Table A amounts to Desert. The transfer is consistent with the implementation of the 2003 Colorado River Quantification Settlement Agreement. The amendment will become effective the later of January 1, 2004, or January 1 of the subsequent year that the 2003 Exchange Agreement becomes effective. The 2003 Exchange Agreement was not executed at the end of 2003. (SWPAO #04009)

County of Kings. The Department executed Amendment No. 16 to the Water Supply Contract between County of Kings and the Department on December 5, 2003. The amendment provided for the permanent transfer of 5,000 acre-feet of SWP Table A amounts from Tulare to County of Kings, and set forth conditions for the transfer. The transfer is effective January 1, 2004. (SWPAO #04004)

Desert Water Agency. The Department executed Amendment No. 18 to the Water Supply Contract between Desert and the Department on November 3, 2003. The amendment provided for the permanent transfer of 11,900 acre-feet of SWP Table A amounts from Metropolitan to Desert, and set forth conditions for the transfer. This amendment is a result of the 2003 Exchange Agreement pending execution, among Coachella, Metropolitan, and Desert Water Agency, which will provide for the transfer of 88,100 acre-feet of Metropolitan's Table A amounts to Coachella, and 11,900 acre-feet of Metropolitan's Table A amounts to Desert. The transfer is consistent with the implementation of the 2003 Colorado River Quantification Settlement Agreement. The amendment will become effective the later of January 1, 2004, or January 1 of the subsequent year that the 2003 Exchange Agreement becomes effective. The 2003 Exchange Agreement was not executed at the end of 2003. (SWPAO #04011)

Kern County Water Agency. The Department executed Amendment No. 36 to the Water Supply Contract between Kern and the Department on October 31, 2003. The amendment provided for the permanent transfer of 2,219 acre-feet of SWP Table A amounts from Kern to Alameda-Zone 7, and set forth conditions for the transfer. The transfer becomes effective January 1, 2004. (SWPAO #04001)

Metropolitan Water District of Southern California. The Department executed Amendment No. 27 to the Water Supply Contract between Metropolitan and the Department on October 24, 2003. The amendment provided for the permanent transfer of 88,100 acre-feet of SWP Table A amounts from Metropolitan to Coachella, and set forth conditions for the transfer. This amendment is a result of the 2003 Exchange Agreement pending execution, among Coachella, Metropolitan, and Desert, which will provide for the transfer of 88,100 acre-feet of Metropolitan's Table A amounts to Coachella, and 11,900 acre-feet of Metropolitan's Table A amounts to Desert. The transfer is consistent with the implementation of the 2003 Colorado River Quantification Settlement Agreement. The amendment will become effective the later of January 1, 2004, or January 1 of the subsequent year that the 2003 Exchange Agreement becomes effective. The

2003 Exchange Agreement was not executed at the end of 2003. (SWPAO #04008)

Metropolitan Water District of Southern California. The Department executed Amendment No. 28 to the Water Supply Contract between Metropolitan and the Department on October 24, 2003. The amendment provided for the permanent transfer of 11,900 acre-feet of SWP Table A amounts from Metropolitan to Desert, and set forth conditions for the transfer. This amendment is a result of the 2003 Exchange Agreement pending execution, among Coachella, Metropolitan, and Desert, which will provide for the transfer of 88,100 acre-feet of Metropolitan's Table A amounts to Coachella, and 11,900 acre-feet of Metropolitan's Table A amounts to Desert. The transfer is consistent with the implementation of the 2003 Colorado River Quantification Settlement Agreement. The amendment will become effective the later of January 1, 2004, or January 1 of the subsequent year that the 2003 Exchange Agreement becomes effective. The 2003 Exchange Agreement was not executed at the end of 2003. (SWPAO #04010)

Solano County Water Agency. The Department executed Amendment No. 19 to the Water Supply Contract between Solano and the Department on November 12, 2003. The amendment provided for the approval for Solano to pay only the prospective charge for the North Bay Aqueduct costs attributable to the 5,756 acre-feet annual Table A increase made effective in Amendment No. 17 to Solano's long term Water Supply Contract. The amendment becomes effective January 1, 2004. (SWPAO #03005)

Tulare Lake Basin Water Storage District. The Department executed Amendment No. 29 to the Water Supply Contract between Tulare and the Department on June 2, 2003. The amendment provided for the permanent transfer of 400 acre-feet of SWP Table A amounts from Tulare to Alameda-Zone 7, and set forth conditions for the transfer. The transfer is effective January 1, 2003. (SWPAO #03002)

Tulare Lake Basin Water Storage District. The Department executed Amendment No. 30 to the Water Supply Contract between Tulare and the Department on December 5, 2003. The amendment provided for the permanent transfer of 5,000 acre-feet of SWP Table A amounts from Tulare to Kings County, and set forth conditions for the transfer. The transfer becomes effective January 1, 2004. (SWPAO #04003)

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.

The Monterey Amendments incorporated 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.

Plumas County Flood Control and Water Conservation District and Empire West Side Irrigation District, the only long-term SWP contractors who have not signed the Monterey Amendment, await completion of the EIR to decide whether to sign.

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.

Monterey Settlement Agreement

On May 5, 2003, the Monterey Settlement Agreement was formally executed and was approved by the court on May 20, 2003. This settlement agreement offered an alternative to further litigation and, with certain conditions, allows the State Water Project to continue to operate pursuant to the Monterey Agreement while the new EIR is being prepared. The Department and the contractors agree not to approve any new projects or activity in reliance on the 1995 EIR, which was not approved, initiated or implemented prior to March 26, 2001, and the approval, initiation, or implementation of which would require a separate environmental document under CEQA. Information on the litigation can be found in *Chapter 6, Legislation and Litigation.*

The settlement agreement is a complex agreement with multiple components that balance the interests of the Department, the SWP contractors, Central Coast Water Authority, and Kern Water Bank Authority, with the disparate interests of the three plaintiffs.

All litigation costs will be paid by all SWP contractors, apportioned according to each agency's portion of the total maximum Table A Amounts as of January 1, 2003. Most of the contractors executed an agreement with the Department providing that the litigation costs will be allocated as incurred.

In addition to procedural items including attorney fees, mediation, and disposition of the lawsuit, items concerning the operation and management of the SWP are described below.

New Amendments to the SWP Contracts

The Department and 28 SWP contractors executed new amendments to the SWP long-term water supply contracts to improve and clarify disclosure of information about the delivery capability of the SWP. The amendments deleted the term "entitlement" and replaced that term with "Table A Amount." This does not change the Department's water delivery obligations or any other rights under the SWP contracts.

Language is also added to the bottom of each contractor's Table A to clarify that Table A is not to be interpreted to mean that the Department is able to deliver those amounts in all years. Empire, which has never signed the Monterey Amendment, did not execute the Monterey Settlement Amendment.

The amendment also requires the Department to distribute a biennial report to SWP contractors and all city, county, and regional planning agencies within the SWP project area, providing information as to SWP delivery capabilities, historic deliveries, and estimated deliveries under a range of hydrologic conditions. This report is intended to assist the SWP contractors in the assessment of the adequacy of the SWP component of their overall water supplies. The first edition of this report was issued in 2003 for SWP deliveries through 2002. More information on this report can be found in *Chapter 7, Water Supply Development and Reliability.*

SWP Availability

In addition to the biennial report mentioned above, the settlement agreement requires the Department to develop guidelines to assist the SWP urban contractors in providing information to land use planning agencies regarding local and regional programs to manage or supplement SWP supplies. The Department is also required to assist these contractors in providing complete and accurate information to land use agencies to assure that local land use decisions reflect accurate information on the availability of water from State, local, and other sources. Preparation of this document is underway.

New EIR

Agreement was reached on the content, scope, and process for the new EIR. The project to be analyzed in the new EIR is the Monterey Amendment and certain components of the settlement agreement. The Department will act as lead agency in preparing the new EIR. A Notice of Preparation was issued in January 2003 and scoping meetings were held throughout the State.

Under the agreement, a committee of plaintiffs and SWP contractors advises the Department on developing the EIR. The Department's Director serves as chair of this committee. Preparation of the new EIR is underway. The committee met nine times during 2003.

Public Participation in SWP Contract Negotiations

Future negotiations for SWP-wide contract amendments and for contract amendments to transfer Table A Amounts between SWP contractors will be conducted in public. The Department agrees that public review of significant changes to the water supply contracts is beneficial and in the public interest. The Department notified the contractors of this new process through Notice to State Water Project Contractors No. 03-10, on July 3, 2003, which is available online at swpao.water.ca.gov/notices/index.cfm).

Guidelines for Review and Approval of Permanent Water Transfers

The Department is required to issue guidelines to describe the process for the Department's review of proposed permanent transfers of Table A Amounts. These guidelines are to assist contractors in developing their transfer proposals and obtaining Department review expeditiously, and to assist the public in participating in that review. The Department issued these guidelines on July 3, 2003, through Notice to State Water Project Contractors No. 03-09 and published them in Bulletin 132-02, Chapter 9 (available online at swpao.water.ca.gov/publications/bulletin/02/Bulletin132-02.pdf).

Kern Water Bank

The Kern Water Bank will remain in local ownership and will operate as it has, but will be subject to additional restrictions on use. The Department agrees to prepare an independent study of KWB regarding impacts related to the transfer, development, and operation of KWB in light of the Kern environmental permits, as part of the new EIR.

Permanent Table A Transfers

The following permanent Table A transfers from Kern already completed under the Monterey Amendment are final:

- Kern to Mojave, Table A Amount of 25,000 acre-feet, effective 1998;
- Kern to Palmdale, Table A Amount of 4,000 acre-feet, effective 2000;
- Kern to Alameda-Zone 7, Table A Amount of 7,000 acre-feet, effective 2000;
- Kern to Alameda-Zone 7, Table A Amount of 15,000 acre-feet, effective 2000;
- Kern to Alameda-Zone-7, Table A Amount of 10,000 acre-feet, effective 2001;
- Kern to Solano, Table A Amount of 5,756 acre-feet, effective 2001; and
- Kern to Napa, Table Amount of 4,025 acre-feet, effective 2001.

The parties recognize that the Kern-Castaic Lake Water Agency 41,000 acre-feet Table A transfer is subject to pending litigation and agree that jurisdiction with respect to that litigation remain in the Los Angeles County Superior Court and that nothing in the agreement is intended to predispose the remedies or other actions that may occur in the pending litigation.

The potential environmental effects of these transfers are required to be analyzed in the new EIR.

Plumas County Flood Control and Water Conservation District

Plumas will resume payments pursuant to its SWP water supply contract beginning in 2003. The Department will not collect any Plumas arrearages. Plumas agreed to support the Monterey Amendments and, along with the other contractors, executed the amendment discussed above which deleted the term "entitlement" and replaced that term with "Table A Amounts."

Up to $8 million will be paid over 8 years to Plumas beginning in 2003, primarily for watershed

improvements for the mutual benefit of Plumas and the SWP in the Feather River watershed, and for other district-related purposes, to be disbursed with input from a watershed forum composed of representatives of Plumas, the Department, and SWP contractors. A technical committee composed of the Department, Plumas, SWP contractors, and local resource management groups was formed to assist the forum. To help the forum set priorities for watershed management and restoration action, a consultant was hired during 2003 to help prepare the Feather River Watershed Management Strategy.

In addition, the Department will offer Plumas an amendment to its water supply contract which will include the Department's agreement that water supplied to Plumas be determined based on availability of Lake Davis' water supply and that water deliveries to Plumas will not be reduced during SWP shortages so long as sufficient water is available from Lake Davis.

Miscellaneous Agreements with Long-Term SWP Contractors

2003 Water Conveyance/Exchange Agreements

During 2003, water conveyance/exchange agreements were executed or pending execution with long-term SWP contractors as described below.

Dudley Ridge Water District. A long-term agreement executed June 30, 2003, among the Department, Dudley Ridge, and Tulare, approved 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, a landowner who farms in both Tulare and Dudley Ridge service areas. 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. No water was delivered in 2003. (SWPAO #02005)

Dudley Ridge Water District. A letter agreement dated October 8, 2003, and executed November 18, 2003, among the Department, Dudley Ridge, and Tulare, approved the delivery of up to 4,000 acre-feet of Dudley Ridge's 2003 Table A amounts to Tulare at Tulare's turnout B in Reach 8D of the California Aqueduct. The agreement facilitated the water transfer from Dudley Ridge to Tulare on behalf of Sandridge Partners, who farms in both Dudley Ridge and Tulare service areas. During 2003, a total of 1,100 acre-feet was delivered to Tulare. (SWPAO #03052)

Dudley Ridge Water District. A letter agreement dated November 19, 2003, and executed November 20, 2003, among the Department, Dudley Ridge, and San Gabriel Valley Municipal Water District, approved the delivery of up to 11,458 acre-feet of Dudley Ridge's 2003 Table A amounts to San Gabriel at Reach 26A of the California Aqueduct. In exchange, San Gabriel will return a like amount of its future Table A amounts to Dudley Ridge by December 31, 2013. During 2003, a total of 8,700 acre-feet of Dudley Ridge's 2003 Table A amounts was delivered to San Gabriel. (SWPAO #03055)

Empire West Side Irrigation District. An agreement, pending execution between the Department and Empire, will provide for the delivery of unscheduled water to Empire in 2003 at times when project water is not needed for fulfilling approved Table A deliveries or for meeting project operational commitments. A total of 175 acre-feet of unscheduled water was delivered to Empire in 2003. (SWPAO #03012)

Kern County Water Agency. A letter agreement dated June 6, 2003, and executed July 3, 2003, between the Department and Kern, approved the delivery of up to 20,000 acre-feet of 2002 CVP water from three CVP contractors

to Kern. In exchange, Kern would return a like amount of its 2003 approved Table A amounts to the CVP contractors by December 31, 2003. The Department petitioned the State Water Resources Control Board on July 25, 2003, and received approval on August 26, 2003, for a temporary change of place of use for delivery of the return water. A total of 18,428 acre-feet was delivered to Kern from O'Neill Forebay and 18,428 acre-feet of water was returned to the CVP contractors at O'Neill Forebay in 2003. (SWPAO #03009)

Kern County Water Agency. A letter agreement dated June 12, 2003, and executed July 3, 2003, between the Department and Kern, approved 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 dated October 2, 2003, and executed December 15, 2003, among the Department, Kern, and Dudley Ridge, approved the delivery of up to 8,000 acre-feet of Kern's 2003 approved Table A amounts to Dudley Ridge at Reach 8D of the California Aqueduct. The agreement facilitated the water transfer from Kern to Dudley Ridge on behalf of the landowner Sandridge Partners who farms in both Kern and Dudley Ridge service areas. During 2003, a total of 8,000 acre-feet was delivered to Dudley Ridge. (SWPAO #03054)

Santa Clara Valley Water District. A letter agreement, pending execution between the Department and Santa Clara, provides for the delivery of up to 3,100 acre-feet of Brown's Valley Irrigation District's water (nonproject) to Santa Clara. This water, which is under Brown's Valley pre-1914 water rights, will be made available at Banks Pumping Plant and conveyed to Santa Clara at Reach 9 of the South Bay Aqueduct. Santa Clara requested this water be delivered pursuant to Article 55 of its long-term Water Supply Contract. During 2003, a total of 2,480 acre-feet of Brown's Valley water (nonproject) was delivered to Santa Clara. (SWPAO #03058)

Solano County Water Agency. A settlement agreement executed May 19, 2003, among the Department, Solano, and the Cities of Fairfield, Vacaville, and Benicia, and a conveyance agreement, executed concurrently between the Department and Solano, approved the delivery of up to 31,260 acre-feet annually of settlement water to Solano for delivery to the Cities of Fairfield, Vacaville, and Benicia. The agreements resulted from negotiations following the cities' petitions to SWRCB to appropriate water from the Sacramento River. The purpose of the agreements was to avoid disputing issues of appropriation before SWRCB. The agreement provides a supplemental water supply to the cities to assist in meeting current and future water demands through the North Bay Aqueduct. Water will be made available during excess conditions in the Delta as defined in the Coordinated Operations Agreement, or during balanced conditions when Water Rights Standard Permit term 91, which relates to availability of water for appropriation, is not in effect. The cities pay a fee per acre-foot of settlement water delivered during balanced conditions at NBA. The agreement remains in effect until December 31, 2035. During 2003, a total of 860 acre-feet of the settlement water was delivered to the Cities of Fairfield, Vacaville, and Benicia through Reaches 1 and 3A of the North Bay Aqueduct. (SWPAO #03017)

Tulare Lake Basin Water Storage District. A letter agreement dated April 14, 2003, and executed April 22, 2003, between the Department and Tulare, approved the transfer of up to 5,000 acre-feet of Tulare's 2003 approved Table A amounts to Westlands Water District at Reaches 5, 6, and 7 of the California Aqueduct on behalf of two landowners, Hansen Ranches

and Newton Farms, who farm in both the Tulare and Westlands service areas. The Department petitioned SWRCB on April 1, 2003, and received approval on May 23, 2003, for a temporary change of place of use. During 2003, a total of 3,900 acre-feet was delivered to Westlands at Reach 5. (SWPAO #03006)

Tulare Lake Basin Water Storage District. A letter agreement dated August 6, 2003, and executed August 25, 2003, between the Department and Tulare, approved the delivery of up to 25,000 acre-feet of Lower Tule River Irrigation District's water (nonproject) to Tulare at Reaches 8C and 8D of the California Aqueduct. Tulare requested this water be delivered pursuant to Article 55 of its long-term water supply contract. No water was delivered in 2003. (SWPAO #03007)

Tulare Lake Basin Water Storage District. A letter agreement dated April 4, 2003, and executed April 10, 2003, between the Department and Tulare, approved the transfer of up to 1,000 acre-feet of Tulare's 2003 Table A amounts to Westlands at Reach 7 of the California Aqueduct on behalf of Westlake Farms Inc., who farms in both Tulare and Westlands service areas. The water was delivered to Westlands for use on lands within the Kings County portion of Westland's service area. During 2003, a total of 1,000 acre-feet was delivered to Westlands at Reach 7. (SWPAO #03011)

Tulare Lake Basin Water Storage District. A letter agreement dated June 5, 2003, and executed August 25, 2003, between the Department and Tulare, approved 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 and delivered to Tulare in 2002. A subsequent Amendment pending execution between the Department and Tulare, will amend the delivery amounts to 10,596 acre-feet. (SWPAO #04022)

Water Conveyance/Exchange Agreements Prior to 2003

During 2003, water delivered pursuant to agreements with SWP contractors that were executed prior to 2003, is 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 April 26, 2002. Byron-Bethany may only transfer water that has been made available by conservation and crop idling. In 2003, 1,000 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)

Castaic Lake Water Agency. An agreement executed on December 27, 2001, among the Department, Castaic Lake, United Water Conservation District, Newhall Land and Farming Company, Newhall County Water District, and Los Angeles County, provided for the temporary extension through December 31, 2001, to store and release up to 8,786 acre-feet of local flood flows in Castaic Reservoir to Castaic Lake. United, a member unit of Ventura, transferred 4,512 acre-feet of stored local water to Castaic Lake in 2001. In 2003, Castaic Lake released 6,768 acre-feet of its 2003 Table A allocation to the Department (1.5 times the amount transferred by United). The Department in turn released 6,768 acre-feet of local water from Piru Creek to United. (SWPAO #01036)

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 2003, a total of 917 acre-feet of Kern's Table A amounts was delivered to Western Hills at Reach 2A. (SWPAO #01001)

Kern County Water Agency. A letter agreement executed October 11, 2002, between the Department and Kern, approved the delivery of up to 30,000 acre-feet of nonproject water from four CVP contractors, members of the San Luis and Delta Mendota Water Authority, to Kern in 2000. In exchange, Kern would return a like amount of its approved Table A amounts to CVP contractors by December 31, 2003. During 2000, a total of 23,941 acre-feet of CVP water was delivered to Kern. During 2003, a total of 1,787 acre-feet was returned to CVP contractors. A balance of 22,154 acre-feet remained to be returned to the CVP contractors at the end of the contract term. (SWPAO #00032)

In a letter dated August 1, 2003, Kern requested an extension on the return period of the CVP water since Kern was unable to return all the water by December 31, 2003. Extension of the return period and other possible alternatives for Kern to return the remaining water to CVP contractors are being discussed among the Department, Kern, and San Luis and Delta Mendota Water Authority.

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 2003, the Department delivered 816 acre-feet of Mojave's 2003 approved Table A amounts through AVEK's turnout at Reach 19. (SWPAO #97003)

San Bernardino Valley Municipal Water District. San Bernardino and Metropolitan entered into an agreement, 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's jurisdictional boundaries. This coordinated use involves delivery of San Bernardino'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 2003, a total of 5,000 acre-feet of San Bernardino's approved Table A amounts was delivered to Metropolitan at Reach 26A. (SWPAO #02035)

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. During 2003, a total of 14,103 acre-feet was returned to Westlands, completing this agreement. (SWPAO #01009)

EWA 2:1 Exchange Agreements

During 2002, six 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, dated March 27, 2003, and executed April 4, 2003, between the Department and Alameda-Zone 7, approved 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 Semitropoic 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); 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, dated March 28, 2003, and executed April 8, 2003, between the Department and Alameda County, approved 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, dated March 27, 2003, and executed April 9, 2003, between the Department and Dudley Ridge, approved 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, dated March 28, 2003, and executed April 15, 2003, between the Department and Kern, approved 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)

Santa Clara Valley Water District. A letter agreement, dated March 27, 2003, and executed April 15, 2003, between the Department and Santa Clara, approved 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, dated March 28, 2003, and executed August 25, 2003, between the Department and Tulare, approved 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

Antelope Valley-East Kern Water Agency. A turn-in agreement executed April 1, 2003, between the Department and AVEK, approved the introduction of local water into the California Aqueduct during 2001. The local water was introduced from a temporary turn-in structure located at Reach 22B, and AVEK took delivery of local water by exchange with project water delivered upstream in Reach 22A. During 2001, a total of 152 acre-feet of local water was introduced at Reach 22B and 152 acre-feet of SWP water was delivered to AVEK at Reach 22A. (SWPAO #01029)

Kern County Water Agency. During 2003, a total of 20,486 acre-feet of local water was introduced into California Aqueduct through Kern's existing turnouts in Reaches 12E and 13B. Letter agreements to allow the introduction of local water are pending.

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 not formally accepted in 2003.

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 2003.

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, and formally accepted on March 27, 2003.

Agreements and Activities Related to the Monterey Amendments

Turnback Water Pool Program. Pursuant to Article 56(d) of the Monterey Amendments, the eighth year of the Turnback Water Pool Program was initiated through Notice to State Water Project Contractors No. 03-02, dated February 3, 2003. 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 2003 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 2003, 29,770 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 2003, respectively. Turnback water sold for $11.90 per acre-foot—50 percent of the Delta Water Rate—through Pool A, and for $5.95 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 2003 Turnback Water Pool Program closed April 1, 2003. Notices to State Water Project Contractors describing the Turnback Water Pool Program are available online at www.swpao.water.ca.gov/notices/index.cfm.

Table 9-1 lists contractors who participated in Pool A and Pool B of the Turnback Water Pool Program.

Storage of Water Outside Service Area. Pursuant to Article 56 of the Monterey Amendments, six 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.

Table 9-1. 2003 Turnback Water Pool Program (Acre-feet)

Contractor	Sold	Purchased
	Pool A	
Butte	375	
Mojave	16,900	
Ventura County	6,750	
Yuba City	2,320	
Alameda County		314
Alameda-Zone 7		583
AVEK		250
Coachella		172
Desert		285
Dudley Ridge		428
Kern		7,476
Kings		30
Metropolitan		15,024
Napa		160
Oak Flat		43
Santa Clara		747
Tulare		833
Total	*26,345*	*26,345*
	Pool B	
Butte	175	
Mojave	2,500	
Ventura	750	
Alameda County		40
Alameda-Zone 7		73
Castaic Lake		90
Coachella		22
Desert		36
Dudley Ridge		54
Kern		943
Kings		4
Metropolitan		1,896
Napa		20
Oak Flat		5
Santa Barbara		43
Santa Clara		94
Tulare		105
Total	*3,425*	*3,425*

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 2002 carryover water and a portion of Alameda-Zone 7's approved 2003 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, 2013. During 2003, the Department delivered a total of 6,500 acre-feet of Alameda-Zone 7's 2002 extended carryover to Reach 10A for storage in Semitropic. (SWPAO #03008)

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 2003 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, 2013. During 2003, the Department delivered a total of 18,800 acre-feet of Alameda County's approved SWP water to Reach 10A for storage in Semitropic, of which 16,100 acre-feet were 2003 Table A amounts and 2,700 acre-feet were 2002 extended carryover water. (SWPAO #03014)

Castaic Lake Water Agency. A change in point of delivery agreement pending execution, among the Department, Castaic Lake, and Kern, will provide for the delivery of up to 35,000 acre-feet of Castaic Lake's 2003 approved SWP water supplies 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 March 31, 2014. No water was delivered in 2003. (SWPAO #03060)

Dudley Ridge Water District. A change in point of delivery agreement pending execution, among the Department, Dudley Ridge, and Kern, will provide for the delivery of up to 1,000 acre-feet of Dudley Ridge's approved 2003 Table A amounts for storage in and later recovery from Kern Water Bank. Dudley Ridge has signed similar delivery agreements annually since 1996. All return water is to be delivered to Dudley Ridge by December 31, 2013. During 2003, the Department delivered 350 acre-feet of Dudley Ridge's approved 2003 Table A amounts for storage in KWB. (SWPAO #03018)

Dudley Ridge Water District. A long-term change in point of delivery agreement pending execution, among the Department, Dudley Ridge, and Kern, will approve the delivery of a portion of Dudley Ridge's approved annual SWP water supplies to Kern to be used within Cawelo Water District, a member unit of Kern, the return of a like amount of such water, and the delivery of local Cawelo water supplies to Dudley Ridge by in lieu exchange for a portion of Cawelo's future allocation of Kern's SWP water supplies. This agreement is effective July 1, 2003, and remains in force until December 31, 2035. No water was delivered in 2003. (SWPAO #03053)

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. During 2003, a total of 350 acre-feet was recovered and delivered to Dudley Ridge at Reach 8D. (SWPAO #97021)

Metropolitan Water District of Southern California. A long-term change in point of delivery agreement pending execution, among the Department, Metropolitan, and Kern, will provide the delivery of a portion of Metropolitan's approved SWP supplies for storage in and later recovery from the groundwater basin underlying Kern Delta Water District, a member unit of Kern, in accordance with the Metropolitan and Kern Delta Water Management Program Agreement. During 2003, a total of 20,134 acre-feet of Metropolitan's Table A amounts was delivered to Kern Delta at Reaches 12E and 13B. (SWPAO #03019)

Metropolitan Water District of Southern California. A change in point of delivery agreement pending execution, among the Department, Metropolitan, and Mojave Water Agency, will provide for the delivery of up to 75,000 acre-feet of Metropolitan's 2003 and 2004 approved SWP water supplies for storage in and later recovery from Mojave River Basin within Mojave, in accordance with the Metropolitan and Mojave Water Banking Demonstration Program Agreement. The water is to be returned to Metropolitan by January 15, 2010. During 2003, the Department delivered a total of 24,874 acre-feet of Metropolitan's approved SWP water to Mojave at Reaches 22B and 24. (SWPAO #03057)

Metropolitan Water District of Southern California. A long-term agreement (SWPAO #01013), pending execution among the Department, Metropolitan, and Kern, will approve the delivery of a portion of Metropolitan's annual Table A and other water supplies for storage and later recovery from groundwater basins within Arvin-Edison Water Storage District, in accordance with the Metropolitan and Arvin-Edison Water Management Program Agreement. The return water is to be delivered to Metropolitan from Arvin-Edison and /or by exchange of Metropolitan's water for a like amount of Kern's SWP approved Table A amounts or other water delivered from the California Aqueduct. The water is to be returned to Metropolitan by December 31, 2035.

Before this long-term agreement was prepared, three interim agreements dated December 29, 1997 (SWPAO #97025), September 17, 1998 (SWPAO #98018, first amendment to SWPAO #97025), and April 13, 1999 (SWPAO #99009, second amendment to SWPAO #97025), among the Department, Metropolitan, and Kern, provided temporary authorization for Metropolitan to store water in Arvin-Edison. Water was delivered to Arvin-Edison for storage each year from 1997 to 2000 under these agreements. During 2001, water previously stored under SWPAO #97025 was returned to Metropolitan, completing the agreement. During 2003, a total of 7,297 acre-feet previously stored under SWPAO #98018 was recovered and delivered to Metropolitan at Reach 26A, completing this agreement. During 2003, a total of 5,083 acre-feet previously stored under SWPAO #99009 was recovered and delivered to Metropolitan at Reach 26A. During 2003, a total of 40,631 acre-feet of Metropolitan's Table A amounts was delivered to Arvin-Edison for storage at Reaches 12C and 14E. (SWPAO #01013)

Metropolitan Water District of Southern California. A letter agreement executed April 21, 1993, among the Department, Metropolitan, and Kern, approved the delivery of Metropolitan's 1992 carryover water for storage in and later recovery from Semitropic. Water is to be returned by December 31, 2010. A subsequent long-term agreement, executed August 21, 1995, among the Department, Metropolitan, and Kern, approved the annual delivery of a portion of Metropolitan's annual Table A and other water supplies for storage in and later recovery from Semitropic, in accordance with the Metropolitan and Semitropic's Water Banking Program Agreement. This agreement remains in effect until November 4, 2035. Water was delivered to Semitropic for storage in 1993, and each year from 1995 to 1999. During 2001, a total of 31,500 acre-feet was recovered and delivered to Metropolitan at Reach 30. During 2003, a total of 10,000 acre-feet was recovered and delivered to Metropolitan at Reach 26A, and a total of 70,940 acre-feet of Metropolitan's Table A amounts was delivered to Reach 10A for storage in Semitropic. (SWPAO #95010)

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 2003 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, 2013. During 2003, the Department delivered 33,000 acre-feet of Santa Clara's 2003 Table A amounts to Reach 10A for storage in Semitropic. (SWPAO #03051)

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 2003 were described in the March 14, 2003, Notice to State Water Project Contractors No. 03-03, available online at www.swpao.water.ca.gov/notices/index.cfm. Sixteen participants signed the notice, which indicated acceptance of the criteria, procedures, and charges for the program, and collectively received a total of 59,653 acre-feet of Article 21 water (Table 9-2).

During the Article 21 water program period, unscheduled water was also made available to Empire pursuant to its long-term water supply contract. Empire received 175 acre-feet of unscheduled water in 2003 for agricultural purposes.

Table 9-2. 2003 Article 21 Water Deliveries (Acre-feet)

Contractor	Amount
Castaic Lake	991
Coachella	204
Kings	58
Desert	330
Dudley Ridge	1,928
Empire[a]	175
Kern	27,891
Metropolitan	17,622
Napa	376
Oak Flat	19
San Bernardino	200
San Gabriel	200
San Luis Obispo	36
Santa Barbara	339
Santa Clara	936
Solano	2,280
Tulare	6,243
Total	*59,828*

[a]Unscheduled agricultural water

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.

One SWP contractor participated in the Flexible Storage Program in 2003. At the end of 2002, Metropolitan had a zero balance in Castaic Lake and Lake Perris. Metropolitan withdrew 77,804 acre-feet from Castaic Lake in 2003, and replaced 77,804 acre-feet in 2003, resulting in a zero water balance at the end of 2003. Metropolitan withdrew 17,993 acre-feet from Lake Perris, and replaced 17,993 acre-feet of Article 21, carryover, and Table A water in 2003, resulting in a zero water balance at the end of 2003. At the end of 2002, Castaic Lake Water Agency had a negative balance of 395 acre-feet from Castaic Lake. There was no action in 2003. Therefore, at the end of 2003, a negative balance of 395 acre-feet remains in Castaic Lake.

Carryover Programs

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. Six SWP contractors took direct delivery of 75,584 acre-feet of 2002 approved Table A amounts carried over into 2003 as extended carryover. One SWP contractor used 45,600 acre-feet of this extended carryover for flexible storage payback. Two SWP contractors had a combined total of 9,200 acre-feet of their extended carryover delivered to storage outside their service areas.

Pursuant to Article 12(e) of the Water Supply Contract, contractors can carry over approved Table A water previously scheduled during October, November, and December that was not delivered due to local outages of wet conditions. One SWP contractor took delivery of 140 acre-feet of 2002 approved Table A amounts carried over into 2003 as Article 12(e) carryover. Addi-

tionally, another SWP contractor took delivery of 187 acre-feet of 2002 approved Table A amounts carried over into 2003 as Article 45(f) carryover.

2002 Summer Allocation Carryover Program

To help contractors prepare for potentially limited water supplies in 2003, the Department provided a 2002 Summer Allocation Carryover Program on October 11, 2002. Under this program, long-term SWP contractors were allowed to carry over up to 5 percent of their 2003 Table A amounts for temporary storage in San Luis Reservoir during 2003. This program is separate from, and in addition to, other carryover programs afforded by Articles 12(e) and 56 of the long-term water supply contracts. Twelve SWP contractors took a total delivery of 89,204 acre-feet of 2002 approved Table A amounts carried over into 2003 (Table 9-3).

Dry Year Water Purchase Program

In 2003, the Department initiated a Dry Year Water Purchase Program to reduce the possibility of adverse economic impacts and hardship associated with water shortages. Two SWP contractors and two Delta farmers participated in the program by signing a Memorandum of Understanding with the Department. The program participants requested a total of 11,355 acre-feet of dry year water. To meet participant demands, the Department obtained water from Butte Water District who made it available through crop idling.

Table 9-3. 2002 Summer Allocation Carryover Program Deliveries (Acre-feet)

Contractor	Amount
AVEK	7,049
Castaic Lake	4,760
Dudley Ridge	1,452
Metropolitan	54,975
Mojave	3,528
Napa	1,055
Palmdale	1,065
San Bernardino	1,844
Santa Barbara	2,274
Santa Clara	5,000
Solano	1,918
Tulare	4,284
Total	*89,204*

The four participants and the amount of water purchased from the 2003 Dry Year Program is detailed below:

- Kern County Water Agency - 8,741 acre-feet
- Dudley Ridge Water District - 2,220 acre-feet
- Phelps Brothers - 300 acre-feet
- Ronald Conn - 94 acre-feet

The participants entered into separate 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 participants was less than the amount purchased due to the Delta being in excess conditions during all of May and most of June 2003 which prevented the transfer and conveyance of the dry year water. The cumulative amount of dry year water made available to all participants was 7,653 acre-feet.

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 project water, called EWA assets, which are used to replace the project water supply (i.e., the undelivered water). EWA assets consist of *purchase assets*,

which are acquired through purchases from willing water sellers; *variable assets*, which are acquired through changes in operations; 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.

In 2003, EWA's third operational year, a total of 316,216 acre-feet of curtailments for fish protection was requested by the management agencies between January and May. These exports occurred at Clifton Court Forebay (290,213 acre-feet) and Tracy Pumping Plants (25,799 acre-feet) in the Delta. All purchase asset acquisitions in 2003 were made by the Department as single-year transactions and environmental studies were carried out to ensure that the transactions complied with CEQA.

In fall 2002, the SWP backed approximately 20,000 acre-feet of EWA assets into Lake Oroville, transferring the debt from San Luis Reservoir to Lake Oroville. In spring 2003, heavy rains forced Oroville Reservoir into flood control status which led to the spill of 20,000 acre-feet of stored EWA water. In July, the SWP released 8,474 acre-feet of SWP water from Lake Oroville, using EWA's 500 cfs capacity at Clifton Court Forebay and creating a debt in Lake Oroville, as the likelihood of spilling EWA's debt to the SWP from Oroville Reservoir was deemed to be greater than that in San Luis Reservoir. The SWP also backed 18,922 acre-feet of EWA water (Yuba transfer) into Lake Oroville in July.

The Department and the Bureau acquired 90,591 acre-feet in variable assets and 214,914 acre-feet of purchase assets through contract agreements. A source shift was not implemented because there was no risk of low-point problems at San Luis Reservoir. The initial year of EWA operation ended with an 83,437 acre-foot credit of water for use during 2002 EWA actions. The second year of EWA operation ended with a 31,273 acre-foot credit for use during 2003 EWA actions. The third year of EWA ended with a 252 acre-foot credit for use during 2004 EWA actions.

The following section lists the SWP contractors and non-SWP contractors that participated in the EWA Program in 2003.

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.

Kern County Water Agency. An agreement executed on August 27, 2003, between the Department and Kern approved the purchase of up to 198,240 acre-feet of water stored in Kern Water Bank through the exchange of approved Table A water for support of EWA under the CALFED Program. A total of 125,000 acre-feet of Kern's water was purchased and used to repay SWP debt. (SWPAO #03704)

Yuba County Water Agency. An agreement executed on April 22, 2003, 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 65,000 acre-feet of Yuba's water was purchased. Of the total, 6,000 acre-feet was used to repay CVP debt and 59,000 was used to repay SWP debt incurred through Delta fish actions (pumping curtailments at Tracy and Banks pumping plants) (SWPAO #03702).

Santa Clara Valley Water District and Kern County Water Agency. An agreement executed on December 1, 2003, between the Department, Santa Clara, and Kern approved the purchase of up to 30,000 acre-feet of water stored in Santa Clara's portion of Semitropic Groundwater Bank through the exchange of approved Table A water for support of EWA under the CALFED Program. A total of 20,000 acre-feet of Santa Clara's water was purchased and used to repay CVP debt. No water was delivered in 2003. (SWPAO #03703)

Metropolitan Water District of Southern California and Kern County Water Agency. An agreement executed on June 4, 2003, between the Department, Metropolitan, and Kern approved the exchange of up to 36,776 acre-feet of water for support of EWA under the CALFED program. The water was delivered by Kern to the Department, conveyed through the California Aqueduct, and delivered to Metropolitan in exchange for Metropolitan's approved Table A water. A total of 29,596 acre-feet of water was exchanged and Kern provided the remaining 7,180 acre-feet directly to the Department. (SWPAO #03700)

South Feather Water and Power Agency. An agreement executed on February 21, 2003, between the Department and South Feather Water and Power Agency, formerly Oroville-Wyandotte Irrigation District, approved the transfer of up to 10,000 acre-feet of water that would otherwise remain in storage from Little Grass Valley Reservoir and Sly Creek Reservoir for support of EWA under the CALFED Program. A total of 4,914 acre-feet of South Feather's water was transferred. (SWPAO #03701)

Operational Assets

Relaxation of the Export/Import Ratio. The Department has the opportunity to gain water credits if the EWA management agencies decide that the E/I ratio can be relaxed, thus allowing the SWP and CVP to pump any extra water that the fisheries do not need. In 2003, relaxation of the E/I ratio resulted in a total of 65,780 acre-feet of water being credited to EWA. (SWPAO #03730)

EWA Share of State Gain. The Department has the opportunity to pump half the CVPIA (b)(2) releases that reach the Delta on behalf of EWA. A total of 19,208 acre-feet of water was pumped at Banks Pumping Plant in 2003, and credited to EWA. (SWPAO #03740).

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, 2003, and December 31, 2003.

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 Family Olive Company. 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.

Byron-Bethany Irrigation District. An agreement executed May 28, 2003, between the Department and Byron-Bethany Irrigation District, approved the annual diversion of up to 50,000 acre-feet of Byron-Bethany's water from the Delta for agricultural, municipal and industrial uses. Historically, Byron-Bethany diverted water from the Delta under a pre-1914 water right and the diversions were primarily for agricultural purposes during the irrigation season. Land use within the District is changing from strictly agricultural uses to a mixture of agriculture, urban, and industrial which resulted in a change in the pattern of demand within the District from sea-

sonal to year-round use. This agreement describes the nature and extent of the District's diversion rights between the District and the Department, and is effective until December 31, 2035. No water was delivered in 2003. (SWPAO #02027)

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: (1) March 1, 1996, through February 28, 1998; (2) March 1, 1998, through February 28, 2000; (3) March 1, 2000, through November 30, 2000; (4) December 1, 2000, through February 28, 2001; (5) March 1, 2001, through February 28, 2002; (6) March 1, 2002 through February 28, 2003; and (7) April 24, 2003 through February 29, 2004.

Between January 1, 2003, and December 31, 2003, the Department delivered CVP water to the CVC contractors as follows:

In May 2003, the following six CVC contractors received part of their 2003-04 approved CVP water: Kern-Tulare Water District (1,076 acre-feet), Rag Gulch Water District (357 acre-feet), Tri-Valley Water District (82 acre-feet), Hills Valley Irrigation District (242 acre-feet), Fresno County Public Works (216 acre-feet), and County of Tulare (383 acre-feet). The water delivered to the CVC contractors totaled 2,356 acre-feet. (SWPAO #s 03300, 03301, 03304, 03305, 03306, and 03307)

Department of Parks and Recreation. Water is provided for recreation facilities at several SWP lakes and reservoirs under an agreement between the Department and the Department of Parks and Recreation, dated October 28, 1971. The agreement implements the provisions of the Davis-Dolwig Act, and specifies maximum quantities of water that can be allocated to each lake per year. The lakes included in the agreement are Del Valle Reservoir, Lake Perris, Castaic Lake and Lagoon, Bethany Reservoir, and the San Luis Division facilities. Allocations to each lake are based on the percentages of Table A water allocated to SWP contractors in a given year.

Madera Irrigation District. On July 22, 2003, Madera Irrigation District requested that the Department convey 1,237 acre-feet of CVP water from the San Joaquin River Exchange Contractor Authority to Madera through SWP facilities. Under an agreement executed on March 22, 2004, the Department delivered 1,200 (1,237 minus 3 percent conveyance loss) acre-feet of water in October 2003. (SWPAO #03318)

Musco Family Olive Company. An agreement dated September 22, 2003, and executed November 21, 2003, among Musco Family Olive Company, Plain View Water District, the Department, and the Bureau, provides for the conveyance of up to 800 acre-feet of Plain View's CVP water to Reach 2A of the California Aqueduct for use by Musco Family Olive Company. A total of 719 acre-feet—95 acre-feet (SWPAO #02320) and 62 acre-feet (SWPAO #03311)—was delivered in 2003 under this agreement. Construction of a permanent turnout is currently being pursued.

U.S. Department of Veterans Affairs. A letter agreement dated November 6, 2002 and executed January 1, 2003, among the U.S. Department of Veterans Affairs, the Department, and the Bureau, provides 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 5 acre-feet was delivered to the National Cemetery in Reach 2B of the California Aqueduct in 2003 under this 2002 agreement (SWPAO #02321), and a total of 80 acre-feet was delivered to the National Cemetery in Reach 2B of the California Aqueduct in 2003 under a pending letter agreement. (SWPAO #03312)

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, 13 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. 013, executed February 3, 2002, extended the agreement through April 30, 2002, and defined the water delivery rates for 2001 and 2002. A new 5-year agreement with the Bureau for Kern National Wildlife Refuge is currently pending. The Department conveyed 14,936 acre-feet of CVP water to Kern National Wildlife Refuge in 2003.

Other Turnout Agreements. In 2003, there was one new turnout agreement with a non-SWP contractor agency.

Plain View Water District. An agreement executed October 1, 2003, between the Department and Plain View Water District, allowed the construction, operation, and maintenance of a permanent Musco Family Olive Turnout at Milepost 12.47, Reach 2A of the California Aqueduct. Construction is currently unscheduled. The agreement contains provisions for submitting plans and specifications within 1 year of executing the agreement.

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.

On October 1, 2002, SWP long-term contractors submitted initial requests for 2003.

The Department approved deliveries of 825,375 acre-feet on December 3, 2002, resulting in initial approved Table A amounts of 20 percent of most SWP contractor requests. The Department increased the 2003 approved Table A amounts to 1.86 million acre-feet, or 45 percent on January 16, 2003. As water conditions improved, approved Table A amounts were increased to 2.06 million acre-feet (50 percent) on March 28; 2.89 million acre-feet (70 percent) on April 24; and finally to 3.71 million acre-feet (90 percent) on May 16.

Notices to State Water Project Contractors informing them of increases or decreases in approved Table A amounts are online at www.swpao.water.ca.gov/notices/index.cfm.

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 2003, 4,223,255 acre-feet of water were conveyed to 27 long-term contractors and 26 other agencies. That amount includes

- 2,901,041 acre-feet of approved Table A water;
- 59,653 acre-feet of Article 21 water and 175 acre-feet of unscheduled water;
- 2,846 acre-feet of SWP water for recreation, fish and wildlife; and
- 1,037,324 acre-feet of water delivered to satisfy water rights settlement agreements and agreements with SWP contractors for local water supplies.

Figure 9-1, located before the tables at the end of the chapter, shows amounts of water delivered to various locations during 2003.

Specific information about water deliveries made to long-term contractors and other agencies during 2003 and historical deliveries from 1962 through 2003 are presented in the following three sections, each with a corresponding table, located at the end of the chapter:

- Water Delivered to Long-term Water Supply Contractors in 2003, by Service Area (Table 9-4);
- Water Delivered in 2003, by Month (Table 9-5); and
- Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-03 (Table 9-6).

Water Deliveries and Credits to Long-Term SWP Contractors

Table 9-4 shows amounts of water delivered in 2003. The following information is arranged by column number.

2003 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 2003.

Turnback Pool Water. Column 5 shows 29,770 acre-feet of turnback pool water was delivered to long-term water supply contractors in 2003.

2002 Carryover Approved Table A Water Delivered During 2003. 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 219,915 acre-feet of water was carried over from 2002 for delivery in 2003.

Total Table A Water Delivered. Column 8 shows all approved Table A water delivered in 2003—a total of 2,898,144 acre-feet.

2003 Water Bank Recoveries. Column 9 shows 72,812 acre-feet of water bank recoveries in 2003.

2003 Article 21 Water. Column 10 shows 59,828 acre-feet of 2003 Article 21 water delivered to long-term water supply contractors in 2003 (includes 59,653 acre-feet of Article 21 water and 175 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 7,388 acre-feet of Dry Year Water Purchase Program water delivered in 2003.

2003 Article 54 Flexible Storage Withdrawal Recoveries. Column 12 shows 95,797 acre-feet of Article 54, Flexible Storage Withdrawal in 2003.

Total SWP Water Delivered. Column 13 shows 3,134,769 acre-feet of total SWP water delivered in 2003. This includes total approved Table A water, water bank recoveries, Dry Year Water Purchase Program, Flexible Storage Withdrawal, and Article 21 and unscheduled water.

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 2003, nonproject water deliveries totaled 51,769 acre-feet.

Total Deliveries. Column 15 shows total amounts of water delivered to long-term contractors. In 2003, the SWP delivered 3,186,528 acre-feet to 27 long-term contractors. This amount included 2,901,041 acre-feet of approved Table A water, 59,828 acre-feet of Article 21 and unscheduled water, and 51,139 acre-feet of nonproject water.

Water Delivered in 2003 by Month

During 2003, the SWP provided water service to 53 agencies, including 27 long-term water contractors. Those agencies and the amounts of water delivered to them by month are listed in Table 9-5, and are summarized below as SWP water and nonproject water.

SWP Water. SWP water as defined in the *long-term water supply contracts,* includes Article 21 water; carryover approved Table A water; current year approved Table A amounts; flexible storage water; transfer and exchange of approved Table A water; and turnback pools A and B.

Related water includes operational flood release and recreation and fish and wildlife. There was no operational flood water released in 2003.

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 2003, 16 contractors participated in the program. A total of 59,828 acre-feet of Article 21 water was delivered to Napa, Solano, Santa Clara, County of Kings, Dudley Ridge, Castaic Lake, Metropolitan, Kern, Oak Flat, Tulare, San Luis Obispo, Santa Barbara, Coachella, Desert, San Bernardino, and San Gabriel. Empire took delivery of 175 acre-feet of unscheduled water.

2002 Carryover Approved Table A Water. In 2003, 174,315 acre-feet of 2002 approved Table A water were delivered that had been stored in SWP storage facilities in 2002.

Approved Table A Water. A total of 2,735,926 acre-feet of 2003 approved Table A water was delivered to 27 long-term contractors. Also, 174,315 acre-feet of carryover water, and 95,797 acre-feet of flexible storage withdrawal water were delivered in 2003.

Exchanges and Transfers of Approved Table A Water. During 2003, a total of 66,677 acre-feet of approved Table A water was exchanged or transferred to SWP long-term contractors and non-SWP water agencies as follows:

- Kern transferred 8,000 acre-feet to Dudley Ridge;
- Tulare transferred 4,900 acre-feet of water to Westlands and exchanged 14,103 acre-feet with Westlands;
- Metropolitan exchanged 24,874 acre-feet with Mojave;
- Dudley Ridge exchanged 8,700 acre-feet with San Gabriel and transferred 1,100 acre-feet to Tulare; and

- San Bernardino transferred 5,000 acre-feet to Metropolitan.

Turnback Pool Water. A total of 29,770 acre-feet of turnback pool water was delivered to long-term water supply contractors.

Water for Recreation and Fish and Wildlife. A total of 2,846 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife.

Recreational Use. The SWP delivered 563 acre-feet of water for facilities at Lake Oroville, Lake del Valle, O'Neill Forebay, Silverwood Lake, and Lake Perris. In addition, 1,776 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 507 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.

Water for North Bay Aqueduct Flow Test. A total of 27 acre-feet was conveyed through the North Bay Aqueduct to test the flow capacity downstream of Barker Slough Pumping Plant, following a clean out of a portion of the pipeline.

Non-SWP Water

In 2003, 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 2003, 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 2003, 1,037,324 acre-feet of water in this category were delivered to the Feather River, South Bay, North Bay, and Southern California.

Feather River Area. Ten nonproject agencies in the Feather River area received 1,008,093 acre-feet. Those agencies are

- Last Chance Creek Water District, 6,598 acre-feet
- Thermalito Irrigation District, 2,398 acre-feet
- South Feather Water and Power Agency, formerly Oroville-Wyandotte Irrigation District, 4,879 acre-feet
- Western Canal Water District, 282,251 acre-feet
- Joint Water Districts Board, 682,403 acre-feet
- Oswald Water District, 445 acre-feet
- Tudor Mutual Water Company, 3,220 acre-feet
- Garden Highway Mutual Water Company, 16,303 acre-feet
- Plumas Mutual Water Company, 8,498 acre-feet
- Dana Brothers, 1,098 acre-feet

North Bay Area. In the North Bay Area, 4,600 acre-feet of Solano permit and settlement water were delivered.

South Bay Area. In the South Bay area, a total of 17,290 acre-feet of local water was delivered to Alameda-Zone 7 (9,378 acre-feet) and Alameda County (7,912 acre-feet). These two South Bay Aqueduct contractors hold water rights to runoff from Lake Del Valle watershed.

Southern California. In Southern California, 573 acre-feet of local runoff from the Houston Creek watershed were stored and delivered to Crestline under water rights held by the Department on Houston Creek. The authorized place of use is limited to Crestline.

The Department also released 6,768 acre-feet of local water from Piru Creek to United Water Conservation District, a member unit of Ventura.

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 9-6. The following discussion of conveyed Table A water is arranged according to column numbers.

Annual Table A. Columns 1 through 7 of Table 9-6 show the amount of long-term contractor's annual Table A water by area for years 1962 through 2003 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 2003.

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 2003.

Other Water. Column 10 includes amounts of water classified as other water delivered in 2003, including nonproject water conveyed through SWP facilities and regulated delivery of local supply.

In 2003, a total of 251,447 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 2003, a total of 1,008,093 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 2003, a total of 2,846 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.

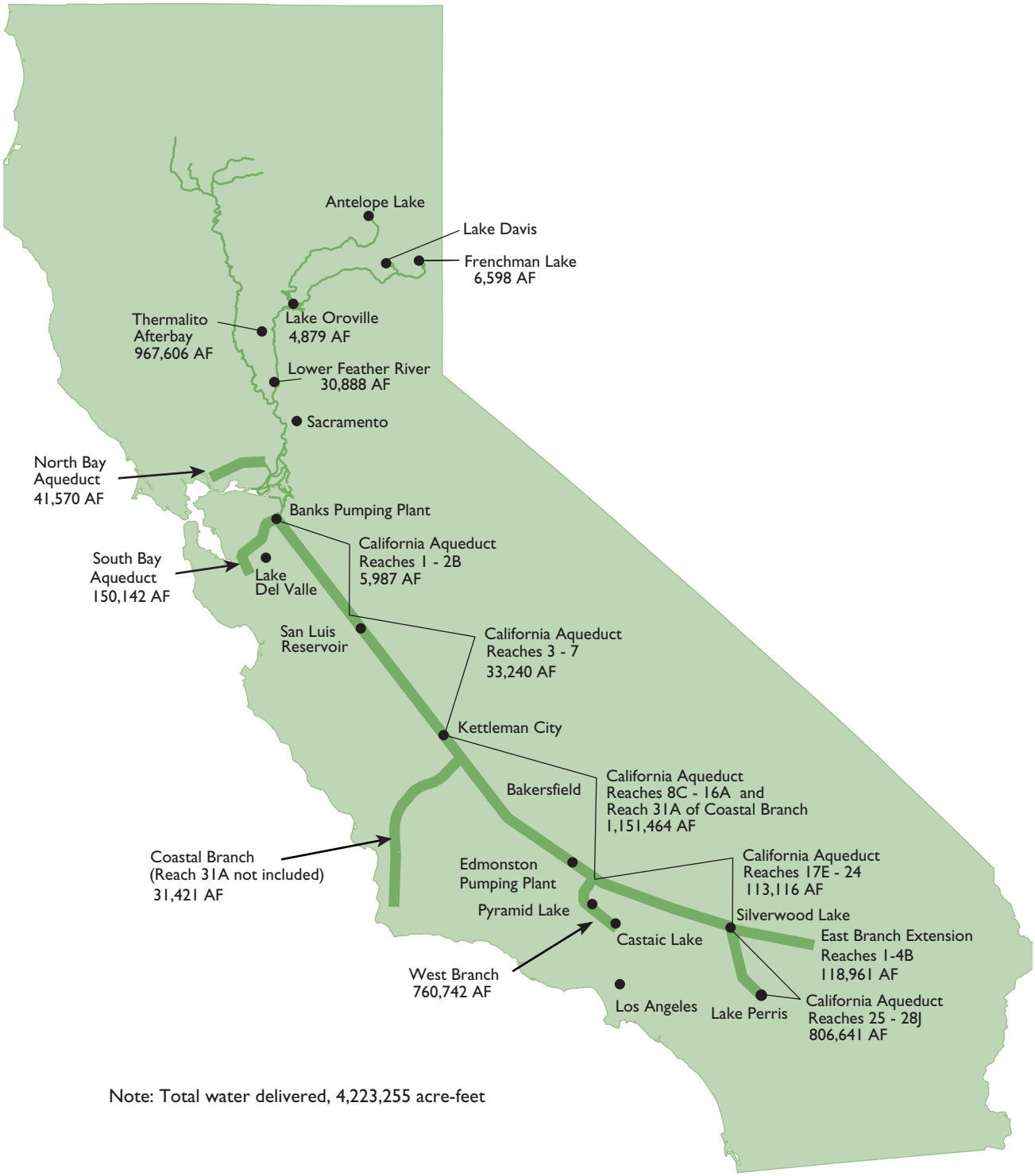


Figure 9-1. Water Delivered in 2003 and Delivery Locations of Long-Term Water Supply Contractors and Feather River Area Districts with Water Right Agreements with the Department

Table 9-4. Water Delivered to Long-Term Contractors through 2003, by Service Area (Acre-Feet)

Water Contractor or Agency	Approved Table A Water Deliveries								Water Bank Recoveries (9)	2003 Article 21 Water (10)	2003 Dry Year Water Purchase (11)	2003 Article 54 Flexible Withdrawal (12)	Total SWP Water Delivered (13)	Non-SWP Water Deliveries (14)	Total Deliveries
	2003 Table A without Transfers, Exchanges, and Storage (1)	2003 Table A Supplied (Not a Delivery) (2)	2003 Table A Delivered through Transfers and Exchanges (3)	2003 Table A Delivered to Storage (4)	Pool Water (5)	Total 2003 Table A Delivered (6)	2002 Carryover Table A Delivered during 2003 (7)	Total Table A Deliveries (8)							
Feather River Area															
County of Butte	551	0	0	0	0	551	0	551	0	0	0	0	551	0	551
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	1,324	0	0	0	0	1,324	0	1,324	0	0	0	0	1,324	0	1,324
North Bay Area															
Napa County Flood Control and Water Conservation District	6,026	0	0	0	180	6,206	1,055	7,261	0	376	0	0	7,637	0	7,637
Solano County Water Agency	25,135	0	0	0	0	25,135	1,918	27,053	0	2,280	0	0	29,333	4,600[p]	33,933
South Bay Area															
Alameda County Flood Control and Water Conservation District-Zone 7	30,695	0	0	6,500[h]	656	31,351	13,099[h]	44,450	0	0	0	0	44,450	10,378[q]	54,828
Alameda County Water District	14,986	0	0	18,800[i]	354	31,440	5,150[i]	36,590	0	0	0	0	36,590	7,912[r]	44,502
Santa Clara Valley Water District	57,000	0	0	33,000[i]	841	90,841	14,104	104,945	0	936	0	0	105,881	3,100[s]	108,981
San Joaquin Valley Area															
Castaic Lake Water Agency	3,506	0	0	0	0	3,506	0	3,506	0	495	0	0	4,001	0	4,001
County of Kings	3,600	0	0	0	34	3,634	0	3,634	0	58	0	0	3,692	0	3,692
Dudley Ridge Water District	39,274	0	9,800[c]	350[k]	482	49,906	1,452	51,358	350	1,928	1,496	0	55,132	0	55,132
Empire West Side Irrigation District	1,074	0	0	0	0	1,074	187	1,261	0	175[m]	0	0	1,436	0	1,436
Kern County Water Agency	697,169	155,565[a]	8,000[d]	0	8,419	713,588	22,380	735,968	0	27,891[n]	5,892	0	790,237	18,428[t]	808,665
Oak Flat Water District	4,059	0	0	0	48	4,107	140	4,247	0	19	0	0	4,266	0	4,266
Tulare Lake Basin Water Storage District	75,373	0	19,003[e]	0	938	95,314	4,284	99,598	0	6,243	0	0	105,841	0	105,841
Central Coastal Area															
San Luis Obispo County Flood Control and Water Conservation District	4,417	0	0	0	0	4,417	0	4,417	0	36	0	0	4,453	0	4,453
Santa Barbara County Flood Control and Water Conservation District	24,312	0	0	0	43	24,355	2,274	26,629	0	339	0	0	26,968	0	26,968
Southern California															
Antelope Valley-East Kern Water Agency	52,730	0	0	0	250	52,980	7,049	60,029	0	0	0	0	60,029	0	60,029
Castaic Lake Water Agency	46,389	0	0	0	90	46,479	4,760	51,239	0	496	0	0	51,735	0	51,735
Coachella Valley Water District	14,045	0	0	0	194	14,239	0	14,239	0	204	0	0	14,443	0	14,443
Crestline-Lake Arrowhead Water Agency	1,563	0	0	0	0	1,563	0	1,563	0	0	0	0	1,563	573[u]	2,136
Desert Water Agency	23,168	0	0	0	321	23,489	0	23,489	0	330	0	0	23,819	0	23,819
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	1,261,502	107,771[b]	24,874[f]	131,705[l]	16,920	1,435,001	134,845[w]	1,524,246	51,976	17,622[o]		95,797	1,689,641	0	1,689,641
Mojave Water Agency	10,907	0	0	0	0	10,907	3,528	14,435	0	0	0	0	14,435	0	14,435
Palmdale Water District	9,701	0	0	0	0	9,701	1,846	11,547	0	0	0	0	11,547	0	11,547
San Bernardino Valley Municipal Water District	20,371	0	5,000[g]	0	0	25,371	1,844	27,215	0	200	0	0	27,415	0	27,415
San Gabriel Valley Municipal Water District	13,034	0	0	0	0	13,034	0	13,034	0	200	0	0	13,234	0	13,234
San Gorgonio Pass Water Agency	116	0	0	0	0	116	0	116	0	0	0	0	116	0	116
Ventura County Watershed Protection District	5,000	0	0	0	0	5,000	0	5,000	0	0	0	0	5,000	6,768[v]	11,768
Total	2,447,027	263,336	66,677	190,355	29,770	2,724,629	219,915	2,898,944	72,812	59,828	7,388	95,797	3,134,769	51,769	3,186,528

[a]Kern supplied 125,000 af to EWA; exchanged 350 af of Dudley Ridge for Kern Water Bank water exchanged 10,000 af to Metropolitan for Semitropic Water Bank water; exchanged 6,436 af with Del Puerto Water District; exchanged 4,284 af with Panoche Water District; exchanged 9,495 af to San Luis Water District.

[b]Metropolitan supplied 29,596 af to EWA; used 45,600 af of carryover for flexible storage payback; used 32,575 af for flexible storage payback.

[c]Dudley Ridge exchanged 8,700 af with San Gorgonio; transferred 1,100 af to Tulare.

[d]Kern transferred 8,000 af to Dudley Ridge.

[e]Tulare exchanged 14,103 af with Westlands; transferred 4,900 af to Westlands.

[f]Metropolitan exchanged 24,874 af with Mojave.

[g]San Bernardino transferred 5,000 af to Metropolitan.

[h]6,500 af of 2002 carryover water delivered to Semitropic Water Bank (not shown in Column 6).

[i] 2,700 af of 2002 carryover water delivered to Semitropic Water Bank(not shown in Column 6).

[i]Delivered to Semitropic Water Bank.

[k]350 af delivered to Kern Water Bank.

[l]40,631 af to Arvin-Edison Water Bank, 20,134 af to Kern Delta Water Bank, and 70,940 af to Semitropic Water Bank..

[m]Empire's unscheduled water.

[n]Kern's Article 21 includes 7,180 af delivered to EWA.

[o]Metropolitan's Article 21 was used for flexible storage payback

[p]Santa Clara's permit and settlement water.

[q]Alameda Zone-7's 9,378 af of local water and 1,000 af of Byron-Bethany water.

[r]Alameda County's 7,912 af of local water.

[s]6,000 af of transferred water from Del Puerto WD, transferred 4,000 af from Panoche WD, and transferred 8,418 af from San Luis Water District.

[t]Transferred water from Browns Valley Irrigation District.

[u]Crestline's local water.

[v]Ventura's local water.

[w]Metropolitan used 45,600 af of carryover for flexible storage payback (not a delivery and not shown in Column 8).

Table 9-5. Water Delivered in 2003, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2003 Total Deliveries	2003 Contract Table A
Feather River Area														
City of Yuba City														
Approved Table A water	0	0	0	0	0	0	741	583	0	0	0	0	1,324	9,600
Pool A water sale[a]	2,320	0	0	0	0	0	0	0	0	0	0	0	2,320	
Agency total	0	0	0	0	0	0	741	583	0	0	0	0	1,324	
County of Butte														
Approved Table A water	34	18	107	62	3	95	54	24	71	5	1	77	551	3,500
Pool A water sale[a]	375	0	0	0	0	0	0	0	0	0	0	0	375	
Pool B water sale[a]	175	0	0	0	0	0	0	0	0	0	0	0	175	
Agency total	34	18	107	62	3	95	54	24	71	5	1	77	551	
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	1,690
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	0	0	0	0	0	1	1	0	1	0	0	0	3	
Last Chance Creek Water District														
Regulated delivery of local supply	0	0	0	0	1,127	2,493	1,210	990	611	167	0	0	6,598	
Thermalito Irrigation District														
Regulated delivery of local supply	31	50	123	112	193	367	402	336	301	269	112	102	2,398	
South Feather Water and Power Agency														
Regulated delivery of local supply	0	0	0	0	200	893	922	922	893	678	199	172	4,879	
Western Canal Water District														
Regulated delivery of local supply	3,130	0	0	1,110	30,937	49,316	58,530	47,044	15,467	27,994	33,700	15,023	282,251	
Joint Water Districts Board														
Regulated delivery of local supply	31,850	0	0	2,027	62,250	110,610	123,760	106,821	66,885	46,240	71,130	60,830	682,403	
Oswald Water District														
Regulated delivery of local supply	0	0	0	0	13	130	156	93	53	0	0	0	445	
Tudor Mutual Water Company														
Regulated delivery of local supply	0	0	0	0	97	961	1,025	426	553	158	0	0	3,220	
Garden Highway Mutual Water Company														
Regulated delivery of local supply	0	0	0	696	2,205	3,050	3,906	2,801	1,567	2,017	61	0	16,303	
Plumas Mutual Water Company														
Regulated delivery of local supply	0	0	0	0	645	2,123	2,432	929	1,748	621	0	0	8,498	
Dana Brothers														
Regulated delivery of local supply	0	0	0	32	189	439	285	51	25	77	0	0	1,098	
SWP	34	18	107	62	3	96	796	607	72	5	1	77	1,878	
Non-SWP	35,011	50	123	3,977	97,856	170,382	192,628	160,413	88,103	78,221	105,202	76,127	1,008,093	
Feather River Area Total	35,045	68	230	4,039	97,859	170,478	193,424	161,020	88,175	78,226	105,203	76,204	1,009,971	14,790
North Bay Area														
Napa County Flood Control and Water Conservation District														
Approved Table A water	0	42	554	690	286	578	731	681	673	473	438	880	6,026	21,475
Article 21 water	0	0	376	0	0	0	0	0	0	0	0	0	376	
2002 summer allocation carryover	335	720	0	0	0	0	0	0	0	0	0	0	1,055	
Pool A water	0	0	0	0	0	160	0	0	0	0	0	0	160	
Pool B water	0	0	0	0	0	20	0	0	0	0	0	0	20	
Flow capacity test[a]	9	0	0	0	0	0	0	0	0	0	0	0	9	
Agency Total	335	762	930	690	286	758	731	681	673	473	438	880	7,637	
Solano County Water Agency														
Approved Table A water	0	0	100	925	2,365	3,464	5,320	4,126	3,531	1,660	1,546	2,098	25,135	46,756
Article 21 water	0	0	0	0	1,210	1,070	0	0	0	0	0	0	2,280	
2002 summer allocation carryover	279	782	857	0	0	0	0	0	0	0	0	0	1,918	
Solano settlement water	0	0	0	0	0	0	0	0	0	860	0	0	860	
Vallejo permit water	0	0	0	0	0	0	0	0	26	1,338	941	1,435	3,740	
Flow capacity test[a]	18	0	0	0	0	0	0	0	0	0	0	0	18	
Agency Total	279	782	957	925	3,575	4,534	5,320	4,126	3,557	3,858	2,487	3,533	33,933	
Delivery of Dry Year Purchase Water to Non-SWP Agencies														
Dry year purchase water to Ronald Conn	0	0	0	0	0	0	0	0	0	0	63	0	63	
Dry year purchase water to the Phelps Brothers	0	0	0	0	0	0	0	0	0	0	202	0	202	
SWP	614	1,544	1,887	1,615	3,861	5,292	6,051	4,807	4,204	2,133	1,984	2,978	36,970	
Non-SWP	0	0	0	0	0	0	0	0	26	2,198	941	1,435	4,600	
North Bay Area Total	614	1,544	1,887	1,615	3,861	5,292	6,051	4,807	4,230	4,331	2,925	4,413	41,570	68,231
South Bay Area														
Alameda County Flood Control and Water Conservation District, Zone 7														
Approved Table A water	0	0	286	1,136	231	3,778	6,369	5,820	4,629	5,041	1,945	1,460	30,695	78,400
Article 56 extended carryover stored in Semitropic[a]	3,800	2,700	0	0	0	0	0	0	0	0	0	0	6,500	
Article 56(c) extended carryover	1,513	2,304	2,782	0	0	0	0	0	0	0	0	0	6,599	
Local water	283	338	292	2,255	3,904	1,185	65	39	637	34	20	326	9,378	

[a]Excluded water from Agency Total

Table 9-5. Water Delivered in 2003, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2003 Total Deliveries	2003 Contract Table A
Pool A water	0	0	0	0	0	583	0	0	0	0	0	0	583	
Pool B water	0	0	0	0	0	73	0	0	0	0	0	0	73	
Transfer water from Byron-Bethany	0	0	0	0	0	0	0	0	500	500	0	0	1,000	
Agency Total	1,796	2,642	3,360	3,391	4,135	5,619	6,434	5,859	5,766	5,575	1,965	1,786	48,328	
Alameda County Water District														
Approved Table A water	0	0	0	0	0	566	3,116	2,733	3,471	3,608	722	770	14,986	42,000
Approved Table A water stored in Semitropic[a]	0	0	0	0	10,000	6,100	0	0	0	0	0	0	16,100	
Article 56 extended carryover water stored in Semitropic[a]	2,000	700	0	0	0	0	0	0	0	0	0	0	2,700	
Article 56C extended carryover	918	1,169	363	0	0	0	0	0	0	0	0	0	2,450	
Local water	203	0	1,207	1,491	1,841	2,053	65	599	84	34	19	316	7,912	
Pool A water	0	0	0	0	0	314	0	0	0	0	0	0	314	
Pool B water	0	0	0	0	0	40	0	0	0	0	0	0	40	
Agency Total	1,121	1,169	1,570	1,491	1,841	2,973	3,181	3,332	3,555	3,642	741	1,086	25,702	
Santa Clara Valley Water District														
Advanced approved Table A water	0	0	0	0	0	0	0	0	0	0	0	620	620	100,000
Approved Table A water	0	0	3,675	4,842	6,131	6,923	7,295	6,250	9,656	4,187	3,407	4,014	56,380	
Approved Table A water stored in Semitropic[a]	0	0	0	0	0	20,000	0	0	9,500	3,500	0	0	33,000	
Article 21 water	0	0	714	222	0	0	0	0	0	0	0	0	936	
Article 56C extended carryover	24	6,871	2,209	0	0	0	0	0	0	0	0	0	9,104	
2002 Summer Allocation Carryover	5,000	0	0	0	0	0	0	0	0	0	0	0	5,000	
Pool A water	0	0	0	0	0	747	0	0	0	0	0	0	747	
Pool B water	0	0	0	0	0	94	0	0	0	0	0	0	94	
Transfer water from Browns Valley Irrigation District	0	0	0	0	0	0	0	0	0	3,100	0	0	3,100	
Agency Total	5,024	6,871	6,598	5,064	6,131	7,764	7,295	6,250	9,656	7,287	3,407	4,634	75,981	
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water, Lake Del Valle	2	2	4	4	11	19	26	21	20	15	5	2	131	
SWP	7,457	10,346	10,033	6,204	6,373	13,137	16,806	14,824	17,776	12,851	6,079	6,866	128,752	
Non-SWP	486	338	1,499	3,746	5,745	3,238	130	638	1,221	3,668	39	642	21,390	
South Bay Area Total	7,943	10,684	11,532	9,950	12,118	16,375	16,936	15,462	18,997	16,519	6,118	7,508	150,142	220,400
San Joaquin Valley Area														
Castaic Lake Water Agency	0	105	2,197	538	0	0	0	0	0	0	0	666	3,506	12,700
Approved Table A water	0	0	396	99	0	0	0	0	0	0	0	0	495	
Article 21 water	0	105	2,593	637	0	0	0	0	0	0	0	666	4,001	
Agency total														
County of Kings														
Approved Table A water	0	0	0	0	0	500	500	500	500	500	550	550	3,600	4,000
Article 21 water	0	0	50	8	0	0	0	0	0	0	0	0	58	
Pool A water	0	0	0	0	0	0	0	30	0	0	0	0	30	
Pool B water	0	0	0	0	0	0	0	4	0	0	0	0	4	
Agency Total	0	0	50	8	0	500	500	534	500	500	550	550	3,692	
Dudley Ridge Water District														
Approved Table A water	0	2,312	2,540	2,288	5,189	8,296	9,745	8,267	61	399	0	177	39,274	57,343
Approved Table A water in Kern Water Bank[a]	0	0	0	0	0	0	0	0	0	0	0	350	350	
Article 21 water	0	0	1,801	127	0	0	0	0	0	0	0	0	1,928	
Bank water recovery, Kern Water Bank	0	0	350	0	0	0	0	0	0	0	0	0	350	
2002 Summer Allocation Carryover	1,359	93	0	0	0	0	0	0	0	0	0	0	1,452	
Dry Year Water Purchase Program	0	0	0	0	0	0	0	0	0	1,249	247	0	1,496	
Exchange approved Table A water to San Gabriel[a]	0	0	0	0	0	0	0	754	2,555	2,889	2,502	0	8,700	
Pool A water	0	0	0	428	0	0	0	0	0	0	0	0	428	
Pool B water	0	0	0	54	0	0	0	0	0	0	0	0	54	
Transfer of approved water to Tulare[a]	0	0	0	0	0	0	0	0	0	1,100	0	0	1,100	
Transfer of approved from Kern	0	0	0	0	0	0	0	0	5,300	2,700	0	0	8,000	
Agency Total	1,359	2,405	4,691	2,897	5,189	8,296	9,745	8,267	5,361	4,348	247	177	52,982	
Empire West Side Irrigation District														
Approved Table A water	11	395	90	0	200	105	0	0	0	0	0	273	1,074	3,000
Carryover wet	187	0	0	0	0	0	0	0	0	0	0	0	187	
Unscheduled water	0	0	171	4	0	0	0	0	0	0	0	0	175	
Agency Total	198	395	261	4	200	105	0	0	0	0	0	273	1,436	
Kern County Water Agency														
Approved Table A water	1,630	3,446	20,468	12,373	50,130	114,180	190,415	107,059	55,209	49,607	47,967	45,768	696,252	1,000,949
Approved Table A water to EWA[a]	0	0	0	0	0	36,000	36,000	36,000	17,000	0	0	0	125,000	
Approved Table A water to Western Hills	0	0	28	110	114	155	181	104	107	81	29	8	917	
Article 21 water	0	0	18,478	2,233	0	0	0	0	0	0	0	0	20,711	
Article 21 water to EWA	0	0	7,180	0	0	0	0	0	0	0	0	0	7,180	
Article 56C extended carryover	7,031	15,177	172	0	0	0	0	0	0	0	0	0	22,380	

[a]Excluded water from Agency Total

Table 9-5. Water Delivered in 2003, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2003 Total Deliveries	2003 Contract Table A
Dry Year Water Purchase Program	0	0	0	0	0	0	0	0	0	0	5,892	0	5,892	
Exchange approved Table A water for water bank water[a]	0	0	350	0	0	0	0	0	0	0	0	0	350	
Exchange approved Table A water for water bank water[a]	0	0	0	8,867	1,133	0	0	0	0	0	0	0	10,000	
Exchange approved Table A water to Del Puerto[a]	0	0	0	0	0	0	0	0	436	0	0	0	436	
Exchange approved Table A water to Panoche[a]	0	0	0	0	0	0	0	0	284	0	0	0	284	
Exchange approved Table A water to San Luis[a]	0	0	0	0	0	0	0	0	1,067	0	0	0	1,067	
Exchange approved Table A water to Del Puerto[a]	0	0	0	0	0	0	0	0	6,000	0	0	0	6,000	
Exchange approved Table A water to Panoche[a]	0	0	0	0	0	0	0	0	1,129	750	1,168	953	4,000	
Exchange approved Table A water to San Luis[a]	0	0	0	0	0	0	0	0	2,922	4,533	973	0	8,428	
Exchange water from Del Puerto	0	4,942	979	79	0	0	0	0	0	0	0	0	6,000	
Exchange water from Panoche	0	3,070	858	72	0	0	0	0	0	0	0	0	4,000	
Exchange water from San Luis	0	5,000	3,428	0	0	0	0	0	0	0	0	0	8,428	
Pool A water	0	0	0	0	0	0	7,476	0	0	0	0	0	7,476	
Pool B water	0	0	0	0	0	0	943	0	0	0	0	0	943	
Turn-in water recovered by Kern	0	0	678	19,808	0	0	0	0	0	0	0	0	20,486	
Transfer of approved Table A water to Dudley Ridge[a]	0	0	0	0	0	0	0	0	5,300	2,700	0	0	8,000	
Deliveries to water banks in Kern														
Approved Table A water from Alameda County stored in Semitropic	3,800	2,700	0	0	0	0	0	0	0	0	0	0	6,500	
Article 56 extended carryover from Alameda-Zone 7 stored in Semitropic	0	0	0	0	10,000	6,100	0	0	0	0	0	0	16,100	
Article 56 extended carryover from Alameda County stored in Semitropic	2,000	700	0	0	0	0	0	0	0	0	0	0	2,700	
Approved Table A water from Santa Clara stored in Semitropic	0	0	0	0	0	20,000	0	0	9,500	3,500	0	0	33,000	
Approved Table A water from Dudley Ridge stored in Kern Water Bank	0	0	0	0	0	0	0	0	0	0	0	350	350	
Approved Table A water from Metropolitan stored in Semitropic	0	0	0	0	0	16,000	14,940	40,000	0	0	0	0	70,940	
Approved Table A water from Metropolitan stored in Arvin-Edison	0	0	0	0	5,477	13,990	11,799	1,900	1,400	1,520	675	3,870	40,631	
Approved Table A water from Metropolitan stored in Kern Delta	0	0	0	0	0	837	1,491	17,806	0	0	0	0	20,134	
Subtotal (Water Bank Deliveries)	5,800	3,400	0	0	15,477	56,927	28,230	59,706	10,900	5,020	675	4,220	190,355	
Agency Total[a]	14,461	35,035	45,089	34,675	65,721	171,262	227,245	166,869	66,216	54,708	52,563	49,996	983,840	
Oak Flat Water District														
Approved Table A water	0	0	0	194	635	704	926	776	416	400	7	1	4,059	5,700
Article 21 water	0	0	7	12	0	0	0	0	0	0	0	0	19	
Carryover 12(e)	0	18	122	0	0	0	0	0	0	0	0	0	140	
Pool A water	0	0	0	0	0	43	0	0	0	0	0	0	43	
Pool B water	0	0	0	0	0	5	0	0	0	0	0	0	5	
Agency Total	0	18	129	206	635	752	926	776	416	400	7	1	4,266	
Tulare Lake Basin Water Storage District														
Approved Table A water	0	1,288	1,241	2,883	1,077	14,373	12,363	20,616	1,428	3,441	12,275	4,388	75,373	111,127
Article 21 water	0	0	5,993	250	0	0	0	0	0	0	0	0	6,243	
2002 Summer Allocation Carryover	2,413	1,871	0	0	0	0	0	0	0	0	0	0	4,284	
Exchange approved Table A water to Westlands	0	0	0	0	11,103	3,000	0	0	0	0	0	0	14,103	
Pool A water	0	0	0	0	0	0	818	15	0	0	0	0	833	
Pool B water	0	0	0	0	0	0	102	3	0	0	0	0	105	
Transfer approved Table A water to Westlands	0	0	0	0	0	3,200	0	0	0	0	0	700	3,900	
Transfer approved Table A water to Westlands	0	0	0	0	250	250	250	0	0	0	250	0	1,000	
Transfer approved Table A water from Dudley	0	0	0	0	0	0	0	0	0	1,100	0	0	1,100	
Agency Total	2,413	3,159	7,234	3,133	1,077	14,373	13,283	20,634	1,428	4,541	12,275	4,388	87,938	
Westlands Water District														
Exchange approved Table A water from Tulare	0	0	0	0	11,103	3,000	0	0	0	0	0	0	14,103	
Transfer approved Table A water from Tulare	0	0	0	0	0	3,200	0	0	0	0	0	700	3,900	
Transfer approved Table A water from Tulare	0	0	0	0	250	250	250	0	0	0	250	0	1,000	
Agency Total	0	0	0	0	11,353	6,450	250	0	0	0	250	700	19,003	
Recreation/Fish and Wildlife														
Department of Fish and Game, O'Neill Forebay/Lateral 4	23	14	37	3	55	63	93	30	37	37	62	53	507	
Department of Parks and Recreation, O'Neill Forebay/San Luis/Cattle	3	0	2	5	9	10	17	11	9	6	1	1	74	
Total	26	14	39	8	64	73	110	41	46	43	63	54	581	
SWP	18,457	28,119	62,001	41,447	84,239	201,811	252,059	197,121	73,967	63,291	59,816	56,805	1,139,103	
Non-SWP	0	13,012	5,265	151	0	0	0	0	0	1,249	6,139	0	25,816	
San Joaquin Valley Area subtotal	18,457	41,131	67,266	41,568	84,239	201,811	252,059	197,121	73,967	64,540	65,955	56,805	1,164,919	
Other non-SWP Water Conveyed														
Tracy Golf and Country Club	0	0	0	0	0	0	0	0	0	0	0	0	0	
CVP Water Conveyed–Annual Contracts														
Plain View Water District/ Musco Family Olive Company	44	51	0	0	0	0	0	0	0	0	0	0	95	
Plain View Water District/ Musco Family Olive Company	0	0	62	64	63	71	72	72	74	87	56	3	624	
U.S. Department of Veteran Affairs, S.J.V. National Cemetery	1	4	0	0	0	0	0	0	0	0	0	0	5	
U.S. Department of Veteran Affairs, S.J.V. National Cemetery	0	0	3	4	7	9	14	16	15	7	3	2	80	
Subtotal	45	55	65	68	70	80	86	88	89	94	59	5	804	

[a]Excluded water from Agency Total

Table 9-5. Water Delivered in 2003, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2003 Total Deliveries	2003 Contract Table A
Cross Valley Canal Contracts														
CVP water to Tulare	0	0	0	383	0	0	0	0	0	0	0	0	383	
CVP water to Fresno County Public Works	0	0	0	216	0	0	0	0	0	0	0	0	216	
CVP water to Hills Valley Irrigation District	0	0	242	0	0	0	0	0	0	0	0	0	242	
CVP water to Kern-Tulare	0	0	0	1,076	0	0	0	0	0	0	0	0	1,076	
CVP water to Rag Gulch	0	0	0	357	0	0	0	0	0	0	0	0	357	
CVP water to Tri-Valley Irrigation District	0	0	0	82	0	0	0	0	0	0	0	0	82	
Agency Total	0	0	242	2,114	0	0	0	0	0	0	0	0	2,356	
Bureau of Reclamation														
Conveyance of nonproject water to O'Neill Forebay	0	0	0	0	0	0	0	0	6,000	0	0	0	6,000	
Kern National Wildlife Refuge	1,136	2,139	1,291	220	236	145	0	1,008	3,497	0	1,255	4,009	14,936	
Recreation/fish and wildlife water	18	13	34	5	53	60	88	35	38	37	52	43	476	
Transfer of water to Madera Water District	0	0	0	0	0	0	0	0	0	1,200	0	0	1,200	
Agency Total	0	0	0	0	0	0	0	0	6,000	1,200	0	0	7,200	
SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
Non-SWP	45	55	307	2,182	70	80	86	88	6,089	1,294	59	5	25,772	
San Joaquin Valley Area subtotal	45	55	307	2,182	70	80	86	88	6,089	1,294	59	5	25,772	
SWP (Total)	18,457	28,119	62,001	41,417	84,239	201,811	252,059	197,121	73,967	63,291	59,816	56,805	1,139,103	
Non-SWP (Total)	45	13,067	5,572	2,333	70	80	86	88	6,089	2,543	6,198	5	51,588	
San Joaquin Valley Area Total	18,502	41,186	67,573	43,750	84,309	201,891	252,145	197,209	80,056	65,834	66,014	56,810	1,190,691	1,194,819
Central Coastal Area														
San Luis Obispo County Flood Control and Water Conservation District														
Approved Table A water	180	352	330	325	398	452	476	493	441	423	266	281	4,417	25,000
Article 21 water	0	0	24	12	0	0	0	0	0	0	0	0	36	
Agency Total	180	352	354	337	398	452	476	493	441	423	266	281	4,453	
Santa Barbara County Flood Control and Water Conservation District														
Approved Table A water	0	665	1,887	2,761	3,322	3,193	3,089	2,942	2,686	1,799	717	1,251	24,312	45,486
Article 21 water	0	0	236	103	0	0	0	0	0	0	0	0	339	
Carryover special (2002)	1,414	860	0	0	0	0	0	0	0	0	0	0	2,274	
Pool B water	0	0	0	43	0	0	0	0	0	0	0	0	43	
Agency Total	1,414	1,525	2,123	2,907	3,322	3,193	3,089	2,942	2,686	1,799	717	1,251	26,968	
SWP	1,594	1,877	2,477	3,244	3,720	3,645	3,565	3,435	3,127	2,222	983	1,532	31,421	
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0	
Central Coastal Area Total	1,594	1,877	2,477	3,244	3,720	3,645	3,565	3,435	3,127	2,222	983	1,532	31,421	70,486
Southern California Area														
Antelope Valley-East Kern Water Agency														
Approved Table A water	0	0	187	3,253	5,074	6,972	8,946	8,224	6,797	5,846	3,984	3,447	52,730	141,400
2002 Summer Allocation Carryover	2,274	2,143	2,632	0	0	0	0	0	0	0	0	0	7,049	
Pool A water	0	0	0	0	0	250	0	0	0	0	0	0	250	
Mojave's Approved Table A water delivered through AVEK	0	0	0	84	0	0	162	202	155	108	81	24	816	
Agency Total	2,274	2,143	2,819	3,337	5,074	7,222	9,108	8,426	6,952	5,954	4,065	3,471	60,845	
Castaic Lake Water Agency														
Approved Table A water	0	0	1,964	3,262	3,481	4,122	5,578	5,659	5,216	4,856	3,088	2,395	39,621	82,500
Approved Table A water to the Department	0	0	0	0	768	2,000	2,737	1,263	0	0	0	0	6,768	
Article 21 water	0	0	397	99	0	0	0	0	0	0	0	0	496	
2002 Summer Allocation Carryover	2,609	1,931	220	0	0	0	0	0	0	0	0	0	4,760	
Pool B water	0	0	0	0	0	90	0	0	0	0	0	0	90	
Agency Total	2,609	1,931	2,581	3,361	3,481	4,212	5,578	5,659	5,216	4,856	3,088	2,395	44,967	23,100
Coachella Valley Water District														
Approved Table A water	0	0	0	2,310	2,310	2,310	2,310	3,557	1,248	0	0	0	14,045	(1,748)
Article 21 water	0	0	152	52	0	0	0	0	0	0	0	0	204	
Pool A water	0	0	0	172	0	0	0	0	0	0	0	0	172	
Pool B water	0	0	0	0	0	22	0	0	0	0	0	0	22	
Agency Total	0	0	152	2,534	2,310	2,332	2,310	3,557	1,248	0	0	0	14,443	
Crestline-Lake Arrowhead Water Agency														
Approved Table A water	146	24	0	0	0	166	263	269	250	229	180	36	1,563	5,800
Local water	0	98	122	110	113	28	0	0	0	0	0	102	573	
Agency Total	146	122	122	110	113	194	263	269	250	229	180	36	2,136	
Desert Water Agency														
Approved Table A water	0	0	0	3,810	3,810	3,810	3,810	5,869	2,059	0	0	0	23,168	38,100
Article 21 water	0	0	246	84	0	0	0	0	0	0	0	0	330	
Pool A water	0	0	0	285	0	0	0	0	0	0	0	0	285	
Pool B water	0	0	0	0	0	36	0	0	0	0	0	0	36	
Agency Total	0	0	246	4,179	3,810	3,846	3,810	5,869	2,059	0	0	0	23,819	
Littlerock Creek Irrigation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	2,300
Agency Total	0	0	0	0	0	0	0	0	0	0	0	0	0	
Metropolitan Water District of Southern California														
Approved Table A water	0	0	77,525	101,953	134,116	121,735	152,455	154,742	145,886	150,859	115,721	106,510	1,261,502	2,011,500

[a]Excluded water from Agency Total

Table 9-5. Water Delivered in 2003, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2003 Total Deliveries	2003 Contract Table A
Approved Table A water to EWA[a]	0	0	0	0	29,596	0	0	0	0	0	0	0	29,596	
Approved Table A water stored in Semitropic[a]	0	0	0	0	0	16,000	14,940	40,000	0	0	0	0	70,940	
Approved Table A water stored in Arvin-Edison[a]	0	0	0	0	5,477	13,990	11,799	1,900	1,400	1,520	675	3,870	40,631	
Approved Table A water stored in Kern Delta[a]	0	0	0	0	0	837	1,491	17,806	0	0	0	0	20,134	
Article 56(c) extended carryover	0	0	34,270	0	0	0	0	0	0	0	0	0	34,270	
Bank water recovery, Arvin-Edison	5,795	1,502	0	0	0	0	0	0	0	0	0	0	7,297	
Bank water recovery, Arvin-Edison	0	4,186	897	0	0	0	0	0	0	0	0	0	5,083	
Bank water recovery, Semitropic	0	0	0	8,867	1,133	0	0	0	0	0	0	0	10,000	
2002 Summer Allocation Carryover	27,803	23,018	4,154	0	0	0	0	0	0	0	0	0	54,975	
Exchange approved water in behalf of EWA	12,287	15,309	2,000	0	0	0	0	0	0	0	0	0	29,596	
Exchange approved water to Mojave[a]	0	0	0	0	0	0	0	0	0	0	4,683	20,191	24,874	
Flexible storage replacement with Article 21 water (Lake Perris)	0	0	1,139	0	0	0	0	0	0	0	0	0	1,139	
Flexible storage replacement with Article 21 water (Castaic Lake)	0	0	12,000	4,483	0	0	0	0	0	0	0	0	16,483	
Flexible storage replacement with carryover special water (Lake Perris)[a]	0	1,100	0	0	0	0	0	0	0	0	0	0	1,100	
Flexible storage replacement with carryover special water (Castaic Lake)[a]	0	6,000	38,500	0	0	0	0	0	0	0	0	0	44,500	
Flexible storage replacement with Table A water (Lake Perris)[a]	0	0	0	15,754	0	0	0	0	0	0	0	0	15,754	
Flexible storage replacement with Table A water (Castaic Lake)[a]	0	0	0	16,821	0	0	0	0	0	0	0	0	16,821	
Flexible storage withdrawal (Lake Perris)	9,712	8,281	0	0	0	0	0	0	0	0	0	0	17,993	
Flexible storage withdrawal (Castaic Lake)	36,059	41,745	0	0	0	0	0	0	0	0	0	0	77,804	
Pool A water	0	0	0	15,024	0	0	0	0	0	0	0	0	15,024	
Pool B water	0	0	0	0	0	1,896	0	0	0	0	0	0	1,896	
Transfer approved Table A water from Santa Barbara	0	0	0	0	0	0	0	0	0	0	0	5,000	5,000	
Agency Total	91,656	94,041	131,985	130,327	135,249	123,631	152,455	154,742	145,886	150,859	115,721	111,510	1,538,062	
Mojave Water Agency														
Approved Table A water	0	0	395	2,211	1,025	678	1,024	908	1,288	1,871	433	258	10,091	75,800
Mojave's approved Table A water delivered through AVEK	0	0	0	84	0	0	162	202	155	108	81	24	816	
2002 Summer Allocation Carryover	502	671	2,355	0	0	0	0	0	0	0	0	0	3,528	
Exchange approved water from Metropolitan	0	0	0	0	0	0	0	0	0	0	4,683	20,191	24,874	
Pool A water sale[a]	16,900	0	0	0	0	0	0	0	0	0	0	0	16,900	
Pool B water sale[a]	2,500	0	0	0	0	0	0	0	0	0	0	0	2,500	
Agency Total[a]	502	671	2,750	2,211	1,025	678	1,024	908	1,288	1,871	5,116	20,449	38,493	
Palmdale Water District														
Approved Table A water	0	0	148	688	1,021	1,333	1,810	746	1,170	1,566	1,042	177	9,701	21,300
Article 56(c) extended carryover	0	0	781	0	0	0	0	0	0	0	0	0	781	
2002 Summer Allocation Carryover	421	565	79	0	0	0	0	0	0	0	0	0	1,065	
Agency Total	421	565	1,008	688	1,021	1,333	1,810	746	1,170	1,566	1,042	177	11,547	
San Bernardino Valley Municipal Water District														
Approved Table A water	0	0	0	959	865	1,096	1,986	2,384	3,266	3,579	2,541	3,695	20,371	102,600
Article 21 water	0	0	120	80	0	0	0	0	0	0	0	0	200	
2002 Summer Allocation Carryover	1,177	597	70	0	0	0	0	0	0	0	0	0	1,844	
Table A transfer to Metropolitan[a]	0	0	0	0	0	0	0	0	0	0	0	5,000	5,000	
Agency Total	1,177	597	190	1,039	865	1,096	1,986	2,384	3,266	3,579	2,541	3,695	22,415	
San Gabriel Valley Municipal Water District														
Approved Table A water	0	0	0	746	2,713	2,613	2,686	1,936	0	0	0	2,340	13,034	28,800
Article 21 water	0	0	136	64	0	0	0	0	0	0	0	0	200	
Exchange approved water from Dudley	0	0	0	0	0	0	0	754	2,555	2,889	2,502	0	8,700	
Agency Total	0	0	136	810	2,713	2,613	2,686	2,690	2,555	2,889	2,502	2,340	21,934	
San Gorgonio Pass Water Agency														
Approved Table A water	0	0	0	0	0	0	2	14	13	22	26	39	116	4,000
Agency Total	0	0	0	0	0	0	2	14	13	22	26	39	116	
Ventura County Watershed Protection District														
Approved Table A water	154	154	154	154	484	1,186	572	1,501	177	154	154	156	5,000	20,000
Local water from the Department to United Conservation District	0	0	0	0	768	2,000	2,737	1,263	0	0	0	0	6,768	
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]	750	0	0	0	0	0	0	0	0	0	0	0	750	
Agency Total	154	154	154	154	1,252	3,186	3,309	2,764	177	154	154	156	11,768	
Recreation/Fish and Wildlife														
Castaic Lake	13	0	16	17	30	34	50	46	50	45	23	32	356	
Castaic Lake to Lagoon	256	0	0	0	0	0	168	182	292	297	0	225	1,420	
Silverwood Lake	2	2	2	2	6	13	18	15	15	14	3	3	95	
Lake Perris	0	0	3	3	2	39	49	47	44	30	18	25	260	
Agency Total	271	2	21	22	38	86	285	290	401	386	44	285	2,131	
Recreation/Fish and Wildlife														
USFWS recreation/fish and wildlife water (Pyramid Lake)	1	1	1	1	1	3	2	2	2	2	0	0	16	
SWP	99,210	100,128	142,042	148,662	156,838	150,401	184,626	188,318	170,481	172,365	134,479	144,553	1,792,103	
Non-SWP	1	99	123	111	882	2,031	2,739	1,265	2	2	0	102	7,357	
Southern California Area Total	99,211	100,227	142,165	148,773	157,720	152,432	187,365	189,583	170,483	172,367	134,479	144,655	1,799,460	2,558,200
SWP Water														
SWP Approved Table A Water														
Agricultural and M&I approved water	2,155	8,801	113,876	148,557	241,225	362,310	453,892	407,954	261,304	245,734	195,795	186,579	2,628,182	

[a]Excluded water from Agency Total

[b]EWA water is not included in the Grand Total to prevent double counting.

Table 9-5. Water Delivered in 2003, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2003 Total Deliveries	2003 Contract Table A
Agricultural and M&I approved water for EWA[a]	0	0	0	0	29,596	36,000	36,000	36,000	17,000	0	0	0	154,596	
Article 21 water	0	0	29,126	3,445	1,210	1,070	0	0	0	0	0	0	34,851	
Article 21 water for EWA	0	0	7,180	0	0	0	0	0	0	0	0	0	7,180	
Article 56(c) extended carryover	15,286	28,921	40,577	0	0	0	0	0	0	0	0	0	84,784	
2002 Summer Allocation Carryover	45,586	33,251	10,367	0	0	0	0	0	0	0	0	0	89,204	
Carryover 12(e) carryover	0	18	122	0	0	0	0	0	0	0	0	0	140	
Carryover (wet)	187	0	0	0	0	0	0	0	0	0	0	0	187	
Exchange approved water	0	0	0	0	11,103	3,000	0	754	2,555	2,889	7,185	20,191	47,677	
Exchange approved water for banked water[a]	0	0	350	8,867	1,133	0	0	0	0	0	0	0	10,350	
Exchange approved water for nonproject water supplied[a]	0	0	0	0	0	0	0	0	11,838	5,283	2,141	953	20,215	
Exchange banked water in behalf of EWA	12,287	15,309	2,000	0	0	0	0	0	0	0	0	0	29,596	
Flexible storage replacement with Article 21 water (Lake Perris)	0	0	1,139	0	0	0	0	0	0	0	0	0	1,139	
Flexible storage replacement with Article 21 water (Castaic Lake)	0	0	12,000	4,483	0	0	0	0	0	0	0	0	16,483	
Flexible storage replacement with carryover water (Lake Perris)[a]	0	1,100	0	0	0	0	0	0	0	0	0	0	1,100	
Flexible storage replacement with carryover water (Castaic Lake)[a]	0	6,000	38,500	0	0	0	0	0	0	0	0	0	44,500	
Flexible storage replacement (Lake Perris)[a]	0	0	0	15,754	0	0	0	0	0	0	0	0	15,754	
Flexible storage replacement (Castaic Lake)[a]	0	0	0	16,821	0	0	0	0	0	0	0	0	16,821	
Flexible storage withdrawal (Lake Perris)	9,712	8,281	0	0	0	0	0	0	0	0	0	0	17,993	
Flexible storage withdrawal (Castaic Lake)	36,059	41,745	0	0	0	0	0	0	0	0	0	0	77,804	
Flow capacity test[a]	27	0	0	0	0	0	0	0	0	0	0	0	27	
Pool A water	0	0	0	15,909	0	2,097	8,294	45	0	0	0	0	26,345	
Pool B water	0	0	0	97	0	2,276	1,045	7	0	0	0	0	3,425	
Pool A water sale[a]	26,345	0	0	0	0	0	0	0	0	0	0	0	26,345	
Pool B water sale[a]	3,425	0	0	0	0	0	0	0	0	0	0	0	3,425	
Pump-in recoveries	0	0	678	19,808	0	0	0	0	0	0	0	0	20,486	
Transfer approved water	0	0	0	0	250	3,450	250	0	5,300	3,800	250	5,700	19,000	
Unscheduled water	0	0	171	4	0	0	0	0	0	0	0	0	175	
Water Bank water recoveries	5,795	5,688	1,247	8,867	1,133	0	0	0	0	0	0	0	22,730	
Agency Total	127,067	142,014	218,483	201,170	254,921	374,203	463,481	408,760	269,159	252,423	203,230	212,470	3,127,381	
SWP Table A-related water														
Recreation/fish and wildlife water	299	18	64	34	113	179	422	352	468	444	112	341	2,846	
Subtotal (SWP water)	127,366	142,032	218,547	201,204	255,034	374,382	463,903	409,112	269,627	252,867	203,342	212,811	3,130,227	
Non-SWP Water														
Other water														
Dry Year Purchase Program	0	0	0	0	0	0	0	0	0	1,249	6,139	0	7,388	
Conveyance of nonproject water to O'Neill Forebay	0	0	0	0	0	0	0	0	6,000	0	0	0	6,000	
Local	35,497	486	1,744	7,833	104,482	175,648	195,495	162,314	88,824	78,289	105,241	76,871	1,032,724	
Solano settlement water	0	0	0	0	0	0	0	0	0	860	0	0	860	
Vallejo permit water	0	0	0	0	0	0	0	0	26	1,338	941	1,435	3,740	
Subtotal	35,497	486	1,744	7,833	104,482	175,648	195,495	162,314	94,850	81,437	112,321	78,306	1,049,235	
CVP Water														
Conveying water to CVP contractor	0	0	0	242	2,114	0	0	0	0	0	0	0	2,356	
Conveying CVP water annual contract	45	55	65	68	70	80	86	88	89	94	59	5	804	
Conveying CVP water (Kern National Wildlife Refuge–the Bureau)	1,136	2,139	1,291	220	236	145	0	1,008	3,497	0	1,255	4,009	14,936	
Conveying CVP water recreation/fish and wildlife water (San Luis/Pyramid)	19	14	35	6	54	63	90	37	40	39	52	43	492	
Delivery of CVP water from CVP/CVC to SWP contractor	0	13,012	5,265	151	0	0	0	0	0	0	0	0	18,428	
Transfer of CVP water to SWP contractor	0	0	0	0	0	0	0	0	500	3,600	0	0	4,100	
Transfer of CVP/CVC water to CVP contractor	0	0	0	0	0	0	0	0	0	1,200	0	0	1,200	
Subtotal (CVP water)	1,200	15,220	6,656	687	2,474	288	176	1,133	4,126	4,933	1,366	4,057	42,316	
Total (Non-SWP water)	36,697	15,706	8,400	8,520	106,956	175,936	195,671	163,447	98,976	86,669	113,687	82,363	1,093,028	
Grand Total	164,063	157,738	226,947	209,724	361,990	550,318	659,574	572,559	368,603	339,536	317,029	295,174	4,223,255	4,126,926

[a]Excluded water from Agency Total

Table 9-6. Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-03 (Acre-feet)

Year	Annual Table A Water According to Long-Term Water Supply Contract							Water Conveyed								
								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)**	**Total (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	4,134,698
2003	14,790	68,231	220,400	1,194,819	70,486	2,558,200	4,126,926	2,901,041	59,828	251,447	1,008,093	2,846	4,223,255	0	459,377	4,682,632
Total	**223,280**	**711,534**	**5,567,038**	**33,040,776**	**1,152,372**	**59,707,709**	**100,402,709**	**59,059,556**	**6,752,710**	**8,240,690**	**30,659,435**	**132,522**	**104,844,913**	**1,834,310**	**725,916**	**107,405,139**

[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.

Information for this chapter was provided by the State Water Project Analysis Office.

Chapter 10
Power Resources



East Branch Extension Crafton Hills pumping station.
Air chambers can be seen in the rear right.

Significant Events in 2003

- Energy used at the 25 State Water Project pumping and generating plants totaled 9.18 million MWh.
- The Department sold 1.00 million MWh of energy to utilities and power marketers, for total revenues of $56.02 million. The Department also received $34.74 million in revenues for capacity and exchanges, including $23.35 million for transactions made through the Independent System Operator.
- The Department purchased 2.81 million MWh of energy at a cost of $96.49 million. Associated costs for capacity totaled $20.54 million. The Department incurred an additional $100.38 million for transmission and other services and costs, including $24.91 million for transactions made through the Independent System Operator.



Long-term State Water Project contractors depend on the SWP to provide economical sources of power to deliver affordable water. In response 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 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.

Also 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 and 2003, the Department worked closely with 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 also 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 requires

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. On January 11, 2001, FERC approved the Department's request.

During calendar year 2003, primary achievements included

- submitting the Final National Environmental Policy Act Scoping Document 2 and California Environmental Quality Act Revised Notice of Preparation to FERC;
- developing a Resource Action Identification (protection, mitigation, and enhancement) form for stakeholders to submit proposed protection, mitigation, and enhancement measures;
- hosting operations modeling seminars for stakeholders to understand the relationship between proposed resource actions and operations modeling analyses, performing sensitivity analyses, and completing benchmark studies;
- developing negotiations protocols and obtaining consensus from stakeholders on the negotiations process;
- reviewing and categorizing numerous resource action proposals for either Preliminary Draft Environmental Assessment analysis or settlement consideration;
- initiating early consultation with U.S. Fish and Wildlife Service on Endangered Species Act issues as well as gaining approval from FERC to begin discussions with NOAA Fisheries for similar early ESA consultation; and
- continuing field studies to support the Department's license application.

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

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—Alamo, Devil Canyon, Gianelli, Mojave Siphon, and Warne—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
- operating characteristics

The Department continues to consider several potential power resources. These include a second unit at Alamo Power Plant and a third unit at Warne Power Plant.

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 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



Figure 10-1. Names, Locations, and Nameplate Capacity of Primary Power Facilities

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.

Under the December 26, 2002, *Settlement Agreement,* the Department and SCE 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 in accordance with 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 expire in 2004. The Department developed the Post 2004 Program to establish new power and transmission contracts to replace 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 these 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
- 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. This 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 2003, the Department also bought and sold excess energy not sold through bilateral agreements.

SWP Power Operation in 2003

Tables 10-1 through 10-4 present actual information about SWP power operation for calendar year 2003, including energy consumed and generated, energy exchanged and purchased, and energy sold.

Energy Consumed

Energy used at the 25 SWP pumping and generating plants totaled 9.18 million MWh.

Table 10-1 shows the amount of energy used each month at SWP pumping and generating plants to operate the SWP in 2003.

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 2003, 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 2.03 million MWh of energy.

Energy generated at SWP recovery plants—Alamo, Devil Canyon, Mojave Siphon, and Warne—totaled 1.67 million MWh.

The SWP share of energy generated at the coal-fired Reid Gardner Unit 4 totaled 1.6 million MWh of energy.

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 2003, LADWP provided 691,417 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 343,220 MWh and generated 203,356 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

Table 10-1. Energy Used at Pumping Plants and Power Plants in 2003, by Month (Millions of Kilowatt-Hours)

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)	0.124	8.602	15.785	20.489	5.545	0.000	0.000	0.013	0.019	0.022	0.001	0.184	50.784
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	0.270	0.619	0.819	0.743	0.613	0.995	1.035	0.970	0.964	0.960	0.622	0.981	9.590
Barker Slough Pumping Plant	0.122	0.288	0.362	0.327	0.840	1.189	1.378	1.046	0.877	0.982	0.590	0.881	8.882
South Bay Pumping Plant	2.885	6.397	11.718	10.597	8.532	12.972	13.036	11.726	11.056	11.811	2.836	6.194	109.760
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	0.008	0.224	0.300	0.008	0.007	0.009	0.007	0.023	0.008	0.008	0.007	0.617
Banks Pumping Plant	100.665	99.472	108.785	42.880	15.668	99.934	114.185	120.781	111.653	51.338	63.470	73.634	1,002.465
Gianelli Pumping-Generating Plant (SWP share)	75.208	75.154	45.076	21.623	0.808	15.704	5.326	12.995	33.411	6.764	21.714	29.440	343.220
Dos Amigos Pumping Plant (SWP share)	11.042	9.089	31.306	25.160	37.950	60.851	55.953	52.008	32.966	27.242	25.503	33.295	402.364
Buena Vista Pumping Plant	12.920	12.113	42.634	42.751	47.433	43.760	49.221	54.498	44.294	36.067	32.285	40.379	458.355
Teerink Pumping Plant	15.836	14.526	46.893	46.782	50.614	44.694	50.078	57.018	47.543	38.942	35.719	45.231	493.877
Chrisman Pumping Plant	35.364	32.170	104.722	104.150	111.774	97.501	109.499	126.080	104.821	86.414	80.037	101.527	1,094.060
Edmonston Pumping Plant	129.812	118.012	386.013	383.156	409.975	353.305	396.903	462.284	385.435	316.452	294.487	375.294	4,011.127
Alamo Power Plant (station service)	0.060	0.081	0.079	0.073	0.067	0.015	0.001	0.000	0.002	0.002	0.003	0.053	0.435
Pearblossom Pumping Plant	28.856	28.705	55.406	51.815	62.491	57.378	64.055	63.212	63.822	59.366	45.655	51.077	631.837
Pine Flat Power Plant	0.067	0.227	0.067	0.068	0.000	0.001	0.000	0.000	0.000	0.122	0.235	0.207	0.993
Mojave Siphon Power Plant (station service)	0.005	0.008	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.023
Devil Canyon Power Plant (station service)	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.076	0.125
Oso Pumping Plant	3.097	1.790	21.781	23.010	21.058	15.928	17.761	26.199	17.433	11.700	15.238	22.581	197.576
Warne Power Plant (station service)	0.565	0.332	0.019	0.002	0.044	0.057	0.001	0.000	0.146	0.029	0.002	0.010	1.207
Las Perillas Pumping Plant	0.170	0.336	0.643	0.660	0.850	1.136	1.303	1.097	0.709	0.535	0.188	0.234	7.861
Badger Hill Pumping Plant	0.418	0.901	1.684	1.733	2.255	2.965	3.386	2.837	1.862	1.389	0.452	0.574	20.457
Devil's Den Pumping Plant	1.114	1.297	1.773	2.326	2.678	2.637	2.571	2.481	2.242	1.569	0.723	1.135	22.545
Bluestone Pumping Plant	1.056	1.228	1.684	2.224	2.573	2.545	2.480	2.365	2.130	1.474	0.682	1.071	21.511
Polonio Pass Pumping Plant	1.137	1.319	1.785	2.309	2.647	2.612	2.550	2.456	2.227	1.579	0.731	1.162	22.515
Subtotal	*420.843*	*412.675*	*879.265*	*783.179*	*784.424*	*816.186*	*890.731*	*1,000.072*	*863.636*	*654.768*	*621.190*	*785.231*	*8,912.199*
Deviation Adjustments	4.670	18.270	12.457	(0.572)	37.864	66.284	2.075	24.382	19.751	27.845	34.112	15.999	263.138
Total Energy Required for SWP	425.513	430.946	891.722	782.607	822.288	882.470	892.806	1,024.454	883.387	682.614	655.302	801.230	9,175.337

Table 10-2. Energy Generated and Purchased in 2003, by Month (Millions of Kilowatt-Hours)

Sources of Energy	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
SWP Energy Sources													
Hyatt-Thermalito Power Plant	58.889	161.478	49.901	44.260	153.028	226.402	483.349	317.098	171.804	114.585	140.792	111.891	2,033.478
Gianelli Pumping-Generating Plant (SWP share)	0.000	0.000	3.866	30.685	59.729	39.257	15.994	9.708	0.309	12.765	12.951	18.090	203.356
Alamo Power Plant	2.649	0.000	0.000	0.000	0.000	7.727	10.864	11.571	10.862	10.104	8.331	3.449	65.557
Mojave Siphon Power Plant	3.228	3.221	6.348	5.787	7.262	6.514	7.480	7.321	7.367	6.073	4.731	5.553	70.884
Devil Canyon Power Plant	53.011	56.245	98.854	90.971	112.946	104.565	113.989	115.932	112.335	106.036	74.062	72.159	1,111.106
Reid Gardner Unit 4[a]	126.319	120.498	146.969	96.048	67.644	152.450	155.940	149.934	121.443	170.477	163.773	131.950	1,603.445
Warne Power Plant	5.610	3.990	46.330	49.324	45.440	34.028	39.312	55.099	35.809	26.025	34.170	47.866	423.003
Subtotal	249.707	345.433	352.267	317.075	446.050	570.942	826.928	666.664	459.929	446.066	438.810	390.959	5,510.829
Energy Sources from Long-Term Agreements													
Castaic Power Plant	7.559	9.080	65.161	85.452	81.447	57.998	64.673	86.759	59.186	42.359	52.828	78.915	691.417
Metropolitan Small Hydro Generation	13.094	10.460	12.786	13.455	19.511	15.147	3.747	33.116	18.095	24.334	8.388	12.136	184.269
Pine Flat Power Plant KRCD	0.000	0.000	2.865	9.846	37.284	119.719	98.908	36.017	9.529	3.315	0.000	0.334	317.816
Power Exchange delivered to other entities[b]	(51.100)	(124.626)	(130.914)	(136.700)	(60.800)	(83.866)	(134.226)	(81.303)	(71.659)	(66.100)	(59.930)	(89.927)	(1,091.151)
Power Exchange received from other entities[b]	54.820	130.630	155.605	135.165	96.572	131.187	84.864	77.860	71.210	66.100	59.930	76.590	1,140.533
Power Exchange delivered to SCE	(105.712)	(141.414)	(117.707)	(117.532)	(177.533)	(226.473)	(334.297)	(267.912)	(212.067)	(182.188)	(160.962)	(151.671)	(2,195.468)
Power Exchange deceived from SCE	234.846	236.500	379.521	285.109	164.927	207.539	292.897	383.251	340.991	247.088	237.682	295.016	3,305.367
Energy to Metropolitan for CRA Pumping	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(4.232)	(63.390)	(60.160)	(40.579)	(168.361)
Energy from Metropolitan for CRA	0.000	14.080	29.810	38.720	27.440	51.837	8.484	1.200	0.000	0.000	0.000	0.000	171.571
Power System Imbalances	0.000	0.000	(0.052)	0.000	0.195	0.000	0.000	0.000	0.000	0.100	0.000	0.036	0.279
Purchases													
Purchases (firm power contracts)	83.117	72.746	156.613	194.048	275.573	208.691	148.008	155.719	247.489	260.307	229.120	280.323	2,311.754
Subtotal	236.624	207.456	553.688	507.562	464.616	481.778	233.058	424.707	458.543	331.926	306.896	461.173	4,668.026
Total Resources	486.331	552.889	905.955	824.637	910.666	1,052.721	1,059.986	1,091.370	918.472	777.991	745.706	852.132	10,178.855
Less Energy Sales	(60.818)	(121.943)	(14.233)	(42.030)	(88.378)	(170.251)	(167.180)	(66.916)	(35.085)	(95.378)	(90.404)	(50.902)	(1,003.518)
Total Energy Provided to the SWP	425.513	430.946	891.722	782.607	822.288	882.470	892.806	1024.454	883.387	682.614	655.302	801.230	9,175.337

[a] The upgrade energy of 5,740 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 2003 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	Energy	205,775.00	9,896,987.50		9,896,987.50
Bonneville Power Administration	Energy	21,490.00	954,280.00		954,280.00
PacifiCorp	Energy	613,139.00	15,616,650.33		15,616,650.33
	Capacity			20,542,533.25	20,542,533.25
Seattle City Light	Energy	6,277.00	257,783.00		257,783.00
Northern California Area					
California Energy Resources Scheduling	Energy	33,233.00	1,293,828.00		1,293,828.00
Kings River Conservation District	Energy	317,817.00	2,493,773.48		2,493,773.48
Northern California Power Agency	Energy	9,572.00	384,561.50		384,561.50
Pacific Gas and Electric Company	Energy	99,370.00	2,953,008.75		2,953,008.75
Sacramento Municipal Utility District	Energy	2,913.00	144,560.00		144,560.00
City and County of San Francisco	Energy	29,610.00	927,655.00		927,655.00
Turlock Irrigation District	Energy	170.00	7,585.00		7,585.00
Southern California Area					
City of Azusa	Energy	4,496.00	151,578.20		151,578.20
Los Angeles Department of Water and Power	Energy	120.00	6,360.00		6,360.00
Metropolitan Water District of Southern California	Energy	129,229.00	6,086,108.95		6,086,108.95
Metropolitan Water District of Southern California	Energy (small hydro)	170,445.00	7,924,088.79		7,924,088.79
San Diego Gas and Electric	Energy	1,100.00	50,100.00		50,100.00
Southern California Edison	Energy	7,084.00	234,219.16		234,219.16
Southwest Area					
Arizona Public Service		242,100.00	10,672,100.00		10,672,100.00
Nevada Power Company	Upgrade energy	5,740.00	159,395.20		159,395.20
Energy Marketers	Energy	906,126.00	36,277,872.50		36,277,872.50
Subtotal		*2,805,806.00*	*96,492,495.36*	*20,542,533.25*	*117,035,028.61*
Transmission and Other Purchases					
California Independent System Operator	Ancillary and other services				24,620,922.51
	FERC charges				284,426.75
Kings River Conservation District	Pine Flat operation and maintenance				3,839,334.12
	Pine Flat debt service				4,886,650.29
Los Angeles Department of Water and Power	Hydro power plant scheduling				1,150.00
	Castaic line transmission service				51,387.17
Nevada Power Company	Reid Gardner Unit 4 firm transmission				1,709,260.00
	Operations and maintenance				23,936,632.02
	Coal and diesel fuel				22,126,610.70
	Insurance				716,500.00
	Property taxes				1,108,377.95
Pacific Gas and Electric Company	EHV transmission				1,500,000.00
	Midway-Wheeler Ridge, transmission operation and maintenance				113,981.71
	Firm transmission				10,599,118.26
	Table Mountain—Tesla line credit				(2,278,005.99)
	Pine Flat firm and additions				283,537.90
	Castle Rock Junction–Lakeville Line: ownership charges				101,256.02
	Coastal Branch—ownership charge				156,463.00
Southern California Edison Company	East Branch Extension—interconnection and wholesale distribution service				589,804.12
	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
	Southern California Edison share of Oroville Table A amounts to ISO				133,899.62
	Reliability service				757,158.12
FERC charges for Oroville, Pine Flat, and southern facilities (administrative and use of land)					59,295.44
Miscellaneous Fees					6,957.90
Subtotal					*100,384,004.65*
Total		**2,805,806.00**	**96,492,495.36**	**20,542,533.25**	**217,419,033.26**

Table 10-4. Energy Sold in 2003 and Revenue from Sales, by Area

Name of Supplier	Energy Sold (MWh)	Revenue from Energy Sales (Dollars)	Revenue from Capacity, Sales, and Other Energy Services (Dollars)	Total Power Sales (Dollars)
Power and Transmission Purchases				
Pacific Northwest Area				
Bonneville Power Administration	3,960.00	128,185.00		128,185.00
PacifiCorp	100.00	3,700.00		3,700.00
Powerex	4,811.00	156,490.00		156,490.00
Seattle City Light	75.00	1,500.00		1,500.00
Northern California Area				
CAISO—ancillary and other services			23,352,145.60	23,352,145.60
California Power Authority	3,200.00	247,818.34	6,666,000.00	6,913,818.34
City and County of San Francisco			146,070.00	146,070.00
City of Redding	3,556.00	182,569.25		182,569.25
City of Santa Clara			19,023.86	19,023.86
Northern California Power Agency	1,445.00	70,020.00	14,728.15	84,748.15
Pacific Gas and Electric Company	15,726.00	826,686.00		826,686.00
Sacramento Municipal Utility District	32,053.00	1,510,554.50		1,510,554.50
Turlock Irrigation District	80.00	3,124.00		3,124.00
Southern California Area				
City of Azusa	20,099.00	905,823.00		905,823.00
City of Banning	5,777.00	263,033.25		263,033.25
City of Burbank	308.00	14,938.00		14,938.00
City of Glendale	20.00	1,040.00		1,040.00
City of Riverside	122,900.00	3,971,823.70	1,151,160.00	5,122,983.70
City of Vernon	8,099.00	320,891.00		320,891.00
Los Angeles Department of Water and Power	2,782.00	79,740.00	587,100.00	666,840.00
Metropolitan Water District of Southern California			128,290.00	128,290.00
San Diego Gas and Electric	19,667.00	963,571.50		963,571.50
Southern California Edison	4,524.00	212,189.00	1,814,185.84	2,026,374.84
Southwest Area				
Arizona Public Service	2,296.00	84,952.00		84,952.00
Nevada Power Company	338,160.00	25,593,494.10	845,752.63	26,439,246.73
Miscellaneous			15,657.24	15,657.24
Energy Marketers				
Eleven marketers	412,856.00	20,477,476.88		20,477,476.88
Total	**1,002,494.00[a]**	**56,019,619.52[b]**	**34,740,113.32**	**90,759,732.84**

[a]Excludes energy exchanges.
[b]Includes revenues from energy exchanges.

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 1,109,899 MWh of energy to the SWP in 2003.

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 2003 and costs of purchases, by area. Amounts shown include short-term and long-term purchases. 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 2.81 million MWh of energy at a cost of $96.49 million.

Associated costs for capacity totaled $20.54 million. Other SWP power costs, including transmission, operation, maintenance, and ISO ancillary services totaled $100.38 million. This amount includes $4.89 million and $3.84 million for debt service and operations and maintenance costs, respectively, at Pine Flat Power Plant. It also includes $1.71 million for transmission at Reid Gardner Unit 4 and $47.89 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 2003, the power plant provided 317,817 MWh of energy to the SWP at a total cost of $2.49 million.

The Department purchased 613,139 MWh of energy at a cost of $15.62 million, under a contract for firm energy with PacifiCorp.

Under the Metropolitan Small Hydro Contract, the Department purchased 170,445 MWh of energy in 2003 from five small hydroelectric power plants on the Metropolitan system at a cost of $7.92 million.

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 2003, the SWP purchased short-term energy from 10 marketers. The short-term energy purchases totaled 906,126 MWh at a cost of $36.28 million.

Sales of Excess Power

The Department sold 1.00 million MWh of energy to 21 utilities and 11 power marketers, for total revenues of $56.02 million in 2003. The Department also received $34.74 million in revenues for capacity and exchanges, including $23.35 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. 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.

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 2 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 provided by the State Water Project Analysis Office.

Chapter 11
Facilities Maintenance



Warne Power Plant, which received its regularly scheduled routine maintenance in 2003

Significant Events in 2003

- The Bureau of Reclamation conducted a comprehensive facility review of the four joint-use facility dams in the San Luis Field Division.
- The inspection of the toe drain systems at the joint-use facility dams in the San Luis Field Division was videotaped from March 18-24.
- The V11 butterfly valve of the Del Valle Dam conservation outlet works was refurbished during fall and winter; portions of the interior and exterior of the pipeline were either relined, coated, or touched up.
- The Department's Technical Underwater Inspection Team inspected the energy dissipator/chute block of Thermalito Diversion Dam in October. The purpose of the inspection was to document the integrity of the energy dissipators by observing erosion, exposed rebar, and concrete loss.



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

The Department conducts several types of inspections of SWP facilities 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 the Division of Safety of Dams review instrumentation data and inspect jurisdictional SWP dams annually. They evaluate proposed modifications to existing dams as well as the design and construction of new jurisdictional dams.

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.

The Department contracts 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.

Routine Inspections

During 2003, 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 Second Afterbay, and Perris Dams in Southern Field Division.

The inspection of the toe drain systems at the joint-use facility dams in the San Luis Field Division was videotaped from March 18-24, 2003.

Joint-Use Facility Inspection

The Bureau conducted a comprehensive facility review of the four joint-use facility dams in the San Luis Field Division from April 28-May 2, 2003.

Underwater Inspection

The Department's Technical Underwater Inspection Team inspected the energy dissipator/chute block of Thermalito Diversion Dam in October 2003. The purpose of the inspection was to document the integrity of the energy dissipa-

tors by observing erosion, exposed rebar, and concrete loss.

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 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.

No independent consulting review board meetings were held in 2003.

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.

The Bureau designed and constructed the San Luis Canal segment of the California Aqueduct and the Department operates and maintains it, with all costs being shared 45 percent and 55 percent, respectively.

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 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 floodwater and sediment west of the Aqueduct, an evacuation culvert to release floodwater east of the Aqueduct, and drain inlets to release floodwater into the Aqueduct. The volume of runoff and sediment transported by the Arroyo Pasajero is roughly 400 percent greater than was originally estimated during the design of the detention basin in the mid-1960s.

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 and the diminished storage capacity of the detention basin. In 1980, asbestos discovered in the Metropolitan Water District of Southern California's water supply was 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. A draft Feasibility Report/Environmental Impact Statement/Environmental Impact Report was released to the public in March 1999. However, in 2002, the Department halted further cooperative studies with the Corps and began developing more cost effective solutions on its own.

Department and Department/Bureau Alternative Long-term Solution

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 flood control 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 diverting them from Pool 21 into a western Tulare Lakebed reservoir. This plan has the added benefit of accommodating 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 sufficient, and 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 West Side Detention Basin such as raised embankments, drain inlet modifications, and facilities to protect adjacent non-SWP infrastructure and private properties. 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. By the end of 2003, the Department had almost finished its feasibility investigation into this more cost effective plan and was planning to proceed with final design, environmental documentation, and other procedural steps leading to construction. The project will be implemented in two phases: Phase 1 would be the construction of the planned improvements within the West Side Detention Basin; and Phase 2 would be the construction of the reservoir at the western Tulare Lakebed. In this plan, construction of Phase 1 would start in summer 2004.

The Department is also exploring alternative locations for the western Tulare Lakebed reservoir that may lead to a less expensive project.

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 2003 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 2003. The table includes information about incidents resulting in outages exceeding 14 days.

Table 11-1. Outages for Maintenance and Repair of Facilities in 2003, by Month

Month	Facility	Units Out of Service
January	Hyatt Power Plant	Unit 6 from January 6 to February 14 for annual maintenance, to repair cooling water system, and replace governor
	Banks Pumping Plant	Unit 1 from January 23 to March 17 to repair stator ground
	South Bay Pumping Plant	Units 1 through 4 from January 20 to March 7 to work on pipeline Units 5, 6, 7, and 9 from January 9 to February 6 to work on pipeline
	Dos Amigos Pumping Plant Chrisman Pumping Plant	Unit 3 from January 6 to April 7 to replace field poles Unit 7 from January 6 to August 11 for annual maintenance and to overhaul pump, motor, and discharge valve
	Alamo Power Plant	Unit 1 from January 16 to June 5 to repair stator and rotor
	Pine Flat Power Plant	Unit 1 from January 27 to February 20 for annual maintenance
February	Hyatt Power Plant	Unit 5 from February 18 to July 1 for annual maintenance and to replace turbine
	Thermalito Power Plant	Unit 4 from February 18 to March 27 for annual maintenance and to replace governor
	Gianelli Pumping-Generating Plant	Unit 4 from February 23 to June 9 to overhaul unit and replace field poles
March	Banks Pumping Plant	Unit 1 from March 17 to November 20 for annual maintenance, to refurbish pump and discharge valve, repair discharge line, work on transformer KYA, and rewind stator
	Gianelli Pumping-Generating Plant	Unit 3 from March 31 to April 24 to repair butterfly valve and replace packing
	Badger Hill Pumping Plant	Unit 5 from March 3 to March 20 to replace impeller and repair amortisseur strap
	Devil Canyon Power Plant	Unit 4 from March 3 to March 19 for annual maintenance
April	Thermalito Power Plant	Unit 1 from April 1 to June 12 for annual maintenance and to replace governor
	Banks Pumping Plant	Units 2 and 3 from April 5 to May 2 to inspect scroll case and work on discharge line and transformer KYA
	Dos Amigos Pumping Plant	Unit 2 from April 21 to May 30 for biennial maintenance and to replace speed switch
	Pearblossom Pumping Plant	Unit 1 from April 6 to May 4 to replace unit breaker and discharge valve seat, and recoat pump and discharge line Unit 2 from April 6 to May 7 to replace unit breaker, automatic voltage regulator, and discharge valve seat, and recoat pump and discharge line Unit 3 from April 6 to May 8 to replace unit breaker, automatic voltage regulator, and discharge valve seat, and recoat pump and discharge line
	Reid Gardner Power Plant	Unit 4 from April 18 to May 11 for annual maintenance
May	Edmonston Pumping Plant	Unit 13 from May 12 to expected completion date in 2004 to overhaul pump and motor
	Pearblossom Pumping Plant	Unit 7 from May 27 to October 15 for annual maintenance, to replace mechanical seal, and repair and recoat pump
June	Oso Pumping Plant	Unit 8 from June 16 to expected completion date in 2004 for annual maintenance, to repair discharge line, recoat pump case, and replace discharge valve and automatic voltage regulator
August	Dos Amigos Pumping Plant	Unit 1 from August 22 to October 31 for biennial maintenance and to repair oil head
	Teerink Pumping Plant	Unit 7 from August 25 to December 12 for annual maintenance and to overhaul pump and motor
	Chrisman Pumping Plant	Unit 2 from August 25 to December 31 to inspect pump and overhaul motor and discharge valve
September	Gianelli Pumping-Generating Plant	Unit 8 from September 1 to December 22 to overhaul unit and replace field poles and voltage regulator
	Mojave Siphon Power Plant	Unit 3 from September 15 to October 16 for annual maintenance, to replace turbine seal, and recoat guide vane
October	Hyatt Power Plant	Unit 1 from October 3 to October 17 to adjust wicket gates and repair oil leak Unit 3 from October 14 to expected completion date in 2004 for annual maintenance and to replace turbine runner
	Thermalito Power Plant	Unit 2 from October 31 to November 18 for annual equipment assessment and to replace transformer KY2 surge arrestor
	Dos Amigos Pumping Plant	Unit 4 from October 1 to expected completion date in 2004 to repair discharge resistor, motor ground, and voltage regulator
	Las Perillas Pumping Plant	Unit 1 from October 1 to October 15 for annual maintenance Unit 2 from October 17 to November 4 for annual maintenance
	Badger Hill Pumping Plant	Unit 1 from October 1 to October 17 for annual maintenance Unit 2 from October 20 to November 6 for annual maintenance

Table 11-1. Outages for Maintenance and Repair of Facilities in 2003, by Month

Month	Facility	Units Out of Service
	Pearblossom Pumping Plant	Unit 5 from October 19 to expected completion date in 2004 to replace unit breaker and automatic voltage regulator, rebuild pump, rewind stator, repair discharge valve, and recoat pump and discharge line Unit 6 from October 26 to expected completion date in 2004 to replace unit breaker and automatic voltage regulator, rebuild pump, rewind stator, repair discharge valve, and recoat pump and discharge line
	Oso Pumping Plant	Unit 2 from October 3 to October 30 to repair air housing water leak
	Warne Power Plant	Unit 2 from October 6 to November 21 for annual maintenance, to modify cooling water system, and work on transformer
	Pine Flat Power Plant	Unit 1 from October 16 to November 12 to replace exciter
November	Hyatt Power Plant	Unit 5 from November 14 to December 12 for annual maintenance and to recoat spiral case
	Banks Pumping Plant	Unit 6 from November 20 to December 9 to repair stator ground
	Del Valle Pumping Plant	Units 1 through 4 from November 16 to expected completion date in 2004 to rehabilitate Del Valle Reservoir conservation outlet works
	Las Perillas Pumping Plant	Unit 3 from November 4 to November 24 for annual maintenance
	Badger Hill Pumping Plant	Unit 3 from November 6 to November 24 for annual maintenance Unit 4 from November 24 to expected completion date in 2004 to refurbish unit
	Bluestone Pumping Plant	Unit 5 from November 26 to December 18 to repair discharge valve
	Alamo Power Plant	Unit 1 from November 30 to December 18 to replace shaft mechanical seal
	Pearblossom Pumping Plant	Unit 4 from November 9 to December 19 to replace unit breaker, repair discharge valve, and recoat pump and discharge line
	Pine Flat Power Plant	Unit 3 from November 13 to December 18 for annual maintenance
December	Banks Pumping Plant	Unit 11 from December 1 to December 15 for annual maintenance
	Teerink Pumping Plant	Unit 2 from December 15 to expected completion date in 2004 for annual maintenance and to overhaul pump and motor
	Pine Flat Power Plant	Unit 1 from December 18 to expected completion date in 2004 to repair exciter

Information for this chapter was provided by the Division of Operations and Maintenance and the Division of Safety of Dams.

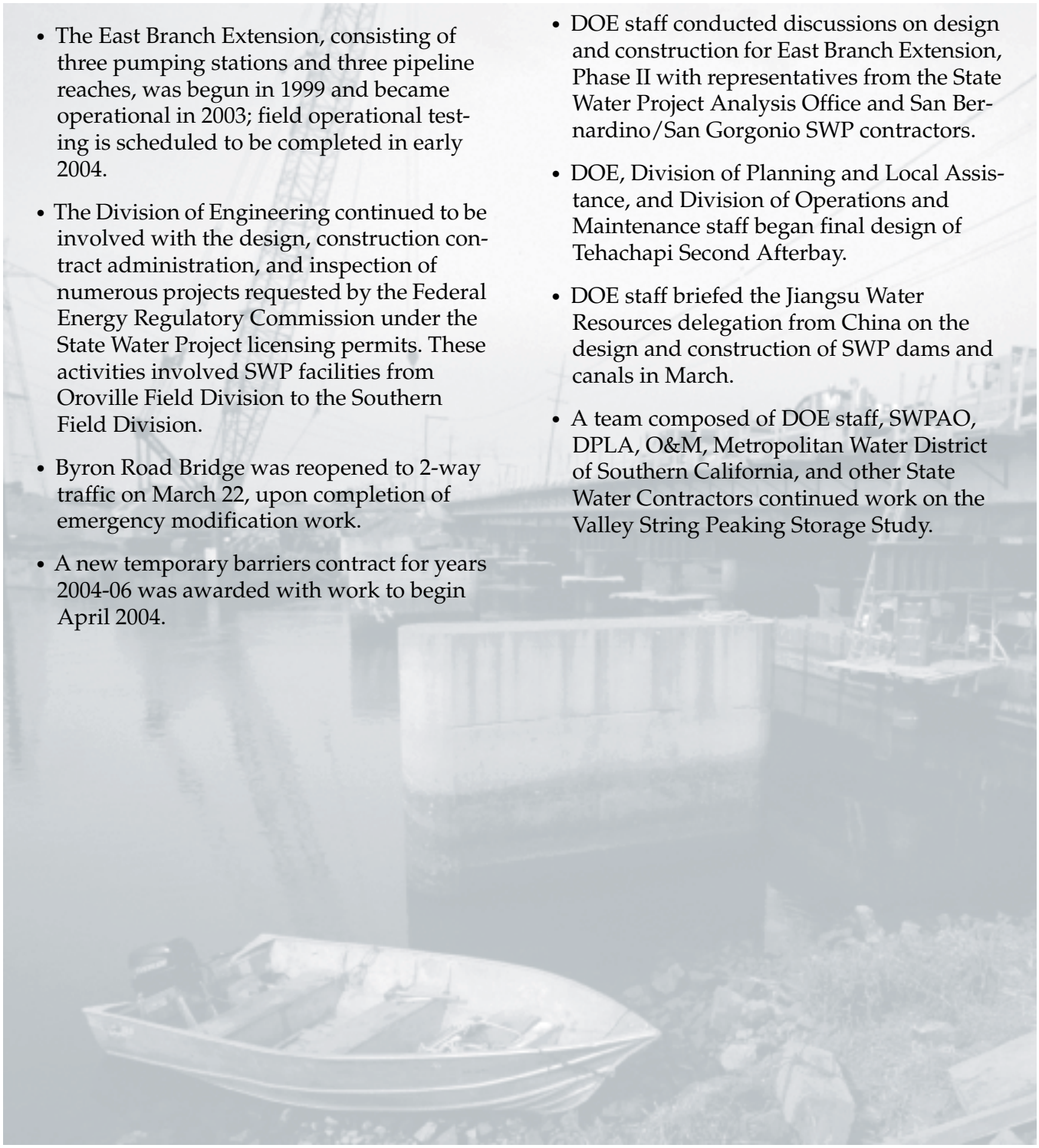
Chapter 12
Engineering and Right of Way



Byron Road Bridge repair

Significant Events in 2003

- The East Branch Extension, consisting of three pumping stations and three pipeline reaches, was begun in 1999 and became operational in 2003; field operational testing is scheduled to be completed in early 2004.
- The Division of Engineering continued to be involved with the design, construction contract administration, and inspection of numerous projects requested by the Federal Energy Regulatory Commission under the State Water Project licensing permits. These activities involved SWP facilities from Oroville Field Division to the Southern Field Division.
- Byron Road Bridge was reopened to 2-way traffic on March 22, upon completion of emergency modification work.
- A new temporary barriers contract for years 2004-06 was awarded with work to begin April 2004.
- DOE staff conducted discussions on design and construction for East Branch Extension, Phase II with representatives from the State Water Project Analysis Office and San Bernardino/San Gorgonio SWP contractors.
- DOE, Division of Planning and Local Assistance, and Division of Operations and Maintenance staff began final design of Tehachapi Second Afterbay.
- DOE staff briefed the Jiangsu Water Resources delegation from China on the design and construction of SWP dams and canals in March.
- A team composed of DOE staff, SWPAO, DPLA, O&M, Metropolitan Water District of Southern California, and other State Water Contractors continued work on the Valley String Peaking Storage Study.



Initial construction of the State Water Project facilities began in 1957 with the relocation of the Western Pacific Railroad facilities and Highway 70 near the City of Oroville to accommodate the SWP Oroville facilities. Construction of the South Bay Aqueduct facilities was started in 1960, and the first SWP water was delivered through the South Bay Aqueduct in 1965 to serve Alameda and Santa Clara counties.

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 down to the foot of the Tehachapi Mountains. By 1973, with the completion of Edmonston Pumping Plant at the foot of the Tehachapi Mountains and other East Branch conveyance facilities, the SWP was delivering water to Lake Perris, the southernmost point in Los Angeles County.

In 1974, SWP water was delivered to Los Angeles County through the West Branch Facilities. SWP water was delivered to Napa County in 1968, through the first phase facilities of the North Bay Aqueduct, and to Solano County in 1988 by the second phase facilities. The first SWP water delivery through the Coastal Branch, Phase I into Kings and Kern Counties was made in 1968.

Even before completion of the initial facilities in 1973, work had begun on the Upper Feather River facilities to supply local water, recreation, and fish enhancement. Also, power plants and additional pumping units and turbine-generators that had been deferred from the initial construction of the SWP were being built to ensure water quality and fish enhancement in the Delta.

From the 1980s through 2003, design and construction activities shifted to repairing concrete lining failures or potential failures of the canal system and concrete pipeline sections; replacing equipment components of existing facilities; enlarging or extending aqueduct reaches; adding pumps and motors to 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 in August 1997; and extending the SWP through the East Branch Extension to San Gorgonio Pass service area in San Bernardino and Riverside Counties. The East Branch Extension became operational in local/manual mode in 2003, while the remote control system is still being completed.

Design Activities

From January 1, 2003, through December 31, 2003, DOE worked on 33 design projects that developed or will develop into construction projects. Table 12-1 lists these projects along with expected or actual design completion dates. Both Table 12-1, *Design Activities*, and Table 12-2, *Construction Activities*, found at the end of this chapter, are 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 for development into construction contracts, DOE staff worked with the O&M, Division of Flood Management, Division of Environmental Services, Department of Fish and Game, Department of Boating and Waterways, Department of Transportation, SWP contractors, California water districts, Sacramento/San Joaquin River and

Delta Levee Maintenance Districts, CALFED, U.S. Army Corps of Engineers, the Bureau, the Federal Energy Regulatory Commission, Environmental Protection Agency, U.S. Fish and Wildlife Service, National Marine Fisheries Service, 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. Continuing and new studies and activities include

- FERC requirements pertaining to operation of the SWP
- FERC requirements for relicensing of the Oroville Facilities
- South Bay Aqueduct enlargement and rehabilitation activities
- discussion of North Bay Aqueduct enlargement with O&M and NBA water contractors
- Clifton Court Forebay radial gate reevaluation report prepared for O&M Frenchman Dam fault study
- Oroville underground storage tank investigation
- South Bay Aqueduct reliability study
- Milepost 62 slide repair geology monitoring and exploration
- South Bay Aqueduct Landslide Stabilization Study—Piedmont Avenue
- North Bay Aqueduct reliability study
- pump/turbine runner replacement feasibility study—Gianelli Pumping-Generating Plant
- Arroyo Pasajero Flood control study—West Side Detention Basin and Tulare Lake
- Pearblossom Pumping Plant disposal area assessment study
- Phase I Horsethief Creek Crossing remediation
- Phase II South Portal Road landslide study
- stability analyses for Oroville Dam, Parrish Canyon and Bidwell Canyon Saddle Dams, and Thermalito Diversion Dam
- ADA recreation sites survey
- seismicity studies for Bethany, Del Valle, and Patterson Dams
- Perris Dam liquefaction study and Phase IV exploration
- Tehachapi Second Afterbay final design
- East Branch Enlargement, Phase II study activities
- East Branch Extension, Phase II feasibility study
- Byron Road Bridge deck deterioration study and analysis
- geologic exploration for new Clifton Court Forebay intake
- Castaic Dam intake tower analysis
- Piru Creek erosion repairs
- Pyramid Dam bridge seismic retrofit
- Devil Canyon Unit I power fluctuations

DOE staff also completed the studies and activities listed below.

- West Stanislaus flood control study
- Thermalito Power Plant Kaplan (turbine) runner refurbishment study
- 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
- capacity evaluation of cross-drainage structure between Buena Vista and Teerink Pumping Plants
- hydrology and capacity evaluation of cross-drainage facilities at Buena Vista and Teerink Pumping Plants
- pump refurbishing pilot program for Edmonston Pumping Plant
- Warne Power Plant penstock cooling water transient study
- Hesperia Master Drainage Plan for Antelope Wash and adjacent area

- Castaic, Pyramid, and Perris Dams emergency release facilities study
- Castaic and Perris Dams breach inundation study
- Devil Canyon Second Afterbay outlet structure design to eliminate vortex
- Crafton Hills Reservoir inundation plan
- SWP energy retrofit cost estimate, design, and construction schedule
- Sites Reservoir engineering feasibility study
- Lokern Bridge at Milepost 229 repairs
- Valley String Peaking storage study
- Chrisman to Edmonston storage 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. Three contracts required continuing environmental review and are described below.

Santa Ana Pipeline

Excavation, Inspection, and Repair/Replacement—Phase II. When eight sections of pipe were replaced north and south of the Box Springs Turnout, surveys were performed for several sensitive species known or suspected to live on or near portions of the project route. The federal threatened listed species of concern was the Stephen's Kangaroo Rat, and one of the repair sites, Station 1056+56, lies within the Riverside County Habitat Conservation Plan for the Stephen's Kangaroo Rat. Therefore, several surveys were preformed prior to construction. The boundaries of the work site were designated by DOE to define the limits of the areas that could be occupied by the contractor. The results of the survey were negative.

North Bay Aqueduct

Seismic Repairs and Pipeline Rehabilitation – Phase I. Several principal features were repaired or replaced along the pipeline (i.e., air relief, vacuum relief, and butterfly valves; sealing manhole riser structures; replacement of cathodic protection and repair coatings). Several sensitive habitats were identified along the Aqueduct wetlands and vernal pools, as well as a number of smaller perennial and seasonal drainages, with listed vernal pool invertebrates, California tiger salamander, California red-legged frog, and vernal pool plants. All repair sites were cleared of potential environmental impacts and the boundaries of the work site were designated by DOE to define the limits of areas that could be occupied by the contractor.

South Bay Aqueduct

Pipeline Rehabilitation Contract No. 2. Several principal features were repaired, replaced, or improved along the pipeline (i.e., air relief, vacuum relief, and butterfly valves; sealing manhole riser structures; addition of access structures for buried manholes; repair of cathodic protection, and repair coatings). Several sensitive habitats were identified along the Aqueduct wetlands and at a number of perennial and seasonal drainages. Species identified as highly sensitive were California tiger salamander, California red-legged frog, kit fox, and burrowing owl. All repair sites were cleared of potential environmental impacts and the boundaries of the work sites where sensitive species were found were designated by DOE to define the limits of areas that could be occupied by the contractor.

Construction Activities

DOE worked on 47 construction contracts in 2003. Table 12-2, *Construction Activities*, shows contract title, specification number, date the contractor received the Notice to Begin Work,

the expected or actual acceptance date (completion date is discussed in narratives below), 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 70 percent of the work completed by the end of 2003. Estimated completion is October 2004.

Refurbishment of pump-turbine Units 2, 4, and 6, which started in November 2001 (Specification No. 01-11) continued with approximately 10 percent of the work completed by the end of 2003. Estimated completion is February 2007.

Hyatt Power Plant and Thermalito Pumping-Generating Plant. Furnishing governor replacements for the Hyatt Power Plant and the Thermalito Pumping-Generating Plant continued during 2003 (Specification No. 99-19). The physical work was completed by October 2001; however, acceptance will be delayed until equipment is installed, tested, and operational—estimated for January 2004.

Oroville Dam. Rehabilitation of the radial gates at Oroville Dam (Specification No. 00-11) was completed in November 2002 and accepted in March 2003.

Oroville Field Division. Work was completed in April 2003 and accepted in June 2003 on a contract to pave roads at Oroville Field Division and extend the Lake Oroville spillway boat ramp (Specification No. 02-07).

Oroville Operations and Maintenance Center. Work on a contract to replace the roof of the plant maintenance shop began in September 2003 and was completed in October 2003 (Specification No. 03-08). Work included selective demolition of existing roofing, insulation, flashing, and removal and reinstallation of existing equipment.

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). The work was completed in April 2002 and accepted in March 2003.

Work on a contract to furnish spare coils and materials began in September 2002 (Specification No. 02-08). All work associated with Thermalito Unit No. 1 was deleted as a cost savings measure. The remaining work was substantially complete in November 2003 with acceptance to follow in 2004.

Delta Facilities

Temporary Rock Barriers. Work on the 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) that started in March 2001 (Specification No. 01-01) was completed in December 2003. These temporary barriers were 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.

Contract change order work included

- required environmental permit work
- work requested by the Bay-Delta Office including geologic exploration for the South Delta permanent barriers
- emergency response to a leak at California Aqueduct Milepost 4.25
- assistance to the Delta Field Division

A new temporary barriers contract for years 2004, 2005, and 2006 was awarded in November 2003 (Specification No. 03-07). Work is expected to begin in April 2004.

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) was started in August 2002, completed in October 2002, and accepted in January 2003.

North San Joaquin Division

Byron Road Bridge. An emergency contract to remove and repair damaged decking on the Byron Road Bridge began in December 2002, was completed in January 2003, and accepted in April 2003 (Specification No. 02-13).

A second Byron Road Bridge contract (Specification No. 02-14) began in January 2003, was completed in March 2003, and accepted in May 2003. Bridge modifications consisted of

- installing structural steel supports for the girders
- placing new concrete slab and barriers on the deck
- extending the asphalt concrete highway approaches
- lowering approximately 260 linear feet of access road beneath the bridge

Skinner Fish Facility. A contract to construct a Delta smelt testing and holding facility (Specification No. 03-06) began in September 2003 and was approximately 27 percent complete by December 2003. Principal features include

- construction of a prefabricated metal building on a concrete foundation
- installation of a Department-furnished fish holding tank
- chain link fence and gate
- drainage system
- construction of pump/motor, metal platform, and water pipeline
- an electrical power service system

South Bay Aqueduct. Work on a contract to furnish valves and sluice gates was awarded and started in July 2001 (Specification No. 01-18). Approximately 89 percent of the original contract work was completed by the end of 2003. Due to a directive to furnish additional valves, estimated completion is expected in February 2004.

Rehabilitation of access structures and valves at Dyer Canal, Altamont Pipeline, Del Valle Pipeline, Sunol Pipeline, and Santa Clara Pipeline, began in October 2001 (Specification No. 01-10), was completed in September 2002, and accepted in January 2003.

Phase II of the rehabilitation of access structures and valves began in August 2002 (Specification No. 02-11). The work was approximately 93 percent complete at the end of 2003. Due to unforeseen extensive corrosion repair and relining of steel sections at the Brushy Creek Pipelines (1 and 2), Brushy Creek surge tanks, Del Valle Reservoir conservation outlet works, and Del Valle surge tank, completion is estimated for June 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
- corrosion repair
- relining of steel sections

San Luis Division

Gianelli Pumping-Generating Plant. Work on a contract to furnish electrical field poles and

materials for the generating units at Gianelli began in September 2000 (Specification No. 00-17); approximately 80 percent of the work was completed by the end of 2003. One set of 48 new field poles and two additional spare field poles were added by change order. Completion is estimated for July 2004.

Tehachapi Division

Edmonston Pumping Plant. A contract to replace pump Units W2, W4, W6, and W8 (Specification No. 02-10) began in June 2003 and is scheduled for completion in March 2011. Work consists of

- designing, fabricating, and testing a four-stage pump model and a single-stage pump model, and furnishing a pump model test program report
- designing, manufacturing, delivering to the work site, storing, and installing four pumps to replace existing pumps
- furnishing spare parts, auxiliary equipment, tools, and templates
- modifying existing pump foundations if required for the new pumps
- applying coatings and providing liaison services

West Branch

Castaic Dam and Pastoria Siphon. A contract to recoat the Castaic Dam outlet works pipeline and the Pastoria Siphon (Specification No. 01-03) began in August 2001. Completion is expected in May 2004. Substantial remedial work at the Castaic Dam outlet works pipeline is needed before the contract can be accepted.

Oso Pumping Plant. Work on a contract to furnish automatic voltage regulators began in May 2000 (Specification No. 00-06). Although work was originally scheduled for completion in June 2002, a contract change order to furnish and deliver six additional automatic voltage regulators for Pearblossom Pumping Plant extended the expected completion to June 2004. Approximately 97 percent of the work was completed by the end of 2003. Contract acceptance will likely occur in December 2004, after the Department installs the automatic voltage regulators and provides engineer services.

Mojave Division

Pearblossom Pumping Plant. A 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. Work was essentially complete by October 1993, at which time the Department took advance possession of all three units; however, substantial remedial warranty work was required prior to acceptance in December 2003. Change orders extended the original March 1992 completion date to November 2003.

Santa Ana Division

San Bernardino Tunnel Intake. A contract to reconstruct the San Bernardino Tunnel intake structure (Specification No. 95-07) began in July 1995 and was essentially completed by July 1997. The Department took advance possession of the intake structure in January 1998 while negotiations for remedial warranty work continued. Contract acceptance was finalized in January 2003.

Santa Ana Pipeline. A "time and materials" contract to excavate, inspect, and repair or replace various sections of the Santa Ana Pipeline (Specification No. 03-05) began in September 2003. Approximately 77 percent of the work was completed by December 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.

Pipeline Reaches

A contract for pipeline Reaches 1 and 2 (Specification No. 98-24) was awarded in February 1999. 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 and accepted in June 2003.

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 was completed in November 2000. Acceptance, which is expected in mid 2004, will be delayed until site acceptance testing can be completed.

A contract to furnish power transformers for Greenspot and Crafton Hills Pump Stations (Specification No. 98-18) started in May 1999. Fabrication was completed by April 2000, but units were stored until work sites were ready for delivery in February 2002. Acceptance is expected in early 2004 after site acceptance testing is completed.

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), and to design, manufacture, test, and deliver programmable logic controllers for the Cherry Valley Pump Station. Completion is scheduled for September 2004.

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 to 2006 due to the possible addition of pump units for Greenspot and Crafton Hills Pump Stations.

A contract to construct Greenspot, Crafton Hills, and Cherry Valley Pump Stations (Specification No. 99-27) was awarded in May 2000; completion is scheduled for October 2004.

An October 2001 contract to furnish and install the control and communications systems (Specification No. 01-05) is expected to be completed in October 2004.

Valve Facilities

A contract to construct new valve facilities at Carter Street and enlarge and reconstruct an existing valve facility in Morton Canyon (Specification No. 00-07) was started in November 2000, completed in November 2002, and accepted in June 2003.

Valves

Three separate contracts were awarded to furnish East Branch Extension valves. In October 1999, work began on contracts to furnish ANSI ball valves (Specification No. 99-20) and AWWA butterfly valves (Specification No. 99-22). The contract to furnish ANSI butterfly valves began in November 1999 (Specification No. 99-23). All three valve contracts are scheduled for completion in October 2004.

East Branch Enlargement

Devil Canyon Power Plant Second Afterbay. A contract to provide the Inland Feeder Connection downstream of Devil Canyon Power Plant Second Afterbay was started in January 2001 (Specification No. 00-22). Work was essentially completed in September 2002 and accepted in January 2003.

Construction Activities in Multiple Divisions

Work continues on a contract to furnish spare coils and associated materials for Pearblossom and Oso Pumping Plants (Specification No. 98-27). This work began in March 1999 and was completed in June 2003, and included additional coils for Pearblossom Pumping Plant, furnished under a contract change order.

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 by December 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, was completed in August 2002, and accepted in January 2003.

A contract to design, manufacture, deliver, and install automatic digital voltage regulators for Banks Pumping Plant and Gianelli Pumping-Generating Plant (Specification No. 02-12) began in May 2003. Completion is expected in December 2005.

A contract to furnish spare coils for Warne Power Plant and Devil Canyon Power Plant (Specification No. 01-13) started in October 2001. By the end of 2003, approximately 50 percent of the work had been completed. Completion of all contract work is 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) and was completed in January 2003.

In September 2003, work started on a contract to apply asphalt seal coat and asphalt concrete to paved areas in San Luis and Southern Field Divisions, and to construct an oil containment basin at Gianelli Pumping-Generating Plant (Specification No. 03-04). By December 2003, the roadwork was approximately 70 percent complete, and the work at Gianelli was 95 percent complete. Road work was delayed by wildfires and heavy rains, but is expected to be completed by August 2004.

A contract to coat bulkhead gates and radial gates (using a new metallized process) at Oso and Pearblossom Pumping Plants and Check 59 (Specification No. 03-02) began in August 2003. Completion is scheduled for March 2004 with approximately 9 percent of the work completed by December 2003. Work consists of

- providing a temporary enclosed paint/blast facility for surface preparation, coating, and hazardous waste containment and removal
- providing a mobile crane with operator for offloading, positioning and loading bulkhead and radial gates
- providing surface preparation, fillet weld repairs, coatings, and hazardous waste containment and removal
- removal of the temporary paint/blast facility

Work added by change order includes

Crafton Hills Reservoir

- repairing erosion damage adjacent to the access road and near the intake structure;
- installing a well monitoring system with protective fencing;
- constructing a concrete "V" ditch along the back access road;
- furnishing and installing ornamental fencing with a slide gate; and
- modifying the existing seepage conveyance system and replacing the pump at Crafton Hills Dam.

Devil Canyon Power Plant

- replacing fire-damaged guardrail posts along the Department's access road.

Miscellaneous Construction Activities

The following non-SWP construction activities are categorized as "Miscellaneous."

A contract (Specification No. 02-05) to construct a reinforced concrete fish barrier to replace an existing gabion fish barrier on the south fork of Kern River started in June 2002. The original completion date scheduled for October 2002 was extended to October 2003 due to a 1-year suspension of work because of the McNally fire. This work was performed for DFG.

A contract (funded by CALFED) to remove a dam and install a siphon on Mill Creek began in August 2002 (Specification No. 02-06). Work was completed in April 2003 and accepted in June 2003.

Castaic Lake State Recreation Area

A contract to renovate and improve the east ramp boating facilities area (Specification No. 02-09) began in January 2003. This work, requested and funded by the Department of Boating and Waterways, was approximately 83 percent finished by December 2003, with estimated completion in March 2004. Work included

- demolition and relocating existing utilities
- constructing a 4-unit restroom, entrance kiosks, and a concession building with utilities
- constructing a masonry retaining wall, an entrance gate, shade armadas, trellises, a play structure, and concrete benches
- installing a water and sanitary system, and landscaping

Land and Right of Way Activities

The Department has spent a net total of $250 million to acquire rights of way, recreation, and mitigation land for the SWP from its inception to December 31, 2003. From January 1 through December 31, 2003, the Department

(1) acquired five parcels (737 acres permanent easement) for a cost of $1,620,000 as damages for Cantua Creek 1995;

(2) acquired one parcel (69.49 acres in fee and 1.92 acres in permanent easement) for Suisun Marsh tidal restoration for a total of $188,500;

(3) acquired two parcels (.87 acre) in permanent easement totaling $2,900 for South Bay Aqueduct;

(4) acquired one parcel (238.75 acres) in fee for a total of $777,050 for West Delta wildlife mitigation;

(5) acquired five parcels (61.27 acres in fee, 6.94 acres in permanent easement, and 7.68 acres in temporary construction easements) for $398,568, including damages for East Branch Extension;

(6) obtained 88 temporary permits:
   - 4 for Arroyo Pasajero Flood Control
   - 2 for California Irrigation Management Information Systems
   - 1 for Decker Island habitat restoration
   - 1 for Coastal Branch
   - 3 for Delta Facilities
   - 27 for East Branch Extension, Phase II
   - 11 for East Branch Extension, Phase I
   - 1 for Orestimba Creek gauging station
   - 1 for Lower Coachella Valley groundwater study
   - 1 for North Delta flood control and ecosystem restoration
   - 1 for North of Delta Off-Stream Storage Program
   - 1 for Old River barriers
   - 1 for dissolved oxygen instrumentation study

- 4 for Santa Ana Valley pipeline
- 12 for South Bay Aqueduct
- 4 for South Delta barriers
- 1 for Suisun Marsh monitoring
- 2 for Tehachapi Afterbay
- 4 for temporary barriers, Emergency Pumps Program
- 2 for Tulare Lake
- 2 for Vernalis real-time monitoring station
- 2 for Yolo Bypass experimental fish passage study

(7) renewed seven leases on SWP properties;

(8) SWP income produced $425,710 (based on a projected average from the first two quarters of the 2003 Quarterly Report);

(9) processed 10 Quit Claim, Director's Deeds, and Transfer of Control and Possession Agreements (based on current workload activity of these types of agreements);

(10) sold the South Geysers Power Plant;

(11) processed 37 encroachment permit applications; issued 19;

(12) collected fees of $98,855 for review and inspection costs related to encroachment permit applications;

(13) received and completed two encroachment reviews where applicant had prior property rights;

(14) received and completed three encroachment permit amendments;

(15) coordinated review of 54 tentative tract map developments within 1 mile of the Aqueduct; and

(16) completed 13 appraisals, 3 lease updates, and 18 appraisal reviews.

Table 12-1. Design Activities, January 1, 2003, through December 31, 2003, by Division

Construction Division and Facility	Design Activity	Date Design Began	Design Actual/ Estimated Completion Date
Oroville Division			
Lime Saddle/Bidwell Boat Ramp	Boat Ramp extension elevation 640	May 2003	July 2003
Delta Facilities			
Temporary Rock Barriers	Temporary rock barriers 2001-2003—Middle River, Old River, and Grant Line Canal	August 2002	December 2003
	Temporary rock barriers 2004-2006—Middle River, Old River, and Grant Line Canal	November 2003	December 2006
	Old River fish control structure	September 2003	May 2005
	Old River flow control structure	September 2003	May 2005
	Grant Line Canal flow control structure	September 2003	May 2005
	Middle River flow control structure	September 2003	May 2005
	Furnish gates for flow control structures	January 2004	October 2004
South Delta Improvement Program Skinner Fish Facility	Trashrake and trashrack replacement	August 2003	December 2003
	Delta smelt testing and holding facility	May 2003	July 2003
North San Joaquin Division			
Banks Pumping Plant Intake Channel	New Byron Road Bridge	April 2002	February 2003 (Postponed)
South Bay Aqueduct Enlargement South Bay Pumping Plant	Furnish pumps and motors	March 2003	September 2004
	Furnish valves and actuators	July 2003	November 2004
	Furnish power transformers	December 2003	October 2004
	Furnish switchyard equipment	December 2003	December 2004
	Furnish switchgear	December 2003	February 2005
	Initial contract	April 2003	March 2005
	Discharge line and third pipeline	May 2003	June 2005
	Surge Tank No. 3	July 2003	December 2005
	Canal Modifications Contract	July 2003	February 2006
	Dyer Reservoir Contract	September 2003	October 2005
San Luis Division			
Arroyo Pasajero Project	West Side Detention Basin improvements	January 2003	March 2004
Mojave Division			
Tehachapi Second Afterbay	Turbine shutoff valve	March 2003	April 2004
Valley String Peaking Storage	Valley String peaking storage	May 2001	March 2004
Santa Ana Division			
Santa Ana Pipeline	Excavation, inspection, and repair/replacement—Phase II	March 2003	June 2003
West Branch	Pyramid Dam bridge repair and Piru Creek repairs	October 2002	March 2004
Multiple Division			
Mojave Division and West Branch	Coat bulkhead gates and radial gates, Oso and Pearblossom Pumping Plants and Check 59	January 2002	June 2003
Delta, San Luis, and Southern Field Divisions	Roofing replacement and recoating	May 2003	May 2004
San Luis and Southern Field Divisions	Building maintenance and repairs contract—soffit and facia replacement, Warne Power Plant and Pearblossom Pumping Plant; Vista del Lago Visitor Center roof investigation and structural repair	October 2003	December 2004 (Suspended)
Miscellaneous			
San Joaquin River	Vernalis water quality monitoring station	November 2002	January 2004
Department Data Center - Sacramento	Completion of HVAC work	January 2003	February 2003
Battle Creek	Eagle Canyon salmon and steelhead restoration project	September 2000	March 2003
Schaeffer Fish Barrier	Golden Trout Fish Barrier Dam	July 2001	March 2002

Table 12-2. Construction Activities, January 1, 2003, through December 31, 2003, 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	December 2004	11,825
	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
Oroville Dam	Rehabilitate radial gate (00-11)	January 2001	March 2003	3,108
Oroville Field Division	Pave roads and extend concrete boat ramp (02-07)	August 2002	June 2003	1,204
Oroville Operations and Maintenance Center	Replace plant maintenance shop roof (03-08)	September 2003	April 2004	219
Thermalito Pumping-Generating Plant	Replace expansion joints at roof and switchyard (00-15)	August 2000	March 2003	75
	Furnish spare coils and materials (02-08)	September 2002	August 2004	686
Delta Facilities				
Temporary Rock Barriers	Construct temporary rock barriers: Middle River, Old River, and Grant Line Canal (01-01)	March 2001	January 2004	8,329
	Construct temporary rock barriers: Middle River, Old River, and Grant Line Canal (03-07)	November 2003	February 2007	9,203
Suisun Marsh Facilities				
Morrow Island Distribution System	Reconstruct intake structure (02-04)	August 2002	January 2003	363
North San Joaquin Division				
Byron Road Bridge	Emergency deck repair (02-13)	December 2002	April 2003	139
	Modify bridge (02-14)	January 2003	May 2003	2,180
Skinner Fish Facility	Construct fish testing and holding facility (03-06)	September 2003	June 2004	725
South Bay Aqueduct	Furnish valves and sluice gates (01-18)	July 2001	April 2004	1,812
	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	October 2004	10,108
San Luis Division				
Gianelli Pumping-Generating Plant	Furnish field poles and materials (00-17)	September 2000	November 2004	4,666
Tehachapi Division				
Edmonston Pumping Plant	Replace pumps (02-10)	June 2003	May 2011	34,000
West Branch				
Castaic Dam and Pastoria Siphon	Recoat Castaic Dam outlet works and Pastoria Siphon pipelines (01-03)	August 2001	June 2004	2,087
Oso Pumping Plant	Furnish automatic voltage regulators (00-06)	May 2000	December 2004	1,177
Mojave Division				
Pearblossom Pumping Plant	Furnish and install vertical centrifugal pumps (87-04)	May 1987	December 2003	2,281
Santa Ana Division				
San Bernardino Tunnel	Reconstruct intake (95-07)	July 1995	January 2003	25,308
Santa Ana Pipeline	Excavate, inspect, repair and replace pipeline (03-05)	September 2003	August 2004	5,000
East Branch Extension				
Pipeline Reaches	Construct pipeline Reaches 1 and 2A—Mill Creek to Garden Air Creek (98-24)	February 1999	June 2003	19,230

[a]Notice to Begin Work

Table 12-2. Construction Activities, January 1, 2003, through December 31, 2003, 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)
Pump Stations				
Greenspot and Crafton Hills	Furnish power circuit breakers and switchgear equipment (98-16)	March 1999	July 2004	275
	Furnish power transformers (98-18)	May 1999	March 2004	605
Greenspot, Crafton Hills, and Cherry Valley	Furnish 5kV switchgear, Greenspot and Crafton Hills Pump Stations, and furnish PLC cubicle, Cherry Valley Pump Station (99-15)	October 1999	November 2004	657
	Furnish pumps, motors, and variable frequency drives (99-17)	November 1999	December 2006	3,111
	Construct pump stations (99-27)	June 2000	December 2004	24,300
Valve Facilities				
Carter Street and Morton Canyon	Furnish and install supervisory control and communications systems (01-05)	October 2001	December 2004	5,500
	Construct valve facilities (00-07)	November 2000	June 2003	2,761
	Furnish ANSI ball valves (99-20)	October 1999	November 2004	1,145
	Furnish AWWA butterfly valves (99-22)	October 1999	November 2004	862
	Furnish ANSI butterfly valves (99-23)	November 1999	November 2004	1,417
East Branch Enlargement				
Devil Canyon Power Plant Second Afterbay	Inland feeder connection (00-22)	January 2001	January 2003	1,087
Multiple Divisions				
Pearblossom and Oso Pumping Plants	Furnish spare coils and materials (98-27)	March 1999	June 2004	903
Mojave Siphon Power Plant and Devil Canyon Second Afterbay	Revegetation (99-21)	November 1999	February 2006	840
Banks Pumping Plant and Gianelli Pumping-Generating Plant	Furnish spare coils (00-19)	September 2000	January 2003	1,764
	Design, manufacture, deliver and install digital voltage regulators (02-12)	May 2003	February 2006	2,284
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
San Luis and Southern Field Divisions	Seal and pave roads and parking areas, and construct Gianelli Pumping-Generating Plant oil containment basin (03-04)	September 2003	October 2004	2,974
Oso and Pearblossom Pumping Plants and Check 59	Coat bulkhead gates and radial gates (03-02)	August 2003	August 2004	184
Miscellaneous Activities				
Kern River	Schaeffer fish barrier, South Fork (02-05)	June 2002	March 2004	1,569
Mill Creek	Remove dam and install siphon (02-06)	August 2002	June 2003	281
Castaic Lake State Recreation Area	Renovate boating facilities (02-09)	January 2003	June 2004	2,378

[a]Notice to Begin Work

Information for this chapter was provided by the Division of Engineering.

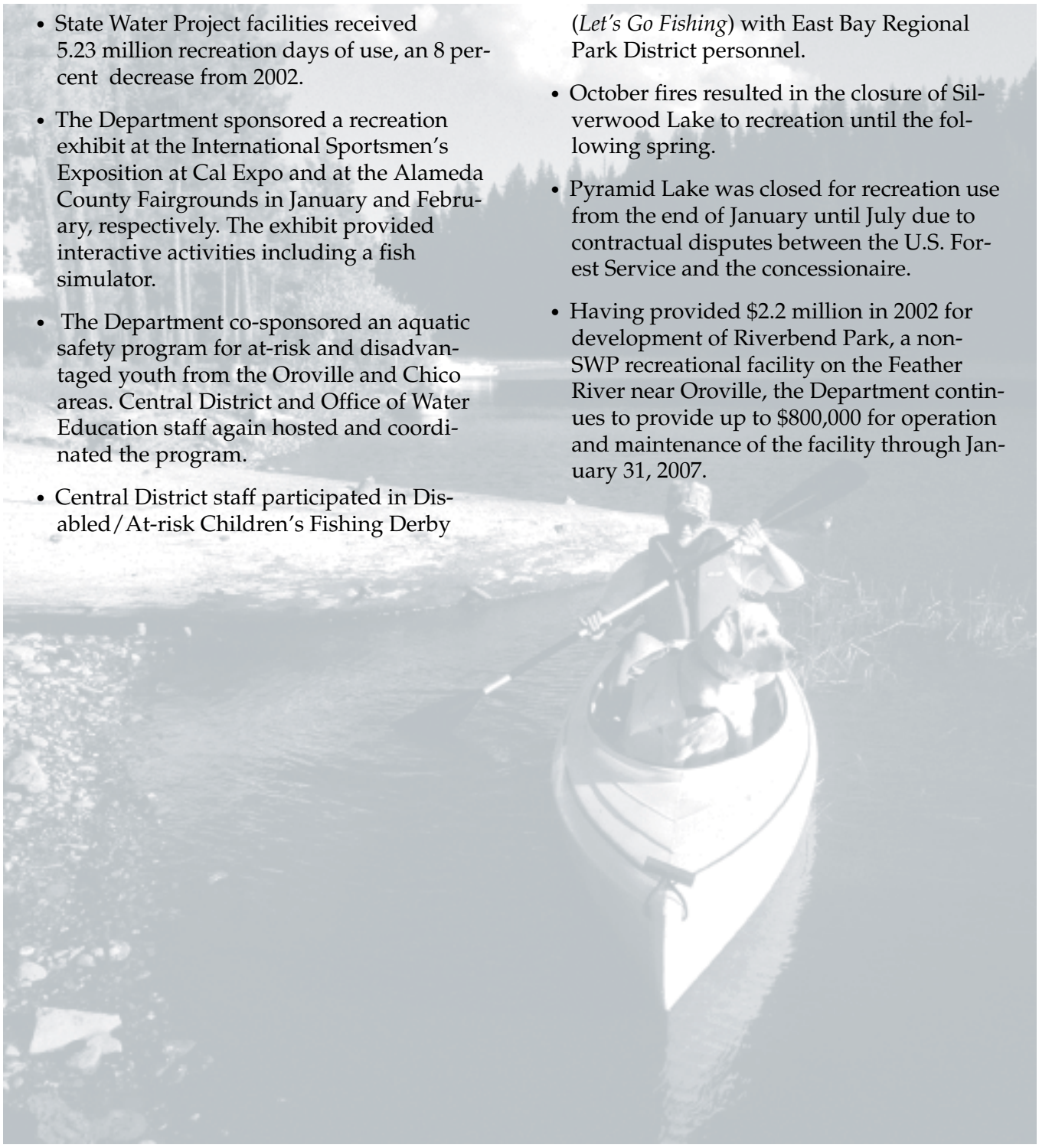
Chapter 13
Recreation



This Labrador retriever is enjoying a kayak ride at Antelope Lake.

Significant Events in 2003

- State Water Project facilities received 5.23 million recreation days of use, an 8 percent decrease from 2002.
- The Department sponsored a recreation exhibit at the International Sportsmen's Exposition at Cal Expo and at the Alameda County Fairgrounds in January and February, respectively. The exhibit provided interactive activities including a fish simulator.
- The Department co-sponsored an aquatic safety program for at-risk and disadvantaged youth from the Oroville and Chico areas. Central District and Office of Water Education staff again hosted and coordinated the program.
- Central District staff participated in Disabled/At-risk Children's Fishing Derby (*Let's Go Fishing*) with East Bay Regional Park District personnel.
- October fires resulted in the closure of Silverwood Lake to recreation until the following spring.
- Pyramid Lake was closed for recreation use from the end of January until July due to contractual disputes between the U.S. Forest Service and the concessionaire.
- Having provided $2.2 million in 2002 for development of Riverbend Park, a non-SWP recreational facility on the Feather River near Oroville, the Department continues to provide up to $800,000 for operation and maintenance of the facility through January 31, 2007.



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 2003, SWP facilities recorded 5.23 million recreation days of use (Table 13-1), an 8 percent decrease from the 5.67 million recreation days recorded in 2002. Most of this decrease is attributable to the impact of the Southern California fires on the four reservoirs in Southern California plus the forced 5-month closure of Pyramid Lake. Recreational use at the fishing access sites and along the California Aqueduct Bikeway nearly equaled that of 2002. 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. Forty-nine percent of the total SWP recreational use in 2003 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 175 million recreation days have been recorded at SWP recreational facilities.

Facilities

Planning

During 2003, the Department of Boating and Waterways completed plans for the following projects:

San Luis Reservoir State Recreation Area. Planning is underway for replacing the boat launching facility at O'Neill Forebay.

Lake Perris. Planning was completed for new restroom facilities at ramps 6 and 7.

Silverwood Lake. Planning was completed for improvements to boat-in sites, and for rehabilitation of the Cleghorn boat launch facility.

Pyramid Lake. Planning was completed for boarding float replacements at Vaqueros and Emigrant boat launch areas.

Lake Oroville. Planning was completed for restroom replacement at the Bidwell Canyon launch ramp area.

New Facilities

Lake Oroville. Construction was completed on boat ramp extensions at various locations.

Castaic Lake. Construction began on the boating instruction and safety center at Castaic Lake Lagoon, and on the new access road and boat launching facility at the east ramp area.



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 2003, 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	889,000
Thermalito Afterbay and Oroville Wildlife Area	285,800
Subtotal	*1,622,800*
Delta Field Division	
Lake del Valle	301,800
Bethany Reservoir	12,600
Fishing Access Site	
Neils Hansen	100
California Aqueduct	
Walk-In Fishing	600
Bikeway	100
White Slough Wildlife Area	12,000
Subtotal	*327,200*
San Luis Field Division	
San Luis Reservoir, including O'Neill Forebay and Los Banos Reservoir	686,300
California Aqueduct	
Walk-In Fishing	12,000
Wildlife Areas	11,000
Subtotal	*709,300*
San Joaquin Field Division	
Fishing Access Sites	
Kettleman City	900
Lost Hills	900
Buttonwillow	900
California Aqueduct	
Walk-In Fishing	9,400
Subtotal	*12,100*
Southern Field Division	
Silverwood Lake	442,000
Lake Perris	1,206,200
Pyramid Lake	100,000
Castaic Lake	805,700
Fishing Access Sites	
Quail Lake	1,300
77th Street East	400
Longview Road	100
California Aqueduct	
Walk-In Fishing	2,500
Bikeway	400
Subtotal	*2,558,600*
Total	**5,230,000**

Silverwood Lake. Construction funding was provided for debris boom and clean-up.

Lake Perris. Construction began on a new restroom and gangway at the marina area.

Lake del Valle. Group barbecue pits with pads were installed at the Beach View and Aqua Vista areas.

Improvements to Facilities

Improvements were made at the following facilities:

Lake del Valle. Faucets were replaced at two fish cleaning facilities, and plants were replaced in islands in boat launch parking area.

San Luis Reservoir. Boarding float facilities were replaced at O'Neill Forebay, and the parking area was renovated at Basalt area.

Pyramid Lake. Boat boarding floats were renovated at various boat-in areas, and boat-in site was renovated at Yellowbar.

Castaic Lake. Boarding floats were replaced at the west ramp area.

Lake Perris. Vault toilets were replaced on Allesandro Island, and boarding floats were replaced at various locations.

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, which included the following 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; however, certain elements of the plan may require time extensions to complete.

Fish Plantings

In 2003, the Department of Fish and Game continued its fish-planting activities at 9 of the 12 SWP facilities. Total plantings of trout and Coho salmon increased by nearly 4 percent in 2003 (see Table 13-2). At the Feather River fish hatchery and the Thermalito Afterbay rearing ponds, 9,611,200 fish were produced in 2003—9,589,300 Chinook salmon and 21,900 steelhead trout. Of the Chinook salmon reared, 1,116,900 were fingerlings and 8,422,400 were advanced fingerlings. Of the steelhead reared, 20,900 were advanced fingerlings and 1,000 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

Table 13-2. Fish Planted in 2003 (Thousands)

Location and Size	Eagle Lake Trout	Brook Trout	Rainbow Trout	Brown Trout	Coho Salmon	Total
Antelope Lake						
Fingerlings	25.0					25.0
Lake Davis						
Catchables	46.4					46.4
Frenchman Reservoir						
Subcatchables			No fish planted			
Fingerlings						
Lake Oroville						
Fingerlings					172.8	172.8
Thermalito Forebay						
Catchables			29.8			29.8
Lake del Valle						
Catchables			No fish planted			
Los Banos Reservoir						
Catchables			11.8			11.8
Pyramid Lake						
Catchables			No fish planted			
Castaic Lake						
Catchables			49.0			49.0
Castaic Lake Lagoon						
Catchables			36.1			36.1
Silverwood Lake						
Catchables			33.3			33.3
Lake Perris						
Catchables			50.64			50.6
Lake Skinner[a]						
Catchables			No fish planted			
California Aqueduct			No fish planted			
Total	**71.4**		**210.6**		**172.8**	**454.8**

[a]Included in the SWP fish planting program, but not an SWP facility.

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 2002-03, 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 2003. Costs have increased by $872,198 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 2003. These interest accruals are calculated through December 31, 2003, 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 www.swpao.water.ca.gov/publications/index.cfm.

Table 13-3. Recreation and Enhancement Capital Costs of the State Water Project, 2003

Facility	1952-2002	2003	Subtotal	Interest	Total Costs	B132-03 Costs	Difference
Joint Costs Allocated to Recreation and Enhancement							
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	2,729,738	7,403	2,737,141	0	2,737,754	2,729,754	7,387
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	4,612,079	15,835	4,627,914	0	4,627,914	4,612,104	15,810
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	2,587,886	15,582	2,603,468	0	2,603,468	2,578,918	15,550
San Luis Dam and Reservoir, O'Neill 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	3,493,679	2,622	3,496,301	0	3,496,301	3,493,588	2,713
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	4,496,877	10,403	4,507,280	0	4,507,280	4,496,760	10,520
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	4,914,004	12,797	4,926,802	0	4,926,802	4,913,972	12,829
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	3,323,306	674,453	3,997,760	0	3,997,760	3,323,217	674,543
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	58,809,624	142,157	58,951,781	0	58,951,781	58,809,933	141,848
Subtotal	*160,217,261*	*881,253*	*161,098,514*	*85,626,954*	*246,725,468*	*245,844,267*	*881,201*
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	49,947	0
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	554,260	0
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'Neill 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	415,610	0
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)	(137,494)	0
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	3,100,347	0	3,100,347	0	3,100,347	3,109,350	(9,003)
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)	(32,200)	0
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	398,349	0
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	370,137	0
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	4,939,979	0
Subtotal	*23,894,895*	*0*	*23,894,895*	*11,953,381*	*35,848,276*	*35,857,279*	*(9,003)*
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	95,588,375	881,253	96,469,628	0	96,469,628	95,597,430	872,198
Total	**184,112,156**	**881,253**	**184,993,409**	**97,580,335**	**282,573,744**	**281,701,546**	**872,198**

[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	1952-2002 Disbursements: WRD Bond Funds	1952-2002 Disbursements: All Other Funds	1952-2002 Reimbursements: WRD Bond Funds	1952-2002 Reimbursements: All Other Funds	1952-2002 Interest Accrual	2003 Disbursements: WRD Bond Funds	2003 Disbursements: All Other Funds	2003 Reimbursements: WRD Bond Funds	2003 Reimbursements: All Other Funds	2003 Interest Accrual	2004 Beginning of Year Balance to be Reimbursed: Disbursements: WRD Bond Funds	2004 Beginning of Year Balance to be Reimbursed: Disbursements: All Other Funds	2004 Beginning of Year Balance to be Reimbursed: Reimbursements: WRD Bond Funds	2004 Beginning of Year Balance to be Reimbursed: Reimbursements: All Other Funds	Interest Accruals 1992-2004
Joint Costs Allocated to Recreation and Enhancement															
Frenchman Dam and Lake	102,997	2,729,738	104,900	2,719,468	2,097	0	7,403	0	0	0	102,997	2,737,141	104,900	2,719,468	2,097
Antelope Dam and Lake	1,033,261	4,612,079	1,140,322	4,478,932	113,788	0	15,835	0	0	0	1,033,261	4,627,914	1,140,322	4,478,932	113,788
Grizzly Valley Dam and Lake Davis	4,003,092	2,587,886	4,444,594	2,568,667	486,754	0	15,582	0	0	0	4,003,092	2,603,468	4,444,594	2,568,667	486,754
Sisk Dam, San Luis Reservoir, O'Neilll Forebay, and Los Banos Reservoir	988,910	3,493,679	1,938,244	2,725,578	169,085	0	2,622	0	0	0	988,910	3,496,301	1,938,244	2,725,578	169,085
California Aqueduct, Delta to Dos Amigos Pumping Plant	4,467,667	4,496,877	5,267,351	4,092,435	897,406	0	10,403	0	0	0	4,467,667	4,507,280	5,267,351	4,092,435	897,406
Oroville Division	5,725,216	4,914,004	7,324,529	4,570,269	1,790,491	0	12,797	0	0	0	5,725,216	4,926,802	7,324,529	4,570,269	1,790,491
Del Valle Dam and Lake del Valle	10,546,762	3,323,306	16,463,934	3,130,016	6,813,560	0	674,453	0	0	0	10,546,762	3,997,760	16,463,934	3,130,016	6,813,560
California Aqueduct, Dos Amigos Pumping Plant to Termini	48,382,162	58,809,624	113,035,518	49,410,851	75,353,773	0	142,157	0	0	0	48,382,162	58,951,781	113,035,518	49,410,851	75,353,773
Subtotal	*75,250,067*	*84,967,194*	*149,719,392*	*73,696,216*	*85,626,954*	*0*	*881,253*	*0*	*0*	*0*	*75,250,067*	*85,848,447*	*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	3,100,347	11,028,039	649,733	3,673,041	0	0	0	0	0	7,809,509	3,100,347	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*	*10,621,181*	*23,674,520*	*8,096,564*	*11,953,381*	*0*	*0*	*0*	*0*	*0*	*13,273,714*	*10,621,181*	*23,674,520*	*8,096,564*	*11,953,381*
Total	**88,523,781**	**95,588,375**	**173,393,912**	**81,792,780**	**97,580,335**	**0**	**881,253**	**0**	**0**	**0**	**88,523,781**	**96,469,628**	**173,393,912**	**81,792,780**	**97,580,335**

Information for this chapter was provided by the Division of Planning and Local Assistance, Central District, the Office of Water Education, and the State Water Project Analysis Office.

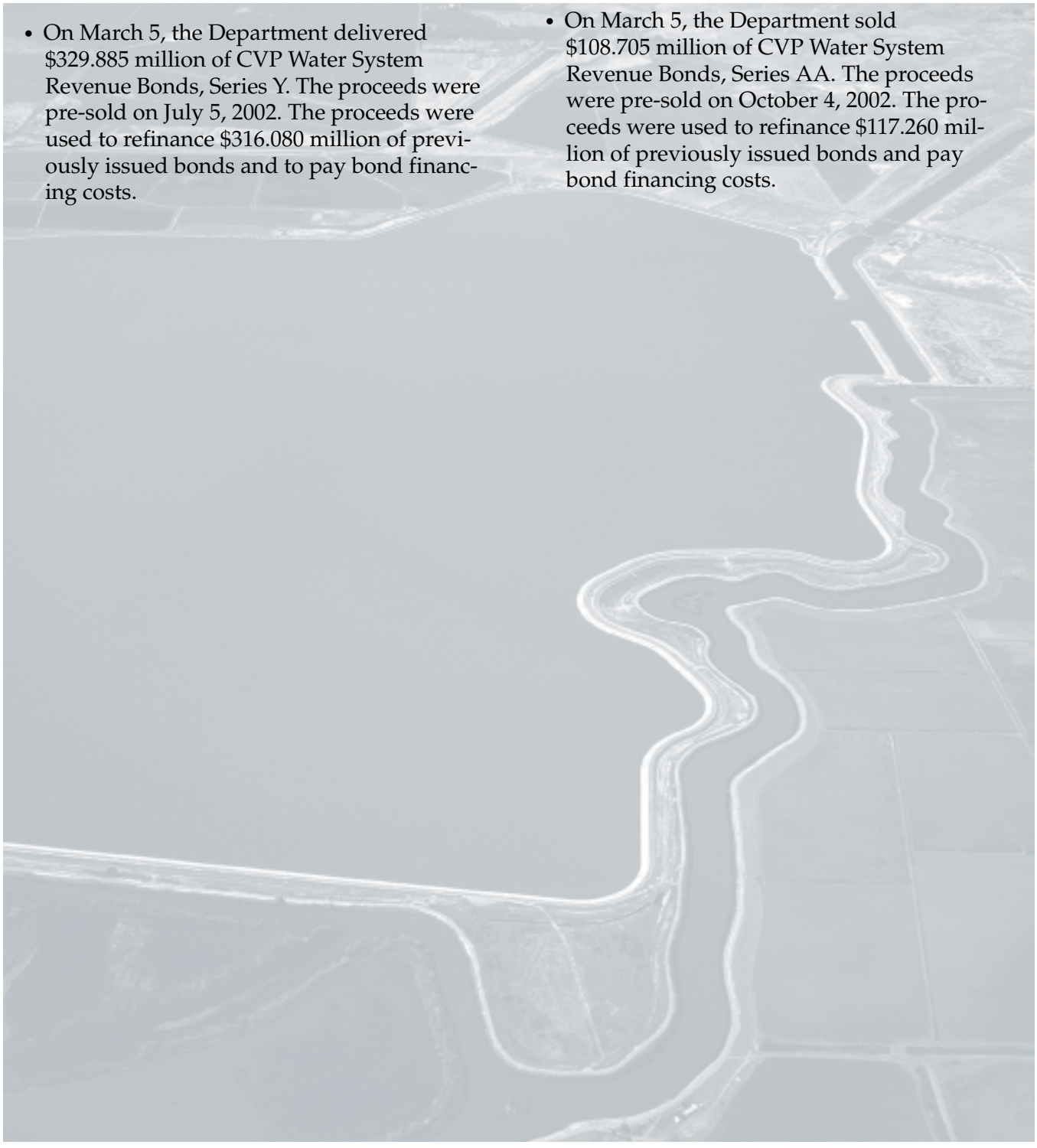
Chapter 14
Financial Analysis



Clifton Court Forebay, Banks Pumping Plant

Significant Events in 2003

- On March 5, the Department delivered $329.885 million of CVP Water System Revenue Bonds, Series Y. The proceeds were pre-sold on July 5, 2002. The proceeds were used to refinance $316.080 million of previously issued bonds and to pay bond financing costs.
- On March 5, the Department sold $108.705 million of CVP Water System Revenue Bonds, Series AA. The proceeds were pre-sold on October 4, 2002. The proceeds were used to refinance $117.260 million of previously issued bonds and pay bond financing costs.



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 2004 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, 2003, are presented in Table 14-1 on page 211 and Table 14-2 on page 212, 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 $92 million interim financing for prior expenditures will total $540 million. Special capital requirements for revenue bond financing of these construction costs are projected at $66 million for a total capital requirement of $606 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 $548 million of revenue bonds. The remaining $58 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 20 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 2.0 percent per year for 2004 and 2.5 percent per year from 2005 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 16) and special capital requirements under revenue bond financing (Line 17). 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 for general Delta facilities and 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 11.

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 11.) 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 the San Bernardino Tunnel Intake. Costs for power plant construction at Alamo, Mojave Siphon, and Devil Canyon are not included in this line.

Table 14-3. Allocation of Capital Expenditures (Thousands of Dollars)

Facilities and Construction Divisions	Expenditures Incurred Through 2003	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	18,289	0	18,289	1,414	0	16,875	0
Oroville Division	588,807	0	588,807	495,327	71,736	21,744	0
Delta Facilities Division	392,783	214,648	607,431	539,289	0	68,142	0
North Bay Aqueduct	94,235	747	94,982	94,982	0	0	0
South Bay Aqueduct	94,484	19,813	114,297	92,831	7,665	13,801	0
California Aqueduct							
North San Joaquin Division	273,198	8,074	281,272	271,700	0	9,572	0
San Luis Division	265,220	7,602	272,822	260,288	0	12,534	0
South San Joaquin Division	312,203	3,048	315,251	297,818	0	17,433	0
Tehachapi Division	327,378	9,213	336,591	317,776	0	18,815	0
Mojave Division	390,704	5,886	396,590	358,313	0	38,277	0
Santa Ana Division	252,942	4,703	257,645	225,981	0	31,664	0
West Branch	500,502	12,446	512,948	480,913	0	32,035	0
Coastal Branch	497,094	626	497,720	497,720	0	0	0
Subtotal, California Aqueduct	*2,819,241*	*51,598*	*2,870,839*	*2,710,509*	*0*	*160,330*	*0*
Other Project Facilities							
Small Hydroelectric Power Generating Facilities	104,198	0	104,198	104,198	0	0	0
Off-Aqueduct Power Generating Facilities	448,653	15,380	464,033	464,033	0	0	0
East Branch Enlargement	453,459	0	453,459	453,459	0	0	0
East Branch Extension	122,831	4,724	127,555	127,555	0	0	0
Coastal Power Allocation	30,708	0	30,708	30,708	0	0	0
San Joaquin Drainage Facilities	53,130	35,268	88,398	0	0	0	88,398
Planning and Preoperations	57,078	24,000	81,078	81,078	0	0	0
Unassigned/Miscellaneous	2,020	81,883	83,903	0	0	0	83,903
Subtotal, Project Construction Expenditures	*5,279,916*	*448,061*	*5,727,977*	*5,195,383*	*79,401*	*280,891*	*172,301*
Other Capital Expenditures							
Davis-Grunsky Act Program	130,000	0	130,000	0	0	0	130,000
Total Capital Expenditures	**5,409,916**	**448,061**	**5,857,977**	**5,195,383**	**79,401**	**280,891**	**302,301**

[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, and costs assigned to the Davis-Grunsky Act Program.

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 2004. All costs in Line 9 will be allocated to and repaid by the two participating contractors.

Line 10, South Bay Aqueduct Enlargement, shows projected costs of providing additional capacity required to meet increases in water demands for Alameda County Flood Control and Water Conservation District service areas. Construction includes creating a third discharge line, creating a 325 acre-foot Dyer Reservoir, modifying canal, and enlarging the South Bay Pumping Plant. Construction is expected to be completed in 2008.

Line 11, 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 11 are shown in Table 14-5.

Line 12, Additional Conservation Facilities, shows projected costs to plan and study additional conservation facilities. Specific planning activities and projected spending amounts for 2004 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 12 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 13, 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 35).

Line 14, 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 15, Subtotal Project Construction Expenditures, is the total of Lines 1 through 14.

Line 16, 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, 2003, the Department had disbursed $130 million (including $8.5 million for administration) in grants and loans to local agencies throughout the State.

Line 17, 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

Table 14-4. East Branch Enlargement Capital Costs by Facility

Facility	Dollar Amounts (in millions)
Aqueduct and siphons	128.1
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	**453.4**

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	38.3
Thermalito Diversion Dam	14.1
Subtotal	*675.7*
Transmission Lines	
Midway-Wheeler Ridge	10.7
Geysers-Lakeville	6.9
Total	**693.3**

Table 14-6. Estimated Future Costs for Planning Additional Conservation Facilities

Activity	Dollar Amounts (in millions)
Bay-Delta Evaluation	12.6
Other Planning Costs	11.4
Total	**24.0**

assumed revenue bond sales is presented in Table 14-7.

Line 18, Total Capital Requirements, is the total of Lines 15, 16, and 17.

Line 19, Power Facilities Capital Requirements, shows the total capital requirements for power facilities included in Line 18.

Line 20, Water Facilities Capital Requirements, shows the total capital requirements for water facilities included in Line 18.

Capital Financing

The SWP was constructed with three general types of financing: Burns-Porter Act, revenue bonds, and capital resources. Lines 21 through 36 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 29 percent of the expenditures through 2003 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 9 percent, of the construction expenditures through 2003.

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, 2003, 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

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	50.8	0.0	3.1	0.0	2.4	5.5	56.3
Future South Bay Aqueduct Enlargement Bond	99.2	0.0	6.2	0.0	5.8	14.0	113.2
Future Water System Facilities Bonds	330.1	0.0	20.7	0.0	26.2	46.9	377.0
Total	**3,042.2**	**2.6**	**279.6**	**14.8**	**3,467.4**	**3,766.4**	**6,968.8**

[a]Actual bond issue for all except future water system facilities and future East Branch Extension 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.

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 21, 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 this financial analysis.

Line 22, 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, 2003. Of this total amount, $417 million were used for construction expenditures and $68 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 23, East Branch Extension, Current Bonds, shows that $86 million of Water System Revenue Bond proceeds had been spent through December 31, 2003.

Line 24, 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 25, South Bay Aqueduct Enlargement, Current Bonds, shows no proceeds spent through December 31, 2003, since the manufacture of pumps is not scheduled to commence until 2004.

Line 26, South Bay Aqueduct Enlargement, Future Bonds, shows the Department's estimate of $113 million of bonds required to complete construction of the South Bay Aqueduct Enlargement and to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Line 27, Water System Facilities, Current Bonds, shows that through December 31, 2003, $1.5 billion of proceeds from Water System Revenue Bonds, Series A through Series AA, 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 28, Water System Facilities, Future Bonds, shows that $379 million of future water revenue bonds are needed to provide $317 million for construction of SWP water system facilities and $62 million for bond discounts, interest costs, and debt service reserve requirements.

Line 29, Subtotal, Water Revenue Bonds, is the total of Lines 22 through 28.

Line 30, 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.)

Table 14-1. Capital Requirements and Financing, December 31, 2003 (Thousands of Dollars)

Line Number/Item	1952-2003	Calendar Year 2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2004-2015	1952-2015
Capital Requirements															
1. Initial Project Facilities	2,202,316	0	0	0	0	0	0	0	0	0	0	0	0	0	2,202,316
2. North Bay Aqueduct	90,019	0	5	0	0	0	0	0	0	0	0	0	0	5	90,024
3. Delta and Suisun Marsh Facilities	253,252	33,290	32,944	38,772	20,729	21,644	18,312	41,012	1,589	1,589	1,589	1,589	1,589	214,648	467,900
4. Final 4 Units at Banks Pumping Plant	43,673	0	0	0	0	0	0	0	0	0	0	0	0	0	43,673
5. Coastal Branch Aqueduct	507,271	3	3	4	4	4	4	0	0	0	0	0	0	22	507,293
6. West Branch Aqueduct	191,660	0	0	0	0	0	0	0	0	0	0	0	0	0	191,660
7. East Branch Enlargement	453,459	0	0	0	0	0	0	0	0	0	0	0	0	0	453,459
8. East Branch Improvements	306,406	21,829	25,558	6,683	111	0	0	0	0	0	0	0	0	54,181	360,587
9. East Branch Extension	122,831	3,074	1,275	375	0	0	0	0	0	0	0	0	0	4,724	127,555
10. South Bay Aqueduct Enlargement	1,533	9,347	21,060	33,550	24,290	7,815	1,605	0	0	0	0	0	0	97,667	99,200
11. Power Generation and Transmission Facilities	677,877	1,880	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	0	0	15,380	693,257
12. Additional Conservation Facilities	144,765	3,300	3,450	3,450	3,450	3,450	3,450	3,450	0	0	0	0	0	24,000	168,765
13. San Joaquin Drainage Facilities	53,130	2,939	2,939	2,939	2,939	2,939	2,939	2,939	2,939	2,939	2,939	2,939	2,939	35,268	88,398
14. Other Costs	231,724	1,482	684	0	0	0	0	0	0	0	0	0	0	2,166	233,890
15. Subtotal Project Construction Expenditures	*5,279,916*	*77,144*	*89,418*	*87,273*	*53,023*	*37,352*	*27,810*	*48,901*	*6,028*	*6,028*	*6,028*	*4,528*	*4,528*	*448,061*	*5,727,977*
16. Davis-Grunsky Act Program Costs	130,000	0	0	0	0	0	0	0	0	0	0	0	0	0	130,000
17. Special Capital Requirements Under Revenue Bond Financing	586,148	8,942	23,361	12,227	0	12,020	3,295	6,599	0	0	0	0	0	66,444	652,592
18. Total Capital Requirements	**5,996,064**	**86,086**	**112,779**	**99,500**	**53,023**	**49,372**	**31,105**	**55,500**	**6,028**	**6,028**	**6,028**	**4,528**	**4,528**	**514,505**	**6,510,569**
19. Power Facilities Capital Requirements	677,877	1,880	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	0	0	15,380	693,257
20. Water Facilities Capital Requirements	5,318,187	84,206	111,279	98,000	51,523	47,872	29,605	54,000	4,528	4,528	4,528	4,528	4,528	499,125	5,817,312
Financing of Capital Requirements															
Power Revenue Bond Proceeds															
21. Power Revenue Bonds through Series H	1,162,458	0	0	0	0	0	0	0	0	0	0	0	0	0	1,162,458
Water Revenue Bond Proceeds															
22. East Branch Enlargement, Current Bonds	485,274	0	0	0	0	0	0	0	0	0	0	0	0	0	485,274
23. East Branch Extension, Current Bonds	86,134	0	0	0	0	0	0	0	0	0	0	0	0	0	86,134
24. East Branch Extension, Future Bonds	0	46,395	9,400	500	0	0	0	0	0	0	0	0	0	56,295	56,295
25. South Bay Aqueduct Enlargement, Current Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26. South Bay Aqueduct Enlargement, Future Bonds	0	8,220	28,000	38,500	0	36,895	1,605	0	0	0	0	0	0	113,220	113,220
27. Water System Facilities, Current Bonds	1,467,200	0	0	0	0	0	0	0	0	0	0	0	0	0	1,467,200
28. Water System Facilities, Future Bonds	0	46,460	143,600	56,000	0	56,500	25,000	51,000	0	0	0	0	0	378,560	378,560
29. Subtotal, Water Revenue Bonds	*2,038,608*	*101,075*	*181,000*	*95,000*	*0*	*93,395*	*26,605*	*51,000*	*0*	*0*	*0*	*0*	*0*	*548,075*	*2,585,078*
Other Capital Financing															
30. Initial Project Facilities Bond Proceeds	1,452,452	0	0	0	0	0	0	0	0	0	0	0	0	0	1,452,452
31. Davis-Grunsky Act Program Bond Proceeds	130,000	0	0	0	0	0	0	0	0	0	0	0	0	0	130,000
32. Application of California Water Fund Monies (Tideland Oil Revenues)	508,056	0	0	0	0	0	0	0	0	0	0	0	0	0	508,056
33. Interim Financing	92,210	(19,489)	(72,721)	0	48,523	(48,523)	0	0	0	0	0	0	0	(92,210)	0
34. Application of Capital Resources Revenues to Construction	547,990	0	0	0	0	0	0	0	1,528	1,528	1,528	28	28	4,640	552,630
35. Revenue Transfers Applied	64,290	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	54,000	118,290
36. Subtotal, Other Capital Financing	*2,794,998*	*(14,989)*	*(68,221)*	*4,500*	*53,023*	*(44,023)*	*4,500*	*4,500*	*6,028*	*6,028*	*6,028*	*4,528*	*4,528*	*(33,570)*	*2,761,428*
37. Total Financing of Capital Requirements	**5,996,064**	**86,086**	**112,779**	**99,500**	**53,023**	**49,372**	**31,105**	**55,500**	**6,028**	**6,028**	**6,028**	**4,528**	**4,528**	**514,505**	**6,510,569**

Table 14-2. State Water Project Revenues and Expenditures, December 31, 2003 (Thousands of Dollars)

Line Number/Item	1952-2003	Calendar Year 2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2004-2015	1952-2015
Project Revenues															
1. Capital resources revenues	814,701	0	0	0	0	0	0	0	0	0	0	0	0	0	814,701
Water Contractor Payments															
2. Transportation capital	3,289,166	136,891	138,245	138,315	139,644	139,937	140,072	140,147	140,147	140,147	138,692	137,605	135,821	1,665,663	4,954,829
3. Transportation minimum	4,411,988	211,822	214,861	244,991	241,140	257,863	258,818	259,403	253,459	253,375	204,261	161,893	152,390	2,714,276	7,126,264
4. Transportation variable	2,798,789	209,233	264,471	201,841	250,924	225,534	236,342	259,079	253,923	274,922	314,626	339,740	349,627	3,180,262	5,979,051
5. Delta Water Charge	1,816,269	95,831	96,415	96,683	96,913	97,361	97,587	97,816	98,050	98,289	98,299	98,310	105,357	1,176,911	2,993,180
6. East Branch Enlargement	468,107	42,135	33,095	43,044	43,079	40,863	41,805	41,532	42,592	42,654	42,928	42,377	43,433	499,537	967,644
7. East Branch Extension	18,388	7,850	10,996	11,649	11,680	8,827	10,372	10,444	10,361	10,363	11,942	11,981	12,121	128,586	146,974
8. Coastal Extension	14,782	3,169	3,170	3,170	4,126	3,113	3,106	6,351	4,176	4,176	4,180	4,209	4,211	47,157	61,939
9. Water Revenue bond surcharge	396,093	61,217	58,338	62,842	62,923	57,403	58,113	55,111	62,363	62,445	64,968	66,097	69,180	741,000	1,137,093
10. Subtotal water contractor payments	*13,213,582*	*768,148*	*819,591*	*802,535*	*850,429*	*830,901*	*846,215*	*869,883*	*865,071*	*886,371*	*879,896*	*862,212*	*872,140*	*10,153,392*	*23,366,974*
11. Revenue bond cover adjustments	0	(38,783)	(38,603)	(40,436)	(40,594)	(40,692)	(41,587)	(41,281)	(42,592)	(42,679)	(37,942)	(37,431)	(37,275)	(479,895)	(479,895)
12. Rate management adjustments	(216,933)	(6,000)	(30,000)	(30,000)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(430,230)	(647,163)
Other Revenues															
13. Federal payments for project operating costs	208,260	11,827	11,827	11,827	11,827	11,827	11,827	11,827	11,839	11,839	11,839	11,839	11,839	141,984	350,244
14. Appropriations for operating costs allocated to recreation	16,657	0	0	0	0	0	0	0	0	0	0	0	0	0	16,657
15. Davis-Grunsky loan repayments	47,613	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	16,800	64,413
16. Revenue bond proceeds	652,977	0	0	0	0	0	0	0	0	0	0	0	0	0	652,977
17. Interest earnings on operating revenues	561,413	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	48,000	609,413
18. Oroville-Thermalito payments	249,279	0	0	0	0	0	0	0	0	0	0	0	0	0	249,279
19. Miscellaneous revenues	184,264	0	0	0	0	0	0	0	0	0	0	0	0	0	184,264
20. Subtotal, other revenues	*1,920,463*	*17,227*	*17,227*	*17,227*	*17,227*	*17,227*	*17,227*	*17,227*	*17,239*	*17,239*	*17,239*	*17,239*	*17,239*	*206,784*	*2,127,247*
21. Total operating revenues	14,917,112	740,592	768,215	749,326	786,592	766,966	781,385	805,359	799,248	820,461	818,723	801,550	811,634	9,450,051	24,367,163
22. Total operating revenues and capital resources revenues	15,731,813	740,592	768,215	749,326	786,592	766,966	781,385	805,359	799,248	820,461	818,723	801,550	811,634	9,450,051	25,181,864
Project Expenses															
23. Project operations, maintenance, and power costs	6,842,328	501,506	526,000	459,324	500,195	472,170	483,690	505,428	500,036	519,336	543,286	528,909	535,417	6,075,297	12,917,625
24. Deposits to replacement reserves	96,618	0	0	0	0	0	0	0	0	0	0	0	0	0	96,618
25. Deposits to special reserves	543,514	(20,997)	(15,753)	9,190	1,643	10,075	5,295	6,779	893	3,698	(5,420)	(3,355)	6,799	(1,153)	542,361
26. Capital resources expenditures	1,090,883	0	0	0	0	0	0	0	0	0	0	0	0	0	1,090,883
Payments of Debt Service															
27. Principal repayments on bonds sold through December 31, 2003 (current bonds)	1,767,298	102,375	101,320	118,750	124,510	130,665	140,520	146,155	154,565	161,465	153,120	155,420	156,295	1,645,160	3,412,458
28. Interest on bonds sold through December 31, 2003 (current bonds)	5,028,923	153,208	145,842	140,728	134,970	128,780	122,538	115,826	108,781	100,990	92,763	85,604	78,150	1,408,180	6,437,103
29. Future water bond principal repayments	155	0	1,199	3,378	4,397	4,640	5,853	6,630	7,991	8,430	8,895	9,383	9,899	70,695	70,850
30. Future water bond interest payments	617	0	5,107	13,456	16,377	16,136	18,989	20,041	22,482	22,042	21,579	21,089	20,574	197,872	198,489
31. Total principal	1,767,453	102,375	102,519	122,128	128,907	135,305	146,373	152,785	162,556	169,895	162,015	164,803	166,194	1,715,855	3,483,308
32. Total interest	5,029,540	153,208	150,949	154,184	151,347	144,916	141,527	135,867	131,263	123,032	114,342	106,693	98,724	1,606,052	6,635,592
33. Subtotal debt service	*6,796,993*	*255,583*	*253,468*	*276,312*	*280,254*	*280,221*	*287,900*	*288,652*	*293,819*	*292,927*	*276,357*	*271,496*	*264,918*	*3,321,907*	*10,118,900*
Net Revenues															
34. Total Operating Expenses and Debt Service	**15,370,336**	**736,092**	**763,715**	**744,826**	**782,092**	**762,466**	**776,885**	**800,859**	**794,748**	**815,961**	**814,223**	**797,050**	**807,134**	**9,396,051**	**24,766,387**
35. Net system revenues	361,477	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	54,000	415,477
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	296,287
37. Revenues used for capital expenditures	65,190	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	54,000	119,190

Table 14-10. Operations, Maintenance, Power, and Replacement Costs, by Facility, Composition, and Purpose (Thousands of Dollars)

Feature	1962-2003	2004	2005	2006	Calendar Year 2007	2008	2009	2010	2011	2012	2013	2014	2015	2016-2035	Total
Project Facility															
Feather River facilities	716,860	35,680	32,334	25,355	22,744	22,791	22,747	22,553	22,751	22,744	22,428	22,453	22,275	491,544	1,505,259
North Bay Aqueduct	38,575	3,506	3,435	2,785	3,157	3,064	3,102	3,136	3,164	3,213	3,292	3,404	3,424	73,614	150,871
Delta facilities	576	0	0	0	0	0	0	0	0	0	0	0	0	0	576
Suisun Marsh	24,109	883	813	2,091	2,380	2,385	2,380	2,360	1,915	1,914	1,887	1,887	1,872	42,760	89,636
South Bay Aqueduct	200,649	11,872	11,635	10,806	12,195	11,681	11,839	11,983	12,057	12,243	12,616	13,074	13,075	279,399	625,124
California Aqueduct															
Delta to Edmonston	2,719,749	171,228	181,978	157,516	177,272	169,100	169,971	182,393	179,554	183,323	203,344	209,989	215,193	4,570,379	9,490,989
Edmonston to Perris	2,337,272	186,353	202,346	181,103	205,818	186,861	197,602	206,470	206,650	220,140	238,866	259,249	260,474	5,352,608	10,241,812
West Branch	(68,521)	(1,658)	3,991	(7,150)	(9,954)	(9,641)	(10,085)	(9,798)	(9,406)	(7,826)	(8,793)	(8,981)	(8,751)	(274,186)	(430,759)
Coastal Branch	179,062	11,174	11,040	11,280	12,622	11,968	12,173	12,375	12,446	12,680	13,190	13,768	13,789	291,792	619,359
Off-Aqueduct power generating facilities	972,154	57,865	56,957	58,985	56,966	56,966	56,966	56,961	56,939	56,939	38,631	100	100	900	1,527,429
Recreation, planning, and CVP negotiations	1,932	683	683	683	683	683	683	683	683	683	683	683	683	13,669	23,797
Water quality monitoring	308,506	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	9,305	600	600	600	600	600	600	600	600	600	600	600	600	12,000	28,505
Subtotal	*7,440,228*	*499,379*	*526,000*	*459,324*	*500,195*	*472,170*	*483,690*	*505,428*	*500,036*	*519,336*	*539,427*	*528,909*	*535,417*	*11,082,051*	*24,591,590*
Payments to\credits from PG&E under Comprehensive Agreement	(57,721)	2,127	0	0	0	0	0	0	0	0	0	0	0	0	(55,594)
Total OMP&R Costs	*7,382,507*	*501,506*	*526,000*	*459,324*	*500,195*	*472,170*	*483,690*	*505,428*	*500,036*	*519,336*	*539,427*	*528,909*	*535,417*	*11,082,051*	*24,535,996*
Composition															
Salaries and expenses of headquarters personnel	2,185,418	92,202	87,183	81,785	77,136	74,162	75,283	73,764	71,329	76,410	71,107	71,609	68,933	1,190,280	4,296,601
Salaries and expenses of field personnel	3,243,150	103,451	95,155	96,492	91,466	94,632	96,454	94,523	90,782	97,448	92,383	93,022	89,418	2,072,712	6,451,088
Pumping power															
Used by pumping plants	1,324,668	314,846	354,564	285,847	342,065	313,975	323,445	349,485	352,265	358,790	409,512	437,921	451,173	9,385,997	15,004,553
Produced by generation plants	(272,639)	(69,262)	(68,136)	(64,062)	(67,715)	(67,842)	(68,735)	(69,582)	(71,556)	(70,528)	(72,483)	(74,020)	(74,484)	(1,573,378)	(2,684,422)
Payments to/credits from PG&E under Comprehensive Agreement	(57,721)	2,127	0	0	0	0	0	0	0	0	0	0	0	0	(55,594)
Off-Aqueduct power generating facilities requirement	972,154	57,865	56,957	58,985	56,966	56,966	56,966	56,961	56,939	56,939	38,631	100	100	900	1,527,429
Oroville-Thermalito insurance premiums	11,320	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	(121,051)
Subtotal	*7,285,299*	*501,506*	*526,000*	*459,324*	*500,195*	*472,170*	*483,690*	*505,428*	*500,036*	*519,336*	*539,427*	*528,909*	*535,417*	*11,082,051*	*24,438,788*
Deposits to replacement reserves	97,208	0	0	0	0	0	0	0	0	0	0	0	0	0	97,208
Total OMP&R Costs	*7,382,507*	*501,506*	*526,000*	*459,324*	*500,195*	*472,170*	*483,690*	*505,428*	*500,036*	*519,336*	*539,427*	*528,909*	*535,417*	*11,082,051*	*24,535,996*
Project Purpose															
Water supply and power generation	7,116,099	476,454	503,074	436,399	477,272	449,247	460,766	482,504	477,113	496,412	516,502	505,983	512,491	10,623,806	23,534,122
Payments to/credits from PG&E under Comprehensive Agreement	(57,721)	2,127	0	0	0	0	0	0	0	0	0	0	0	0	(55,594)
Recreation and fish and wildlife enhancement	124,902	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	444,902
Flood control	4,064	325	326	325	323	323	324	324	323	324	325	326	326	6,245	14,203
Miscellaneous purposes															
Federal share, San Luis, and Delta facilities	185,858	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	240,000	569,858
Other (Davis-Grunsky, drainage, City of Los Angeles)	9,305	600	600	600	600	600	600	600	600	600	600	600	600	12,000	28,505
Total OMP&R Costs	**7,382,507**	**501,506**	**526,000**	**459,324**	**500,195**	**472,170**	**483,690**	**505,428**	**500,036**	**519,336**	**539,427**	**528,909**	**535,417**	**11,082,051**	**24,535,996**

Table 14-11. Annual Debt Service on Bonds Sold through December 31, 2003 (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	59,875	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	154,610
2004	45,730	34,244	0	0	2,500	4,355	970	2,101	1,330	2,606	26,396	59,056	76,926	102,362	3,055	5,470	2,210	9,443	2,425	2,838	5,610	5,744	9,883	20,801	220	2,315	2,045	4,235	102,374	153,208
2005	46,985	32,242	0	0	2,705	4,213	1,320	2,047	1,445	2,531	22,218	55,671	74,673	96,703	3,240	5,305	8,825	9,332	2,750	2,697	5,950	5,420	3,542	19,912	230	2,306	2,110	4,166	101,320	145,841
2006	48,275	30,186	0	0	2,865	4,058	1,370	1,973	1,525	2,447	28,635	54,401	82,670	93,064	3,435	5,130	9,340	8,827	2,920	2,535	6,325	5,067	11,625	19,723	240	2,296	2,195	4,086	118,750	140,728
2007	49,765	28,060	0	0	3,020	3,888	1,450	1,894	1,620	2,356	29,835	53,054	85,690	89,252	3,640	4,945	9,835	8,286	3,100	2,359	6,730	4,687	12,225	19,151	1,015	2,286	2,275	4,003	124,510	134,969
2008	51,755	25,871	0	0	3,145	3,711	1,395	1,811	1,650	2,261	22,745	51,550	80,690	85,205	3,860	4,749	25,227	7,711	3,209	2,173	6,247	4,285	11,077	18,526	260	2,230	95	3,900	130,665	128,779
2009	54,095	23,583	0	0	3,315	3,533	1,405	1,734	1,780	2,163	25,086	50,627	85,681	81,640	4,090	4,540	26,790	6,324	3,373	1,994	6,624	3,928	12,357	18,000	270	2,215	1,335	3,896	140,520	122,539
2010	55,785	21,206	0	0	3,915	3,347	1,635	1,657	2,130	2,057	21,905	49,493	85,370	77,761	4,335	4,319	28,379	4,940	3,714	1,807	7,297	3,552	12,735	17,403	2,880	2,201	1,445	3,844	146,155	115,826
2011	57,275	18,749	0	0	2,625	3,131	1,070	1,570	1,475	1,936	34,450	48,455	96,895	73,842	4,595	4,085	26,840	3,474	2,935	1,602	6,390	3,140	14,210	16,776	1,260	2,081	1,440	3,782	154,565	108,781
2012	58,615	16,199	0	0	2,790	2,949	1,085	1,500	1,585	1,833	36,270	46,764	100,345	69,245	4,875	3,837	28,465	1,987	3,135	1,399	6,870	2,695	14,955	16,081	1,315	2,026	1,505	3,720	161,465	100,989
2013	60,455	13,650	0	0	4,160	2,754	2,170	1,426	2,570	1,722	42,030	44,932	111,385	64,484	5,165	3,574	515	376	4,805	1,179	11,100	2,214	15,935	15,320	1,380	1,964	2,835	3,652	153,120	92,763
2014	57,985	11,222	0	0	5,425	2,532	2,240	1,307	3,755	1,588	45,884	42,837	115,289	59,486	5,475	3,303	215	350	4,485	917	9,180	1,624	16,311	14,503	1,470	1,897	2,995	3,524	155,420	85,604
2015	53,775	8,806	0	0	6,020	2,245	2,920	1,184	3,715	1,392	53,024	40,498	119,454	54,125	5,805	3,015	810	339	4,530	676	2,905	1,128	17,996	13,663	1,550	1,819	3,245	3,385	156,295	78,151
2016	46,215	6,588	0	0	6,405	1,919	3,310	1,024	3,750	1,193	57,290	37,741	116,970	48,464	6,150	2,710	1,020	295	2,560	431	3,270	974	19,105	12,729	1,630	1,736	3,435	3,226	154,140	70,566
2017	38,145	4,652	0	0	6,755	1,575	3,585	842	3,705	993	61,141	34,784	113,331	42,846	6,520	2,388	1,185	240	1,370	293	3,590	797	20,409	11,739	1,720	1,650	3,615	3,058	151,740	63,011
2018	25,435	3,011	0	0	5,015	1,211	2,550	645	2,950	795	52,557	31,609	88,507	37,272	6,910	2,045	50	175	725	220	1,295	605	20,543	10,681	1,810	1,559	3,575	2,878	123,415	55,436
2019	16,975	1,804	0	0	5,250	959	2,640	517	3,125	647	61,767	28,950	89,757	32,877	7,325	1,682	50	172	765	184	1,370	539	22,258	9,622	1,910	1,463	3,760	2,701	127,195	49,239
2020	17,405	956	0	0	5,505	683	2,760	376	3,320	485	51,252	25,825	80,242	28,325	7,765	1,298	55	170	810	146	1,455	470	21,578	8,475	2,005	1,361	3,945	2,513	117,855	42,758
2021	8,595	318	0	0	1,835	399	1,130	231	1,000	314	59,815	23,225	72,375	24,487	8,230	890	1,010	167	575	105	1,980	396	23,580	7,396	2,120	1,254	4,315	2,315	114,185	37,009
2022	1,885	60	0	0	4,780	306	1,180	174	4,645	264	56,635	20,179	69,125	20,983	8,725	458	1,060	117	600	76	2,075	298	24,910	6,214	2,230	1,140	4,540	2,100	113,265	31,385
2023	85	7	0	0	850	65	675	114	400	31	61,493	17,282	63,503	17,498	0	0	550	62	475	45	1,895	191	20,103	4,958	2,350	1,021	4,655	1,870	93,531	25,645
2024	35	3	0	0	430	21	440	79	200	10	61,287	14,070	62,392	14,182	0	0	310	34	340	19	1,450	84	22,024	3,944	2,470	896	4,850	1,635	93,836	20,794
2025	0	0	0	0	0	0	200	57	0	0	54,397	10,868	54,597	10,925	0	0	65	18	0	0	0	0	27,602	2,836	2,605	765	5,040	1,392	89,909	15,935
2026	0	0	0	0	0	0	210	46	0	0	41,193	8,124	41,403	8,170	0	0	70	15	0	0	0	0	8,661	1,451	2,745	626	5,295	1,140	58,174	11,402
2027	0	0	0	0	0	0	220	36	0	0	38,614	6,039	38,834	6,075	0	0	75	12	0	0	0	0	6,541	1,014	2,890	480	5,555	876	53,895	8,456
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**	**84,069**	**61,330**	**102,750**	**1,306,116**	**1,592,978**	**3,355,586**	**4,611,725**	**139,165**	**283,872**	**423,116**	**568,075**	**76,026**	**117,100**	**159,024**	**230,010**	**487,426**	**623,776**	**45,655**	**54,282**	**92,335**	**89,611**	**4,778,333**	**6,578,448**

[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.

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 31, 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 32, 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, 2003, was used to finance a total of $508 million of SWP costs.

Line 33, 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 34, Application of Capital Resources Revenues to Construction, presents the Capital Resources Revenues applied for capital expenditures.

Line 35, 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 2004 through 2015 include funds to finance expenditures for San Joaquin drainage facilities, as indicated in Line 13 of Table 14-1, and expenditures for additional conservation facilities, as indicated in Line 12.

Line 36, Subtotal, Other Capital Financing, is the total of Lines 30 through 35.

Line 37, Total Financing of Capital Requirements, totals Lines 21, 29, and 36.

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 2004 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 2004-2015. 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).

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]	72.0
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.

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 2005 water charges to be billed July 1, 2004. 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 2005 charges included in Appendix B are as described below.

- Future capital costs in Appendix B are based on the prevailing prices as of December 31, 2003. Those costs presented in the financial analysis include allowances for price escalation.
- Pre-2004 charges in Appendix B represent charges as they should have been according to currently known conditions. Pre-2004 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 2004 and thereafter have been adjusted for any apparent overpayments or underpayments of pre-2004 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 AA 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 AA bonds. Surcharge values included in Table 14-2 apply to Series B through Series AA 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

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.

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 2004 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 and none are indicated for 2004 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, 2003. 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 17 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 1952-2003 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 213.

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, 2003, $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 1952-2003 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 34 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, 2003, show the total principal and interest payments on bonds sold to date. Table 14-11 on page 214 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 AA).

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 24 and 26 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 2005 and 2010. 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 2005 and 2010, 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 2003 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 2 percent per year for 2004 and at 2 percent per year for 2005 through 2015. The escalation rates for future power sources vary, depending on the source of energy.

Table 14-12. Estimated Unit Water Charges for 2005 and 2010, by Service Area (Dollars per Acre-Foot)

	2005		2010	
Service Area and Charge	*Unescalated*	*Escalated*	*Unescalated*	*Escalated*
Feather River Area				
Capital; OM&R	28	28	76	76
North Bay Area				
Capital; OM&R	170	170	146	148
Power	24	24	21	22
Total	**194**	**194**	**167**	**170**
South Bay Area				
Capital; OM&R	96	96	100	102
Power	48	48	47	50
Total	**144**	**144**	**147**	**152**
Coastal Area				
Capital; OM&R	502	502	487	489
Power	126	126	126	132
Total	**628**	**628**	**613**	**621**
San Joaquin Area				
Capital; OM&R	53	53	51	53
Power	21	21	22	23
Total	**74**	**74**	**73**	**76**
Southern California Area				
Capital; OM&R	148	148	137	139
Power	146	146	143	149
Total	**294**	**294**	**280**	**288**

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



Romero Visitors Center exhibits highlight how this joint State-federal complex of facilities serves both the State Water Project and the federal Central Valley Project

Significant Events in 2003

- The Office of Water Education installed a photographic exhibit highlighting the Salton Sea at the California History Museum.
- OWE initiated the first annual California Lakes and Reservoirs Appreciation Week awareness campaign. The campaign was designed to raise public appreciation for the State's lakes and reservoirs, including those in the State Water Project system, and the need to care for the water quality of such resources.
- During May, the Department celebrated Water Awareness Month for the sixteenth consecutive year.
- The SWP recreation section on the Department's Web site was renovated and placed online. The section provided detailed information on recreational activities available at each SWP lake and reservoir.
- The Department's Graphic Services Branch entered into an agreement with the Office of the Secretary of State, outlining terms for the California State Archives to take possession and maintain the State Water Project historical memorabilia collection.
- The Department welcomed 257 visitors, both foreign and domestic, to SWP facilities. Tour groups included visitors from 11 foreign countries.



The Office of Water Education serves as liaison between the Department of Water Resources and the news media and the public. OWE informs and educates about the value and the operations of the State Water Project and many other Departmental programs. Sophisticated graphics, video, and photography units play an important role in the outreach process, as do publications, Web sites, visitors centers, tours, exhibits, 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 2003 with maps of the Sacramento and San Joaquin river systems and the State's hydrologic regions.

OWE's graphic design unit produced a flood fighting methods handbook, used in training classes within and outside State service. The handbook was also distributed to at-risk community groups located along rivers of the SWP.

The *Floodlight Newsletter,* a quarterly publication addressing flood preparedness and flood plain management, was produced.

Snow Surveys

OWE continued to provide media outreach for the Division of Flood Management's Snow Surveys Section.

California Bay-Delta Authority

OWE assisted the California Bay-Delta Authority in media and outreach activities, including providing public address system support for many public hearings, meetings, and conferences.

OWE's design group assisted in the graphic development of the CALFED Bay-Delta Program plans, as well as producing the 2003 annual report. The design group also provided graphic support for a traveling Delta exhibit used by the CALFED Bay-Delta Program at events such as Association of California Water Agency conferences. The video unit produced and transferred to DVD *Discovering New Paths*, a video documenting a multiagency study on the effects of natural and man-made Delta flows on water quality fish migration.

News Events

The Department notified news media of the following 2003 water-related highlights:

- Ninety percent of SWP allocations were met for most contractors during 2003.
- In January, the Department's Division of Planning and Local Assistance announced a new Web site for Integrated Storage Investigations, a cooperative water management program that brings together local water interests, CALFED agencies, and stakeholders to cooperatively plan for California's future water needs.
- In February, Department officials announced that the Settlement Agreement negotiated in response to a lawsuit filed in 1996 challenging the Monterey Amendment (*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) was available for review.

- In March, the Department announced that since September 11, 2001, security had significantly increased at Department facilities and personnel are more vigilant.

- In April, the Department conducted the "Great Map Giveaway" in conjunction with closing its map library due to both the decreased demand and high cost of paper maps. The existing inventory was given away at no charge.

- In May, the Department announced the first meeting, in Sacramento, of the California Water Desalination Task Force.

- In June, the Department announced new recommendations to reduce flood damage, preserve agriculture, and restore the environment.

- In July, the Department announced the award of grants under the Local Groundwater Assistance Fund (Assembly Bill 303).

- In August, the Department opened a free color photography exhibit at the Golden State Museum showing scenes and wildlife at the Salton Sea (the Department is producing a feasibility study on Salton Sea restoration).

- In September, the Department's water resources scientists offered environmental expertise at the American River Salmon Festival held at the Nimbus Fish Hatchery and Lake Natoma.

- In October, key findings and recommendations of the Water Desalination Task Force were distributed; the draft Truckee River Operating Agreement was made available to the public; the *Show Me the Water* guidebook was issued to assist water suppliers, cities, and counties with integrating water and land use planning as required by Senate Bills 610 and 221; and the Department announced release of the long-awaited *California's Groundwater, Bulletin 118—Update 2003.*

- In November, the Department announced that they, in conjunction with the University of California at Davis, had developed two state-of-the-art computer models for estimating California agricultural water demand and that the models were available without charge.

- Also in November, the Department announced that it (along with other State and local agencies) had completed the purchase of 1,166 acres in the Sacramento-San Joaquin Delta, paving the way for the largest scale wetlands restoration effort in the region—the Dutch Slough Tidal Marsh Project.

- In December, the Department and the Water Education Foundation produced a brochure providing details and registration information for a January 2004 Salton Sea Conference in Sacramento.

Community Relations

Oroville

OWE staff continued to assist in the preparation and media outreach for Oroville community meetings relating to the Department's license renewal application to the Federal Energy Regulatory Commission for a new license to operate its Oroville Facilities. 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, Feather River Fiesta

Days, and the September Salmon Festival. Products included posters, interactive educational displays, promotional displays, and informative handouts. The video group created public service announcements about these events and distributed them to local radio and television stations in the Oroville and Chico areas to encourage attendance.

The audio/visual group provided public address system support to many relicensing public hearings held in Oroville.

California Lakes and Reservoirs Appreciation Week

OWE initiated the first annual California Lakes and Reservoirs Appreciation Week awareness campaign in 2003. The campaign was designed to raise public appreciation for the State's lakes and reservoirs, including those in the SWP system, and the need to care for the water quality of such resources.

Also in 2003, the SWP recreation section on the Department's Web site was renovated and placed online. The section provided detailed information on recreational activities available at each SWP lake and reservoir. Similar information was provided on the three SWP visitors centers.

Revised SWP Publications

In 2003, four of the more than 35 SWP brochures were revised and reprinted. *Your Guide to Vista del Lago Visitors Center* in English and Spanish, *San Luis Joint-Use Complex,* and the *State Water Project Visitors Centers* brochures were revised and printed. The *SWP Visitors Centers* brochure was formerly known as the *California's Water* brochure. The *San Luis Joint-Use Complex* brochure, which now includes a photo of former Department Director William R. Gianelli's collection, was revised and printed. The *Location and Profile of State Water Project Facilities* map and flyer were also revised and reprinted in English and Spanish.

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 increase and now includes approximately 4,000 individuals and agencies throughout the State, including SWP contractors, municipal and private water agencies, other government departments, 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 2003. Stories spotlight individual and team accomplishments, skills, awards, promotions, retirements, and other news items. Some of the articles featured in 2003 included the East Branch Extension Project, the Governor's Recycled Water Task Force, the Network and Communications Support Office, the Aquatic Safety Program, Byron Road Bridge Repair, Twitchell Island Setback Project, and the Literacy Pal Program. Since *DWR People* will merge with *DWR NEWS* to become *DWR NEWS/People* in 2004, the fall of 2003 was the last separate edition of *DWR People* newsletter.

DWR NEWS. The quarterly *DWR NEWS* is circulated to all elements of the California water community, including the SWP contractors and current and retired employees of the Department.

Staff initiated plans to merge *DWR People* with *DWR NEWS*. Past issues of *DWR NEWS* were placed on the Department's Web site.

Video

In 2003, OWE's Film/Video Unit continued to document the Department's habitat restoration work on Decker Island in the Delta. Although the work is still in progress, a short video piece describing the process and importance of the project was produced for use on a Department/Water Education Foundation Delta tour. The comprehensive Decker Island video *Weeds to Wetlands*, is slated for completion in 2004.

For California Lakes and Reservoirs Appreciation Week in July, radio public service announcements were produced to encourage visitation and responsible use of SWP reservoirs. The announcements aired on Southern California radio stations the week before and during California Lakes and Reservoirs Appreciation Week.

Photography

The Department's photography unit provided photographs documenting monthly construction progress on the East Branch Extension and other 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 the California Bay-Delta Authority for its annual report.

A photographic exhibit at the California History Museum highlighting the Salton Sea was installed for a month.

Photographic projects included Byron Road bridge construction, water safety program in Chico and Oroville, Lake Oroville aerials, Salton Sea, Fourth of July celebration at Oroville Dam, Salmon Festival, Water Awareness Month activities at San Luis Reservoir and Edmonston Pumping Plant, dedication of East Branch Extension, Delta bridges, aerials, waterways, irrigation, agriculture, housing growth, and urban sprawl.

SWP Tours

During 2003, the Department welcomed 25 tours with 257 visitors to SWP facilities. Tour groups came from all over the United States and 11 foreign countries: Australia, China, Ethiopia, India, Iraq, Japan, Oman, Portugal, South Korea, Spain, and Vietnam. The Delta Tour Program for Departmental employees was reinstituted and 12 Delta tours were completed in 2003. Figure 15-1 shows visitors centers on the SWP.

Water Safety Education

Water safety materials featuring the Department's water safety mascots, Albert and Einstein, were distributed to schools and other venues in 2003. Events included the Sportsman's Exposition in Sacramento, three major Oroville events (Feather River Fiesta Days, the Fourth of July, and the Salmon Festival), and many community functions held at the Department's facilities.

Production continued on the water safety video *Friends for Life,* aimed at school-aged children and featuring Albert and Einstein. The importance of 10 key water safety tips is demonstrated using 3-D animation and live action sequences. In 2003, all live action scenes planned for the video were completed. As a water safety training aid, an interim video was produced from those sequences. The brief video has been used extensively by the Department in community outreach.

OWE worked with Oroville's local agencies and merchants in 2002 on a cooperative effort to organize an Aquatic Adventure Camp for children at an SWP facility. The event gave children a hands-on opportunity to learn and experience water safety practices and to be introduced to lifesaving techniques. OWE's video unit

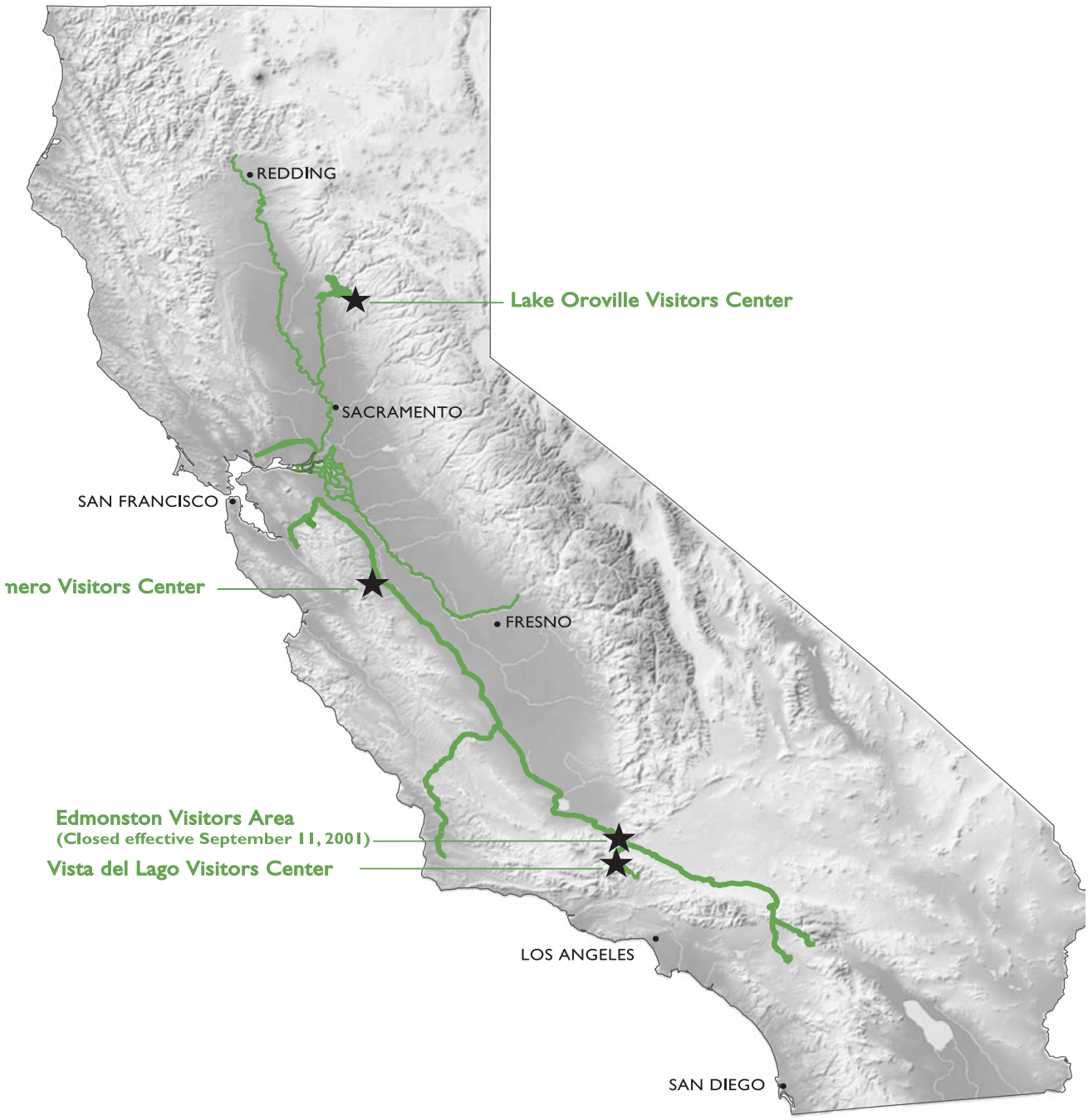


Figure 15-1. Visitors Centers on the SWP

documented this first-time event and produced a videotape to encourage other communities to participate in the program. Throughout 2003, the video was widely used and the Aquatic Adventure Camp program has spread to other SWP facilities. Footage taken at these events will be used in a video to provide an overview of the facilities and activities involved and to document the success of this statewide water safety program. The video, scheduled for completion in 2004, will be used to encourage other communities to participate in the Aquatic Adventure Camp program.

Displays and Exhibits

In 2003, OWE's Graphic Services Branch developed and entered into an agreement with the Office of the Secretary of State, outlining terms for the California State Archives to take possession of the SWP historic memorabilia collection so that it can be maintained at climatically controlled, archival quality facilities. Although ownership remains with the Department, the agreement allows the historically significant memorabilia to be entered into the State Archives collection and database.

During 2003, the following displays and exhibits were provided:

- a permanent, interactive exhibit was designed and installed at Vista del Lago Visitors Center describing the benefits of the State Water Project;
- a permanent exhibit with an audio component providing an overview of California's Bay-Delta was completed. (In 2004, the Delta exhibit is scheduled to be extended to include the role of the California Bay-Delta Authority);
- conceptual designs were completed for exhibit cases at the Delta Field Division administration building;
- a tabletop traveling display describing groundwater and related issues was created for DPLA;
- a display was created for the ACWA conferences highlighting the Department's support to local water agencies; and
- OWE produced an informational lobby display explaining the new recycling program implemented throughout the Resources Building.

Salton Sea

OWE's Graphic Services Branch produced an exhibit displayed at the Golden State Museum in Sacramento regarding the unique habitat and critical issues associated with the Salton Sea. This exhibit and an accompanying brochure were produced for use at the fall ACWA conference.

The design unit also produced *The Salton Sea Report*, a technical reference document including background information, species listings, governmental districts, statutes, photos, and maps.

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 2003 include

- a display of the Department's Interactive Children's Exhibits at 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' *Get Wet* event in Folsom; and the *Make a Splash* event at the Folsom Lake Recreation Area and the Mission Avenue School's Water Event;
- providing curriculum materials and children's videos to California teachers and water agencies through the Water Facts and

Fun online ordering catalog and promotional events;
- printing of the *Environmental Education Compendium for Communities* resource guide for teachers and bookmarks for Creek Week Event;
- providing support and coordination to California Integrated Waste Management Board on Senate Bill 373, School DEEL, legislation to increase the presence of resource management programs in school districts statewide;
- presenting the Department's School Education Program to the California Regional Environmental Education Community Conference in Modesto;
- exhibiting the Department's educational materials at the California Association of Bilingual Educators Conference in Los Angeles;
- participating on the Water Awareness Education Subcommittee to review development of an educational unit on *Water Uses in California* for elementary students;
- participating and assisting at Water Education Committee meetings hosted by the Santa Barbara County Water Agency in June and by the San Diego County Water Authority and Helix Water District in November;
- participating on the Project Water Education for Teachers Advisory Committee, the Creek Week Planning Committee, and the California Environmental Education Interagency Network Committee and providing Project WET books to teachers who participated in Project WET training workshops.;
- participating on Jiminy Cricket's Environmentality Contest Committee.

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 2003, the Department celebrated Water Awareness Month for the sixteenth 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.

Information for this chapter was provided by the Office of Water Education.

Appendix B
Data and Computations Used to Determine 2005 Water Charges

Appendix B

Data and Computations

Used to

Determine 2005 Water Charges

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Appendix B
Data and Computations
Used to
Determine 2005 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 2005. The information is based on established data about the SWP, both known and projected, as of June 30, 2004.

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

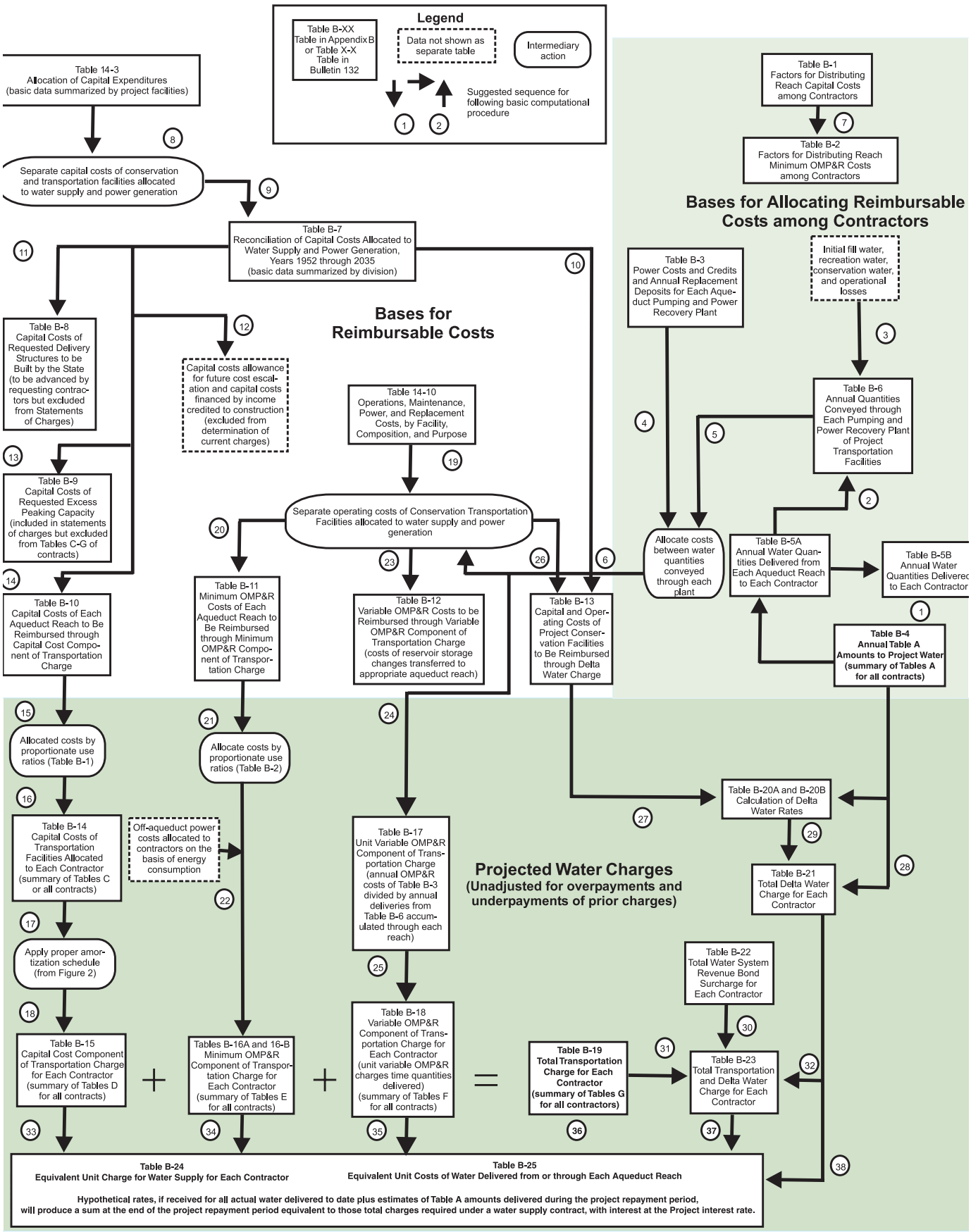


Figure B-1. Relationships of Data Used to Substantiate Statements of Charges

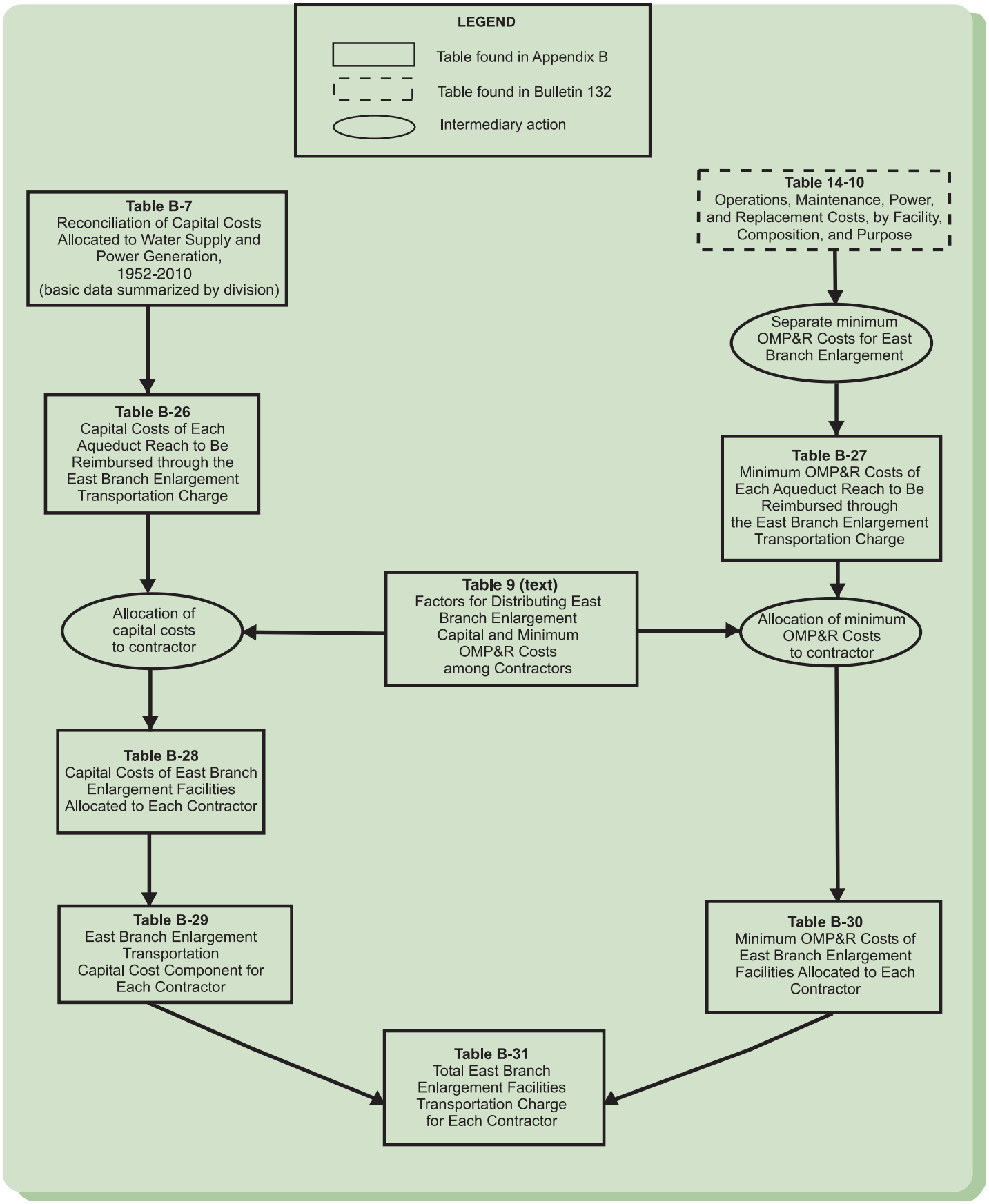


Figure B-2. Relationships of Data Used to Substantiate East Branch Enlargement Charges

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 2005.

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 2003 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.

(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

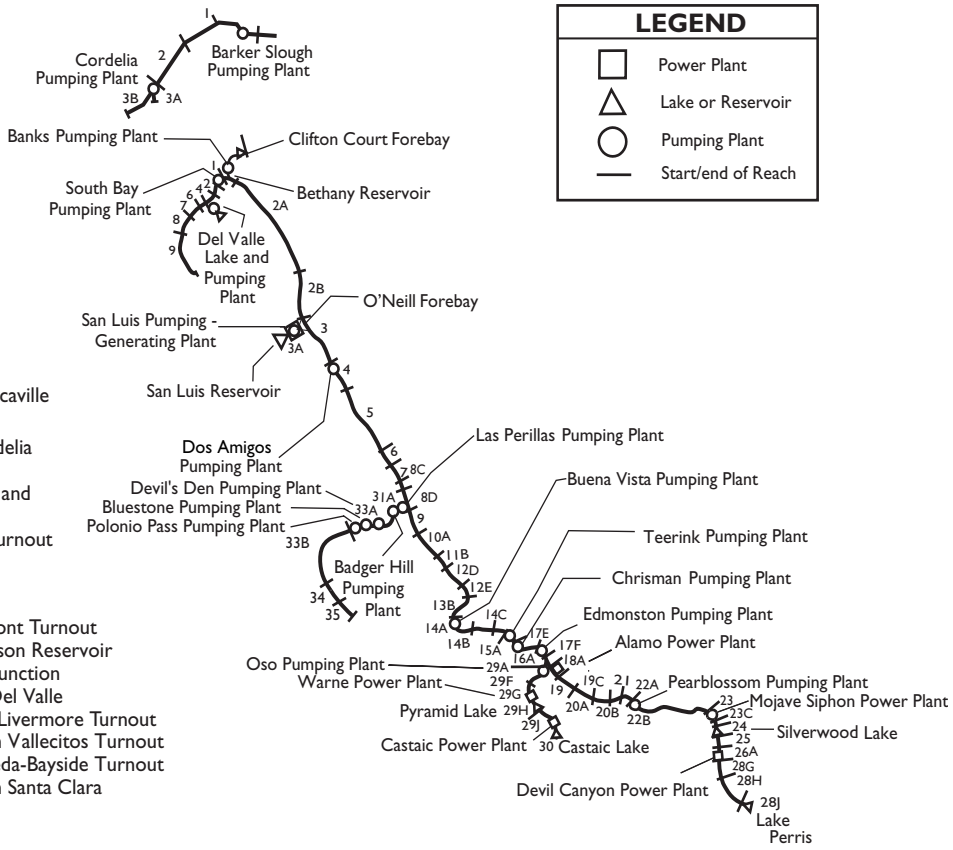
This section describes the procedures for allocating reimbursable costs of Project Transportation Facilities among contractors (see upper right portion of Figure B-1). Those costs do not include annual costs of Off-Aqueduct Power Facilities, which are explained in the section "Project Water Charges."

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 reported in Bulletin 132-70. The ratios in Bulletin 132-70 were subsequently revised for the



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 Road
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

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. Under Article 53 of the Monterey Amendment, Agricultural contractors may sell up to 130,000 acre-feet of aqueduct capacity to Municipal and Industrial contractors. The first permanent transfer occurred in 1998. Currently, 114,000 acre-feet of the allowable capacity has been transferred. Table 1 below shows the permanent capacity transfers that have taken place since 1995.

Table B-1 presents the reach ratios currently applicable to reimbursable capital costs.

Table B-2 presents corresponding ratios for allocating 2004 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, credits, and transmission costs 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 that are not, depend and vary with power usage classified as minimum OMP&R costs);

Table 1. Summary of Permanent Aqueduct Capacity Transfers

Contractor		Capacity Transfer		
Seller	*Buyer*	*Amount (acre-feet)*	*Effective Year*	**Transfer Description**
Transfers under Monterey Amendment				
Kern	Mojave	25,000	1998	Purchased capacity upstream of Reach 31A
Kern	Castaic Lake	41,000	2000	Purchased capacity upstream of Reach 16A
Kern	Palmdale	4,000	2000	Purchased capacity upstream of Reach 11B
Kern	Alameda Zone-7	7,000	2000	Purchased capacity upstream of Reach 10A
Kern	Alameda Zone-7	15,000	2000	Purchased capacity upstream of Reach 10A
Kern	Alameda Zone-7	10,000	2001	Purchased capacity upstream of Reach 11B
Kern	Solano	5,756	2001	Purchased capacity upstream of Reach 11B and Reach 31A
Kern	Napa	4,025	2001	Purchased capacity upstream of Reach 11B and Reach 31A
Kern	Alameda Zone-7	2,219	2004	Purchased capacity upstream of Reach 11B
Subtotal Under Article 53		*114,000*		
Transfers outside of Monterey Amendment				
Tulare	Dudley Ridge	3,973	2002	Purchased capacity upstream of Reach 8D
Tulare	AVEK	3,000	2002	Purchased capacity upstream of Reach 8D
Tulare	Alameda Zone-7	400	2003	Purchased capacity upstream of Reach 8D
Tulare	Kings	5,000	2004	Purchased capacity upstream of Reach 8D
Subtotal Outside of Article 53		*12,373*		

- Credits for capacity and energy produced at aqueduct power recovery plants (treated as negative costs);
- 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; and
- Starting in 2005, a portion of transmission expenditures will depend and vary with water and power usage; these costs will be included as part of the variable component.

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 2004 through 2035 are based on contractors' requests for future water deliveries. The quantities included in Table B-5A also include nonproject water delivered to contractors and surplus water deliveries prior to May 1, 1973, 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 nonproject 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 2. 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.

Table 2. 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.

Capital Costs

Capital costs used in the redeterminations in this appendix reflect prices prevailing on December 31, 2003; future cost escalation will be reflected in subsequent bulletins.

Table B-7 presents a reconciliation of estimated total capital costs of each Project Conservation Facility and each Project Transportation Facility. This table shows the relationship of Project Conservation and Transportation costs allocated to contractors (Tables B-8, B-9, B-10, and B-13) to the total SWP capital costs projected by the Department.

Table B-8 shows costs incurred and projected to be incurred by the State in connection with each contractor's turnouts. Costs incurred by the State for both State-constructed and contractor-constructed delivery structures are paid directly by the contractors for which the structures are built. (The State incurs design review and construction inspection costs in connection with contractor-constructed turnouts.)

Table B-9 lists costs and payments for excess capacity built into SWP Transportation Facilities according to amendments to contracts with 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) all of electric power transmission and station service costs up to 2004, and electric power transmission and station service costs for 2005 and after that do not vary with power usage allocable to aqueduct pumping and 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 2004, 2005, and 2006.

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 Table B-3 costs to derive 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.

Table 3. Criteria for Amortizing Capital Costs of Transportation Facilities

Contractor	Year of Initial Payment [a]
Alameda County Flood Control and Water Conservation District - Zone 7	1963 [b]
Alameda County Water District	1963
Antelope Valley-East Kern Water Agency	1963
Castaic Lake Water Agency	1964
City of Yuba City	[c]
Coachella Valley Water District	1964
County of Butte	[c]
County of Kings	1968
Crestline-Lake Arrowhead Water Agency	1964
Desert Water Agency	1963 [d]
Dudley Ridge Water District	1968 [e]
Empire-West Side Irrigation District	1968 [e]
Kern County Water Agency	
Agricultural Use	1968 [e]
Municipal and Industrial Use	1965
Littlerock Creek Irrigation District	1964
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.

(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 3.

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 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 4, 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 4. 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 5 summarizes Off-aqueduct Power Facility charges and credits related to deliveries for 2003.

Table 5. Summary of Off-Aqueduct Power Facility Charges and Credits

Charges by Item	
Reid Gardner Power Plant	$67,493,832
Bottle Rock Power Plant	$14,489,911
South Geysers Power Plant	$6,629,665
Subtotal	*$88,613,408*
Credits by Item	
Power sales	$26,472,999
Miscellaneous water (wheeling)	0
Subtotal	*$26,472,999*
Net Total Charge	**$62,140,409**

Table 6 shows projected charges for Off-Aqueduct Power Facilities and an amount equal to 25 percent of annual bond service for 2004 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 6. Projected Charges for Off-Aqueduct Facilities

Year	Total Annual Cost	25% Bond Cover
2004	91,542,876	7,067,483
2005	100,703,144	8,749,229
2006	102,796,619	8,762,324
2007	100,757,838	8,758,368
2008	118,074,595	12,221,719
2009	118,302,984	12,267,397
2010	119,113,832	12,430,566
2011	112,459,389	11,104,078
2012	112,667,480	11,145,696
2013	63,910,927	5,055,919
2014	21,108,272	4,201,654
2015	13,129,897	2,605,979
2016	10,830,554	2,146,111
2017	9,488,804	1,877,761
2018	3,982,451	776,490
2019	3,996,983	779,397
2020	4,027,137	785,427
2021	5,436,840	1,067,368
2022	5,426,527	1,065,305
2023	4,168,504	813,701
2024	2,940,954	568,191
2025	169,250	29,675
2026	309,376	57,613
2027	393,626	74,388
2028	524,000	100,400
2029	516,000	99,000

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 7) 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 aqueduct pumping plant and power plant for each year of the project repayment period. Those data are derived according to the following

Table 7. 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

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 8 and 9 on pages B-18 and B-19.

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.

Delta Water Charges

Table B-20A presents the calculation of the Delta Water Rate for the initial Conservation Facilities applicable in 2005 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 2005 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 AB. 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.

Table 8. 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
2003	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 9. Extra Peaking Charges for Additional Power, by Contractor (Dollars)

Year	Napa	Solano	Alameda Zone 7	Alameda County	Santa Clara	Dudley Ridge	Empire	Kern County	Kings	Oak Flat	Tulare	AVEK	Castaic Lake	Coachella	Desert	Littlerock	Palmdale	San Gabriel	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
2003	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**

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 10).

Table B-27 lists the projected minimum OMP&R costs for each reach of the enlargement to be repaid by the seven contractors participating in the East Branch Enlargement. Currently, this table includes only the amounts of estimated incremental minimum OMP&R costs attributable to the East Branch Enlargement. According to Article 49(e)(1), the contractors participating in the East Branch Enlargement will also share in the remaining minimum OMP&R costs of the affected reaches according to a formula to be developed by the Department in consultation with the affected contractors. Once the formula is developed, subsequent versions of this table will reflect the transfer of a share of the minimum OMP&R costs now included in Table B-11.

Table 10. Determination of Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities among Participating Contractors

Reach Number	Description
18A	Junction, West Branch, California Aqueduct, through Alamo 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-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 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							
								1.00000000
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						
	South Bay Aqueduct							
1	Bethany Reservoir thru Altamont Turnout			0.22599612	0.20663021	0.49237700	0.07499667	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.22599658	0.20663059	0.49237783	0.07499500	1.00000000
4	Patterson Reservoir to del Valle Junction			0.19504795	0.21450017	0.51113249	0.07931939	1.00000000
5	Del Valle Junction thru Lake del Valle			0.14436367	0.12972254	0.33715573	0.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				0.25176680	0.60218448	0.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355		1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	California Aqueduct							
1	Delta thru Bethany Reservoir			0.00954737	0.00872917	0.02080118	0.00342507	N/A

Reach No.	Reach Description	Central Coastal Area		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		0.57546190			

Reach No.	Southern California Area (Continued)								Total
	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	
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	0.00679699	0.00416304	0.45921072	1.00000000
2B	0.00051469	0.01152409	0.00386317	0.02472511	0.00680570	0.00680570	0.00416880	0.45973548	1.00000000
3	0.00051461	0.01152193	0.00386244	0.02472246	0.00680478	0.00680478	0.00416835	0.45965407	1.00000000
4	0.00051451	0.01151965	0.00386167	0.02471968	0.00680380	0.00680380	0.00416787	0.45956848	1.00000000
5	0.00051440	0.01151681	0.00386070	0.02471620	0.00680259	0.00680259	0.00416730	0.45946161	1.00000000
6	0.00051419	0.01151251	0.00385926	0.02471095	0.00680076	0.00680076	0.00416640	0.45929991	1.00000000
7	0.00051413	0.01151113	0.00385879	0.02470927	0.00680016	0.00680016	0.00416612	0.45924807	1.00000000
8C	0.00051405	0.01150938	0.00385821	0.02470716	0.00679941	0.00679941	0.00416576	0.45918261	1.00000000
8D	0.00052466	0.01174718	0.00393793	0.02522383	0.00694100	0.00694100	0.00425288	0.46868533	
9	0.00057339	0.01283841	0.00430367	0.02758959	0.00758975	0.00465175	0.51227887	0.00448738	1.00000000
10A	0.00058254	0.01304366	0.00437246	0.02803943	0.00771262	0.00472760	0.52049091	0.00448685	1.00000000
11B	0.00064171	0.01436906	0.00481665	0.03093503	0.00850448	0.00521581	0.57349473	0.00448616	1.00000000
12D	0.00067463	0.01510596	0.00506361	0.03254889	0.00894541	0.00548790	0.60297374	0.00457883	1.00000000
12E	0.00067553	0.01512626	0.00507040	0.03259749	0.00895830	0.00549608	0.60379667		1.00000000
13B	0.00073290	0.01641098	0.00550099	0.03540212	0.00972547	0.00596896	0.65516902	0.00639604	1.00000000
14A	0.00076961	0.01723325	0.00577656	0.03720681	0.01021819	0.00627322	0.68807273	0.00671639	1.00000000
14B	0.00078354	0.01754538	0.00588113	0.03789703	0.01040613	0.00638960	0.70057530	0.00683798	1.00000000
14C	0.00080743	0.01808019	0.00606036	0.03907670	0.01072763	0.00658850	0.72199174	0.00704634	1.00000000
15A	0.00082089	0.01838154	0.00616135	0.03974336	0.01090913	0.00670088	0.73406357	0.00716371	1.00000000
16A	0.00085171	0.01907194	0.00639271	0.04126559	0.01132404	0.00695754	0.76170731	0.00743264	1.00000000
17E	0.00089182	0.01997003	0.00669365	0.04325018	0.01186455	0.00729213	0.79767940	0.00778251	1.00000000
17F	0.00089372	0.02001251	0.00670788	0.04334270	0.01188988	0.00730773	0.79937767	0.00779906	1.00000000
18A	0.00221525	0.04960424	0.01662680	0.10730448	0.02944860	0.01809192	0.57469530		1.00000000
19	0.00221522	0.04960300	0.01662640	0.10730707	0.02944876	0.01809230	0.57469556		1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161798	0.01942666	0.61700971		1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316986	0.02038045	0.64729087		1.00000000
21	0.00254199	0.05692053		0.12319480	0.03380324	0.02077093	0.65963498		1.00000000
22A		0.05773082		0.12495766	0.03428605	0.02106816	0.66905054		1.00000000
22B		0.05842136		0.12645207	0.03469614	0.02132008	0.67705256		1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614		1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404		1.00000000
25				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
28G				0.05126137			0.94873863		1.00000000
28H							1.00000000		1.00000000
28J							1.00000000		1.00000000
29A							0.95147783	0.01307880	1.00000000
29F							0.95147785	0.01307876	1.00000000
29G							0.95147785	0.01307876	1.00000000
29H							0.96278381	0.00904475	1.00000000
29J							0.95147787	0.01307875	1.00000000
30							0.96212388	0.00860328	1.00000000
31A									1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

Table B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	Reach Description	North Bay Area		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			0.33980110	0.19515838	0.46504052		1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.33978741	0.19516252	0.46505007		1.00000000
4	Patterson Reservoir to del Valle Junction			0.31610985	0.20216089	0.48172926		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			0.32478705	0.19906896	0.47614399		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				0.00870695	0.02074827		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	0.00531837	0.00981175	0.03024911	0.02544508	0.00527041	0.00133289	0.00869201
2A	Bethany Reservoir to Orestimba Creek	0.00557094	0.01027771	0.03168298	0.02660898	0.00551824	0.00139557	0.00910071
2B	Orestimba Creek to O'Neill Forebay	0.00557705	0.01028900	0.03171947	0.02666636	0.00552586	0.00139751	0.00911329
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557599	0.01028704	0.03171394	0.02666957	0.00552528	0.00139735	0.00911233
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557487	0.01028498	0.03170814	0.02667296	0.00552466	0.00139720	0.00911131
5	Panoche Creek to Five Points	0.00557347	0.01028242	0.03170088	0.02667718	0.00552389	0.00139699	0.00911004
6	Five Points to Arroyo Pasajero	0.00557137	0.01027854	0.03168989	0.02668357	0.00552272	0.00139669	0.00910810
7	Arroyo Pasajero to Kettleman City	0.00557069	0.01027730	0.03168638	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 that have been signed as of February 1, 2004.

Table B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	North Bay Area: Napa County FC&WCD	North Bay Area: Solano County Water Agency	South Bay Area: Alameda County FC&WCD-Zone 7	San Joaquin Valley Area: Dudley Ridge Water District	San Joaquin Valley Area: Empire West Side Irrigation District	San Joaquin Valley Area: Future Contractor San Joaquin Valley	San Joaquin Valley Area: Kern County Water Agency: Municipal and Industrial	San Joaquin Valley Area: Kern County Water Agency: Agricultural	San Joaquin Valley Area: County of Kings	San Joaquin Valley Area: Oak Flat Water District	San Joaquin Valley Area: Tulare Lake Basin Water Storage District
	California Aqueduct										
1	0.00101512	0.00145940	0.02320397	0.01822276	0.00088486	0.00254134	0.02735528	0.27471558	0.00238160	0.00166761	0.03131974
2A	0.00106177	0.00152639	0.00868499	0.01904003	0.00092455	0.00266203	0.02863338	0.28703167	0.00249011	0.00174236	0.03272442
2B	0.00106392	0.00152952	0.00870071	0.01909141	0.00092703	0.00266495	0.02867813	0.28780912	0.00249576		0.03281272
3	0.00106402	0.00152967	0.00870087	0.01909675	0.00092729	0.00266444	0.02867660	0.28789036	0.00249613		0.03282188
4	0.00106411	0.00152981	0.00870104	0.01910235	0.00092757	0.00266389	0.02867497	0.28797580	0.00249653		0.03283152
5	0.00106422	0.00152999	0.00870126	0.01910935	0.00092791	0.00266322	0.02867295	0.28808247	0.00249703		0.03284354
6	0.00106441	0.00153027	0.00870159	0.01911995	0.00092842	0.00266222	0.02866989	0.28824388	0.00249779		0.03286174
7	0.00106447	0.00153035	0.00870171	0.01912335	0.00092859	0.00266188	0.02866890	0.28829563	0.00249804		0.03286757
8C	0.00105157	0.00151172	0.00860054	0.01886317	0.00091597	0.00263520	0.02835152	0.28436682	0.00246646		0.03242043
8D	0.00107380	0.00154371	0.00878069	0.01927238	0.00000000	0.00268881	0.02893948	0.29053820	0.00156173		0.01407957
9	0.00080015	0.00110418	0.00788332				0.03150656	0.29330625			
10A	0.00081335	0.00112220	0.00801131				0.03201476	0.28210109			
11B	0.00065223	0.00095504	0.00355729				0.03516180	0.21827756			
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	0.00049059	0.01818504	0.00458605	0.02357145	0.00648785	0.00397424	0.43808303	0.00427965	1.00000000
2A	0.00051389	0.01903164	0.00480328	0.02467987	0.00679401	0.00416112	0.45885647	0.00448289	1.00000000
2B	0.00051445	0.01906331	0.00480891	0.02471393	0.00680270	0.00416686	0.4593802 1	0.00448782	1.00000000
3	0.00051436	0.01906286	0.00480810	0.02471127	0.00680178	0.00416641	0.45929874	0.00448697	1.00000000
4	0.00051427	0.01906238	0.00480726	0.02470849	0.00680079	0.00416593	0.45921309	0.00448608	1.00000000
5	0.00051415	0.01906178	0.00480620	0.02470502	0.00679958	0.00416535	0.45910614	0.00448497	1.00000000
6	0.00051395	0.01906086	0.00480460	0.02469976	0.00679773	0.00416447	0.45894432	0.00448327	1.00000000
7	0.00051388	0.01906058	0.00480408	0.02469807	0.00679714	0.00416419	0.45889243	0.00448274	1.00000000
8C	0.00050873	0.01884526	0.00475508	0.02443477	0.00672619	0.00411979	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	0.00492277	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, Transmission Costs and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant[a]

(Dollars)

	North Bay Aqueduct			South Bay Aqueduct	California Aqueduct					
	Reach 1	Reach 3A	Reach 3B	Reach 1[c]	Reach 1	Reach 4	Reach 14A	Reach 15A	Reach 16A	Reach 17E
Calendar Year	Barker Slough Pumping Plant (1)	Cordelia Pumping Plant Solano (2)	Cordelia Pumping Plant Napa[b] (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	3,924,603	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	4,983,698	2,284,581	1,551,337	1,239,433	3,227,958	12,549,543
2000	60,341	44,106	15,543	773,365	8,528,823	3,146,623	3,064,574	3,136,973	7,222,983	26,064,176
2001	354,903	250,507	214,360	3,654,930	23,073,126	10,272,932	14,693,851	15,101,143	33,985,836	125,457,902
2002	180,703	99,441	58,458	2,006,571	17,421,447	6,571,276	8,025,098	8,304,204	18,773,367	69,005,159
2003	190,117	113,438	93,675	2,482,984	23,723,839	8,788,897	10,247,545	11,047,538	24,525,689	90,079,700
2004	438,403	193,790	310,248	4,185,159	38,832,626	14,356,718	16,388,610	19,282,251	41,089,230	145,104,776
2005	479,739	174,856	431,636	6,320,951	36,236,199	15,326,224	18,536,755	21,839,742	46,602,990	165,461,984
2006	473,591	197,706	211,249	5,262,429	30,606,282	12,272,560	14,839,624	17,484,983	37,300,563	132,420,456
2007	423,456	333,861	329,172	5,718,348	34,180,165	15,620,098	18,809,913	18,691,438	43,668,348	163,627,745
2008	392,626	302,893	299,678	5,217,870	34,784,065	14,105,548	17,024,013	16,946,587	39,560,709	148,242,185
2009	406,223	313,420	317,472	5,388,744	31,492,295	14,704,819	17,811,437	17,725,479	41,402,818	155,160,931
2010	423,778	327,467	340,084	5,615,571	39,457,213	15,551,001	18,919,398	18,824,120	44,002,465	164,929,495
2011	426,284	327,586	346,393	5,617,491	36,327,186	15,764,737	19,288,644	19,204,228	44,914,073	168,382,336
2012	440,737	338,509	366,160	5,794,237	34,280,382	16,224,056	19,799,305	19,697,029	46,068,407	172,693,356
2013	478,461	370,569	411,777	6,313,020	44,484,781	18,147,154	22,297,147	22,172,332	51,925,261	194,699,074
2014	511,502	397,225	454,257	6,744,393	40,129,216	19,720,949	24,331,426	24,186,575	56,689,478	212,596,402
2015	523,864	403,074	478,444	6,839,025	44,909,539	20,099,058	24,832,132	24,684,643	57,869,608	217,034,022
2016	533,671	407,109	499,520	6,904,332	50,815,745	20,511,346	25,444,552	25,303,348	59,343,330	222,593,757
2017	532,160	401,348	507,143	6,811,093	45,905,128	20,256,698	25,154,864	25,022,581	58,684,297	220,129,894
2018	550,650	412,719	540,375	6,995,101	44,410,458	20,646,728	25,531,624	25,375,799	59,503,080	223,167,431
2019	567,817	422,716	572,891	7,156,868	52,598,088	21,985,483	27,598,232	27,474,840	64,512,426	242,087,293
2020	545,636	400,001	554,925	6,789,287	46,322,789	20,513,579	25,638,372	25,525,005	59,892,832	224,715,601
2021	545,850	399,357	556,617	6,778,879	45,558,847	20,563,880	25,742,031	25,633,879	60,155,572	225,714,577
2022	530,486	386,679	536,801	6,573,723	42,139,464	19,882,643	24,893,383	24,798,261	58,183,124	218,314,266
2023	533,217	388,932	540,322	6,610,177	45,288,559	20,019,155	25,070,457	24,973,795	58,598,598	219,875,453
2024	551,028	403,629	563,293	6,848,007	49,896,359	20,840,693	26,110,086	25,999,997	61,022,898	228,976,002
2025	548,763	401,759	560,372	6,817,764	41,779,624	20,648,679	25,825,965	25,712,901	60,339,078	226,396,343
2026	552,199	404,595	564,804	6,863,640	52,114,186	20,949,811	26,274,017	26,165,853	61,418,343	230,469,025
2027	544,590	398,316	554,990	6,762,035	46,368,467	20,543,842	25,734,841	25,629,732	60,148,141	225,692,334
2028	548,039	401,161	559,438	6,808,094	45,445,926	22,740,435	25,892,901	25,783,744	60,510,561	227,049,079
2029	541,668	395,906	551,223	6,723,039	45,230,625	20,401,675	25,551,229	25,447,756	59,717,883	224,076,069
2030	545,652	399,193	556,360	6,776,213	47,314,218	20,580,543	25,776,449	25,669,770	60,242,041	226,043,066
2031	538,840	393,573	547,575	6,685,268	42,070,184	19,836,867	24,628,869	24,504,452	57,461,048	215,539,694
2032	548,626	401,647	560,198	6,815,948	47,151,679	20,929,108	26,317,964	26,220,342	61,556,512	231,008,449
2033	573,824	422,439	592,693	7,152,391	48,440,510	21,530,155	26,811,793	26,665,169	62,571,075	234,734,497
2034	554,495	406,490	567,765	6,894,302	46,768,445	21,194,665	26,652,685	26,550,444	62,335,986	233,933,973
2035	544,144	397,948	554,415	6,756,091	46,478,023	20,579,146	25,805,314	25,703,496	60,325,935	226,367,896
Total	**17,475,358**	**12,557,756**	**16,211,873**	**232,731,559**	**1,553,011,039**	**673,458,131**	**822,658,978**	**829,934,611**	**1,924,471,007**	**7,168,151,042**

[a]Starting with 2005, transmission costs that vary and depend on power usage are included; therefore, they are recovered through the variable component.
[b]Power costs for the period 1968 through 1987 are for an interim facility.
[c]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, Transmission Costs and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant[a]

(Dollars)

Calendar Year	California Aqueduct (continued)									Grand Total (20)
	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)	
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	1,749,955
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	(6,297,186)
2000	(5,115,261)	4,096,099	(4,415,350)	(25,857,510)	1,258,932	(9,487,334)	(17,952,087)	239,305	394,013	(4,781,686)
2001	(3,279,765)	18,929,220	(3,625,917)	(19,515,323)	6,300,229	(7,785,701)	(13,652,669)	1,087,098	2,166,054	207,682,716
2002	(4,923,759)	10,156,716	(5,252,750)	(24,669,937)	3,612,752	(10,279,966)	(18,398,706)	514,671	1,278,922	82,483,667
2003	(3,408,979)	13,963,720	(6,565,620)	(27,777,638)	4,447,987	(10,436,565)	(17,134,431)	611,260	1,474,728	126,467,884
2004	(5,387,200)	24,094,923	(10,537,600)	(32,247,500)	7,372,351	(13,187,500)	(22,552,500)	855,504	2,341,350	230,933,639
2005	(5,784,800)	8,012,678	(10,688,900)	(33,285,000)	28,406,630	(20,830,000)	(12,197,500)	1,413,589	5,319,738	271,777,511
2006	(5,590,694)	21,510,404	(10,254,346)	(31,361,562)	7,864,489	(11,079,980)	(20,425,000)	1,479,954	3,923,120	207,135,828
2007	(5,470,233)	24,041,488	(6,395,700)	(30,960,225)	9,740,216	(14,952,875)	(24,586,100)	1,857,593	5,023,386	259,700,094
2008	(5,578,051)	21,978,013	(6,548,625)	(31,216,650)	8,861,442	(14,833,825)	(24,315,100)	1,701,588	4,557,328	231,482,294
2009	(5,582,798)	23,022,822	(6,526,500)	(31,566,025)	9,228,308	(15,056,975)	(24,652,550)	1,754,615	4,715,747	240,060,282
2010	(5,630,503)	24,648,118	(6,596,625)	(31,860,925)	9,693,839	(15,179,275)	(24,964,750)	1,825,381	4,927,154	265,253,006
2011	(5,676,281)	24,917,781	(6,650,250)	(32,188,175)	9,993,807	(15,783,600)	(25,907,400)	1,825,980	4,928,941	266,059,761
2012	(5,769,388)	26,113,708	(6,829,725)	(32,405,200)	9,999,667	(15,166,000)	(25,007,250)	1,881,001	5,093,316	273,612,307
2013	(5,758,155)	29,411,787	(6,846,000)	(32,831,750)	11,182,265	(15,745,900)	(25,950,950)	2,042,506	5,575,799	322,379,178
2014	(5,782,172)	31,728,381	(6,862,800)	(32,782,050)	12,277,756	(16,350,900)	(26,891,650)	2,176,796	5,976,987	349,251,771
2015	(5,871,801)	32,897,268	(7,063,725)	(33,390,200)	12,331,132	(16,195,075)	(26,613,550)	2,206,256	6,064,994	362,038,708
2016	(5,934,499)	33,921,980	(7,156,875)	(34,005,575)	12,576,676	(16,378,000)	(26,938,550)	2,226,586	6,125,736	376,794,189
2017	(5,889,990)	33,312,333	(7,174,350)	(33,978,600)	12,543,673	(16,553,625)	(27,262,450)	2,197,561	6,039,018	366,638,776
2018	(5,952,829)	34,435,371	(7,497,975)	(34,012,075)	12,426,717	(15,866,450)	(26,157,200)	2,254,845	6,210,153	372,974,522
2019	(5,999,923)	36,071,862	(7,434,300)	(34,727,425)	13,969,183	(17,564,050)	(29,161,650)	2,305,206	6,360,601	408,796,158
2020	(5,968,950)	34,042,174	(7,439,925)	(34,666,150)	12,810,179	(16,962,875)	(28,022,500)	2,190,773	6,018,740	372,899,493
2021	(5,995,458)	34,133,768	(7,505,625)	(34,811,350)	12,894,985	(17,103,250)	(28,281,650)	2,187,534	6,009,059	373,177,502
2022	(6,023,188)	32,860,842	(7,496,625)	(34,809,700)	12,566,869	(17,179,400)	(28,413,900)	2,123,665	5,818,257	355,685,650
2023	(6,038,651)	33,154,896	(7,534,575)	(34,804,325)	12,628,478	(17,170,050)	(28,398,200)	2,135,014	5,852,163	361,723,415
2024	(6,012,989)	34,621,438	(7,548,000)	(34,803,550)	13,072,714	(17,174,325)	(28,405,950)	2,209,053	6,073,349	383,243,732
2025	(5,984,836)	33,990,693	(7,450,050)	(34,514,225)	13,016,670	(17,174,375)	(28,406,000)	2,199,638	6,045,223	370,753,986
2026	(6,048,709)	34,997,107	(7,632,075)	(35,124,800)	13,101,763	(17,174,325)	(28,405,950)	2,213,920	6,087,893	387,791,297
2027	(6,006,644)	34,036,317	(7,471,275)	(34,768,475)	12,933,359	(17,206,350)	(28,457,150)	2,182,290	5,993,396	373,612,756
2028	(5,985,400)	34,303,243	(7,494,675)	(34,815,075)	12,978,643	(17,146,300)	(28,355,950)	2,196,627	6,036,232	377,456,723
2029	(5,995,317)	33,809,743	(7,507,125)	(34,810,950)	12,840,899	(17,174,300)	(28,406,000)	2,170,149	5,957,128	369,521,300
2030	(5,985,494)	34,118,307	(7,494,825)	(34,815,050)	12,939,606	(17,174,350)	(28,406,050)	2,186,703	6,006,583	375,278,935
2031	(5,989,113)	33,304,068	(7,813,125)	(34,452,000)	12,048,449	(16,066,325)	(26,531,150)	2,158,391	5,922,000	354,787,565
2032	(6,059,237)	34,404,970	(7,908,300)	(34,774,175)	13,398,388	(17,670,050)	(29,359,850)	2,199,072	6,043,535	381,784,826
2033	(6,024,927)	36,230,918	(7,942,800)	(34,611,900)	13,057,206	(16,256,200)	(26,994,600)	2,303,811	6,356,436	395,612,490
2034	(6,054,396)	34,808,524	(7,981,350)	(34,688,400)	13,566,004	(17,689,125)	(29,401,050)	2,223,465	6,116,407	386,759,329
2035	(6,056,370)	34,189,489	(7,716,375)	(35,001,675)	12,956,360	(17,192,050)	(28,533,900)	2,180,438	5,987,864	374,326,189
Total	**(222,956,181)**	**1,068,925,327**	**(269,602,781)**	**(1,401,092,903)**	**426,921,430**	**(659,731,577)**	**(1,109,895,521)**	**72,869,615**	**185,175,753**	**11,341,274,516**

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	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2005	22,225	47,256	69,481	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2006	22,550	47,306	69,856	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2007	22,875	47,356	70,231	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2008	23,200	47,406	70,606	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2009	23,525	47,456	70,981	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2010	23,850	47,506	71,356	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2011	24,175	47,556	71,731	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2012	24,500	47,606	72,106	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2013	24,775	47,656	72,431	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2014	25,150	47,706	72,856	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2015	25,825	47,756	73,581	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2016	26,450	47,756	74,206	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2017	27,075	47,756	74,831	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2018	27,700	47,756	75,456	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2019	28,325	47,756	76,081	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2020	28,925	47,756	76,681	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2021	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2022	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2023	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2024	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2025	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2026	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2027	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2028	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2029	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2030	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2031	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2032	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2033	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2034	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2035	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
Total	**1,048,440**	**2,049,856**	**3,098,296**	**3,720,815**	**2,459,248**	**6,510,783**	**12,690,846**	**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	864,130	998,730	9,000	5,700	106,127	1,179,900
2005	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2006	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2007	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2008	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2009	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2010	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2011	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2012	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2013	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2014	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2015	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2016	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2017	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2018	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2019	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2020	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2021	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2022	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2023	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2024	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2025	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2026	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2027	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2028	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2029	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2030	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2031	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2032	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2033	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2034	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
2035	57,343	3,000	134,600	864,130	998,730	9,000	5,700	106,127	1,179,900
Total	3,361,478	199,000	7,693,900	52,271,303	59,965,203	393,900	352,822	6,499,773	70,772,176

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				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)		
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	0	13,100	0	4,127,061
2005	6,500	2,011,500	20,000	2,572,400	9,600	27,500	0	37,100	0	4,151,986
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**	**109,260**	**1,464,340**	**0**	**233,786,891**

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	9,345	43,931	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	17,260	16,691	7,646	41,597	0	108	7,916	11,348	0	2,887	16,684	5,037
2004	1,138	24,462	29,297	18,493	72,252	0	272	18,863	9,448	0	1,206	16,490	3,578
2005	1,810	1,349	42,920	19,400	63,669	0	7,102	16,518	33,828	0	777	17,688	6,962
2006	1,880	0	41,757	20,200	61,957	0	5,622	17,014	33,570	0	777	18,930	3,981
2007	1,950	0	41,807	20,700	62,507	0	5,669	17,445	31,802	0	777	20,279	3,981
2008	2,020	0	41,857	21,100	62,957	0	5,637	18,250	30,093	0	777	21,159	3,981
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	**71,920**	**939,035**	**991,525**	**997,884**	**2,928,444**	**53,844**	**53,376**	**699,316**	**1,196,790**	**11,722**	**110,193**	**877,618**	**411,835**

[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 7	Reach 8	Reach 9		Reach 1	Reach 2A						Reach 3		
							KCWA							
Calendar Year	AC FC&WCD (14)	ACWD (15)	SCVWD (16)	Total (17)	AC FC&WCD (18)	OFWD[c] (19)	(M&I) (20)	AG (21)	AC FC&WCD (22)	TLBWSD (23)	SCVWD (24)	MWDSC (25)	DRWD (26)	SCVWD (27)
1962	0	0	0	8,906	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	12,645	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	20,911	0	0	0	0	0	0	0	0	0	0
1965	0	0	15,014	34,026	0	0	0	0	0	0	0	0	0	0
1966	0	0	34,538	54,913	0	0	0	0	0	0	0	0	0	0
1967	0	0	39,101	56,763	0	0	0	0	0	0	0	0	0	0
1968	0	0	70,105	101,055	0	3,084	0	0	0	0	0	0	0	0
1969	0	0	62,264	69,712	0	3,016	0	0	0	0	0	0	0	0
1970	0	0	80,311	89,560	0	5,911	0	0	0	0	0	0	0	0
1971	0	0	87,606	98,584	0	7,212	0	0	0	0	0	0	0	0
1972	0	0	100,266	138,426	0	8,166	0	0	0	0	0	0	0	0
1973	0	0	88,582	94,078	0	3,214	0	0	0	0	0	0	0	0
1974	0	4	88,000	89,318	0	3,471	0	0	0	0	0	0	0	0
1975	0	593	88,000	93,604	0	3,576	0	0	0	0	0	0	0	0
1976	0	7,526	88,000	126,431	0	4,112	0	0	0	0	0	0	0	0
1977	0	7,556	76,220	107,704	0	1,472	0	0	0	0	0	0	0	0
1978	0	5,009	95,727	112,574	0	3,906	0	0	0	0	0	0	0	0
1979	0	7,444	91,991	122,190	0	6,149	0	0	0	0	0	0	0	0
1980	0	6,702	88,000	115,824	0	5,700	0	0	0	0	0	0	0	0
1981	0	8,570	88,000	129,507	0	4,300	0	0	0	0	0	0	0	0
1982	0	4,540	88,000	107,439	0	3,838	0	0	0	0	0	0	0	0
1983	0	3,157	86,733	94,656	0	3,822	0	0	0	0	0	0	0	0
1984	0	3,338	88,000	98,122	0	5,700	0	0	0	0	0	0	0	0
1985	0	7,813	88,000	122,088	0	5,433	0	0	0	0	0	0	0	0
1986	0	7,068	88,000	110,988	0	5,107	0	0	0	0	0	0	0	0
1987	0	9,902	88,000	136,796	0	5,625	0	0	0	0	0	0	0	0
1988	0	9,205	87,961	147,255	0	4,412	0	0	0	0	0	0	0	0
1989	0	8,702	90,000	142,269	0	6,091	0	0	0	300	0	0	602	0
1990	0	9,554	91,800	156,537	0	2,922	0	0	0	0	200	0	0	0
1991	0	3,493	28,200	50,259	0	141	0	0	0	0	0	0	0	0
1992	0	6,532	42,839	76,661	0	2,239	0	0	0	0	0	0	0	0
1993	0	6,829	62,065	105,971	0	2,858	0	0	0	0	0	0	0	0
1994	0	19,532	57,115	100,568	0	3,071	0	0	0	0	0	0	0	0
1995	0	17,772	28,756	76,640	0	5,169	0	0	0	0	0	0	0	0
1996	0	11,591	44,850	77,215	0	4,904	0	0	0	0	0	0	0	0
1997	0	10,864	60,601	102,186	0	5,238	0	0	0	0	0	11,100	0	0
1998	0	11,478	39,610	70,876	0	4,401	0	0	0	0	0	(11,100)	0	0
1999	0	16,226	52,945	100,497	0	4,871	0	0	0	0	0	0	0	0
2000	0	18,100	78,258	135,533	0	4,508	0	0	0	0	0	0	0	0
2001	0	18,004	47,922	95,335	0	3,592	638	0	0	0	0	0	0	30,000
2002	0	20,616	58,875	123,577	0	4,885	773	0	0	0	0	0	1,070	0
2003	0	12,753	75,981	132,714	0	4,266	917	0	7	0	0	29,596	0	0
2004	3,152	33,013	78,000	164,022	38	4,776	1,406	0	0	0	0	0	0	0
2005	3,457	27,538	100,000	213,870	30	5,700	0	3,600	0	0	0	0	0	0
2006	3,457	30,519	100,000	213,870	30	5,700	0	3,600	0	0	0	0	0	0
2007	3,398	30,519	100,000	213,870	30	5,700	0	3,600	0	0	0	0	0	0
2008	3,454	30,519	100,000	213,870	30	5,700	0	3,600	0	0	0	0	0	0
2009	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2010	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2011	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2012	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2013	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2014	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2015	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2016	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2017	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2018	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2019	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2020	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2021	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2022	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2023	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2024	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2025	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2026	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2027	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2028	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2029	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2030	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2031	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2032	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2033	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2034	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
2035	0	30,500	100,000	205,982	50	5,700	0	0	0	0	0	0	0	0
Total	**16,918**	**1,256,081**	**5,934,236**	**10,621,929**	**1,508**	**337,858**	**3,734**	**14,400**	**7**	**300**	**200**	**29,596**	**1,672**	**30,000**

[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)

Calendar Year	California Aqueduct (continued)															
	San Luis Division (continued)															
	Reach 3					Reach 4				Reach 5						
		AC		KCWA		KCWA					KCWA					
	TLBWSD (28)	FC&WCD (29)	ACWD (30)	(M&I) (31)	(Ag) (32)	(M&I) (33)	(Ag) (34)	DRWD (35)	TLBWSD (36)	DRWD (37)	(M&I) (38)	(Ag) (39)	MWDSC (40)	CLWA (41)	TLBWSD (42)	OFWD (43)
1962	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
1964	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
1966	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
1968	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
1970	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
1972	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
1974	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
1976	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
1978	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
1980	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
1982	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
1984	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
1986	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
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,550	0
1989	0	0	0	0	0	0	12,647	1,898	0	0	0	18,831	0	0	0	0
1990	0	0	0	0	0	0	0	0	1,500	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	10,823	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	27,200	0	28,200	0	5,095	1,624	2,000
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	3,500	14,446	0	0	0	21,776	0	0	0	0
1996	0	0	0	0	0	1,125	4,162	0	0	0	1,125	81,507	0	0	4,000	0
1997	0	0	0	0	0	0	0	0	0	0	9,080	154,940	0	0	3,500	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	1,300	0	0	0	21,500	0	8,000	0
2000	0	0	0	3,320	57,825	1,517	(11,928)	0	0	0	8,130	57,647	0	0	0	0
2001	0	0	0	14,621	125,621	0	0	0	0	0	0	0	0	0	2,457	0
2002	0	0	0	21,050	50,346	0	0	0	0	0	0	0	0	0	3,000	0
2003	0	0	0	0	151,044	0	1,351	0	0	0	0	0	0	0	3,200	0
2004	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
2006	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
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	2,118	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**96,177**	**384,836**	**2,642**	**9,732**	**16,344**	**2,800**	**38,023**	**16,335**	**362,901**	**21,500**	**5,095**	**27,331**	**2,000**

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)													
	San Luis Division (continued)										South San Joaquin Division			
	Reach 6				Reach 7						Reach 8C			
	KCWA				KCWA						KCWA			
Calendar Year	(M&I) (44)	(Ag) (45)	MWDSC (46)	TLBWSD (:47)	(M&I) (48)	(Ag) (49)	CLWA (50)	DRWD (51)	TLBWSD (52)	MWDSC (53)	(M&I) (54)	(Ag) (55)	DRWD (56)	TLBWSD (57)
	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	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	0	0	0	0	0	0	0	0	0	0	25,100
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	7,081
1970	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	80,906
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	144,843
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	26,317
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	32,603
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	41,536
1976	0	0	0	0	0	0	0	0	0	0	0	0	0	26,595
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	12,984
1978	0	0	0	0	0	0	0	0	0	0	0	0	0	3,934
1979	0	0	0	0	0	0	0	0	0	0	0	0	0	74,758
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	35,140
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	50,888
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	4,405
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	1,001
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	3,677
1985	0	0	0	0	0	0	0	0	0	0	0	0	0	68,638
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	40,017
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	30,359
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	46,281
1989	0	8,260	0	0	0	5,262	0	0	0	0	0	0	2,391	63,703
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	23,504
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	1,697
1992	0	0	0	0	0	0	0	0	0	0	0	0	280	15,982
1993	0	31,200	0	0	18,157	10,043	0	0	0	0	0	0	0	57,112
1994	0	0	0	0	0	0	2,100	0	0	0	0	0	0	21,510
1995	0	3,932	0	0	10,875	20,595	0	0	0	0	989	10,527	0	40,934
1996	0	0	0	0	3,424	69,704	0	0	0	0	0	1,500	95	84,130
1997	0	0	0	0	27,079	32,463	0	0	0	0	0	1,500	0	9,467
1998	20,400	33,340	0	3,000	3,998	62,081	0	200	0	0	0	1,000	90	8,956
1999	0	33,776	11,000	23,000	7,923	19,500	0	0	4,470	500	0	400	86	90,334
2000	1,457	35,847	0	3,000	0	45,137	1,200	0	17,519	20,000	0	400	166	63,842
2001	0	0	0	600	0	0	0	0	0	0	0	0	14	23,300
2002	0	0	0	0	0	0	0	0	12,067	0	0	0	0	34,009
2003	0	0	0	0	0	0	0	0	14,853	0	0	0	0	25,317
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	26,785
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	44,450
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	44,450
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	44,450
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	44,450
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2026	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2027	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2028	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2030	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2031	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2032	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2033	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2034	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
2035	0	0	0	0	0	0	0	0	0	0	0	0	0	44,611
Total	**21,857**	**146,355**	**11,000**	**29,600**	**71,456**	**264,785**	**3,300**	**200**	**48,909**	**20,500**	**989**	**15,327**	**3,122**	**2,729,942**

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 8C (cont.)		Reach 8D								Reach 9				Reach 10A	
			KCWA									KCWA			KCWA	
Calendar Year	EWSID (58)	CK (59)	(M&I) (60)	(Ag) (61)	DRWD (62)	CK (63)	SBC FC&WCD (64)	SGVMWD (65)	SLOC FC&WCD (66)	TLBWSD (67)	DRWD (68)	(M&I) (69)	(Ag) (70)	TLBWSD (71)	(M&I) (72)	(Ag) (73)
1962	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
1964	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
1966	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
1968	1,978	900	0	0	26,360	0	0	0	0	0	0	0	30,951	0	0	0
1969	56	100	0	0	31,375	0	0	0	0	0	0	0	24,489	0	0	0
1970	3,942	0	0	0	40,407	0	0	0	0	3,408	0	0	46,114	1,855	0	158
1971	5,990	3,700	0	0	41,053	0	0	0	0	41,579	0	0	58,356	0	0	9,973
1972	5,795	1,400	0	0	42,443	0	0	0	0	113,550	0	0	75,464	0	0	5,876
1973	3,000	1,500	0	1,500	22,057	0	0	0	0	24,147	0	0	54,583	0	0	22,948
1974	3,000	1,500	0	0	33,390	0	0	0	0	39,686	0	0	63,814	0	10,019	22,719
1975	3,000	1,600	0	0	40,555	0	0	0	0	44,722	0	0	50,021	0	2,791	72,121
1976	3,000	1,600	0	0	41,421	0	0	0	0	32,216	0	0	53,465	0	74	50,444
1977	738	1,530	0	0	11,153	0	0	0	0	5,097	0	0	24,668	0	201	34,451
1978	454	2,070	0	0	51,747	0	0	0	0	8,119	0	0	72,231	0	0	161,889
1979	1,739	2,000	0	0	38,544	0	0	0	0	80,363	0	0	74,524	0	285	153,245
1980	894	2,200	0	0	41,000	0	0	0	0	40,304	0	0	79,946	0	3,780	131,836
1981	5,859	2,300	0	0	41,000	0	0	0	0	32,550	0	0	76,508	0	341	133,500
1982	361	1,536	0	0	41,000	214	0	0	0	14,146	0	0	76,877	0	4,700	164,832
1983	0	3,550	0	0	42,900	0	0	0	0	5	0	2,217	84,573	0	0	146,493
1984	0	3,100	0	0	45,100	0	0	0	0	2,066	0	4,100	85,732	0	6,910	150,302
1985	5,197	3,400	0	0	46,251	0	0	0	0	41,153	0	0	67,696	0	6,495	153,473
1986	1,170	3,700	0	0	50,249	0	0	0	0	39,338	0	0	79,943	0	5,065	198,099
1987	2,525	4,000	0	0	46,288	0	0	0	0	62,725	0	0	97,732	0	900	226,521
1988	3,475	4,000	0	0	47,994	0	0	0	0	48,035	0	1,100	83,858	0	9,529	212,495
1989	3,000	4,000	0	0	52,158	0	0	0	0	63,947	0	0	91,134	0	21,038	251,979
1990	1,279	2,000	0	161	36,296	0	0	0	0	32,066	0	0	83,108	0	25,189	47,472
1991	221	0	0	0	927	0	0	0	0	483	0	13,683	601	0	1,142	6,820
1992	1,354	1,806	0	0	12,667	0	0	0	0	30,746	0	28	40,183	0	3,685	89,390
1993	2,741	4,000	0	0	23,221	0	0	0	0	65,732	197	5,945	53,597	0	775	233,862
1994	1,666	2,116	0	1,726	28,793	0	0	0	0	40,852	0	0	44,994	0	5,227	126,792
1995	1,631	4,000	2,959	27,270	45,240	0	0	0	0	57,435	0	0	64,076	0	366	229,448
1996	1,868	4,000	0	1,455	52,722	0	0	0	100	148,745	0	2,236	89,291	0	6,666	199,854
1997	0	0	0	0	57,496	0	0	0	100	9,402	4,900	0	72,013	0	3,577	157,385
1998	542	15	0	20,000	49,435	0	0	0	0	8,721	0	0	57,530	0	2,603	163,587
1999	3,176	4,000	0	9,000	58,290	0	0	0	0	162,631	0	0	72,734	0	1,657	190,787
2000	1,799	3,600	0	0	57,920	0	0	0	0	113,952	0	2,000	71,562	0	16,880	274,000
2001	1,360	1,560	0	6,089	35,981	0	0	0	0	58,369	0	0	54,198	0	6,394	91,941
2002	1,405	2,854	0	7,522	47,434	0	745	0	0	47,426	0	0	60,957	0	7,645	163,998
2003	1,436	3,692	0	8,350	45,732	0	0	0	0	61,521	0	0	54,724	0	3,223	171,696
2004	3,576	5,850	0	0	39,159	0	0	0	0	41,401	0	0	46,700	0	244	142,382
2005	3,000	4,000	0	0	57,343	0	0	0	0	66,677	0	0	124,468	0	150	220,158
2006	3,000	4,000	0	0	57,343	0	0	0	0	66,677	0	0	124,468	0	150	220,158
2007	3,000	4,000	0	0	57,343	0	0	0	0	66,677	0	0	124,468	0	150	220,158
2008	3,000	4,000	0	0	57,343	0	0	0	0	66,677	0	0	124,468	0	150	220,308
2009	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2010	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2011	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2012	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2013	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2014	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2015	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2016	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2017	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2018	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2019	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2020	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2021	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2022	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2023	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2024	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2025	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2026	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2027	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2028	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2029	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2030	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2031	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2032	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2033	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2034	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
2035	3,000	4,000	0	0	57,343	0	0	0	0	66,916	0	0	124,000	0	150	219,060
Total	**172,227**	**213,179**	**2,959**	**83,073**	**3,243,391**	**214**	**745**	**0**	**200**	**3,690,078**	**5,097**	**31,309**	**6,164,819**	**1,855**	**162,051**	**11,388,170**

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 10A								Reach 11B			Reach 12D		Reach 12E	
									KCWA			KCWA		KCWA	
Calendar Year	DRWD (74)	AC FC&WCD (75)	CLWA (76)	SCVWD (77)	ACWD (78)	MWDSC (79)	AVEKWA (80)	TLBWSD (81)	(M&I) (82)	(Ag) (83)	DRWD (84)	(M&I) (85)	(Ag) (86)	(M&I) (87)	(Ag) (88)
1962	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
1964	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
1966	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
1968	0	0	0	0	0	0	0	0	0	24,776	0	0	0	0	0
1969	0	0	0	0	0	0	0	2,842	0	64,682	0	0	0	0	0
1970	0	0	0	0	0	0	0	4,315	0	72,279	0	0	0	0	9,279
1971	0	0	0	0	0	0	0	0	0	63,773	0	0	0	0	28,056
1972	0	0	0	0	0	0	0	0	0	72,358	0	0	0	0	62,342
1973	0	0	0	0	0	0	0	0	0	67,544	0	0	0	0	13,082
1974	0	0	0	0	0	0	0	0	0	87,476	0	0	0	2,651	4,248
1975	0	0	0	0	0	0	0	0	0	85,675	0	0	0	0	10,787
1976	0	0	0	0	0	0	0	0	0	85,067	0	0	0	37,519	20,555
1977	0	0	0	0	0	0	0	0	3,981	29,603	0	0	0	20,280	1,737
1978	0	0	0	0	0	0	0	0	0	88,753	0	0	0	47,133	15,011
1979	0	0	0	0	0	0	0	0	484	108,379	0	0	0	50,740	61,567
1980	0	0	0	0	0	0	0	0	3,112	103,207	0	0	0	32,039	22,252
1981	0	0	0	0	0	0	0	0	494	104,395	0	0	0	59,917	58,470
1982	0	0	0	0	0	0	0	0	798	99,081	0	0	0	36,139	75,587
1983	0	0	0	0	0	0	0	0	2,069	94,117	0	0	0	0	10,950
1984	0	0	0	0	0	0	0	0	2,349	124,819	0	0	0	63,941	39,929
1985	0	0	0	0	0	0	0	0	10,666	118,646	0	0	0	69,839	84,117
1986	0	0	0	0	0	0	0	0	8,673	124,836	0	0	0	62,109	51,540
1987	0	0	0	0	0	0	0	0	13,074	111,877	0	0	0	95,297	86,223
1988	0	0	0	0	0	0	0	0	13,509	114,031	0	0	0	86,390	123,249
1989	0	0	0	0	0	0	0	0	9,986	127,058	0	0	0	83,965	146,544
1990	0	0	0	0	0	0	0	0	9,319	104,107	0	0	0	82,164	38,973
1991	0	0	0	0	0	0	0	0	6,099	118	0	0	0	8,842	303
1992	0	0	0	0	0	0	0	0	7,419	35,093	0	0	0	47,181	57,048
1993	0	0	0	0	0	44,496	0	0	2,696	72,645	0	0	0	84,822	285,554
1994	0	0	0	0	0	0	0	0	3,506	71,202	0	0	0	66,188	77,839
1995	0	0	0	0	0	50,000	0	0	1,154	97,072	0	0	0	107,130	181,097
1996	0	0	0	45,000	6,200	95,000	0	0	1,185	96,250	0	0	0	89,257	134,138
1997	900	0	0	35,000	10,000	125,000	0	0	1,111	104,823	0	0	0	32,061	128,329
1998	0	1,970	0	23,800	3,780	39,500	0	0	1,311	72,646	0	0	0	28,258	88,998
1999	0	22,910	0	30,000	16,100	75,850	0	0	2,127	92,262	0	0	0	110,161	255,343
2000	0	23,940	0	23,730	13,380	0	0	0	3,793	89,623	1,500	21	0	78,285	89,702
2001	0	5,000	0	0	0	0	0	0	636	73,105	0	41	0	18,556	32,905
2002	0	14,287	24,000	3,311	2,083	0	0	0	1,457	91,123	0	760	6	39,104	96,231
2003	0	6,500	0	33,000	18,800	70,940	0	0	1,379	87,174	0	2,431	152	44,499	107,001
2004	26,091	5,740	27,807	0	4,000	0	0	0	1,672	65,534	0	6,510	341	57,676	85,386
2005	0	5,000	0	0	7,500	0	0	0	1,410	104,000	0	6,000	0	92,357	177,310
2006	0	5,000	0	0	7,500	0	0	0	1,410	104,000	0	6,000	0	92,357	177,310
2007	0	5,000	0	0	7,500	0	0	0	1,410	104,000	0	6,000	0	92,357	177,310
2008	0	5,000	0	0	7,500	0	0	0	1,410	104,000	0	6,000	0	92,357	177,310
2009	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2010	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2011	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2012	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2013	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2014	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2015	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2016	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2017	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2018	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2019	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2020	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2021	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2022	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2023	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2024	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2025	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2026	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2027	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2028	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2029	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2030	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2031	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2032	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2033	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2034	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
2035	0	6,468	0	0	7,500	0	0	0	2,000	106,727	0	0	0	105,092	159,962
Total	**26,991**	**274,983**	**51,807**	**193,841**	**306,843**	**500,786**	**0**	**7,157**	**173,699**	**6,422,838**	**1,500**	**33,763**	**499**	**4,849,055**	**7,612,586**

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*		*Reach 14C*		
			KCWA					*KCWA*		*KCWA*		*KCWA*		
Calendar Year	*DRWD (89)*	*MWDSC (90)*	*(M&I) (91)*	*(Ag) (92)*	*MWDSC (93)*	*DRWD (94)*	*TLBWSD (95)*	*(M&I) (96)*	*(Ag) (97)*	*(M&I) (98)*	*(Ag) (99)*	*(M&I) (100)*	*(Ag) (101)*	*MWDSC (102)*
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	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
1970	0	0	0	4,891	0	0	0	0	0	0	3	0	0	0
1971	0	0	0	0	0	0	0	0	23,844	0	49,929	0	24,187	0
1972	0	0	0	17,388	0	0	0	0	26,621	0	77,034	0	35,016	0
1973	0	0	0	9,297	0	0	0	0	15,328	0	47,040	0	19,043	0
1974	0	0	8,038	4,246	0	0	0	0	7,794	0	32,356	0	12,601	0
1975	0	0	8,538	7,059	0	0	0	0	10,306	0	27,736	0	12,783	0
1976	0	0	5,626	8,855	0	0	0	0	268	0	35,296	0	9,005	0
1977	0	0	0	5,024	0	0	0	0	8,299	0	13,539	0	3,757	0
1978	0	0	21,773	7,601	0	0	0	0	34,029	0	72,351	0	24,542	0
1979	0	0	5,663	17,766	0	0	0	3,012	27,356	0	59,413	0	22,372	0
1980	0	0	0	22,515	0	0	0	4,312	16,876	0	40,513	0	19,953	0
1981	0	0	7,844	14,037	0	0	0	4,511	13,007	8	42,753	7	18,729	0
1982	0	0	0	25,553	0	0	0	3,735	24,240	184	57,739	0	26,479	0
1983	0	0	0	3,491	0	0	0	1,168	20,302	0	57,922	0	26,613	0
1984	0	0	12,117	26,178	0	0	0	137	35,369	10	79,179	2	34,996	0
1985	0	0	0	67,711	0	0	0	206	33,103	0	72,855	0	31,758	0
1986	0	0	0	66,551	0	0	0	180	26,384	0	70,864	0	34,566	0
1987	0	0	5,609	40,374	0	0	0	610	30,098	9	67,710	10	31,019	0
1988	0	0	9,298	47,167	0	0	0	622	32,778	19	75,968	1	37,165	0
1989	0	0	5,504	57,114	0	0	0	721	29,292	7	82,201	5	37,800	0
1990	0	0	7,645	20,423	0	0	0	673	26,800	13	81,076	9	34,174	0
1991	0	0	0	0	0	0	0	768	0	0	0	0	0	0
1992	0	0	789	17,449	0	0	0	673	16,238	464	41,143	0	18,084	0
1993	0	5,504	12,798	88,157	0	0	0	629	17,832	0	62,493	0	28,103	0
1994	0	0	2,494	33,148	0	0	0	2,513	16,760	3,000	54,011	1,000	22,624	0
1995	1,000	0	8,751	110,685	0	0	3,500	3	21,234	0	67,391	0	31,285	0
1996	4,131	0	28,063	64,849	0	0	0	0	26,978	0	85,936	0	38,879	0
1997	8,012	1,486	43,803	49,312	0	0	0	0	23,035	0	79,790	0	33,512	0
1998	5,925	24,234	29,444	40,085	5,500	0	0	0	15,706	0	58,132	0	23,097	0
1999	1,321	62,162	12,969	92,998	0	0	0	0	21,153	0	67,576	0	31,489	0
2000	953	149,731	4,066	98,136	0	0	0	0	19,264	0	70,585	0	33,716	0
2001	0	0	4,044	29,881	0	1,733	0	1	12,451	0	49,602	0	23,557	0
2002	0	0	15,951	55,493	0	736	0	0	11,161	0	52,762	0	27,138	0
2003	0	46,024	35,239	91,739	1,865	350	0	0	13,685	0	44,576	0	24,783	12,911
2004	0	0	6,917	34,532	0	0	0	0	15,520	0	41,657	0	25,202	0
2005	0	0	19,000	48,300	0	0	0	0	14,500	0	45,700	0	24,100	0
2006	0	0	19,000	48,300	0	0	0	0	14,500	0	45,700	0	24,100	0
2007	0	0	19,000	48,300	0	0	0	0	14,500	0	45,700	0	24,100	0
2008	0	0	19,000	48,300	0	0	0	0	14,500	0	45,700	0	24,100	0
2009	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2010	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2011	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2012	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2013	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2014	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2015	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2016	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2017	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2018	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2019	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2020	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2021	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2022	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2023	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2024	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2025	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2026	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2027	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2028	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2029	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2030	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2031	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2032	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2033	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2034	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
2035	0	0	7,400	41,800	0	0	0	0	18,200	0	60,000	0	26,500	0
Total	**21,342**	**289,141**	**578,783**	**2,601,505**	**7,365**	**2,819**	**3,500**	**24,474**	**1,222,511**	**3,714**	**3,721,931**	**1,034**	**1,669,927**	**12,911**

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)												
	South San Joaquin Division (continued)					Mojave Division							
	Reach 15A		Reach16A			Reach 18A	Reach 19		Reach 20A			Reach 20B	
	KCWA		KCWA										
Calendar Year	(M&I) (103)	(Ag) (104)	(M&I) (105)	(Ag) (106)	AVEKWA (107)	AVEKWA (108)	MWA (109)	AVEKWA (110)	PWD (111)	MWA (112)	AVEKWA (113)	PWD (114)	AVEKWA (115)
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	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	3,552	0	0	0	0	0	0	0	0	0	0	0
1972	0	6,064	0	4,768	0	0	0	0	0	0	0	0	0
1973	0	19,916	0	1,961	0	0	0	0	0	0	0	0	0
1974	0	18,000	3,000	1,564	0	0	0	1,223	0	0	0	0	0
1975	0	35,420	3,200	9,867	0	0	0	7,622	0	0	420	0	0
1976	0	39,551	3,500	11,667	0	3,808	0	23,063	0	0	471	0	416
1977	0	6,158	3,420	685	0	1,231	0	8,927	0	0	773	0	271
1978	0	31,148	7,989	1,655	0	1,321	0	36,333	0	0	5,549	0	934
1979	0	38,602	2,813	15,808	0	2,098	0	49,910	0	0	7,555	0	930
1980	0	37,817	2,700	16,145	0	2,610	0	61,534	0	0	7,605	0	655
1981	0	39,033	2,636	18,156	0	2,340	0	65,690	0	0	10,333	0	966
1982	0	47,782	1,921	16,577	0	1,669	0	41,127	0	0	7,313	0	8
1983	0	37,426	1,400	17,907	0	43	0	26,377	0	0	6,253	0	20
1984	0	49,848	1,338	24,246	0	90	0	22,462	0	0	9,558	0	2
1985	0	44,078	1,309	16,820	0	8	0	23,440	1,510	0	11,613	32	217
1986	0	42,461	1,213	15,559	0	8	0	16,898	3,041	0	13,808	45	0
1987	0	34,748	1,665	10,170	0	0	0	15,958	2,389	0	15,493	1,624	151
1988	16	41,978	1,925	8,987	0	0	0	13,471	366	0	17,117	1,261	281
1989	2	43,239	2,668	8,649	0	0	0	18,007	381	0	23,481	7,848	112
1990	6	36,347	2,819	8,608	0	0	0	17,281	282	0	25,843	8,292	84
1991	0	0	2,588	343	2,000	0	0	728	84	1,391	4,282	3,830	131
1992	0	24,243	2,087	8,275	0	0	0	7,238	185	1,310	18,518	3,850	650
1993	0	27,997	2,494	9,167	0	0	0	13,340	164	1,514	23,662	7,597	996
1994	0	29,511	3,011	13,877	0	0	0	19,122	299	1,399	25,250	8,119	124
1995	0	26,134	3,188	15,042	0	0	0	20,222	328	1,227	22,385	6,633	0
1996	0	36,186	2,573	18,142	0	0	0	23,919	354	1,316	26,979	11,080	0
1997	0	36,281	3,997	17,048	0	0	64	28,834	313	1,272	27,999	11,548	0
1998	0	28,712	3,751	17,032	0	0	1,345	22,466	195	0	25,985	8,557	0
1999	0	36,801	3,316	24,071	0	0	1,439	30,944	377	0	32,409	12,901	36
2000	0	40,063	3,015	20,919	0	0	1,361	34,786	0	0	37,819	9,060	80
2001	0	31,192	1,894	13,476	0	0	1,385	24,370	0	0	33,216	10,427	282
2002	0	41,552	4,227	14,520	0	0	1,370	14,297	0	0	36,311	18,496	1,662
2003	0	36,602	1,168	16,799	0	0	1,285	12,145	0	0	39,532	11,547	2,289
2004	0	49,359	4,321	20,410	0	0	1,384	25,975	237	0	60,675	22,947	1,580
2005	0	36,900	4,643	17,400	0	0	1,500	24,254	351	0	53,887	20,949	986
2006	0	36,900	4,643	17,400	0	0	1,500	23,734	351	0	52,733	20,949	965
2007	0	36,900	4,643	17,400	0	0	1,500	24,922	351	0	55,369	20,949	1,012
2008	0	36,900	4,643	17,400	0	0	1,500	26,170	351	0	58,138	20,949	1,065
2009	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2010	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2011	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2012	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2013	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2014	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2015	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2016	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2017	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2018	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2019	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2020	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2021	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2022	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2023	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2024	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2025	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2026	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2027	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2028	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2029	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2030	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2031	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2032	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2033	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2034	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2035	0	36,000	4,840	18,600	0	0	1,500	38,329	0	0	88,822	21,300	1,569
Total	**24**	**2,217,401**	**236,398**	**990,720**	**2,000**	**15,226**	**56,133**	**1,861,672**	**11,909**	**9,429**	**3,196,528**	**824,590**	**59,268**

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)											
	Mojave Division (continued)											
	Reach 21			Reach 22A		Reach 22B						Reach 23
Calendar Year	LCID (116)	PWD (117)	AVEKWA (118)	AVEKWA (119)	LCID (120)	MWDSC[d] (121)	SCWA (122)	MWA (123)	CVWD[e] (124)	DWA[e] (125)	AVEKWA[f] (126)	MWA (127)
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	338	0	0	0	0	0	0	55	0	0	0	0
1973	290	0	0	0	0	(14,800)	0	0	5,800	9,000	0	0
1974	400	0	0	0	0	(16,400)	0	0	6,400	10,000	0	14
1975	520	0	0	0	0	(18,000)	0	0	7,000	11,000	0	0
1976	589	0	0	0	0	(19,600)	0	0	7,600	12,000	0	0
1977	111	0	0	0	0	0	0	22	0	0	0	58
1978	208	0	0	0	0	(25,384)	0	0	10,084	15,300	0	0
1979	133	0	0	0	0	(25,063)	0	4,000	10,063	15,000	0	0
1980	191	0	0	3	0	(27,884)	0	4,000	10,884	17,000	0	0
1981	1,270	0	0	46	0	(31,105)	0	4,000	12,105	19,000	0	0
1982	0	0	0	174	0	(34,326)	0	10,500	13,326	21,000	0	0
1983	38	0	0	268	0	(37,547)	0	0	14,547	23,000	0	0
1984	1	0	0	550	0	(40,768)	0	0	15,768	25,000	0	0
1985	0	16	0	1,786	0	(43,989)	0	0	16,989	27,000	0	0
1986	163	10	0	1,735	0	(47,210)	0	0	18,210	29,000	0	0
1987	1,080	1,366	0	2,273	5	(50,931)	0	17	19,431	31,500	214	0
1988	419	143	0	3,210	0	(54,652)	0	9	20,652	34,000	0	0
1989	971	780	0	3,591	0	(58,373)	0	0	21,873	36,500	89	200
1990	1,747	34	0	3,988	0	(61,200)	0	0	23,100	38,100	10	0
1991	522	0	0	2,427	0	(18,360)	0	0	6,930	11,430	0	0
1992	251	0	0	3,859	0	(27,624)	0	42	10,427	17,197	0	0
1993	734	0	0	5,098	0	0	0	0	0	0	0	0
1994	1,098	0	0	4,657	0	0	0	14,634	0	0	0	0
1995	480	0	0	4,679	0	0	0	7,495	0	0	0	0
1996	494	0	0	5,458	0	0	0	6,111	0	0	0	0
1997	444	0	0	5,549	0	0	0	9,038	0	0	0	0
1998	404	0	0	4,468	0	0	0	2,580	0	0	0	0
1999	342	0	0	5,684	0	0	0	6,705	0	0	0	0
2000	0	0	5,002	5,890	0	0	0	10,019	0	0	0	0
2001	0	0	0	4,989	0	0	0	3,048	0	0	0	0
2002	0	0	0	5,404	0	0	0	2,976	0	0	497	0
2003	0	0	0	6,063	0	0	0	20,775	0	0	0	0
2004	1,495	0	0	8,973	0	0	0	35,228	0	0	0	0
2005	2,300	0	0	11,731	0	0	0	36,400	0	0	0	0
2006	2,300	0	0	11,480	0	0	0	36,400	0	0	0	0
2007	2,300	0	0	12,054	0	0	0	36,400	0	0	0	0
2008	2,300	0	0	12,656	0	0	0	36,400	0	0	0	0
2009	2,300	0	0	12,680	0	0	0	30,500	0	0	0	0
2010	2,300	0	0	12,680	0	0	0	32,000	0	0	0	0
2011	2,300	0	0	12,680	0	0	0	33,500	0	0	0	0
2012	2,300	0	0	12,680	0	0	0	35,000	0	0	0	0
2013	2,300	0	0	12,680	0	0	0	36,500	0	0	0	0
2014	2,300	0	0	12,680	0	0	0	38,500	0	0	0	0
2015	2,300	0	0	12,680	0	0	0	40,500	0	0	0	0
2016	2,300	0	0	12,680	0	0	0	43,000	0	0	0	0
2017	2,300	0	0	12,680	0	0	0	45,500	0	0	0	0
2018	2,300	0	0	12,680	0	0	0	48,000	0	0	0	0
2019	2,300	0	0	12,680	0	0	0	51,500	0	0	0	0
2020	2,300	0	0	12,680	0	0	0	54,000	0	0	0	0
2021	2,300	0	0	12,680	0	0	0	55,600	0	0	0	0
2022	2,300	0	0	12,680	0	0	0	57,200	0	0	0	0
2023	2,300	0	0	12,680	0	0	0	59,000	0	0	0	0
2024	2,300	0	0	12,680	0	0	0	60,700	0	0	0	0
2025	2,300	0	0	12,680	0	0	0	62,500	0	0	0	0
2026	2,300	0	0	12,680	0	0	0	64,300	0	0	0	0
2027	2,300	0	0	12,680	0	0	0	66,200	0	0	0	0
2028	2,300	0	0	12,680	0	0	0	68,200	0	0	0	0
2029	2,300	0	0	12,680	0	0	0	70,200	0	0	0	0
2030	2,300	0	0	12,680	0	0	0	72,300	0	0	0	0
2031	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2032	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2033	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2034	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2035	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
Total	**86,033**	**2,349**	**5,002**	**481,103**	**5**	**(653,216)**	**0**	**1,783,054**	**251,189**	**402,027**	**810**	**272**

[d] In accordance with the Exchange Agreement between the noted agencies, MWDSC assumed responsibility for payment of variable OMP&R costs on the exchange water in reaches beyond Reach 22B, and Desert Water Agency and Coachella Valley Water District for such costs from the Delta through Reach 22B.The adjustment in deliveries in Reach 22B provides for compliance with provisions for the repayment of costs under the agreement. In 1993 and after the exchange takes place in Reach 26A

[e] In accordance with the Exchange Agreement between the noted agencies, MWDSC assumed responsibility for payment of variable OMP&R costs on the exchange water in reaches beyond Reach 22B, and Desert Water Agency and Coachella Valley Water District for such costs from the Delta through Reach 22B.The adjustment in deliveries in Reach 22B 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)												
	Mojave Division (continued)			Santa Ana Division									
	Reach 24			Reach 26A			Reach 26A			Reach 28G	Reach 28H		
	CLAWA (128)	MWA (129)	MWDSC[e] (130)	MWDSC[e] (131)	SBVMWD[g] (132)	SGVMWD (133)	SGPWA (134)	CVWD[e] (135)	DWA[e] (136)	MWDSC (137)	CVWD (138)	DWA (139)	MWDSC (140)
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	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
1972	464	0	0	0	1,275	0	0	0	0	0	0	0	0
1973	389	0	0	444	32,426	0	0	0	0	18,942	0	0	0
1974	627	0	0	84,981	16,605	612	0	0	0	0	0	0	0
1975	825	0	0	169,960	13,865	5,450	0	0	0	0	0	0	0
1976	1,002	0	0	215,312	12,273	6,071	0	0	0	0	0	0	55
1977	1,109	0	0	64,823	24,833	8,996	0	0	0	0	0	0	43
1978	1,209	0	0	297,708	4,055	7,771	0	0	0	0	0	0	48
1979	1,260	0	0	260,903	18	290	0	0	0	0	0	0	1,290
1980	1,239	0	0	300,345	0	1,085	0	0	0	0	0	0	3,013
1981	1,485	0	0	395,678	16,021	3,619	0	0	0	0	0	0	4,365
1982	1,238	0	0	214,566	8,409	12,599	0	0	0	0	0	0	3,961
1983	911	0	0	175,288	5,994	734	0	0	0	0	0	0	6,645
1984	1,128	0	0	122,311	5,556	7,656	0	0	0	0	0	0	109,743
1985	1,422	0	0	147,599	7,390	5,028	0	0	0	0	0	0	182,781
1986	1,506	0	0	215,265	6,421	9,454	0	0	0	0	0	0	131,439
1987	1,849	0	0	175,012	18,751	10,630	0	0	0	0	0	0	144,743
1988	2,006	0	0	247,101	21,386	8,948	0	0	0	0	0	0	199,641
1989	2,170	0	0	326,217	20,782	12,839	0	0	0	0	0	0	247,430
1990	1,827	0	0	399,387	18,831	16,649	0	0	0	0	0	0	257,796
1991	849	2,032	0	107,182	3,661	5,399	0	0	0	0	0	0	38,832
1992	519	9,334	0	219,524	3,358	7,908	0	0	0	0	0	0	85,341
1993	439	10,000	0	98,291	4,361	14,397	0	23,100	38,100	0	0	0	61,841
1994	785	819	0	192,979	9,135	15,230	0	14,102	23,257	0	0	0	134,262
1995	409	0	0	107,299	696	12,922	0	23,100	38,100	0	0	0	117,762
1996	485	0	0	73,438	6,064	15,989	0	62,219	102,622	0	0	0	144,906
1997	651	0	0	157,215	9,654	18,175	0	58,100	53,100	0	0	0	107,853
1998	187	0	0	36,770	1,878	9,310	0	78,100	58,100	0	6,582	7,708	77,473
1999	1,132	0	0	139,752	12,874	21,729	0	50,480	58,100	0	0	0	206,689
2000	1,194	0	0	332,113	18,399	15,140	0	42,323	58,234	0	0	0	379,713
2001	1,057	0	0	284,007	26,488	2,360	0	9,100	15,010	0	0	0	260,984
2002	2,189	0	0	303,127	63,468	24,851	0	16,755	27,640	0	0	0	340,635
2003	1,634	0	17,249	532,198	27,672	21,934	116	16,753	27,629	0	0	0	247,382
2004	2,600	0	0	697,886	106,690	18,720	3,900	28,195	35,887	0	0	0	509,866
2005	2,600	0	0	602,076	52,600	28,800	6,500	23,100	38,100	0	0	0	426,898
2006	2,800	0	0	611,912	52,600	28,800	7,000	23,100	38,100	0	0	0	434,275
2007	3,000	0	0	612,106	52,600	28,800	7,500	23,100	38,100	0	0	0	435,843
2008	3,150	0	0	611,915	52,600	28,800	17,300	23,100	38,100	0	0	0	434,272
2009	3,450	0	0	611,912	102,600	28,800	8,500	23,100	38,100	0	0	0	434,278
2010	3,600	0	0	611,912	102,600	28,800	9,500	23,100	38,100	0	0	0	434,278
2011	3,750	0	0	611,912	102,600	28,800	10,500	23,100	38,100	0	0	0	434,278
2012	3,900	0	0	611,912	102,600	28,800	11,500	23,100	38,100	0	0	0	434,278
2013	4,050	0	0	611,912	102,600	28,800	12,500	23,100	38,100	0	0	0	434,278
2014	4,200	0	0	611,912	102,600	28,800	13,500	23,100	38,100	0	0	0	434,278
2015	4,350	0	0	611,912	102,600	28,800	14,500	23,100	38,100	0	0	0	434,278
2016	4,500	0	0	611,912	102,600	28,800	15,500	23,100	38,100	0	0	0	434,278
2017	4,650	0	0	611,912	102,600	28,800	16,500	23,100	38,100	0	0	0	434,278
2018	4,800	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2019	4,925	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2020	5,050	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2021	5,150	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2022	5,250	0	0	611,912	102,600	30,800	17,300	23,100	38,100	0	0	0	434,278
2023	5,325	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2024	5,400	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2025	5,450	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2026	5,500	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2027	5,550	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2028	5,600	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2029	5,650	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2030	5,700	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2031	5,725	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2032	5,750	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2033	5,775	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2034	5,800	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
2035	5,800	0	0	611,912	102,600	28,800	17,300	23,100	38,100	0	0	0	434,278
Total	**183,996**	**22,185**	**17,249**	**26,054,314**	**3,509,889**	**1,217,295**	**466,216**	**1,138,427**	**1,716,879**	**18,942**	**6,582**	**7,708**	**17,463,326**

[g]Includes 1,650 AF recaptured from groundwater storage in 1982, 10,000 AF in 1987, and 8,749 AF in 1988. The 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)											
	Santa Ana Division (continued)			West Branch								
	Reach 28J			Reach 29FA	Reach 29H	Reach 30						
	CVWD (141)	DWA (142)	MWDSC (143)	AVEKWA (144)	VCFCD (145)	CVWD (146)	DWA (147)	MWDSC[h] (148)	VCFCD (149)	SBVMWD[g] (150)	CLWA (151)	SBCFC& WCD (152)
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	53	0	0	0	71,938	0	0	0	0
1973	0	0	0	20	0	0	0	155,297	0	0	0	0
1974	0	0	0	36	0	0	0	209,136	0	0	0	0
1975	0	0	251	26	0	0	0	374,280	0	0	0	0
1976	0	0	2,000	24	0	0	0	420,684	0	0	0	0
1977	0	0	2,442	0	0	0	0	122,447	0	0	0	0
1978	0	0	64,054	0	0	0	0	171,139	0	0	0	0
1979	0	0	94,353	0	0	0	0	145,591	0	0	7	0
1980	0	0	91,532	0	0	0	0	164,721	0	0	1,210	0
1981	0	0	149,405	0	0	0	0	277,503	0	0	5,761	0
1982	0	0	155,629	0	0	0	0	351,362	0	0	9,516	0
1983	0	0	41,616	0	0	0	0	157,519	0	0	9,476	0
1984	0	0	5,672	0	0	0	0	260,624	0	0	11,477	0
1985	0	0	6,538	0	0	0	0	390,696	0	0	12,401	0
1986	0	0	30,071	0	0	0	0	379,275	0	0	13,928	0
1987	0	0	26,315	0	0	0	0	417,285	0	0	16,167	0
1988	0	0	22,209	0	0	0	0	488,265	0	0	18,904	0
1989	0	0	51,462	0	0	0	0	589,962	0	0	21,719	0
1990	0	0	36,060	0	4,836	0	0	764,380	0	0	22,139	0
1991	0	0	5,958	0	988	0	0	257,835	0	0	3,846	1,240
1992	0	0	12,223	0	0	0	0	420,849	0	0	14,812	0
1993	0	0	4,588	6	0	0	0	437,470	0	0	13,787	0
1994	0	0	4,725	0	0	0	0	475,900	0	0	14,919	0
1995	0	0	21,099	0	0	0	0	139,882	0	0	17,747	0
1996	0	0	12,418	0	0	0	0	267,618	0	0	18,448	0
1997	0	0	47,777	11	0	10,240	16,890	271,379	1,850	0	22,842	0
1998	1,027	4,839	50,411	7	0	0	0	187,277	1,850	0	19,782	0
1999	0	0	8,163	0	0	0	0	327,001	1,850	0	28,813	0
2000	0	0	7,864	0	2,200	0	0	632,991	1,850	0	31,085	0
2001	0	0	33,414	0	0	0	0	444,764	1,850	0	30,701	0
2002	0	0	41,552	0	3,148	0	0	723,605	1,850	8,601	42,080	0
2003	0	0	50,776	0	3,150	0	0	678,964	1,850	0	51,735	0
2004	0	0	5,171	0	3,150	0	0	1,051,230	9,850	0	59,924	0
2005	0	0	3,540	0	3,150	0	0	778,986	1,850	0	69,600	0
2006	0	0	3,600	0	3,150	0	0	761,713	1,850	0	69,600	0
2007	0	0	3,600	0	3,150	0	0	759,951	1,850	0	69,600	0
2008	0	0	3,600	0	3,150	0	0	761,713	1,850	0	69,600	0
2009	0	0	3,600	0	3,150	0	0	761,710	1,850	0	73,700	0
2010	0	0	3,600	0	3,150	0	0	761,710	1,850	0	81,070	0
2011	0	0	3,600	0	3,150	0	0	761,710	1,850	0	89,177	0
2012	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2013	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2014	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2015	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2016	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2017	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2018	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2019	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2020	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2021	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2022	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2023	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2024	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2025	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2026	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2027	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2028	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2029	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2030	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2031	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2032	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2033	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2034	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
2035	0	0	3,600	0	3,150	0	0	761,710	1,850	0	95,200	0
Total	**1,027**	**4,839**	**1,197,288**	**183**	**115,122**	**10,240**	**16,890**	**35,857,402**	**80,150**	**8,601**	**3,320,373**	**1,240**

[h]Deliveries exclude 6,171 AF of 1982 exchange water.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)								
	Coastal Branch								
	Reach 31A			Reach 33A	Reach 34	Reach 35			
	KCWA								
	(M&I) (153)	(Ag) (154)	CLWA (155)	SLOCFC& WCD (156)	SLOCFC& WCD (157)	SLOCFC& WCD (158)	SBCFC& WCD (159)	Total	Grand Total
1962	0	0	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	0	0	56,763
1968	0	71,657	7,382	0	0	0	0	192,188	294,457
1969	0	52,094	9,970	0	0	0	0	195,705	268,104
1970	0	71,910	11,739	0	0	0	0	276,211	369,459
1971	0	98,481	12,490	0	0	0	0	553,081	654,250
1972	0	107,850	13,905	0	0	0	0	895,006	1,037,584
1973	0	69,227	9,418	0	0	0	0	638,930	737,479
1974	0	68,474	9,700	0	0	0	0	783,984	878,820
1975	0	74,516	10,700	0	0	0	0	1,129,728	1,230,577
1976	0	78,358	11,700	0	0	0	0	1,245,662	1,379,597
1977	0	35,504	5,075	0	0	0	0	465,442	581,675
1978	0	81,242	11,362	0	0	0	0	1,339,268	1,458,154
1979	0	104,017	19,138	0	0	0	0	1,537,075	1,666,155
1980	0	97,497	13,882	0	0	0	0	1,413,363	1,536,189
1981	0	97,054	12,700	0	0	0	0	1,779,479	1,918,342
1982	0	83,076	12,700	0	0	0	0	1,641,571	1,750,528
1983	0	87,859	12,659	0	0	0	0	1,089,626	1,186,831
1984	0	119,098	12,741	0	0	0	0	1,489,814	1,591,131
1985	0	110,124	12,099	0	0	0	0	1,863,544	1,989,925
1986	0	118,298	13,301	0	0	0	0	1,882,290	1,998,514
1987	0	116,259	11,821	0	0	0	0	1,984,570	2,131,061
1988	0	109,435	11,534	0	0	0	0	2,221,538	2,384,434
1989	0	102,156	14,645	0	0	0	0	2,686,838	2,853,044
1990	0	103,362	6,440	0	0	0	0	2,398,121	2,581,277
1991	0	780	716	0	0	0	0	489,489	548,520
1992	0	73,748	5,887	0	0	0	0	1,374,775	1,470,695
1993	0	90,764	4,157	0	0	0	0	2,173,352	2,314,233
1994	200	77,536	9,422	0	0	0	0	1,727,504	1,860,612
1995	0	85,050	9,486	0	0	0	0	1,926,835	2,030,310
1996	0	100,578	14,052	0	0	0	0	2,429,928	2,542,395
1997	0	97,020	4,870	0	1,099	0	7,439	2,263,966	2,404,254
1998	0	86,879	311	0	3,592	0	18,618	1,657,381	1,763,382
1999	0	92,095	4,086	0	0	3,743	20,137	2,755,025	2,895,579
2000	5,662	85,215	8,395	0	0	3,962	22,741	3,368,820	3,546,326
2001	0	63,448	1,238	0	0	4,283	18,946	2,030,176	2,169,442
2002	0	65,055	2,737	0	0	4,355	27,636	2,743,385	2,912,397
2003	0	65,691	4,001	0	0	4,453	26,968	3,152,333	3,326,644
2004	0	80,514	2,004	0	0	16,250	29,566	3,610,889	3,848,301
2005	0	61,532	6,000	0	0	25,000	45,486	3,461,872	3,741,221
2006	0	61,532	6,000	0	0	25,000	45,486	3,460,626	3,738,333
2007	0	61,532	6,000	0	0	25,000	45,486	3,465,771	3,744,098
2008	0	61,532	6,000	0	0	25,000	45,486	3,480,543	3,759,390
2009	0	68,500	21,500	0	0	25,000	45,486	3,580,273	3,857,742
2010	0	68,500	14,130	0	0	25,000	45,486	3,582,923	3,860,773
2011	0	68,500	6,023	0	0	25,000	45,486	3,585,573	3,863,809
2012	0	68,500	0	0	0	25,000	45,486	3,588,223	3,866,850
2013	0	68,500	0	0	0	25,000	45,486	3,590,873	3,869,897
2014	0	68,500	0	0	0	25,000	45,486	3,594,023	3,873,448
2015	0	68,500	0	0	0	25,000	45,486	3,597,173	3,877,005
2016	0	68,500	0	0	0	25,000	45,486	3,600,823	3,881,117
2017	0	68,500	0	0	0	25,000	45,486	3,604,473	3,885,035
2018	0	68,500	0	0	0	25,000	45,486	3,607,923	3,888,858
2019	0	68,500	0	0	0	25,000	45,486	3,611,548	3,892,862
2020	0	68,500	0	0	0	25,000	45,486	3,614,173	3,895,871
2021	0	68,500	0	0	0	25,000	45,486	3,615,873	3,897,961
2022	0	68,500	0	0	0	25,000	45,486	3,619,573	3,902,057
2023	0	68,500	0	0	0	25,000	45,486	3,619,448	3,902,334
2024	0	68,500	0	0	0	25,000	45,486	3,621,223	3,904,517
2025	0	68,500	0	0	0	25,000	45,486	3,623,073	3,906,781
2026	0	68,500	0	0	0	25,000	45,486	3,624,923	3,909,052
2027	0	68,500	0	0	0	25,000	45,486	3,626,873	3,911,428
2028	0	68,500	0	0	0	25,000	45,486	3,628,923	3,913,636
2029	0	68,500	0	0	0	25,000	45,486	3,630,973	3,915,686
2030	0	68,500	0	0	0	25,000	45,486	3,633,123	3,917,836
2031	0	68,500	0	0	0	25,000	45,486	3,635,148	3,919,861
2032	0	68,500	0	0	0	25,000	45,486	3,635,173	3,919,886
2033	0	68,500	0	0	0	25,000	45,486	3,635,198	3,919,911
2034	0	68,500	0	0	0	25,000	45,486	3,635,223	3,919,936
2035	0	68,500	0	0	0	25,000	45,486	3,635,223	3,919,936
Total	**5,862**	**5,217,549**	**404,116**	**0**	**4,691**	**812,046**	**1,582,117**	**172,853,675**	**186,475,968**

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	9,345	34,586	43,931	34,409	18,004	77,922	130,335	4,283	18,946	23,229
2002	6,875	38,560	45,435	53,261	27,811	62,186	143,258	4,355	28,381	32,736
2003	7,646	33,951	41,597	45,450	36,590	108,981	191,021	4,453	26,968	31,421
2004	18,493	53,759	72,252	55,209	40,591	78,000	173,800	16,250	29,566	45,816
2005	19,400	44,269	63,669	84,400	42,000	100,000	226,400	25,000	45,486	70,486
2006	20,200	41,757	61,957	84,400	42,000	100,000	226,400	25,000	45,486	70,486
2007	20,700	41,807	62,507	84,400	42,000	100,000	226,400	25,000	45,486	70,486
2008	21,100	41,857	62,957	84,400	42,000	100,000	226,400	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	**997,884**	**1,930,560**	**2,928,444**	**3,230,709**	**2,040,325**	**6,158,277**	**11,429,311**	**816,937**	**1,584,102**	**2,401,039**

[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	122,484	1,077,713	1,200,197	3,600	4,508	198,313	1,468,956
2001	37,728	1,360	46,825	607,466	654,291	1,560	3,592	84,726	783,257
2002	49,240	1,405	90,967	737,864	828,831	2,854	4,885	96,502	983,717
2003	46,082	1,436	88,856	875,367	964,223	3,692	4,266	104,891	1,124,590
2004	65,250	3,576	78,746	607,537	686,283	5,850	4,776	68,186	833,921
2005	57,343	3,000	123,560	877,968	1,001,528	4,000	5,700	111,127	1,182,698
2006	57,343	3,000	123,560	877,968	1,001,528	4,000	5,700	111,127	1,182,698
2007	57,343	3,000	123,560	877,968	1,001,528	4,000	5,700	111,127	1,182,698
2008	57,343	3,000	123,560	878,118	1,001,678	4,000	5,700	111,127	1,182,848
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	**3,360,501**	**172,227**	**6,312,653**	**50,511,865**	**56,824,518**	**213,393**	**339,858**	**6,541,472**	**67,451,969**

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	62,857	31,939	9,100	1,057	15,010	0	4,433	10,427	26,488	2,360
2002	58,171	68,817	16,755	2,189	27,640	0	4,346	18,496	72,069	24,851
2003	60,029	55,736	16,753	1,634	27,629	0	22,060	11,547	27,672	21,934
2004	97,203	89,735	28,195	2,600	35,887	1,495	36,612	23,184	106,690	18,720
2005	90,858	75,600	23,100	2,600	38,100	2,300	37,900	21,300	52,600	28,800
2006	88,912	75,600	23,100	2,800	38,100	2,300	37,900	21,300	52,600	28,800
2007	93,357	75,600	23,100	3,000	38,100	2,300	37,900	21,300	52,600	28,800
2008	98,029	75,600	23,100	3,150	38,100	2,300	37,900	21,300	52,600	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	**5,621,792**	**3,784,691**	**1,407,465**	**183,996**	**2,148,343**	**86,038**	**1,871,073**	**838,848**	**3,518,490**	**1,217,295**

[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				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)		
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	0	64	64	0	654,250
1972	0	71,938	0	88,028	0	0	505	505	0	1,037,584
1973	0	159,883	0	217,226	0	0	679	679	0	737,479
1974	0	277,717	0	323,334	0	0	648	648	0	878,820
1975	0	526,491	0	583,919	0	0	405	405	0	1,230,577
1976	0	618,451	0	697,468	0	0	382	382	0	1,379,597
1977	0	189,755	0	241,161	0	0	303	303	0	581,675
1978	0	507,565	0	601,691	0	0	278	278	0	1,458,154
1979	0	477,074	0	587,476	0	0	329	329	0	1,666,155
1980	0	531,727	0	653,625	0	0	295	295	0	1,536,189
1981	0	795,846	0	951,182	0	0	355	355	0	1,918,342
1982	0	691,192	0	830,771	0	0	305	305	0	1,750,528
1983	0	343,521	0	443,841	0	0	262	262	0	1,186,831
1984	0	457,582	0	569,571	0	0	272	272	0	1,591,131
1985	0	683,625	0	804,576	0	0	254	254	0	1,989,925
1986	0	708,840	0	836,368	0	0	317	317	0	1,998,514
1987	0	712,424	0	863,143	0	0	452	452	0	2,131,061
1988	0	902,564	0	1,056,271	0	0	523	523	0	2,384,434
1989	0	1,156,698	0	1,342,686	0	0	486	486	0	2,853,044
1990	0	1,396,423	4,836	1,585,906	0	0	548	548	0	2,581,277
1991	0	391,447	988	442,693	0	0	420	420	0	548,520
1992	0	710,313	0	815,658	0	0	485	485	0	1,470,695
1993	0	652,190	0	818,737	0	0	444	444	0	2,314,233
1994	0	807,866	0	972,337	0	0	492	492	0	1,860,612
1995	0	436,042	0	601,951	0	0	308	308	0	2,030,310
1996	0	593,380	0	888,970	0	0	360	360	0	2,542,395
1997	0	721,810	1,850	1,003,254	0	0	231	231	0	2,404,254
1998	0	410,065	1,850	665,746	0	0	0	0	0	1,763,382
1999	0	852,617	1,850	1,122,518	1,096	286	0	1,382	0	2,896,961
2000	0	1,528,074	4,050	1,812,111	901	586	0	1,487	0	3,547,813
2001	0	1,023,169	1,850	1,188,690	1,065	513	0	1,578	0	2,171,020
2002	0	1,408,919	4,998	1,707,251	1,181	419	0	1,600	0	2,913,997
2003	116	1,687,905	5,000	1,938,015	1,324	551	0	1,875	0	3,328,519
2004	3,900	2,264,153	13,000	2,721,374	6,240	2,275	1,138	9,653	0	3,856,816
2005	6,500	1,811,500	5,000	2,196,158	9,600	27,500	1,810	38,910	0	3,778,321
2006	7,000	1,811,500	5,000	2,194,912	9,600	27,500	1,880	38,980	0	3,775,433
2007	7,500	1,811,500	5,000	2,200,057	9,600	27,500	1,950	39,050	0	3,781,198
2008	17,300	1,811,500	5,000	2,214,679	9,600	27,500	2,020	39,120	0	3,796,490
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	**466,216**	**80,853,766**	**195,272**	**102,193,285**	**309,407**	**182,130**	**71,920**	**563,457**	**0**	**186,967,505**

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	4	21,525	21,529	0	180	4,958	5,138
2001	0	1,760	43,931	45,691	0	0	19,737	19,737	0	0	9,345	9,345
2002	0	496	45,435	45,931	0	0	19,719	19,719	0	0	6,875	6,875
2003	0	3,991	41,597	45,588	0	0	16,691	16,691	0	0	7,646	7,646
2004	0	51	72,252	72,303	0	0	29,297	29,297	0	5	18,493	18,498
2005	0	51	63,669	63,720	0	0	42,920	42,920	0	5	19,400	19,405
2006	0	51	61,957	62,008	0	0	41,757	41,757	0	5	20,200	20,205
2007	0	51	62,507	62,558	0	0	41,807	41,807	0	5	20,700	20,705
2008	0	51	62,957	63,008	0	0	41,857	41,857	0	5	21,100	21,105
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)

	South Bay Aqueduct						California Aqueduct							
							North San Joaquin Division							
	South Bay Pumping Plant						Banks Pumping Plant							
				Deliveries			Transportation Water							
										Deliveries				
Calendar Year	Initial Fill Water (13)	Operational Losses (14)	Reservoir Storage Changes (15)	Water Supply[b] (16)	Recreation (17)	Total (18)	Initial Fill Water (19)	Operational Losses (20)	Reservoir Storage Changes (21)	Water Supply (22)	Recreation (23)	Total (24)	Conservation Water (25)	Total (26)
1961	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	9	272	0	8,906	0	9,187	0	0	0	0	0	0	0	0
1963	71	185	0	12,645	0	12,901	0	0	0	0	0	0	0	0
1964	171	152	0	20,911	0	21,234	0	0	0	0	0	0	0	0
1965	93	729	0	34,026	0	34,848	0	0	0	0	0	0	0	0
1966	0	1,746	0	54,913	0	56,659	0	0	0	0	0	0	0	0
1967	0	1,677	0	56,763	0	58,440	5,746	1,183	0	11,538	0	18,467	2,957	21,424
1968	0	1,847	0	101,055	0	102,902	11,079	74,464	0	293,243	0	378,786	531,275	910,061
1969	3,449	2,668	0	69,712	0	75,829	7,336	44,287	0	265,417	0	317,040	531,185	848,225
1970	16,279	1,086	(5,355)	89,560	0	101,570	23,947	20,767	(5,355)	365,771	0	405,130	(12,995)	392,135
1971	0	1,815	8,854	98,584	0	109,253	23,207	(10,754)	8,854	651,665	8	672,980	7,708	680,688
1972	0	3,557	2,273	138,426	0	144,256	145,066	9,057	(4,285)	1,033,432	6,489	1,189,759	48,300	1,238,059
1973	0	(33)	(1,510)	94,078	0	92,535	214,941	(4,951)	2,902	733,008	1,155	947,055	55,846	1,002,901
1974	0	1,287	(10,056)	89,318	0	80,549	247,894	(11,526)	(32,510)	873,302	2,118	1,079,278	54,683	1,133,961
1975	0	320	8,550	93,604	0	102,474	110,149	(8,092)	16,101	1,223,332	3,377	1,344,867	(102,625)	1,242,242
1976	0	2,431	1,391	126,431	141	130,394	67,834	5,443	(244,124)	1,372,093	1,745	1,202,991	(442,348)	760,643
1977	0	2,866	2,685	107,704	112	113,367	0	39,897	(157,543)	573,146	1,111	456,611	(13,507)	443,104
1978	0	2,165	(11,249)	112,574	126	103,616	67,457	(36,898)	35,129	1,451,842	1,177	1,518,707	752,075	2,270,782
1979	0	2,401	1,069	122,190	89	125,749	17,397	60,958	(32,307)	1,659,265	1,398	1,706,711	(112,053)	1,594,658
1980	0	1,758	(6,563)	115,824	123	111,142	3,159	58,484	(275,538)	1,529,187	2,131	1,317,423	186,601	1,504,024
1981	0	2,627	13,742	129,507	121	145,997	46,060	85,350	40,536	1,908,986	4,974	2,085,906	(931,878)	1,154,028
1982	0	2,344	(23,928)	107,439	129	85,984	5,979	61,556	99,897	1,743,145	4,646	1,915,223	347,983	2,263,206
1983	0	2,151	(22,886)	94,656	132	74,053	6,071	47,022	(310,477)	1,184,282	7,853	934,751	835,771	1,770,522
1984	0	2,088	8,442	98,122	158	108,810	38,649	97,143	(108,548)	1,587,936	5,874	1,621,054	21,875	1,642,929
1985	0	2,817	(1,607)	122,088	152	123,450	0	110,469	137,783	1,985,632	5,452	2,239,336	(110,569)	2,128,767
1986	0	2,299	(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	2,346	(20,958)	135,533	145	117,066	0	115,895	(13,232)	3,479,483	5,182	3,587,328	(15,487)	3,571,841
2001	0	2,784	1,301	95,335	196	99,616	0	222,144	(17,529)	1,899,922	1,978	2,106,515	86,928	2,193,443
2002	0	2,534	(13,938)	123,577	146	112,319	0	225,032	36,404	2,806,316	4,672	3,072,424	(151,719)	2,920,705
2003	0	3,960	(16,952)	132,714	131	119,853	0	228,264	(51,787)	3,212,585	11,291	3,400,353	328,334	3,728,687
2004	0	2,931	(428)	164,022	400	166,925	0	554,022	3,655	3,774,911	8,660	4,341,248	195,999	4,537,247
2005	0	2,922	77	213,870	400	217,269	0	(22,470)	168	3,675,742	8,660	3,662,100	(121,668)	3,540,432
2006	0	2,779	63	213,870	400	217,112	0	131,334	154	3,674,496	8,660	3,814,644	(253,589)	3,561,055
2007	0	3,351	0	213,870	400	217,621	0	129,168	22,514	3,679,641	8,660	3,839,983	(77,232)	3,762,751
2008	0	3,351	0	213,870	400	217,621	0	128,939	6,985	3,694,413	8,660	3,838,997	222,755	4,061,752
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)	Operaional 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	134,231	7,726	3,278,297	4,222	3,424,476	0	37,514	7,726	1,814,685	4,216	1,864,141
2001	0	150,830	(18,830)	1,611,602	1,218	1,744,820	0	31,361	(18,830)	1,318,987	1,211	1,332,729
2002	0	92,905	50,342	2,623,551	3,968	2,770,766	0	41,565	50,342	1,831,874	3,961	1,927,742
2003	0	85,981	(34,835)	2,894,041	10,585	2,955,772	0	43,335	(34,835)	1,910,822	10,574	1,929,896
2004	0	79,432	4,083	3,604,669	7,210	3,695,394	0	49,970	4,083	2,848,032	7,010	2,909,095
2005	0	75,425	91	3,452,542	7,210	3,535,268	0	45,963	91	2,333,401	7,010	2,386,465
2006	0	75,425	91	3,451,296	7,210	3,534,022	0	45,963	91	2,332,155	7,010	2,385,219
2007	0	70,076	22,514	3,456,441	7,210	3,556,241	0	40,614	22,514	2,337,300	7,010	2,407,438
2008	0	70,205	6,985	3,471,213	7,210	3,555,613	0	40,743	6,985	2,351,922	7,010	#######
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	87,084	7,726	1,691,120	4,216	1,790,146	0	49,690	7,726	1,651,057	4,216	1,712,689
2001	0	71,588	(18,830)	1,234,014	1,211	1,287,983	0	54,742	(18,830)	1,202,822	1,211	1,239,945
2002	0	108,309	50,342	1,740,813	3,961	1,903,425	0	69,443	50,342	1,699,261	3,961	1,823,007
2003	0	106,956	(34,835)	1,827,247	10,574	1,909,942	0	57,274	(34,835)	1,790,645	10,574	1,823,658
2004	0	46,340	4,083	2,765,653	7,010	2,823,086	0	46,090	4,083	2,716,294	7,010	2,773,477
2005	0	42,333	91	2,249,101	7,010	2,298,535	0	42,083	91	2,212,201	7,010	2,261,385
2006	0	42,333	91	2,247,855	7,010	2,297,289	0	42,083	91	2,210,955	7,010	2,260,139
2007	0	36,984	22,514	2,253,000	7,010	2,319,508	0	36,734	22,514	2,216,100	7,010	2,282,358
2008	0	37,113	6,985	2,267,622	7,010	2,318,730	0	36,863	6,985	2,230,722	7,010	2,281,580
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					
				Deliveries						Deliveries		
	Initial Fill Water (51)	Operational Losses (52)	Reservoir Storage Changes (53)	Water Supply (54)	Recreation (55)	Total (56)	Initial Fill Water (57)	Operational Losses (58)	Reservoir Storage Changes (59)	Water Supply (60)	Recreation (61)	Total (62)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	5,446	8	0	0	0	5,454	0	0	0	0	0	0
1972	100,274	16,067	(6,558)	74,123	6,481	190,387	0	0	0	0	0	0
1973	204,638	34,051	1,329	207,808	1,147	448,973	0	0	0	0	0	0
1974	237,554	18,181	(15,295)	313,634	2,108	556,182	0	0	0	0	0	0
1975	103,352	20,183	(693)	573,219	3,358	699,419	0	0	0	0	0	0
1976	61,122	21,096	(152,171)	685,768	1,581	617,396	0	0	0	0	0	0
1977	0	18,424	(116,219)	236,086	560	138,851	0	0	0	0	0	0
1978	65,027	20,887	121,904	590,329	674	798,821	0	0	0	0	0	0
1979	12,302	46,332	(51,299)	568,338	502	576,175	0	0	0	0	0	0
1980	0	52,967	(134,009)	639,743	1,262	559,963	0	0	0	0	0	0
1981	0	40,602	23,359	938,482	4,112	1,006,555	0	0	0	0	0	0
1982	0	37,244	117,296	812,206	4,045	970,791	0	0	0	0	0	0
1983	0	40,690	(101,155)	431,182	7,291	378,008	0	0	0	0	0	0
1984	0	42,112	(115,214)	556,830	5,244	488,972	0	0	0	0	0	0
1985	0	45,265	139,988	792,477	4,804	982,534	0	0	0	0	0	0
1986	0	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	43,072	7,726	1,627,123	4,216	1,682,137	0	8,983	(10,472)	958,997	449	957,957
2001	0	39,544	(18,830)	1,187,452	1,211	1,209,377	0	14,526	3,478	710,137	452	728,593
2002	0	60,037	50,342	1,680,514	3,961	1,794,854	0	15,190	8,398	901,230	490	925,308
2003	0	53,303	(34,835)	1,772,678	10,574	1,801,720	0	13,659	(7,441)	1,036,979	284	1,043,481
2004	0	44,540	4,083	2,691,563	7,010	2,747,196	0	37,032	14,016	1,567,409	1,630	1,620,087
2005	0	40,533	91	2,190,158	7,010	2,237,792	0	23,070	20	1,336,572	1,630	1,361,292
2006	0	40,533	91	2,188,912	7,010	2,236,546	0	23,069	19	1,352,599	1,630	1,377,317
2007	0	35,184	22,514	2,194,057	7,010	2,258,765	0	20,894	25,284	1,359,506	1,630	1,407,314
2008	0	35,313	6,985	2,208,679	7,010	2,257,987	0	21,000	(934)	1,372,366	1,630	1,394,062
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 — Initial Fill Water (63)	Operational Losses (64)	Reservoir Storage Changes (65)	Deliveries — Water Supply (66)	Deliveries — Recreation (67)	Total (68)	Mojave Siphon Power Plant — Initial Fill Water (69)	Operational Losses (70)	Reservoir Storage Changes (71)	Deliveries — Water Supply (72)	Deliveries — 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	(23,296)	(10,472)	864,999	449	831,680	0	4,896	(10,472)	854,980	449	849,853
2001	0	(9,304)	3,478	635,468	452	630,094	0	7,403	3,478	632,420	452	643,753
2002	0	3,810	8,398	823,690	490	836,388	0	9,300	8,398	820,217	490	838,405
2003	0	2,797	(7,441)	964,118	284	959,758	0	(3,827)	(7,441)	943,343	284	932,359
2004	0	31,682	14,016	1,444,143	1,430	1,491,271	0	28,212	14,016	1,408,915	1,430	1,452,573
2005	0	17,720	20	1,220,614	1,430	1,239,784	0	14,250	20	1,184,214	1,430	1,199,914
2006	0	17,719	19	1,238,587	1,430	1,257,755	0	14,249	19	1,202,187	1,430	1,217,885
2007	0	15,544	25,284	1,241,049	1,430	1,283,307	0	12,074	25,284	1,204,649	1,430	1,243,437
2008	0	15,650	(934)	1,249,237	1,430	1,265,383	0	12,180	(934)	1,212,837	1,430	1,225,513
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)

Calendar Year	California Aqueduct (continued)											
	Santa Ana Division						West Branch, California Aqueduct					
	Devil Canyon Power Plant						Oso Pumping Plant					
				Deliveries						Deliveries		
	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	7,407	(11,040)	853,786	375	850,528	0	33,658	18,198	668,126	3,767	723,749
2001	0	9,324	8,183	631,363	374	649,244	0	24,551	(22,308)	477,315	759	480,317
2002	0	10,315	9,682	818,028	413	838,438	0	44,692	41,944	779,284	3,471	869,391
2003	0	11,957	(18,298)	924,460	260	918,379	0	39,495	(27,394)	735,699	10,290	758,090
2004	0	25,074	15,016	1,406,315	1,250	1,447,655	0	7,458	(9,933)	1,124,154	5,380	1,127,059
2005	0	10,068	20	1,181,614	1,250	1,192,952	0	17,413	71	853,586	5,380	876,450
2006	0	10,067	19	1,199,387	1,250	1,210,723	0	17,414	72	836,313	5,380	859,179
2007	0	8,531	6,931	1,201,649	1,250	1,218,361	0	14,240	(2,770)	834,551	5,380	851,401
2008	0	8,481	(2,332)	1,209,687	1,250	1,217,086	0	14,263	7,919	836,313	5,380	863,875
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					
				Deliveries						Deliveries		
	Initial Fill Water (87)	Operational Losses (88)	Reservoir Storage Changes (89)	Water Supply (90)	Recreation (91)	Total (92)	Initial Fill Water (93)	Operational Losses (94)	Reservoir Storage Changes (95)	Water Supply (96)	Recreation (97)	Total (98)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	57,364	1,788	(6,162)	71,938	6,481	131,409
1973	0	0	0	0	0	0	37,198	6,430	4,542	155,297	1,075	204,542
1974	0	0	0	0	0	0	82,364	1,772	(950)	209,136	541	292,863
1975	0	0	0	0	0	0	90,460	5,002	(1,534)	374,280	1,563	469,771
1976	0	0	0	0	0	0	55,990	(7,695)	(132,036)	420,684	1,429	338,372
1977	0	0	0	0	0	0	0	(1,485)	(102,532)	122,447	(20)	18,410
1978	0	0	0	0	0	0	45,105	(2,264)	129,523	171,139	176	343,679
1979	0	0	0	0	0	0	0	(2,339)	(20,400)	145,598	0	122,859
1980	0	0	0	0	0	0	0	991	(118,026)	165,931	481	49,377
1981	0	0	0	0	0	0	0	(44,416)	47,244	283,264	2,704	288,796
1982	0	24,468	61,169	360,878	2,126	448,641	0	(60,135)	59,069	360,878	1,187	360,999
1983	0	20,780	(74,308)	166,995	6,111	119,578	0	(33,418)	(46,904)	166,995	2,618	89,291
1984	0	13,572	(139,219)	275,212	2,208	151,773	0	(29,618)	(139,545)	275,212	2,201	108,250
1985	0	29,286	141,492	403,097	874	574,749	0	(4,622)	135,007	403,097	844	534,326
1986	0	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	27,237	18,198	668,126	3,767	717,328	0	(19,645)	9,320	665,926	1,556	657,157
2001	0	17,404	(22,308)	477,315	759	473,170	0	(5,949)	(16,588)	477,315	746	455,524
2002	0	35,058	41,944	779,284	3,471	859,757	0	10,071	35,623	776,136	305	822,135
2003	0	28,167	(27,394)	735,699	10,290	746,762	0	9,075	(17,034)	732,549	356	724,946
2004	0	5,548	(9,933)	1,124,154	5,380	1,125,149	0	(177)	(9,933)	1,121,004	2,330	1,113,224
2005	0	15,503	71	853,586	5,380	874,540	0	9,778	71	850,436	2,330	862,615
2006	0	15,504	72	836,313	5,380	857,269	0	9,779	72	833,163	2,330	845,344
2007	0	12,330	(2,770)	834,551	5,380	849,491	0	6,045	(2,770)	831,401	2,330	837,006
2008	0	12,353	7,919	836,313	5,380	861,965	0	6,068	7,919	833,163	2,330	849,480
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	(742)	87,915	87,173	0	0	23,229	23,229
2002	0	638	99,783	100,421	0	(151)	31,991	31,840
2003	0	161	101,113	101,274	0	284	31,421	31,705
2004	0	802	128,334	129,136	0	212	45,816	46,028
2005	0	802	138,018	138,820	0	212	70,486	70,698
2006	0	802	138,018	138,820	0	212	70,486	70,698
2007	0	802	138,018	138,820	0	212	70,486	70,698
2008	0	802	138,018	138,820	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 SWP 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	21,657	0	0	0	367,547	0	389,204	86,922	476,126
Specific Power Facilities	5,002	0	0	0	101,121	0	106,123	6,558	112,681
Total, Oroville Division	26,659	0	0	0	468,668	0	495,327	93,480	588,807
California Aqueduct									
North San Joaquin Division	1,210	0	0	0	79,411	0	80,621	2,880	83,501
San Luis Division	13,152	0	0	0	105,034	0	118,186	3,827	122,013
Total, California Aqueduct	14,362	0	0	0	184,445	0	198,807	6,707	205,514
Delta Facilities	37,311	0	0	0	292,367	0	329,678	42,268	371,946
Planning and Pre-operation	5,302	0	0	0	78,981	0	84,283	0	84,283
Total, Conservation Facilities	83,880	0	0	0	1,025,104	0	1,108,984	159,010	1,267,994
Transportation Facilities									
Upper Feather Division									
Grizzly Valley Pipeline	323	0	181	0	0	341	845	0	845
North Bay Aqueduct	337	0	681	0	0	93,964	94,982	0	94,982
South Bay Aqueduct	(2,526)	0	1,722	0	0	93,635	92,831	21,466	114,297
California Aqueduct	9,027	0	57	0	0	182,270	191,354	6,417	197,771
North San Joaquin Division									
San Luis Division									
South San Joaquin Division	7,903	0	0	0	0	136,393	144,296	6,513	150,809
Tehachapi Division	1,078	0	3,630	2,093	0	291,121	297,922	17,329	315,251
Mojave Division	305	0	0	5,230	0	312,766	318,301	18,290	336,591
Santa Ana Division	88,992	0	(18,647)	0	0	288,304	358,649	37,941	396,590
West Branch	(2,285)	0	5,982	5,331	0	217,221	226,249	31,396	257,645
Coastal Branch	(441)	0	440	37	0	481,586	481,622	31,326	512,948
Total, California Aqueduct	6,350	0	176	0	0	491,194	497,720	0	497,720
	110,929	0	(8,362)	12,691	0	2,400,855	2,516,113	149,212	2,665,325
Total, Transportation Facilities	109,063	0	(5,778)	12,691	0	2,588,795	2,704,771	170,678	2,875,449
East Branch Enlargement	0	0	0	0	0	453,459	453,459	0	453,459
East Branch Extension	0	0	0	0	0	127,555	127,555	0	127,555
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	88,398	88,398
Off-Aqueduct Power Generation Facilities	0	0	0	0	0	464,033	464,033	0	464,033
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	58,194	25,709	0	83,903	0	83,903
Davis - Grunsky	0	0	0	0	0	0	0	130,000	130,000
Total through 2015	**192,943**	**0**	**(5,778)**	**70,885**	**1,099,594**	**3,754,653**	**5,112,297**	**548,086**	**5,660,383**

[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.
[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 Pre-Operations total includes $50,534,000 of planning costs financed from Systems Revenues and not included in Table 14-3. Planning and Pre-Operations total does not include $24,000,000 of projected costs that are included in Table 14-3. Delta Facilities total does not include $214,648,000 of projected 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*
	1952-2001 (1)	*2002 (2)*	*2003 (3)*	*2004 (4)*	*2005 (5)*	*2006 (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	5,000	0	18,590
Solano County Water Agency	662,113	0	0	0	0	0	662,113
Subtotal	675,703	0	0	0	5,000	0	680,703
South Bay Area							
Alameda County Flood Control and Water Conservation District, Zone 7	310,481	62,668	4,874	6,142	10,000	0	394,165
Alameda County Water District	232,484	7,095	0	0	0	0	239,579
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	1,631,145	69,763	4,874	6,142	10,000	0	1,721,924
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							
	82,567	0	0	0	0	0	82,567
Castaic Lake Water Agency	304,541	0	0	0	0	0	304,541
Dudley Ridge Water District	6,358	0	0	0	0	0	6,358
Empire West Side Irrigation District	5,292	0	0	0	0	0	5,292
Green Valley Water District[c]	2,973,641	33,381	10,824	12,082	12,000	0	3,041,928
Kern County Water Agency	46,882	0	0	0	0	0	46,882
Oak Flat Water District	6,932	0	0	0	0	0	6,932
Tracy Golf and Country Club[c]	277,483	0	0	0	0	0	277,483
Tulare Lake Basin Water Storage District	3,342	0	0	0	0	0	3,342
Veterans Administration Cemetery[b]							
Subtotal	3,707,038	33,381	10,824	12,082	12,000	0	3,775,325
Southern California Area	402,882	0	0	13,412	17,000	0	433,294
	354,745	0	0	0	0	0	354,745
Antelope Valley-East Kern Water Agency	14,206	0	0	0	0	0	14,206
Castaic Lake Water Agency	25,298	0	0	5,472	0	0	30,770
Coachella Valley Water District	23,438	0	0	0	0	0	23,438
Crestline-Lake Arrowhead Water Agency	23,732	0	0	0	0	0	23,732
Desert Water Agency	211,765	0	0	0	0	0	211,765
Littlerock Creek Irrigation District	34,173	0	0	0	0	0	34,173
Mojave Water Agency	952,254	8,431	0	0	0	0	960,685
Palmdale Water District							
San Bernardino Valley Municipal Water District	131,052	0	0	0	0	0	131,052
San Gabriel Valley Municipal Water District	66,530	0	0	0	0	0	66,530
San Gorgonio Pass Water Agency	4,814,078	0	0	0	0	0	4,814,078
The Metropolitan Water District of Southern California	79,699	0	0	0	0	0	79,699
Ventura County Flood Control District	7,133,852	8,431	0	18,884	17,000	0	7,178,167
Subtotal	13,422,130	111,575	15,698	37,108	44,000	0	13,630,511
Total	**13,422,130**	**111,575**	**15,698**	**37,108**	**44,000**	**0**	**13,630,511**

[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] Jan-Jun (4)	Annual Surplus Money Investment Fund Interest Rate[b] Jul-Dec (5)	Net Over or Underpayment With Interest[c] (6)
	Metropolitan Water District of Southern California					
1965	0	158,000	(158,000)	3.968%	4.184%	(163,412)
1966	8,056,000	435,800	7,620,200	4.540%	5.057%	7,701,103
1967	9,094,963	1,878,270	7,216,693	4.815%	4.744%	15,524,533
1968	1,523,252	2,887,351	(1,364,099)	5.330%	5.540%	14,959,187
1969	8,310,651	3,059,310	5,251,341	5.946%	6.389%	21,369,973
1970	3,426,736	2,397,102	1,029,634	7.071%	7.125%	23,986,083
1971	1,086,045	1,146,648	(60,603)	5.154%	5.580%	25,238,017
1972	(4,244,807)	487,394	(4,732,201)	4.477%	4.977%	21,532,965
1973	(15,913,829)	25,041	(15,938,870)	6.023%	8.717%	6,014,116
1974	0	37,775	(37,775)	9.222%	10.351%	6,576,393
1975	0	2,085	(2,085)	7.089%	6.791%	7,038,515
1976	0	0	0	6.048%	6.021%	7,469,662
1977	0	0	0	5.788%	6.182%	7,923,403
1978	0	0	0	7.171%	8.096%	8,539,736
1979	0	0	0	8.979%	9.671%	9,354,605
1980	0	0	0	11.500%	11.500%	10,461,314
Total	**11,339,011**	**12,514,776**	**(1,175,765)**	**-**	**-**	**10,461,314**
	San Gabriel Valley Municipal Water District					
1967	0	25,730	(25,730)	4.815%	4.744%	(26,611)
1968	184,422	44,053	140,369	5.330%	5.540%	117,587
1969	49,052	38,075	10,977	5.946%	6.389%	136,751
1970	44,911	17,959	26,952	7.071%	7.125%	175,186
1971	61,588	5,900	55,688	5.154%	5.580%	242,927
1972	(20,263)	6,835	(27,098)	4.477%	4.977%	226,230
1973	(180,465)	0	(180,465)	6.023%	8.717%	49,198
1974	0	0	0	9.222%	10.351%	54,130
1975	0	0	0	7.089%	6.791%	57,952
1976	0	0	0	6.048%	6.021%	61,501
1977	0	0	0	5.788%	6.182%	65,237
1978	0	0	0	7.171%	8.096%	70,312
1979	0	0	0	8.979%	9.671%	77,021
1980	0	0	0	11.500%	11.500%	86,133
Total	**139,245**	**138,552**	**693**	**-**	**-**	**86,133**
	Antelope Valley-East Kern Water Agency					
1968	85,495	1,645	83,850	5.330%	5.540%	86,962
1969	52,625	6,326	46,299	5.946%	6.389%	140,964
1970	101,648	15,076	86,572	7.071%	7.125%	243,222
1971	34,062	11,748	22,314	5.154%	5.580%	279,673
1972	(12,794)	2,018	(14,812)	4.477%	4.977%	277,552
1973	(205,354)	308	(205,662)	6.023%	8.717%	77,288
1974	0	96	(96)	9.222%	10.351%	84,933
1975	0	0	0	7.089%	6.791%	90,929
1976	0	190	(190)	6.048%	6.021%	96,300
1977	0	0	0	5.788%	6.182%	102,150
1978	0	0	0	7.171%	8.096%	110,096
1979	0	0	0	8.979%	9.671%	120,601
1980	0	0	0	11.500%	11.500%	134,869
Total	**55,682**	**37,407**	**18,275**	**-**	**-**	**134,869**

[a]Overpayment or underpayment for each calendar year - column (1) minus column (2).
[b]Interest rates shown are annual rates. Interest is credited daily at applicable rates on funds deposited in the State's Surplus Money Investment Fund.
[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	(4,244,807)	(14,381,396)				(356,668)	12,514,776
	2. Interest Credits-Amendment 2[e]													
28J									(1,532,433)				(10,104,646)	(11,637,079)
	3. Advance Payments Applied to Incremental Costs Amendment 5 f													
	0	1,240,000	1,483,180	2,469,325	(927,035)	1,729,160	3,215,258	2,967,475	1,690,000	(9,488,722)				4,378,641
	4. Interest Credits-Amendment 5[g]													
										(2,721,803)				(2,721,803)
	5. Net Required Advance of Funds													
	0	9,296,000	10,578,143	3,992,577	7,383,616	5,155,896	4,301,303	(1,277,332)	(14,233,829)	(12,210,525)			(10,461,314)	2,524,535
San Gabriel Valley Municipal Water District														
Incremental Costs														
25			25,730	44,053	38,075	17,959	5,900	6,835						138,552
Total Unadjusted Incremental Costs for Past Payments														
			25,730	44,053	38,075	17,959	5,900	6,835						138,552
Current Adjustments														
	1. Advance Payments Applied to Incremental Costs[d]													
			0	184,422	49,052	44,911	61,588	(20,263)	(174,133)				(7,025)	138,552
	2. Interest Credit													
									(6,332)				(79,108)	(85,440)
	3. Net Required Advance of Funds													
			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														
29A				1,645	6,326	13,376	10,048	2,018	308	96		190		34,007
29F						1,700	1,700							3,400
Total Unadjusted Incremental Costs for Past Payments														
				1,645	6,326	15,076	11,748	2,018	308	96		190		37,407
Current Adjustment														
	1. Advance Payments Applied to Incremental Costs[d]													
				85,495	52,625	101,648	34,062	(12,794)	(189,120)	0		0	(34,509)	37,407
	2. Interest Credit													
									(16,234)				(100,360)	(116,594)
	3. Net Required Advance of Funds													
				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	71,817	35,374	33,879	32,533	173,603	162,077	25,320	35,680	24,336
2000	24	29,750	8,069	11,711	4,012	53,542	100,502	15,672	24,079	19,633
2001	20	9,481	2,371	4,048	1,059	16,959	435,965	4,416	118,404	4,349
2002	14	14,375	9,728	8,387	1,986	34,476	2,989,760	2,322	320,620	46,081
2003	0	6,741	4,026	3,467	45,157	59,391	4,483,446	202,997	197,594	356,792
2004	0	12,795	8,184	7,160	605,211	633,350	2,507,919	16,616	20,759	31,678
2005	0	18,280	11,748	10,308	7,581	47,917	3,312,418	24,206	30,271	45,653
2006	0	14,403	9,219	8,070	5,883	37,575	5,152,017	18,763	23,445	35,708
2007	0	3,720	2,261	1,916	1,227	9,124	3,669,960	3,847	4,740	8,375
2008	0	3,843	2,335	1,978	1,266	9,422	1,199,553	3,967	4,888	8,646
2009	0	3,913	2,374	2,010	1,281	9,578	268,431	4,012	4,942	8,780
2010	0	0	0	0	0	0	0	0	0	0
Total	**341,125**	**41,889,395**	**33,070,373**	**4,632,537**	**14,371,938**	**93,964,243**	**43,008,477**	**2,064,233**	**6,033,124**	**11,757,234**

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	296,479	2,208,773	88,790	90,527	2,388,090
2000	2,400	4,907	5,279	10,611	183,083	(706,522)	57,209	39,982	(609,331)
2001	91,645	68,650	403,208	1,187,915	2,314,552	374,052	90,595	8,388	473,035
2002	228,659	452,784	1,106,114	2,975,297	8,121,637	149,067	28,800	8,932	186,799
2003	66,515	508,993	479,336	1,416,215	7,711,888	174,984	26,300	31,980	233,264
2004	811	1,854	11,251	1,990,296	4,581,184	383,572	56,415	906,236	1,346,223
2005	1,131	2,582	16,463	1,303,247	4,735,971	557,926	81,733	909,366	1,549,025
2006	909	2,078	12,715	31,421	5,277,056	433,028	63,648	1,808,757	2,305,433
2007	295	681	2,452	5,901	3,696,251	90,588	14,010	15,719	120,317
2008	305	704	2,528	6,081	1,226,672	93,438	14,456	16,199	124,093
2009	313	721	2,551	6,132	295,882	94,562	14,653	16,333	125,548
2010	0	0	0	0	0	0	0	0	0
Total	**956,087**	**4,924,300**	**6,959,400**	**17,932,068**	**93,634,923**	**112,296,752**	**42,866,130**	**27,106,999**	**182,269,881**

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	18,187	158,843	99,981	41,672	1,901,201	2,219,884	5,706	25,138	23,475
2000	101,618	373,593	77,891	36,152	1,138,744	1,727,998	3,922	23,516	29,216
2001	(9,390)	(56,413)	519,484	(3,308)	59,916	510,289	2,282	16,694	21,033
2002	(7,448)	(63,278)	6,054,839	(4,464)	(2,477,567)	3,502,082	2,942	34,605	15,945
2003	(3,172)	36,241	(5,381,744)	3,635	2,172,587	(3,172,453)	2,906	12,083	10,342
2004	51,471	376,864	72,728	26,412	2,212,998	2,740,473	3,422	14,228	12,149
2005	84,644	935,644	120,306	42,149	2,226,286	3,409,029	5,580	23,111	19,698
2006	215,597	719,829	92,918	33,240	27,941	1,089,525	4,346	18,039	15,392
2007	13,399	70,565	17,939	8,687	7,197	117,787	959	4,108	3,560
2008	13,818	72,814	18,491	8,973	7,434	121,530	989	4,240	3,674
2009	13,974	73,813	18,663	9,140	7,568	123,158	1,003	4,302	3,730
2010	0	0	0	0	0	0	0	0	0
Total	**21,197,369**	**33,490,192**	**23,784,677**	**6,061,331**	**51,859,043**	**136,392,612**	**879,472**	**13,125,924**	**11,172,154**

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	260,362	24,603	14,842	264,415
2000	43,393	21,100	32,408	40,128	25,095	168,350	15,186	11,034	151,288
2001	42,777	14,096	22,116	34,928	7,804	67,029	4,286	3,935	62,957
2002	70,952	15,280	5,501	66,469	37,698	217,911	17,885	27,898	131,136
2003	26,782	7,179	8,178	10,856	13,905	120,363	9,038	7,416	122,565
2004	31,153	8,455	4,826	10,786	16,050	142,831	10,537	8,384	144,867
2005	51,116	13,699	7,671	17,511	26,068	232,370	16,854	13,520	235,260
2006	39,665	10,708	6,064	13,672	20,349	181,209	13,274	10,598	183,654
2007	8,272	2,489	1,630	3,127	4,639	40,729	3,411	2,560	41,904
2008	8,532	2,570	1,684	3,227	4,788	42,032	3,524	2,643	43,250
2009	8,634	2,609	1,716	3,275	4,858	42,633	3,587	2,686	43,887
2010	0	0	0	0	0	0	0	0	0
Total	**10,539,446**	**12,609,097**	**11,246,757**	**8,392,490**	**16,198,225**	**66,729,279**	**9,142,699**	**7,212,531**	**47,547,894**

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 (contd.)		Tehachapi Division			Mojave Division			
	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	361,308	1,123,375	661,104	12,023	673,127	113,032	49,062	5,329	171,867
2000	372,619	937,255	406,462	14,073	420,535	119,903	89,985	936	83,355
2001	163,179	463,116	231,717	8,992	240,709	65,946	186,338	2,223	343,377
2002	226,209	870,431	111,515	4,323	115,838	14,450	(147,959)	1,374	(119,574)
2003	177,511	529,124	244,697	4,160	248,857	32,243	(19,273)	0	41,399
2004	310,952	718,640	2,452,652	5,966	2,458,618	129,787	12,921	0	97,342
2005	345,555	1,008,013	3,372,956	9,709	3,382,665	239,313	20,401	0	161,282
2006	268,405	785,375	2,993,284	7,570	3,000,854	144,567	16,190	0	124,451
2007	56,828	174,216	118,828	1,697	120,525	15,370	4,558	0	23,646
2008	58,621	179,774	122,607	1,751	124,358	15,860	4,710	0	24,371
2009	59,349	182,269	124,256	1,776	126,032	16,078	4,806	0	24,584
2010	0	0	0	0	0	0	0	0	0
Total	**76,325,253**	**291,121,221**	**258,154,529**	**54,611,756**	**312,766,285**	**51,299,216**	**23,669,177**	**759,941**	**18,788,504**

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	1,007,117	2,208,411	123,902	3,792,764	223,882	843,461
2000	75,113	44,803	20,567	725,557	1,251,238	84,653	2,496,110	128,725	1,285,316
2001	121,683	77,698	54,798	549,115	343,903	27,468	1,772,549	70,195	466,527
2002	(89,233)	(26,112)	(43,540)	112,440	236,870	54,777	(6,507)	45,633	1,681,366
2003	(4,909)	(3,711)	(3,173)	377,702	121,959	35,565	577,802	77,730	337,759
2004	18,808	11,140	5,057	312,929	313,705	44,939	946,628	75,457	637,990
2005	30,656	17,853	8,102	513,472	798,057	329,271	2,118,407	150,725	835,475
2006	23,880	14,044	6,375	398,440	713,156	825,903	2,267,006	75,573	496,808
2007	5,282	3,558	1,618	83,073	56,806	13,294	207,205	156	72,782
2008	5,451	3,675	1,671	85,684	17,307	13,723	172,452	161	42,584
2009	5,526	3,740	1,701	86,706	17,397	13,935	174,473	164	43,111
2010	0	0	0	0	0	0	0	0	0
Total	**17,756,576**	**8,390,262**	**12,910,776**	**126,420,020**	**65,518,824**	**52,894,061**	**378,407,357**	**60,922,636**	**46,516,170**

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)	Reach 30 (65)	Subtotal (66)
1952	4,785	4,055	3,020	20,793	2,924	136	175	459	553	1,408	5,655
1953	15,580	11,511	9,476	64,106	9,093	344	237	1,754	1,683	4,346	17,457
1954	18,015	18,100	12,160	84,631	7,389	1,201	2,229	2,350	4,162	5,743	23,074
1955	6,052	6,081	4,151	28,546	1,019	585	1,086	1,147	2,029	1,943	7,809
1956	6,496	6,525	4,480	30,682	490	698	1,297	1,366	2,420	2,077	8,348
1957	24,044	24,156	16,585	113,576	1,809	2,583	4,792	5,057	8,952	7,684	30,877
1958	40,844	41,033	28,470	193,367	3,256	4,516	8,714	8,878	15,847	13,931	55,142
1959	45,746	45,946	44,331	233,485	7,953	9,150	19,414	18,243	35,583	44,384	134,727
1960	59,102	58,548	118,969	395,974	21,753	14,990	34,447	29,764	69,752	84,703	255,409
1961	32,226	34,382	674,787	825,108	22,442	12,775	21,559	20,086	39,761	123,330	239,953
1962	21,383	20,530	47,484	135,596	40,237	28,729	86,938	58,215	108,962	348,366	671,447
1963	43,884	41,698	1,506,440	1,735,306	91,959	69,162	163,347	110,015	211,592	521,491	1,167,566
1964	89,710	45,762	98,569	506,352	150,670	66,420	207,977	143,340	291,404	1,372,464	2,232,275
1965	96,956	76,899	146,095	805,543	361,811	77,914	403,115	127,430	589,638	3,383,950	4,943,858
1966	170,878	308,756	589,107	1,847,811	489,512	203,497	1,233,640	348,918	3,231,797	9,364,753	14,872,117
1967	233,968	283,126	987,832	5,327,761	1,589,715	882,096	1,117,243	891,607	31,088,491	17,618,827	53,187,979
1968	871,337	266,295	780,587	11,450,539	3,899,363	300,921	396,190	1,104,832	36,157,768	15,736,691	57,595,765
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	16,228,175	34,690,908
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	22,330,328	50,497,652
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	16,890,503	40,115,145
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)	3,818,001	2,874,264
1973	209,664	247,769	3,673,344	6,078,500	775,824	168,064	399,856	9,408,706	1,821,206	13,426,222	25,999,878
1974	162,178	101,638	1,980,991	4,235,986	560,657	168,878	169,717	3,901,261	(3,454,239)	2,988,318	4,334,592
1975	157,365	124,399	1,626,274	5,862,488	353,670	421,176	925,693	664,113	609,891	1,808,235	4,782,778
1976	178,287	118,748	1,497,465	3,764,426	396,809	650,417	1,274,484	706,244	650,209	1,253,067	4,931,230
1977	127,106	89,036	323,091	1,391,573	390,637	3,018,637	2,152,961	196,012	1,135,148	345,023	7,238,418
1978	147,112	153,867	347,482	837,000	1,427,190	2,219,135	6,694,615	57,817	149,932	763,445	11,312,134
1979	29,723	19,225	225,947	385,337	940,013	2,168,382	19,813,742	597,858	331,313	282,145	24,133,453
1980	137,833	154,821	1,077,900	1,583,654	1,276,793	4,108,143	24,537,814	550,337	204,751	2,055,206	32,733,044
1981	28,815	22,654	61,349	187,713	(711,751)	2,699,873	19,806,531	94,944	28,852	275,460	22,193,909
1982	16,069	58,900	55,841	299,314	(465,217)	351,251	17,964,617	215,678	42,587	351,376	18,460,292
1983	18,213	89,581	(264,804)	376,058	100,394	180,971	6,751,649	220,029	24,295	566,545	7,843,883
1984	14,462	12,259	49,547	350,573	71,759	68,930	2,870,259	335,942	17,285	1,118,954	4,483,129
1985	17,816	11,481	54,070	151,493	142,244	25,386	2,126,670	102,366	21,971	284,243	2,702,880
1986	31,564	25,037	86,794	267,883	133,914	62,294	274,660	141,894	36,149	213,353	862,264
1987	17,141	8,005	45,528	102,790	13,936	453,949	711,773	192,511	27,931	158,313	1,558,413
1988	41,892	21,113	90,784	323,104	427,544	118,010	1,660,959	203,130	95,930	222,068	2,727,641
1989	28,708	12,619	51,556	(2,196,424)	207,067	430,662	584,186	241,811	97,472	148,674	1,709,872
1990	27,478	12,817	55,408	(1,385,019)	197,428	355,480	386,882	813,211	54,269	119,438	1,926,708
1991	142,139	15,524	62,794	(893,417)	219,321	344,386	453,336	1,132,520	55,176	229,315	2,434,054
1992	34,185	13,422	69,479	(1,427,482)	541,026	295,312	464,421	4,402,524	47,182	206,495	5,956,960
1993	44,300	27,047	162,854	5,720,209	464,987	320,182	643,189	3,361,457	74,198	296,349	5,160,362
1994	16,351	11,673	54,581	4,680,290	203,666	231,527	362,717	306,148	33,758	168,426	1,306,242
1995	35,402	28,202	164,254	4,039,213	344,358	392,647	536,253	468,656	34,007	304,983	2,080,904
1996	76,723	73,629	344,747	19,414,376	150,901	161,394	427,223	203,201	15,357	98,522	1,056,598
1997	50,662	20,720	268,293	7,322,753	298,002	71,310	432,940	276,180	50,095	233,956	1,362,483
1998	10,268	8,970	479,138	3,105,500	346,973	21,003	2,028,979	181,951	49,377	67,874	2,696,157
1999	84,563	45,203	324,045	1,521,154	296,367	37,791	1,080,369	125,121	50,944	117,470	1,708,062
2000	63,878	41,167	113,901	1,632,987	211,896	34,019	238,107	116,129	12,752	186,940	799,843
2001	19,930	12,977	87,039	656,668	42,611	6,097	107,434	108,940	83,023	18,081	366,186
2002	37,509	8,652	180,577	1,953,737	102,471	19,775	185,093	15,134	3,259	34,910	360,642
2003	1,094,211	2,488,488	176,017	4,174,205	64,216	5,847	99,643	37,820	50,623	31,578	289,727
2004	772,117	1,163,191	35,077	2,683,832	662,585	29,127	111,830	400,171	819,126	99,234	2,122,073
2005	23,745	48,246	56,594	1,114,785	1,815,436	26,982	181,389	429,448	798,469	146,220	3,397,944
2006	18,901	37,281	44,348	672,911	1,232,661	21,072	141,700	74,198	33,266	5,088,079	6,590,976
2007	5,506	7,260	10,668	96,372	34,525	4,836	32,658	14,155	6,209	16,497	108,880
2008	5,692	7,484	11,014	66,935	35,621	4,992	33,709	14,591	6,400	17,017	112,330
2009	5,812	7,556	11,193	67,836	36,091	5,066	34,216	14,724	6,455	17,224	113,776
2010	0	0	0	0	0	0	0	0	0	0	0
Total	**26,309,402**	**27,464,280**	**56,008,058**	**217,220,546**	**40,742,201**	**32,000,232**	**125,828,512**	**64,420,188**	**76,932,658**	**141,662,353**	**481,586,144**

[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)									
	Coastal Branch									
	Reach 31A (67)	Reach 33A (68)	Reach 33B (69)	Reach 34 (70)	Reach 35 (71)	Reach 37 (72)	Reach 38 (73)	Subtotal (74)	Total (75)	Grand Total (76)
1952	0	0	0	0	0	0	0	0	98,857	99,353
1953	0	0	0	0	0	0	0	0	309,387	311,812
1954	0	0	0	0	0	0	0	0	394,688	402,143
1955	0	0	0	0	0	0	0	0	159,842	169,342
1956	0	0	0	0	0	0	0	0	255,679	351,551
1957	0	0	0	0	0	0	0	0	708,753	1,464,452
1958	0	0	0	0	0	0	0	0	1,331,616	2,286,623
1959	28,046	49,114	0	7,441	8,236	0	0	92,837	2,096,392	2,967,412
1960	34,404	70,450	0	8,507	14,265	0	0	127,626	2,937,049	4,660,833
1961	13,801	17,868	0	1,501	3,931	0	0	37,101	4,650,264	8,545,244
1962	10,121	7,798	0	524	1,689	0	0	20,132	5,827,774	8,875,171
1963	20,470	14,299	0	880	2,943	0	0	38,592	18,981,487	24,610,278
1964	315,418	26,963	0	1,687	5,639	0	0	349,707	31,550,813	41,736,060
1965	747,023	36,178	0	2,118	7,060	0	0	792,379	57,936,405	62,664,743
1966	2,258,915	35,864	0	1,736	5,764	0	0	2,302,279	124,748,128	129,110,330
1967	6,310,419	38,331	0	1,891	6,213	0	0	6,356,854	187,465,580	194,146,365
1968	2,707,580	30,784	0	1,324	4,369	0	0	2,744,057	192,593,079	197,978,911
1969	423,797	26,549	0	907	2,905	0	0	454,158	182,530,023	184,473,490
1970	269,194	24,368	0	851	2,787	0	0	297,200	206,720,774	207,082,650
1971	164,446	32,230	0	1,315	3,804	0	0	201,795	158,414,033	158,624,739
1972	131,332	17,601	0	522	1,660	0	0	151,115	68,228,670	68,362,291
1973	182,493	16,154	0	542	1,758	0	0	200,947	45,110,823	45,263,853
1974	190,866	18,799	0	463	1,405	0	0	211,533	24,036,199	24,402,166
1975	64,582	36,012	0	2,255	6,656	0	0	109,505	21,065,768	21,318,838
1976	198,266	68,898	0	5,088	14,988	0	0	287,240	17,183,961	17,492,910
1977	918,473	81,305	0	1,834	5,387	0	0	1,006,999	15,165,801	15,544,382
1978	52,994	83,300	0	1,302	3,852	0	0	141,448	18,661,117	19,119,151
1979	38,182	108,951	0	1,505	4,433	0	0	153,071	31,202,118	31,857,362
1980	189,070	376,036	0	1,152	3,449	0	0	569,707	73,891,101	74,986,833
1981	19,897	(157,537)	0	1,427	4,261	0	0	(131,952)	15,246,649	15,742,773
1982	(16,381)	(96,449)	0	588	1,787	0	0	(110,455)	38,256,580	39,705,931
1983	85,496	67,106	0	794	2,398	0	0	155,794	34,705,281	38,044,649
1984	28,568	54,074	0	986	2,959	0	0	86,587	24,454,091	30,382,250
1985	36,834	54,314	0	2,111	6,263	0	0	99,522	14,914,930	28,537,556
1986	82,358	223,134	0	17,458	51,279	0	0	374,229	13,435,351	43,155,828
1987	53,817	1,061,939	0	92,506	272,968	0	0	1,481,230	11,711,428	34,331,982
1988	183,853	1,141,272	0	99,456	293,612	0	0	1,718,193	11,026,370	18,123,243
1989	84,678	893,765	0	77,283	228,038	0	0	1,283,764	30,302,112	33,130,497
1990	133,868	1,100,167	0	103,785	277,889	0	0	1,615,709	32,589,619	34,435,721
1991	164,610	1,635,283	0	123,603	363,889	0	0	2,287,385	38,320,942	39,811,664
1992	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	344,928	5,274,657	5,052,431	1,345,211	688,935	268,937	358,367	13,333,467	53,122,385	53,921,788
1994	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	1,196,326	45,172,271	62,947,362	23,975,738	20,849,939	7,029,108	7,117,197	168,287,940	191,033,089	191,525,570
1996	948,730	42,987,442	54,300,990	26,475,298	18,790,572	7,213,823	6,616,310	157,333,164	187,776,346	188,025,324
1997	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	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	288,155	2,913,031	4,398,199	2,617,504	357,331	36,680	51,648	10,662,548	24,089,004	24,559,088
2000	132,288	241,661	2,964,598	2,747,810	19,670	0	0	6,106,027	13,511,424	13,748,073
2001	103,702	14,065	559,917	3,891	253	0	0	681,828	5,164,380	7,495,911
2002	53,229	171,803	96,896	83,097	20,195	0	0	425,220	7,408,242	15,564,369
2003	59,776	73,222	11,802	24,788	8,678	0	0	178,266	3,058,792	10,830,071
2004	128,269	47,100	0	0	0	0	0	175,369	13,191,856	18,406,390
2005	211,498	78,947	0	0	0	0	0	290,445	16,270,313	21,054,201
2006	163,655	60,514	0	0	0	0	0	224,169	16,936,249	22,250,880
2007	32,602	10,160	0	0	0	0	0	42,762	988,064	4,693,439
2008	33,615	10,460	0	0	0	0	0	44,075	945,547	2,181,641
2009	33,965	10,502	0	0	0	0	0	44,467	957,559	1,263,019
2010	0	0	0	0	0	0	0	0	0	0
Total	**21,134,872**	**134,952,106**	**171,222,054**	**81,145,537**	**50,059,620**	**16,067,297**	**16,612,628**	**491,194,114**	**2,490,958,160**	**2,678,898,451**

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	2,118,974	163,714	400,547	283,067
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	662,764	323,051	311,893	269,801	1,567,509	3,671,137	468,822	423,480	402,810
2000	505	916,579	251,004	850,976	219,626	2,238,185	3,805,948	541,354	439,802	580,471
2001	319	1,072,019	233,337	456,300	180,716	1,942,372	2,907,269	275,771	292,402	511,236
2002	3,627	1,581,831	412,204	409,886	395,974	2,799,895	3,846,330	334,261	457,920	576,607
2003	3,950	1,584,245	465,920	517,291	419,271	2,986,727	2,745,833	422,069	532,212	791,762
2004	4,005	1,477,561	377,098	484,246	349,799	2,688,704	3,477,099	469,783	569,976	520,319
2005	4,005	1,454,248	382,859	447,114	316,644	2,600,865	3,151,139	477,294	579,900	545,487
2006	4,075	1,496,162	394,319	459,723	325,386	2,675,590	3,237,557	491,528	597,096	552,143
2007	4,149	985,912	275,041	492,553	415,293	2,168,799	4,363,472	509,681	822,512	709,945
2008	4,151	986,362	275,127	492,780	415,460	2,169,729	4,364,946	509,851	822,799	710,333
2009	4,148	986,144	275,024	492,675	415,345	2,169,188	4,363,427	509,670	822,522	710,242
2010	4,149	985,862	275,056	492,524	415,289	2,168,731	4,363,609	509,700	822,533	709,867
2011	4,147	989,652	275,989	494,412	416,694	2,176,747	4,377,835	511,476	825,450	715,400
2012	4,148	989,924	276,030	494,553	416,790	2,177,297	4,378,608	511,564	825,605	715,650
2013	4,148	990,796	276,048	495,006	417,035	2,178,885	4,379,531	511,654	825,830	716,627
2014	4,146	991,500	275,895	495,388	417,137	2,179,920	4,378,093	511,463	825,642	717,676
2015	4,149	992,237	276,111	495,755	417,451	2,181,554	4,381,483	511,859	826,278	718,193
2016	4,145	990,883	275,820	495,071	416,929	2,178,703	4,376,612	511,296	825,340	717,081
2017	4,146	991,452	275,923	495,360	417,138	2,179,873	4,378,402	511,502	825,689	717,577
2018	4,147	992,474	275,944	495,894	417,425	2,181,737	4,379,488	511,608	825,955	718,726
2019	4,142	990,982	275,688	495,133	416,885	2,178,688	4,374,970	511,092	825,066	717,397
2020	4,147	991,796	275,978	495,536	417,263	2,180,573	4,379,390	511,612	825,886	717,891
2021	4,151	992,148	276,192	495,701	417,475	2,181,516	4,382,443	511,979	826,435	717,966
2022	4,146	992,224	275,903	495,766	417,334	2,181,227	4,378,739	511,523	825,809	718,499
2023	4,145	990,934	275,856	495,094	416,966	2,178,850	4,377,118	511,357	825,431	717,082
2024	4,145	991,485	275,854	495,383	417,111	2,179,833	4,377,529	511,393	825,544	717,721
2025	4,151	992,478	276,172	495,875	417,551	2,182,076	4,382,438	511,969	826,459	718,376
2026	4,141	990,690	275,610	494,987	416,764	2,178,051	4,373,722	510,946	824,831	717,181
2027	4,156	993,799	276,569	496,534	418,126	2,185,028	4,388,671	512,701	827,628	719,287
2028	4,141	990,664	275,539	494,980	416,719	2,177,902	4,372,774	510,831	824,666	717,261
2029	4,148	991,799	276,031	495,530	417,292	2,180,652	4,380,086	511,698	826,005	717,809
2030	4,145	990,751	275,823	495,000	416,898	2,178,472	4,376,542	511,288	825,317	716,923
2031	4,155	994,327	276,510	496,813	418,234	2,185,884	4,388,328	512,645	827,611	719,988
2032	4,139	990,122	275,370	494,711	416,480	2,176,683	4,370,150	510,522	824,176	716,897
2033	4,149	991,794	276,148	495,520	417,357	2,180,819	4,381,609	511,884	826,266	717,622
2034	4,148	992,188	276,061	495,733	417,411	2,181,393	4,380,782	511,774	826,153	718,212
2035	4,139	990,248	275,418	494,772	416,540	2,176,978	4,370,867	510,609	824,310	716,970
Total	**208,372**	**44,101,969**	**13,239,755**	**20,353,915**	**20,224,203**	**97,919,842**	**205,683,721**	**23,694,698**	**36,447,089**	**31,284,490**

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	3,461,081	5,292,200	958,927	362,065	6,613,192
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	49,229	33,596	424,454	2,026,648	7,500,176	11,348,086	1,348,379	1,286,555	13,983,020
2000	135,580	86,950	184,603	638,368	6,413,076	12,608,937	911,519	646,069	14,166,525
2001	112,849	188,257	196,957	1,047,060	5,531,801	17,568,572	1,409,589	756,693	19,734,854
2002	143,775	170,770	500,620	2,778,631	8,808,914	14,358,528	916,453	628,981	15,903,962
2003	52,022	75,179	342,753	1,216,624	6,178,454	15,897,848	1,142,805	978,307	18,018,960
2004	107,699	149,637	351,253	1,756,020	7,401,786	16,421,481	678,988	674,096	17,774,565
2005	109,303	151,867	356,486	1,782,185	7,153,661	14,949,434	693,920	685,612	16,328,966
2006	112,577	156,416	367,164	1,835,568	7,350,049	14,801,947	713,195	705,687	16,220,829
2007	96,701	89,607	108,921	534,485	7,235,324	12,087,959	2,303,015	767,627	15,158,601
2008	96,731	89,635	108,955	534,650	7,237,900	12,091,212	2,303,837	767,890	15,162,939
2009	96,694	89,600	108,914	534,447	7,235,516	12,088,645	2,303,560	767,791	15,159,996
2010	96,706	89,612	108,927	534,512	7,235,466	12,087,965	2,302,877	767,586	15,158,428
2011	97,032	89,917	109,296	536,319	7,262,725	12,127,360	2,311,798	770,207	15,209,365
2012	97,047	89,930	109,312	536,399	7,264,115	12,129,176	2,312,313	770,373	15,211,862
2013	97,050	89,936	109,318	536,426	7,266,372	12,133,098	2,314,188	770,949	15,218,235
2014	96,995	89,883	109,254	536,115	7,265,121	12,133,580	2,316,039	771,489	15,221,108
2015	97,070	89,952	109,340	536,535	7,270,710	12,140,102	2,317,234	771,890	15,229,226
2016	96,969	89,859	109,226	535,971	7,262,354	12,129,788	2,314,833	771,108	15,215,729
2017	97,005	89,893	109,265	536,170	7,265,503	12,133,802	2,315,880	771,444	15,221,126
2018	97,011	89,897	109,271	536,200	7,268,156	12,138,407	2,318,085	772,121	15,228,613
2019	96,921	89,814	109,171	535,708	7,260,139	12,128,083	2,315,312	771,233	15,214,628
2020	97,023	89,909	109,288	536,275	7,267,274	12,136,116	2,316,528	771,650	15,224,294
2021	97,100	89,979	109,372	536,693	7,271,967	12,140,995	2,316,872	771,792	15,229,659
2022	96,996	89,883	109,255	536,119	7,266,823	12,136,680	2,317,614	771,972	15,226,266
2023	96,981	89,872	109,239	536,040	7,263,120	12,130,563	2,314,869	771,124	15,216,556
2024	96,979	89,868	109,237	536,031	7,264,302	12,132,833	2,316,089	771,496	15,220,418
2025	97,090	89,972	109,362	536,649	7,272,315	12,142,037	2,317,637	772,022	15,231,696
2026	96,894	89,790	109,141	535,556	7,258,061	12,125,617	2,314,822	771,071	15,211,510
2027	97,231	90,102	109,521	537,424	7,282,565	12,153,929	2,319,761	772,735	15,246,425
2028	96,869	89,767	109,111	535,416	7,256,695	12,124,366	2,314,907	771,084	15,210,357
2029	97,042	89,927	109,309	536,380	7,268,256	12,136,979	2,316,420	771,627	15,225,026
2030	96,970	89,860	109,227	535,977	7,262,104	12,129,277	2,314,534	771,017	15,214,828
2031	97,210	90,082	109,496	537,302	7,282,662	12,155,192	2,321,033	773,113	15,249,338
2032	96,809	89,711	109,045	535,087	7,252,397	12,119,409	2,314,051	770,796	15,204,256
2033	97,084	89,966	109,355	536,612	7,270,398	12,138,838	2,316,178	771,573	15,226,589
2034	97,053	89,937	109,319	536,434	7,269,664	12,139,077	2,317,219	771,877	15,228,173
2035	96,826	89,727	109,064	535,180	7,253,553	12,120,695	2,314,234	770,858	15,205,787
Total	**4,002,409**	**5,074,338**	**7,667,152**	**35,114,146**	**348,968,043**	**613,139,137**	**99,304,690**	**47,059,813**	**759,503,640**

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	362,738	3,104,592	424,107	236,349	439,232	4,567,018	113,962	412,042	446,067
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	685,610	5,610,737	1,201,667	520,446	654,424	8,672,884	103,243	391,082	402,618
2000	456,509	5,859,272	1,025,823	524,142	866,672	8,732,418	103,906	468,540	514,512
2001	65,830	5,843,390	855,107	372,855	687,435	7,824,617	59,662	558,976	606,191
2002	436,200	5,076,891	647,033	246,690	714,515	7,121,329	56,585	745,818	431,450
2003	673,779	6,072,437	1,041,619	375,835	649,090	8,812,760	69,650	437,038	416,618
2004	865,702	7,243,872	1,182,288	447,501	832,428	10,571,791	64,221	541,193	443,044
2005	893,777	6,245,576	1,220,352	460,742	852,463	9,672,910	65,266	553,770	453,872
2006	896,196	6,770,744	1,213,830	460,408	865,654	10,206,832	67,204	569,482	466,647
2007	861,094	4,867,517	1,042,425	490,971	670,483	7,932,490	291,139	1,106,376	907,413
2008	861,625	4,870,379	1,042,748	491,232	670,834	7,936,818	291,232	1,106,903	907,868
2009	861,751	4,869,969	1,042,353	491,168	670,727	7,935,968	291,125	1,106,679	907,706
2010	860,894	4,866,827	1,042,478	490,918	670,420	7,931,537	291,150	1,106,306	907,341
2011	869,953	4,894,682	1,047,833	493,904	674,446	7,980,818	292,150	1,110,828	911,137
2012	870,331	4,896,555	1,047,993	494,073	674,668	7,983,620	292,198	1,111,151	911,420
2013	872,265	4,904,438	1,048,045	494,726	675,494	7,994,968	292,232	1,112,243	912,436
2014	874,873	4,913,463	1,047,437	495,417	676,339	8,007,529	292,097	1,113,211	913,417
2015	875,269	4,916,944	1,048,257	495,777	676,831	8,013,078	292,324	1,114,035	914,088
2016	873,892	4,908,882	1,047,156	495,015	675,818	8,000,763	292,007	1,112,469	912,756
2017	874,590	4,912,578	1,047,542	495,354	676,263	8,006,327	292,121	1,113,138	913,333
2018	876,865	4,921,829	1,047,603	496,120	677,235	8,019,652	292,163	1,114,419	914,528
2019	874,945	4,911,901	1,046,643	495,219	676,050	8,004,758	291,880	1,112,662	913,002
2020	875,060	4,914,933	1,047,747	495,566	676,541	8,009,847	292,182	1,113,544	913,689
2021	874,556	4,914,837	1,048,566	495,628	676,659	8,010,246	292,400	1,113,879	913,903
2022	876,531	4,920,133	1,047,445	495,968	677,033	8,017,110	292,116	1,114,122	914,268
2023	873,786	4,908,772	1,047,292	495,017	675,828	8,000,695	292,045	1,112,512	912,780
2024	875,099	4,913,985	1,047,274	495,448	676,367	8,008,173	292,054	1,113,212	913,440
2025	875,458	4,918,247	1,048,480	495,902	676,998	8,015,085	292,387	1,114,304	914,312
2026	874,742	4,910,402	1,046,346	495,071	675,849	8,002,410	291,797	1,112,331	912,728
2027	876,099	4,924,330	1,049,995	496,537	677,872	8,024,833	292,805	1,115,777	915,504
2028	875,123	4,911,276	1,046,072	495,120	675,896	8,003,487	291,727	1,112,335	912,765
2029	874,727	4,914,097	1,047,954	495,514	676,484	8,008,776	292,236	1,113,517	913,639
2030	873,561	4,907,594	1,047,169	494,910	675,685	7,998,919	292,008	1,112,302	912,595
2031	877,700	4,930,195	1,049,757	496,998	678,445	8,033,095	292,757	1,116,472	916,186
2032	874,897	4,908,873	1,045,431	494,867	675,544	7,999,612	291,549	1,111,735	912,281
2033	873,989	4,912,201	1,048,408	495,396	676,359	8,006,353	292,350	1,113,454	913,523
2034	875,460	4,917,271	1,048,061	495,785	676,833	8,013,410	292,273	1,113,995	914,074
2035	874,899	4,909,308	1,045,612	494,917	675,619	8,000,355	291,598	1,111,870	912,385
Total	**38,882,044**	**264,182,120**	**52,281,976**	**24,915,557**	**46,502,791**	**426,764,488**	**11,494,254**	**46,965,337**	**39,327,979**

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	South San Joaquin Division (continued)								
	Reach 10A (29)	Reach 11B (30)	Reach 12D (31)	Reach 12E (32)	Reach 13B (33)	Reach 14A (34)	Reach 14B (35)	Reach 14C (36)	Reach 15A (37)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	83,706	59,077	0	0	0	0	0	0	0
1970	118,046	85,758	94,171	123,374	152,424	0	0	0	0
1971	129,811	80,282	95,075	91,389	167,142	691,791	151,979	111,623	529,723
1972	117,625	84,287	98,647	115,592	146,096	877,535	124,831	101,479	609,058
1973	117,706	92,257	74,238	114,843	221,385	961,855	120,106	99,429	692,748
1974	141,658	98,103	74,914	193,523	141,540	898,272	143,866	115,649	853,098
1975	207,908	124,105	61,799	117,194	108,154	1,156,757	180,614	119,889	988,045
1976	139,134	69,715	33,655	147,908	134,063	1,124,051	177,086	114,133	1,037,799
1977	194,086	108,644	91,547	175,039	137,975	1,397,006	203,837	119,467	1,339,196
1978	168,634	106,702	72,585	170,578	151,120	1,254,043	139,662	132,224	1,265,813
1979	175,107	85,942	56,331	174,147	150,029	1,490,461	201,935	260,981	1,216,126
1980	284,207	120,896	123,120	167,249	164,749	1,988,619	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	488,226	334,059	325,697	469,378	322,824	3,731,912	463,757	238,813	4,080,465
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	1,117,004	368,654	168,895	392,819	493,720	4,983,660	343,309	227,690	4,705,305
2000	924,522	406,536	331,490	651,335	568,064	5,927,987	334,038	135,618	5,384,951
2001	873,918	417,155	896,572	523,507	657,493	4,700,704	(127,206)	(88,545)	5,982,849
2002	1,328,125	385,992	300,944	964,884	870,258	5,901,476	27,553	248,955	5,563,098
2003	724,781	235,355	121,753	471,991	458,664	6,141,268	218,245	220,410	6,000,858
2004	949,559	324,729	405,845	640,530	618,158	6,353,221	305,351	329,290	5,890,967
2005	968,244	332,068	415,942	652,685	631,063	5,753,569	315,156	338,042	5,204,523
2006	996,367	341,529	427,615	671,729	649,249	5,887,041	323,751	347,549	5,320,972
2007	922,570	690,649	627,360	976,179	1,026,059	6,346,083	866,000	598,223	6,045,682
2008	922,854	690,966	627,720	976,590	1,026,528	6,348,710	866,443	598,534	6,047,937
2009	922,507	690,812	627,656	976,331	1,026,299	6,347,011	866,302	598,447	6,046,057
2010	922,618	690,616	627,279	976,156	1,026,008	6,345,950	865,924	598,166	6,045,724
2011	925,732	693,381	630,097	979,903	1,030,117	6,367,718	869,594	600,732	6,065,413
2012	925,873	693,573	630,333	980,142	1,030,399	6,369,242	869,873	600,929	6,066,656
2013	925,918	694,183	631,295	980,791	1,031,299	6,373,296	870,904	601,684	6,069,136
2014	925,382	694,672	632,377	981,155	1,032,022	6,375,412	871,937	602,462	6,068,998
2015	926,106	695,189	632,826	981,895	1,032,790	6,380,221	872,574	602,898	6,073,643
2016	925,133	694,240	631,808	980,633	1,031,382	6,372,100	871,278	601,989	6,066,439
2017	925,475	694,639	632,273	981,146	1,031,973	6,375,375	871,845	602,388	6,069,215
2018	925,528	695,354	633,400	981,908	1,033,031	6,380,133	873,058	603,272	6,072,120
2019	924,679	694,308	632,159	980,581	1,031,480	6,371,632	871,554	602,208	6,065,012
2020	925,657	694,882	632,565	981,447	1,032,331	6,377,305	872,197	602,641	6,070,798
2021	926,379	695,125	632,578	981,905	1,032,697	6,380,358	872,370	602,736	6,074,420
2022	925,390	695,177	633,190	981,685	1,032,769	6,378,704	872,801	603,092	6,070,936
2023	925,254	694,274	631,799	980,705	1,031,434	6,372,568	871,299	601,996	6,067,021
2024	925,237	694,662	632,435	981,104	1,032,006	6,375,045	871,968	602,487	6,068,417
2025	926,303	695,357	632,991	982,122	1,033,038	6,381,703	872,789	603,049	6,075,009
2026	924,418	694,105	631,968	980,295	1,031,176	6,369,775	871,294	602,026	6,063,263
2027	927,640	696,284	633,782	983,461	1,034,417	6,390,420	873,917	603,824	6,083,489
2028	924,175	694,085	632,065	980,208	1,031,147	6,369,163	871,345	602,073	6,062,288
2029	925,838	694,879	632,468	981,499	1,032,332	6,377,679	872,133	602,587	6,071,484
2030	925,144	694,146	631,650	980,542	1,031,245	6,371,517	871,116	601,867	6,066,129
2031	927,431	696,651	634,489	983,790	1,034,959	6,392,393	874,625	604,348	6,084,104
2032	923,609	693,706	631,753	979,655	1,030,582	6,365,556	870,890	601,762	6,058,745
2033	926,240	694,878	632,253	981,607	1,032,333	6,378,472	871,990	602,467	6,072,964
2034	925,933	695,153	632,860	981,809	1,032,736	6,379,641	872,569	602,904	6,072,864
2035	923,768	693,794	631,809	979,791	1,030,714	6,366,455	870,986	601,827	6,059,677
Total	**48,344,601**	**29,097,327**	**26,012,333**	**41,988,452**	**43,717,644**	**311,087,975**	**35,057,559**	**25,266,172**	**297,251,358**

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	5,636,043	17,063,245	17,398,908	98,355	17,497,263	1,261,056	558,996	0	818,475
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	8,649,783	22,347,782	19,534,455	149,791	19,684,246	3,083,958	624,186	0	5,303,129
2000	12,469,541	28,221,040	23,189,016	241,354	23,430,370	1,868,295	750,021	0	1,388,536
2001	15,715,098	30,776,374	23,935,019	611,834	24,546,853	2,425,277	2,484,804	0	1,792,245
2002	11,361,000	28,186,138	20,361,344	467,836	20,829,180	1,402,978	802,544	0	759,385
2003	11,410,772	26,927,403	22,168,460	213,292	22,381,752	2,598,559	402,196	0	1,512,677
2004	15,087,515	31,953,623	26,978,311	423,336	27,401,647	2,182,979	1,028,045	0	1,180,688
2005	12,977,387	28,661,587	18,248,039	429,644	18,677,683	2,372,953	1,103,736	0	1,237,068
2006	12,990,463	29,059,598	17,196,426	442,513	17,638,939	2,433,282	1,129,653	0	1,269,534
2007	8,728,570	29,132,303	24,755,137	363,296	25,118,433	2,088,418	1,115,440	0	1,679,337
2008	8,732,223	29,144,508	24,763,916	363,450	25,127,366	2,089,367	1,117,218	0	1,680,779
2009	8,729,933	29,136,865	24,755,736	363,357	25,119,093	2,088,901	1,118,364	0	1,681,150
2010	8,728,373	29,131,611	24,755,630	363,287	25,118,917	2,088,320	1,114,599	0	1,678,849
2011	8,756,514	29,233,316	24,807,112	364,689	25,171,801	2,096,726	1,124,408	0	1,688,385
2012	8,758,641	29,240,430	24,811,822	364,776	25,176,598	2,097,301	1,125,859	0	1,689,465
2013	8,764,440	29,259,857	24,819,386	365,025	25,184,411	2,099,130	1,134,107	0	1,694,812
2014	8,767,689	29,270,831	24,814,843	365,167	25,180,010	2,100,581	1,145,990	0	1,701,888
2015	8,774,296	29,292,885	24,833,952	365,440	25,199,392	2,102,146	1,146,585	0	1,703,026
2016	8,763,054	29,255,288	24,805,468	364,972	25,170,440	2,099,290	1,142,425	0	1,699,337
2017	8,767,613	29,270,534	24,816,182	365,164	25,181,346	2,100,496	1,144,895	0	1,701,280
2018	8,774,412	29,293,326	24,825,063	365,449	25,190,512	2,102,634	1,154,448	0	1,707,472
2019	8,762,575	29,253,732	24,797,805	364,957	25,162,762	2,099,495	1,147,802	0	1,702,318
2020	8,770,313	29,279,551	24,822,195	365,276	25,187,471	2,101,223	1,146,654	0	1,702,596
2021	8,774,402	29,293,152	24,838,319	365,444	25,203,763	2,101,978	1,143,367	0	1,701,241
2022	8,772,433	29,286,683	24,820,528	365,370	25,185,898	2,102,117	1,153,522	0	1,706,733
2023	8,763,689	29,257,376	24,808,097	364,998	25,173,095	2,099,407	1,141,955	0	1,699,162
2024	8,767,249	29,269,316	24,812,031	365,150	25,177,181	2,100,568	1,147,612	0	1,702,776
2025	8,776,355	29,299,719	24,839,444	365,529	25,204,973	2,102,666	1,147,329	0	1,703,708
2026	8,760,027	29,245,203	24,790,699	364,852	25,155,551	2,098,883	1,147,500	0	1,701,849
2027	8,788,305	29,339,625	24,874,468	366,025	25,240,493	2,105,471	1,147,881	0	1,705,457
2028	8,759,253	29,242,629	24,785,989	364,820	25,150,809	2,098,813	1,149,402	0	1,702,820
2029	8,770,776	29,281,067	24,825,598	365,295	25,190,893	2,101,238	1,145,067	0	1,701,771
2030	8,762,229	29,252,490	24,804,651	364,936	25,169,587	2,099,029	1,141,235	0	1,698,582
2031	8,791,221	29,349,426	24,874,640	366,151	25,240,791	2,106,569	1,155,112	0	1,709,886
2032	8,754,308	29,226,131	24,771,295	364,614	25,135,909	2,097,666	1,149,332	0	1,702,183
2033	8,771,749	29,284,280	24,833,008	365,331	25,198,339	2,101,242	1,141,303	0	1,699,769
2034	8,773,551	29,290,362	24,830,353	365,412	25,195,765	2,102,051	1,147,984	0	1,703,743
2035	8,755,528	29,230,202	24,775,239	364,666	25,139,905	2,097,945	1,149,305	0	1,702,330
Total	**474,447,646**	**1,430,058,637**	**1,227,313,957**	**16,617,525**	**1,243,931,482**	**98,593,475**	**53,104,226**	**0**	**86,110,935**

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	357,971	298,190	236,263	5,731,239	151,796	732,607	10,146,593	19,362	2,847,390
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	1,577,222	1,338,805	159,468	9,475,038	2,020,975	1,323,420	24,906,201	187,814	5,914,976
2000	1,444,750	978,102	175,999	9,482,397	1,706,388	1,576,537	19,371,025	347,584	4,181,341
2001	1,475,281	1,041,313	457,544	7,822,885	1,896,336	863,272	20,258,957	295,606	2,545,970
2002	584,982	1,158,736	290,391	11,239,211	1,693,034	974,789	18,906,050	500,641	3,447,703
2003	466,757	326,983	167,796	12,188,001	1,762,760	1,299,327	20,725,056	266,379	3,964,638
2004	641,872	744,167	216,495	15,207,489	1,931,025	1,644,135	24,776,895	370,250	4,848,052
2005	690,224	777,179	236,923	14,426,283	2,670,203	1,321,357	24,835,926	375,766	5,296,424
2006	706,310	797,864	241,984	14,806,670	2,080,577	1,983,067	25,448,941	387,022	5,280,801
2007	983,902	739,936	407,672	8,845,263	479,719	2,337,602	18,677,289	72,715	6,477,365
2008	985,129	740,688	408,204	8,851,869	480,119	1,720,169	18,073,542	72,739	6,479,704
2009	985,761	740,976	408,499	8,852,716	480,207	2,310,759	18,667,333	72,710	6,477,608
2010	983,377	739,650	407,435	8,843,228	479,568	1,889,463	18,224,489	72,720	6,477,464
2011	990,642	744,357	410,567	8,884,111	481,084	2,379,304	18,799,584	72,966	6,497,644
2012	991,616	744,932	410,995	8,888,852	481,368	2,031,969	18,462,357	72,976	6,498,915
2013	996,927	747,942	413,346	8,911,321	482,818	1,070,968	17,551,371	72,979	6,501,137
2014	1,004,407	752,064	416,682	8,940,030	484,751	2,802,319	19,348,712	72,937	6,500,322
2015	1,004,999	752,546	416,923	8,946,147	485,062	1,064,969	17,622,403	72,994	6,505,315
2016	1,002,044	750,680	415,643	8,928,683	484,013	3,054,739	19,576,854	72,917	6,497,761
2017	1,003,730	751,701	416,380	8,937,468	484,544	1,784,027	18,324,521	72,945	6,500,627
2018	1,009,882	755,190	419,105	8,963,600	486,243	2,102,426	18,701,000	72,948	6,503,237
2019	1,005,366	752,467	417,131	8,940,188	484,790	3,038,258	19,587,815	72,883	6,495,926
2020	1,004,908	752,403	416,897	8,943,317	484,897	1,858,365	18,411,260	72,958	6,502,247
2021	1,003,009	751,474	416,034	8,939,023	484,543	825,777	17,366,446	73,016	6,506,347
2022	1,009,247	754,803	418,827	8,960,028	485,993	1,942,842	18,534,112	72,937	6,502,020
2023	1,001,778	750,555	415,522	8,928,049	483,936	3,000,967	19,521,331	72,927	6,498,426
2024	1,005,404	752,600	417,130	8,943,157	484,917	1,777,853	18,332,017	72,926	6,499,625
2025	1,005,533	752,883	417,153	8,949,228	485,216	1,977,372	18,541,088	73,010	6,506,762
2026	1,005,095	752,263	417,021	8,937,614	484,630	3,110,631	19,655,486	72,862	6,494,060
2027	1,006,275	753,573	417,444	8,959,185	485,725	1,602,074	18,183,085	73,115	6,515,905
2028	1,006,250	752,865	417,538	8,941,285	484,907	860,804	17,414,684	72,843	6,492,897
2029	1,003,947	751,896	416,463	8,940,119	484,658	2,936,630	19,481,789	72,973	6,503,082
2030	1,001,281	750,252	415,303	8,925,372	483,768	3,054,673	19,569,495	72,918	6,497,505
2031	1,010,860	756,120	419,481	8,977,305	486,917	240,456	16,862,706	73,099	6,516,169
2032	1,006,038	752,635	417,460	8,937,524	484,723	2,910,048	19,457,609	72,798	6,489,065
2033	1,001,641	750,673	415,430	8,932,483	484,116	1,532,566	18,059,223	73,006	6,504,896
2034	1,005,847	752,992	417,306	8,948,607	485,205	1,314,068	17,877,803	72,980	6,504,411
2035	1,006,067	752,683	417,469	8,938,294	484,729	4,494,107	21,042,929	72,811	6,490,085
Total	**50,864,291**	**37,450,594**	**17,698,860**	**484,008,570**	**40,325,210**	**93,981,828**	**962,137,989**	**6,351,080**	**294,566,227**

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	1,118,529	4,482,092	3,423,494	213,106	2,933,342	944,604	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	486,220	1,959,108	826,184	9,374,302	4,720,466	4,333,228	4,880,010	1,374,472	995,006
2000	839,158	1,000,681	1,124,505	7,493,269	5,443,345	793,176	4,256,442	2,409,277	163,372
2001	1,667,458	810,438	5,410,301	10,729,773	5,891,385	1,461,766	5,143,044	4,784,059	412,705
2002	1,247,213	421,191	2,214,872	7,831,620	5,306,165	1,501,325	4,084,168	4,146,494	137,770
2003	540,809	704,152	1,193,897	6,669,875	4,779,437	379,351	3,862,712	2,166,085	286,793
2004	1,216,046	834,756	3,036,509	10,305,613	5,669,826	464,464	4,766,893	2,631,186	3,532,074
2005	1,234,165	926,785	2,270,538	10,103,678	5,264,869	471,385	4,749,798	2,863,535	1,785,652
2006	1,271,133	947,323	2,302,072	10,188,351	5,379,681	485,505	4,860,849	2,926,845	1,387,466
2007	675,173	470,735	2,307,304	10,003,292	6,543,635	696,512	3,191,857	3,856,828	772,081
2008	675,382	470,880	2,093,095	9,791,800	6,545,969	698,304	3,193,317	3,863,503	772,319
2009	675,127	470,702	2,149,564	9,845,711	6,543,823	699,717	3,192,611	3,867,942	772,027
2010	675,208	470,759	2,489,347	10,185,498	6,543,761	695,548	3,191,703	3,854,009	772,121
2011	677,375	472,349	2,048,366	9,768,700	6,563,345	704,485	3,203,011	3,890,339	773,768
2012	677,478	472,420	2,242,094	9,963,883	6,564,605	705,898	3,203,890	3,895,275	773,887
2013	677,511	472,443	2,523,763	10,247,833	6,566,681	714,740	3,206,705	3,925,644	773,925
2014	677,118	472,169	2,113,805	9,836,351	6,565,598	727,978	3,208,975	3,970,193	773,476
2015	677,649	472,539	2,382,010	10,110,507	6,570,650	728,136	3,211,356	3,971,844	774,080
2016	676,936	472,043	2,043,098	9,762,755	6,563,084	724,094	3,206,977	3,956,299	773,267
2017	677,188	472,217	2,691,155	10,414,132	6,565,944	726,540	3,208,815	3,965,210	773,554
2018	677,225	472,245	2,179,972	9,905,627	6,568,381	736,898	3,212,117	4,000,650	773,599
2019	676,605	471,811	2,713,412	10,430,637	6,561,119	730,054	3,207,291	3,975,638	772,889
2020	677,320	472,310	1,913,287	9,638,122	6,567,551	728,339	3,209,923	3,970,921	773,705
2021	677,849	472,678	2,246,681	9,976,571	6,571,778	724,376	3,211,063	3,958,587	774,310
2022	677,125	472,173	3,120,823	10,845,078	6,567,176	735,746	3,211,299	3,996,087	773,483
2023	677,026	472,105	2,184,711	9,905,195	6,563,779	723,407	3,207,133	3,953,672	773,370
2024	677,012	472,096	2,524,102	10,245,761	6,564,876	729,502	3,208,917	3,974,519	773,355
2025	677,792	472,639	1,836,581	9,566,784	6,572,113	728,689	3,212,120	3,973,003	774,245
2026	676,413	471,678	3,036,550	10,751,563	6,559,241	729,760	3,206,344	3,973,995	772,670
2027	678,771	473,322	1,550,523	9,291,636	6,581,366	728,502	3,216,411	3,974,381	775,365
2028	676,236	471,554	2,438,288	10,151,818	6,558,014	732,099	3,206,264	3,982,211	772,469
2029	677,453	472,402	2,303,135	10,029,045	6,568,431	726,391	3,209,923	3,964,229	773,858
2030	676,945	472,048	2,372,592	10,092,008	6,562,865	722,642	3,206,544	3,950,848	773,278
2031	678,619	473,215	3,165,149	10,906,251	6,581,479	736,376	3,218,110	4,001,247	775,189
2032	675,822	471,265	1,741,859	9,450,809	6,554,136	732,361	3,204,509	3,982,239	771,995
2033	677,746	472,607	2,562,966	10,291,221	6,570,350	722,081	3,209,913	3,950,212	774,192
2034	677,521	472,451	2,322,431	10,049,794	6,569,718	729,555	3,211,188	3,975,835	773,938
2035	675,939	471,347	3,079,880	10,790,062	6,555,172	731,969	3,204,909	3,980,442	772,128
Total	**37,538,487**	**34,834,707**	**109,714,972**	**483,005,473**	**309,332,751**	**40,028,029**	**183,645,158**	**174,868,064**	**46,347,804**

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	1,406,519	9,380,463	1,689,141	4,324	0	26	67	1,693,558	71,443,424	75,217,576
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	2,035,784	18,338,966	4,157,746	2,002,480	11,222	191,174	94,832	6,457,454	123,764,855	132,832,956
2000	1,489,081	14,554,693	2,876,508	2,704,331	2,833	276,164	133,968	5,993,804	121,963,144	130,614,910
2001	507,437	18,200,396	3,117,825	2,324,278	5,541	165,105	71,094	5,683,843	137,755,667	145,230,159
2002	3,283,370	18,459,292	3,184,959	2,852,293	23,546	222,431	117,644	6,400,873	123,638,444	135,250,880
2003	1,667,622	13,142,000	3,632,990	2,819,190	17,294	230,024	116,992	6,816,490	123,494,296	132,663,427
2004	1,929,839	18,994,282	3,495,246	2,843,785	16,034	214,185	105,927	6,675,177	148,453,593	158,548,088
2005	3,038,592	18,173,831	3,375,384	2,741,906	16,273	217,376	107,505	6,458,444	132,913,025	142,671,556
2006	3,097,763	18,138,109	3,471,967	2,810,675	16,760	223,887	110,725	6,634,014	133,535,613	143,565,327
2007	2,938,688	17,999,601	4,264,034	2,066,586	0	1,740	4,625	6,336,985	130,358,994	139,767,266
2008	3,110,930	18,184,342	4,265,680	2,067,359	0	1,766	4,690	6,339,495	129,760,810	139,172,590
2009	3,213,146	18,289,266	4,264,413	2,066,716	0	1,789	4,753	6,337,671	130,491,903	139,900,755
2010	3,115,155	18,172,297	4,264,025	2,066,599	0	1,724	4,580	6,336,928	130,259,705	139,668,051
2011	3,293,750	18,428,698	4,279,279	2,072,361	0	1,832	4,872	6,358,344	130,950,626	140,394,245
2012	3,110,579	18,254,134	4,280,203	2,072,786	0	1,853	4,927	6,359,769	130,652,653	140,098,213
2013	3,544,714	18,732,409	4,282,267	2,073,643	0	1,989	5,289	6,363,188	130,552,272	140,001,677
2014	3,209,964	18,456,184	4,282,661	2,073,616	0	2,200	5,844	6,364,321	131,685,046	141,134,233
2015	3,061,211	18,317,277	4,285,922	2,075,200	0	2,196	5,832	6,369,150	130,153,918	139,610,331
2016	3,654,596	18,878,317	4,280,720	2,072,735	0	2,140	5,689	6,361,284	132,221,430	141,666,632
2017	3,465,828	18,705,891	4,282,755	2,073,686	0	2,174	5,779	6,364,394	131,488,271	140,937,793
2018	3,369,895	18,661,540	4,285,176	2,074,693	0	2,334	6,205	6,368,408	131,368,678	140,822,718
2019	3,942,898	19,189,889	4,279,935	2,072,253	0	2,237	5,942	6,360,367	133,204,588	142,647,557
2020	3,734,649	18,985,088	4,283,932	2,074,231	0	2,200	5,848	6,366,211	131,101,844	140,553,838
2021	2,898,402	18,138,516	4,286,324	2,075,463	0	2,133	5,666	6,369,586	129,587,939	139,045,573
2022	2,921,248	18,205,039	4,284,300	2,074,286	0	2,317	6,160	6,367,063	131,667,249	141,119,445
2023	3,302,975	18,524,336	4,281,098	2,072,933	0	2,129	5,654	6,361,814	131,960,398	141,406,513
2024	4,127,050	19,378,219	4,282,304	2,073,417	0	2,222	5,903	6,363,846	131,994,931	141,443,211
2025	2,253,575	17,513,745	4,286,896	2,075,668	0	2,200	5,847	6,370,611	129,743,701	139,202,243
2026	4,157,118	19,399,128	4,278,699	2,071,657	0	2,234	5,936	6,358,526	133,779,377	143,219,630
2027	39,632	15,315,657	4,292,838	2,078,566	0	2,184	5,806	6,379,394	127,021,148	136,492,897
2028	7,533,269	22,784,326	4,278,099	2,071,329	0	2,270	6,037	6,357,735	134,315,845	143,754,583
2029	1,890,396	17,133,228	4,284,340	2,074,461	0	2,168	5,766	6,366,735	130,716,559	140,169,615
2030	3,323,569	18,539,746	4,280,445	2,072,627	0	2,117	5,628	6,360,817	132,197,890	141,642,611
2031	101,507	15,413,908	4,293,560	2,078,781	0	2,310	6,133	6,380,784	127,436,299	136,909,000
2032	7,514,666	22,759,906	4,275,626	2,070,117	0	2,281	6,063	6,354,087	135,588,319	145,021,538
2033	2,218,030	17,444,778	4,285,220	2,074,963	0	2,096	5,574	6,367,853	129,878,636	139,334,002
2034	3,231,732	18,491,966	4,285,426	2,074,937	0	2,217	5,891	6,368,471	130,515,744	139,970,949
2035	4,218,141	19,462,761	4,276,261	2,070,436	0	2,275	6,043	6,355,015	135,227,016	144,661,686
Total	**145,485,625**	**899,707,431**	**203,345,323**	**83,137,383**	**110,889**	**1,962,368**	**1,110,438**	**289,666,401**	**6,494,775,541**	**6,941,871,798**

[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	814,111	6,595,625	2,627,407	2,405,224	2,432,322
1987	0	0	27,223	27,223	888,558	5,672,836	2,486,510	2,176,468	2,150,351
1988	17,813	0	24,020	41,833	911,176	6,191,443	2,572,359	2,493,468	2,482,190
1989	29,819	43,846	26,519	100,184	1,163,619	9,630,930	3,861,818	3,876,366	3,876,245
1990	52,210	67,109	40,775	160,094	1,834,626	10,372,948	4,458,062	5,709,623	5,934,464
1991	10,429	10,118	5,252	25,799	420,688	1,812,097	471,056	864,019	985,734
1992	13,319	13,070	9,406	35,795	339,021	2,955,130	1,080,234	1,110,416	1,147,287
1993	(11,941)	(8,753)	(5,392)	(26,086)	(150,856)	492,762	322,907	(105,293)	(84,064)
1994	46,791	39,624	29,189	115,604	801,374	5,320,875	2,151,664	2,252,137	2,234,950
1995	20,014	20,620	11,791	52,425	302,558	3,756,998	1,432,438	783,233	689,519
1996	57,320	47,288	23,483	128,091	718,807	8,112,547	3,969,388	2,430,979	2,231,167
1997	67,416	52,935	21,955	142,306	1,038,568	6,900,694	2,845,506	2,589,077	2,417,154
1998	(10,647)	(9,488)	(4,554)	(24,689)	(121,313)	238,073	(314,172)	(245,259)	(219,762)
1999	31,572	25,250	10,553	67,375	513,529	5,300,455	2,307,215	1,574,511	1,283,679
2000	60,341	44,106	15,543	119,990	824,737	8,450,390	3,136,027	3,045,930	3,116,494
2001	354,903	250,507	214,360	819,770	3,654,930	22,745,073	10,100,741	14,392,919	14,770,574
2002	180,703	99,441	58,458	338,602	2,093,098	17,326,950	6,568,060	8,019,473	8,298,079
2003	190,117	113,438	93,675	397,230	2,608,168	23,261,234	8,650,136	10,002,503	10,771,285
2004	438,094	193,790	310,164	942,048	4,112,375	33,766,720	14,004,249	16,044,607	18,889,972
2005	479,355	174,856	431,525	1,085,736	6,222,065	36,371,186	14,967,587	18,124,583	21,370,040
2006	473,201	197,706	211,197	882,104	5,183,848	29,481,823	11,985,278	14,509,487	17,108,734
2007	423,111	333,861	329,093	1,086,065	5,619,784	32,752,941	15,181,746	18,261,907	18,155,492
2008	392,308	302,893	299,607	994,808	5,127,933	33,474,030	13,770,723	16,636,812	16,573,061
2009	405,925	313,420	317,400	1,036,745	5,292,368	30,500,702	14,453,465	17,579,062	17,510,735
2010	423,469	327,467	340,008	1,090,944	5,515,139	38,036,979	15,203,574	18,528,424	18,445,984
2011	425,975	327,586	346,317	1,099,878	5,517,024	34,492,276	15,161,788	18,449,728	18,360,611
2012	440,419	338,509	366,081	1,145,009	5,690,609	33,669,701	16,180,914	19,960,866	19,895,479
2013	478,118	370,569	411,689	1,260,376	6,200,114	42,830,243	17,716,114	21,793,358	21,682,119
2014	511,137	397,225	454,162	1,362,524	6,623,772	38,551,011	19,215,349	23,715,505	23,583,094
2015	523,493	403,074	478,345	1,404,912	6,716,711	42,976,003	19,502,107	24,058,520	23,918,179
2016	533,295	407,109	499,419	1,439,823	6,780,850	49,405,356	20,234,474	25,247,449	25,136,652
2017	531,787	401,348	507,041	1,440,176	6,689,279	43,631,402	19,502,408	24,100,483	23,964,639
2018	550,266	412,719	540,268	1,503,253	6,869,996	43,765,413	20,663,184	25,867,525	25,763,909
2019	567,423	422,716	572,779	1,562,918	7,028,870	50,136,250	21,231,628	26,557,686	26,433,950
2020	545,259	400,001	554,818	1,500,078	6,667,863	44,719,236	20,082,166	25,159,387	25,064,866
2021	545,475	399,357	556,512	1,501,344	6,657,641	43,858,668	20,070,756	25,151,680	25,057,928
2022	530,123	386,679	536,701	1,453,503	6,456,154	40,713,136	19,481,164	24,458,289	24,382,384
2023	532,854	388,932	540,223	1,462,009	6,491,956	43,927,733	19,697,721	24,782,187	24,711,067
2024	550,655	403,629	563,191	1,517,475	6,725,533	48,031,743	20,339,302	25,508,301	25,412,681
2025	548,394	401,759	560,272	1,510,425	6,695,831	40,443,272	20,282,162	25,465,553	25,376,321
2026	551,830	404,595	564,705	1,521,130	6,740,886	50,003,969	20,374,315	25,539,775	25,440,977
2027	544,228	398,316	554,894	1,497,438	6,641,098	44,965,907	20,208,940	25,429,445	25,350,149
2028	547,675	401,161	559,342	1,508,178	6,686,334	43,738,168	22,187,718	25,286,847	25,191,631
2029	541,308	395,906	551,128	1,488,342	6,602,800	43,767,306	20,021,515	25,161,753	25,080,336
2030	545,290	399,193	556,264	1,500,747	6,655,023	45,441,759	20,035,290	25,092,201	24,996,127
2031	538,482	393,573	547,481	1,479,536	6,565,704	41,646,598	19,946,573	25,121,039	25,053,942
2032	548,262	401,647	560,102	1,510,011	6,694,047	44,579,123	20,032,356	25,007,352	24,896,493
2033	573,443	422,439	592,591	1,588,473	7,024,473	47,918,015	21,631,948	27,315,877	27,230,058
2034	554,127	406,490	567,667	1,528,284	6,771,000	44,388,204	20,370,987	25,475,593	25,365,806
2035	543,783	397,948	554,320	1,496,051	6,635,261	47,804,941	21,567,603	27,969,046	28,005,351
Total	**17,448,743**	**12,535,584**	**16,208,661**	**46,192,988**	**229,442,155**	**1,503,638,740**	**666,435,440**	**810,528,325**	**817,308,932**

[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	(5,081)	3,468	0	0	(3,024)	0	79,315
1973	387,198	1,548,428	(4,075)	202,289	0	0	(461,268)	0	122,787
1974	564,464	2,164,223	(18,021)	324,993	0	0	(546,156)	0	157,511
1975	1,095,331	4,010,395	(101,120)	575,061	0	0	(1,095,523)	0	314,636
1976	1,506,985	5,443,936	(367,681)	889,544	0	0	(1,566,056)	0	326,967
1977	657,108	2,360,624	(88,675)	315,128	0	0	(1,222,866)	0	75,335
1978	1,132,296	4,180,131	(779,108)	1,508,115	0	0	(3,085,094)	0	89,383
1979	1,374,154	4,910,139	(863,269)	1,644,213	0	160,215	(3,164,026)	393,867	88,211
1980	2,102,439	7,028,235	(1,196,385)	1,762,063	0	0	(3,318,152)	0	236,768
1981	2,838,773	9,351,931	(1,418,479)	2,296,771	0	0	(3,842,971)	0	444,280
1982	2,424,920	8,352,207	(1,224,437)	1,498,620	0	0	(2,736,072)	0	539,245
1983	540,330	1,582,582	(681,076)	341,957	0	384,275	(5,478,830)	0	71,197
1984	1,129,131	3,448,759	(652,094)	622,123	0	0	(7,326,265)	(10,080)	240,134
1985	2,781,953	9,261,674	(756,699)	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	4,303,650	14,175,038	(979,235)	1,738,112	0	375,589	(10,477,826)	106,484	1,293,875
1988	4,963,097	16,278,159	(742,800)	2,370,395	0	37,927	(14,495,967)	0	1,327,120
1989	8,156,160	27,367,482	(765,190)	4,095,273	0	737,353	(18,532,961)	89,890	1,902,425
1990	13,432,034	47,661,480	(826,448)	6,435,686	0	276,334	(20,778,357)	294,326	2,801,821
1991	2,318,920	8,254,467	(269,625)	996,352	0	0	(4,884,013)	0	493,553
1992	2,295,388	7,675,866	(874,786)	1,085,002	0	474,019	(9,243,617)	(122,467)	574,862
1993	(474,807)	(2,151,939)	(54,137)	(238,527)	0	(114,824)	(7,502,549)	0	49,210
1994	4,666,519	16,146,073	(57,943)	2,534,572	0	0	(11,479,113)	228,814	913,377
1995	1,360,097	4,481,059	(1,104,691)	891,343	0	1,244,438	(9,742,248)	0	151,109
1996	4,723,600	16,483,976	(2,644,648)	2,487,165	(857,876)	1,959,474	(12,358,465)	0	895,929
1997	5,424,334	19,413,834	(2,488,338)	3,037,087	(1,680,469)	0	(13,293,791)	111,776	897,657
1998	(488,690)	(1,683,606)	(1,969,187)	(402,338)	(1,217,950)	(144,207)	(10,183,555)	0	(25,895)
1999	3,296,378	12,771,415	(2,775,691)	1,766,160	(2,444,540)	69,727	(14,674,969)	(44,411)	676,333
2000	7,174,686	25,887,330	(5,056,374)	4,043,821	(4,358,336)	0	(25,523,156)	(96,053)	1,258,932
2001	33,222,582	122,603,893	(3,258,035)	18,789,069	(3,598,941)	918,606	(19,515,323)	0	6,005,779
2002	18,759,181	68,952,437	(4,916,744)	10,140,884	(5,244,527)	90,441	(24,669,937)	0	3,612,752
2003	23,899,866	87,757,833	(3,348,826)	13,698,703	(6,438,267)	0	(27,227,830)	1,107,601	4,282,365
2004	40,242,060	142,166,282	(5,212,032)	23,333,462	(10,220,886)	0	(31,326,623)	0	7,353,349
2005	45,589,398	161,939,935	(5,679,753)	7,888,783	(10,549,044)	0	(32,968,654)	0	27,665,585
2006	36,488,847	129,600,164	(5,490,361)	21,182,589	(10,122,172)	0	(31,067,924)	0	7,655,185
2007	42,400,634	158,940,215	(5,284,403)	23,249,826	(6,196,191)	0	(30,535,550)	0	9,547,448
2008	38,678,873	145,005,000	(5,491,239)	21,697,579	(6,480,890)	0	(31,026,875)	0	8,578,717
2009	40,897,881	153,351,959	(5,532,741)	22,887,776	(6,505,180)	0	(31,234,822)	0	9,078,659
2010	43,109,684	161,656,432	(5,529,526)	24,252,502	(6,505,777)	0	(31,353,095)	0	9,470,400
2011	42,916,393	160,923,571	(5,493,002)	24,113,125	(6,447,175)	0	(31,904,978)	0	9,354,093
2012	46,544,765	174,615,086	(5,846,329)	26,623,508	(6,986,503)	0	(32,748,964)	0	10,074,368
2013	50,765,308	190,430,982	(5,652,952)	28,928,170	(6,748,509)	0	(32,153,219)	0	10,869,182
2014	55,259,627	207,316,123	(5,683,670)	31,250,902	(6,774,783)	0	(32,647,212)	0	11,814,093
2015	56,051,891	210,285,904	(5,696,059)	31,922,482	(6,866,216)	0	(33,055,852)	0	11,924,053
2016	58,952,661	221,259,737	(5,928,960)	34,030,820	(7,200,481)	0	(33,778,290)	0	12,394,818
2017	56,172,637	210,751,761	(5,675,400)	32,081,061	(6,918,265)	0	(33,458,212)	0	11,879,718
2018	60,433,712	226,845,864	(6,065,403)	35,323,512	(7,720,651)	0	(34,285,419)	0	12,580,841
2019	62,038,928	232,864,106	(5,788,839)	34,789,520	(7,178,618)	0	(33,994,739)	0	13,368,188
2020	58,803,136	220,730,110	(5,892,855)	33,693,952	(7,380,640)	0	(34,875,788)	0	12,475,096
2021	58,789,987	220,682,985	(5,910,165)	33,727,411	(7,432,530)	0	(34,555,195)	0	12,432,747
2022	57,198,752	214,723,597	(5,946,846)	32,527,106	(7,437,242)	0	(34,173,968)	0	12,279,733
2023	57,978,925	217,669,271	(6,022,767)	33,195,487	(7,565,008)	0	(34,768,030)	0	12,344,020
2024	59,630,180	223,843,255	(5,841,459)	33,650,101	(7,345,929)	0	(34,518,538)	0	12,921,122
2025	59,543,625	223,527,549	(5,941,211)	33,852,467	(7,438,579)	0	(34,126,014)	0	12,732,782
2026	59,697,954	224,094,141	(5,908,153)	34,223,815	(7,475,092)	0	(34,960,887)	0	12,640,724
2027	59,488,382	223,337,487	(5,941,868)	33,762,955	(7,428,357)	0	(34,481,768)	0	12,807,029
2028	59,106,529	221,871,972	(5,881,119)	33,770,234	(7,391,988)	0	(34,694,551)	0	12,563,720
2029	58,848,925	220,926,400	(5,910,045)	33,406,476	(7,432,805)	0	(34,465,120)	0	12,664,865
2030	58,643,920	220,129,047	(5,864,293)	33,479,152	(7,366,358)	0	(34,540,142)	0	12,470,398
2031	58,775,680	220,668,665	(6,022,986)	33,656,303	(7,922,634)	0	(34,241,364)	0	12,737,420
2032	58,409,966	219,225,367	(5,803,227)	32,909,085	(7,564,987)	0	(34,004,301)	0	12,515,706
2033	63,923,821	240,021,161	(6,087,346)	36,807,719	(8,099,384)	0	(34,993,029)	0	13,638,997
2034	59,520,625	223,408,260	(5,856,168)	33,666,765	(7,725,163)	0	(33,846,228)	0	12,675,687
2035	65,824,603	247,401,058	(6,165,648)	35,032,680	(7,940,486)	0	(35,616,148)	0	16,249,818
Total	**1,891,439,237**	**7,043,430,155**	**(226,349,479)**	**1,053,925,796**	**(266,209,429)**	**6,469,367**	**(1,380,794,042**	**2,003,177**	**421,799,193**

[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	2,489,405	3,102,541
1973	0	0	(1,057,564)	0	120,913	0	2,428,061	2,936,000
1974	0	0	(1,547,884)	0	118,582	0	3,089,951	3,672,999
1975	0	0	(2,455,461)	0	94,848	0	5,359,014	5,723,551
1976	0	0	(2,827,557)	0	141,260	0	7,253,788	7,846,005
1977	0	0	(3,734,462)	0	71,311	0	302,212	837,843
1978	0	0	(1,542,479)	0	179,925	0	5,935,053	6,543,100
1979	0	0	(2,384,748)	(21,562)	192,126	0	8,120,885	8,742,258
1980	0	0	(3,408,863)	0	168,458	0	8,686,175	9,229,489
1981	0	0	(2,834,322)	0	169,177	0	15,553,886	16,145,420
1982	(783,626)	0	(3,463,971)	0	168,390	0	11,634,898	12,252,835
1983	(495,041)	65,741	(3,260,764)	(3,176,515)	17,920	0	(8,218,412)	(8,133,848)
1984	(2,027,345)	0	(2,336,089)	(2,151,129)	112,679	0	(5,087,952)	(4,811,587)
1985	(5,930,176)	0	(15,698,638)	0	146,843	0	(11,079,090)	(10,617,882)
1986	(5,579,301)	0	(11,072,448)	0	297,886	0	10,793,124	11,622,736
1987	(6,152,096)	149,232	(11,393,428)	(84,982)	245,082	0	5,785,660	6,701,441
1988	(6,530,772)	108,077	(11,560,647)	(422,370)	214,519	0	5,286,198	6,239,207
1989	(7,781,434)	98,760	(13,790,660)	216,643	282,180	0	23,321,280	24,585,083
1990	(10,796,857)	0	(19,722,708)	490,215	416,832	0	46,159,455	48,154,175
1991	(3,322,691)	871,450	(6,579,194)	0	3,610	0	2,015,735	2,462,222
1992	(4,412,167)	29,879	(7,684,617)	(2,076,879)	101,665	0	(5,884,785)	(5,509,969)
1993	(3,241,036)	(688,729)	(7,630,581)	(3,198,117)	(111,306)	0	(24,731,030)	(24,907,972)
1994	(4,399,518)	20,518	(7,987,523)	(168,255)	206,086	(1,127)	12,582,106	13,499,084
1995	(1,179,155)	544,099	(4,049,615)	0	243,434	0	(497,942)	(142,959)
1996	(4,248,531)	0	(8,457,232)	0	296,170	0	15,023,643	15,870,541
1997	(4,797,589)	0	(8,727,328)	(897)	298,483	208,816	13,156,006	14,336,880
1998	(740,480)	(931,305)	(3,360,851)	(2,108,804)	(51,634)	(87,016)	(23,936,638)	(24,082,640)
1999	(5,526,541)	0	(9,954,674)	0	159,124	233,730	(5,982,099)	(5,401,195)
2000	(9,487,334)	0	(17,952,087)	0	239,305	394,013	(5,726,412)	(4,781,685)
2001	(7,421,825)	987,800	(13,178,201)	2,390,152	1,087,098	2,166,054	203,208,015	207,682,715
2002	(10,279,966)	0	(18,398,706)	0	514,671	1,278,922	80,051,970	82,483,670
2003	(10,047,956)	810,179	(16,736,003)	933,676	611,260	1,474,728	123,462,487	126,467,885
2004	(13,175,838)	0	(22,710,113)	0	850,191	2,330,566	216,335,966	221,390,389
2005	(20,330,913)	0	(12,025,287)	0	1,405,422	5,303,786	259,072,654	266,380,455
2006	(10,809,129)	0	(20,130,686)	0	1,471,404	3,911,356	195,774,595	201,840,547
2007	(14,689,899)	0	(24,421,459)	0	1,846,861	5,008,323	244,217,891	250,923,740
2008	(14,392,372)	0	(23,848,050)	0	1,691,757	4,543,662	219,410,788	225,533,529
2009	(14,846,000)	0	(24,575,998)	0	1,745,890	4,701,606	230,012,994	236,342,107
2010	(14,862,111)	0	(24,708,575)	0	1,815,870	4,912,379	252,473,144	259,079,227
2011	(14,804,197)	0	(24,546,205)	0	1,815,937	4,914,161	247,306,126	253,923,028
2012	(15,313,483)	0	(25,531,582)	0	1,870,209	5,078,043	268,086,078	274,921,696
2013	(15,338,082)	0	(25,546,905)	0	2,030,788	5,559,079	307,165,676	314,626,166
2014	(15,767,038)	0	(26,202,624)	0	2,164,307	5,959,064	331,753,748	339,740,044
2015	(15,694,069)	0	(26,061,820)	0	2,193,598	6,046,807	341,505,528	349,627,151
2016	(16,176,505)	0	(26,894,673)	0	2,213,811	6,107,367	365,004,236	373,224,909
2017	(15,710,389)	0	(26,138,485)	0	2,184,953	6,020,909	342,389,220	350,518,675
2018	(16,099,355)	0	(26,838,636)	0	2,241,908	6,191,531	368,667,935	377,041,184
2019	(16,844,114)	0	(28,256,658)	0	2,291,980	6,341,528	383,990,796	392,582,584
2020	(16,554,894)	0	(27,639,304)	0	2,178,204	6,000,692	356,563,364	364,731,305
2021	(16,525,469)	0	(27,612,840)	0	2,174,984	5,991,040	355,901,987	364,060,972
2022	(16,823,302)	0	(28,122,153)	0	2,111,481	5,800,810	341,172,941	349,082,598
2023	(16,819,726)	0	(28,116,077)	0	2,122,765	5,834,614	348,972,182	356,926,147
2024	(17,012,433)	0	(28,443,477)	0	2,196,379	6,055,137	364,426,365	372,669,373
2025	(16,836,305)	0	(28,144,728)	0	2,187,018	6,027,095	356,951,007	365,157,263
2026	(16,605,480)	0	(27,753,417)	0	2,201,218	6,069,637	367,583,496	375,845,512
2027	(17,075,752)	0	(28,548,337)	0	2,169,770	5,975,424	360,019,406	368,157,942
2028	(16,633,821)	0	(27,798,529)	0	2,184,024	6,018,131	359,518,966	367,713,478
2029	(16,975,964)	0	(28,381,709)	0	2,157,698	5,939,265	354,808,896	362,900,038
2030	(16,587,009)	0	(27,722,164)	0	2,174,157	5,988,571	356,370,656	364,526,426
2031	(17,024,937)	0	(28,448,072)	0	2,146,008	5,904,242	351,996,477	360,041,717
2032	(16,540,191)	0	(27,758,460)	0	2,186,455	6,025,412	354,116,149	362,320,207
2033	(17,019,926)	0	(28,593,168)	0	2,290,593	6,337,375	392,322,711	400,935,657
2034	(16,562,507)	0	(27,805,005)	0	2,210,708	6,098,066	361,385,630	369,684,914
2035	(21,622,300)	0	(36,419,181)	0	2,167,928	5,969,908	390,229,173	398,360,485
Total	**(633,254,947)**	**2,065,701**	**(1,090,744,826)**	**(9,378,824)**	**72,188,562**	**184,633,706**	**10,869,134,784**	**11,144,769,927**

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	23,514,665	(14,650,000)	(9,451,000)	1,762,179	31,990,110
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	5,754,178	0	53,461,323	(14,650,000)	(9,198,000)	9,686	35,377,187
2000	8,940,440	0	55,507,690	(14,650,000)	(9,251,342)	13,491	40,560,279
2001	7,742,241	0	76,355,067	(14,650,000)	(11,613,299)	23,866	57,857,875
2002	12,858,087	0	67,080,854	(14,650,000)	(19,216,868)	24,426	46,096,499
2003	14,644,644	0	68,552,626	(14,650,000)	(27,013,752)	9,833	41,543,351
2004	5,847,830	0	82,568,017	(14,650,000)	(21,868,750)	3,129,000	55,026,097
2005	10,322,179	0	67,187,874	(14,650,000)	(13,161,250)	3,129,000	52,827,803
2006	10,070,649	0	64,259,814	(14,650,000)	(9,575,250)	3,129,000	53,234,213
2007	6,764,479	0	57,634,305	(14,650,000)	(7,365,250)	3,129,000	45,512,534
2008	5,624,527	0	55,592,100	(14,650,000)	(7,365,250)	3,129,000	42,330,377
2009	4,478,648	0	55,576,373	(14,650,000)	(7,365,250)	3,129,000	41,168,771
2010	396,417	0	54,810,896	(14,650,000)	(7,365,250)	3,129,000	36,321,063
2011	396,417	0	53,883,321	(14,650,000)	(7,365,250)	0	32,264,488
2012	396,417	0	52,479,257	(14,650,000)	(7,365,250)	0	30,860,424
2013	396,417	0	55,385,311	(14,650,000)	(7,365,250)	0	33,766,478
2014	396,417	0	53,987,134	(14,650,000)	(7,365,250)	0	32,368,301
2015	396,417	0	52,132,042	(14,650,000)	(7,365,250)	0	30,513,209
2016	396,417	0	55,583,324	(14,650,000)	(7,365,250)	0	33,964,491
2017	396,417	0	54,816,193	(14,650,000)	(7,365,250)	0	33,197,360
2018	396,417	0	55,226,233	(14,650,000)	(7,365,250)	0	33,607,400
2019	396,417	0	54,159,881	(14,650,000)	(7,365,250)	0	32,541,048
2020	396,417	0	51,862,738	(14,650,000)	(7,365,250)	0	30,243,905
2021	396,417	0	55,746,206	(14,650,000)	(7,365,250)	0	34,127,373
2022	396,417	0	54,595,763	(14,650,000)	(7,365,250)	0	32,976,930
2023	396,417	0	51,824,149	(14,650,000)	(7,365,250)	0	30,205,316
2024	396,417	0	52,702,830	(14,650,000)	(7,365,250)	0	31,083,997
2025	396,417	0	56,924,718	(14,650,000)	(7,365,250)	0	35,305,885
2026	396,417	0	54,474,248	(14,650,000)	(7,365,250)	0	32,855,415
2027	396,417	0	51,431,317	(14,650,000)	(7,365,250)	0	29,812,484
2028	396,417	0	51,857,879	(14,650,000)	(7,365,250)	0	30,239,046
2029	396,417	0	57,487,477	(14,650,000)	(7,365,250)	0	35,868,644
2030	396,417	0	53,523,908	(14,650,000)	(7,365,250)	0	31,905,075
2031	396,417	0	51,768,998	(14,650,000)	(7,365,250)	0	30,150,165
2032	396,417	0	51,311,123	(14,650,000)	(7,365,250)	0	29,692,290
2033	396,417	0	55,993,243	(14,650,000)	(7,365,250)	0	34,374,410
2034	396,417	0	52,966,016	(14,650,000)	(7,365,250)	0	31,347,183
2035	396,417	0	53,473,757	(14,650,000)	(7,365,250)	0	31,854,924
Total	**1,054,089,704**	**(11,528,320)**	**2,816,519,086**	**(1,002,213,000)**	**(483,747,504)**	**78,981,357**	**2,452,101,323**

[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 (2003) 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	15,937	37,603	53,540	27,391	28,767	80,016	136,174	489,386	5,542,764	6,032,150
2001	4,782	12,176	16,958	140,198	269,519	1,852,777	2,262,494	73,586	551,334	624,920
2002	9,988	24,489	34,477	780,195	1,165,641	5,816,474	7,762,310	57,882	389,126	447,008
2003	48,703	10,687	59,390	1,160,548	1,334,669	4,634,226	7,129,443	(112)	90,049	89,937
2004	612,151	21,199	633,350	582,938	537,337	3,272,223	4,392,498	41,089	109,369	150,458
2005	17,517	30,400	47,917	772,051	712,221	3,002,585	4,486,857	57,973	163,214	221,187
2006	13,698	23,877	37,575	1,182,571	1,086,148	2,621,298	4,890,017	42,349	121,254	163,603
2007	3,199	5,925	9,124	833,308	762,932	1,824,256	3,420,496	5,803	17,947	23,750
2008	3,303	6,119	9,422	275,129	252,617	608,424	1,136,170	5,983	18,491	24,474
2009	3,354	6,224	9,578	64,751	60,280	150,161	275,192	6,041	18,629	24,670
2010	0	0	0	0	0	0	0	0	0	0
Total	**39,827,601**	**50,534,599**	**90,362,200**	**14,272,085**	**16,498,979**	**57,972,749**	**88,743,813**	**39,111,892**	**409,820,275**	**448,932,167**

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									
				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)	Total (20)
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	21,067	1,072	9,811	45,646	6,006	547,273	1,094	(1,081)	42,783	673,671
2001	17,620	899	7,860	35,635	5,019	428,810	919	783	35,840	533,385
2002	66,472	3,419	12,600	117,687	17,895	1,310,182	3,497	299	135,756	1,667,807
2003	(52,379)	(2,731)	(4,796)	(78,302)	(13,426)	(837,606)	(2,794)	338	(107,735)	(1,099,431)
2004	73,073	3,781	17,361	129,097	19,344	1,431,326	3,864	739	149,698	1,828,283
2005	88,705	4,584	23,892	159,204	23,600	1,790,392	4,686	1,075	181,610	2,277,748
2006	60,707	3,135	17,316	111,410	16,194	1,245,782	3,207	835	124,244	1,582,830
2007	4,275	218	2,283	8,796	1,193	111,887	223	176	8,694	137,745
2008	4,410	225	2,354	9,075	1,230	115,418	230	181	8,968	142,091
2009	4,465	228	2,380	9,192	1,246	116,857	233	184	9,081	143,866
2010	0	0	0	0	0	0	0	0	0	0
Total	**5,860,361**	**(41,328)**	**1,940,356**	**13,451,473**	**1,718,380**	**149,687,185**	**298,476**	**262,390**	**11,773,967**	**184,951,260**

[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	138,739	77,710	54,773	23,902	90,332	2,660	103,134	19,109	637,413	171,058
2001	127,757	46,071	50,228	15,507	82,836	2,938	101,018	20,565	355,494	96,244
2002	131,252	84,033	22,495	7,976	37,099	1,790	44,126	13,931	401,183	106,872
2003	(48,267)	(10,371)	3,096	2,034	5,106	(774)	4,546	(5,741)	154,194	25,799
2004	316,536	201,256	69,658	20,371	114,881	5,480	141,267	40,915	506,523	126,669
2005	425,848	288,442	100,954	34,673	166,494	7,426	196,753	55,399	762,149	202,053
2006	331,337	337,037	84,668	34,858	139,640	5,777	153,009	43,094	703,868	177,770
2007	26,264	14,984	7,980	2,568	13,161	487	15,854	3,588	56,615	15,152
2008	27,097	15,458	8,099	2,312	13,356	503	16,356	3,702	47,576	12,694
2009	27,456	15,655	8,202	2,341	13,526	509	16,564	3,750	48,171	12,851
2010	0	0	0	0	0	0	0	0	0	0
Total	**52,277,800**	**33,343,941**	**14,837,110**	**4,757,919**	**24,469,593**	**938,290**	**29,141,022**	**6,882,367**	**101,260,406**	**26,473,753**

[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)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (39)	Grand Total (40)
	San Gorgonio Pass Water Agency (31)	Metropolitan Water District of Southern California[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)		
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	106,153	5,386,696	23,952	6,835,631	0	0	0	0	16,880	13,748,046
2001	59,517	3,018,474	13,528	3,990,177	0	0	0	0	67,954	7,495,888
2002	66,824	4,341,805	27,703	5,287,089	0	0	0	0	365,663	15,564,354
2003	16,219	3,919,194	-4,184	4,060,851	0	0	0	0	589,883	10,830,073
2004	78,322	9,506,854	68,079	11,196,811	0	0	0	0	204,989	18,406,389
2005	125,312	11,284,730	97,432	13,747,665	0	0	0	0	272,827	21,054,201
2006	111,023	12,942,303	107,027	15,171,411	0	0	0	0	405,444	22,250,880
2007	9,377	652,216	4,474	822,720	0	0	0	0	279,605	4,693,440
2008	7,848	615,396	4,616	775,013	0	0	0	0	94,473	2,181,643
2009	7,945	623,356	4,678	785,004	0	0	0	0	24,710	1,263,020
2010	0	0	0	0	0	0	0	0	0	0
Total	**16,424,719**	**1,480,719,153**	**11,181,054**	**1,802,707,127**	**0**	**0**	**341,067**	**341,067**	**9,664,185**	**2,625,701,819**

[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, c]

(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	153,778	105,673	364,827	624,278	0	0	0
1964	0	0	0	216,203	170,929	530,036	917,168	6,696	21,667	28,363
1965	0	0	0	284,369	259,943	899,371	1,443,683	13,756	36,029	49,785
1966	18,063	0	18,063	320,384	290,808	1,073,270	1,684,462	26,524	61,349	87,873
1967	41,574	0	41,574	391,262	320,989	1,187,619	1,899,870	56,469	118,263	174,732
1968	121,508	0	121,508	507,807	361,935	1,309,946	2,179,688	104,160	208,037	312,197
1969	165,289	0	165,289	609,951	397,386	1,411,701	2,419,038	122,043	242,426	364,469
1970	169,077	0	169,077	644,277	412,322	1,450,660	2,507,259	125,963	250,808	376,771
1971	171,286	0	171,286	651,095	415,439	1,457,564	2,524,098	128,402	256,371	384,773
1972	172,649	0	172,649	652,400	416,368	1,461,847	2,530,615	129,861	260,482	390,343
1973	173,649	31,366	205,015	653,730	417,018	1,465,086	2,535,834	130,843	263,040	393,883
1974	176,527	32,938	209,465	654,713	417,636	1,467,092	2,539,441	132,015	265,901	397,916
1975	184,973	36,291	221,264	657,004	418,878	1,470,816	2,546,698	133,290	269,028	402,318
1976	189,650	40,836	230,486	658,324	419,683	1,472,924	2,550,931	134,041	272,155	406,196
1977	192,592	45,096	237,688	660,984	421,449	1,478,507	2,560,940	135,754	278,799	414,553
1978	195,860	49,178	245,038	664,552	423,747	1,485,299	2,573,598	141,271	292,281	433,552
1979	199,390	53,340	252,730	669,843	427,108	1,494,207	2,591,158	142,362	297,569	439,931
1980	209,132	67,748	276,880	673,624	429,296	1,499,843	2,602,763	143,530	303,969	447,499
1981	222,599	87,408	310,007	683,762	435,629	1,515,357	2,634,748	148,789	327,544	476,333
1982	234,191	106,918	341,109	681,633	434,108	1,512,014	2,627,755	148,004	320,657	468,661
1983	262,160	151,259	413,419	682,863	434,532	1,513,393	2,630,788	148,213	317,658	465,871
1984	326,072	224,245	550,317	693,952	441,230	1,530,671	2,665,853	149,853	323,275	473,128
1985	455,836	364,305	820,141	706,357	448,410	1,548,594	2,703,361	151,658	328,761	480,419
1986	819,636	692,479	1,512,115	708,241	449,390	1,551,318	2,708,949	152,545	332,779	485,324
1987	1,360,688	1,559,243	2,919,931	710,809	451,007	1,555,828	2,717,644	154,805	348,472	503,277
1988	1,771,651	2,208,121	3,979,772	715,018	453,514	1,562,985	2,731,517	161,346	417,591	578,937
1989	1,891,484	2,433,160	4,324,644	723,897	459,332	1,578,655	2,761,884	169,453	494,247	663,700
1990	1,955,330	2,514,151	4,469,481	731,940	464,692	1,592,216	2,788,848	177,387	557,384	734,771
1991	1,978,582	2,557,403	4,535,985	749,048	476,459	1,625,032	2,850,539	189,050	639,235	828,285
1992	1,983,860	2,562,121	4,545,981	779,647	496,722	1,675,047	2,951,416	204,822	754,678	959,500
1993	1,986,897	2,565,427	4,552,324	794,006	505,773	1,698,585	2,998,364	224,056	941,300	1,165,356
1994	1,993,467	2,572,330	4,565,797	804,437	512,498	1,716,961	3,033,896	286,878	1,585,162	1,872,040
1995	1,997,323	2,576,836	4,574,159	808,912	515,638	1,729,386	3,053,936	517,412	4,095,798	4,613,210
1996	1,998,994	2,578,433	4,577,427	816,817	520,936	1,743,439	3,081,192	1,187,010	12,569,247	13,756,257
1997	2,000,110	2,579,484	4,579,594	820,867	523,583	1,750,461	3,094,911	1,808,546	20,578,178	22,386,724
1998	2,001,225	2,585,478	4,586,703	827,597	527,976	1,762,113	3,117,686	1,985,645	22,700,288	24,685,933
1999	2,002,197	2,586,683	4,588,880	829,815	529,321	1,765,633	3,124,769	2,035,255	23,293,757	25,329,012
2000	2,006,033	2,592,721	4,598,754	987,458	533,508	1,777,480	3,298,446	2,088,064	23,839,244	25,927,308
2001	2,325,355	2,780,689	5,106,044	1,115,556	535,160	1,782,076	3,432,792	2,116,176	24,157,637	26,273,813
2002	2,325,674	2,781,432	5,107,106	1,129,928	550,830	1,889,798	3,570,556	2,120,455	24,189,692	26,310,147
2003	2,326,348	2,782,930	5,109,278	1,211,885	619,473	2,232,322	4,063,680	2,123,863	24,212,607	26,336,470
2004	2,329,653	2,783,594	5,113,247	1,345,114	699,143	2,508,949	4,553,206	2,123,857	24,217,982	26,341,839
2005	2,371,767	2,784,928	5,156,695	1,401,870	731,682	2,707,103	4,840,655	2,126,345	24,224,605	26,350,950
2006	2,372,998	2,786,871	5,159,869	1,478,263	775,475	2,891,726	5,145,464	2,129,909	24,234,641	26,364,550
2007	2,373,977	2,788,422	5,162,399	1,596,540	843,352	3,055,539	5,495,431	2,132,556	24,242,219	26,374,775
2008	2,374,209	2,788,814	5,163,023	1,681,013	891,859	3,171,527	5,744,399	2,132,925	24,243,360	26,376,285
2009	2,374,454	2,789,227	5,163,681	1,709,537	908,219	3,210,928	5,828,684	2,133,312	24,244,557	26,377,869
2010	2,374,708	2,789,655	5,164,363	1,716,522	912,200	3,220,845	5,849,567	2,133,711	24,245,787	26,379,498
2011	2,374,708	2,789,655	5,164,363	1,716,522	912,200	3,220,845	5,849,567	2,133,711	24,245,787	26,379,498
2012	2,374,708	2,789,655	5,164,363	1,716,522	912,200	3,220,845	5,849,567	2,133,711	24,245,787	26,379,498
2013	2,374,708	2,789,655	5,164,363	1,543,059	806,526	2,856,018	5,205,603	2,133,711	24,245,787	26,379,498
2014	2,374,708	2,789,655	5,164,363	1,473,103	741,271	2,690,809	4,905,183	2,127,015	24,224,121	26,351,136
2015	2,374,708	2,789,655	5,164,363	1,397,784	652,256	2,321,474	4,371,514	2,119,956	24,209,758	26,329,714
2016	2,354,135	2,789,655	5,143,790	1,358,954	621,391	2,147,575	4,127,920	2,107,187	24,184,438	26,291,625
2017	2,327,413	2,789,655	5,117,068	1,284,692	591,210	2,033,226	3,909,128	2,077,243	24,127,525	26,204,768
2018	2,236,602	2,789,655	5,026,257	1,165,120	550,265	1,910,899	3,626,284	2,029,551	24,037,750	26,067,301
2019	2,186,852	2,789,655	4,976,507	1,059,644	514,814	1,809,144	3,383,602	2,011,668	24,003,361	26,015,029
2020	2,182,529	2,789,655	4,972,184	1,023,870	499,877	1,770,185	3,293,932	2,007,748	23,994,979	26,002,727
2021	2,179,998	2,789,655	4,969,653	1,016,680	496,760	1,763,281	3,276,721	2,005,309	23,989,416	25,994,725
2022	2,178,437	2,789,655	4,968,092	1,015,315	495,832	1,758,998	3,270,145	2,003,851	23,985,305	25,989,156
2023	2,177,295	2,756,122	4,933,417	1,013,907	495,182	1,755,758	3,264,847	2,002,868	23,982,747	25,985,615
2024	2,174,013	2,754,488	4,928,501	1,012,855	494,564	1,753,753	3,261,172	2,001,696	23,979,886	25,981,582
2025	2,164,399	2,750,911	4,915,310	1,010,522	493,321	1,750,029	3,253,872	2,000,421	23,976,760	25,977,181
2026	2,159,055	2,746,158	4,905,213	1,009,049	492,516	1,747,920	3,249,485	1,999,670	23,973,632	25,973,302
2027	2,155,683	2,741,722	4,897,405	1,006,069	490,751	1,742,338	3,239,158	1,997,957	23,966,989	25,964,946
2028	2,151,944	2,737,464	4,889,408	1,002,068	488,453	1,735,545	3,226,066	1,992,440	23,953,506	25,945,946
2029	2,147,906	2,733,096	4,881,002	996,080	485,091	1,726,638	3,207,809	1,991,350	23,948,219	25,939,569
2030	2,136,750	2,717,633	4,854,383	991,923	482,904	1,721,001	3,195,828	1,990,181	23,941,818	25,931,999
2031	2,121,334	2,696,567	4,817,901	980,483	476,571	1,705,487	3,162,541	1,984,922	23,918,243	25,903,165
2032	2,108,037	2,675,622	4,783,659	983,008	478,092	1,708,830	3,169,930	1,985,707	23,925,131	25,910,838
2033	2,075,977	2,628,172	4,704,149	981,811	477,668	1,707,452	3,166,931	1,985,498	23,928,130	25,913,628
2034	2,002,880	2,551,555	4,554,435	969,562	470,970	1,690,174	3,130,706	1,983,859	23,922,513	25,906,372
2035	1,854,737	2,405,253	4,259,990	955,800	463,790	1,672,251	3,091,841	1,982,053	23,917,026	25,899,079
Total	**110,128,213**	**132,682,183**	**242,810,396**	**68,052,006**	**37,692,733**	**132,277,071**	**238,021,810**	**85,958,163**	**961,505,130**	**1,047,463,293**

[a]Unadjusted for prior overpayments or underpayments of charges.
[b]Determined at the current Project Interest Rate of 4.610 percent per annum.
[c]Reflects the transfers of permanent Aqueduct capacity among contractors.

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[d] (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	77,319	1,744	48,950	335,771	48,966	423,021	8,504	4,694	65,189	1,014,158
1969	77,455	5,231	57,418	392,005	52,536	868,739	9,011	5,102	246,656	1,714,153
1970	84,889	5,231	59,224	423,404	53,922	1,056,646	9,261	5,306	182,529	1,880,412
1971	96,784	5,231	60,329	444,522	54,712	1,403,418	9,402	5,714	194,236	2,274,348
1972	108,139	5,231	60,945	454,227	55,075	2,101,499	9,470	10,951	599,206	3,404,743
1973	118,953	5,231	61,370	458,449	55,248	2,423,757	9,500	6,326	231,764	3,370,598
1974	180,538	5,231	61,890	460,485	55,349	2,714,245	9,518	7,084	384,691	3,879,031
1975	219,279	5,231	62,452	462,798	55,490	3,250,921	9,542	7,298	459,027	4,532,038
1976	167,188	5,231	62,719	464,655	55,679	3,504,462	9,577	8,243	328,378	4,606,132
1977	164,371	5,231	63,362	467,359	55,965	3,839,885	9,621	7,551	313,972	4,927,317
1978	175,726	0	65,796	469,216	56,156	4,268,356	9,644	7,959	336,856	5,389,709
1979	208,405	5,231	66,111	471,978	56,491	4,686,838	9,705	8,163	379,114	5,892,036
1980	221,685	5,231	66,399	474,721	56,828	5,114,399	9,773	11,633	381,556	6,342,225
1981	221,685	5,231	67,986	491,115	58,770	5,597,335	10,164	8,775	404,438	6,865,499
1982	221,685	5,231	67,996	488,835	58,708	6,043,054	10,149	9,184	426,789	7,331,631
1983	231,958	5,231	68,332	493,076	59,377	6,550,499	10,283	7,694	50,809	7,477,259
1984	243,853	5,231	68,950	498,702	60,083	6,871,851	10,424	9,796	333,188	8,102,078
1985	255,208	5,231	69,678	506,586	61,243	7,317,570	10,657	10,000	242,393	8,478,566
1986	266,563	5,231	69,966	508,983	61,587	7,445,987	10,725	10,408	517,257	8,896,707
1987	277,917	5,231	70,471	512,652	62,116	8,209,911	10,828	10,612	539,606	9,699,344
1988	289,272	5,231	70,832	515,513	62,526	8,630,211	10,906	11,020	561,959	10,157,470
1989	300,626	5,231	71,717	519,169	63,150	8,933,407	11,056	11,428	584,840	10,500,624
1990	155,990	5,231	73,153	537,527	65,389	9,248,404	11,483	11,633	630,608	10,739,418
1991	288,790	5,231	75,796	566,573	69,966	9,248,404	12,296	11,633	630,608	10,909,297
1992	311,981	5,231	78,990	597,260	74,817	9,248,404	13,275	11,633	630,608	10,972,199
1993	311,981	5,231	80,482	610,123	76,657	9,248,404	13,626	11,633	630,608	10,988,745
1994	311,981	5,231	82,105	619,494	77,936	9,248,404	13,866	11,633	630,608	11,001,258
1995	311,981	5,231	83,398	626,231	78,890	9,248,404	14,050	11,633	630,608	11,010,426
1996	288,643	5,231	87,367	635,384	80,221	8,931,617	14,287	11,633	630,608	10,684,991
1997	288,643	5,231	90,231	639,177	80,707	8,866,234	14,366	11,633	630,608	10,626,830
1998	288,643	5,231	92,940	652,602	82,732	8,607,321	14,767	11,633	630,608	10,386,477
1999	288,643	5,231	94,235	659,484	83,776	8,607,321	14,976	11,633	630,608	10,395,907
2000	288,643	5,231	95,758	667,712	85,022	7,963,614	15,223	11,633	630,608	9,763,444
2001	288,643	5,231	96,322	670,334	85,367	7,834,945	15,286	11,633	630,608	9,638,369
2002	310,537	5,231	96,778	672,406	85,659	7,834,945	15,339	11,633	592,191	9,624,719
2003	310,537	5,231	97,520	679,337	86,713	7,834,945	15,545	11,633	589,985	9,631,446
2004	310,537	5,231	97,234	674,663	85,911	7,822,986	42,729	11,633	562,548	9,613,472
2005	333,875	5,231	98,286	682,480	87,083	8,195,230	42,963	11,633	562,548	10,019,329
2006	333,875	5,231	99,755	692,269	88,534	8,195,230	43,250	11,633	562,549	10,032,326
2007	333,875	5,231	100,837	699,232	89,546	8,195,230	43,451	11,633	562,549	10,041,584
2008	333,875	5,231	100,982	699,791	89,622	8,195,230	43,465	11,633	562,549	10,042,378
2009	333,875	5,231	101,134	700,379	89,701	8,195,230	43,480	11,633	562,549	10,043,212
2010	333,875	5,231	101,291	700,986	89,784	8,195,230	43,495	11,633	562,549	10,044,074
2011	333,875	5,231	101,291	700,986	89,784	8,195,230	43,495	11,633	562,549	10,044,074
2012	333,875	5,231	101,291	700,986	89,784	8,195,230	43,495	11,633	562,549	10,044,074
2013	333,875	5,231	101,291	700,986	89,784	8,195,230	43,495	11,633	562,549	10,044,074
2014	333,875	5,231	98,567	700,986	89,784	8,195,230	43,495	11,633	562,549	10,041,350
2015	333,875	5,231	95,262	636,701	80,499	8,195,230	43,495	11,633	562,549	9,964,475
2016	333,875	5,231	89,252	580,729	72,711	8,195,230	43,495	11,633	562,549	9,894,705
2017	333,875	5,231	75,034	467,724	55,434	8,195,230	43,495	11,633	562,549	9,750,205
2018	333,875	5,231	52,342	365,215	40,817	8,195,230	34,992	11,633	562,549	9,601,884
2019	333,875	5,231	43,874	308,981	37,248	8,195,230	34,484	11,633	562,549	9,533,105
2020	333,875	5,231	42,067	277,582	35,862	8,195,230	34,235	11,633	562,549	9,498,264
2021	333,875	5,231	40,963	256,463	35,071	8,195,230	34,093	11,633	562,549	9,475,108
2022	333,875	5,231	40,347	246,758	34,709	8,195,230	34,026	11,633	562,549	9,464,358
2023	333,875	5,231	39,921	242,537	34,536	8,195,230	33,995	11,633	562,549	9,459,507
2024	333,875	5,231	39,402	240,501	34,435	8,195,230	33,978	11,633	562,549	9,456,834
2025	333,875	5,231	38,839	238,188	34,294	8,195,230	33,953	11,633	562,549	9,453,792
2026	333,875	5,231	38,572	236,331	34,105	8,195,230	33,918	11,633	562,549	9,451,444
2027	333,875	5,231	37,929	233,627	33,819	8,195,230	33,874	11,633	562,549	9,447,767
2028	333,875	5,231	35,495	231,769	33,627	8,195,230	33,852	11,633	562,549	9,443,261
2029	333,875	5,231	35,181	229,008	33,292	8,195,230	33,790	11,633	562,549	9,439,789
2030	333,875	5,231	34,892	226,264	32,956	8,195,230	33,723	11,633	562,549	9,436,353
2031	333,875	5,231	33,305	209,870	31,014	8,195,230	33,331	11,633	562,549	9,416,038
2032	333,875	5,231	33,295	212,151	31,076	8,195,230	33,347	11,633	562,549	9,418,387
2033	333,875	5,231	32,959	207,909	30,407	8,195,230	33,212	11,633	562,549	9,413,005
2034	333,875	5,231	32,342	202,283	29,700	8,195,230	33,071	11,633	562,549	9,405,914
2035	333,875	5,231	31,613	194,399	28,541	8,195,230	32,838	11,633	562,549	9,395,909
Total	**18,915,796**	**346,990**	**4,739,863**	**33,264,401**	**4,228,006**	**485,102,493**	**1,632,116**	**720,059**	**34,515,491**	**583,465,215**

[d]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	101,265	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	679,349	419,705	140,991	38,551	231,908	11,781	286,779	87,293	729,849	194,527
1969	986,622	623,427	209,785	57,301	345,362	17,249	426,698	127,220	1,136,415	302,649
1970	1,288,451	780,285	295,870	84,796	487,337	23,427	592,756	171,297	1,691,461	443,708
1971	1,549,446	947,265	400,317	120,210	659,595	28,845	790,357	208,821	2,395,028	619,778
1972	1,683,231	1,056,695	454,890	137,454	749,598	31,306	897,413	226,497	2,825,630	720,983
1973	1,733,737	1,071,161	471,786	142,143	777,464	32,281	931,809	233,340	2,963,053	756,530
1974	1,752,133	1,117,762	479,863	146,331	790,785	32,602	944,246	235,688	3,052,719	777,084
1975	1,775,561	1,132,131	493,063	150,105	812,554	33,017	971,233	238,700	3,135,093	798,777
1976	1,788,692	1,144,716	502,924	152,796	828,818	33,269	991,473	240,432	3,213,203	819,552
1977	1,800,992	1,157,756	509,889	154,692	840,304	33,485	1,005,988	242,010	3,262,212	832,585
1978	1,811,326	1,176,727	514,543	156,009	847,980	33,676	1,015,799	243,377	3,292,334	840,506
1979	1,826,974	1,200,724	518,545	157,141	854,580	33,943	1,024,285	245,346	3,314,183	846,199
1980	1,845,505	1,248,600	522,711	158,251	861,451	34,247	1,033,251	247,608	3,334,737	851,720
1981	1,942,277	1,339,176	544,293	164,015	897,044	35,899	1,077,787	259,877	3,438,673	879,634
1982	1,934,026	1,370,337	541,894	163,563	893,087	35,768	1,073,035	258,879	3,431,345	877,416
1983	2,014,902	1,414,299	557,111	167,582	918,182	37,104	1,104,835	268,895	3,503,738	897,190
1984	2,122,000	1,440,889	577,281	173,473	951,446	38,871	1,142,321	282,134	3,612,031	926,815
1985	2,200,738	1,456,008	592,435	177,807	976,439	40,260	1,173,673	291,738	3,690,801	948,379
1986	2,247,258	1,464,150	603,493	180,992	994,676	40,927	1,205,405	297,214	3,747,687	963,927
1987	2,291,036	1,469,575	614,820	183,970	1,013,355	41,390	1,220,395	301,992	3,801,384	978,588
1988	2,308,450	1,475,066	623,374	186,235	1,027,463	41,677	1,238,382	304,089	3,841,746	989,568
1989	2,322,061	1,484,126	626,785	187,412	1,033,088	41,852	1,245,363	305,475	3,863,999	995,456
1990	2,377,371	1,506,813	643,633	192,472	1,060,874	42,727	1,279,568	312,010	3,935,728	1,014,854
1991	2,413,170	1,526,459	661,088	197,604	1,089,661	43,112	1,314,857	315,536	4,014,970	1,036,359
1992	2,457,325	1,547,705	680,497	203,996	1,121,670	43,744	1,353,624	320,432	4,119,592	1,064,912
1993	2,491,392	1,566,712	694,918	210,989	1,145,453	44,253	1,380,335	324,519	4,231,061	1,095,444
1994	2,525,873	1,584,534	706,850	220,171	1,165,132	44,800	1,399,304	328,488	4,437,565	1,151,617
1995	2,551,485	1,593,494	714,024	225,248	1,176,964	45,193	1,411,126	331,367	4,564,586	1,186,123
1996	2,576,885	1,609,502	721,266	229,526	1,188,907	45,599	1,423,808	334,344	4,671,562	1,215,084
1997	2,593,652	1,620,889	727,354	232,003	1,198,947	45,868	1,435,478	336,316	4,891,356	1,268,666
1998	2,618,276	1,634,776	733,103	233,373	1,208,428	46,279	1,960,331	339,344	5,046,598	1,290,750
1999	2,631,400	1,646,086	736,578	235,675	1,214,159	46,500	1,967,144	340,984	5,250,216	1,307,744
2000	2,646,989	2,800,139	741,632	237,859	1,222,495	46,777	1,977,634	404,717	5,549,676	1,320,734
2001	2,655,069	2,806,066	744,779	239,232	1,227,684	46,930	1,984,199	405,918	6,332,958	1,330,561
2002	2,679,042	2,809,491	747,699	240,133	1,232,500	47,101	1,990,400	407,165	7,452,654	1,336,156
2003	2,686,807	2,815,320	749,024	240,603	1,234,685	47,206	1,993,457	408,057	8,148,742	1,342,450
2004	2,683,971	2,815,363	749,208	240,725	1,234,990	47,160	1,994,094	407,775	8,292,583	1,343,990
2005	2,703,371	2,832,690	753,427	241,958	1,241,947	47,492	2,004,384	410,539	8,323,256	1,351,660
2006	2,729,889	2,858,341	759,634	244,090	1,252,184	47,948	2,018,903	414,402	8,370,119	1,364,084
2007	2,750,877	2,885,867	764,925	246,269	1,260,910	48,310	2,030,590	417,446	8,414,106	1,375,194
2008	2,752,569	2,887,135	765,433	246,432	1,261,747	48,340	2,031,756	417,700	8,417,705	1,376,157
2009	2,754,348	2,888,468	765,957	246,582	1,262,612	48,373	2,032,980	417,967	8,420,786	1,376,979
2010	2,756,186	2,889,845	766,499	246,736	1,263,505	48,407	2,034,246	418,243	8,423,967	1,377,828
2011	2,756,186	2,889,845	766,499	246,736	1,263,505	48,407	2,034,246	418,243	8,423,967	1,377,828
2012	2,756,186	2,889,845	766,499	246,736	1,263,505	48,407	2,034,246	418,243	8,423,967	1,377,828
2013	2,722,865	2,889,845	766,499	246,736	1,250,140	48,407	2,034,246	418,243	8,372,238	1,364,727
2014	2,693,318	2,855,703	752,072	242,366	1,240,329	47,264	2,001,346	409,341	8,341,157	1,356,546
2015	2,637,582	2,824,881	741,404	239,542	1,222,736	46,325	1,975,818	401,745	8,288,899	1,342,483
2016	2,540,404	2,767,747	721,769	234,258	1,190,353	44,653	1,928,342	388,153	8,191,465	1,316,363
2017	2,338,705	2,633,848	680,381	223,264	1,122,095	41,123	1,828,829	359,714	7,990,618	1,262,254
2018	2,076,836	2,346,035	625,507	208,185	1,031,597	36,625	1,691,253	322,491	7,694,119	1,183,300
2019	1,769,564	2,049,994	556,714	189,435	918,143	31,158	1,513,924	276,384	7,287,553	1,075,179
2020	1,467,735	1,819,284	470,629	161,940	776,169	24,980	1,306,811	225,453	6,732,507	934,120
2021	1,206,740	1,572,205	366,182	126,526	603,910	19,562	1,074,329	182,062	6,028,940	758,049
2022	1,072,954	1,412,670	311,609	109,282	513,908	17,100	948,960	161,212	5,598,337	656,845
2023	1,022,449	1,404,945	294,713	104,593	486,042	16,126	907,730	153,176	5,460,914	621,298
2024	1,004,053	1,346,072	286,636	100,405	472,721	15,805	892,815	150,365	5,371,248	600,743
2025	980,624	1,328,207	273,436	96,631	450,951	15,390	863,016	146,789	5,288,874	579,051
2026	967,494	1,309,960	263,575	93,940	434,688	15,138	841,310	144,769	5,210,764	558,276
2027	955,194	1,291,448	256,610	92,044	423,201	14,922	825,719	142,957	5,161,755	545,243
2028	944,860	1,263,612	251,956	90,727	415,526	14,730	815,421	141,441	5,131,633	537,321
2029	929,212	1,225,299	247,954	89,595	408,926	14,464	805,902	139,228	5,109,785	531,629
2030	910,680	1,148,085	243,787	88,485	402,055	14,160	795,883	136,714	5,089,231	526,108
2031	813,909	1,005,032	222,206	82,722	366,462	12,508	740,494	122,551	4,985,295	498,194
2032	822,160	953,527	224,604	83,173	370,418	12,639	749,519	124,184	4,992,622	500,412
2033	741,284	880,976	209,388	79,155	345,323	11,303	714,372	113,518	4,920,230	480,638
2034	634,186	838,739	189,218	73,263	312,059	9,536	668,915	99,530	4,811,937	451,013
2035	555,448	817,018	174,063	68,929	287,066	8,147	636,266	89,632	4,733,167	429,449
Total	**133,109,396**	**117,273,631**	**36,958,469**	**11,758,687**	**60,922,289**	**2,348,136**	**89,385,541**	**18,922,461**	**357,163,789**	**64,901,184**

Table B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area					
	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	1,400,140
1964	21,736	1,260,513	9,378	1,593,480	0	0	0	0	0	2,541,736
1965	21,866	2,180,589	17,767	2,702,924	0	0	405	405	0	4,276,394
1966	37,964	3,900,172	33,426	4,834,766	0	0	564	564	0	6,775,096
1967	71,283	7,693,703	68,155	9,497,844	0	0	562	562	0	11,908,450
1968	120,094	14,345,147	133,299	17,419,274	0	0	564	564	0	21,047,389
1969	187,059	21,857,456	202,599	26,479,842	0	0	3,191	3,191	0	31,145,982
1970	275,010	28,992,595	257,859	35,384,852	0	0	15,121	15,121	0	40,333,492
1971	385,025	37,259,904	316,307	45,680,898	0	0	15,947	15,947	0	51,051,351
1972	448,055	44,379,100	353,936	53,964,788	0	0	17,332	17,332	0	60,480,470
1973	470,185	46,623,272	357,342	56,564,103	0	0	17,333	17,333	0	63,086,766
1974	483,259	48,646,370	372,112	58,830,953	0	0	17,334	17,334	0	65,874,139
1975	496,722	49,608,775	376,511	60,022,242	0	0	17,336	17,336	0	67,741,896
1976	509,650	50,460,986	380,788	61,067,298	0	0	17,338	17,338	0	68,878,381
1977	517,741	51,150,857	385,098	61,893,609	0	0	17,340	17,340	0	70,051,447
1978	522,656	51,750,272	390,742	62,595,947	0	0	17,342	17,342	0	71,255,185
1979	526,178	52,554,036	399,649	63,501,783	0	0	17,344	17,344	0	72,694,983
1980	529,583	53,961,104	417,136	65,045,903	0	0	17,345	17,345	0	74,732,615
1981	546,787	56,991,129	449,812	68,566,402	0	0	17,346	17,346	0	78,870,335
1982	545,445	57,788,754	461,234	69,374,784	0	0	17,348	17,348	0	80,161,288
1983	557,607	59,361,164	477,333	71,279,943	0	0	17,348	17,348	0	82,284,628
1984	575,830	60,637,271	486,863	72,967,224	0	0	17,349	17,349	0	84,775,950
1985	589,089	61,468,320	492,117	74,097,804	0	0	17,351	17,351	0	86,597,642
1986	598,648	61,990,037	494,977	74,829,391	0	0	17,352	17,352	0	88,449,839
1987	607,664	62,418,401	496,758	75,439,328	0	0	17,354	17,354	0	91,296,879
1988	614,418	62,776,604	498,619	75,925,691	0	0	17,355	17,355	0	93,390,742
1989	618,059	63,119,928	501,579	76,345,183	0	0	17,358	17,358	0	94,613,392
1990	629,934	64,086,150	509,566	77,591,700	0	0	17,360	17,360	0	96,341,578
1991	643,118	65,001,046	516,147	78,773,127	0	0	17,364	17,364	0	97,914,598
1992	660,626	66,100,044	523,154	80,197,321	0	0	17,367	17,367	0	99,643,784
1993	679,343	67,228,732	529,384	81,622,536	0	0	17,369	17,369	0	101,344,694
1994	714,062	68,810,314	535,055	83,623,764	0	0	17,370	17,370	0	104,114,125
1995	735,431	69,697,231	537,812	84,770,084	0	0	17,371	17,371	0	108,039,186
1996	753,524	70,574,747	541,753	85,886,508	0	0	17,371	17,371	0	118,003,746
1997	813,156	71,854,644	544,467	87,562,796	0	0	17,371	17,371	0	128,268,226
1998	921,675	72,607,128	548,490	89,188,551	0	0	17,372	17,372	0	131,982,722
1999	1,115,573	73,238,314	552,157	90,282,529	0	0	17,372	17,372	0	133,738,469
2000	1,450,724	73,749,386	555,287	92,704,050	0	0	17,372	17,372	0	136,309,374
2001	2,427,933	74,058,814	556,663	94,816,807	0	0	17,372	17,372	0	139,285,196
2002	3,860,785	74,234,310	557,449	97,594,885	0	0	17,372	17,372	0	142,224,785
2003	4,739,323	74,489,993	559,080	99,454,747	0	0	17,372	17,372	0	144,612,993
2004	4,915,398	74,723,938	558,831	100,008,026	0	0	17,372	17,372	0	145,647,162
2005	4,920,140	75,299,640	562,953	100,693,457	0	0	17,372	17,372	0	147,078,458
2006	4,927,846	75,993,512	568,944	101,549,896	0	0	17,372	17,372	0	148,269,477
2007	4,934,784	76,802,318	575,633	102,507,229	0	0	17,372	17,372	0	149,598,790
2008	4,935,380	76,843,786	575,917	102,560,057	0	0	17,372	17,372	0	149,903,514
2009	4,935,888	76,883,639	576,216	102,610,795	0	0	17,372	17,372	0	150,041,613
2010	4,936,413	76,924,806	576,525	102,663,206	0	0	17,372	17,372	0	150,118,080
2011	4,936,413	76,924,806	576,525	102,663,206	0	0	17,372	17,372	0	150,118,080
2012	4,936,413	76,924,806	576,525	102,663,206	0	0	17,372	17,372	0	150,118,080
2013	4,928,261	76,233,994	576,525	101,852,726	0	0	17,372	17,372	0	148,663,636
2014	4,923,205	75,664,293	567,147	101,094,087	0	0	17,372	17,372	0	147,573,491
2015	4,914,547	74,744,217	558,758	99,938,937	0	0	16,967	16,967	0	145,785,970
2016	4,898,449	73,024,634	543,099	97,789,689	0	0	16,808	16,808	0	143,264,537
2017	4,865,130	69,231,103	508,370	93,085,434	0	0	16,810	16,810	0	138,083,413
2018	4,816,319	62,579,659	443,226	85,055,152	0	0	16,808	16,808	0	129,393,686
2019	4,749,354	55,067,350	373,926	75,858,678	0	0	14,181	14,181	0	119,781,102
2020	4,661,403	47,932,211	318,666	66,831,908	0	0	2,252	2,252	0	110,601,267
2021	4,551,388	39,664,902	260,218	56,415,013	0	0	1,425	1,425	0	100,132,645
2022	4,488,358	32,545,707	222,589	48,059,531	0	0	40	40	0	91,751,322
2023	4,466,228	30,301,534	219,183	45,458,931	0	0	39	39	0	89,102,356
2024	4,453,154	28,278,437	204,413	43,176,867	0	0	38	38	0	86,804,994
2025	4,439,691	27,316,031	200,014	41,978,705	0	0	36	36	0	85,578,896
2026	4,426,763	26,463,820	195,737	40,926,234	0	0	34	34	0	84,505,712
2027	4,418,672	25,773,949	191,427	40,093,141	0	0	32	32	0	83,642,449
2028	4,413,757	25,174,534	185,783	39,381,301	0	0	30	30	0	82,886,012
2029	4,410,235	24,370,771	176,876	38,459,876	0	0	29	29	0	81,928,074
2030	4,406,830	22,963,703	159,389	36,885,110	0	0	27	27	0	80,303,700
2031	4,389,626	19,933,678	126,713	33,299,390	0	0	26	26	0	76,599,061
2032	4,390,968	19,136,052	115,291	32,475,569	0	0	24	24	0	75,758,407
2033	4,378,806	17,563,643	99,192	30,537,828	0	0	24	24	0	73,735,565
2034	4,360,583	16,287,535	89,662	28,826,176	0	0	23	23	0	71,823,626
2035	4,347,324	15,456,486	84,408	27,687,403	0	0	21	21	0	70,334,243
Total	**180,500,546**	**3,692,627,618**	**27,966,541**	**4,793,838,288**	**0**	**0**	**868,500**	**868,500**	**0**	**6,906,467,502**

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	585,401	1,003,593	1,588,994	1,209,863	1,251,432	5,043,457	7,504,752	788,625	3,034,442	3,823,067
2000	578,179	1,680,057	2,258,236	2,182,040	1,295,148	3,751,425	7,228,613	728,506	3,625,408	4,353,914
2001	652,487	1,446,541	2,099,028	2,091,843	1,052,875	3,581,711	6,726,429	737,903	3,210,941	3,948,844
2002	1,089,772	1,862,434	2,952,206	2,448,344	1,353,719	6,048,705	9,850,768	781,446	3,772,533	4,553,979
2003	1,147,272	2,013,487	3,160,759	2,273,584	1,123,353	3,934,731	7,331,668	844,958	3,866,326	4,711,284
2004	1,011,106	1,856,100	2,867,206	2,496,191	1,278,317	4,836,508	8,611,016	841,429	3,850,756	4,692,185
2005	970,401	1,801,194	2,771,595	2,362,394	1,210,943	4,703,130	8,276,467	806,043	3,717,357	4,523,400
2006	980,007	1,823,269	2,803,276	2,363,767	1,213,336	4,763,052	8,340,155	811,159	3,812,453	4,623,612
2007	873,459	1,430,670	2,304,129	2,856,112	1,386,901	3,865,596	8,108,609	792,585	2,941,047	3,733,632
2008	873,815	1,431,297	2,305,112	2,857,160	1,387,381	3,866,917	8,111,458	792,889	2,942,246	3,735,135
2009	873,580	1,430,959	2,304,539	2,856,318	1,386,931	3,865,638	8,108,887	792,669	2,941,465	3,734,134
2010	873,446	1,430,613	2,304,059	2,856,121	1,386,929	3,865,689	8,108,739	792,578	2,940,985	3,733,563
2011	876,565	1,436,042	2,312,607	2,867,537	1,391,947	3,879,630	8,139,114	795,356	2,950,600	3,745,956
2012	876,770	1,436,417	2,313,187	2,868,123	1,392,206	3,880,334	8,140,663	795,529	2,951,294	3,746,823
2013	877,312	1,437,548	2,314,860	2,869,346	1,392,613	3,881,360	8,143,319	795,945	2,953,150	3,749,095
2014	877,576	1,438,369	2,315,945	2,869,431	1,392,356	3,880,461	8,142,248	796,085	2,954,124	3,750,209
2015	878,234	1,439,439	2,317,673	2,871,550	1,393,403	3,883,397	8,148,350	796,670	2,956,316	3,752,986
2016	877,129	1,437,532	2,314,661	2,868,219	1,391,844	3,879,079	8,139,142	795,717	2,952,611	3,748,328
2017	877,574	1,438,323	2,315,897	2,869,511	1,392,430	3,880,690	8,142,631	796,094	2,954,103	3,750,197
2018	878,209	1,439,651	2,317,860	2,870,951	1,392,909	3,881,895	8,145,755	796,582	2,956,283	3,752,865
2019	877,057	1,437,585	2,314,642	2,867,630	1,391,418	3,877,807	8,136,855	795,607	2,952,401	3,748,008
2020	877,838	1,438,797	2,316,635	2,870,254	1,392,759	3,881,589	8,144,602	796,314	2,954,989	3,751,303
2021	878,266	1,439,369	2,317,635	2,871,862	1,393,646	3,884,128	8,149,636	796,721	2,956,379	3,753,100
2022	878,016	1,439,305	2,317,321	2,870,396	1,392,661	3,881,217	8,144,274	796,419	2,955,633	3,752,052
2023	877,200	1,437,617	2,314,817	2,868,476	1,391,989	3,879,495	8,139,960	795,781	2,952,825	3,748,606
2024	877,526	1,438,326	2,315,852	2,869,179	1,392,200	3,880,006	8,141,385	796,028	2,953,955	3,749,983
2025	878,441	1,439,782	2,318,223	2,872,175	1,393,703	3,884,232	8,150,110	796,847	2,956,994	3,753,841
2026	876,803	1,437,165	2,313,968	2,866,831	1,391,029	3,876,720	8,134,580	795,384	2,951,556	3,746,940
2027	879,637	1,441,708	2,321,345	2,876,043	1,395,626	3,889,624	8,161,293	797,910	2,960,966	3,758,876
2028	876,717	1,437,092	2,313,809	2,866,412	1,390,769	3,875,960	8,133,141	795,289	2,951,278	3,746,567
2029	877,893	1,438,827	2,316,720	2,870,544	1,392,947	3,882,141	8,145,632	796,377	2,955,159	3,751,536
2030	877,056	1,437,362	2,314,418	2,868,060	1,391,800	3,878,975	8,138,835	795,659	2,952,347	3,748,006
2031	879,893	1,442,352	2,322,245	2,876,411	1,395,630	3,889,530	8,161,571	798,080	2,961,868	3,759,948
2032	876,220	1,436,300	2,312,520	2,864,798	1,389,962	3,873,696	8,128,456	794,847	2,949,635	3,744,482
2033	878,010	1,438,889	2,316,899	2,871,172	1,393,356	3,883,345	8,147,873	796,511	2,955,512	3,752,023
2034	878,154	1,439,347	2,317,501	2,871,209	1,393,205	3,882,823	8,147,237	796,588	2,956,054	3,752,642
2035	876,344	1,436,488	2,312,832	2,865,220	1,390,180	3,874,310	8,129,710	794,960	2,950,044	3,745,004
Total	**40,224,584**	**62,547,966**	**102,772,550**	**117,707,895**	**66,861,690**	**195,993,821**	**380,563,406**	**36,525,095**	**129,779,449**	**166,304,544**

Table B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	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	404,675	20,647	270,164	953,270	11,226,118	21,117	21,316	823,093	13,740,400
2000	409,349	20,817	206,206	1,011,983	10,291,329	21,291	22,656	831,213	12,814,844
2001	488,930	24,865	230,253	1,190,296	11,575,474	25,431	31,755	992,819	14,559,823
2002	442,607	20,794	222,449	1,055,646	10,459,010	21,267	25,541	784,967	13,032,281
2003	508,239	24,270	254,213	1,110,937	11,330,685	24,823	28,502	906,380	14,188,049
2004	538,658	25,650	251,499	1,225,813	12,071,033	69,881	28,568	915,494	15,126,596
2005	495,430	23,539	239,422	1,123,664	11,200,497	64,219	26,139	840,957	14,013,867
2006	504,031	23,942	245,495	1,058,831	11,419,072	65,328	25,927	855,441	14,198,067
2007	457,149	21,163	278,940	1,035,773	11,418,312	58,691	24,171	764,640	14,058,839
2008	457,324	21,171	279,048	1,036,181	11,422,792	58,713	24,178	764,930	14,064,337
2009	457,247	21,167	278,973	1,035,974	11,420,399	58,703	24,173	764,802	14,061,438
2010	457,127	21,162	278,937	1,035,731	11,417,894	58,688	24,170	764,602	14,058,311
2011	459,112	21,254	279,983	1,039,913	11,464,161	58,943	24,252	767,928	14,115,546
2012	459,219	21,259	280,045	1,040,158	11,466,835	58,957	24,256	768,105	14,118,834
2013	459,575	21,275	280,199	1,040,926	11,474,962	59,002	24,265	768,698	14,128,902
2014	459,886	21,289	280,262	1,041,522	11,480,930	59,042	24,269	769,213	14,136,413
2015	460,161	21,302	280,465	1,042,200	11,488,521	59,077	24,282	769,670	14,145,678
2016	459,641	21,278	280,130	1,040,968	11,474,941	59,011	24,261	768,806	14,129,036
2017	459,862	21,288	280,263	1,041,482	11,480,572	59,039	24,270	769,173	14,135,949
2018	460,281	21,307	280,444	1,042,383	11,490,115	59,092	24,281	769,869	14,147,772
2019	459,699	21,281	280,098	1,041,036	11,475,383	59,018	24,259	768,902	14,129,676
2020	459,997	21,294	280,342	1,041,793	11,483,955	59,056	24,275	769,397	14,140,109
2021	460,113	21,300	280,479	1,042,131	11,487,960	59,071	24,283	769,590	14,144,927
2022	460,182	21,303	280,386	1,042,156	11,487,630	59,080	24,277	769,705	14,144,719
2023	459,656	21,279	280,151	1,041,016	11,475,521	59,013	24,262	768,832	14,129,730
2024	459,885	21,289	280,244	1,041,502	11,480,632	59,042	24,268	769,211	14,136,073
2025	460,251	21,306	280,527	1,042,417	11,490,932	59,089	24,286	769,820	14,148,628
2026	459,589	21,276	280,021	1,040,768	11,472,401	59,004	24,254	768,719	14,126,032
2027	460,745	21,329	280,895	1,043,636	11,504,605	59,152	24,310	770,640	14,165,312
2028	459,587	21,276	279,990	1,040,735	11,471,900	59,004	24,252	768,717	14,125,461
2029	459,990	21,294	280,361	1,041,801	11,484,152	59,055	24,276	769,386	14,140,315
2030	459,586	21,276	280,108	1,040,852	11,473,720	59,004	24,260	768,715	14,127,521
2031	460,969	21,339	280,963	1,044,090	11,509,272	59,180	24,314	771,013	14,171,140
2032	459,386	21,266	279,837	1,040,235	11,466,285	58,978	24,242	768,382	14,118,611
2033	459,973	21,293	280,403	1,041,814	11,484,535	59,053	24,278	769,358	14,140,707
2034	460,146	21,301	280,438	1,042,147	11,487,864	59,075	24,281	769,646	14,144,898
2035	459,432	21,269	279,876	1,040,353	11,467,621	58,984	24,245	768,459	14,120,239
Total	**22,771,895**	**1,084,823**	**13,301,862**	**52,346,974**	**589,801,047**	**2,314,034**	**1,196,129**	**40,646,315**	**723,463,079**

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	3,727,471	2,060,589	1,089,679	305,850	1,797,093	73,731	3,153,043	534,616	6,341,390	1,705,593
2000	3,738,771	3,366,436	1,032,559	291,416	1,702,896	68,261	2,988,317	592,809	5,864,254	1,567,823
2001	4,412,305	3,811,038	1,111,979	306,527	1,833,870	79,836	3,263,330	691,922	5,922,552	1,586,400
2002	3,585,042	3,447,577	1,007,860	280,199	1,662,161	61,676	2,968,182	541,187	5,594,601	1,500,325
2003	3,879,706	3,383,292	1,075,056	301,071	1,772,984	65,402	3,177,976	590,160	5,977,396	1,591,493
2004	4,450,710	4,078,901	1,274,974	356,436	2,102,689	75,488	3,667,966	673,914	7,135,786	1,892,719
2005	3,805,443	3,508,471	1,141,182	324,834	1,882,039	65,192	3,260,531	576,529	6,645,199	1,763,022
2006	3,713,605	3,442,012	1,156,802	327,547	1,907,803	65,181	3,243,693	562,723	6,694,776	1,781,336
2007	3,957,493	3,645,988	1,044,280	290,826	1,722,236	70,068	3,125,845	607,574	6,156,945	1,633,154
2008	3,959,311	3,653,214	1,038,541	283,250	1,712,766	70,104	3,127,447	607,863	6,022,648	1,607,190
2009	3,958,555	3,655,844	1,044,517	290,623	1,722,626	70,094	3,127,012	607,757	6,153,359	1,632,644
2010	3,957,268	3,651,535	1,039,560	285,184	1,714,448	70,062	3,125,569	607,534	6,056,686	1,613,548
2011	3,971,236	3,669,950	1,048,678	292,363	1,729,490	70,326	3,137,468	609,726	6,187,330	1,640,709
2012	3,972,369	3,664,991	1,045,515	288,118	1,724,270	70,349	3,138,507	609,908	6,112,074	1,626,183
2013	3,976,183	3,682,447	1,037,303	276,514	1,710,721	70,435	3,142,424	610,549	5,906,153	1,586,629
2014	3,979,554	3,674,518	1,056,902	298,667	1,743,055	70,522	3,146,453	611,149	6,299,676	1,664,076
2015	3,982,401	3,672,231	1,039,822	277,108	1,714,874	70,572	3,148,692	611,585	5,917,283	1,589,783
2016	3,977,027	3,686,682	1,058,573	301,590	1,745,813	70,470	3,144,089	610,740	6,351,240	1,673,777
2017	3,979,342	3,682,608	1,046,318	285,883	1,725,593	70,516	3,146,154	611,109	6,072,529	1,619,709
2018	3,983,791	3,683,419	1,051,483	290,362	1,734,113	70,616	3,150,716	611,855	6,152,472	1,636,026
2019	3,977,750	3,696,619	1,059,055	301,554	1,746,608	70,496	3,145,298	610,890	6,350,291	1,673,814
2020	3,980,763	3,692,581	1,047,571	286,940	1,727,659	70,545	3,147,450	611,337	6,091,555	1,623,615
2021	3,981,899	3,666,472	1,036,962	274,007	1,710,157	70,556	3,147,911	611,485	5,862,351	1,578,925
2022	3,982,819	3,667,924	1,049,534	288,284	1,730,898	70,597	3,149,859	611,701	6,115,353	1,628,658
2023	3,977,214	3,675,398	1,058,023	300,916	1,744,905	70,472	3,144,170	610,765	6,339,376	1,671,468
2024	3,979,658	3,704,314	1,046,571	285,889	1,726,010	70,528	3,146,725	611,178	6,072,458	1,619,802
2025	3,983,386	3,646,817	1,049,467	288,603	1,730,787	70,591	3,149,530	611,740	6,121,799	1,629,804
2026	3,976,644	3,702,557	1,059,509	302,386	1,747,357	70,477	3,144,417	610,721	6,364,789	1,676,520
2027	3,988,442	3,579,439	1,046,858	284,223	1,726,482	70,679	3,153,446	612,509	6,045,347	1,615,424
2028	3,976,641	3,812,259	1,036,628	274,273	1,709,606	70,482	3,144,650	610,735	5,864,975	1,579,062
2029	3,980,689	3,632,583	1,058,458	300,393	1,745,623	70,539	3,147,198	611,314	6,330,780	1,670,234
2030	3,976,487	3,675,409	1,058,337	301,528	1,745,423	70,458	3,143,528	610,649	6,350,102	1,673,466
2031	3,990,887	3,583,583	1,034,129	267,499	1,705,480	70,739	3,156,196	612,935	5,748,134	1,557,890
2032	3,974,577	3,809,799	1,057,134	299,795	1,743,438	70,446	3,143,071	610,422	6,317,971	1,667,224
2033	3,980,452	3,643,049	1,043,678	282,717	1,721,237	70,526	3,146,553	611,250	6,016,930	1,608,877
2034	3,982,336	3,677,647	1,042,482	280,254	1,719,263	70,575	3,148,811	611,586	5,973,048	1,600,693
2035	3,975,088	3,703,099	1,073,480	319,650	1,770,408	70,455	3,143,454	610,499	6,670,992	1,736,147
Total	**196,966,173**	**159,992,360**	**53,137,472**	**14,706,233**	**87,634,540**	**3,503,451**	**146,151,690**	**29,160,805**	**306,896,108**	**81,667,074**

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	1,047,014	84,179,404	622,509	106,637,982	0	0	415	415	551,178	133,846,788
2000	962,069	82,182,880	633,214	104,991,705	0	0	0	0	0	131,647,312
2001	969,943	94,586,803	721,114	119,297,619	0	0	0	0	0	146,631,743
2002	916,367	84,251,591	647,323	106,464,091	0	0	0	0	0	136,853,325
2003	991,360	81,521,979	616,358	104,944,233	0	0	3,950	3,950	0	134,339,943
2004	1,177,707	101,343,796	765,994	128,997,080	0	0	4,005	4,005	0	160,298,088
2005	1,097,763	90,109,943	652,074	114,832,222	0	0	4,005	4,005	0	144,421,556
2006	1,099,802	88,952,978	647,884	113,596,142	0	0	4,075	4,075	0	143,565,327
2007	1,011,061	87,612,958	679,481	111,557,909	0	0	4,149	4,149	0	139,767,267
2008	994,014	87,194,778	681,273	110,952,399	0	0	4,151	4,151	0	139,172,592
2009	1,010,700	87,731,837	682,038	111,687,606	0	0	4,148	4,148	0	139,900,752
2010	998,220	87,658,670	680,948	111,459,232	0	0	4,149	4,149	0	139,668,053
2011	1,015,786	88,018,991	684,822	112,076,875	0	0	4,147	4,147	0	140,394,245
2012	1,006,247	87,832,577	683,451	111,774,559	0	0	4,148	4,148	0	140,098,214
2013	980,241	87,993,876	687,877	111,661,352	0	0	4,148	4,148	0	140,001,676
2014	1,030,895	88,524,107	685,695	112,785,269	0	0	4,146	4,146	0	141,134,230
2015	982,171	87,550,085	684,888	111,241,495	0	0	4,149	4,149	0	139,610,331
2016	1,037,301	88,984,975	689,041	113,331,318	0	0	4,145	4,145	0	141,666,630
2017	1,001,830	88,659,551	687,828	112,588,970	0	0	4,146	4,146	0	140,937,790
2018	1,012,421	88,389,207	687,838	112,454,319	0	0	4,147	4,147	0	140,822,718
2019	1,037,294	89,952,886	691,678	114,314,233	0	0	4,142	4,142	0	142,647,556
2020	1,004,362	88,222,292	690,374	112,197,044	0	0	4,147	4,147	0	140,553,840
2021	975,076	87,076,958	683,365	110,676,124	0	0	4,151	4,151	0	139,045,573
2022	1,007,611	88,769,877	683,816	112,756,931	0	0	4,146	4,146	0	141,119,443
2023	1,035,788	88,754,711	686,048	113,069,254	0	0	4,145	4,145	0	141,406,512
2024	1,001,875	89,137,206	693,561	113,095,775	0	0	4,145	4,145	0	141,443,213
2025	1,008,379	86,858,257	678,129	110,827,289	0	0	4,151	4,151	0	139,202,242
2026	1,039,084	90,506,186	693,322	114,893,969	0	0	4,141	4,141	0	143,219,630
2027	998,883	84,300,178	660,005	108,081,915	0	0	4,156	4,156	0	136,492,897
2028	975,215	91,654,687	722,253	115,431,466	0	0	4,141	4,141	0	143,754,585
2029	1,034,918	87,553,985	674,549	111,811,263	0	0	4,148	4,148	0	140,169,614
2030	1,037,110	88,981,094	686,096	113,309,687	0	0	4,145	4,145	0	141,642,612
2031	961,120	85,140,337	661,012	108,489,941	0	0	4,155	4,155	0	136,909,000
2032	1,033,014	92,264,678	721,757	116,713,326	0	0	4,139	4,139	0	145,021,534
2033	994,731	87,175,075	677,274	110,972,349	0	0	4,149	4,149	0	139,334,000
2034	989,315	87,822,172	686,340	111,604,522	0	0	4,148	4,148	0	139,970,948
2035	1,078,170	91,504,716	693,605	116,349,763	0	0	4,139	4,139	0	144,661,687
Total	**50,489,701**	**4,415,827,452**	**34,179,825**	**5,580,312,884**	**0**	**0**	**203,920**	**203,920**	**8,715,446**	**6,962,335,829**

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	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	63,698	205,414	269,112	367,297	304,845	1,189,291	1,861,433	711	105	816
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	58,017	195,562	253,579	559,900	446,655	1,039,572	2,046,127	147,204	791,946	939,150
2000	28,759	128,393	157,152	374,808	237,138	748,820	1,360,766	82,628	474,268	556,896
2001	81,300	156,491	237,791	394,562	232,158	860,678	1,487,398	133,971	592,623	726,594
2002	40,384	128,219	168,603	384,774	230,122	521,729	1,136,625	91,976	586,079	678,055
2003	38,551	95,034	133,585	309,137	185,287	659,690	1,154,114	80,724	488,877	569,601
2004	106,295	180,649	286,944	439,423	324,429	664,514	1,428,366	335,822	611,010	946,832
2005	144,626	270,307	414,933	897,679	412,086	1,104,967	2,414,732	670,094	1,219,196	1,889,290
2006	153,684	265,552	419,236	916,118	420,551	1,127,665	2,464,334	683,859	1,244,240	1,928,099
2007	154,053	260,071	414,124	896,139	411,379	1,103,072	2,410,590	668,944	1,217,104	1,886,048
2008	182,937	303,340	486,277	1,043,983	479,249	1,285,056	2,808,288	779,306	1,417,901	2,197,207
2009	185,759	206,635	392,394	921,520	465,023	1,246,910	2,633,453	756,173	1,375,812	2,131,985
2010	189,194	207,468	396,662	924,699	466,627	1,251,212	2,642,538	758,782	1,380,559	2,139,341
2011	180,651	195,286	375,937	869,901	438,974	1,177,065	2,485,940	713,817	1,298,746	2,012,563
2012	183,157	195,183	378,340	868,942	438,491	1,175,767	2,483,200	713,030	1,297,315	2,010,345
2013	105,341	110,659	216,000	492,365	248,460	666,221	1,407,046	404,021	735,093	1,139,114
2014	35,267	36,522	71,789	162,404	81,953	219,750	464,107	133,264	242,467	375,731
2015	22,237	22,701	44,938	100,888	50,911	136,512	288,311	82,786	150,624	233,410
2016	18,665	18,697	37,362	83,094	41,932	112,435	237,461	68,185	124,058	192,243
2017	16,506	16,356	32,862	72,691	36,682	98,359	207,732	59,648	108,527	168,175
2018	7,022	6,855	13,877	30,465	15,374	41,222	87,061	24,999	45,484	70,483
2019	7,142	6,870	14,012	30,531	15,407	41,311	87,249	25,053	45,582	70,635
2020	7,296	6,914	14,210	30,728	15,506	41,578	87,812	25,214	45,876	71,090
2021	9,991	9,328	19,319	41,454	20,919	56,092	118,465	34,016	61,891	95,907
2022	10,106	9,296	19,402	41,313	20,848	55,901	118,062	33,900	61,680	95,580
2023	7,880	7,141	15,021	31,736	16,015	42,942	90,693	26,042	47,382	73,424
2024	5,639	5,034	10,673	22,374	11,290	30,274	63,938	18,359	33,404	51,763
2025	329	290	619	1,287	649	1,741	3,677	1,056	1,921	2,977
2026	610	529	1,139	2,350	1,186	3,180	6,716	1,928	3,509	5,437
2027	787	672	1,459	2,988	1,508	4,042	8,538	2,452	4,460	6,912
2028	1,053	894	1,947	3,974	2,005	5,377	11,356	3,261	5,933	9,194
2029	1,036	880	1,916	3,910	1,973	5,290	11,173	3,208	5,837	9,045
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	**3,075,244**	**5,278,032**	**8,353,276**	**18,254,384**	**12,512,876**	**40,533,924**	**71,301,184**	**7,807,597**	**17,212,645**	**25,020,242**

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

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)	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	407,919	13,446	1,226,968	9,219,091	28,668	24,001	1,691,135	12,611,228
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	360,554	19,182	874,948	7,723,883	24,159	20,065	1,749,925	10,772,716
2000	193,895	5,762	392,659	4,215,772	11,530	9,847	667,127	5,496,592
2001	201,286	6,533	226,283	2,840,015	7,494	11,768	286,120	3,579,499
2002	153,869	4,557	309,688	2,803,477	9,257	10,806	301,042	3,592,696
2003	128,292	3,998	255,374	2,744,723	10,279	8,100	292,016	3,442,782
2004	207,087	11,349	285,662	2,606,406	18,566	10,338	216,406	3,355,814
2005	236,044	12,349	560,405	4,346,495	16,465	16,003	457,439	5,645,200
2006	240,893	12,603	571,917	4,435,779	16,804	16,331	466,835	5,761,162
2007	235,639	12,328	559,444	4,339,039	16,437	15,975	456,654	5,635,516
2008	274,515	14,362	651,741	5,055,609	19,149	18,611	531,992	6,565,979
2009	266,366	13,935	622,641	5,000,003	18,581	18,058	518,059	6,457,643
2010	267,285	13,984	624,789	5,017,253	18,645	18,121	519,846	6,479,923
2011	251,446	13,155	587,764	4,719,928	17,540	17,047	489,040	6,095,920
2012	251,169	13,140	587,116	4,714,725	17,520	17,028	488,501	6,089,199
2013	142,319	7,446	332,675	2,671,488	9,928	9,648	276,797	3,450,301
2014	46,943	2,456	109,731	881,177	3,275	3,183	91,300	1,138,065
2015	29,162	1,526	68,167	547,400	2,034	1,977	56,717	706,983
2016	24,019	1,257	56,144	450,855	1,675	1,628	46,714	582,292
2017	21,011	1,099	49,115	394,410	1,466	1,424	40,865	509,390
2018	8,806	461	20,584	165,299	614	597	17,127	213,488
2019	8,825	462	20,629	165,655	616	598	17,164	213,949
2020	8,882	465	20,762	166,723	620	602	17,274	215,328
2021	11,982	627	28,009	224,925	836	812	23,305	290,496
2022	11,942	625	27,914	224,158	833	810	23,225	289,507
2023	9,173	480	21,443	172,195	640	622	17,841	222,394
2024	6,467	338	15,117	121,397	451	438	12,578	156,786
2025	372	19	869	6,981	26	25	723	9,015
2026	679	36	1,588	12,751	47	46	1,321	16,468
2027	864	45	2,019	16,210	60	59	1,680	20,937
2028	1,149	60	2,685	21,561	80	78	2,234	27,847
2029	1,130	59	2,642	21,214	79	77	2,198	27,399
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	**9,579,016**	**419,994**	**21,766,885**	**197,303,021**	**620,315**	**636,007**	**18,423,782**	**248,749,020**

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	3,572,856	1,507,542	4,652,945	77,384	7,674,388	31,691	760,763	723,670	458,246	1,201,941
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	3,696,973	1,694,851	3,195,685	71,662	3,678,076	18,305	501,486	710,674	815,001	1,375,575
2000	2,372,130	994,396	1,420,806	40,083	1,954,947	0	374,972	257,146	617,664	508,258
2001	2,668,867	1,411,816	458,191	53,221	755,763	0	212,427	443,872	1,333,688	118,828
2002	1,674,587	1,389,921	569,606	74,418	939,655	0	140,550	531,620	2,422,881	844,839
2003	1,480,979	1,405,892	488,863	47,681	806,231	0	637,929	284,877	807,486	640,047
2004	2,733,836	1,906,735	937,932	86,491	1,193,814	42,047	1,210,817	652,050	3,549,140	622,738
2005	3,314,331	2,764,179	996,670	112,179	1,643,858	83,900	1,625,228	776,985	2,269,474	1,242,602
2006	3,309,968	2,820,959	1,017,143	123,290	1,677,626	85,623	1,658,612	792,945	2,316,092	1,268,127
2007	3,399,648	2,759,437	994,960	129,216	1,641,038	83,756	1,622,440	775,652	2,265,581	1,240,470
2008	4,158,722	3,214,687	1,159,108	158,060	1,911,776	97,574	1,890,109	903,618	2,639,355	1,445,122
2009	5,820,603	3,418,276	1,124,701	167,975	1,855,027	94,677	1,546,741	876,795	4,995,426	1,402,225
2010	5,840,684	3,700,380	1,128,582	175,883	1,861,427	95,004	1,625,362	879,820	5,012,661	1,407,063
2011	5,494,563	3,760,814	1,061,701	172,354	1,751,118	89,374	1,597,984	827,682	4,715,608	1,323,680
2012	5,488,505	3,964,255	1,060,531	179,051	1,749,187	89,276	1,665,088	826,769	4,710,410	1,322,220
2013	3,109,932	2,246,251	600,925	105,357	991,136	50,586	982,504	468,469	2,669,043	749,205
2014	1,025,796	740,915	198,212	36,039	326,921	16,686	341,235	154,522	880,370	247,122
2015	637,239	460,267	123,132	23,187	203,088	10,365	222,641	95,991	546,899	153,515
2016	524,849	379,090	101,415	19,756	167,270	8,537	194,350	79,061	450,442	126,440
2017	459,140	331,629	88,719	17,859	146,328	7,468	179,619	69,163	394,049	110,610
2018	192,427	138,987	37,182	7,726	61,327	3,130	79,303	28,987	165,147	46,357
2019	192,842	139,286	37,262	7,944	61,459	3,137	85,120	29,049	165,503	46,457
2020	194,086	140,185	37,503	8,199	61,855	3,157	89,728	29,236	166,571	46,757
2021	261,839	189,122	50,595	11,280	83,448	4,259	124,555	39,443	224,719	63,079
2022	260,946	188,477	50,422	11,460	83,164	4,245	127,623	39,308	223,953	67,229
2023	200,456	144,786	38,734	8,929	63,885	3,261	101,057	30,196	172,038	48,291
2024	141,321	102,073	27,307	6,383	45,039	2,299	73,254	21,288	121,286	34,045
2025	8,127	5,870	1,570	370	2,590	132	4,335	1,224	6,975	1,958
2026	14,843	10,721	2,868	683	4,731	241	8,141	2,236	12,739	3,576
2027	18,870	13,630	3,646	876	6,014	307	10,650	2,843	16,195	4,546
2028	25,099	18,129	4,850	1,176	7,999	408	14,585	3,781	21,541	6,047
2029	24,696	17,837	4,772	1,167	7,871	402	14,764	3,720	21,195	5,949
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	**106,600,227**	**62,769,166**	**54,618,894**	**3,432,223**	**78,298,607**	**1,570,804**	**26,097,477**	**17,364,900**	**57,017,270**	**31,824,741**

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	36,536,259	401	57,198,086	0	0	0	0	71,940,675
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	42,257,580	106,226	58,122,094	0	0	0	0	72,133,666
2000	0	43,977,877	123,318	52,641,597	0	0	0	0	60,213,003
2001	0	49,183,605	84,487	56,724,765	0	0	0	0	62,756,047
2002	0	45,579,833	154,113	54,322,023	0	0	0	0	59,898,002
2003	3,385	42,982,970	132,336	49,718,676	0	0	0	0	55,018,758
2004	129,737	72,067,338	392,244	85,524,919	0	0	0	0	91,542,875
2005	280,448	75,033,466	195,669	90,338,989	0	0	0	0	100,703,144
2006	308,225	76,645,490	199,689	92,223,789	0	0	0	0	102,796,620
2007	323,039	74,980,988	195,334	90,411,559	0	0	0	0	100,757,837
2008	868,077	87,343,079	227,560	106,016,847	0	0	0	0	118,074,598
2009	413,851	84,750,406	220,805	106,687,508	0	0	0	0	118,302,983
2010	464,135	85,042,801	221,567	107,455,369	0	0	0	0	119,113,833
2011	482,592	80,003,124	208,436	101,489,030	0	0	0	0	112,459,390
2012	527,970	79,914,928	208,207	101,706,397	0	0	0	0	112,667,481
2013	325,176	45,281,907	117,975	57,698,466	0	0	0	0	63,910,927
2014	115,838	14,936,012	38,914	19,058,582	0	0	0	0	21,108,274
2015	77,291	9,278,467	24,174	11,856,256	0	0	0	0	13,129,898
2016	68,049	7,642,025	19,910	9,781,194	0	0	0	0	10,830,552
2017	63,370	6,685,271	17,418	8,570,643	0	0	0	0	9,488,802
2018	27,846	2,801,823	7,300	3,597,542	0	0	0	0	3,982,451
2019	27,906	2,807,858	7,315	3,611,138	0	0	0	0	3,996,983
2020	28,086	2,825,972	7,363	3,638,698	0	0	0	0	4,027,138
2021	37,891	3,812,490	9,933	4,912,653	0	0	0	0	5,436,840
2022	37,762	3,799,490	9,899	4,903,978	0	0	0	0	5,426,529
2023	29,008	2,918,725	7,604	3,766,970	0	0	0	0	4,168,502
2024	20,451	2,057,685	5,361	2,657,792	0	0	0	0	2,940,952
2025	1,176	118,327	308	152,962	0	0	0	0	169,250
2026	2,148	216,126	563	279,616	0	0	0	0	309,376
2027	2,731	274,759	716	355,783	0	0	0	0	393,629
2028	3,632	365,458	952	473,657	0	0	0	0	524,001
2029	3,574	359,583	937	466,467	0	0	0	0	516,000
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	**4,673,394**	**1,953,774,236**	**3,614,857**	**2,401,656,796**	**0**	**0**	**0**	**0**	**2,755,080,518**

[a]Costs allocated to contractors in 1989 through 1998 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	5.7570016	5.7570016	3.3315620	4.8750942	1.5435322	1.5435322
1969	0	0	0	0	3.1823595	3.1823595	3.6949019	4.8016170	1.1067151	1.1067151
1970	0	0	0	0	3.7584301	3.7584301	4.4256141	5.3721490	0.9465349	0.9465349
1971	0	0	0	0	4.2082507	4.2082507	3.8714396	4.7522833	0.8808437	0.8808437
1972	0	0	0	0	3.9577735	3.9577735	4.3250690	5.2281686	0.9030996	0.9030996
1973	0	0	0	0	3.8103903	3.8103903	5.2455409	6.1841800	0.9386391	0.9386391
1974	0	0	0	0	3.5878850	3.5878850	6.3321503	7.2293909	0.8972406	0.8972406
1975	0	0	0	0	2.1606725	2.1606725	3.7365711	4.8327731	1.0962020	1.0962020
1976	0	0	0	0	2.9283909	2.9283909	4.5191527	5.7132795	1.1941268	1.1941268
1977	0	0	0	0	2.7516411	2.7516411	4.7630172	6.5309908	1.7679736	1.7679736
1978	0	0	0	0	3.5949619	3.5949619	5.2086183	6.8245097	1.6158914	1.6158914
1979	0	0	0	0	2.4747752	2.4747752	4.9524184	7.1045026	2.1520842	2.1520842
1980	0	0	0	0	2.9737588	2.9737588	4.5186576	5.8960239	1.3773663	1.3773663
1981	0	0	0	0	2.6488168	2.6488168	4.3834851	6.4662961	2.0828110	2.0828110
1982	0	0	0	0	10.0222589	10.0222589	5.6383622	7.4121096	1.7737474	1.7737474
1983	0	0	0	0	1.0240490	1.0240490	0.8686507	1.7250802	0.8564295	0.8564295
1984	0	0	0	0	1.6524119	1.6524119	2.7719370	3.9566693	1.1847323	1.1847323
1985	0	0	0	0	2.5219114	2.5219114	3.6942124	5.3128683	1.6186559	1.6186559
1986	0	0	0	0	4.4046604	4.4046604	7.2799131	10.6056639	3.3257508	3.3257508
1987	0	0	0	0	3.5386715	3.5386715	6.4837861	9.2421280	2.7583419	2.7583419
1988	1.1792022	1.1792022	0	1.1792022	4.4545623	5.6337645	6.1749958	8.7900561	2.6150603	2.6150603
1989	1.2712038	1.2712038	2.5418648	3.8130686	4.2795803	5.5507841	8.1600349	11.6976286	3.5375937	3.5375937
1990	2.0024548	2.0024548	4.2324041	6.2348589	5.8752161	7.8776709	11.7200790	15.8670513	4.1469723	4.1469723
1991	1.2488027	1.2488027	2.6241245	3.8729272	3.8050725	5.0538752	7.5402614	11.2642636	3.7240022	3.7240022
1992	0.7095451	0.7095451	1.4174620	2.1270071	2.3506623	3.0602074	4.0600957	6.4118184	2.3517227	2.3517227
1993	-0.3463994	-0.3463994	-0.6048649	-0.9512643	-1.0204313	-1.3668307	-1.4929839	-1.2402745	0.2527094	0.2527094
1994	1.4607776	1.4607776	2.6575471	4.1183247	4.2850412	5.7458188	7.9485622	11.2592004	3.3106382	3.3106382
1995	0.7544766	0.7544766	1.2974895	2.0519661	2.2753763	3.0298529	3.2312761	5.2800374	2.0487613	2.0487613
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	6.9710607	1.8611657	1.8611657
2000	1.4376039	1.4376039	2.0490783	3.4866822	3.1349153	4.5725192	5.7061030	8.1572783	2.4511753	2.4511753
2001	8.0786463	8.0786463	12.6922430	20.7708893	22.9384569	31.0171032	38.3377517	50.4820007	12.1442490	12.1442490
2002	3.9771678	3.9771678	5.0429053	9.0200731	8.5030327	12.4802005	16.2374172	22.4453593	6.2079421	6.2079421
2003	4.5704500	4.5704500	6.7963459	11.3667959	12.2515211	16.8219711	18.7092824	26.0939396	7.3846572	7.3846572
2004	6.0634137	6.0634137	6.6146704	12.6780841	16.7719754	22.8353891	25.0720923	34.0171298	8.9450375	8.9450375
2005	7.5288606	7.5288606	4.0739981	11.6028587	22.2435455	29.7724061	29.0927422	38.9876656	9.8949234	9.8949234
2006	7.6375790	7.6375790	4.7346792	12.3722582	10.4552834	18.0928624	24.2383148	32.2616800	8.0233652	8.0233652
2007	6.7690144	6.7690144	7.9857679	14.7547823	15.8981888	22.6672032	26.2766369	35.1777609	8.9011240	8.9011240
2008	6.2313675	6.2313675	7.2363762	13.4677437	14.1993840	20.4307515	23.9768680	33.0375849	9.0607169	9.0607169
2009	5.8375438	5.8375438	15.5930348	21.4305786	14.3743548	20.2118986	25.6933530	33.7489917	8.0556387	8.0556387
2010	6.0566537	6.0566537	16.2918906	22.3485443	15.1708079	21.2274616	26.7748566	36.8138994	10.0390428	10.0390428
2011	6.0590434	6.0590434	16.2978110	22.3568544	15.2240584	21.2831018	26.7840111	35.8811431	9.0971320	9.0971320
2012	6.2298505	6.2298505	16.8412438	23.0710943	15.8552005	22.0850510	27.6267302	36.5007107	8.8739805	8.8739805
2013	6.7253419	6.7253419	18.4362687	25.1616106	17.5665287	24.2918706	30.1002703	41.3807230	11.2804527	11.2804527
2014	7.1494745	7.1494745	19.7624378	26.9119123	19.0928463	26.2423208	32.1570425	42.3020320	10.1449895	10.1449895
2015	7.2808439	7.2808439	20.0534328	27.3342767	19.8121661	27.0930100	32.6082448	43.9083372	11.3000924	11.3000924
2016	7.3698231	7.3698231	20.2541791	27.6240022	20.2966153	27.6664384	32.9196264	45.8977946	12.9781682	12.9781682
2017	7.3218585	7.3218585	19.9675622	27.2894207	20.3843804	27.7062389	32.4750659	43.9255100	11.4504441	11.4504441
2018	7.5375749	7.5375749	20.5332836	28.0708585	21.3992951	28.9368700	33.3524100	44.8276336	11.4752236	11.4752236
2019	7.7324500	7.7324500	21.0306468	28.7630968	22.3514884	30.0839384	34.1237097	47.2568743	13.1331646	13.1331646
2020	7.3917390	7.3917390	19.9005473	27.2922863	21.3309629	28.7227019	32.3710956	44.0772270	11.7061314	11.7061314
2021	7.3557751	7.3557751	19.8685075	27.2242826	21.0799849	28.4357600	32.3214706	43.7972247	11.4757541	11.4757541
2022	7.1107864	7.1107864	19.2377612	26.3485476	20.0291407	27.1399271	31.3432936	41.9857065	10.6424129	10.6424129
2023	7.1090861	7.1090861	19.3498508	26.4589369	19.8625887	26.9716748	31.5171051	43.0001889	11.4830838	11.4830838
2024	7.3068039	7.3068039	20.0810448	27.3878487	20.4010358	27.7078397	32.6510707	45.2011543	12.5500836	12.5500836
2025	7.2370396	7.2370396	19.9880100	27.2250496	19.9954327	27.2324723	32.5068730	43.0690802	10.5622072	10.5622072
2026	7.2421441	7.2421441	20.1291045	27.3712486	19.8553048	27.0974489	32.7256083	45.7783906	13.0527823	13.0527823
2027	7.1026684	7.1026684	19.8167164	26.9193848	19.2224300	26.3250984	32.2411590	43.9728595	11.7317005	11.7317005
2028	7.1329524	7.1329524	19.9582587	27.0912111	19.2710300	26.4039824	32.4607668	43.8660474	11.4052806	11.4052806
2029	7.0500312	7.0500312	19.6968159	26.7468471	18.9880469	26.0380781	32.0552274	43.4620086	11.4067812	11.4067812
2030	7.1018846	7.1018846	19.8603483	26.9622329	19.1650017	26.2668863	32.3087592	44.1453093	11.8365501	11.8365501
2031	7.0132237	7.0132237	19.5807463	26.5939700	18.8623837	25.8756074	31.8751365	42.7174141	10.8422776	10.8422776
2032	7.1405925	7.1405925	19.9824378	27.1230303	19.2972098	26.4378023	32.4982144	44.1038702	11.6056558	11.6056558
2033	7.4685548	7.4685548	21.0168657	28.4854205	20.4165691	27.8851239	34.1023635	46.5771798	12.4748163	12.4748163
2034	7.2169799	7.2169799	20.2233831	27.4403630	19.5578712	26.7748511	32.8718037	44.4276056	11.5558019	11.5558019
2035	7.0822574	7.0822574	19.7984080	26.8806654	19.0980021	26.1802595	32.2128182	44.6581161	12.4452979	12.4452979

[a]For the period 1968 through 1987, rates are for an interim facility.

[b]The relatively minor costs of Del Valle Pumping Plant have been combined with those of South Bay Pumping Plant to simplify the allocation procedure

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

	California Aqueduct (continued)									
	Reach 4		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	
Calendar Year	Unit Rate (11)	Cumulative Unit Rate (12)	Unit Rate (13)	Cumulative Unit Rate (14)	Unit Rate (15)	Cumulative Unit Rate (16)	Unit Rate (17)	Cumulative Unit Rate (18)	Unit Rate (19)	Cumulative Unit Rate (20)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	1.0745886	2.6181208	0	0	0	0	0	0	0	0
1969	0.7051830	1.8118981	0	0	0	0	0	0	0	0
1970	0.7838143	1.7303492	0.3333333	2.0636825	0	0	0	0	0	0
1971	0.4151197	1.2959634	1.3603318	2.6562952	4.9729730	7.6292682	0	0	0	0
1972	0.5689843	1.4720839	1.0818018	2.5538857	1.1418280	3.6957137	2.2892599	5.9849736	7.3206022	13.3055758
1973	0.6025584	1.5411975	0.9854386	2.5266361	1.2143719	3.7410080	2.1051633	5.8461713	7.4512435	13.2974148
1974	0.5766848	1.4739254	0.9233319	2.3972573	1.0924098	3.4896671	1.9449022	5.4345693	6.9004732	12.3350425
1975	0.4638166	1.5600186	0.8201332	2.3801518	0.9574493	3.3376011	1.9610412	5.2986423	6.9962702	12.2949125
1976	0.5196472	1.7137740	0.9637643	2.6775383	1.0211874	3.6987257	2.2275746	5.9263003	7.9384515	13.8647518
1977	0.6172856	2.3852592	1.0980643	3.4833235	1.3715867	4.8549102	2.9301764	7.7850866	9.9990004	17.7840870
1978	0.4578324	2.0737238	0.9617095	3.0354333	1.0432294	4.0786627	1.9992416	6.0779043	7.1214594	13.1993637
1979	0.6624709	2.8145551	1.1111583	3.9257134	1.2652451	5.1909585	2.7288840	7.9198425	9.6837428	17.6035853
1980	0.8090774	2.1864437	1.3528383	3.5392820	1.5041463	5.0434283	3.2274062	8.2708345	11.0353314	19.3061659
1981	1.0965610	3.1793720	1.2422925	4.4216645	1.3219771	5.7436416	2.9988606	8.7425022	10.0207633	18.7632655
1982	0.8365509	2.6102983	1.2049224	3.8152207	1.3715109	5.1867316	2.9378063	8.1245379	10.2606361	18.3851740
1983	0.3691099	1.2255394	0.7604543	1.9859937	0.8857383	2.8717320	1.8026411	4.6743731	5.5653668	10.2397399
1984	0.6642414	1.8489737	1.0562168	2.9051905	1.2202995	4.1254900	2.5897300	6.7152200	8.3105777	15.0257977
1985	0.8780315	2.4966874	1.4221464	3.9188338	1.6516280	5.5704618	3.5176053	9.0880671	11.8858945	20.9739616
1986	1.4047267	4.7304775	2.3730496	7.1035271	2.7567993	9.8603264	6.0029982	15.8633246	20.6708919	36.5342165
1987	1.2966188	4.0549607	2.2362590	6.2912197	2.5459999	8.8372196	5.3658848	14.2031044	17.8358435	32.0389479
1988	1.2001961	3.8152564	2.1148911	5.9301475	2.4017135	8.3318610	5.0600095	13.3918705	16.6769503	30.0688208
1989	1.4991710	5.0367647	2.6962512	7.7330159	3.0078924	10.7409083	6.6054692	17.3463775	22.2552075	39.6015850
1990	1.9023461	6.0493184	3.3101004	9.3594188	3.7483042	13.1077230	8.7425943	21.8503173	31.1242008	52.9745181
1991	1.0592185	4.7832207	2.1212585	6.9044792	2.4222131	9.3266923	5.7602628	15.0869551	20.6196938	35.7066489
1992	0.9064819	3.2582046	1.4858303	4.7440349	1.7077285	6.4517634	3.6067199	10.0584833	12.1335007	22.1919840
1993	0.1664878	0.4191972	-0.1384508	0.2807464	-0.1312944	0.1494520	-0.7173389	-0.5678869	-3.5014056	-4.0692925
1994	1.4294391	4.7400773	2.5099528	7.2500301	2.7989861	10.0490162	6.1401376	16.1891538	21.5691939	37.7583477
1995	0.8047106	2.8534719	1.3496693	4.2031412	1.4945512	5.6976924	3.1864400	8.8841324	10.8322270	19.7163594
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	2.7024308	1.4005291	4.1029599	1.2785545	5.3815144	3.4081412	8.7896556	13.5892138	22.3788694
2000	0.9598348	3.4110101	1.6887635	5.0997736	1.8549677	6.9547413	4.3747632	11.3295045	16.0185654	27.3480699
2001	6.3743604	18.5186094	11.1402546	29.6588640	12.2374163	41.8962803	28.2550835	70.1513638	105.6530302	175.8043940
2002	2.5047260	8.7126681	4.3808130	13.093411	4.7703020	17.8637831	11.0479595	28.9117426	41.0619367	69.9736793
2003	3.0368946	10.4215518	5.3628988	15.7844506	6.0460017	21.8304523	13.6965671	35.5270194	50.8156024	86.3426218
2004	3.8850304	12.8300679	5.6335768	18.4636447	6.8302032	25.2938479	14.8150607	40.1089086	52.8192295	92.9281381
2005	4.3352368	14.2301602	7.7674531	21.9976133	9.5015921	31.4992054	20.6081627	52.1073681	73.9398407	126.0472088
2006	3.4726892	11.4960544	6.2214933	17.7175477	7.6111377	25.3286854	16.5036589	41.8323443	59.2075710	101.0399153
2007	4.3923058	13.2934298	7.8132492	21.1066790	8.0583632	29.1650422	19.1329967	48.2980389	72.4412433	120.7392822
2008	3.9671213	13.0278382	7.0737092	20.1015474	7.3085642	27.4101116	17.3391724	44.7492840	65.6523643	110.4016483
2009	4.0458642	12.1015029	7.1579193	19.2594222	7.4476052	26.7070274	17.6650215	44.3720489	66.9147842	111.2868331
2010	4.2526825	14.2917253	7.5138280	21.8055533	7.8120894	29.6176427	18.5401249	48.1577676	70.2313580	118.3891256
2011	4.2378530	13.3349850	7.4494180	20.7844030	7.7406689	28.5250719	18.3720032	46.8970751	69.5877592	116.4848343
2012	4.5193603	13.3933408	8.0314426	21.4247834	8.3571977	29.7819811	19.8515615	49.6335426	75.2262127	124.8597553
2013	4.9444848	16.2249375	8.7594233	24.9843608	9.0975581	34.0819189	21.6271990	55.7091179	81.9463310	137.6554489
2014	5.3582037	15.5031932	9.5199406	25.0231338	9.8821230	34.9052568	23.5103328	58.4155896	89.0915865	147.5071761
2015	5.4333937	16.7334861	9.6454380	26.3789241	10.0093234	36.3882475	23.8154866	60.2037341	90.2456509	150.4493850
2016	5.6317083	18.6098765	10.1073082	28.7171847	10.5031889	39.2203736	25.0091893	64.2295629	94.8066384	159.0362013
2017	5.4224493	16.8728934	9.6340659	26.5069593	9.9982223	36.5051816	23.7929922	60.2981738	90.1631088	150.4612826
2018	5.7396856	17.2149092	10.3261923	27.5411015	10.7334417	38.2745432	25.5604999	63.8350431	96.9054053	160.7404484
2019	5.8916520	19.0248166	10.5863820	29.6111986	10.9959794	40.6071780	26.1992588	66.8064368	99.3225090	166.1289458
2020	5.5686267	17.2747581	10.0185112	27.2932693	10.4150961	37.7083654	24.8052748	62.5136402	94.0417576	156.5553978
2021	5.5628405	17.0385946	10.0086669	27.0472615	10.4048633	37.4521248	24.7819563	62.2340811	93.9536302	156.1877113
2022	5.3938969	16.0363098	9.7184352	25.7547450	10.1088246	35.8635696	24.0736503	59.9372199	91.2727032	151.2099231
2023	5.4540453	16.9371291	9.8476246	26.7847537	10.2456259	37.0303796	24.4032911	61.4336707	92.5297370	153.9634077
2024	5.6289244	18.1790080	10.1290140	28.3080220	10.5287784	38.8368004	25.0795661	63.9163665	95.0825154	158.9988819
2025	5.6102385	16.1724457	10.1046165	26.2770622	10.5056616	36.7827238	25.0236920	61.8064158	94.8738555	156.6802713
2026	5.6328462	18.6856285	10.1266337	28.8122622	10.5243684	39.3366306	25.0690593	64.4056899	95.0397138	159.4454037
2027	5.5841151	17.3158156	10.0750972	27.3909128	10.4783424	37.8692552	24.9606141	62.8298693	94.6405441	157.4704134
2028	6.1274180	17.5326986	10.0104698	27.5431684	10.4040041	37.9471725	24.7790792	62.7262517	93.9379196	156.6641713
2029	5.5260653	16.9328465	9.9528709	26.8857174	10.3492776	37.2349950	24.6499000	61.8848950	93.4564603	155.3413553
2030	5.5265877	17.3631378	9.9169253	27.2800631	10.3053866	37.5854497	24.5419285	62.1273782	93.0345488	155.1619270
2031	5.4990442	16.3413218	9.9203832	26.2617050	10.3206059	36.5823109	24.5762421	61.1585530	93.1828620	154.3414150
2032	5.5226555	17.1283113	9.8753901	27.0037014	10.2556414	37.2593428	24.4230683	61.6824111	92.5724168	154.2548279
2033	5.9636007	18.4384170	10.7869189	29.2253359	11.2167943	40.4421302	26.7283076	67.1704378	101.3527971	168.5232349
2034	5.6159342	17.1717361	10.0600997	27.2318358	10.4487512	37.6805870	24.8869499	62.5675369	94.3367357	156.9042726
2035	5.9458209	18.3911188	11.0447434	29.4358622	11.5360396	40.9719018	27.5227889	68.4946907	104.4679758	172.9626665

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	14.2519509	27.5575267	0	0	-2.3717647	25.1857620	1.4212193	14.7267951
1973	0	0	4.4326545	17.7300693	0	0	-8.4298618	9.3002075	1.0210537	14.3184685
1974	0	0	3.4431782	15.7782207	0	0	-5.1043660	10.6738547	0.9241725	13.2592150
1975	0	0	3.1739313	15.4688438	0	0	-5.6510611	9.8177827	0.9362286	13.2311411
1976	0	0	3.9391330	17.8038848	0	0	-6.4449941	11.3588907	0.8622774	14.7270292
1977	0	0	3.4988957	21.2829827	0	0	-11.6274558	9.6555269	0.9076172	18.6917042
1978	0	0	4.1619043	17.3612680	0	0	-8.1314274	9.2298406	0.7314697	13.9308334
1979	0	0	5.2283922	22.8319775	0	0	-9.5825772	13.2494003	0.9509677	18.5545530
1980	0	0	4.4253989	23.7315648	0	0	-11.5446606	12.1869042	1.4272378	20.7334037
1981	0	0	4.0325337	22.7957992	0	0	-6.7528607	16.0429385	1.5690769	20.3323424
1982	0	0	3.7143664	22.0995404	0	0	-6.9141441	15.1853963	1.4949290	19.8801030
1983	0	0	1.7592652	11.9990051	0	0	-23.7923414	-11.7933363	1.2824635	11.5222034
1984	0	0	2.5203002	17.5460979	0	0	-29.2940447	-11.7479468	1.7818310	16.8076287
1985	0	0	3.5406919	24.5146535	0	0	-30.7672356	-6.2525821	2.1691578	23.1431194
1986	-2.3583180	34.1758985	6.0306655	40.2065640	0	0	-29.2499580	10.9566060	3.2296473	39.7638638
1987	-2.5482255	29.4907224	5.0997322	34.5904546	0	0	-29.7006533	4.8898013	3.1281318	35.1670797
1988	-1.3847067	28.6841141	4.7880132	33.4721273	0	0	-29.0334518	4.4386755	2.9887414	33.0575622
1989	-1.1019487	38.4996363	6.4559997	44.9556360	0	0	-28.3706997	16.5849363	3.5266078	43.1281928
1990	-1.0673268	51.9071913	9.0317647	60.9389560	0	0	-28.8797266	32.0592294	3.6820302	56.6565483
1991	-1.5206590	34.1859899	6.1338271	40.3198170	0	0	-30.3294563	9.9903607	2.1966277	37.9032766
1992	-2.6080003	19.5839837	3.6796265	23.2636102	0	0	-29.7938993	-6.5302891	1.9058052	24.0977892
1993	-0.1885524	-4.2578449	-0.9592579	-5.2171028	0	0	-30.6629489	-35.8800517	0.1578038	-3.9114887
1994	-0.1279266	37.6304211	6.5139903	44.1444114	0	0	-30.4781656	13.6662458	3.0574815	40.8158292
1995	-3.4425314	16.2738280	3.4305039	19.7043319	0	0	-30.3517624	-10.6474305	1.5732257	21.2895851
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	17.6109183	3.5463358	21.1572541	-4.9754645	16.1817896	-29.6766184	-13.4948288	1.8909725	24.2698419
2000	-5.3339698	22.0141001	4.7353804	26.7494805	-5.1642729	21.5852076	-30.2857039	-8.7004963	1.8842727	29.2323426
2001	-4.6184962	171.1858978	29.7878421	200.9737399	-5.7334003	195.2403396	-30.9098300	164.3305096	13.1993109	189.0037049
2002	-5.4633767	64.5103026	12.3307511	76.8410537	-6.4040979	70.4369558	-30.1578149	40.2791409	4.6359884	74.6096677
2003	-3.2874137	83.0552081	14.4834140	97.5386221	-6.9599499	90.5786722	-30.0474201	60.5312521	6.0459338	92.3885556
2004	-3.3252535	89.6028846	16.1573068	105.7601914	-7.2544375	98.5057539	-22.2756803	76.2300736	6.5412290	99.4693671
2005	-4.2494924	121.7977164	6.4629629	128.2606793	-8.9080551	119.3526242	-27.9013741	91.4512501	32.4110103	158.4582191
2006	-4.0591193	96.9807960	17.1022210	114.0830170	-8.4197983	105.6632187	-25.9031686	79.7600501	9.1534930	110.1934083
2007	-3.8870025	116.8522797	18.7340114	135.5862911	-5.1435658	130.4427253	-25.4113723	105.0313530	11.4402215	132.1795037
2008	-4.0012933	106.4003550	17.3686647	123.7690197	-5.3435786	118.4254411	-25.6486805	92.7767606	10.2577827	120.6594310
2009	-3.8121602	107.4746729	17.8137171	125.2883900	-5.1861376	120.1022524	-24.9700788	95.1321736	10.8026545	122.0894876
2010	-3.8030012	114.5861244	18.8370414	133.4231658	-5.1818625	128.2413033	-25.0446089	103.1966944	11.1708229	129.5599485
2011	-3.7710089	112.7138254	18.6903169	131.4041423	-5.1304869	126.2736554	-25.4651067	100.8085487	10.9291212	127.4139555
2012	-4.0062830	120.8534723	20.5938385	141.4473108	-5.5545864	135.8927244	-26.1178921	109.7748323	11.6884219	136.5481772
2013	-3.8667472	133.7887017	22.3307676	156.1194693	-5.3604692	150.7590001	-25.6223407	125.1366594	12.6105768	150.2660257
2014	-3.8794000	143.6277761	24.0652571	167.6930332	-5.3764275	162.3166057	-25.9952802	136.3213255	13.7068760	161.2140521
2015	-3.8795149	146.5698701	24.5229320	171.0928021	-5.4440201	165.6487820	-26.2997173	139.3490647	13.8344528	164.2838378
2016	-4.0281273	155.0080740	26.0694659	181.0775399	-5.7038482	175.3736917	-26.8531351	148.5205566	14.3806412	173.4168425
2017	-3.8463206	146.6149620	24.5073189	171.1222809	-5.4753032	165.6469777	-26.5775497	139.0694280	13.7830141	164.2442967
2018	-4.1010437	156.6394047	26.9133569	183.5527616	-6.1057434	177.4470182	-27.2173462	150.2296720	14.5964673	175.3369157
2019	-3.9044790	162.2244668	26.4334958	188.6579626	-5.6765245	182.9814381	-26.9865912	155.9948469	15.5099577	181.6389035
2020	-3.9676114	152.5877864	25.5501096	178.1378960	-5.8356976	172.3021984	-27.6860088	144.6161896	14.4737809	171.0291787
2021	-3.9747162	152.2129951	25.5425551	177.7555502	-5.8762612	171.8792890	-27.4315066	144.4477824	14.4246467	170.6123580
2022	-3.9894580	147.2204651	24.5647031	171.7851682	-5.8702398	165.9149284	-27.0858671	138.8290613	14.2471170	165.4570401
2023	-4.0407288	149.9226789	25.0718363	174.9945152	-5.9801727	169.0143425	-27.6004655	141.4138770	14.3217045	168.2851122
2024	-3.9144261	155.0844558	25.3811695	180.4656253	-5.8066452	174.6589801	-27.4024066	147.2565735	14.9912663	173.9901482
2025	-3.9763419	152.7039294	25.4982278	178.2021572	-5.8796487	172.3225085	-27.0908031	145.2317054	14.7727513	171.4530226
2026	-3.9493262	155.4960775	25.7420631	181.2381406	-5.9082763	175.3298643	-27.7535643	147.5763000	14.6659447	174.1113484
2027	-3.9666929	153.5037205	25.3582252	178.8619457	-5.8711053	172.9908404	-27.3732172	145.6176232	14.8588933	172.3293067
2028	-3.9207723	152.7433990	25.3246999	178.0680989	-5.8421294	172.2259695	-27.5421339	144.6838356	14.5766031	171.2407744
2029	-3.9346786	151.4066767	25.0134597	176.4201364	-5.8741565	170.5459799	-27.3600009	143.1859790	14.6939535	170.0353088
2030	-3.8986386	151.2632884	25.0275867	176.2908751	-5.8214132	170.4694619	-27.4195568	143.0499051	14.4683297	169.6302567
2031	-3.9987561	150.3426589	25.1219874	175.4646463	-6.2608981	169.2037482	-27.1823733	142.0213749	14.7781327	169.1195477
2032	-3.8527903	150.4020376	24.5637845	174.9658221	-5.9781475	168.9876746	-26.9941819	141.9934927	14.5208969	168.7757248
2033	-4.0413511	164.4818838	27.4732652	191.9551490	-6.4003223	185.5548267	-27.7790798	157.7757469	15.8241543	184.3473892
2034	-3.8878093	153.0164633	25.1283898	178.1448531	-6.1044837	172.0403694	-26.8686959	145.1716735	14.7065084	171.6107810
2035	-4.0932675	168.8693990	26.1478888	195.0172878	-6.2746336	188.7426542	-28.2737405	160.4689137	18.8532655	191.8159320

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

	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	
Calendar Year	Unit Rate (31)	Cumulative Unit Rate (32)	Unit Rate (33)	Cumulative Unit Rate (34)	Unit Rate (35)	Cumulative Unit Rate (36)	Unit Rate (37)	Cumulative Unit Rate (38)
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	1.5014866	4.1196074	0	0
1969	0	0	0	0	1.2624065	3.0743046	0	0
1970	0	0	0	0	1.6309699	3.3613191	0	0
1971	0	0	0	0	1.4985537	2.7945171	0	0
1972	0	0	-2.9350830	11.7917121	1.9517720	3.4238559	0	0
1973	0	0	-6.8099448	7.5085237	1.5374531	3.0786506	0	0
1974	0	0	-7.4013274	5.8578876	1.5168982	2.9908236	0	0
1975	0	0	-6.5604921	6.6706490	1.1130304	2.6730490	0	0
1976	0	0	-6.7213324	8.0056968	1.5685447	3.2823187	0	0
1977	0	0	-30.4985994	-11.8068952	1.7573375	4.1425967	0	0
1978	0	0	-9.0130187	4.9178147	1.9429506	4.0166744	0	0
1979	0	0	-19.0478097	-0.4932567	1.5600341	4.3745892	0	0
1980	0	0	-7.4485479	13.2848558	1.5124754	3.6989191	0	0
1981	0	0	-10.0059379	10.3264045	1.5414199	4.7207919	0	0
1982	-2.1714430	17.7086600	-9.5987314	8.1099286	1.7581649	4.3684632	0	0
1983	-8.9130752	2.6091282	-39.8193120	-37.2101838	0.1783064	1.4038458	0	0
1984	-15.0246012	1.7830275	-17.3126964	-15.5296689	0.8560669	2.7050406	0	0
1985	-14.7115359	8.4315835	-38.9450653	-30.5134818	1.2075223	3.7042097	0	0
1986	-14.1893653	25.5744985	-28.1596224	-2.5851239	2.2635962	6.9940737	0	0
1987	-14.8696165	20.2974632	-27.0536484	-6.7561852	1.9135150	5.9684757	0	0
1988	-14.7032843	18.3542779	-25.6857024	-7.3314245	1.7733304	5.5885868	0	0
1989	-14.4231503	28.7050425	-25.3986130	3.3064295	2.4154074	7.4521721	0	0
1990	-14.1850383	42.4715100	-26.0776141	16.3938959	3.7962241	9.8455425	0	0
1991	-14.7813217	23.1219549	-25.1420394	-2.0200845	2.4124332	7.1956539	0	0
1992	-14.6199453	9.4778439	-25.1951380	-15.7172941	1.2766497	4.5348543	0	0
1993	-10.3386629	-14.2501516	-21.1218951	-35.3720467	-1.1726278	-0.7534306	0	0
1994	-14.7696788	26.0461504	-26.7435205	-0.6973701	2.3664953	7.1065726	0	0
1995	-12.2705911	9.0189940	-25.6908056	-16.6718116	2.5750190	5.4284909	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	8.8180734	-27.8324731	-19.0143997	1.3253630	4.0277938	9.7876943	13.8154881
2000	-14.1999174	15.0324252	-26.9580809	-11.9256557	1.9890233	5.4000334	14.7553882	20.1554216
2001	-16.3114526	172.6922523	-28.6030588	144.0891935	12.3653339	30.8839433	93.2478402	124.1317835
2002	-13.1915528	61.4181149	-23.7055181	37.7125968	5.1579063	13.8705744	39.9775512	53.8481256
2003	-14.1859171	78.2026385	-23.3901500	54.8124885	6.0453139	16.4668657	46.9344709	63.4013366
2004	-11.7206699	87.7486972	-20.2587260	67.4899712	6.6248296	19.4548975	50.8679499	70.3228474
2005	-23.8182359	134.6399832	-14.1401436	120.4998396	10.1828915	24.4130517	75.2459476	99.6589993
2006	-12.9247412	97.2686671	-24.1617614	73.1069057	10.6609566	22.1570110	55.4912445	77.6482555
2007	-17.6021582	114.5773455	-29.3738635	85.2034820	13.3813067	26.6747365	71.0541458	97.7288823
2008	-17.2093124	103.4501186	-28.6235109	74.8266077	12.2575133	25.2853515	64.4619084	89.7472599
2009	-17.6651868	104.4243008	-29.3528864	75.0714144	10.8787697	22.9802726	66.7026932	89.6829658
2010	-17.5306223	112.0293262	-29.2537266	82.7755996	11.8594381	26.1511634	69.6929758	95.8441392
2011	-17.2969063	110.1170492	-28.7852004	81.3318488	12.5229235	25.8579085	69.7182523	95.5761608
2012	-17.7669167	118.7812605	-29.7307531	89.0505074	13.4560978	26.8494386	72.0432827	98.8927213
2013	-17.7954561	132.4705696	-29.7485963	102.7219733	14.6114545	30.8363920	78.8678463	109.7042383
2014	-18.2931373	142.9209148	-30.5121621	112.4087527	15.5721235	31.0753167	84.5425189	115.6178356
2015	-18.2084774	146.0753604	-30.3481994	115.7271610	15.7828712	32.5163573	85.7873490	118.3037063
2016	-18.7682061	154.6486364	-31.3180323	123.3306041	15.9283057	34.5381822	86.6465247	121.1847069
2017	-18.2274118	146.0168849	-30.4374743	115.5794106	15.7206699	32.5935633	85.4199270	118.0134903
2018	-18.6786958	156.6582199	-31.2527779	125.4054420	16.1304618	33.3453710	87.8405754	121.1859464
2019	-19.5427756	162.0961279	-32.9040218	129.1921061	16.4907288	35.5155454	89.9686130	125.4841584
2020	-19.2072194	151.8219593	-32.1851318	119.6368275	15.6721106	32.9468687	85.1331014	118.0799701
2021	-19.1730798	151.4392782	-32.1543158	119.2849624	15.6489398	32.6875344	84.9961668	117.6837012
2022	-19.5186297	145.9384104	-32.7473956	113.1910148	15.1920408	31.2283506	82.2973351	113.5256857
2023	-19.5144807	148.7706315	-32.7403194	116.0303121	15.2732280	32.2103571	82.7769244	114.9872815
2024	-19.7380625	154.2520857	-33.1215668	121.1305189	15.8028801	33.9818881	85.9055277	119.8874158
2025	-19.5337158	151.9193068	-32.7736832	119.1456236	15.7355281	31.9079738	85.5076947	117.4156685
2026	-19.2659092	154.8454392	-32.3180132	122.5274260	15.8376971	34.5233256	86.1112478	120.6345734
2027	-19.8115261	152.5177806	-33.2436739	119.2741067	15.6114259	32.9272415	84.7746188	117.7018603
2028	-19.2987906	151.9419838	-32.3705450	119.5714388	15.7139883	33.2466869	85.3805200	118.6272069
2029	-19.6957499	150.3395589	-33.0496396	117.2899193	15.5245729	32.4574194	84.2616199	116.7190393
2030	-19.2444786	150.3857781	-32.2816199	118.1041582	15.6429951	33.0061329	84.9611446	117.9672775
2031	-19.7525692	149.3669785	-33.1269182	116.2400603	15.4404598	31.7817816	83.7647458	115.5465274
2032	-19.1901602	149.5855646	-32.3238857	117.2616789	15.7314791	32.8597904	85.4838185	118.3436089
2033	-19.7467549	164.6006343	-33.2958783	131.3047560	16.4807494	34.9191664	89.9097004	124.8288668
2034	-19.2160517	152.3947293	-32.3780854	120.0166439	15.9059791	33.0777152	86.5145690	119.5922842
2035	-25.0864936	166.7294384	-42.4090329	124.3204055	15.5981772	33.9892960	84.6963705	118.6856665

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	216,211	234,290	812,631	1,263,132	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	243,160	193,749	450,156	887,065	51,711	278,202	329,913
2000	22,671	97,319	119,990	364,530	229,977	719,316	1,313,823	79,856	458,354	538,210
2001	289,855	529,915	819,770	1,543,755	908,878	2,592,295	5,044,928	531,656	2,351,801	2,883,457
2002	85,801	252,801	338,602	996,768	593,847	1,345,824	2,936,439	234,509	1,494,638	1,729,147
2003	128,621	268,609	397,230	1,083,968	660,136	2,326,555	4,070,659	282,326	1,709,807	1,992,133
2004	422,295	519,753	942,048	1,755,485	1,296,041	2,653,336	5,704,862	1,142,746	2,079,165	3,221,911
2005	577,585	508,151	1,085,736	3,165,899	1,451,801	3,898,767	8,516,467	2,491,475	4,533,089	7,024,564
2006	365,476	516,628	882,104	2,618,331	1,199,248	3,226,168	7,043,747	1,941,206	3,531,909	5,473,115
2007	469,211	616,853	1,086,064	2,858,793	1,313,333	3,517,776	7,689,902	2,443,222	4,445,296	6,888,518
2008	431,089	563,719	994,808	2,687,604	1,237,505	3,303,758	7,228,867	2,243,682	4,082,244	6,325,926
2009	446,299	590,446	1,036,745	2,491,121	1,255,101	3,374,899	7,121,121	2,242,074	4,079,319	6,321,393
2010	475,750	615,194	1,090,944	2,724,472	1,377,267	3,681,390	7,783,129	2,396,103	4,359,567	6,755,670
2011	484,148	615,730	1,099,878	2,651,561	1,337,912	3,588,114	7,577,587	2,389,404	4,347,377	6,736,781
2012	509,922	635,087	1,145,009	2,696,216	1,359,725	3,650,071	7,706,012	2,472,318	4,498,234	6,970,552
2013	569,304	691,072	1,260,376	3,063,484	1,549,322	4,138,072	8,750,878	2,742,606	4,990,007	7,732,613
2014	624,226	738,298	1,362,524	3,124,616	1,575,694	4,230,203	8,930,513	2,890,446	5,258,993	8,149,439
2015	654,134	750,778	1,404,912	3,247,453	1,640,339	4,390,834	9,278,626	2,957,593	5,381,162	8,338,755
2016	680,760	759,062	1,439,822	3,401,884	1,723,048	4,589,779	9,714,711	3,029,618	5,512,208	8,541,826
2017	689,165	751,011	1,440,176	3,249,590	1,641,977	4,392,551	9,284,118	2,950,337	5,367,962	8,318,299
2018	730,569	772,683	1,503,252	3,316,289	1,675,665	4,482,763	9,474,717	3,029,649	5,512,264	8,541,913
2019	770,931	791,987	1,562,918	3,501,725	1,773,048	4,725,687	10,000,460	3,137,104	5,707,772	8,844,876
2020	747,077	753,001	1,500,078	3,263,047	1,650,225	4,407,723	9,320,995	2,951,999	5,370,986	8,322,985
2021	750,704	750,639	1,501,343	3,241,493	1,638,794	4,379,722	9,260,009	2,942,093	5,352,961	8,295,054
2022	727,241	726,262	1,453,503	3,105,477	1,568,779	4,198,571	8,872,827	2,838,142	5,163,829	8,001,971
2023	733,576	728,434	1,462,010	3,183,863	1,610,535	4,300,019	9,094,417	2,874,682	5,230,311	8,104,993
2024	764,903	752,573	1,517,476	3,349,278	1,695,782	4,520,115	9,565,175	2,997,185	5,453,199	8,450,384
2025	763,054	747,371	1,510,425	3,183,795	1,607,177	4,306,908	9,097,880	2,935,392	5,340,769	8,276,161
2026	770,679	750,451	1,521,130	3,393,842	1,719,497	4,577,839	9,691,178	3,015,864	5,487,184	8,503,048
2027	759,927	737,511	1,497,438	3,255,853	1,646,932	4,397,286	9,300,071	2,942,547	5,353,787	8,296,334
2028	766,376	741,802	1,508,178	3,249,605	1,644,874	4,386,605	9,281,084	2,965,680	5,395,877	8,361,557
2029	755,755	732,587	1,488,342	3,216,843	1,626,436	4,346,201	9,189,480	2,917,976	5,309,082	8,227,058
2030	762,396	738,351	1,500,747	3,268,492	1,653,237	4,414,531	9,336,260	2,949,182	5,365,860	8,315,042
2031	751,040	728,497	1,479,537	3,159,764	1,596,311	4,271,741	9,027,816	2,888,663	5,255,749	8,144,412
2032	767,357	742,653	1,510,010	3,263,999	1,650,046	4,410,387	9,324,432	2,958,590	5,382,977	8,341,567
2033	809,366	779,107	1,588,473	3,449,313	1,745,201	4,657,718	9,852,232	3,120,722	5,677,966	8,798,688
2034	777,140	751,144	1,528,284	3,287,419	1,661,540	4,442,761	9,391,720	2,989,807	5,439,775	8,429,582
2035	759,882	736,168	1,496,050	3,311,827	1,678,638	4,465,812	9,456,277	2,967,142	5,398,536	8,365,678
Total	**22,154,504**	**24,052,026**	**46,206,530**	**106,611,009**	**56,231,979**	**156,659,580**	**319,502,568**	**88,954,780**	**166,106,439**	**255,061,219**

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								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	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	769,054	4,785	6,353	158,419	999,455
1972	62,365	8,515	0	0	1,151,788	2,057	7,375	379,686	1,611,786
1973	33,931	4,615	0	0	770,121	2,307	3,017	77,630	891,621
1974	49,114	4,413	0	46,752	677,660	2,206	3,114	106,332	889,591
1975	63,140	4,671	0	34,580	848,249	2,491	3,920	134,295	1,091,346
1976	70,851	5,132	0	94,653	966,820	2,737	4,910	100,597	1,245,701
1977	26,565	1,758	0	84,875	498,624	3,644	2,602	43,067	661,135
1978	108,944	938	0	190,675	1,616,975	4,319	6,294	24,901	1,953,046
1979	107,956	4,871	0	194,048	2,371,175	5,602	13,172	434,472	3,131,297
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	187,090	10,273	0	504,168	4,230,949	16,140	15,529	375,604	5,339,753
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	161,327	8,583	0	469,959	3,346,034	10,810	9,066	789,911	4,795,690
2000	206,499	6,136	0	438,482	4,306,374	12,280	11,050	676,448	5,657,269
2001	698,670	25,185	0	867,671	10,971,268	28,889	43,622	1,103,005	13,738,310
2002	426,332	12,241	0	823,286	7,356,440	24,866	30,326	808,587	9,482,078
2003	480,246	14,965	0	952,556	10,132,297	38,476	31,503	1,093,127	12,743,170
2004	837,162	45,880	0	1,122,726	9,964,182	75,056	42,722	874,831	12,962,559
2005	816,000	42,690	0	1,934,142	15,055,680	56,921	56,401	1,581,355	19,543,189
2006	659,218	34,488	0	1,561,304	12,299,404	45,984	45,733	1,277,522	15,923,653
2007	762,285	39,880	0	1,805,063	14,332,172	53,174	50,736	1,477,259	18,520,569
2008	747,055	39,084	0	1,757,002	13,858,900	52,111	51,646	1,447,745	17,953,543
2009	693,936	36,305	0	1,619,163	13,262,105	48,406	45,917	1,349,644	17,055,476
2010	819,530	42,875	0	1,892,778	15,348,125	57,167	57,223	1,593,913	19,811,611
2011	764,668	40,005	0	1,774,999	14,534,978	53,340	51,854	1,487,211	18,707,055
2012	768,014	40,180	0	1,794,461	14,804,114	53,573	50,582	1,493,719	19,004,643
2013	930,387	48,675	0	2,153,583	17,562,636	64,900	64,299	1,809,519	22,633,999
2014	889,000	46,510	0	2,081,536	17,192,790	62,013	57,826	1,729,025	22,058,700
2015	959,548	50,200	0	2,233,680	18,321,696	66,934	64,411	1,866,236	23,562,705
2016	1,067,146	55,830	0	2,471,832	20,104,404	74,440	73,976	2,075,504	25,923,132
2017	967,542	50,619	0	2,250,437	18,437,187	67,492	65,268	1,881,783	23,720,328
2018	987,155	51,645	0	2,306,818	18,949,283	68,860	65,409	1,919,927	24,349,097
2019	1,090,940	57,074	0	2,532,202	20,633,166	76,099	74,859	2,121,781	26,586,121
2020	990,586	51,824	0	2,307,772	18,890,072	69,099	66,725	1,926,602	24,302,680
2021	977,044	51,116	0	2,278,857	18,678,254	68,154	65,412	1,900,263	24,019,100
2022	919,570	48,109	0	2,151,071	17,690,026	64,145	60,662	1,788,482	22,722,065
2023	971,226	50,811	0	2,263,367	18,521,903	67,749	65,454	1,888,947	23,829,457
2024	1,042,439	54,537	0	2,420,014	19,723,093	72,716	71,535	2,027,450	25,411,784
2025	927,377	48,517	0	2,175,555	17,947,823	64,690	60,205	1,803,664	23,027,831
2026	1,071,490	56,057	0	2,481,527	20,170,159	74,743	74,401	2,083,952	26,012,329
2027	992,941	51,947	0	2,314,064	18,937,376	69,263	66,871	1,931,181	24,363,643
2028	1,005,378	52,598	0	2,337,735	19,117,386	70,131	65,010	1,955,369	24,603,607
2029	970,980	50,799	0	2,264,898	18,562,366	67,731	65,019	1,888,470	23,870,263
2030	995,654	52,089	0	2,316,311	18,938,723	69,453	67,468	1,936,459	24,376,157
2031	937,060	49,024	0	2,192,373	18,028,337	65,365	61,801	1,822,499	23,156,459
2032	982,189	51,385	0	2,286,748	18,726,746	68,513	66,152	1,910,269	24,092,002
2033	1,057,314	55,315	0	2,465,344	20,170,675	73,754	71,106	2,056,381	25,949,889
2034	984,679	51,515	0	2,295,904	18,825,482	68,687	65,868	1,915,112	24,207,247
2035	1,054,602	55,173	0	2,466,268	20,141,906	73,564	70,938	2,051,106	25,913,557
Total	**35,119,141**	**1,795,127**	**0**	**79,245,022**	**662,004,078**	**2,400,833**	**2,355,694**	**67,939,810**	**850,859,706**

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	780	47,571	0	12,785	0	4,496	1,515	0	32,107	0
1973	286	28,968	102,812	6,896	159,536	3,855	0	0	301,444	0
1974	15,558	28,982	100,955	9,890	157,742	4,932	221	0	177,173	5,961
1975	99,186	28,568	108,253	12,758	170,111	6,391	0	0	136,066	50,723
1976	385,090	38,365	135,276	17,835	213,594	8,164	0	0	139,354	65,476
1977	199,166	21,006	0	23,598	0	1,974	1,702	0	239,663	74,838
1978	581,729	45,550	174,116	20,875	264,178	2,731	0	0	37,043	67,462
1979	1,058,904	83,940	228,437	28,603	340,510	2,328	90,803	0	236	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	1,019,605	(40,745)	668,383	63,601	1,083,530	32,651	585	157,843	88,076	49,930
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	1,216,439	(531,404)	(681,219)	18,318	(784,050)	6,023	167,202	245,414	(173,732)	(243,142)
2000	1,839,872	(321,283)	(368,231)	25,773	(506,665)	0	297,964	199,448	(160,080)	(131,726)
2001	10,757,417	4,461,917	1,495,408	206,369	2,466,601	0	849,660	1,784,955	4,352,787	387,820
2002	3,758,757	1,834,014	674,877	154,187	1,113,315	0	317,058	1,193,183	2,880,803	1,000,977
2003	4,985,721	2,901,608	1,014,080	148,006	1,672,418	0	2,133,091	959,038	1,675,021	1,327,692
2004	8,709,669	4,440,022	2,149,307	256,115	2,735,669	133,956	3,849,730	2,077,353	8,132,987	1,427,027
2005	11,066,297	8,533,267	2,112,524	310,317	3,484,293	280,135	4,851,385	2,594,291	4,810,336	2,633,796
2006	8,622,757	5,221,183	1,842,457	295,857	3,038,858	223,056	4,298,093	2,065,691	4,195,379	2,297,089
2007	10,908,978	6,090,211	2,426,224	391,328	4,001,695	268,760	5,110,619	2,488,954	5,524,649	3,024,903
2008	10,430,320	5,359,644	2,143,143	373,040	3,534,795	244,721	4,664,793	2,266,328	4,880,058	2,671,971
2009	15,196,919	6,026,839	2,197,553	414,353	3,624,536	247,192	3,982,508	2,289,211	9,760,561	2,739,807
2010	16,202,478	7,080,134	2,383,844	461,669	3,931,794	263,548	4,441,420	2,440,684	10,587,981	2,972,065
2011	15,937,735	7,408,672	2,328,677	473,526	3,840,806	259,242	4,571,110	2,400,804	10,342,957	2,903,286
2012	17,088,681	8,477,608	2,535,799	529,982	4,182,421	277,963	5,131,936	2,574,179	11,262,898	3,161,515
2013	18,917,722	9,779,132	2,890,657	610,574	4,767,707	307,714	5,899,044	2,849,699	12,839,021	3,603,936
2014	20,308,968	10,701,313	3,149,023	681,730	5,193,843	330,344	6,671,623	3,059,272	13,986,568	3,926,054
2015	20,724,980	11,017,226	3,218,963	720,572	5,309,199	337,111	7,149,113	3,121,938	14,297,214	4,013,253
2016	21,918,142	11,741,074	3,430,825	789,182	5,658,633	356,519	8,018,846	3,301,672	15,238,209	4,277,392
2017	20,731,356	11,003,160	3,212,504	770,258	5,298,545	337,214	8,005,986	3,122,899	14,268,523	4,005,200
2018	22,148,812	11,938,598	3,470,305	851,746	5,723,751	360,271	9,045,492	3,336,419	15,413,564	4,326,615
2019	22,938,540	12,299,089	3,603,481	901,184	5,943,404	373,116	9,959,222	3,455,381	16,005,071	4,492,652
2020	21,575,913	11,389,426	3,340,634	870,126	5,509,877	350,952	9,848,328	3,250,120	14,837,621	4,164,946
2021	21,522,918	11,355,928	3,336,744	885,178	5,503,461	350,090	10,111,528	3,242,137	14,820,342	4,160,096
2022	20,816,974	10,775,785	3,206,951	871,053	5,289,387	338,607	10,046,942	3,135,796	14,243,862	4,275,935
2023	21,199,067	11,046,086	3,266,661	900,001	5,387,869	344,822	10,549,560	3,193,353	14,509,064	4,072,720
2024	21,928,942	11,531,625	3,401,627	943,158	5,610,475	356,694	11,186,890	3,303,299	15,108,524	4,240,989
2025	21,592,336	11,342,663	3,354,852	939,158	5,533,328	351,219	11,366,691	3,252,594	14,900,773	4,182,673
2026	21,987,145	11,664,611	3,409,013	964,314	5,622,657	357,641	11,886,857	3,312,066	15,141,328	4,250,197
2027	21,705,426	11,354,895	3,363,767	960,099	5,548,031	353,059	12,070,916	3,269,629	14,940,368	4,193,788
2028	21,597,917	11,383,201	3,342,197	964,465	5,512,454	351,310	12,373,359	3,253,434	14,844,562	4,166,894
2029	21,408,904	11,166,000	3,307,596	963,585	5,455,386	348,235	12,611,804	3,224,962	14,690,881	4,123,756
2030	21,388,629	11,243,516	3,304,453	971,676	5,450,201	347,906	12,972,725	3,221,908	14,676,920	4,119,837
2031	21,258,452	11,066,054	3,280,694	968,691	5,411,014	345,788	13,262,537	3,202,299	14,571,393	4,090,216
2032	21,266,848	11,163,312	3,280,050	971,679	5,409,952	345,925	13,225,564	3,203,563	14,568,532	4,089,413
2033	23,257,738	12,500,213	3,644,620	1,071,579	6,011,256	378,308	14,508,990	3,503,464	16,187,792	4,543,942
2034	21,636,528	11,425,585	3,353,466	997,834	5,531,041	351,938	13,465,687	3,259,251	14,894,614	4,180,944
2035	23,878,133	11,835,303	3,706,832	1,094,707	6,113,866	388,400	14,743,089	3,596,918	16,464,111	4,621,505
Total	**654,274,415**	**326,681,038**	**102,697,834**	**25,533,929**	**171,745,347**	**10,605,424**	**296,031,844**	**102,750,119**	**421,964,802**	**122,989,686**

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	1,513,434
1972	0	848,011	0	947,266	0	0	0	0	0	3,297,202
1973	0	1,083,328	0	1,687,126	0	0	0	0	0	3,174,991
1974	0	1,872,297	0	2,373,712	0	0	0	0	0	3,926,489
1975	0	3,887,152	0	4,499,209	0	0	0	0	0	6,057,701
1976	0	5,485,263	0	6,488,418	0	0	0	0	0	8,477,311
1977	0	(796,686)	0	(234,739)	0	0	0	0	0	1,152,444
1978	0	3,696,428	0	4,890,112	0	0	0	0	0	7,632,606
1979	0	4,021,960	0	5,859,389	0	0	0	0	0	9,873,798
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	(3,007,097)	0	116,362	0	0	0	0	0	6,746,470
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	(10,540,900)	(35,177)	(11,336,228)	0	0	0	0	0	(5,256,186)
2000	0	(13,297,058)	11,009	(12,410,977)	0	0	0	0	0	(4,781,685)
2001	0	158,166,751	266,565	185,196,250	0	0	0	0	0	207,682,715
2002	0	54,807,120	263,113	67,997,404	0	0	0	0	0	82,483,670
2003	7,022	90,093,255	347,741	107,264,693	0	0	0	0	0	126,467,885
2004	297,297	163,408,692	941,185	198,559,009	0	0	0	0	0	221,390,389
2005	594,433	188,292,384	647,041	230,210,499	0	0	0	0	0	266,380,455
2006	558,320	139,417,544	441,644	172,517,928	0	0	0	0	0	201,840,547
2007	787,735	175,196,086	518,545	216,738,687	0	0	0	0	0	250,923,740
2008	1,605,038	154,392,237	464,297	193,030,385	0	0	0	0	0	225,533,529
2009	808,623	157,051,451	467,819	204,807,372	0	0	0	0	0	236,342,107
2010	980,369	171,385,860	506,027	223,637,873	0	0	0	0	0	259,079,227
2011	1,058,490	167,779,089	497,333	219,801,727	0	0	0	0	0	253,923,028
2012	1,262,411	183,071,183	538,904	240,095,480	0	0	0	0	0	274,921,696
2013	1,564,208	209,611,568	607,318	274,248,300	0	0	0	0	0	314,626,166
2014	1,840,338	228,731,635	658,157	299,238,868	0	0	0	0	0	339,740,044
2015	2,020,561	234,437,790	674,233	307,042,153	0	0	0	0	0	349,627,151
2016	2,302,069	249,857,550	715,305	327,605,418	0	0	0	0	0	373,224,909
2017	2,294,646	234,031,688	673,775	307,755,754	0	0	0	0	0	350,518,675
2018	2,598,973	253,232,186	725,473	333,172,205	0	0	0	0	0	377,041,184
2019	2,698,711	262,168,750	749,608	345,588,209	0	0	0	0	0	392,582,584
2020	2,501,860	242,945,197	699,567	321,284,567	0	0	0	0	0	364,731,305
2021	2,498,947	242,500,386	697,711	320,985,466	0	0	0	0	0	364,060,972
2022	2,401,743	231,960,088	669,109	308,032,232	0	0	0	0	0	349,082,598
2023	2,446,460	236,836,323	683,284	314,435,270	0	0	0	0	0	356,926,147
2024	2,547,539	246,854,806	709,986	327,724,554	0	0	0	0	0	372,669,373
2025	2,512,509	243,217,205	698,965	323,244,966	0	0	0	0	0	365,157,263
2026	2,553,070	248,254,489	714,439	330,117,827	0	0	0	0	0	375,845,512
2027	2,519,185	243,720,205	701,088	324,700,456	0	0	0	0	0	368,157,942
2028	2,503,030	242,966,405	699,824	323,959,052	0	0	0	0	0	367,713,478
2029	2,477,117	239,656,113	690,556	320,124,895	0	0	0	0	0	362,900,038
2030	2,474,763	240,133,478	692,208	320,998,220	0	0	0	0	0	364,526,426
2031	2,456,970	237,633,835	685,550	318,233,493	0	0	0	0	0	360,041,717
2032	2,456,487	238,382,742	688,129	319,052,196	0	0	0	0	0	362,320,207
2033	2,729,520	265,647,547	761,406	354,746,375	0	0	0	0	0	400,935,657
2034	2,511,470	243,817,649	702,074	326,128,081	0	0	0	0	0	369,684,914
2035	2,776,112	263,154,757	755,190	353,128,923	0	0	0	0	0	398,360,485
Total	**63,646,026**	**7,364,362,667**	**22,087,702**	**9,685,370,835**	**0**	**0**	**0**	**0**	**0**	**11,157,000,857**

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	199,726	190,272	447,723	837,721	0	0	0
1964	0	0	0	263,282	277,455	621,356	1,162,093	6,696	21,667	28,363
1965	0	0	0	373,816	404,324	1,158,090	1,936,230	13,756	36,029	49,785
1966	18,063	0	18,063	419,467	421,722	1,412,954	2,254,143	26,524	61,349	87,873
1967	41,574	0	41,574	539,116	498,441	1,686,098	2,723,655	56,469	118,263	174,732
1968	128,627	0	128,627	663,764	603,483	1,985,220	3,252,467	115,960	229,807	345,767
1969	254,715	0	254,715	787,221	539,340	2,083,254	3,409,815	185,156	358,861	544,017
1970	277,547	0	277,547	822,957	532,567	2,202,767	3,558,291	200,150	387,675	587,825
1971	227,474	0	227,474	788,008	552,113	2,169,897	3,510,018	202,413	392,912	595,325
1972	224,978	0	224,978	829,645	678,520	2,320,421	3,828,586	209,057	406,589	615,646
1973	221,091	31,366	252,457	794,866	549,393	2,338,619	3,682,878	206,557	402,723	609,280
1974	240,498	32,938	273,436	818,647	564,594	2,506,358	3,889,599	208,545	407,090	615,635
1975	237,459	36,291	273,750	868,497	605,730	2,409,923	3,884,150	225,895	439,873	665,768
1976	271,292	40,836	312,128	959,262	734,811	2,500,506	4,194,579	228,976	447,299	676,275
1977	293,627	45,096	338,723	923,431	713,558	2,476,400	4,113,389	238,699	468,721	707,420
1978	273,870	49,178	323,048	978,764	692,588	2,785,987	4,457,339	245,331	484,259	729,590
1979	289,479	53,340	342,819	1,043,930	736,358	2,813,578	4,593,866	243,110	483,437	726,547
1980	310,846	67,748	378,594	1,161,942	866,372	3,028,204	5,056,518	269,858	537,074	806,932
1981	347,781	87,408	435,189	1,127,607	879,357	2,917,582	4,924,546	288,997	586,256	875,253
1982	438,335	106,918	545,253	1,165,492	850,483	3,262,104	5,278,079	290,049	582,758	872,807
1983	354,787	151,259	506,046	1,177,043	900,363	3,795,446	5,872,852	319,214	633,181	952,395
1984	467,336	224,245	691,581	1,469,182	1,097,480	5,737,802	8,304,464	351,621	695,559	1,047,180
1985	736,074	364,305	1,100,379	1,919,622	1,789,369	6,551,546	10,260,537	394,593	776,994	1,171,587
1986	1,084,728	692,479	1,777,207	1,746,822	1,528,732	6,863,229	10,138,783	385,545	762,683	1,148,228
1987	1,773,801	1,559,243	3,333,044	2,236,678	2,011,876	6,675,355	10,923,909	385,289	812,310	1,197,599
1988	2,231,563	2,333,792	4,565,355	2,238,308	2,210,523	6,368,850	10,817,681	420,153	978,621	1,398,774
1989	2,397,272	3,326,435	5,723,707	2,154,614	1,872,030	5,916,713	9,943,357	414,225	1,162,723	1,576,948
1990	2,746,134	3,433,321	6,179,455	2,573,912	2,261,914	6,668,440	11,504,266	487,609	1,234,409	1,722,018
1991	2,748,636	3,682,311	6,430,947	1,753,540	1,621,188	4,527,928	7,902,656	491,419	1,476,387	1,967,806
1992	2,554,528	3,528,958	6,083,486	2,074,721	2,003,327	5,385,858	9,463,906	551,042	1,491,155	2,042,197
1993	2,592,888	3,504,240	6,097,128	2,879,963	2,011,222	6,511,865	11,403,050	610,116	1,675,438	2,285,554
1994	2,718,330	3,537,462	6,255,792	2,906,700	2,642,454	7,314,499	12,863,653	767,900	2,473,450	3,241,350
1995	2,649,273	3,509,935	6,159,208	3,035,074	2,289,027	5,893,667	11,217,768	995,341	4,977,121	5,972,462
1996	2,699,210	3,891,715	6,590,925	2,584,217	2,137,443	6,675,491	11,397,151	1,837,384	13,766,531	15,603,915
1997	2,641,890	3,631,175	6,273,065	2,657,473	2,007,332	6,551,468	11,216,273	2,294,918	21,860,553	24,155,471
1998	2,539,293	3,479,662	6,018,955	2,266,504	2,066,776	6,303,465	10,636,745	2,978,238	26,609,547	29,587,785
1999	2,660,348	3,838,479	6,498,827	2,842,738	2,421,157	8,298,818	13,562,713	3,022,795	27,398,347	30,421,142
2000	2,635,642	4,498,490	7,134,132	3,908,836	2,295,771	6,997,041	13,201,648	2,979,054	28,397,274	31,376,328
2001	3,348,997	4,913,636	8,262,633	5,145,716	2,729,071	8,816,760	16,691,547	3,519,706	30,313,002	33,832,708
2002	3,541,631	5,024,886	8,566,517	4,959,814	2,728,518	9,806,056	17,494,388	3,228,386	30,042,942	33,271,328
2003	3,640,792	5,160,060	8,800,852	4,878,574	2,588,249	9,153,298	16,620,121	3,331,871	30,277,617	33,609,488
2004	3,869,349	5,340,096	9,209,445	6,036,213	3,597,930	10,663,307	20,297,450	4,443,854	30,758,913	35,202,767
2005	4,064,379	5,364,580	9,428,959	7,827,842	3,806,512	12,413,967	24,048,321	6,093,957	33,694,247	39,788,204
2006	3,872,165	5,392,320	9,264,485	7,376,479	3,608,610	12,008,611	22,993,700	5,566,133	32,823,243	38,389,376
2007	3,870,700	5,096,016	8,966,716	8,207,584	3,954,965	11,541,983	23,704,532	6,037,307	32,845,666	38,882,973
2008	3,862,050	5,087,170	8,949,220	8,269,760	3,995,994	11,627,258	23,893,012	5,948,802	32,685,751	38,634,553
2009	3,880,092	5,017,267	8,897,359	7,978,496	4,015,274	11,698,375	23,692,145	5,924,228	32,641,153	38,565,381
2010	3,913,098	5,042,930	8,956,028	8,221,814	4,143,023	12,019,136	24,383,973	6,081,174	32,926,898	39,008,072
2011	3,916,072	5,036,713	8,952,785	8,105,521	4,081,033	11,865,654	24,052,208	6,032,288	32,842,510	38,874,798
2012	3,944,557	5,056,342	9,000,899	8,149,803	4,102,622	11,927,017	24,179,442	6,114,588	32,992,630	39,107,218
2013	3,926,665	5,028,934	8,955,599	7,968,254	3,996,921	11,541,671	23,506,846	6,076,283	32,924,037	39,000,320
2014	3,911,777	5,002,844	8,914,621	7,629,554	3,791,274	11,021,223	22,442,051	5,946,810	32,679,705	38,626,515
2015	3,929,313	5,002,573	8,931,886	7,617,675	3,736,909	10,732,217	22,086,801	5,957,005	32,697,860	38,654,865
2016	3,930,689	5,004,946	8,935,635	7,712,151	3,778,215	10,728,868	22,219,234	6,000,707	32,773,315	38,774,022
2017	3,910,658	4,995,345	8,906,003	7,476,484	3,662,299	10,404,826	21,543,609	5,883,322	32,558,117	38,441,439
2018	3,852,402	5,008,844	8,861,246	7,382,825	3,634,213	10,316,779	21,333,817	5,880,781	32,551,781	38,432,562
2019	3,841,982	5,026,097	8,868,079	7,459,530	3,694,687	10,453,949	21,608,166	5,969,432	32,709,116	38,678,548
2020	3,814,740	4,988,367	8,803,107	7,187,899	3,558,367	10,101,075	20,847,341	5,781,275	32,366,830	38,148,105
2021	3,818,959	4,988,991	8,807,950	7,171,489	3,550,119	10,083,223	20,804,831	5,778,139	32,360,647	38,138,786
2022	3,793,800	4,964,518	8,758,318	7,032,501	3,478,120	9,894,687	20,405,308	5,672,312	32,166,447	37,838,759
2023	3,795,951	4,929,314	8,725,265	7,097,982	3,513,721	9,978,214	20,589,917	5,699,373	32,213,265	37,912,638
2024	3,822,081	4,950,421	8,772,502	7,253,686	3,593,836	10,184,148	21,031,670	5,813,268	32,420,444	38,233,712
2025	3,806,223	4,938,354	8,744,577	7,067,779	3,494,850	9,942,910	20,505,539	5,733,716	32,276,444	38,010,160
2026	3,807,147	4,934,303	8,741,450	7,272,072	3,604,228	10,205,659	21,081,959	5,812,846	32,415,881	38,228,727
2027	3,796,034	4,921,613	8,717,647	7,140,953	3,534,817	10,033,290	20,709,060	5,740,866	32,286,202	38,027,068
2028	3,796,090	4,917,252	8,713,342	7,122,059	3,526,101	10,003,487	20,651,647	5,756,670	32,306,594	38,063,264
2029	3,782,590	4,905,390	8,687,980	7,087,377	3,506,447	9,960,270	20,554,094	5,708,911	32,218,297	37,927,208
2030	3,776,202	4,893,346	8,669,548	7,128,475	3,527,941	10,014,507	20,670,923	5,735,022	32,260,025	37,995,047
2031	3,752,267	4,867,416	8,619,683	7,016,658	3,468,512	9,866,758	20,351,928	5,671,665	32,135,860	37,807,525
2032	3,751,614	4,854,575	8,606,189	7,111,805	3,518,100	9,992,913	20,622,818	5,739,144	32,257,743	37,996,887
2033	3,763,353	4,846,168	8,609,521	7,302,296	3,616,225	10,248,515	21,167,036	5,902,731	32,561,608	38,464,339
2034	3,658,174	4,742,046	8,400,220	7,128,190	3,525,715	10,015,758	20,669,663	5,770,254	32,318,342	38,088,596
2035	3,490,963	4,577,909	8,068,872	7,132,847	3,532,608	10,012,373	20,677,828	5,744,155	32,265,606	38,009,761
Total	**175,582,545**	**224,560,207**	**400,142,752**	**310,625,294**	**173,299,278**	**525,464,396**	**1,009,388,968**	**219,245,635**	**1,274,603,663**	**1,493,849,298**

Table B-19

Total 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	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	184,102	8,883	54,589	445,438	1,542,029	12,867	11,527	208,460	2,467,895
1969	179,708	7,567	87,576	525,095	2,387,252	11,478	10,525	355,385	3,564,586
1970	201,676	14,334	94,674	573,999	2,909,006	11,605	13,059	292,487	4,110,840
1971	197,878	15,292	95,695	605,888	3,815,635	16,553	14,355	447,529	5,208,826
1972	220,370	16,160	98,789	631,615	4,982,456	13,996	20,580	1,077,669	7,061,635
1973	202,890	12,231	97,550	639,250	4,913,751	14,247	11,653	407,724	6,299,296
1974	282,470	12,200	98,460	698,247	5,214,970	14,338	12,727	595,632	6,929,043
1975	349,382	13,145	106,703	715,606	6,334,412	15,350	14,409	725,985	8,274,992
1976	304,543	13,691	108,083	774,290	6,687,281	15,718	16,072	562,915	8,482,594
1977	266,531	10,801	112,554	797,860	6,860,799	17,163	13,861	509,877	8,589,445
1978	355,358	4,441	115,521	890,944	8,312,494	17,546	17,897	503,429	10,217,630
1979	385,240	13,538	114,253	896,194	9,436,328	18,821	24,827	952,079	11,841,281
1980	406,329	11,888	125,950	888,893	9,992,557	19,365	24,176	736,439	12,205,597
1981	469,820	29,729	134,169	1,079,315	11,436,231	23,538	22,866	907,683	14,103,351
1982	464,329	12,879	135,057	1,004,668	12,267,380	21,552	22,329	744,987	14,673,181
1983	637,494	14,473	149,201	1,027,258	15,473,898	38,569	29,093	427,942	17,797,928
1984	910,022	14,887	164,505	2,063,179	23,599,753	53,018	59,566	783,177	27,648,107
1985	1,098,425	87,448	184,905	2,350,593	27,905,393	68,071	70,094	2,170,077	33,935,006
1986	1,262,519	33,904	180,445	2,365,159	30,484,371	79,353	75,951	2,181,129	36,662,831
1987	1,120,950	50,699	179,872	2,804,775	29,267,360	76,595	74,196	2,240,037	35,814,484
1988	1,106,414	61,494	193,735	2,750,424	29,178,952	72,740	60,068	2,197,580	35,621,407
1989	1,141,788	49,176	187,914	2,435,634	29,240,084	65,604	68,529	2,440,857	35,629,586
1990	865,208	34,338	221,391	2,541,315	27,354,767	49,604	48,957	1,867,533	32,983,113
1991	581,979	23,243	220,282	2,055,249	17,554,159	26,464	26,726	1,228,098	21,716,200
1992	951,340	39,079	241,456	2,369,788	25,852,280	54,314	50,780	1,905,238	31,464,275
1993	1,163,630	53,606	264,959	2,799,482	31,366,449	71,391	69,463	2,638,826	38,427,806
1994	1,018,735	43,733	306,359	2,808,831	29,242,332	58,930	57,230	2,114,789	35,650,939
1995	1,515,408	46,590	304,297	3,499,610	36,365,815	87,317	80,053	2,768,866	44,667,956
1996	1,374,681	48,222	389,202	3,560,139	36,679,461	84,418	73,701	4,314,757	46,524,581
1997	1,416,524	25,379	276,681	3,107,763	32,939,964	34,948	68,561	1,668,834	39,538,654
1998	1,269,497	34,363	381,881	2,734,119	29,713,046	40,018	60,005	1,800,197	36,033,126
1999	1,215,199	53,643	364,399	3,041,437	30,903,356	71,062	62,080	3,993,537	39,704,713
2000	1,098,386	37,946	301,964	2,595,858	26,777,089	60,324	55,186	2,805,396	33,732,149
2001	1,677,529	61,814	326,575	3,039,951	33,221,702	77,100	98,778	3,012,552	41,516,001
2002	1,333,345	42,823	319,227	2,946,685	28,453,872	70,729	78,306	2,486,787	35,731,774
2003	1,427,314	48,464	351,733	3,084,917	32,042,650	89,123	79,738	2,881,508	40,005,447
2004	1,893,444	88,110	348,733	3,394,775	32,464,607	206,232	93,261	2,569,279	41,058,441
2005	1,881,349	83,809	337,708	4,387,774	38,797,902	180,568	110,176	3,442,299	49,221,585
2006	1,738,017	76,264	345,250	3,972,855	36,349,485	171,366	99,624	3,162,347	45,915,208
2007	1,788,948	78,602	379,777	4,189,058	38,284,753	171,753	102,515	3,261,102	48,256,508
2008	1,812,769	79,848	380,030	4,234,337	38,532,531	173,438	106,068	3,307,216	48,626,237
2009	1,751,424	76,638	380,107	4,067,858	37,877,737	169,170	99,781	3,195,054	47,617,769
2010	1,877,817	83,252	380,228	4,344,068	39,978,502	177,995	111,147	3,440,910	50,393,919
2011	1,809,101	79,645	381,274	4,193,446	38,914,297	173,318	104,786	3,306,728	48,962,595
2012	1,812,277	79,810	381,336	4,212,505	39,180,904	173,545	103,499	3,312,874	49,256,750
2013	1,866,156	82,627	381,490	4,317,954	39,904,316	177,325	109,845	3,417,563	50,257,276
2014	1,729,704	75,486	378,829	4,023,559	37,750,127	167,825	96,911	3,152,087	47,374,528
2015	1,782,746	78,259	375,727	4,061,247	38,552,847	171,540	102,303	3,255,172	48,379,841
2016	1,884,681	83,596	369,382	4,222,384	40,225,430	178,621	111,498	3,453,573	50,529,165
2017	1,782,290	78,237	355,297	3,864,192	38,507,399	171,492	102,595	3,254,370	48,115,872
2018	1,790,117	78,644	332,786	3,775,817	38,799,927	163,558	101,920	3,269,472	48,312,241
2019	1,893,339	84,048	323,972	3,940,096	40,469,434	170,217	111,349	3,470,396	50,462,851
2020	1,793,340	78,814	322,409	3,683,771	38,735,980	163,010	103,235	3,275,822	48,156,381
2021	1,783,014	78,274	321,442	3,640,531	38,586,369	162,154	102,140	3,255,707	47,929,631
2022	1,725,569	75,268	320,733	3,502,608	37,597,044	158,084	97,382	3,143,961	46,620,649
2023	1,773,930	77,801	320,072	3,602,899	38,364,849	161,397	101,971	3,238,169	47,641,088
2024	1,842,666	81,395	319,646	3,751,569	39,520,352	166,187	107,874	3,371,788	49,161,477
2025	1,721,875	75,073	319,366	3,491,323	37,640,966	157,758	96,149	3,136,756	46,639,266
2026	1,865,633	82,600	318,593	3,794,319	39,850,541	167,712	110,334	3,416,541	49,606,273
2027	1,788,425	78,552	318,824	3,627,165	38,653,421	162,349	102,873	3,266,050	47,997,659
2028	1,799,989	79,165	315,485	3,646,551	38,806,077	163,067	100,973	3,288,869	48,200,176
2029	1,765,975	77,383	315,542	3,571,641	38,262,962	160,655	101,005	3,222,603	47,477,766
2030	1,789,115	78,596	315,000	3,616,383	38,607,673	162,180	103,361	3,267,723	47,940,031
2031	1,731,904	75,594	314,268	3,477,347	37,732,839	157,876	97,748	3,156,061	46,743,637
2032	1,775,450	77,882	313,132	3,570,210	38,388,261	160,838	102,027	3,241,200	47,629,000
2033	1,851,162	81,839	313,362	3,745,474	39,850,440	166,019	107,017	3,388,288	49,503,601
2034	1,778,700	78,047	312,780	3,570,034	38,508,576	160,833	101,782	3,247,307	47,758,059
2035	1,847,909	81,673	311,489	3,729,561	39,804,757	165,386	106,816	3,382,114	49,429,705
Total	**86,385,848**	**3,646,934**	**18,041,725**	**190,851,288**	**1,934,210,639**	**6,967,298**	**4,907,889**	**161,525,398**	**2,406,537,019**

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	101,265	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	744,423	478,191	152,688	41,509	251,199	12,870	311,159	95,466	782,164	208,926
1969	1,072,961	724,396	225,307	61,226	370,960	18,694	459,046	138,064	1,205,834	321,755
1970	1,396,258	904,292	315,262	89,700	519,318	25,231	633,147	184,837	1,778,188	467,573
1971	1,728,266	1,088,115	432,545	128,360	712,746	31,837	857,356	231,280	2,539,164	659,414
1972	2,047,567	1,306,891	561,630	181,206	925,635	42,403	1,111,961	274,599	3,405,860	865,096
1973	2,138,684	1,322,894	695,939	183,713	1,137,116	43,482	1,175,129	287,315	3,989,032	946,686
1974	2,202,559	1,382,272	711,445	193,283	1,163,959	45,211	1,207,202	292,071	4,015,999	990,064
1975	2,379,538	1,450,200	752,347	206,039	1,231,747	48,490	1,274,341	304,280	4,176,583	1,088,342
1976	2,732,795	1,445,501	798,886	215,085	1,307,416	51,463	1,316,985	313,685	4,317,081	1,141,598
1977	2,675,663	1,514,511	694,702	226,033	1,145,096	47,349	1,388,851	329,365	4,571,321	1,197,216
1978	2,993,398	1,599,223	875,687	231,040	1,420,607	47,118	1,388,991	321,681	4,477,656	1,208,719
1979	3,547,001	1,633,736	943,246	237,955	1,518,767	48,395	1,516,557	332,472	4,439,871	1,152,375
1980	4,093,661	1,715,314	1,032,560	259,401	1,679,887	53,349	1,635,992	360,461	4,853,142	1,269,447
1981	4,424,142	1,968,846	1,103,412	271,181	1,797,318	77,806	1,756,401	391,869	5,241,672	1,357,680
1982	3,986,642	2,060,406	1,155,506	280,313	1,883,595	55,961	1,952,847	406,891	5,428,365	1,565,182
1983	5,177,487	2,322,521	1,745,294	333,081	2,827,449	69,382	2,026,907	494,688	6,038,419	1,556,652
1984	7,213,475	3,364,143	2,827,090	445,338	4,553,458	75,773	2,254,517	553,321	7,066,939	2,331,850
1985	8,929,000	3,748,434	3,623,210	540,388	5,828,183	79,232	2,364,982	759,053	7,757,848	2,378,394
1986	8,828,003	4,315,915	4,048,459	577,474	6,515,952	102,399	2,474,211	1,000,062	7,875,058	3,047,740
1987	8,844,743	4,156,446	3,903,266	604,982	6,363,370	211,808	2,506,602	1,026,398	9,242,097	3,034,142
1988	8,319,630	4,219,644	3,901,697	615,999	6,426,525	124,667	2,561,081	779,820	9,522,748	2,828,998
1989	8,696,682	4,099,467	3,545,799	586,595	5,896,494	170,570	2,508,408	1,442,627	8,961,755	2,930,396
1990	9,984,740	4,539,806	4,218,533	620,394	6,957,035	289,349	2,704,013	1,639,829	9,812,509	3,678,107
1991	6,485,510	3,508,737	2,724,560	567,449	4,492,938	175,137	3,463,136	1,294,608	8,939,328	3,035,639
1992	8,586,450	4,466,302	2,795,639	470,165	4,610,064	121,335	4,264,571	1,129,578	8,590,851	2,980,091
1993	8,970,087	4,097,718	2,992,812	472,817	4,935,312	157,747	4,143,437	1,347,511	9,523,173	3,320,012
1994	11,156,938	4,710,711	3,036,689	554,800	5,007,501	225,808	5,136,400	1,698,985	10,229,192	4,077,199
1995	10,758,143	4,967,769	3,809,040	509,163	6,281,598	155,561	4,224,191	1,527,248	9,460,717	3,715,377
1996	11,126,949	5,155,849	6,745,205	553,231	11,124,414	150,613	4,291,042	1,867,203	9,886,818	3,807,422
1997	11,377,243	4,922,570	6,305,827	579,281	7,362,993	144,833	4,594,489	1,869,307	11,283,990	4,037,861
1998	9,919,725	4,561,836	5,405,904	546,772	5,890,021	146,260	5,632,522	1,477,975	11,203,951	3,324,156
1999	11,272,283	4,870,122	4,340,723	631,505	5,905,278	144,559	5,788,875	1,831,688	12,232,875	4,145,770
2000	10,597,762	6,839,688	2,826,766	595,131	4,373,673	115,038	5,638,887	1,454,120	11,871,514	3,265,089
2001	20,493,658	12,490,837	3,810,357	805,349	6,283,918	126,766	6,309,616	3,326,667	17,941,985	3,423,609
2002	11,697,428	9,481,003	3,000,042	748,937	4,947,631	108,777	5,416,190	2,673,155	18,350,939	4,682,297
2003	13,033,213	10,506,112	3,327,023	737,361	5,486,318	112,608	7,942,453	2,242,132	16,608,645	4,901,682
2004	18,578,186	13,241,021	5,111,421	939,767	7,267,162	298,651	10,722,607	3,811,092	27,110,496	5,286,474
2005	20,889,442	17,638,607	5,003,803	989,288	8,252,137	476,719	11,741,528	4,358,344	22,048,265	6,991,080
2006	18,376,219	14,342,495	4,776,036	990,784	7,876,471	421,808	11,219,301	3,835,761	21,576,366	6,710,636
2007	21,016,996	15,381,503	5,230,389	1,057,639	8,625,879	470,894	11,889,494	4,289,626	22,361,281	7,273,721
2008	21,300,922	15,114,680	5,106,225	1,060,782	8,421,084	460,739	11,714,105	4,195,509	21,959,766	7,100,440
2009	27,730,425	15,989,427	5,132,728	1,119,533	8,464,801	460,336	10,689,241	4,191,730	29,330,132	7,151,655
2010	28,756,616	17,321,894	5,318,485	1,169,472	8,771,174	477,021	11,226,597	4,346,281	30,081,295	7,370,504
2011	28,159,720	17,729,281	5,205,555	1,184,979	8,584,919	467,349	11,340,808	4,256,455	29,669,862	7,245,503
2012	29,305,741	18,996,699	5,408,344	1,243,887	8,919,383	485,995	11,969,777	4,429,099	30,509,349	7,487,746
2013	28,726,702	18,597,675	5,295,384	1,239,181	8,719,704	477,142	12,058,218	4,346,960	29,786,455	7,304,497
2014	28,007,636	17,972,449	5,156,209	1,258,802	8,504,148	464,816	12,160,657	4,234,284	29,507,771	7,193,798
2015	27,982,202	17,974,605	5,123,321	1,260,409	8,449,897	464,373	12,496,264	4,231,259	29,050,295	7,099,034
2016	28,960,422	18,574,593	5,312,582	1,344,786	8,762,069	480,179	13,285,627	4,379,626	30,231,356	7,393,972
2017	27,508,543	17,651,245	5,027,922	1,297,264	8,292,561	456,321	13,160,588	4,162,885	28,725,719	6,997,773
2018	28,401,866	18,107,039	5,184,477	1,358,019	8,550,788	470,642	13,966,764	4,299,752	29,425,302	7,192,298
2019	28,878,696	18,184,988	5,256,512	1,400,117	8,669,614	477,907	14,703,564	4,371,704	29,808,418	7,288,102
2020	27,218,497	17,041,476	4,896,337	1,327,205	8,075,560	449,634	14,392,317	4,116,146	27,828,254	6,769,438
2021	26,973,396	16,783,727	4,790,483	1,296,991	7,900,976	444,467	14,458,323	4,075,127	26,936,352	6,560,149
2022	26,133,693	16,044,856	4,618,516	1,280,079	7,617,357	430,549	14,273,384	3,948,017	26,181,505	6,628,667
2023	26,399,186	16,271,215	4,658,131	1,314,439	7,682,701	434,681	14,702,517	3,987,490	26,481,392	6,413,777
2024	27,053,974	16,684,084	4,762,141	1,335,835	7,854,245	445,326	15,299,684	4,086,130	26,673,516	6,495,579
2025	26,564,473	16,323,557	4,679,325	1,324,762	7,717,656	437,332	15,383,572	4,012,347	26,318,421	6,393,486
2026	26,946,126	16,687,849	4,734,965	1,361,323	7,809,433	443,497	15,880,725	4,069,792	26,729,620	6,488,569
2027	26,667,932	16,239,412	4,670,881	1,337,242	7,703,728	438,967	16,060,731	4,027,938	26,163,665	6,359,001
2028	26,544,517	16,477,201	4,635,631	1,330,641	7,645,585	436,930	16,348,015	4,009,391	25,862,711	6,289,324
2029	26,343,501	16,041,719	4,618,780	1,354,740	7,617,806	433,640	16,579,668	3,979,224	26,152,641	6,331,568
2030	26,275,796	16,067,010	4,606,577	1,361,689	7,597,679	432,524	16,912,136	3,969,271	26,116,253	6,319,411
2031	26,063,248	15,654,669	4,537,029	1,318,912	7,482,956	429,035	17,159,227	3,937,785	25,304,822	6,146,300
2032	26,063,585	15,926,638	4,561,788	1,354,647	7,523,808	429,010	17,118,154	3,938,169	25,879,125	6,257,049
2033	27,979,474	17,024,238	4,897,686	1,433,451	8,077,816	460,137	18,369,915	4,228,232	27,124,952	6,633,457
2034	26,253,050	15,941,971	4,585,166	1,351,351	7,562,363	432,049	17,283,413	3,970,367	25,679,599	6,232,650
2035	28,408,669	16,355,420	4,954,375	1,483,286	8,171,340	467,002	18,522,809	4,297,049	27,868,270	6,787,101
Total	**1,090,950,212**	**666,716,194**	**247,412,669**	**55,431,072**	**398,600,783**	**18,027,815**	**557,666,553**	**168,198,285**	**1,143,041,969**	**301,382,685**

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	1,626,209
1964	21,736	1,260,513	9,378	1,593,480	0	0	0	0	13,938	2,800,599
1965	21,866	2,180,589	17,767	2,702,924	0	0	405	405	28,937	4,797,878
1966	37,964	3,900,172	33,426	4,834,766	0	0	564	564	31,321	7,376,098
1967	71,283	7,693,703	68,155	9,497,844	0	0	562	562	47,718	12,779,953
1968	128,915	15,317,881	142,803	18,668,195	0	0	564	564	46,945	24,910,460
1969	198,763	23,153,063	215,209	28,165,278	0	0	3,191	3,191	52,963	35,994,565
1970	289,633	30,617,164	273,605	37,494,208	0	0	15,121	15,121	69,744	46,113,576
1971	409,327	39,976,488	342,425	49,137,323	0	0	16,001	16,001	55,532	58,750,499
1972	537,186	53,265,574	422,305	64,947,913	0	0	17,372	17,372	80,412	76,776,541
1973	587,964	57,596,916	435,655	70,540,526	0	0	17,334	17,334	54,219	81,455,990
1974	611,428	62,100,158	455,565	75,371,216	0	0	17,477	17,477	76,783	87,173,189
1975	644,621	67,080,475	478,404	81,115,408	0	0	18,405	18,405	84,547	94,317,020
1976	668,314	68,808,738	475,587	83,593,134	0	0	17,477	17,477	106,717	97,382,904
1977	696,515	66,557,870	507,064	81,551,555	0	0	18,232	18,232	98,618	95,417,383
1978	709,040	73,258,470	523,177	89,054,806	0	0	17,381	17,381	100,786	104,900,580
1979	712,866	72,990,285	526,405	89,599,932	0	0	20,579	20,579	119,352	107,244,376
1980	777,982	80,250,247	571,232	98,552,674	0	0	17,761	17,761	178,812	117,196,888
1981	806,031	91,585,085	636,404	111,417,846	0	0	21,193	21,193	185,347	131,962,725
1982	853,400	93,468,432	670,375	113,767,916	0	0	28,423	28,423	173,894	135,339,553
1983	952,131	102,111,392	803,591	126,458,995	0	0	19,276	19,276	220,926	151,828,418
1984	1,072,638	137,830,768	868,967	170,458,276	0	0	21,114	21,114	225,959	208,396,682
1985	1,120,854	173,765,988	908,769	211,804,335	0	0	20,239	20,239	340,322	258,632,405
1986	1,149,714	193,565,717	937,311	234,438,015	0	0	20,139	20,139	279,227	284,464,431
1987	1,172,016	179,088,130	908,034	221,062,034	0	0	19,742	19,742	345,116	272,695,929
1988	1,208,205	190,567,215	904,867	231,981,096	0	0	17,900	17,900	365,207	284,767,420
1989	1,194,911	193,558,952	932,599	234,525,255	0	0	19,158	19,158	422,329	287,840,339
1990	1,297,621	239,864,108	1,486,754	287,092,798	0	0	18,148	18,148	474,284	339,974,082
1991	1,354,921	180,274,674	1,141,118	217,457,755	0	0	21,018	21,018	214,683	255,711,066
1992	1,349,184	196,490,668	1,025,285	236,880,183	0	0	18,014	18,014	443,676	286,395,737
1993	1,507,551	169,817,019	1,068,135	212,353,332	0	0	20,999	20,999	599,571	271,187,440
1994	1,498,079	209,636,843	1,009,188	257,978,332	0	0	19,649	19,649	609,932	316,619,647
1995	1,520,622	173,743,955	1,061,324	221,734,708	0	0	20,277	20,277	534,971	290,307,350
1996	1,527,177	181,727,720	1,103,254	239,066,898	0	0	25,378	25,378	571,857	319,780,705
1997	1,730,528	187,060,217	1,216,560	242,485,699	0	0	24,820	24,820	428,638	324,122,620
1998	1,922,340	169,057,830	1,238,443	220,327,735	0	0	18,170	18,170	465,140	303,087,656
1999	2,162,587	189,134,398	1,245,715	243,706,377	0	0	17,787	17,787	551,178	334,462,737
2000	2,412,793	186,613,085	1,322,828	237,926,375	0	0	17,372	17,372	0	323,388,004
2001	3,397,876	375,995,973	1,628,829	456,035,441	0	0	17,372	17,372	0	556,355,701
2002	4,777,152	258,872,854	1,621,998	326,378,403	0	0	17,372	17,372	0	421,459,782
2003	5,741,090	289,088,197	1,655,515	361,382,349	0	0	21,322	21,322	0	460,439,579
2004	6,520,139	411,543,764	2,658,254	513,089,034	0	0	21,377	21,377	0	618,878,514
2005	6,892,784	428,735,433	2,057,737	536,075,167	0	0	21,377	21,377	0	658,583,613
2006	6,894,193	381,009,524	1,858,161	479,887,755	0	0	21,447	21,447	0	596,471,971
2007	7,056,619	414,592,350	1,968,993	521,215,384	0	0	21,521	21,521	0	641,047,634
2008	8,402,509	405,773,880	1,949,047	512,559,688	0	0	21,523	21,523	0	632,684,233
2009	7,169,062	406,417,333	1,946,878	525,793,281	0	0	21,520	21,520	0	644,587,455
2010	7,379,137	421,012,137	1,985,067	545,215,680	0	0	21,521	21,521	0	667,979,193
2011	7,493,281	412,726,010	1,967,116	536,030,838	0	0	21,519	21,519	0	656,894,743
2012	7,733,041	427,743,494	2,007,087	556,239,642	0	0	21,520	21,520	0	677,805,471
2013	7,797,886	419,121,345	1,989,695	545,460,844	0	0	21,520	21,520	0	667,202,405
2014	7,910,276	407,856,047	1,949,913	532,176,806	0	0	21,518	21,518	0	649,556,039
2015	7,994,570	406,010,559	1,942,053	530,078,841	0	0	21,116	21,116	0	648,153,350
2016	8,305,868	419,509,184	1,967,355	548,507,619	0	0	20,953	20,953	0	668,986,628
2017	8,224,976	398,607,613	1,887,391	522,000,801	0	0	20,956	20,956	0	639,028,680
2018	8,455,559	407,002,875	1,863,837	534,279,218	0	0	20,955	20,955	0	651,240,039
2019	8,513,265	409,996,844	1,822,527	539,372,258	0	0	18,323	18,323	0	659,008,225
2020	8,195,711	381,925,672	1,715,970	503,952,217	0	0	6,399	6,399	0	619,913,550
2021	8,063,302	373,054,736	1,651,227	492,989,256	0	0	5,576	5,576	0	608,676,030
2022	7,935,474	357,075,162	1,585,413	473,752,672	0	0	4,186	4,186	0	587,379,892
2023	7,977,484	358,811,293	1,596,119	476,730,425	0	0	4,184	4,184	0	591,603,517
2024	8,023,019	366,328,134	1,613,321	486,654,988	0	0	4,183	4,183	0	603,858,532
2025	7,961,755	357,509,820	1,577,416	476,203,922	0	0	4,187	4,187	0	590,107,651
2026	8,021,065	365,440,621	1,604,061	486,217,646	0	0	4,175	4,175	0	603,880,230
2027	7,939,471	354,069,091	1,553,236	473,231,295	0	0	4,188	4,188	0	588,686,917
2028	7,895,634	360,161,084	1,608,812	479,245,476	0	0	4,171	4,171	0	594,878,076
2029	7,925,844	351,940,452	1,542,918	470,862,501	0	0	4,177	4,177	0	585,513,726
2030	7,918,703	352,078,275	1,537,693	471,193,017	0	0	4,172	4,172	0	586,472,738
2031	7,807,716	342,707,850	1,473,275	460,022,824	0	0	4,181	4,181	0	573,549,778
2032	7,880,469	349,783,472	1,525,177	468,241,091	0	0	4,163	4,163	0	583,100,148
2033	8,103,057	370,386,265	1,537,872	496,256,552	0	0	4,173	4,173	0	614,005,222
2034	7,861,368	347,927,356	1,478,076	466,558,779	0	0	4,171	4,171	0	581,479,488
2035	8,201,606	370,115,959	1,533,203	497,166,089	0	0	4,160	4,160	0	613,356,415
Total	**299,309,667**	**17,426,591,973**	**87,848,925**	**22,461,178,803**	**0**	**0**	**1,072,420**	**1,072,420**	**8,715,446**	**27,780,884,706**

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 2004 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 2005 Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Table A Amounts during the Project Repayment Period	$4,320.34[b]	271.49 AF	$2,820.48[c]	271.49 AF	$7,140.82	271.49 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period	(1,582.82)		(554.35)		(2,137.17)	
Less, Delta Water Charges Paid and Project Table A Amounts, Prior to 2005	(1,945.69)[d]	(203.45) AF	(1,392.05)	(203.45) AF	(3,337.74)	(203.45) AF
Total	$791.83	68.04 AF	$874.08	68.04 AF	$1,665.91	68.04 AF
Rate Applicable in 2005	$11.64	per acre-foot	$12.84	per acre-foot	$24.48	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 2005 Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Table A Amounts during the Project Repayment Period	$4,309.45[b]	271.49 AF	$2,807.42[c]	271.49 AF	$7,116.87	271.49 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period	(1,582.82)		(554.35)		(2,137.17)	
Less, Delta Water Charges Paid and Table A Amounts, Prior to 2005	(1,945.69)[d]	(203.45) AF	(1,392.05)	(203.45) AF	(3,337.74)	(203.45) AF
Total	68.04 AF	$874.08	68.04 AF	$1,665.91	68.04 AF	68.04 AF
Rate Applicable in 2005	$11.48	per acre-foot	12.68	per acre-foot	$24.13	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]	38.86	21.38	60.25
Less, Oroville Power Revenues	-23.26	-8.15	-31.41
Subtotal	15.60	13.24	28.84
Delta Facilities[b]	10.62	9.73	20.35
California Aqueduct, portion			
Reach 1	2.47	3.97	6.44
Reach 2A	1.48	0.64	2.12
Reach 2B	0.77	0.35	1.13
Reach 3	0.53	0.19	0.73
Subtotal	5.26	5.16	10.41
San Luis Facilities	7.47	4.98	12.46
Planning and preoperating costs through 2001	2.17	0.00	2.17
45,000 AF relinquished costs	0.16	0.19	0.35
Less, Capital Cost Credits	-1.05	0.00	-1.05
Less, Delta Water Charges paid prior to 2005	-28.59	-20.46	-49.05
Rate applicable in 2005	11.64	12.85	24.48

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	573,729	1,219,893	1,793,622	2,081,144	1,084,212	2,581,456	5,746,812	645,364	1,174,201	1,819,565
2006	552,079	1,158,165	1,710,244	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2007	560,035	1,159,389	1,719,424	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2008	567,992	1,160,613	1,728,605	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2009	575,949	1,161,838	1,737,787	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2010	583,906	1,163,062	1,746,968	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2011	591,862	1,164,286	1,756,148	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2012	599,819	1,165,510	1,765,329	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2013	606,552	1,166,734	1,773,286	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2014	615,733	1,167,958	1,783,691	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2015	632,258	1,169,182	1,801,440	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2016	647,560	1,169,182	1,816,742	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2017	662,861	1,169,182	1,832,043	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2018	678,163	1,169,182	1,847,345	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2019	693,464	1,169,182	1,862,646	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2020	708,154	1,169,182	1,877,336	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2021	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2022	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2023	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2024	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2025	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2026	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2027	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2028	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2029	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2030	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2031	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2032	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2033	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2034	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2035	710,602	1,169,182	1,879,784	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
Total	**25,193,640**	**48,868,960**	**74,062,600**	**84,457,827**	**52,004,287**	**130,239,813**	**266,701,927**	**27,929,879**	**51,435,528**	**79,365,406**

Table B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								Total
				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)	(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	1,480,284	77,153	0	3,474,640	22,307,136	232,331	147,143	2,739,621	30,458,308
2006	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2007	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2008	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2009	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2010	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2011	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2012	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2013	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2014	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2015	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2016	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2017	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2018	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2019	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2020	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2021	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2022	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2023	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2024	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2025	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2026	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2027	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2028	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2029	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2030	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2031	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2032	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2033	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2034	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
2035	1,403,895	72,391	0	3,295,333	21,155,992	220,342	139,550	2,598,246	28,885,749
Total	**71,117,187**	**3,955,590**	**0**	**163,387,664**	**1,119,134,050**	**8,786,738**	**7,288,255**	**136,946,244**	**1,510,615,729**

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	3,650,179	2,457,547	596,316	149,725	983,535	59,374	1,956,744	549,850	2,648,574	743,459
2006	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2007	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2008	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2009	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2010	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2011	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2012	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2013	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2014	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2015	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2016	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2017	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2018	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2019	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2020	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2021	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2022	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2023	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2024	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2025	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2026	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2027	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2028	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2029	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2030	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2031	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2032	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2033	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2034	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
2035	3,461,814	2,330,726	565,544	141,998	932,780	56,310	1,855,767	521,476	2,511,896	705,094
Total	**166,042,009**	**102,818,854**	**28,177,772**	**7,068,935**	**46,304,619**	**2,800,604**	**85,191,490**	**24,928,867**	**127,465,342**	**35,585,606**

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	167,795	51,925,988	516,291	66,405,377	247,820	717,289	0	965,109	0	107,188,793
2006	171,377	49,246,383	489,648	62,990,813	235,031	673,266	45,365	953,662	0	101,716,387
2007	183,618	49,246,383	489,648	63,003,054	235,031	673,266	47,054	955,351	0	101,739,497
2008	423,546	49,246,383	489,648	63,242,982	235,031	673,266	48,744	957,041	0	101,990,296
2009	423,546	49,246,383	489,648	63,242,982	235,031	673,266	50,433	958,730	0	102,001,167
2010	423,546	49,246,383	489,648	63,242,982	235,031	673,266	52,122	960,419	0	102,012,037
2011	423,546	49,246,383	489,648	63,242,982	235,031	673,266	54,052	962,349	0	102,023,147
2012	423,546	49,246,383	489,648	63,242,982	235,031	673,266	55,983	964,280	0	102,034,259
2013	423,546	49,246,383	489,648	63,242,982	235,031	673,266	58,154	966,451	0	102,044,387
2014	423,546	49,246,383	489,648	63,242,982	235,031	673,266	60,326	968,623	0	102,056,964
2015	423,546	49,246,383	489,648	63,242,982	235,031	673,266	62,739	971,036	0	102,077,126
2016	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,094,841
2017	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,110,142
2018	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,125,444
2019	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,140,745
2020	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,155,435
2021	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2022	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2023	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2024	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2025	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2026	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2027	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2028	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2029	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2030	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2031	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2032	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2033	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2034	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
2035	423,546	49,246,383	489,648	63,242,982	235,031	673,266	65,152	973,449	0	102,157,883
Total	**16,692,644**	**2,462,519,701**	**22,769,370**	**3,128,365,814**	**10,447,549**	**21,847,708**	**2,469,529**	**34,764,786**	**0**	**5,093,876,263**

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	268,151	408,027	676,178	635,422	300,907	839,455	1,775,784	230,647	1,440,782	1,671,429
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	433,742	659,996	1,093,738	1,045,369	486,726	1,357,842	2,889,937	373,078	2,330,504	2,703,582
2006	460,634	700,916	1,161,550	1,110,182	516,903	1,442,029	3,069,114	396,209	2,474,996	2,871,205
2007	459,931	699,846	1,159,777	1,108,487	516,114	1,439,827	3,064,428	395,604	2,471,218	2,866,822
2008	418,671	637,062	1,055,733	1,009,044	469,813	1,310,660	2,789,517	360,114	2,249,524	2,609,638
2009	425,472	647,411	1,072,883	1,025,436	477,445	1,331,951	2,834,832	365,964	2,286,067	2,652,031
2010	404,766	615,905	1,020,671	975,533	454,210	1,267,131	2,696,874	348,155	2,174,814	2,522,969
2011	460,006	699,960	1,159,966	1,108,669	516,198	1,440,063	3,064,930	395,669	2,471,622	2,867,291
2012	460,621	700,895	1,161,516	1,110,150	516,888	1,441,987	3,069,025	396,198	2,474,925	2,871,123
2013	479,478	729,588	1,209,066	1,155,597	538,048	1,501,019	3,194,664	412,417	2,576,243	2,988,660
2014	487,921	742,435	1,230,356	1,175,945	547,522	1,527,449	3,250,916	419,679	2,621,605	3,041,284
2015	510,967	777,503	1,288,470	1,231,490	573,384	1,599,597	3,404,471	439,502	2,745,435	3,184,937
2016	518,210	788,525	1,306,735	1,248,947	581,512	1,622,272	3,452,731	445,732	2,784,353	3,230,085
2017	522,499	795,051	1,317,550	1,259,283	586,324	1,635,697	3,481,304	449,421	2,807,395	3,256,816
2018	466,059	709,170	1,175,229	1,123,257	522,990	1,459,012	3,105,259	400,875	2,504,145	2,905,020
2019	497,501	757,014	1,254,515	1,199,036	558,273	1,557,442	3,314,751	427,920	2,673,083	3,101,003
2020	463,878	705,852	1,169,730	1,118,001	520,543	1,452,184	3,090,728	398,999	2,492,426	2,891,425
2021	492,948	750,086	1,243,034	1,188,063	553,164	1,543,189	3,284,416	424,004	2,648,620	3,072,624
2022	463,528	705,318	1,168,846	1,117,156	520,150	1,451,087	3,088,393	398,698	2,490,543	2,889,241
2023	473,441	720,403	1,193,844	1,141,048	531,274	1,482,121	3,154,443	407,225	2,543,808	2,951,033
2024	457,461	696,086	1,153,547	1,102,533	513,341	1,432,093	3,047,967	393,479	2,457,943	2,851,422
2025	409,591	623,247	1,032,838	987,163	459,625	1,282,238	2,729,026	352,305	2,200,742	2,553,047
2026	373,169	567,825	940,994	899,380	418,753	1,168,215	2,486,348	320,976	2,005,041	2,326,017
2027	366,918	558,313	925,231	884,314	411,738	1,148,646	2,444,698	315,600	1,971,455	2,287,055
2028	344,721	524,538	869,259	830,817	386,830	1,079,158	2,296,805	296,508	1,852,191	2,148,699
2029	345,044	525,029	870,073	831,595	387,192	1,080,169	2,298,956	296,785	1,853,926	2,150,711
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	**13,791,541**	**21,121,487**	**34,913,028**	**31,446,060**	**15,760,494**	**44,026,988**	**91,233,542**	**12,074,502**	**72,351,228**	**84,425,730**

Table B-22

Water System Revenue Bond Surcharge 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)	
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	284,834	12,395	0	588,659	3,640,346	17,428	23,227	543,193	5,110,082
2004	486,046	21,151	0	1,004,498	6,211,955	29,740	39,635	926,916	8,719,941
2005	460,727	20,049	0	952,172	5,873,956	67,582	37,571	836,088	8,248,145
2006	489,292	21,292	0	1,011,207	6,238,142	71,772	39,900	887,926	8,759,531
2007	488,545	21,260	0	1,009,663	6,228,619	71,662	39,839	886,570	8,746,158
2008	444,718	19,353	0	919,086	5,669,848	65,233	36,265	807,036	7,961,539
2009	451,942	19,667	0	934,016	5,761,953	66,293	36,854	820,146	8,090,871
2010	429,948	18,710	0	888,562	5,481,544	63,067	35,061	780,233	7,697,125
2011	488,625	21,263	0	1,009,828	6,229,638	71,674	39,845	886,715	8,747,588
2012	489,278	21,292	0	1,011,177	6,237,962	71,770	39,899	887,900	8,759,278
2013	509,308	22,164	0	1,052,573	6,493,331	74,708	41,532	924,249	9,117,865
2014	518,276	22,554	0	1,071,106	6,607,665	76,023	42,263	940,523	9,278,410
2015	542,757	23,619	0	1,121,699	6,919,773	79,614	44,260	984,948	9,716,670
2016	550,450	23,954	0	1,137,600	7,017,866	80,743	44,887	998,910	9,854,410
2017	555,006	24,152	0	1,147,015	7,075,943	81,411	45,259	1,007,177	9,935,963
2018	495,055	21,543	0	1,023,116	6,311,610	72,617	40,370	898,383	8,862,694
2019	528,453	22,997	0	1,092,139	6,737,414	77,516	43,093	958,991	9,460,603
2020	492,738	21,442	0	1,018,328	6,282,075	72,277	40,181	894,179	8,821,220
2021	523,617	22,786	0	1,082,144	6,675,755	76,807	42,699	950,215	9,374,023
2022	492,366	21,426	0	1,017,559	6,277,327	72,223	40,151	893,503	8,814,555
2023	502,896	21,884	0	1,039,321	6,411,579	73,767	41,009	912,613	9,003,069
2024	485,921	21,146	0	1,004,239	6,195,161	71,277	39,625	881,808	8,699,177
2025	435,074	18,933	0	899,155	5,546,894	63,819	35,479	789,535	7,788,889
2026	396,385	17,249	0	819,198	5,053,637	58,144	32,324	719,326	7,096,263
2027	389,745	16,960	0	805,475	4,968,983	57,170	31,782	707,276	6,977,391
2028	366,167	15,934	0	756,748	4,668,384	53,711	29,860	664,489	6,555,293
2029	366,510	15,949	0	757,457	4,672,756	53,761	29,887	665,112	6,561,432
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	**14,867,978**	**652,934**	**0**	**31,522,379**	**197,921,342**	**1,931,806**	**1,219,562**	**27,646,913**	**275,762,914**

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	1,015,056	1,215,738	222,296	63,601	366,429	17,415	777,586	144,812	1,258,593	334,692
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	1,641,882	1,966,490	359,570	102,876	592,709	28,168	1,257,767	234,238	2,035,810	541,373
2006	1,743,679	2,088,412	381,864	109,255	629,457	29,915	1,335,749	248,760	2,162,030	574,939
2007	1,741,017	2,085,224	381,281	109,088	628,496	29,869	1,333,710	248,381	2,158,730	574,061
2008	1,584,830	1,898,158	347,076	99,302	572,113	27,189	1,214,062	226,098	1,965,070	522,562
2009	1,610,575	1,928,993	352,714	100,915	581,407	27,631	1,233,784	229,771	1,996,992	531,051
2010	1,532,196	1,835,118	335,549	96,004	553,113	26,286	1,173,741	218,589	1,899,807	505,207
2011	1,741,302	2,085,565	381,343	109,106	628,599	29,874	1,333,928	248,421	2,159,083	574,155
2012	1,743,629	2,088,352	381,853	109,251	629,439	29,914	1,335,710	248,753	2,161,968	574,922
2013	1,815,009	2,173,845	397,485	113,724	655,207	31,138	1,390,391	258,937	2,250,474	598,458
2014	1,846,968	2,212,122	404,484	115,726	666,743	31,687	1,414,873	263,496	2,290,101	608,996
2015	1,934,208	2,316,610	423,589	121,193	698,237	33,183	1,481,704	275,942	2,398,272	637,761
2016	1,961,627	2,349,449	429,594	122,911	708,135	33,654	1,502,708	279,854	2,432,269	646,802
2017	1,977,860	2,368,892	433,149	123,928	713,995	33,932	1,515,144	282,170	2,452,398	652,155
2018	1,764,215	2,113,008	386,361	110,541	636,870	30,267	1,351,480	251,690	2,187,493	581,710
2019	1,883,235	2,255,559	412,426	117,999	679,836	32,309	1,442,656	268,670	2,335,069	620,954
2020	1,755,959	2,103,120	384,553	110,024	633,890	30,125	1,345,156	250,512	2,177,257	578,988
2021	1,866,000	2,234,917	408,652	116,919	673,614	32,013	1,429,453	266,211	2,313,700	615,271
2022	1,754,632	2,101,531	384,262	109,941	633,411	30,103	1,344,139	250,323	2,175,611	578,550
2023	1,792,158	2,146,476	392,481	112,292	646,957	30,746	1,372,886	255,677	2,222,141	590,923
2024	1,731,665	2,074,023	379,233	108,502	625,120	29,708	1,326,545	247,046	2,147,134	570,977
2025	1,550,462	1,856,996	339,549	97,148	559,707	26,600	1,187,734	221,195	1,922,456	511,230
2026	1,412,588	1,691,863	309,355	88,509	509,935	24,234	1,082,115	201,525	1,751,502	465,769
2027	1,388,925	1,663,522	304,173	87,027	501,393	23,828	1,063,989	198,150	1,722,162	457,967
2028	1,304,902	1,562,887	285,772	81,762	471,061	22,387	999,623	186,163	1,617,980	430,262
2029	1,306,124	1,564,351	286,040	81,839	471,502	22,408	1,000,559	186,337	1,619,495	430,665
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	**53,136,835**	**60,454,868**	**11,680,782**	**3,339,636**	**19,254,957**	**915,598**	**39,441,944**	**7,515,154**	**66,086,045**	**17,557,337**

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	74,063	20,920,403	177,728	26,588,412	34,087	10,345	8,446	52,878	0	35,874,763
2004	126,381	35,698,972	303,279	45,370,966	58,166	17,653	14,414	90,233	0	61,217,373
2005	119,798	33,839,341	287,480	43,007,502	55,136	16,733	13,663	85,532	0	58,028,436
2006	127,225	35,937,380	305,304	45,673,969	58,555	17,771	14,510	90,836	0	61,626,205
2007	127,031	35,882,530	304,838	45,604,256	58,465	17,743	14,488	90,696	0	61,532,137
2008	115,635	32,663,493	277,491	41,513,079	53,220	16,152	13,188	82,560	0	56,012,066
2009	117,514	33,194,109	281,999	42,187,455	54,085	16,414	13,402	83,901	0	56,921,973
2010	111,795	31,578,693	268,275	40,134,373	51,453	15,615	12,750	79,818	0	54,151,830
2011	127,052	35,888,398	304,888	45,611,714	58,475	17,746	14,490	90,711	0	61,542,200
2012	127,222	35,936,347	305,295	45,672,655	58,553	17,770	14,509	90,832	0	61,624,429
2013	132,430	37,407,506	317,794	47,542,398	60,950	18,497	15,103	94,550	0	64,147,203
2014	134,762	38,066,174	323,389	48,379,521	62,023	18,823	15,369	96,215	0	65,276,702
2015	141,127	39,864,203	338,664	50,664,693	64,953	19,712	16,095	100,760	0	68,360,001
2016	143,128	40,429,304	343,465	51,382,900	65,874	19,992	16,324	102,190	0	69,329,051
2017	144,312	40,763,883	346,308	51,808,126	66,419	20,157	16,459	103,035	0	69,902,794
2018	128,724	36,360,630	308,900	46,211,889	59,244	17,980	14,681	91,905	0	62,351,996
2019	137,408	38,813,648	329,739	49,329,508	63,241	19,193	15,671	98,105	0	66,558,485
2020	128,121	36,190,480	307,454	45,995,639	58,967	17,896	14,612	91,475	0	62,060,217
2021	136,150	38,458,439	326,722	48,878,061	62,662	19,017	15,528	97,207	0	65,949,365
2022	128,025	36,163,129	307,222	45,960,879	58,923	17,882	14,601	91,406	0	62,013,320
2023	130,763	36,936,539	313,793	46,943,832	60,183	18,265	14,913	93,361	0	63,339,582
2024	126,349	35,689,781	303,201	45,359,284	58,151	17,648	14,410	90,209	0	61,201,606
2025	113,128	31,955,166	271,474	40,612,845	52,066	15,801	12,902	80,769	0	54,797,414
2026	103,068	29,113,558	247,333	37,001,354	47,436	14,396	11,755	73,587	0	49,924,563
2027	101,341	28,625,868	243,192	36,381,537	46,642	14,155	11,558	72,355	0	49,088,267
2028	95,211	26,894,147	228,476	34,180,633	43,820	13,299	10,859	67,978	0	46,118,667
2029	95,300	26,919,341	228,691	34,212,652	43,861	13,311	10,869	68,041	0	46,161,865
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	**4,251,555**	**1,099,988,916**	**9,346,172**	**1,392,969,799**	**1,776,767**	**511,671**	**438,712**	**2,727,150**	**0**	**1,882,032,163**

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	199,726	190,272	447,723	837,721	0	0	0
1964	0	0	0	263,282	277,455	621,356	1,162,093	6,696	21,667	28,363
1965	0	0	0	373,816	404,324	1,158,090	1,936,230	13,756	36,029	49,785
1966	18,063	0	18,063	419,467	421,722	1,412,954	2,254,143	26,524	61,349	87,873
1967	41,574	0	41,574	553,116	548,491	1,863,198	2,964,805	56,469	118,263	174,732
1968	128,627	0	128,627	682,920	633,184	2,178,465	3,494,569	115,960	229,807	345,767
1969	254,715	0	254,715	817,545	583,436	2,298,737	3,699,718	185,156	358,861	544,017
1970	277,547	0	277,547	903,865	640,297	2,787,967	4,332,129	200,150	387,675	587,825
1971	227,474	0	227,474	845,328	675,193	2,807,017	4,327,538	202,413	392,912	595,325
1972	224,978	0	224,978	929,313	822,397	3,027,749	4,779,459	209,057	406,589	615,646
1973	221,091	31,366	252,457	915,746	716,492	3,120,786	4,753,024	206,557	402,723	609,280
1974	240,498	32,938	273,436	956,331	746,933	3,325,022	5,028,286	208,545	407,090	615,635
1975	237,459	36,291	273,750	1,014,701	793,054	3,214,046	5,021,801	225,895	439,873	665,768
1976	271,292	40,836	312,128	1,127,751	943,463	3,362,542	5,433,756	228,976	447,299	676,275
1977	293,627	45,096	338,723	1,096,362	922,203	3,303,462	5,322,027	238,699	468,721	707,420
1978	273,870	49,178	323,048	1,185,142	935,819	3,712,581	5,833,542	245,331	484,259	729,590
1979	289,479	53,340	342,819	1,281,701	1,009,566	3,819,533	6,110,800	243,110	483,437	726,547
1980	310,846	86,073	396,919	1,434,659	1,173,798	4,119,071	6,727,528	282,254	540,553	822,807
1981	347,781	112,848	460,629	1,543,171	1,349,125	4,507,566	7,399,862	307,065	596,670	903,735
1982	438,335	141,835	580,170	1,623,480	1,369,536	4,941,393	7,934,409	328,215	682,546	1,010,761
1983	354,787	163,294	518,081	1,493,746	1,260,138	4,910,241	7,664,125	357,218	702,083	1,059,301
1984	467,336	246,698	714,034	1,803,769	1,478,394	6,870,250	10,152,413	409,530	801,057	1,210,587
1985	736,074	386,306	1,122,380	2,301,592	2,225,097	7,796,485	12,323,174	500,696	969,931	1,470,627
1986	1,120,086	714,246	1,834,332	2,170,200	2,014,104	8,193,844	12,378,148	536,751	1,038,030	1,574,781
1987	1,773,801	1,582,227	3,356,028	2,666,702	2,505,662	7,980,255	13,152,619	570,644	1,148,974	1,719,618
1988	2,349,572	2,524,763	4,874,335	2,727,858	2,774,430	7,830,285	13,332,573	673,071	1,439,620	2,112,691
1989	2,548,764	3,701,384	6,250,148	2,711,810	2,515,471	7,578,849	12,806,130	772,571	1,814,759	2,587,330
1990	2,900,023	3,848,935	6,748,958	3,147,106	2,929,775	8,355,392	14,432,273	933,367	2,046,370	2,979,737
1991	2,941,321	4,170,227	7,111,548	2,419,038	2,384,246	6,430,834	11,234,118	979,709	2,366,841	3,346,550
1992	2,797,727	4,144,993	6,942,720	2,893,513	2,927,114	7,656,940	13,477,567	1,118,807	2,526,860	3,645,667
1993	2,855,497	4,172,491	7,027,988	3,750,289	2,977,354	8,849,995	15,577,638	1,185,666	2,726,057	3,911,723
1994	2,987,939	4,225,294	7,213,233	3,787,368	3,586,249	9,613,529	16,987,146	1,335,974	3,518,043	4,854,017
1995	2,961,322	4,405,219	7,366,541	4,036,020	3,313,351	8,393,827	15,743,198	1,647,816	6,195,415	7,843,231
1996	3,045,020	4,898,210	7,943,230	3,643,860	3,178,398	9,228,554	16,050,812	2,592,043	15,232,541	17,824,584
1997	3,028,004	4,734,808	7,762,812	3,870,369	3,145,550	9,338,015	16,353,934	3,002,833	23,737,163	26,739,996
1998	2,936,591	4,590,497	7,527,088	3,479,844	3,204,217	9,085,221	15,769,282	3,256,282	28,312,394	31,568,676
1999	3,133,543	5,078,354	8,211,897	4,154,290	3,659,366	11,348,214	19,161,870	3,801,021	29,594,819	33,395,840
2000	3,265,149	5,811,692	9,076,841	5,798,004	3,586,424	10,186,480	19,570,908	3,796,090	30,850,550	34,646,640
2001	4,080,182	6,370,132	10,450,314	7,575,964	4,015,410	11,994,072	23,585,446	4,333,398	32,744,802	37,078,200
2002	4,312,079	6,542,166	10,854,245	7,466,178	4,038,491	13,043,172	24,547,841	4,057,625	32,532,341	36,589,966
2003	4,420,002	6,680,779	11,100,781	7,370,228	3,888,666	12,372,538	23,631,432	4,157,464	32,800,868	36,958,332
2004	4,896,541	7,266,990	12,163,531	9,164,342	5,206,315	14,702,700	29,073,357	5,489,168	34,403,279	39,892,446
2005	5,071,850	7,244,469	12,316,319	10,954,355	5,377,450	16,353,265	32,685,070	7,112,399	37,198,952	44,311,351
2006	4,884,878	7,251,401	12,136,279	10,460,409	5,153,775	15,898,882	31,513,066	6,574,402	36,411,846	42,986,248
2007	4,890,666	6,955,251	11,845,917	11,289,819	5,499,341	15,430,052	32,219,212	7,044,971	36,430,491	43,475,462
2008	4,848,713	6,884,845	11,733,558	11,252,552	5,494,069	15,386,160	32,132,781	6,920,976	36,048,882	42,969,858
2009	4,881,513	6,826,516	11,708,029	10,977,680	5,520,981	15,478,568	31,977,229	6,902,252	36,040,827	42,943,079
2010	4,901,770	6,821,897	11,723,667	11,171,095	5,625,495	15,734,509	32,531,099	7,041,389	36,215,319	43,256,708
2011	4,967,940	6,900,959	11,868,899	11,187,938	5,625,493	15,753,959	32,567,390	7,040,017	36,427,739	43,467,756
2012	5,004,997	6,922,747	11,927,744	11,233,701	5,647,772	15,817,246	32,698,719	7,122,846	36,581,162	43,704,008
2013	5,012,695	6,925,256	11,937,951	11,097,599	5,563,231	15,490,932	32,151,762	7,100,760	36,613,887	43,714,647
2014	5,015,431	6,913,237	11,928,668	10,779,247	5,367,058	14,996,914	31,143,219	6,978,549	36,414,917	43,393,466
2015	5,072,538	6,949,258	12,021,796	10,822,913	5,338,555	14,780,056	30,941,524	7,008,567	36,556,902	43,565,469
2016	5,096,459	6,962,653	12,059,112	10,934,846	5,387,989	14,799,382	31,122,217	7,058,499	36,671,275	43,729,774
2017	5,096,018	6,959,578	12,055,596	10,709,515	5,276,885	14,488,765	30,475,165	6,944,803	36,479,119	43,423,922
2018	4,996,624	6,887,196	11,883,820	10,479,830	5,185,465	14,224,033	29,889,328	6,893,716	36,169,533	43,063,249
2019	5,032,947	6,952,293	11,985,240	10,632,314	5,281,222	14,459,633	30,373,169	7,009,412	36,495,806	43,505,218
2020	4,986,772	6,863,401	11,850,173	10,279,648	5,107,172	14,001,501	29,388,321	6,792,334	35,972,863	42,765,197
2021	5,022,509	6,908,259	11,930,768	10,333,300	5,131,545	14,074,654	29,539,499	6,814,203	36,122,874	42,937,077
2022	4,967,930	6,839,018	11,806,948	10,123,405	5,026,532	13,794,016	28,943,953	6,683,070	35,770,597	42,453,667
2023	4,979,994	6,818,899	11,798,893	10,212,778	5,073,257	13,908,577	29,194,612	6,718,658	35,870,680	42,589,338
2024	4,990,144	6,815,689	11,805,833	10,329,967	5,135,439	14,064,483	29,529,889	6,818,807	35,991,994	42,810,801
2025	4,926,416	6,730,783	11,657,199	10,028,690	4,982,737	13,673,390	28,684,817	6,698,081	35,590,793	42,288,874
2026	4,890,918	6,671,310	11,562,228	10,145,200	5,051,243	13,822,116	29,018,559	6,745,882	35,534,529	42,280,411
2027	4,873,554	6,649,108	11,522,662	9,999,015	4,974,817	13,630,178	28,604,010	6,668,526	35,371,264	42,039,790
2028	4,851,413	6,610,972	11,462,385	9,926,624	4,941,193	13,530,887	28,398,704	6,665,238	35,272,392	41,937,630
2029	4,838,236	6,599,601	11,437,837	9,892,720	4,921,901	13,488,681	28,303,302	6,617,756	35,185,830	41,803,586
2030	4,486,804	6,062,528	10,549,332	9,102,223	4,556,203	12,462,749	26,121,175	6,347,082	33,373,632	39,720,714
2031	4,462,869	6,036,598	10,499,467	8,990,406	4,496,774	12,315,000	25,802,180	6,283,725	33,249,467	39,533,192
2032	4,462,216	6,023,757	10,485,973	9,085,553	4,546,362	12,441,155	26,073,070	6,351,204	33,371,350	39,722,554
2033	4,473,955	6,015,350	10,489,305	9,276,044	4,644,487	12,696,757	26,617,288	6,514,791	33,675,215	40,190,006
2034	4,368,776	5,911,228	10,280,004	9,101,938	4,553,977	12,464,000	26,119,915	6,382,314	33,431,949	39,814,263
2035	4,201,565	5,747,091	9,948,656	9,106,595	4,560,870	12,460,615	26,128,080	6,356,215	33,379,213	39,735,428
Total	**214,567,726**	**294,550,654**	**509,118,380**	**426,529,181**	**241,064,059**	**699,731,197**	**1,367,324,437**	**259,250,016**	**1,398,390,419**	**1,657,640,434**

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								Total (19)
				Kern County Water Agemcu					
	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	224,797	19,352	54,589	445,438	1,707,551	16,044	19,600	307,068	2,794,439
1969	240,975	10,848	87,576	525,095	2,724,938	15,678	19,330	457,863	4,082,303
1970	306,081	34,284	94,674	573,999	3,873,921	20,250	30,349	520,582	5,454,140
1971	327,474	37,012	95,695	605,888	5,193,407	25,965	34,627	711,789	7,031,858
1972	381,126	40,273	98,789	631,615	7,158,291	25,249	63,711	1,982,726	10,381,780
1973	398,431	38,895	97,550	1,025,888	7,286,918	27,580	39,206	781,031	9,695,499
1974	506,672	40,109	98,460	1,144,792	7,996,565	28,292	42,497	1,040,770	10,898,156
1975	679,070	40,558	106,703	1,197,166	9,375,460	29,970	48,111	1,553,576	13,030,614
1976	718,788	43,079	108,083	1,323,839	10,619,066	31,391	52,038	1,440,066	14,336,351
1977	579,063	38,996	112,554	1,367,405	10,932,017	33,140	54,150	1,136,087	14,253,411
1978	697,566	36,029	115,521	1,565,883	13,263,453	37,552	58,962	1,169,945	16,944,911
1979	780,763	47,832	114,253	1,668,951	15,338,314	41,684	70,552	1,723,692	19,786,042
1980	961,670	49,567	125,950	1,770,264	16,976,583	46,637	94,834	1,669,920	21,695,425
1981	1,210,609	83,933	134,169	2,430,802	22,576,961	65,094	100,558	2,280,851	28,882,977
1982	1,246,725	70,127	135,057	2,523,661	24,970,816	69,259	108,202	2,275,430	31,399,277
1983	1,180,956	52,477	149,201	2,085,047	24,615,213	74,040	87,366	506,448	28,750,748
1984	1,490,401	28,459	164,505	3,396,379	33,341,376	92,911	121,336	1,539,309	40,174,676
1985	1,766,165	129,889	184,905	3,891,204	39,309,313	116,171	139,414	2,814,460	48,351,521
1986	2,007,966	79,266	180,445	4,079,838	43,409,484	135,299	153,066	3,650,854	53,696,218
1987	1,883,130	95,184	179,872	4,570,840	42,678,177	135,909	151,304	3,743,638	53,438,054
1988	1,968,069	109,562	193,735	4,734,502	44,613,216	136,850	146,459	3,898,008	55,800,401
1989	2,122,682	101,689	187,914	4,677,356	46,803,897	135,641	166,281	4,379,286	58,574,746
1990	1,882,845	86,893	221,391	4,827,892	45,579,077	119,700	148,583	3,957,034	56,823,415
1991	1,687,605	80,182	220,282	4,535,868	37,454,732	102,443	134,593	3,498,044	47,713,749
1992	2,233,205	105,001	241,456	5,550,167	48,651,828	142,302	175,576	4,536,874	61,636,409
1993	2,455,360	120,004	264,959	5,806,060	54,552,995	160,024	195,141	5,290,728	68,845,271
1994	2,260,198	107,510	306,359	5,210,311	52,023,607	144,095	177,953	4,663,461	64,893,494
1995	2,856,644	115,426	304,297	6,621,490	60,483,691	179,243	210,286	5,522,262	76,293,339
1996	2,078,832	125,116	389,202	6,671,115	58,894,516	176,799	189,898	7,088,027	75,613,505
1997	2,790,409	100,521	276,681	6,521,956	57,762,784	136,350	212,098	4,710,158	72,510,957
1998	2,645,179	119,842	381,881	5,812,841	54,354,532	141,616	203,856	4,964,577	68,624,324
1999	2,692,216	133,990	364,399	6,346,982	57,098,770	179,741	215,627	7,263,269	74,294,994
2000	2,627,781	120,624	301,964	6,376,433	51,617,672	172,612	213,674	6,189,532	67,620,292
2001	3,203,203	144,419	326,575	6,453,075	57,793,232	189,147	256,946	6,388,611	74,755,208
2002	3,000,862	126,848	319,227	6,784,062	53,010,326	184,703	239,176	5,719,602	69,384,806
2003	3,076,788	131,409	351,733	6,876,767	56,300,239	201,743	238,613	6,078,804	73,256,096
2004	3,874,383	187,071	348,733	7,908,202	61,261,684	340,250	281,491	6,393,199	80,595,013
2005	3,822,360	181,011	337,708	8,814,586	66,978,994	480,481	294,890	7,018,008	87,928,038
2006	3,631,204	169,947	345,250	8,279,395	63,743,619	463,480	279,074	6,648,519	83,560,488
2007	3,681,388	172,253	379,777	8,494,054	65,669,364	463,757	281,904	6,745,918	85,888,415
2008	3,661,382	171,592	380,030	8,448,756	65,358,371	459,013	281,883	6,712,498	85,473,525
2009	3,607,261	168,696	380,107	8,297,207	64,795,682	455,805	276,185	6,613,446	84,594,389
2010	3,711,660	174,353	380,228	8,527,963	66,616,038	461,404	285,758	6,819,389	86,976,793
2011	3,701,621	173,299	381,274	8,498,607	66,299,927	465,334	284,181	6,791,689	86,595,932
2012	3,705,450	173,493	381,336	8,519,015	66,574,858	465,657	282,948	6,799,020	86,901,777
2013	3,779,359	177,182	381,490	8,665,860	67,553,639	472,375	290,927	6,940,058	88,260,890
2014	3,651,875	170,431	378,829	8,389,998	65,513,784	464,190	278,724	6,690,856	85,538,687
2015	3,729,398	174,269	375,727	8,478,279	66,628,612	471,496	286,113	6,838,366	86,982,260
2016	3,839,026	179,941	369,382	8,655,317	68,399,288	479,706	295,935	7,050,729	89,269,324
2017	3,741,191	174,780	355,297	8,306,540	66,739,334	473,245	287,404	6,859,793	86,937,584
2018	3,689,067	172,578	332,786	8,094,266	66,267,529	456,517	281,840	6,766,101	86,060,684
2019	3,825,687	179,436	323,972	8,327,568	68,362,840	468,075	293,992	7,027,633	88,809,203
2020	3,689,973	172,647	322,409	7,997,432	66,174,047	455,629	282,966	6,768,247	85,863,350
2021	3,710,526	173,451	321,442	8,018,008	66,418,116	459,303	284,389	6,804,168	86,189,403
2022	3,621,830	169,085	320,733	7,815,500	65,030,363	450,649	277,083	6,635,710	84,320,953
2023	3,680,721	172,076	320,072	7,937,553	65,932,420	455,506	282,530	6,749,028	85,529,906
2024	3,732,482	174,932	319,646	8,051,141	66,871,505	457,806	287,049	6,851,842	86,746,403
2025	3,560,844	166,397	319,366	7,685,811	64,343,852	441,919	271,178	6,524,537	83,313,904
2026	3,665,913	172,240	318,593	7,908,850	66,060,170	446,198	282,208	6,734,113	85,588,285
2027	3,582,065	167,903	318,824	7,727,973	64,778,396	439,861	274,205	6,571,572	83,860,799
2028	3,570,051	167,490	315,485	7,698,632	64,630,453	437,120	270,383	6,551,604	83,641,218
2029	3,536,380	165,723	315,542	7,624,431	64,091,710	434,758	270,442	6,485,961	82,924,947
2030	3,193,010	150,987	315,000	6,911,716	59,763,665	382,522	242,911	5,865,969	76,825,780
2031	3,135,799	147,985	314,268	6,772,680	58,888,831	378,218	237,298	5,754,307	75,629,386
2032	3,179,345	150,273	313,132	6,865,543	59,544,253	381,180	241,577	5,839,446	76,514,749
2033	3,255,057	154,230	313,362	7,040,807	61,006,432	386,361	246,567	5,986,534	78,389,350
2034	3,182,595	150,438	312,780	6,865,367	59,664,568	381,175	241,332	5,845,553	76,643,808
2035	3,251,804	154,064	311,489	7,024,894	60,960,749	385,728	246,366	5,980,360	78,315,454
Total	**172,371,013**	**8,255,458**	**18,041,725**	**385,761,332**	**3,251,266,031**	**17,685,842**	**13,415,706**	**326,118,555**	**4,192,915,662**

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	101,265	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	744,423	491,251	152,688	41,509	251,199	12,870	311,159	95,466	782,164	208,926
1969	1,072,961	742,200	225,307	61,226	370,960	18,694	459,046	138,064	1,205,834	321,755
1970	1,396,258	942,197	315,262	89,700	519,318	25,231	633,147	184,837	1,778,188	467,573
1971	1,728,266	1,136,623	432,545	128,360	712,746	31,837	857,356	231,280	2,539,164	659,414
1972	2,208,323	1,381,642	603,427	185,868	989,938	43,770	1,179,479	287,620	3,775,599	950,298
1973	2,360,891	1,430,057	747,491	190,992	1,217,110	46,059	1,270,233	313,446	4,043,940	961,024
1974	2,481,649	1,525,538	770,984	204,074	1,256,989	48,932	1,329,071	331,702	4,481,149	1,104,491
1975	2,699,360	1,616,507	816,311	219,289	1,332,262	53,242	1,415,063	355,269	4,656,316	1,208,047
1976	3,163,813	1,653,174	873,335	232,130	1,424,966	57,732	1,491,351	381,276	4,855,853	1,278,740
1977	3,145,585	1,741,013	773,846	245,112	1,267,276	54,210	1,578,699	406,620	5,111,731	1,336,313
1978	3,593,578	1,874,042	973,000	255,468	1,568,020	56,805	1,625,904	420,026	5,109,424	1,374,032
1979	4,267,174	1,953,813	1,058,279	267,791	1,690,237	60,284	1,801,197	449,757	5,154,328	1,342,135
1980	4,951,479	2,092,159	1,167,480	295,350	1,890,623	67,605	1,973,169	499,051	5,665,094	1,485,141
1981	5,779,242	2,561,477	1,322,125	328,818	2,140,610	100,752	2,291,214	603,265	6,479,330	1,688,324
1982	5,538,076	2,724,488	1,409,804	346,721	2,284,334	82,296	2,265,904	641,991	6,770,288	1,929,664
1983	6,288,481	2,795,042	1,929,577	380,840	3,118,816	88,384	2,461,424	658,613	6,982,194	1,808,748
1984	7,663,880	3,873,745	3,030,004	497,585	4,875,176	96,492	2,726,799	727,821	8,070,699	2,598,233
1985	9,494,881	4,339,780	3,863,554	601,928	6,210,153	103,706	2,916,716	959,658	8,910,831	2,686,799
1986	9,463,069	4,975,174	4,323,806	647,634	6,954,450	130,221	3,100,205	1,223,847	9,160,311	3,398,539
1987	9,497,193	4,832,622	4,191,397	678,086	6,830,465	240,872	3,154,604	1,255,052	10,561,826	3,398,921
1988	9,095,537	5,019,337	4,248,225	704,411	6,997,013	158,845	3,328,718	1,044,206	11,112,682	3,271,137
1989	10,985,943	5,028,640	3,955,357	691,191	6,579,619	210,634	3,409,478	1,746,763	10,829,479	3,453,680
1990	12,377,417	5,496,643	4,647,031	729,229	7,663,736	331,172	3,640,314	1,953,904	11,740,436	4,221,266
1991	9,237,042	4,610,406	3,200,211	688,866	5,277,388	221,166	4,499,753	1,640,084	11,122,363	3,642,611
1992	11,793,160	5,799,094	3,353,122	612,895	5,529,463	174,998	5,477,853	1,532,325	11,161,591	3,694,099
1993	12,206,276	5,445,758	3,556,023	617,198	5,864,156	211,904	5,368,698	1,753,971	12,124,665	4,042,324
1994	14,275,077	6,012,998	3,580,859	694,570	5,904,938	278,011	6,319,471	2,090,719	12,751,813	4,777,246
1995	14,141,382	6,387,865	4,401,989	661,812	7,259,469	212,244	5,511,990	1,952,494	12,221,934	4,480,934
1996	14,567,796	6,619,007	7,353,726	710,651	12,127,946	208,357	5,609,614	2,300,206	12,748,420	4,599,073
1997	15,137,351	6,512,662	6,968,473	750,419	8,455,795	207,887	6,031,593	2,342,198	14,415,767	4,897,486
1998	13,676,909	6,146,267	6,066,715	717,267	6,979,801	209,243	7,636,289	1,950,390	14,320,332	4,180,208
1999	15,361,261	6,627,392	5,069,845	820,894	7,107,677	213,258	8,218,724	2,346,607	15,693,304	5,101,949
2000	14,852,365	10,270,416	3,590,397	794,236	5,632,963	186,602	8,190,234	2,086,091	15,520,024	4,271,625
2001	24,734,017	15,903,742	4,570,758	1,003,527	7,537,886	198,080	8,849,641	3,972,433	21,572,063	4,425,252
2002	16,109,593	12,962,798	3,775,073	951,011	6,225,721	181,413	8,005,602	3,330,017	22,053,781	5,703,832
2003	17,413,285	13,987,405	4,099,050	938,990	6,759,445	184,758	10,523,916	2,893,838	20,308,897	5,921,753
2004	23,996,498	17,797,378	6,092,952	1,199,499	8,885,684	388,326	14,025,547	4,613,478	31,932,894	6,608,394
2005	26,181,503	22,062,644	5,959,689	1,241,889	9,828,381	564,261	14,956,039	5,142,432	26,732,649	8,275,912
2006	23,581,712	18,761,633	5,723,444	1,242,037	9,438,708	508,033	14,410,817	4,605,997	26,250,292	7,990,669
2007	26,219,827	19,797,453	6,177,214	1,308,725	10,187,155	557,073	15,078,971	5,059,483	27,031,907	8,552,876
2008	26,347,566	19,343,564	6,018,845	1,302,082	9,925,977	544,238	14,783,934	4,943,083	26,436,732	8,328,096
2009	32,802,814	20,249,146	6,050,986	1,362,446	9,978,988	544,277	13,778,792	4,942,977	33,839,020	8,387,800
2010	33,750,626	21,487,738	6,219,578	1,407,474	10,257,067	559,617	14,256,105	5,086,346	34,492,998	8,580,805
2011	33,362,836	22,145,572	6,152,442	1,436,083	10,146,298	553,533	14,530,503	5,026,352	34,340,841	8,524,752
2012	34,511,184	23,415,777	6,355,741	1,495,136	10,481,602	572,219	15,161,254	5,199,328	35,183,213	8,767,762
2013	34,003,525	23,102,246	6,258,413	1,494,903	10,307,691	564,590	15,304,376	5,127,373	34,548,825	8,608,049
2014	33,316,418	22,515,297	6,126,237	1,516,526	10,103,671	552,813	15,431,297	5,019,256	34,309,768	8,507,888
2015	33,378,224	22,621,941	6,112,454	1,523,600	10,080,914	553,866	15,833,735	5,028,677	33,960,463	8,441,889
2016	34,383,863	23,254,768	6,307,720	1,609,695	10,402,984	570,143	16,644,102	5,180,956	35,175,521	8,745,868
2017	32,948,217	22,350,863	6,026,615	1,563,190	9,939,336	546,563	16,531,499	4,966,531	33,690,013	8,355,022
2018	33,627,895	22,550,773	6,136,382	1,610,558	10,120,438	557,219	17,174,011	5,072,918	34,124,691	8,479,102
2019	34,223,745	22,771,273	6,234,482	1,660,114	10,282,230	566,526	18,001,987	5,161,850	34,655,383	8,614,150
2020	32,436,270	21,475,322	5,846,434	1,579,227	9,642,230	536,069	17,593,240	4,888,134	32,517,407	8,053,520
2021	32,301,210	21,349,370	5,764,679	1,555,908	9,507,370	532,790	17,743,543	4,862,814	31,761,948	7,880,514
2022	31,350,139	20,477,113	5,568,322	1,532,018	9,183,548	516,962	17,473,290	4,719,816	30,869,012	7,912,311
2023	31,653,158	20,748,417	5,616,156	1,568,729	9,262,438	521,737	17,931,170	4,764,643	31,215,429	7,709,794
2024	32,247,453	21,088,833	5,706,918	1,586,335	9,412,145	531,344	18,481,996	4,854,652	31,332,546	7,771,650
2025	31,576,749	20,511,279	5,584,418	1,563,908	9,210,143	520,242	18,427,073	4,755,018	30,752,773	7,609,810
2026	31,820,528	20,710,438	5,609,864	1,591,830	9,252,148	524,041	18,818,607	4,792,793	30,993,018	7,659,432
2027	31,518,671	20,233,660	5,540,598	1,566,267	9,137,901	519,105	18,980,487	4,747,564	30,397,723	7,522,062
2028	31,311,233	20,370,814	5,486,947	1,554,401	9,049,426	515,627	19,203,405	4,717,030	29,992,587	7,424,680
2029	31,111,439	19,936,796	5,470,364	1,578,577	9,022,088	512,358	19,435,994	4,687,037	30,284,032	7,467,327
2030	29,737,610	18,397,736	5,172,121	1,503,687	8,530,459	488,834	18,767,903	4,490,747	28,628,149	7,024,505
2031	29,525,062	17,985,395	5,102,573	1,460,910	8,415,736	485,345	19,014,994	4,459,261	27,816,718	6,851,394
2032	29,525,399	18,257,364	5,127,332	1,496,645	8,456,588	485,320	18,973,921	4,459,645	28,391,021	6,962,143
2033	31,441,288	19,354,964	5,463,230	1,575,449	9,010,596	516,447	20,225,682	4,749,708	29,636,848	7,338,551
2034	29,714,864	18,272,697	5,150,710	1,493,349	8,495,143	488,359	19,139,180	4,491,843	28,191,495	6,937,744
2035	31,870,483	18,686,146	5,519,919	1,625,284	9,104,120	523,312	20,378,576	4,818,525	30,380,166	7,492,195
Total	**1,310,129,055**	**829,989,917**	**287,271,223**	**65,839,643**	**464,160,359**	**21,744,017**	**682,299,987**	**200,642,306**	**1,336,593,357**	**354,525,628**

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	1,626,209
1964	21,736	1,260,513	9,378	1,593,480	0	0	0	0	13,938	2,800,599
1965	21,866	2,180,589	17,767	2,702,924	0	0	405	405	28,937	4,797,878
1966	37,964	3,900,172	33,426	4,834,766	0	0	564	564	31,321	7,376,098
1967	71,283	7,693,703	68,155	9,497,844	0	0	562	562	47,718	13,021,103
1968	128,915	15,317,881	142,803	18,681,255	0	1,050	1,439	2,489	46,945	25,494,091
1969	198,763	23,153,063	215,209	28,183,082	0	1,225	4,120	5,345	52,963	36,822,143
1970	289,633	30,617,164	273,605	37,532,113	0	3,848	17,116	20,964	69,744	48,274,462
1971	409,327	39,976,488	342,425	49,185,831	0	4,546	19,187	23,733	55,532	61,447,291
1972	537,186	55,308,785	422,305	67,874,240	0	4,929	21,150	26,079	80,412	83,982,593
1973	587,964	59,914,809	435,655	73,519,672	0	7,059	21,778	28,837	54,219	88,912,988
1974	611,428	66,332,091	455,565	80,933,663	0	8,336	22,408	30,744	76,783	97,856,703
1975	644,621	72,153,761	478,404	87,648,453	0	9,416	23,522	32,938	84,547	106,757,871
1976	668,314	75,230,905	475,587	91,787,176	0	7,004	23,257	30,261	106,717	112,682,664
1977	696,515	73,662,148	507,064	90,526,131	0	16,917	24,059	40,976	98,618	111,287,307
1978	709,040	82,274,859	523,177	100,357,374	0	12,635	24,225	36,860	100,786	124,326,111
1979	712,866	83,925,477	526,405	103,209,744	0	16,575	28,352	44,927	119,352	130,340,231
1980	862,276	93,353,043	583,628	114,886,097	0	19,834	26,562	46,396	178,812	144,753,984
1981	946,961	112,495,184	672,540	137,409,841	0	21,682	34,563	56,245	185,347	175,298,636
1982	1,021,329	117,466,992	727,623	143,209,511	0	16,117	43,117	59,234	173,894	184,367,256
1983	1,076,279	119,314,699	854,263	147,757,361	0	15,202	29,410	44,612	220,926	186,015,154
1984	1,211,620	156,597,226	933,311	192,902,590	20,590	15,442	31,795	67,827	225,959	245,448,087
1985	1,287,789	195,816,962	993,651	238,186,408	24,050	16,976	32,405	73,431	340,322	301,867,863
1986	1,344,770	218,655,375	1,058,276	264,435,677	31,753	18,145	33,596	83,494	279,227	334,281,878
1987	1,379,614	205,183,173	1,056,318	252,260,143	37,071	17,794	33,384	88,249	345,116	324,359,828
1988	1,465,828	221,990,807	1,124,101	269,560,847	48,058	19,117	33,605	100,780	365,207	346,146,834
1989	1,505,481	230,651,969	1,232,379	280,280,613	61,184	20,809	37,188	119,181	422,329	361,040,476
1990	1,624,763	277,518,457	1,855,990	333,800,358	66,041	20,855	36,812	123,708	474,284	415,382,733
1991	1,720,878	222,210,752	1,549,955	269,621,475	180,212	22,526	42,200	244,938	214,683	339,487,062
1992	1,779,902	245,689,309	1,503,480	298,101,291	208,216	26,028	43,517	277,761	443,676	384,525,091
1993	1,943,337	219,561,871	1,551,253	274,247,435	209,613	26,203	47,588	283,404	599,571	370,493,030
1994	1,920,543	257,719,771	1,475,305	317,801,320	201,284	25,161	46,079	272,524	609,932	412,631,666
1995	1,982,808	226,187,062	1,568,401	286,970,384	216,944	27,118	50,021	294,083	534,971	395,045,747
1996	1,651,251	235,734,004	1,622,641	305,852,693	217,250	27,156	56,623	301,029	571,857	424,157,710
1997	1,758,787	245,777,257	1,777,266	315,032,941	236,300	29,847	59,915	326,062	428,638	439,155,340
1998	1,949,514	227,576,090	1,797,591	293,206,616	128,021	29,927	54,392	212,340	465,140	417,373,466
1999	2,263,284	254,011,479	1,861,329	324,697,002	254,675	31,834	58,372	344,881	551,178	460,657,662
2000	2,554,751	254,588,461	1,970,029	324,508,195	262,163	79,001	61,076	402,240	0	455,825,116
2001	3,562,686	443,666,607	2,273,456	542,270,149	261,699	93,471	62,428	417,598	0	688,556,914
2002	4,945,515	327,862,252	2,278,868	414,385,476	266,107	95,018	64,669	425,794	0	556,188,128
2003	5,934,142	357,877,976	2,309,200	449,152,655	262,547	93,638	69,511	425,696	0	594,524,992
2004	6,802,936	499,681,156	3,482,919	625,507,662	308,431	109,701	81,233	499,365	0	787,731,375
2005	7,180,377	514,500,762	2,861,508	645,488,046	302,956	734,022	35,040	1,072,018	0	823,800,842
2006	7,192,795	466,193,287	2,653,113	588,552,537	293,586	691,037	81,322	1,065,945	0	759,814,563
2007	7,367,268	499,721,263	2,763,479	629,822,694	293,496	691,009	83,063	1,067,568	0	804,319,268
2008	8,941,690	487,683,756	2,716,186	617,315,749	288,251	689,418	83,455	1,061,124	0	790,686,595
2009	7,710,122	488,857,825	2,718,525	631,223,718	289,116	689,680	85,355	1,064,151	0	803,510,595
2010	7,914,478	501,837,213	2,742,990	648,593,035	286,484	688,881	86,393	1,061,758	0	824,143,060
2011	8,043,879	497,860,791	2,761,652	644,885,534	293,506	691,012	90,061	1,074,579	0	820,460,090
2012	8,283,809	512,926,224	2,802,030	665,155,279	293,584	691,036	92,012	1,076,632	0	841,464,159
2013	8,353,862	505,775,234	2,797,137	656,246,224	295,981	691,763	94,777	1,082,521	0	833,393,995
2014	8,468,584	495,168,604	2,762,950	643,799,309	297,054	692,089	97,213	1,086,356	0	816,889,705
2015	8,559,243	495,121,145	2,770,365	643,986,516	299,984	692,978	99,950	1,092,912	0	818,590,477
2016	8,872,542	509,184,871	2,800,468	663,133,501	300,905	693,258	102,429	1,096,592	0	840,410,520
2017	8,792,834	488,617,879	2,723,347	637,051,909	301,450	693,423	102,567	1,097,440	0	811,041,616
2018	9,007,829	492,609,888	2,662,385	643,734,089	294,275	691,246	100,788	1,086,309	0	815,717,479
2019	9,074,219	498,056,875	2,641,914	651,944,748	298,272	692,459	99,146	1,089,877	0	827,707,455
2020	8,747,378	467,362,535	2,513,072	613,190,838	293,998	691,162	86,163	1,071,323	0	784,129,202
2021	8,622,998	460,759,558	2,467,597	605,110,299	297,693	692,283	86,256	1,076,232	0	776,783,278
2022	8,487,045	442,484,674	2,382,283	582,956,533	293,954	691,148	83,939	1,069,041	0	751,551,095
2023	8,531,793	444,994,215	2,399,560	586,917,239	295,214	691,531	84,249	1,070,994	0	757,100,982
2024	8,572,914	451,264,298	2,406,170	595,257,254	293,182	690,914	83,745	1,067,841	0	767,218,021
2025	8,498,429	438,711,369	2,338,538	580,059,749	287,097	689,067	82,241	1,058,405	0	747,062,948
2026	8,547,679	443,800,562	2,341,042	586,461,982	282,467	687,662	81,082	1,051,211	0	755,962,676
2027	8,464,358	431,941,342	2,286,076	572,855,814	281,673	687,421	80,898	1,049,992	0	739,933,067
2028	8,414,391	436,301,614	2,326,936	576,669,091	278,851	686,565	80,182	1,045,598	0	743,154,626
2029	8,444,690	428,106,176	2,261,257	568,318,135	278,892	686,577	80,198	1,045,667	0	733,833,474
2030	8,342,249	401,324,658	2,027,341	534,435,999	235,031	673,266	69,324	977,621	0	688,630,621
2031	8,231,262	391,954,233	1,962,923	523,265,806	235,031	673,266	69,333	977,630	0	675,707,661
2032	8,304,015	399,029,855	2,014,825	531,484,073	235,031	673,266	69,315	977,612	0	685,258,031
2033	8,526,603	419,632,648	2,027,520	559,499,534	235,031	673,266	69,325	977,622	0	716,163,105
2034	8,284,914	397,173,739	1,967,724	529,801,761	235,031	673,266	69,323	977,620	0	683,637,371
2035	8,625,152	419,362,342	2,022,851	560,409,071	235,031	673,266	69,312	977,609	0	715,514,298
Total	**320,253,866**	**20,989,100,590**	**119,964,467**	**26,982,514,415**	**12,224,316**	**22,359,379**	**3,980,661**	**38,564,356**	**8,715,446**	**34,756,793,132**

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	48.91	7.62	56.52
County of Butte	0.00	0.00	0.00	0.00	0.00	27.84	0.77	28.61
Plumas County Flood Control and Water Conservation District	27.17	3.64	0.00	0.00	30.81	33.21	5.27	69.29
Feather River Area	2.40	0.32	0.00	0.00	2.72	33.53	2.87	39.12
North Bay Area								
Napa County Flood Control and Water Conservation District	122.84	41.14	4.22	14.63	182.82	19.27	11.55	213.64
Solano County Water Agency	83.99	33.55	4.53	9.85	131.92	25.78	10.91	168.60
North Bay Area	98.76	36.44	4.41	11.66	151.27	23.30	11.15	185.73
South Bay Area								
Alameda County Flood Control and Water Conservation District, Zone 7	33.68	34.18	7.97	22.80	98.63	24.73	7.51	130.87
Alameda County Water District	23.35	26.36	6.96	15.43	72.10	21.20	4.57	97.87
Santa Clara Valley Water District	21.21	20.17	6.45	12.73	60.57	15.33	3.32	79.22
South Bay Area	23.91	23.84	6.82	15.08	69.66	18.08	4.32	92.06
San Joaquin Valley Area								
County of Kings	6.37	6.78	3.65	6.43	23.22	27.13	4.86	55.21
Dudley Ridge Water District	5.14	4.83	3.10	5.60	18.67	15.96	2.34	36.97
Empire West Side Irrigation District	2.00	4.06	2.36	5.05	13.47	17.34	1.79	32.61
Kern County Water Agency	9.35	9.43	4.78	7.55	31.11	18.87	2.48	52.46
Oak Flat Water District	1.98	2.28	1.92	3.51	9.69	15.63	1.76	27.08
Tulare Lake Basin Water Storage District	5.19	4.75	3.01	5.60	18.55	16.41	2.32	37.27
San Joaquin Valley Area	8.61	8.62	4.48	5.51	27.22	16.66	2.36	46.23
Central Coastal Area								
San Luis Obispo County Flood Control and Water Conservation District	149.22	72.60	14.41	102.35	338.58	51.02	19.35	408.95
Santa Barbara County Flood Control and Water Conservation District	707.81	110.26	16.60	94.90	929.57	45.62	53.20	1,028.38
Central Coastal Area	526.02	98.00	15.89	97.32	737.24	47.37	42.18	826.79
Southern California Area								
Antelope Valley-East Kern Water Agency	44.26	39.84	28.27	77.14	189.52	31.67	8.01	229.20
Castaic Lake Water Agency	48.54	41.28	23.03	51.10	163.95	26.94	12.77	203.66
Coachella Valley Water District	36.96	33.43	50.65	40.10	161.14	17.39	5.44	183.96
Crestline-Lake Arrowhead Water Agency	118.85	96.55	31.15	91.48	338.04	45.37	16.24	399.66
Desert Water Agency	40.76	36.87	49.18	45.45	172.25	18.97	5.99	197.22
Littlerock Creek Irrigation District	56.19	50.07	27.85	86.17	220.29	39.29	9.78	269.35
Mojave Water Agency	119.12	123.51	25.18	132.50	400.31	70.54	26.11	496.95
Palmdale Water District	49.29	46.02	34.48	97.88	227.67	39.36	9.15	276.18
San Bernardino Valley Municipal Water District	173.55	119.85	24.29	86.08	403.77	51.28	19.27	474.33
San Gabriel Valley Municipal Water District	93.39	77.52	40.21	62.51	273.64	34.37	12.42	320.43
San Gorgonio Pass Water Agency	622.08	218.58	15.87	129.85	986.38	62.73	15.25	1,064.36
Metropolitan Water District of Southern California	77.47	57.97	34.95	52.62	223.00	31.86	10.71	265.57
Ventura County Flood Control District	349.84	261.20	28.52	94.52	734.08	147.51	52.74	934.33
Southern California Area	71.61	54.08	31.67	51.61	208.98	31.02	10.18	250.18
All Areas	**47.12**	**34.35**	**18.83**	**31.47**	**131.76**	**25.32**	**6.97**	**164.06**

[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)*	*Aqueduct Costs (4)*	*Variable OMP&R (5)*	*Total (6)*	*Capital Costs (7)*	*Water System Revenue Bond Surcharge*[c] *(8)*	*Minimum OMP&R (9)*	*Aqueduct Costs (10)*	*Variable OMP&R (11)*	*Total (12)*
North Bay Aqueduct												
1	39.49	11.19	11.80	1.29	3.22	66.99	39.49	11.19	11.80	1.29	3.22	66.99
2	42.02	11.91	5.16	0.00	0.00	59.09	81.51	23.10	16.96	1.29	3.22	126.08
3A	7.49	2.12	10.26	2.40	5.21	27.48	89.00	25.22	27.22	3.69	8.43	153.56
3B	48.18	13.65	23.19	3.09	11.57	99.68	129.69	36.75	40.15	4.38	14.79	225.76
South Bay Aqueduct												
1	6.90	1.96	13.84	5.29	12.06	40.05	8.83	2.51	16.56	7.02	17.70	52.62
2	0.65	0.18	1.56	0.00	0.00	2.39	9.48	2.69	18.12	7.02	17.70	55.01
4	2.17	0.61	2.67	0.00	0.00	5.45	11.65	3.30	20.79	7.02	17.70	60.46
5	4.56	1.29	2.09	0.00	0.00	7.94	16.21	4.59	22.88	7.02	17.70	68.40
6	0.26	0.07	0.22	0.00	0.00	0.55	16.47	4.66	23.10	7.02	17.70	68.95
7	2.02	0.57	0.40	0.00	0.00	2.99	18.49	5.23	23.50	7.02	17.70	71.94
8	2.74	0.78	0.67	0.00	0.00	4.19	21.23	6.01	24.17	7.02	17.70	76.13
9	5.66	1.60	2.51	0.00	0.00	9.77	26.89	7.61	26.68	7.02	17.70	85.90
California Aqueduct												
1	1.93	0.55	2.72	1.73	5.64	12.57	1.93	0.55	2.72	1.73	5.64	12.57
2A	1.23	0.35	0.54	0.00	0.00	2.12	3.16	0.90	3.26	1.73	5.64	14.69
2B	0.63	0.18	0.27	0.00	0.00	1.08	3.79	1.08	3.53	1.73	5.64	15.77
3	0.55	0.16	0.20	0.00	0.00	0.91	4.34	1.24	3.73	1.73	5.64	16.68
4	0.87	0.25	1.35	0.80	2.55	5.82	5.21	1.49	5.08	2.53	8.19	22.50
5	0.67	0.19	0.27	0.00	0.00	1.13	5.88	1.68	5.35	2.53	8.19	23.63
6	0.17	0.05	0.13	0.00	0.00	0.35	6.05	1.73	5.48	2.53	8.19	23.98
7	1.00	0.28	0.33	0.00	0.00	1.61	7.05	2.01	5.81	2.53	8.19	25.59
8C	0.02	0.01	0.06	0.00	0.00	0.09	7.07	2.02	5.87	2.53	8.19	25.68
8D	0.39	0.11	0.26	0.00	0.00	0.76	7.46	2.13	6.13	2.53	8.19	26.44
9	0.32	0.09	0.24	0.00	0.00	0.65	7.78	2.22	6.37	2.53	8.19	27.09
10A	0.35	0.10	0.32	0.00	0.00	0.77	8.13	2.32	6.69	2.53	8.19	27.86
11B	0.51	0.14	0.20	0.00	0.00	0.85	8.64	2.46	6.89	2.53	8.19	28.71
12D	0.48	0.14	0.18	0.00	0.00	0.80	9.12	2.60	7.07	2.53	8.19	29.51
12E	0.33	0.09	0.31	0.00	0.00	0.73	9.45	2.69	7.38	2.53	8.19	30.24
13B	0.72	0.20	0.35	0.00	0.00	1.27	10.17	2.89	7.73	2.53	8.19	31.51
14A	2.78	0.79	2.73	1.37	4.80	12.47	12.95	3.68	10.46	3.90	12.99	43.98
14B	0.44	0.12	0.34	0.00	0.00	0.90	13.39	3.80	10.80	3.90	12.99	44.88
14C	0.37	0.10	0.25	0.00	0.00	0.72	13.76	3.90	11.05	3.90	12.99	45.60
15A	2.06	0.58	2.85	1.65	5.21	12.35	15.82	4.48	13.90	5.55	18.20	57.95
16A	3.41	0.97	4.41	3.56	12.16	24.51	19.23	5.45	18.31	9.11	30.36	82.46
17E	11.51	3.26	12.39	12.45	44.88	84.49	30.74	8.71	30.70	21.56	75.24	166.95
17F	2.98	0.84	0.15	0.00	0.00	3.97	33.72	9.55	30.85	21.56	75.24	170.92
18A	2.68	0.76	1.49	0.00	-4.72	0.21	36.40	10.31	32.34	21.56	70.52	171.13
19	1.98	0.56	0.90	0.00	0.00	3.44	38.38	10.87	33.24	21.56	70.52	174.57
19C	2.15	0.61	0.00	0.00	0.00	2.76	40.53	11.48	33.24	21.56	70.52	177.33
20A	1.57	0.44	1.49	0.00	0.00	3.50	42.10	11.92	34.73	21.56	70.52	180.83
20B	1.91	0.54	0.98	0.00	0.00	3.43	44.01	12.46	35.71	21.56	70.52	184.26
21	0.96	0.27	0.68	0.00	0.00	1.91	44.97	12.73	36.39	21.56	70.52	186.17
22A	1.00	0.28	0.35	0.00	0.00	1.63	45.97	13.01	36.74	21.56	70.52	187.80
22B	9.86	2.79	9.59	4.02	14.80	41.06	55.83	15.80	46.33	25.58	85.32	228.86
23	2.71	0.77	0.66	0.00	-6.01	(1.87)	58.54	16.57	46.99	25.58	79.31	226.99
24	5.26	1.49	1.86	0.00	0.00	8.61	63.80	18.06	48.85	25.58	79.31	235.60
25	3.84	1.09	0.11	0.00	0.00	5.04	67.64	19.15	48.96	25.58	79.31	240.64
26A	4.19	1.19	6.21	0.00	-41.04	(29.45)	71.83	20.34	55.17	25.58	38.27	211.19
28G	7.80	2.21	2.35	0.00	0.00	12.36	79.63	22.55	57.52	25.58	38.27	223.55
28H	7.51	2.13	2.46	0.00	0.00	12.10	87.14	24.68	59.98	25.58	38.27	235.65
28J	84.24	23.87	34.26	0.00	0.00	142.37	171.38	48.55	94.24	25.58	38.27	378.02
West Branch												
29A	3.91	1.11	7.11	1.53	5.27	18.93	37.63	10.66	37.96	23.09	80.51	189.85
29F	2.85	0.81	0.85	0.00	0.00	4.51	40.48	11.47	38.81	23.09	80.51	194.36
29G	9.47	2.68	4.05	0.00	-18.98	(2.78)	49.95	14.15	42.86	23.09	61.53	191.58
29H	5.90	1.67	3.84	0.00	0.00	11.41	55.85	15.82	46.70	23.09	61.53	202.99
29J	9.88	2.80	1.10	0.00	-35.49	(21.71)	65.73	18.62	47.80	23.09	26.04	181.28
30	15.86	4.49	3.44	0.00	0.00	23.79	81.59	23.11	51.24	23.09	26.04	205.07
Coastal Branch												
31A	7.17	2.03	16.24	1.70	4.53	31.67	14.63	4.16	22.37	4.23	12.72	58.11
33A	268.09	75.97	30.63	14.40	59.28	448.37	282.72	80.13	53.00	18.63	72.00	506.48
34	191.54	54.28	0.85	0.00	0.00	246.67	474.26	134.41	53.85	18.63	72.00	753.15
35	0.00	0.00	0.00	0.00	0.00	0.00	474.26	134.41	53.85	18.63	72.00	753.15

[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
2001	0	0	0	0	0	0	0	0
2002	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
2001	0	0	0	0	0	0	0	0
2002	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	1,307,944	0
2001	347	146	183	116	108	48	1,064,675	0
2002	1,639	690	861	546	510	226	1,537,274	0
2003	0	0	0	0	0	0	1,717,009	0
2004	0	0	0	0	0	0	1,742,618	0
2005	0	0	0	0	0	0	1,745,200	0
2006	0	0	0	0	0	0	1,794,889	0
2007	0	0	0	0	0	0	1,794,889	0
2008	0	0	0	0	0	0	1,794,889	0
2009	0	0	0	0	0	0	1,794,889	0
2010	0	0	0	0	0	0	1,794,889	0
2011	0	0	0	0	0	0	1,794,889	0
2012	0	0	0	0	0	0	1,794,889	0
2013	0	0	0	0	0	0	1,794,889	0
2014	0	0	0	0	0	0	1,794,889	0
2015	0	0	0	0	0	0	1,794,889	0
2016	0	0	0	0	0	0	1,794,889	0
2017	0	0	0	0	0	0	1,794,889	0
2018	0	0	0	0	0	0	1,794,889	0
2019	0	0	0	0	0	0	1,794,889	0
2020	0	0	0	0	0	0	1,794,889	0
2021	0	0	0	0	0	0	1,794,889	0
2022	0	0	0	0	0	0	1,794,889	0
2023	0	0	0	0	0	0	1,794,889	0
2024	0	0	0	0	0	0	1,794,889	0
2025	0	0	0	0	0	0	1,794,889	0
2026	0	0	0	0	0	0	1,794,889	0
2027	0	0	0	0	0	0	1,794,889	0
2028	0	0	0	0	0	0	1,794,889	0
2029	0	0	0	0	0	0	1,794,889	0
2030	0	0	0	0	0	0	1,794,889	0
2031	0	0	0	0	0	0	1,794,889	0
2032	0	0	0	0	0	0	1,794,889	0
2033	0	0	0	0	0	0	1,794,889	0
2034	0	0	0	0	0	0	1,794,889	0
2035	0	0	0	0	0	0	1,794,889	0
Total	**7,667**	**3,228**	**4,030**	**2,555**	**2,387**	**1,057**	**69,126,746**	**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)

Calendar Year	California Aqueduct (continued)							
	Mojave Division (continued)			Santa Ana Division				
	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	733,397	0	2,053,492	0	1,401,687	0	1,401,687	3,455,179
2001	812,454	0	1,878,077	0	837,771	0	837,771	2,715,848
2002	725,397	0	2,267,143	0	1,140,100	0	1,140,100	3,407,243
2003	896,818	0	2,613,827	0	1,409,838	0	1,409,838	4,023,665
2004	786,004	0	2,528,622	0	1,251,666	0	1,251,666	3,780,288
2005	793,355	0	2,538,555	0	1,238,916	0	1,238,916	3,777,471
2006	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2007	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2008	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2009	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2010	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2011	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2012	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2013	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2014	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2015	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2016	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2017	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2018	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2019	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2020	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2021	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2022	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2023	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2024	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2025	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2026	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2027	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2028	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2029	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2030	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2031	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2032	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2033	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2034	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
2035	813,606	0	2,608,495	0	1,250,733	0	1,250,733	3,859,228
Total	**31,042,647**	**0**	**100,190,317**	**0**	**53,422,164**	**0**	**53,422,164**	**153,612,481**

[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)

	Southern California Area							
Calendar Year	*Antelope Valley-East Kern Water Agency (1)*	*Coachella Valley Water District (2)*	*Desert Water Agency (3)*	*Mojave Water Agency (4)*	*Palmdale Water District (5)*	*San Bernardino Valley Municipal Water District (6)*	*Metropolitan Water District of Southern California (7)*	*Total (8)*
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	11,731	1,010	10,566	466	0	93,227	117,000
1979	0	28,241	4,708	27,495	797	0	212,759	274,000
1980								
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
2001	0	0	0	0	0	0	0	0
2002	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)

	Southern California Area							
Calendar Year	Antelope Valley-East Kern Water Agency (1)	Coachella Valley Water District (2)	Desert Water Agency (3)	Mojave Water Agency (4)	Palmdale Water District (5)	San Bernardino Valley Municipal Water District[a] (6)	Metropolitan Water District of Southern California (7)	Total (8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	18,266	1,209,293	360,156	502,810	3,356	0	8,552,529	10,646,410
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	8,983,597	11,183,013
1991	19,187	1,270,261	378,314	528,160	3,525	0	8,983,717	11,183,164
1992	38,420	2,543,616	757,549	1,057,606	7,059	0	17,989,315	22,393,565
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	18,591,099	23,142,681
1995	39,632	2,623,828	781,438	1,090,958	7,281	0	18,556,603	23,099,740
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	19,966,107	24,854,326
1999	44,738	2,961,888	882,120	1,231,519	8,219	0	20,947,474	26,075,958
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	22,965,749	28,588,357
2002	48,374	3,202,620	953,815	1,331,613	8,887	0	22,650,015	28,195,324
2003	42,564	2,818,001	839,267	1,171,692	7,820	0	19,929,858	24,809,202
2004	52,541	3,541,661	1,063,142	1,446,321	9,653	0	24,993,848	31,107,166
2005	50,853	3,415,806	1,023,794	1,399,855	9,343	0	24,115,806	30,015,457
2006	67,895	4,535,553	1,356,156	1,868,971	12,474	0	32,042,316	39,883,365
2007	67,714	4,541,813	1,360,427	1,864,007	12,441	0	32,071,027	39,917,429
2008	64,232	4,286,941	1,281,305	1,768,144	11,801	0	30,289,272	37,701,695
2009	65,847	4,393,885	1,313,156	1,812,609	12,098	0	31,045,614	38,643,209
2010	65,351	4,363,103	1,304,262	1,798,950	12,007	0	30,826,145	38,369,818
2011	67,142	4,483,752	1,340,467	1,848,256	12,336	0	31,677,648	39,429,601
2012	67,249	4,490,889	1,342,601	1,851,197	12,355	0	31,728,070	39,492,361
2013	67,885	4,520,163	1,349,624	1,868,698	12,472	0	31,946,064	39,764,906
2014	66,755	4,459,776	1,333,545	1,837,597	12,264	0	31,506,667	39,216,604
2015	68,540	4,579,792	1,369,531	1,886,738	12,592	0	32,353,896	40,271,089
2016	68,905	4,604,500	1,376,965	1,896,774	12,659	0	32,528,156	40,487,959
2017	69,541	4,649,810	1,390,877	1,914,299	12,776	0	32,845,898	40,883,201
2018	67,606	4,518,176	1,351,207	1,861,035	12,421	0	31,917,959	39,728,404
2019	69,037	4,610,901	1,378,560	1,900,416	12,684	0	32,575,436	40,547,034
2020	67,779	4,527,743	1,353,812	1,865,780	12,453	0	31,987,197	39,814,764
2021	69,749	4,661,149	1,393,937	1,920,010	12,815	0	32,928,139	40,985,799
2022	69,837	4,688,278	1,404,835	1,922,429	12,831	0	33,101,788	41,199,998
2023	56,896	3,830,029	1,149,027	1,566,213	10,453	0	27,033,263	33,645,881
2024	58,886	3,961,228	1,188,026	1,620,998	10,819	0	27,961,631	34,801,588
2025	68,520	4,598,440	1,377,728	1,886,180	12,589	0	32,468,694	40,412,151
2026	25,947	1,780,172	538,419	714,257	4,767	0	12,536,698	15,600,260
2027	20,893	1,416,579	426,297	575,141	3,839	0	9,990,044	12,432,793
2028	16,960	1,156,452	348,859	466,877	3,116	0	8,150,116	10,142,380
2029	17,033	1,161,539	350,411	468,877	3,129	0	8,185,859	10,186,848
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	**2,111,158**	**140,943,041**	**42,131,201**	**58,114,951**	**387,870**	**0**	**995,794,796**	**1,239,483,017**

[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)

	Southern California Area							
Calendar Year	Antelope Valley-East Kern Water Agency (1)	Coachella Valley Water District (2)	Desert Water Agency (3)	Mojave Water Agency (4)	Palmdale Water District (5)	San Bernardino Valley Municipal Water District (6)	Metropolitan Water District of Southern California (7)	Total (8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994	0	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	401,654	120,899	119,673	40	57,379	2,755,402	3,455,179
2001	10	315,360	91,932	96,615	3	34,295	2,177,633	2,715,848
2002	49	390,159	108,343	139,779	15	46,671	2,722,228	3,407,244
2003	0	463,373	132,326	155,676	0	57,713	3,214,580	4,023,668
2004	0	432,063	118,900	157,997	0	51,238	3,020,090	3,780,288
2005	0	431,656	118,574	158,231	0	50,716	3,018,294	3,777,471
2006	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2007	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2008	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2009	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2010	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2011	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2012	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2013	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2014	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2015	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2016	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2017	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2018	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2019	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2020	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2021	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2022	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2023	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2024	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2025	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2026	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2027	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2028	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2029	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2030	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2031	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2032	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2033	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2034	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2035	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
Total	**228**	**17,596,803**	**4,913,778**	**6,269,372**	**69**	**2,186,886**	**122,645,409**	**153,612,545**

Table B-31

Total East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

	Southern California Area							
Calendar Year	Antelope Valley-East Kern Water Agency (1)	Coachella Valley Water District (2)	Desert Water Agency (3)	Mojave Water Agency (4)	Palmdale Water District (5)	San Bernardino Valley Municipal WaterDistrict (6)	Metropolitan Water District of Southern California (7)	Total (8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	18,266	1,209,293	360,156	502,810	3,356	0	8,552,529	10,646,410
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	8,983,597	11,183,013
1991	19,187	1,270,261	378,314	528,160	3,525	0	8,983,717	11,183,164
1992	38,420	2,543,616	757,549	1,057,606	7,059	0	17,989,315	22,393,565
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	20,765,874	25,904,565
1995	39,632	2,902,004	868,042	1,177,437	7,281	59,461	20,452,246	25,506,103
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	22,546,559	28,086,185
2000	49,163	3,647,763	1,087,666	1,469,368	9,048	57,379	25,712,989	32,033,376
2001	49,059	3,562,623	1,059,044	1,446,790	9,014	34,295	25,143,380	31,304,205
2002	48,423	3,592,778	1,062,159	1,471,392	8,902	46,671	25,372,243	31,602,568
2003	42,564	3,281,373	971,592	1,327,368	7,820	57,713	23,144,440	28,832,870
2004	52,541	3,973,724	1,182,042	1,604,318	9,653	51,238	28,013,938	34,887,454
2005	50,853	3,847,461	1,142,368	1,558,087	9,343	50,716	27,134,100	33,792,928
2006	67,895	4,976,261	1,476,733	2,031,708	12,474	51,200	35,126,324	43,742,595
2007	67,714	4,982,520	1,481,004	2,026,743	12,441	51,200	35,155,037	43,776,659
2008	64,232	4,727,649	1,401,882	1,930,881	11,801	51,200	33,373,280	41,560,925
2009	65,847	4,834,593	1,433,733	1,975,345	12,098	51,200	34,129,623	42,502,439
2010	65,351	4,803,811	1,424,839	1,961,686	12,007	51,200	33,910,154	42,229,048
2011	67,142	4,924,459	1,461,044	2,010,993	12,336	51,200	34,761,657	43,288,831
2012	67,249	4,931,597	1,463,178	2,013,933	12,355	51,200	34,812,079	43,351,591
2013	67,885	4,960,871	1,470,202	2,031,435	12,472	51,200	35,030,071	43,624,136
2014	66,755	4,900,484	1,454,123	2,000,334	12,264	51,200	34,590,674	43,075,834
2015	68,540	5,020,500	1,490,108	2,049,475	12,592	51,200	35,437,904	44,130,319
2016	68,905	5,045,208	1,497,542	2,059,511	12,659	51,200	35,612,164	44,347,189
2017	69,541	5,090,518	1,511,455	2,077,035	12,776	51,200	35,929,906	44,742,431
2018	67,606	4,958,884	1,471,784	2,023,772	12,421	51,200	35,001,967	43,587,634
2019	69,037	5,051,609	1,499,137	2,063,152	12,684	51,200	35,659,445	44,406,264
2020	67,779	4,968,451	1,474,390	2,028,517	12,453	51,200	35,071,204	43,673,994
2021	69,749	5,101,857	1,514,515	2,082,747	12,815	51,200	36,012,146	44,845,029
2022	69,837	5,128,986	1,525,413	2,085,165	12,831	51,200	36,185,796	45,059,228
2023	56,896	4,270,736	1,269,604	1,728,950	10,453	51,200	30,117,272	37,505,111
2024	58,886	4,401,936	1,308,604	1,783,735	10,819	51,200	31,045,638	38,660,818
2025	68,520	5,039,147	1,498,305	2,048,917	12,589	51,200	35,552,703	44,271,381
2026	25,947	2,220,879	658,997	876,993	4,767	51,200	15,620,707	19,459,490
2027	20,893	1,857,287	546,875	737,878	3,839	51,200	13,074,051	16,292,023
2028	16,960	1,597,159	469,436	629,613	3,116	51,200	11,234,126	14,001,610
2029	17,033	1,602,247	470,988	631,614	3,129	51,200	11,269,867	14,046,078
2030	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2031	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2032	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2033	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2034	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
2035	0	440,708	120,577	162,737	0	51,200	3,084,008	3,859,230
Total	**2,111,386**	**158,539,834**	**47,044,986**	**64,384,315**	**387,939**	**2,186,886**	**1,118,440,216**	**1,393,095,562**