

# MANAGEMENT OF THE CALIFORNIA STATE WATER PROJECT

BULLETIN 132-05

DECEMBER 2006



ARNOLD SCHWARZENEGGER  
*Governor, State of California*

MIKE CHRISMAN  
*Secretary for Resources, The Resources Agency*

LESTER A. SNOW  
*Director, Department of Water Resources*



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Department of Water Resources  
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Bulletin I 32-05

# Management of the California State Water Project

*Covers Activities during Calendar Year 2004*



*Published December 2006*



**Arnold Schwarzenegger, Governor**

*State of California*

**Mike Chrisman, Secretary for Resources**

*The Resources Agency*

**Lester A. Snow, Director**

*Department of Water Resources*



# Foreword



Bulletin 132-05, *Management of the California State Water Project*, continues the Bulletin 132 annual series begun in 1963. Bulletin 132-05 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 2006. Appendix B was previously published as a separate document.

The Bulletin discusses significant events and issues that affect SWP management and operations. The Bulletin covers the period from January 1, 2004, to December 31, 2004.

Bulletin 132-05 also discusses water supply and delivery; 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.

A handwritten signature in black ink, appearing to read "Lester A. Snow", with a long horizontal line extending to the right.

Lester A. Snow  
Director

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State of California  
**Arnold Schwarzenegger, Governor**

The Resources Agency  
**Mike Chrisman, Secretary for Resources**

Department of Water Resources  
**Lester A. Snow, Director**

**Nancy J. Saracino**  
Chief Deputy Director

**Brian E. White**  
Assistant Director Legislative Affairs

**David A. Sandino**  
Acting Chief Counsel

**Susan Sims Teixeira**  
Assistant Director Public Affairs

**Timothy Haines**  
Deputy Director

**Leslie F. Harder, Jr**  
Deputy Director

**Raphael A. Torres**  
Deputy Director

**Gerald E. Johns**  
Deputy Director

**This report was prepared under the direction of**

State Water Project Analysis Office  
**Robert B. Cooke**, Acting Chief  
**George T. Qualley**, Principal Engineer

**By**  
Bulletin 132 Section  
**Lauren Buffalo**, Chief  
**Kay Mogavero**, Former Chief  
**Margaret Gentzel**, Research Writer  
**Therese J. Tynan**, Research Writer  
**Lorna K. Wilson**, Research Writer

**With major contributions provided under the direction of**

**Mark Andersen**..... Chief, Oroville Facilities Relicensing Branch  
**Chi Doan** ..... Chief, Project Power Contracts Branch  
**Teresa Geimer**..... Chief, Water Supply and Transfers Branch  
**Dave Paulson**..... Chief, Water Delivery Analysis and Documentation Branch  
**Nancy Quan**..... Bay-Delta Hearings and Program Development  
**Dave Samson**..... SWP Program Coordination  
**Craig Trombly**..... Chief, Water Contracts Branch  
**Pedro Villalobos**..... Chief, Project Cost Branch  
**Michael Werner**..... Chief, Project Power Planning Branch

**Christina Acken** ..... Senior Engineer  
**Teodoro Alvarez** ..... Senior Engineer  
**Lori Brown** ..... Senior Engineer  
**Rick Buckingham** ..... Senior Engineer  
**Daniel Cretu** ..... Senior Engineer  
**Holly Cronin** ..... Senior Engineer  
**Miguel De Anda** ..... Senior Engineer  
**Andrea Glasgow** ..... Senior Engineer  
**Steve Gold** ..... Senior Engineer  
**Jerry Green** ..... Senior Engineer

**Charles Kearney** ..... Senior Engineer  
**Susan Lee** ..... Senior Engineer  
**Charles Mee** ..... Senior Engineer  
**Paul Mendoza** ..... Senior Engineer  
**Lucas Munoz** ..... Senior Engineer  
**Linda Quok** ..... Senior Engineer  
**Amir Rangchi** ..... Senior Engineer  
**Bhupinder Sandhu** ... Senior Engineer  
**Lee Terry** ..... Senior Engineer  
**Kuen Tsay** ..... Senior Engineer  
**James Upholt** ..... Senior Engineer

**Assisted by State Water Project Analysis Office staff**

Frank Acuna	Gerold Mateo
Shahram Ahi	Kathleen McDonnell
Bob Aldridge	Edgar Najera
Ghassan Alqaser	Douglas Nelson
Mohammed Anwar	Laura Nelson
Melanie Baillie	Mohan Niroula
Sal Batmanghilich	Do Nguyen
LaTresce Brown	Elizabeth Patterson
Jonathan Canuela	Shawna Pawlaczyk
Jess Cason	Balwant Purewal
Grace Cheng	Angela Reynolds
Teresa Clausen	Mark Risney
Rosi Corral	Terry Schultze
Don Davis	Jon Seehafer
Amrik Dhugga	Maureen Sergent
Alvin Eshe	Jamie So
Dan Flory	Ellen Tam
Francesca Grosjean	Alice Tay
Haydeh Hakim-Edrissi	Mark Thompson
Steven Heinbach	Pamela Tom
Dennis Johnson	Mike Torabian
Jon Jones	Maifiny Vang
David Lane	Cecelia Vasquez
Sue Larsen	Andrew Ward
Yi Shiu Liu	Janet Wolf-Eshe
Howard Lockard	Ingdean Yan
Gary Lotspeich	Ahrash Zamanian
Barry Mahoney	Reza Zamanian
Jagruti Maroney	Long Zhou

State of California  
Departmental Divisions and Offices



Information; financial and cost accounting data; or reviews  
of material provided by staff members of:

**Executive Division**

Raphael A. Torres, Deputy Director

Brian E. White, Assistant Director  
Legislative Affairs

**Executive Manager Power Systems**

Veronica G. Hicks, Chief

**Division of Operations and Maintenance**

Carl Torgersen, Chief

Peter Scheele, Chief, Oroville Field Division

Dave Duval, Chief, Delta Field Division

Jim Thomas, Chief, San Luis Field Division

Jeff J. Said, Chief, San Joaquin Field Division

Don Perez, Chief, Southern Field Division

**Division of Engineering**

Richard Sanchez, Chief

**Division of Fiscal Services**

Perla Netto-Brown, Chief

**Division of Flood Management**

Rod Mayer, Chief

**Division of Planning and Local Assistance**

Mark Cowin, Chief

Glen Pearson, Acting Chief, Northern District

Karl P. Winkler, Chief, Central District

Paula J. Landis, Chief, San Joaquin District

Mark Stuart, Chief, Southern District

**Division of Safety of Dams**

David A. Gutierrez, Chief

**Bay-Delta Office**

Katherine F. Kelly, Chief

**Division of Environmental Services**

Barbara McDonnell, Chief

**Office of the Chief Counsel**

David Sandino, Acting Chief Counsel

**Office of Water Use Efficiency and Transfers**

William J. Bennett, Chief

# 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. Some of the members have resigned and terms of the remaining members have expired. New members have not yet been appointed at this time.

*Executive Officer (Acting)*  
*Jay S. Punia*

*Staff Assistant*  
*Vacant*

*Legal Counsel*  
*Vacant*

# Abbreviations and Acronyms



## A

**AB** Assembly Bill  
**ACWA** Association of California Water Agencies  
**ADA** Americans with Disabilities Act  
**AFRP** Anadromous Fish Restoration Plan  
**Ag Council** Agricultural Water Management Council  
**ASCE** American Society of Civil Engineers  
**AWMP** Agricultural Water Management Plan

## B

**BDAC** Bay-Delta Advisory Council  
**BDPAC** Bay-Delta Public Advisory Committee  
**BOD** biochemical oxygen demand

## C

**CALFED** State (CAL) and federal (FED) agencies participating in the Bay-Delta Accord  
**CalPX** California Power Exchange  
**CAMAL** California Association of Mutual Aid Laboratories  
**C.A.S.T.** Catch a Special Thrill  
**CBDA** California Bay-Delta Authority  
**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  
**CIDH** Cast in drill hole  
**CIMIS** California Irrigation Management Information System

**COA** Coordinated Operation Agreement  
**Corps** U.S. Army Corps of Engineers  
**CPUC** California Public Utilities Commission  
**CUSE** Catholic University of Santiago del Estero  
**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  
**DBPs** disinfection by-products  
**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  
**DPR** California Department of Parks and Recreation  
**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<sub>o</sub>** 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  
**IHSim** Integrated Hydrological Simulator  
**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

## J

**JWR&DTF** Joint Water Reuse & Deslination Task Force

## K

**kV** kilovolt  
**KWB** Kern Water Bank  
**kWh** kilowatt hour

## L

**LADWP** Los Angeles Department of Water and Power  
**LSEs** Load Serving Entities

## M

**MCL** maximum contaminant level  
**MCWA** Mokelumne-Cosumnes Watershed Alliance  
**MD02** Market Design 2002  
**MFP** Middle Fork Project  
**mg/L** milligrams per liter  
**MIB** Methylisoborneol  
**MIDS** Morrow Island Distribution System  
**MRTU** Market Redesign and Technology Upgrade  
**MTBE** methyl tertiary butyl ether  
**MWh** megawatt hour  
**MWQI** Municipal Water Quality Investigations

## N

**NBA** North Bay Aqueduct  
**NDOI** Net Delta Outflow Index  
**NEMDEC** Natomas East Main Drainage Canal  
**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**

**OBS** optical backscatter

**OCAP** Operating Criteria and Plan

**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

**P**

**PCL** Planning and Conservation League

**PG&E** Pacific Gas and Electric Company

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

**ppt** parts per thousand

**PAO** Public Affairs Office

**PDEA** Preliminary Draft Environmental Assessment

**PFMA** Potential Failure Mode Analysis

**PSA** Public Service Announcement

**PSP** Proposal Solicitation Packet

**Q**

**QA/QC** Quality Assurance/Quality Control

**R**

**RCRC** Regional Council of Rural Counties

**RD** reclamation district

**Reclamation** Bureau of Reclamation

**RMR** Reliability Must-Run

**RMS** Reliability Management System

**ROD** Record of Decision

**RRR** Red Rock Ranch

**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

**Se** Selenium

**SEW** Suisun Ecological Workgroup

**SGA** Sacramento Groundwater Authority

**SJVDIP** San Joaquin Valley Drainage Implementation Program

**SJRA** San Joaquin River Agreement

**SJREC** San Joaquin River Exchange Contractor Authority

**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

**STID** Supporting Technical Information Document

**SVUR** Sacramento Valley Unimpaired Runoff

**SVWMA** Sacramento Valley Water Management Agreement

**SWP** State Water Project

**SWRCB** State Water Resources Control Board

**SWT** Sephton Water Technology

**T**

**TDF** through-Delta facilities

**TEAM** Transmission Economic Assessment Methodology

**THM** trihalomethane

**TOC** total organic carbon

**U**

**UCLA** University of California at Los Angeles

**USFWS** U.S. Fish and Wildlife Service

**USGS** U.S. Geological Survey

**UWMP** Urban Water Management Plan

**V**

**VAMP** Vernalis Adaptive Management Plan

**VTE** vertical tube evaporation

**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 Geronio Pass Water Agency	San Geronio
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 water 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
Fresno County Public Works	Fresno
Hills Valley Irrigation District	Hills Valley
Kern-Tulare Water District	Kern-Tulare
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
San Luis & Delta-Mendota Water Authority	San Luis & Delta-Mendota
Semitropic Water Storage District	Semitropic
South Feather Water and Power Agency	South Feather
Tranquility Irrigation District	Tranquility
Tri-Valley Water District	Tri-Valley
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



East Branch Aqueduct



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 132-05, *Management of the California State Water Project*, continues this series with the forty-third edition. It reports planning, construction, financing, managing, and operating activities of the SWP in 2004. The SWP is operated and maintained by the California Department of Water Resources (DWR).

### **2004 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 2004, the SWP delivered 4,380,657 acre-feet of water to 27 of its 29 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.

Ten non-Project agencies in the Feather River area received 1,174,672 acre-feet.

DWR 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 2004, the SWP handled approximately \$696 million each in income and expenses, with general fund contributions limited to recreation facilities.

### **New Director Appointed**

On February 24, 2004, Governor appointed Lester Snow as Director of DWR.

### **Jones Tract Levee Break**

On June 3, 2004, a levee breach occurred on the western levee of Upper Jones Tract. Jones Tract is in the southern Delta in San Joaquin County and is bordered on the western edge by Middle River and is about 10 river-miles from the Clifton Court Forebay intake. The 450-foot break occurred about a quarter of a mile north of the Woodward Island ferry, allowing Middle River water to pour over 12,000 acres of farmland, which comprises both Upper and Lower Jones Tract. By the time the breach was closed on June 30, Jones Tract had been flooded to an average depth of 15 feet, creating a reservoir of about 180 taf. The Jones Tract levee breach resulted in the Governor declaring a State of Emergency on June 4 and the President declaring a federal Declaration of Emergency on June 30.

Immediately DWR and other state agencies assumed an emergency mode. Division of Engineering staff prepared and awarded four emergency contracts to (1) close the breach, (2) provide support to the activities, (3) provide and place rock slope protection for Lower Jones Tract levee, and (4) pump out flood water from both Upper and Lower Jones Tracts.

The breach was closed on June 30, 2004. Dewatering of approximately 12,000 acres of farmland began on July 2, 2004 and was completed on December 18, 2004. Thirty-nine days after the levee break, ten large pumps were installed and began pumping flood water out of the tracts. DWR constantly monitored Delta water quality at more than 20 water quality monitoring sites in the region surrounding the break.

Impacts to the SWP included a 6-day reduction in exports at Banks Pumping Plant from June 3 through June 8 and a 13-day exceedance of electrical conductivity standards at two compliance locations in the western Delta, Jersey Point and Emmaton, from about June 7 through June 20.

Total costs related to the Jones Tract levee breach are estimated to be approximately \$71 million. State costs were \$24 million (not including any possible litigation); city and county costs were \$4 million; Reclamation District costs were \$18 million, and costs to private entities were \$11 million. Costs related to crop damage was estimated at \$14 million. Federal reimbursement of these costs was on the order of \$20 million.

## 2004 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.

DWR monitors and records annual precipitation and runoff during each water year, which begins on October 1 and ends on September 30.

### Precipitation in Water Year 2003-04

Statewide precipitation was 85 percent of average compared to 110 percent of average during water year 2002-03. Neutral El Niño conditions prevailed during water year 2003-04.

Mountain snowpack peaked at about 30 inches of snow water content during the first week of March, about a month earlier than normal.

The Northern Sierra 8 Station Precipitation Index finished with 47.3 inches (95 percent of average). December and February accounted for about 60 percent of the water year total.

### Runoff

Statewide river runoff totaled 80 percent of average in the 2003-04 water year. Runoff in the Sacramento River and San Joaquin River regions was 85 and 60 percent of average, respectively.

### Storage

**Water Year 2003-04.** Storage in all SWP reservoirs at the end of the 2003-04 water year was 2.99 million acre-feet or 76 percent of average, compared to 3.69 million acre-feet or 95 percent of average at the end of water year 2002-03. Average end of month total storage in major SWP reservoirs was 3.83 million acre-feet for the 2003-04 water year. End of water year storage on September 30, 2004, at Lake Oroville was 1.75 million acre-feet, about 531,000 acre-feet less than last water year.

**Calendar Year 2004.** Total storage in major SWP reservoirs was about 3.07 million acre-feet at the end of calendar year 2004 compared with 3.61 million acre-feet in 2003.

### October-December Water Conditions

In contrast to the previous season, water year 2004-05 started with a wet October. Precipitation was more than twice the average for the Northern Sierra and more than 350 percent statewide. The southern half of the State was extremely wet for the month, a trend which continued through winter. November precipitation was below normal, except in the southeastern desert regions, but December was quite wet at 150 percent of average overall. The accumulated statewide precipitation for the first quarter, October through December, was 155 percent of average.

Seasonal runoff lagged at about two-thirds of average overall, but the relatively cool storms boosted the mountain snowpack to about 150 percent of normal and 50 percent of a full

April 1 snowpack at the end of the calendar year. Statewide reservoir storage stood at 90 percent of average, a small improvement over the 85 percent at the end of September.

## 2004 Water Supplies, Contracts, and Deliveries

### 2004 Water Deliveries

On December 1, 2003, DWR initially approved 1,445,084 acre-feet of water for long term SWP contractors, or about 35 percent of their 2004 Table A allocations. As a result of improvements in water supply conditions and an updated snow survey, approved Table A amounts were increased to 2.06 million acre-feet (50 percent) on January 15, 2004; and finally to 2.68 million acre-feet (projected to meet 65 percent) on March 1.

In 2004, DWR executed 8 water conveyance/exchange agreements, 5 storage agreements, 10 turnout agreements, 29 Turnback Water Pool Program agreements, 11 Article 21 Water Program agreements, and 1 unscheduled water agreement with SWP contractors.

The SWP approved delivery of 60 percent of SWP contractors' Table A requests, and conveyed 4,380,657 acre-feet to 27 long-term contractors and 26 other agencies. Table ES-1 shows SWP water deliveries by category for 1962-2004.

**Nonproject Conveyance.** In 2004, DWR conveyed 117,995 acre-feet of Central Valley Project water through SWP facilities for Reclamation.

**Dry Year Water Purchase Program.** In 2004, DWR initiated a Dry Year Water Purchase Program to reduce the possibility of adverse economic impacts and hardship associated with water shortages. Water being made available to the Dry Year Program in 2004 came from Yuba County Water Agency, who made it available through reservoir water releases. Two Delta farmers participated in the program by signing a Memorandum of Understanding with DWR.

The program participants requested a total of 535 acre-feet of dry year water.

## Power Resources

In 2004, energy used at the SWP pumping and generating plants totaled 9.86 million MWh. DWR sold 0.626 million MWh of energy, including 0.125 million MWh of Reid Gardner Unit 4 generation sales, for a total net revenue of \$56.79 million. The total revenue includes \$22.36 million in revenues for capacity and exchanges, including \$10.93 million for transactions made through the California Independent System Operator.

DWR purchased 2.30 million MWh of energy at a cost of \$109.16 million. Other SWP power costs, including transmission, operation, maintenance, and ISO ancillary services, totaled \$102.39 million. The sidebar on page xxiii documents 2004 SWP power generation and consumption.

### 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 DWR must file a new application to FERC by January 31, 2005.

During calendar year 2004, primary achievements included

- hosting kick-off settlement negotiations and establishing the Oroville Facilities Relicensing Settlement Negotiations structure, process and ground rules; providing negotiations training for settlement negotiations participants and hosting an issue-oriented site tour;
- establishing separate negotiation discussions with tribal representatives to supplement consultation compliance with the Federal Power Act and Section 106 of the National Historic Preservation Act;

**Table ES-I. SWP Water Delivered by Category, 1962-04 (Acre-feet)**

Year	Table A Water			Other SWP Water Deliveries					
	Municipal and Industrial (1)	Agricultural (2)	Total (3)	Article 21			Feather River Diversions <sup>b</sup> (7)	Fish and Wildlife/ Recreation Water (8)	Total Deliveries (9)
				Municipal and Industrial (4)	Agricultural (5)	Other Water <sup>a</sup> (6)			
1962	---	---	---	---	---	18,289	---	---	18,289
1963	---	---	---	---	---	22,456	---	---	22,456
1964	---	---	---	---	---	32,507	---	---	32,507
1965	---	---	---	---	---	44,105	---	---	44,105
1966	---	---	---	---	---	67,928	---	---	67,928
1967	5,747	5,791	11,538	0	0	53,605	---	---	65,143
1968	46,472	125,237	171,709	10,000	111,534	14,777	866,926	---	1,174,946
1969	34,434	158,586	193,020	0	72,397	18,829	794,374	---	1,078,620
1970	47,996	185,997	233,993	0	133,024	38,080	759,759	---	1,164,856
1971	85,286	272,054	357,340	2,400	293,619	44,119	778,362	8	1,475,848
1972	181,066	430,735	611,801	22,205	401,759	66,638	817,398	6,489	1,926,290
1973	293,824	400,564	694,388	3,161	293,255	42,511	800,743	1,155	1,835,213
1974	418,521	455,556	874,077	4,753	412,923	46,224	911,613	2,118	2,251,708
1975	641,621	582,369	1,223,990	21,043	601,859	63,793	862,218	3,377	2,776,280
1976	818,588	554,414	1,373,002	32,488	547,622	115,217	946,440	1,745	3,016,514
1977	280,919	293,236	574,155	0	0	389,065	581,994	1,111	1,546,325
1978	742,385	710,314	1,452,699	3,566	13,348	121,225	786,517	1,691	2,379,046
1979	690,659	969,237	1,659,896	66,081	582,308	187,630	882,549	1,766	3,380,230
1980	730,545	799,204	1,529,749	19,722	384,835	46,459	875,045	2,131	2,857,941
1981	1,057,273	852,289	1,909,562	12,000	896,428	279,161	838,557	4,688	3,940,396
1982	928,721	821,303	1,750,024	0	215,873	154,882	776,330	4,646	2,901,755
1983	483,499	701,370	1,184,869	0	13,019	181,453	602,905	7,849	1,990,095
1984	725,925	862,694	1,588,619	3,663	259,254	381,024	832,332	7,040	3,071,932
1985	992,538	1,002,915	1,995,453	9,638	298,034	404,842	870,008	4,033	3,582,008
1986	998,611	997,025	1,995,636	2,595	34,025	193,606	791,737	3,865	3,021,464
1987	1,096,368	1,033,718	2,130,086	6,949	107,958	377,592	831,947	7,672	3,462,204
1988	1,316,820	1,068,302	2,385,122	0	0	507,076	794,834	4,889	3,691,921
1989	1,602,454	1,251,293	2,853,747	0	0	474,559	830,500	8,135	4,166,941
1990	1,876,072	706,079	2,582,151	0	90	424,697	875,099	9,262	3,891,299
1991	536,669	12,444	549,113	3,521	0	551,051	565,395	4,879	1,673,959
1992	961,649	509,805	1,471,454	1,156	0	144,789	613,978	2,605	2,233,982
1993	1,064,866	1,250,369	2,315,235	0	0	254,854	822,589	2,609	3,395,287
1994	1,134,992	614,359	1,749,351	48,150	64,475	236,739	874,018	8,200	2,980,933
1995	801,570	1,165,523	1,967,093	17,984	46,346	78,425	860,077	2,575	2,972,500
1996	1,145,638	1,369,187	2,514,825	12,091	16,556	251,391	934,997	3,907	3,733,767
1997	1,258,456	1,067,319	2,325,775	2,814	18,618	322,000	993,211	4,146	3,666,564
1998	864,795	860,724	1,725,519	9,982	10,306	134,682	872,738	2,108	2,755,335
1999	1,405,299	1,333,592	2,738,891	61,191	96,879	85,312	1,108,672	4,324	4,095,269
2000	2,022,703	1,177,974	3,200,677	170,302	138,483	332,654	1,085,886	4,030	4,932,032
2001	1,162,897	383,845	1,546,742	10,261	33,174	535,160	1,078,656	2,929	3,206,922
2002	1,808,017	765,013	2,573,030	15,478	27,637	309,094	1,132,938	3,694	4,061,871
2003	2,118,150	782,891	2,901,041	23,019	36,809	251,447	1,008,093	2,846	4,223,255
2004	1,950,407	649,129	2,599,536	103,890	114,606	385,088	1,174,672	2,865	4,380,657
<b>Total</b>	<b>34,332,452</b>	<b>27,182,456</b>	<b>61,514,908</b>	<b>700,103</b>	<b>6,277,053</b>	<b>8,685,035</b>	<b>31,834,107</b>	<b>135,387</b>	<b>109,146,593</b>

<sup>a</sup> Includes water conveyed for SWP and non-SWP water contractors.

<sup>b</sup> Includes amounts of water diverted according to various water right agreements.

- hosting an operations modeling seminar for stakeholders to discuss temperature sensitivity analyses;
- distributing the Oroville Facilities Draft Application for New License and Preliminary Draft Environmental Assessment Progress Summary for public, stakeholder, and agency review;
- releasing the Initial Settlement Agreement and initiating negotiation of substantive settlement issues with negotiation subgroups and tribes;
- concluding and/or rescheduling Plenary and Resource Area Work Group meetings to coincide with completion of technical investigations and to accommodate and transition participants' focus on the settlement negotiations process;
- completing all Study Plan Reports except those dependent upon seasonal monitoring;
- continuing settlement negotiation meetings with Indian tribes, State and federal agencies, and other interested stakeholders and reaching tentative draft agreement on many issues;
- developing the No-Action Alternative, the Proposed Action Alternative, and Alternative 2 for the Preliminary Draft Environmental Assessment based upon collaborative discussions and studies; and,
- preparing license application for the Oroville Facilities Relicensing process for submittal to FERC by January 31, 2005, including the PDEA.

## **Project Development**

### **East Branch Extension Project**

Field operational testing for the East Branch Extension Project was completed in June 2004.

### **South Bay Aqueduct Enlargement Project**

Design of the South Bay Aqueduct Enlargement Project continued during 2004. Twelve construction contracts will be developed and awarded with a projected overall completion date in mid-2008.

### **Tehachapi East Afterbay Project**

Design for the Tehachapi East Afterbay Project began in June 2004. Overall completion of the project is scheduled for early 2007. A map of the area is shown in Figure ES-1.

### **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.

In accordance with terms of the May 5, 2003 Monterey Settlement Agreement, the SWP continues to operate pursuant to the Monterey Amendments while the new EIR is being prepared. The draft EIR is expected to be released in 2007.

### **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.

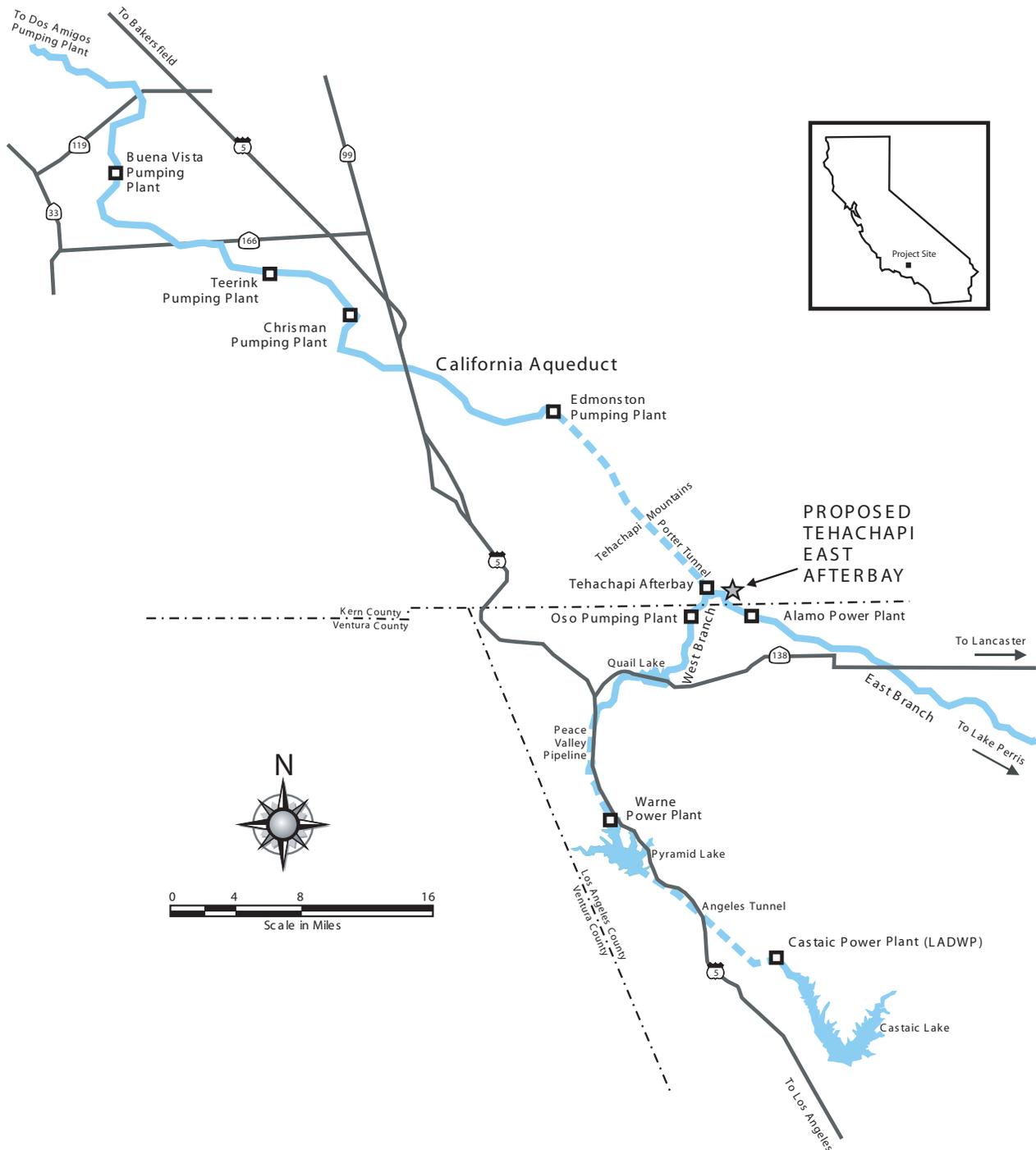


Figure ES-I. Tehachapi East Afterbay

### State Water Project Power Generation and Consumption in 2004

Power Generation and Consumption	Millions of Megawatt Hours
Energy generation by SWP facilities	6.056
Energy sources and firm purchases under long-term agreements and exchanges	4.429
<b>Total energy available to the SWP</b>	<b>10.485</b>
Energy sales	(0.626)
<b>Net power consumption of the SWP</b>	<b>9.859</b>

#### **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 25 State and federal agencies working cooperatively through the CALFED Bay-Delta Program to improve the quality and reliability of California's water supplies while restoring the Bay-Delta ecosystem.

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 Investigations.** DWR is the State lead agency for the Storage Program element, which consists of surface storage studies and groundwater programs and projects. The Surface Storage Investigations are developing environmental and feasibility engineering documentation for four of the five surface storage projects identified for further study in the CALFED Record of Decision.

**Environmental Water Account.** EWA is designed to provide water at critical times to meet environmental needs while providing water supply reliability 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, conveys, and releases the water as needed to protect fish and compensate water users.

In 2004, EWA's fourth operational year, exports were curtailed at both the SWP and CVP export facilities between April 15 and May 31. These actions resulted in an EWA debt of 54,400 acre-feet at the SWP and 67,970 acre-feet at the CVP. Earlier, on March 14, the CVP was able to export 202 acre-feet of water from the Delta for pay-back of an earlier EWA debt. On March 30, about 657 acre-feet of EWA assets stored on the SWP's share of San Luis Reservoir converted to SWP water since San Luis Reservoir storage was physically filling on the State side. All purchase asset acquisitions in 2004 were made by DWR as single year transactions and environmental studies were carried out to ensure that the transactions complied with CEQA.

The fourth year of EWA ended with a 5,600 acre-foot credit for use during 2005 EWA actions.

**North Delta Program.** The North Delta Conveyance Program is comprised of studies related to the Delta Cross Channel, a potentially screened through-Delta facility on the Sacramento River, and a project to improve flood management and the ecosystem along the Mokelumne River. In addition, DWR 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. During 2004, DWR began preparing an EIR. Project environmental documentation is expected to be completed by spring 2005.

**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 were conducted during 2004 and four temporary rock barriers were installed during low flow conditions. Due to funding issues and technical uncertainties, DWR 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 final EIR/EIS is scheduled for release in 2005.

### Status of Threatened or Endangered Listings

In 2001, NOAA Fisheries was petitioned to list the North American green sturgeon as either a threatened or endangered species under the federal Endangered Species Act. In January 2003, NOAA Fisheries issued a 12-month determination that listing of the species was not warranted. However, in March 2004, that finding was set aside by the U.S. District Court and the matter was remanded to NOAA Fisheries.

### Financial Analysis

In 2004, DWR 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 2004, the SWP handled approximately \$696 million in revenues and \$696 million in expenses. The sidebar below shows a 2004 income statement for the SWP.

<b>2004 Income Statement for the State Water Project</b>	
<b>Revenues</b>	<b>Thousands of Dollars</b>
Water contractor payments	720,021
Revenue bond cover adjustments	(38,358)
Rate management adjustments	(6,000)
Other revenue	20,698
<b>Total operating revenues</b>	<b>\$696,361</b>
<b>Expenses</b>	
Project operations, maintenance, and power	473,079
Deposits to reserves	(35,354)
Water bond principal	102,374
Water bond interest	156,262
<b>Total operating expenses and debt service</b>	<b>\$696,361</b>
<b>Net system revenues</b>	<b>0</b>

## 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 that extends from Tulare Lake to Fresno Slough. The alluvial fan is 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 floodwaters 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, DWR and Reclamation have worked to minimize the effects of heavy flooding.

In 1990, DWR 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, DWR and Reclamation 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 State Water Contractors asked DWR to develop the least costly alternative that would still provide a 100-year level of flood protection to the Aqueduct. In 2004, DWR finished its feasibility investigation into a more cost effective plan and proceeded with final design, environmental documentation, and other procedural steps leading to construction. Construction started in fall 2004, and included implementing improvements to increase the storage capacity of the West Side Detention Basin. The plan also included both adding new and improving the existing flood control structures.

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

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

For example, 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 Reclamation and other federal and State agencies.

In 2004, a security assessment was completed by an independent consultant and many of their recommendations were implemented immediately and throughout the year.

While DWR 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, Reclamation, utilities, regional and municipal water entities, and others.

### Phase 2B of the Future Operations Program

Phase 2B, Utility Operations Implementation, uses automated technology to support the DWR'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 of the Future Operations Program was implemented in August 2004. Phase 2B integrates and improves SWP operations and business processes with the use of two new tools that have been installed at DWR: Sun-guard ACES and SAP Business Warehouse

(SAP BW). The ACES application manages DWR water and power scheduling and settlements. The SAP BW enterprise database provides for analysis and reporting of SWP operations.

## Community Service

In addition to water supply, DWR provided education and outreach, recreation opportunities on the SWP, and local assistance to users of the SWP. DWR managed several programs—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 - 1964

December storms cause severe flooding along North Coast rivers, including the Smith, Eel, and Van Duzen. December flooding on the Feather River is checked by the partly-completed Oroville Dam.

### Twenty Years Ago - 1984

The Legislature authorizes construction of Los Banos Grandes, a 1.75 million acre-feet off-stream reservoir south of the Delta. It would benefit the Delta by increasing export pumping flexibility to offset impacts on Delta fish. (The project is put on hold pending a Bay-Delta solution.)

### Ten Years Ago - 1994

In July, state and federal agencies sign the Framework Agreement, whose principles set into motion processes to provide more reliable water supplies for Northern and Southern California, protect wildlife in the Bay-Delta ecosystem, and prohibit the listing of more endangered species. To help fulfill the agreement, the CALFED Bay-Delta Program was established and charged with developing long-term solutions to problems in the Bay-Delta estuary.

As a leading state agency, DWR signs on December 15, 1994, *The Principles for Agreement on Bay-Delta Standards*, a major agreement on Delta water supplies, water quality and environmental protection. DWR will also serve as an active partner in the CALFED Bay-Delta Program process created by the agreement to develop solutions to Delta water supply and quality challenges.

In December, DWR and the SWP long-term water supply contractors sign the Statement of Principles that is the foundation for the Monterey Amendment to the water supply contracts that will settle their disputes over water allocations and to make the SWP operate more effectively for the contractors. The principles include water allocations when requests exceed available supply, transfer of the Kern Water Bank property, permanent transfers of Table A amounts from agricultural contractors to urban contractors, rate management, flexible storage in Perris and Castaic Reservoirs, interruptible water supply, water storage outside contractor's service area and turn-back water pool program.

# Chapter I

## The State Water Project



Aerial of Oroville



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 (SWP). 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 (DWR), is the largest state-built, multi-purpose 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, DWR 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 DWR, 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, 30 pumping and generating plants, and approximately 675 miles of aqueducts.



**Figure I-1. Names and Locations of Primary Water Delivery Facilities, December 31, 2004**

Existing long-term SWP water supply contracts call for the annual delivery of 4,128,811 acre-feet of Table A water during 2004 through SWP facilities, gradually increasing to a maximum of 4,172,786 acre-feet by 2021. Some 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 2,599,536 acre-feet of approved Table A water to long-term contractors' service areas in 2004. Demands for SWP water are expected to increase as California's population 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 DWR.

Downstream from these three lakes lies Lake Oroville, the keystone of the SWP. Lake Oroville conserves water from the Feather River watershed. Created by Oroville Dam, the tallest earth-fill 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 Cen-

tral 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 agricultural lands of the San Joaquin Valley and the 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 DWR and the Bureau of Reclamation (Reclamation). DWR'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 DWR and Reclamation.

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, 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 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. The water enters 8.5 miles of tunnels and siphons as it flows into Antelope Valley, where the Aqueduct divides into two: 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, carries water from Devil Canyon Power Plant Afterbay to Cherry Valley, bringing water to Yucaipa, Calimesa, Beaumont, Banning, and other communities. The East Branch Extension is a nearly 33-mile pipeline linking parts of service areas for San Bernardino Valley Municipal Water District and San Geronio Pass Water Agency to the California Aqueduct.

Construction began on the East Branch Extension in February 1999. It began operating in 2003, and field testing was completed in 2004.

Water in the West Branch flows through Oso Pumping Plant, Quail Lake, and then 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 largest single 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	2,027,800	12,520	65
SWP storage, 1,062,180 AF			
O'Neill Forebay	56,100	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 I-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	4,180
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
Crafton Hills	2,932	95	500	144

**Table I-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) <sup>a</sup>	85-102	9,120	120,000
Hyatt	3 (p-g) <sup>a</sup>	500-625	5,610	519,000
Barker Slough	9	95-120	228	4,800
Cordelia	11	110-376	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) <sup>a</sup>	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 <sup>b</sup>	6	521	134	10,500
Bluestone <sup>b</sup>	6	484	134	10,500
Polonio Pass <sup>b</sup>	6	533	134	10,500
Buena Vista <sup>b</sup>	10	205	5,405	144,500
Teerink <sup>b</sup>	9	233	5,445	150,000
Chrisman <sup>b</sup>	9	518	4,995	330,000
Edmonston <sup>b</sup>	14	1,926	4,480	1,120,000
Oso	8	231	3,252	93,800
Pearblossom	9	540	2,525	203,200
Greenspot	4	382	50	3,900
Crafton Hills	3	613	40	4,000
Cherry Valley	2	75	16	300

<sup>a</sup>The term p-g indicates pumping-generating units.

<sup>b</sup>These plants have one unit in reserve.

**Table I-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
<b>Hydro</b>					
Thermalito Diversion Dam	1	63-77	615	3.3	3.3
Thermalito	4 (3 p-g) <sup>a</sup>	85-102	17,400	128	126.1
Hyatt	6 (3 p-g) <sup>a</sup>	410-676	16,950	639	714
Gianelli (total)	8 p-g <sup>a</sup>	99-327	16,960	362	424
Alamo	1	115-141	1,740	18	18
Warne	2	719-739	1,600	76	78.2
Mojave Siphon	3	81-136	2,880	14	30
Devil Canyon	4	1,406	2,940	235	291
Castaic	7 (6 p-g) <sup>a</sup>	900-1,050	20,820		1,319.7
<b>Geo-thermal</b>					
Reid Gardner, Unit 4 (total) SWP share of generation <sup>c</sup>	1 <sup>b</sup>			275	265

<sup>a</sup>The term p-g indicates pumping-generating units.

<sup>b</sup>Life of the plant is expected to extend through 2013.

<sup>c</sup>SWP ownership share in Reid Gardner, Unit 4, is 67.8%

**Table I-5. Total Miles of Aqueducts**

Facility	Channel and Reservoir	Canal	Pipeline	Tunnel	Total
North Bay Aqueduct	0.0	0.0	27.6	0.0	27.6
South Bay Aqueduct	0.0	8.4	34.6	1.6	44.6
<i>Subtotal</i>	<i>0.0</i>	<i>8.4</i>	<i>62.2</i>	<i>1.6</i>	<i>72.2</i>
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
<i>Subtotal</i>	<i>6.5</i>	<i>385.0</i>	<i>40.8</i>	<i>11.7</i>	<i>444.0</i>
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					
Devil Canyon to Greenspot Pumping Plant	0.0	0.0	15.8	0.0	15.8
Greenspot Pumping Plant to Noble Creek Terminus	0.0	0.0	13.3	0.0	13.3
<i>Subtotal</i>	<i>9.2</i>	<i>24.1</i>	<i>133.4</i>	<i>9.9</i>	<i>176.6</i>
<b>Total</b>	<b>15.7</b>	<b>417.5</b>	<b>236.4</b>	<b>23.2</b>	<b>692.8</b>

## 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, DWR 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, DWR began planning an off-stream 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. DWR 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 DWR to two agricultural contractors, Kern County Water Agency and Dudley Ridge Water District. The transfer occurred August 9, 1996.

DWR 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 DWR for SWP water; costs are repaid as debt service on the bonds is due.

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 DWR. 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 DWR as

of December 31, 2004, 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 I-2. Names, Locations, and First Year of Service of Long-Term Contracting Agencies, December 31, 2004**

**Table I-6. Long-Term Water Supply Contracting Agencies, by Area, as of December 31, 2004**

Contracting Agency	Cumulative Deliveries through December 31, 2004 (Acre-Feet) <sup>a</sup>	Maximum Annual Table A (Acre-Feet)	Payments through December 31, 2004 (Dollars)	Gross Area as of December 31, 2004 (Acres)	Assessed Valuation 2004 (Dollars) <sup>b</sup>	Estimated Population December 31, 2004
<b>Upper Feather River Area</b>						
City of Yuba City	15,264	9,600	3,478,164	5,888	1,680,000,000	47,144
County of Butte	12,396	3,500	1,004,845	1,069,000	13,000,000,000	212,968
Plumas County Flood Control and Water Conservation District	10,472	0	1,410,167	1,676,056 <sup>c</sup>	2,060,744,342	21,200
<i>Subtotal</i>	<i>38,132</i>	<i>13,100</i>	<i>5,893,176</i>	<i>2,750,944</i>	<i>16,740,744,342</i>	<i>281,312</i>
<b>North Bay Area</b>						
Napa County Flood Control and Water Conservation District	208,161	21,850	62,749,871	510,010	14,008,347,997	128,145
Solano County Water Agency	504,780	47,206	86,258,923	537,600	32,733,946,293	421,657
<i>Subtotal</i>	<i>712,941</i>	<i>69,056</i>	<i>149,008,794</i>	<i>1,047,610</i>	<i>46,742,294,290</i>	<i>549,802</i>
<b>South Bay Area</b>						
Alameda County Flood Control and Water Conservation District, Zone 7	1,066,565	80,619	111,219,241	275,900	27,798,501,949	184,150
Alameda County Water District	975,159	42,000	81,607,542	67,062	36,126,024,559	324,838
Santa Clara Valley Water District	3,228,748	100,000	257,431,623	849,000	147,074,863,200	1,715,374
<i>Subtotal</i>	<i>5,270,472</i>	<i>222,619</i>	<i>450,258,406</i>	<i>1,191,962</i>	<i>210,999,389,708</i>	<i>2,224,362</i>
<b>San Joaquin Valley Area</b>						
County of Kings	92,538	9,000	3,838,887	893,300	5,841,901,779	144,732
Castaic Lake Water Agency	443,555	12,700	---	8,700	4,654,458	0
Dudley Ridge Water District	1,902,689	57,343	61,036,187	37,568	45,390,000	36
Empire West Side Irrigation District	102,155	3,000	3,068,503	7,400	<sup>d</sup>	50
Kern County Water Agency	28,938,720	998,730	1,385,807,449	5,161,000	50,800,000,000	734,846
Oak Flat Water District	183,682	5,700	4,911,659	4,500	<sup>d</sup>	10
Tulare Lake Basin Water Storage District	4,208,679	96,227	125,439,128	189,519	152,288,305	23
<i>Subtotal</i>	<i>35,872,018</i>	<i>1,182,700</i>	<i>1,584,101,812</i>	<i>6,301,987</i>	<i>56,844,234,542</i>	<i>879,697</i>
<b>Central Coastal Area</b>						
San Luis Obispo County Flood Control and Water Conservation District	29,752	25,000	50,735,262	2,122,240	26,980,231,815	254,566
Santa Barbara County Flood Control and Water Conservation District	173,205	45,486	296,405,682	1,775,296	16,388,608,721	431,505
<i>Subtotal</i>	<i>202,957</i>	<i>70,486</i>	<i>347,140,943</i>	<i>3,897,536</i>	<i>43,368,840,536</i>	<i>686,071</i>
<b>Southern California Area</b>						
Antelope Valley-East Kern Water Agency	1,422,561	141,400	331,650,193	1,525,547	16,145,000,000	350,000
Castaic Lake Water Agency <sup>e</sup>	543,813	82,500	187,039,223	133,700	23,129,000,000	225,000
Coachella Valley Water District	683,904	33,000	152,092,237	639,857	34,376,743,187	240,573
Crestline-Lake Arrowhead Water Agency	43,812	5,800	19,613,488	55,100	1,500,527,807	25,000
Desert Water Agency	960,436	38,100	179,439,390	209,760	6,141,602,400	65,548
Littlerock Creek Irrigation District	18,995	2,300	5,052,592	10,000	340,357,589	2,900
Metropolitan Water District of Southern California	24,497,384	2,011,500	6,911,779,333	3,328,000 <sup>f</sup>	1,461,178,994,688	17,800,000
Mojave Water Agency	201,757	75,800	164,994,064	3,136,000	16,349,505,648	351,240
Palmdale Water District	167,526	21,300	48,241,132	119,680	910,070,664	90,000
San Bernardino Valley Municipal Water District	477,130	102,600	364,879,168	210,000	20,296,330,129	600,000
San Gabriel Valley Municipal Water District	311,120	28,800	107,177,330	18,297	11,720,110,333	210,145
San Geronio Pass Water Agency	957	6,000	59,477,273	140,800	3,664,061,473	65,000
Ventura County Flood Control District	39,290	20,000	42,505,224	308,252	21,957,265,429	457,000
<i>Subtotal</i>	<i>29,368,685</i>	<i>2,569,100</i>	<i>8,573,940,648</i>	<i>9,834,993</i>	<i>1,617,709,569,347</i>	<i>20,482,406</i>
<b>Total, State Water Project</b>	<b>71,465,205</b>	<b>4,127,061</b>	<b>11,110,343,780</b>	<b>25,025,032<sup>g</sup></b>	<b>1,992,405,072,765</b>	<b>25,103,650</b>

<sup>a</sup>All water delivered to long-term SWP contractors, including carryover, Article 21, surplus, unscheduled, exchange, permit, purchased, local, and non-SWP water.

<sup>b</sup>Statutes of 1978, Chapter 1207, added Section 135 to the Revenue and Taxation Code, requiring assessment at 100% of full value for the 1981-82 fiscal year and fiscal years thereafter.

<sup>c</sup>Total of all Plumas County Flood Control and Water Conservation District, including Last Chance Creek Water District.

<sup>d</sup>Assessed valuation not available on an agency area breakdown.

<sup>e</sup>District includes land in the San Joaquin Valley Area formerly known as Devil's Den Water District.

<sup>f</sup>Total for Metropolitan, including Calleguas Municipal Water District, which is common to Metropolitan and Ventura County Flood Control District.

<sup>g</sup>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

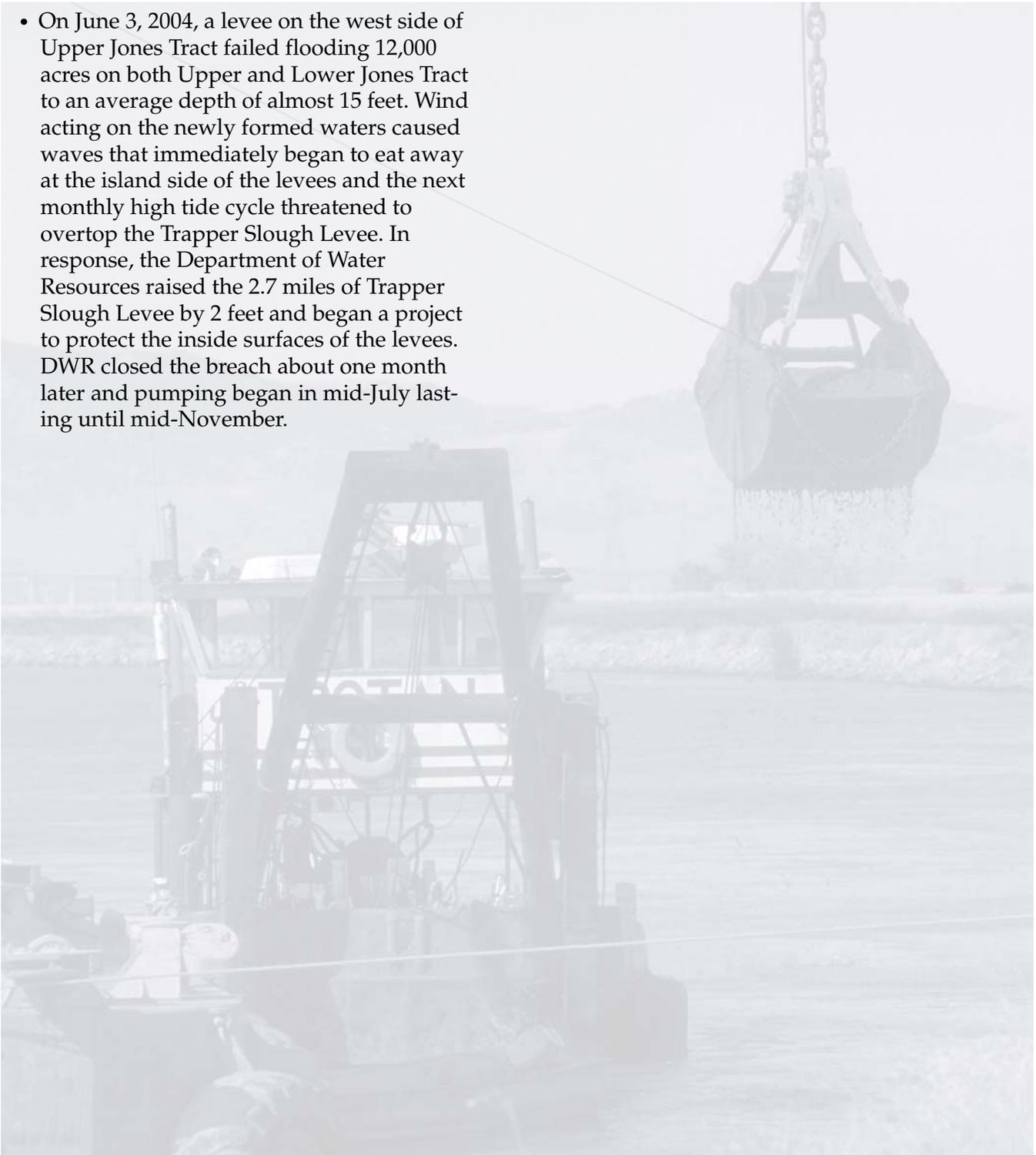
## Delta Resources



Delta Levee Maintenance

## Significant Events in 2004

- On June 3, 2004, a levee on the west side of Upper Jones Tract failed flooding 12,000 acres on both Upper and Lower Jones Tract to an average depth of almost 15 feet. Wind acting on the newly formed waters caused waves that immediately began to eat away at the island side of the levees and the next monthly high tide cycle threatened to overtop the Trapper Slough Levee. In response, the Department of Water Resources raised the 2.7 miles of Trapper Slough Levee by 2 feet and began a project to protect the inside surfaces of the levees. DWR closed the breach about one month later and pumping began in mid-July lasting until mid-November.



Over the past 40 years many programs were developed and implemented by federal and State agencies, including the Department of Water Resources (DWR), 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**

DWR'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 DWR's programs were deferred while solutions were sought.

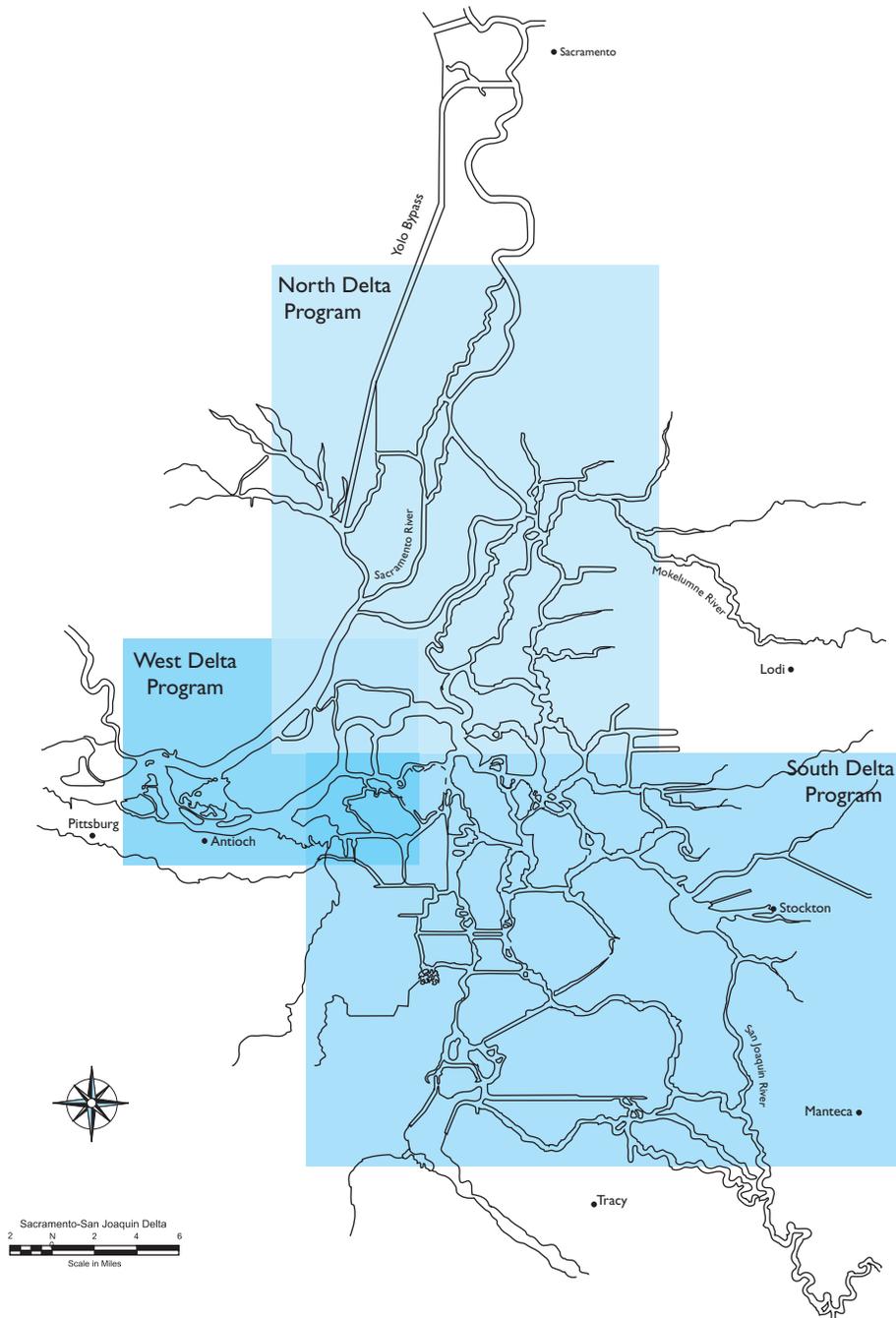
In June 1994, a Framework Agreement between federal and State governments was established which defined a joint federal-State cooperative

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, DWR 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. DWR 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,



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

DWR 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.** DWR 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 DWR, Reclamation, Department of Fish and Game, U.S. Fish and Wildlife Service, and NOAA Fisheries. 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 DWR and Reclamation 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 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. To improve conditions and collect data to design and operate permanent barrier facilities as proposed in SDIP, DWR 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.

DWR 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 DWR could mitigate impacts associated with current and future Delta water management programs, including those being proposed by DWR and the CALFED Bay-Delta Program. (See Chapter 7 for more information.)

DWR 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 DWR 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, DWR initiated the Franks Tract Project in 2003 as part of the North Delta conveyance improvement project to evaluate the feasibility of rehabilitating Franks Tract's remnant levees for water quality, ecosystem, and recreation improvements. DWR 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 Delta Cross Channel Reoperation Project.

The DCC reoperation project involves evaluation of improved operational procedures for the 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 Delta Cross Channel 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.

In 2003, DWR became actively involved in the DCC Reoperation and the Through-Delta Facilities studies. DWR 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. DWR also initiated the Franks Tract Project in 2003. 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.

The activities in 2004 relating to the Delta Cross Channel Reoperation and Through-Delta Facility projects were limited to completing analyses and writing reports on the field works conducted during the past three years and reevaluating project funding and schedules. In April 2004, DWR initiated the Flooded Islands Pre-feasibility Study to develop and evaluate conceptual alternatives for modifying Franks Tract, Lower Sherman Lake, and Big Break with the objectives of improving water quality, enhancing ecosystem values, and improving recre-

ational opportunities. The study, scheduled to be completed in June 2005, will provide conceptual modification alternatives on the three flooded islands and their costs and benefits. This study is the initial conceptualization and pre-feasibility analysis of the Franks Tract Project. The flooded islands modifications, particularly in Franks Tract, could produce significant Delta water quality improvement at a relatively low cost.

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. DWR is the State implementing 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.

DWR is overseeing preparation of an EIR 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. DWR has worked cooperatively with stakeholders to refine alternatives, develop alternatives screening criteria, and initiate impact analysis. DWR staff have also worked with Regulatory Agency scientists and academic experts to identify science uncertainties and convened an academic science panel to provide science advisement throughout alternatives refinement and project planning. Staff convened the North Delta Agency Team, a group of Regulatory Agency representatives, to begin preparing an Action Specific Implementation Plan to satisfy ESA and to address other project permit requirements. Project environmental documentation is expected to be completed by spring 2005. Funding for design and construction has not yet been identified, but will be pursued during 2004-05 through the CALFED Program's solicitation process.

## Delta Flood Control

Many of the important assets in the Sacramento-San Joaquin Delta are protected from flooding by levees. Without the levees, 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 export 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 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 \$180 million in appropriated funds and, combined with local funds, has realized \$250 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 State. 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 by supporting maintenance and improvement of the levee system in 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 System Integrity Program would contribute to CALFED program goals. The team has identified significant links between Suisun Marsh levee maintenance and achievement of CALFED drinking water quality and ecosystem restoration goals. Furthermore, modeling research indicates a significant risk of negative water quality impacts in the Delta if Suisun Marsh levees are inadequately maintained and allowed to fail. When adopted, the

CALFED Suisun Marsh Charter will help guide future actions.

**Levee Emergency Response Plan.** The emergency response plan for the Delta has been improved recently to better coordinate response agency activities and distribution of materials when combined with local agency efforts. This will enhance the combined ability to 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 DWR, 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 8 western islands, portions of the Suisun Marsh, 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 DWR 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 DWR always seeks cost sharing for all projects, the actual reimbursement depends on each reclamation district's ability to pay. DWR 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 net long-term habitat enhancement.

Levee restoration projects in 2004 include

- initiation of a large-scale levee rehabilitation project on Jersey Island;
- completion of the setback levee stability berms on Sherman Island
- emergency levee work on Empire Tract;
- completion of large scale rehabilitation projects on Bradford and Jersey Islands using material from Decker Island;
- continuation of a large scale rehabilitation project on New Hope Tract; and
- emergency levee repair on Webb Tract.

## **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 2004, 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 2004, 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 Sites 3 and 1, and Little Tinsley Island in-channel island protection and restoration;
- Decker Island Phase I and Phase II construction, and tidal wetlands restoration at Horseshoe Bend along the lower Sacramento River; and
- Tyler Island bank stabilization demonstration.

Projects underway include

- Construction of setback levee on Sherman Island, and construction at Sherman Island Parcel 11;
- Dutch Slough Tidal Restoration planning and design concepts; and

- Bradford Island Tract 19 mitigation area design.

Projects proposed include

- study of the restoration of three flooded islands;
- developing habitat on McCormack-Williamson Tract; and
- tidal wetland restoration on Meins Landing in the Suisun Marsh.

DWR, DFG, and reclamation districts are successfully providing avoidance or mitigation of habitat losses and net long-term habitat improvement in the Delta. Reclamation districts have been very cooperative in helping DWR meet its mitigation and enhancement needs. Decker Island Habitat Restoration Area, completed in 2004, is targeted specifically for the needs of endangered Sacramento splittail and Delta smelt, providing 26 acres of tidal aquatic area. Monitoring will determine the amount of fishery use of the restoration site, evaluate the hydrogeomorphic performance of the site, and will provide valuable data for future restoration work.

DWR 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, DWR, 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, DWR will reevaluate the practicality of participating in this portion of the program. Based on the assumption that reuse will remain economically beneficial, DWR 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;
- participation in a large regional meeting with various stakeholders in the Delta to address dredging and dredged material reuse issues.
- 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
- obtaining 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 being implemented through DWR's Delta Flood Control Program. According to the CALFED Record of Decision, all Delta levees should be built to the Corps' Delta-specific PL 84-99 levee standard. This standard is comparable to DWR'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.

DWR 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, DWR began monitoring subsidence and studying its causes and the means for reversing its effects.

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

- land management practices substantially influence subsidence rates;

- cultivation practices that raise soil temperature and lower the water table dramatically increase oxidation of the peat soils;
- conversion of highly organic peat soils to carbon dioxide gas (oxidation) appears to be the recent primary cause of subsidence;
- permanently shallow flooded wetlands decrease release of gaseous carbon by as much as 80 percent, thereby mitigating subsidence; 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 DWR 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.

DWR 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, DWR 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 DWR in 1981. DWR 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, DWR 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, DWR 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, DWR signed contracts with Contra Costa in 1967 and the City of Antioch in 1968.

According to terms of the contracts, DWR 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



Fish barrier dam and pool diverts fish into a fish ladder that leads to the hatchery

## Significant Events in 2004

- The U.S. Fish and Wildlife Service (USFWS) issued a nonjeopardy biological opinion with regard to impacts on the threatened delta smelt of the proposed revised operations of the Central Valley Plan and the State Water Project Operating Plan. The USFWS concluded in its opinion that any adverse effects from the Operating Criteria and Plan (OCAP) for the two jointly-operated projects will be avoided or minimized by the conservation measures and by the adaptive management measures newly incorporated into the project plan.
- In its supplemental biological opinion issued February 27, 2004, NOAA Fisheries concluded that continuation of the OCAP through March 2006 is not likely to jeopardize the continued existence of Central Valley spring-run Chinook salmon or Central Valley steelhead. This opinion was issued to authorize take of listed salmonids under the Endangered Species Act (ESA) for State Water Project (SWP) operations while the long-term consultation is completed.
- In late January 2003, NOAA Fisheries issued a 12-month determination that listing the North American green sturgeon (*Acipenser medirostris*) as either a threatened or an endangered species under the ESA was not warranted. However, in March 2004, that finding was set aside by the U.S. District Court and the matter was remanded to NOAA Fisheries.

The Department of Water Resources (DWR) 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 (SWP) 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 (EWA), 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 (CVP) water users. (Additional information about EWA can be found in Chapters 7 and 9.)

### San Joaquin River Activities

In recent years, DWR coordinated with the Bureau of Reclamation (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 (VAMP), 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 were coordinated with the fisheries collection efforts to estimate the relative survival of marked salmon moving through the Delta 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.** VAMP participating agencies use temporary barriers as a tool 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 2004, a temporary barrier was installed at the Head of Old River on April 21 and removed on June 10. 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 29 through November 12) to help with low dissolved oxygen levels in the lower San Joaquin River and to prevent migrating adult Chinook salmon from entering the area.

Temporary barriers were installed on Middle River and Old River near Tracy on April 13 and

April 20, respectively, and the Grant Line Canal barrier was completed on June 9. 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 to early December due to lack of need for irrigation water and possible conflicts with winter-run salmon.

## **Biological Opinions Issued on the Revised CVP/SWP Operating Plan**

### **U.S. Fish and Wildlife Service Biological Opinion**

On August 6, 2004, the USFWS issued a non-jeopardy biological opinion with regard to impacts on the threatened delta smelt of the proposed revised operations of the CVP and the SWP. The USFWS concluded in its opinion that any adverse effects from the Operating Criteria and Plan (OCAP) for the two jointly operated projects will be avoided or minimized by the conservation measures and by the adaptive management measures newly incorporated into the project plan.

OCAP addresses the operational impacts on delta smelt by committing the two projects to take early protective actions for the species, before high numbers of the fish reach the major export pumps, where losses often occur. OCAP, for the first time, incorporates the EWA into the delta smelt protective actions, along with other management measures.

The biological opinion also set new incidental take limits for delta smelt. The new take limits are based on the most recent 11 years of data (1993-2003). The USFWS concluded that, using the more recent information, the adaptive management measures in OCAP will provide better protection for the species. Like the previous incidental take limits, the new take limits are based on two categories of water year type: (1) wet or above normal and, (2) below normal, dry, or critical. When the incidental take is exceeded, a team of interagency scientists called the Delta Smelt Working Group will convene a meeting to

determine and recommend the actions, if any, that should be taken to reduce salvage.

### **NOAA Fisheries Biological Opinion**

In its supplemental biological opinion issued February 27, 2004, NOAA Fisheries concluded that continuation of OCAP through March 2006 is not likely to jeopardize the continued existence of Central Valley spring-run Chinook salmon or Central Valley steelhead. This opinion was issued in order to provide an ESA take exemption for project operations while work on the long-term consultation continues. Notwithstanding this conclusion, an incidental take statement and several reasonable and prudent measures were issued to minimize take. Reasonable and prudent measures to protect CV spring-run Chinook and CV steelhead include: continuing research on effects of flow and water temperature; operating to meet temperature objectives; minimizing adverse effects of Delta Cross Channel Operations; minimizing Delta exports; conducting research to improve facility operations at fish salvage collection facilities; conducting weekly scientific reviews of current data; and minimizing take from unscreened diversions that are part of interim water contract renewals.

### **Delta Export Curtailment**

Because the new USFWS biological opinion did not take effect until August 2004, early year operations for delta smelt were based on the previous biological opinion. Under the previous biological opinion, effects of SWP/ CVP operations on delta smelt set thresholds for combined (SWP and CVP) delta smelt salvage for each month. SWP and CVP delta smelt salvage was compared with these thresholds to determine when consultation should be reinitiated between USFWS, Reclamation, and DWR. If needed, further actions were 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 was 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 ranged from 733 fish in December to 11,990 fish in October. Monthly red-light levels for below normal water years were generally higher—as much as six times—than levels for above normal water years. Reaching the yellow-light level triggered informal consultation to consider options for reducing delta smelt take. Reaching the red-light level triggered formal reconsultation among the agencies to determine whether additional actions were necessary to avoid jeopardizing the species.

In 2004, approximately 13,700 delta smelt were salvaged by SWP and about 6,770 by CVP, a decrease from the approximately 37,800 delta smelt salvaged at both facilities in 2003. Salvage numbers on June 2 exceeded the yellow-light level, which triggered export reductions. By June 4, delta smelt salvage dropped below the level of concern and a normal export schedule resumed. Salvage numbers for the SWP and CVP peaked in May and June 2004 (5,755 and 6,392, respectively), but were 53 percent lower than the same period in 2003. In general, delta smelt salvage was low in 2004—a 46 percent decrease from 2003.

## 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 .

### Endangered Species Acts

In planning, constructing, and operating the SWP, DWR 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.

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. However, on April 7, 2003, the plaintiffs challenged the NOAA Fisheries not warranted finding. The initial finding was set aside by the U.S. District Court and the matter was remanded to NOAA Fisheries in March 2004. The court's March 2004 remand was issued because the court was not satisfied with NOAA Fisheries' examination of whether

purported lost spawning habitat constituted a significant portion of either Distinct Population Segment's range. A proposed rule from NOAA Fisheries on the status of green sturgeon is due in 2005.

### Trends in Fish Abundance

Figure 3-1 shows the abundance index for delta smelt from 1967 through 2004, 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 2004 index was the lowest index on record. Since 2002, abundance indices for this species have been very low. Scientists have initiated an extensive investigation of possible causes of this recent low abundance.

Figure 3-2 shows estimates of returning adult winter-run Chinook salmon from 1967 through 2004. The estimates are referred to as escapement estimates—the number of adults that escape mortality and return to spawn. The estimated escapement for 2004 was 8,700, which more than replaced the estimated 5,500 adults in the parent stock of 2001. 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 3-3 shows estimates of returning adult spring-run Chinook salmon from 1990 through 2004. 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 2004 was 3,650

for the Feather River Hatchery and about 9,200 for the other streams combined. Overall, spring-run escapement in 2004 decreased about 26 percent compared to 2003. However, counting methods for returning adult spring-run Chinook from the Feather River Hatchery changed in 2004. In an effort to better estimate spring-run Chinook abundance and to distinguish fall run from spring run, the fish ladder at Feather River Hatchery was opened from April 1 through June 17, 2004. During this period, 3,650 adult spring run Chinook salmon entered the Feather River Fish Hatchery. These fish were tagged with an external "floy" tags, and released back into the Feather River. The fish ladder was reopened September 13, after which 834 of these tagged spring run re-entered the Feather River Fish Hatchery. Most of these fish were spawned by the Feather River Hatchery as spring-run Chinook salmon. While these methods do not yet provide a complete population estimate for Feather River spring run Chinook salmon, it is hoped that future refinements will eventually make such an estimate possible.

Although the return numbers for spring-run Chinook are lower than the last 3 years, partly due to the new counting technique, 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 and the difficulty in conducting that monitoring, 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 1967 through 2004. In comparison, the index for year 2004 was very low. Splittail reproduce in spring and appear to have greater reproductive success in years when ample seasonally flooded habitat (such as Sutter and Yolo Bypasses) is available. Much of this habitat was not available during the splittail spawning season in 2002 through 2004. 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, radiotelemetry, and spring-run Chinook tagging.

*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 fall 2004, more than 51,000 salmon spawned in the Feather River from the Fish Barrier Dam downstream to Gridley.

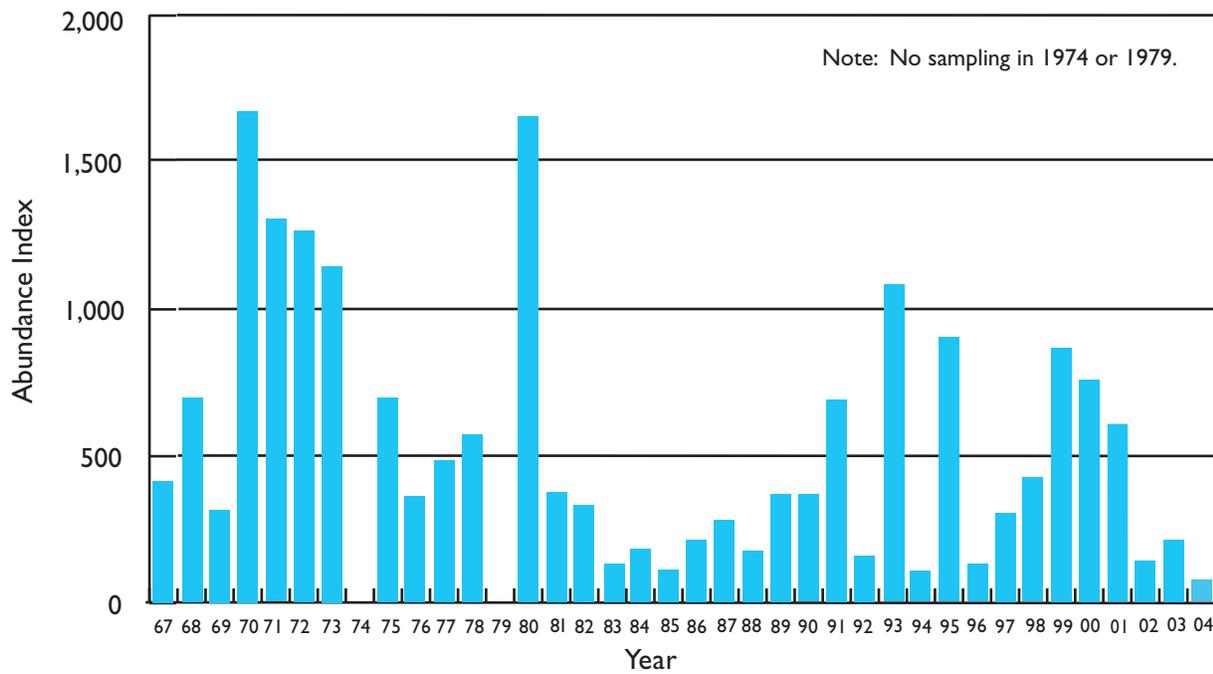
The radiotelemetry study results indicated that more than 79 percent of the tagged fish likely spawned upstream of Gridley. The studies also suggested that the Thermalito Outlet may be a factor in the migration of Chinook salmon because of higher harvesting pressure coupled with the prolonged holding periods that occur in this area.

### Fish-Related Mitigation Projects

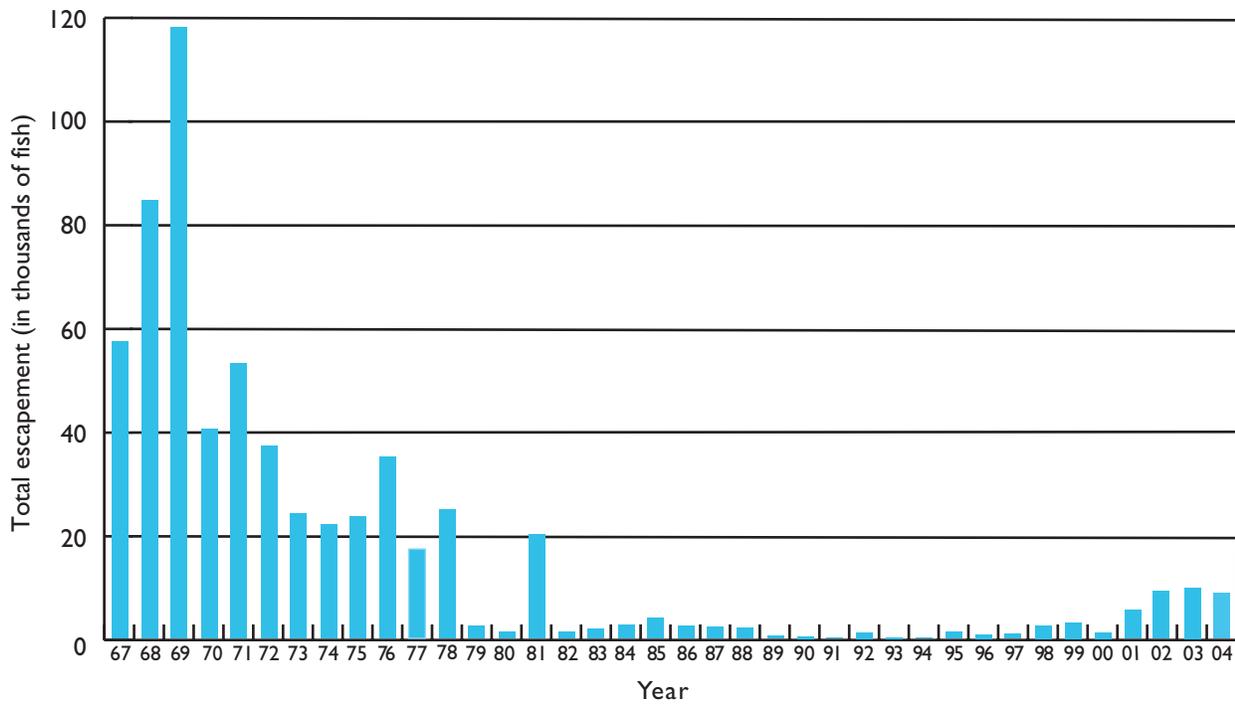
In 1986, DWR and the Department of Fish and Game (DFG) signed the Four Pumps Agreement to annually provide funds to replace fish lost at Banks Pumping Plant. The agreement also provided a \$15 million lump sum for additional projects to compensate for losses prior to 1986. The agreement focuses on Chinook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

Since 1986, DWR has spent \$40 million on mitigation projects developed under the Four Pumps Agreement. These projects include the following:

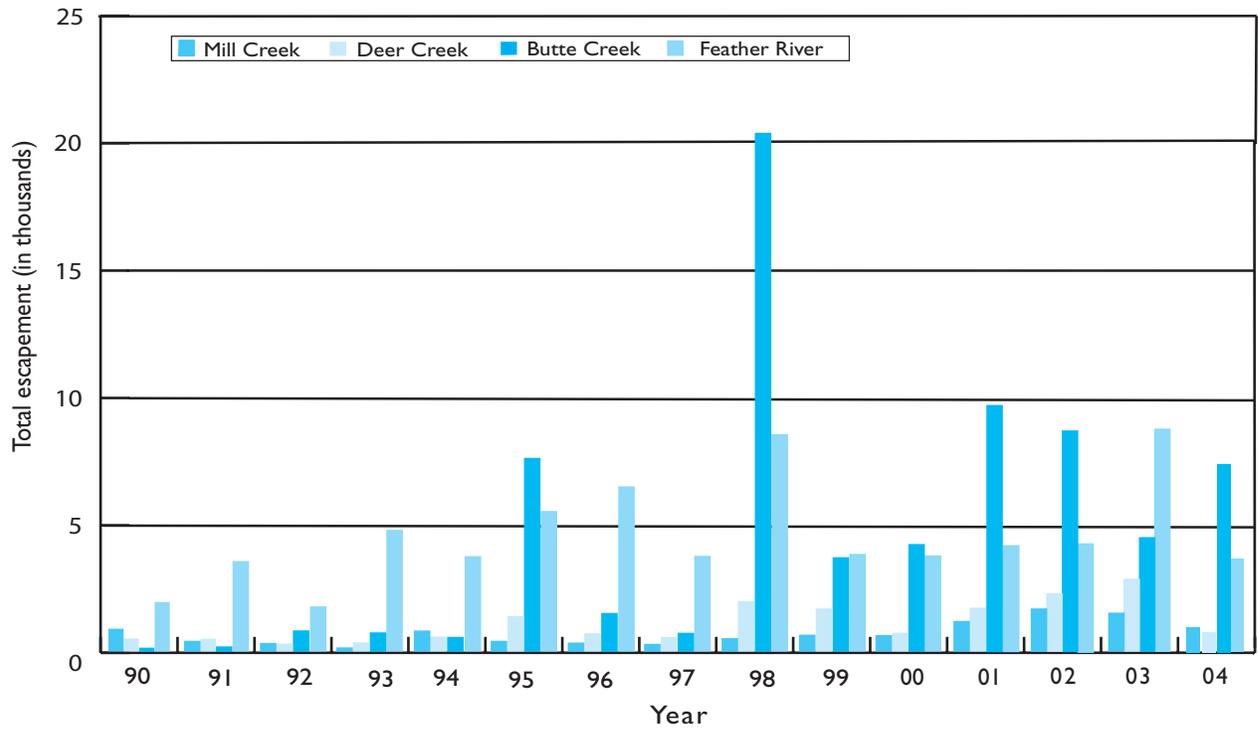
- improving salmon spawning and rearing habitat and migration pathways in the San Joaquin Basin;
- planting hatchery-reared and net-pen-reared striped bass;
- expanding the Merced River Fish Facility to increase salmon production and cost sharing in annual operating costs;
- implementing a conjunctive-use project to improve salmon migration flows in Mill and Deer Creeks in Tehama County;
- constructing fish ladders and screens on Butte Creek;



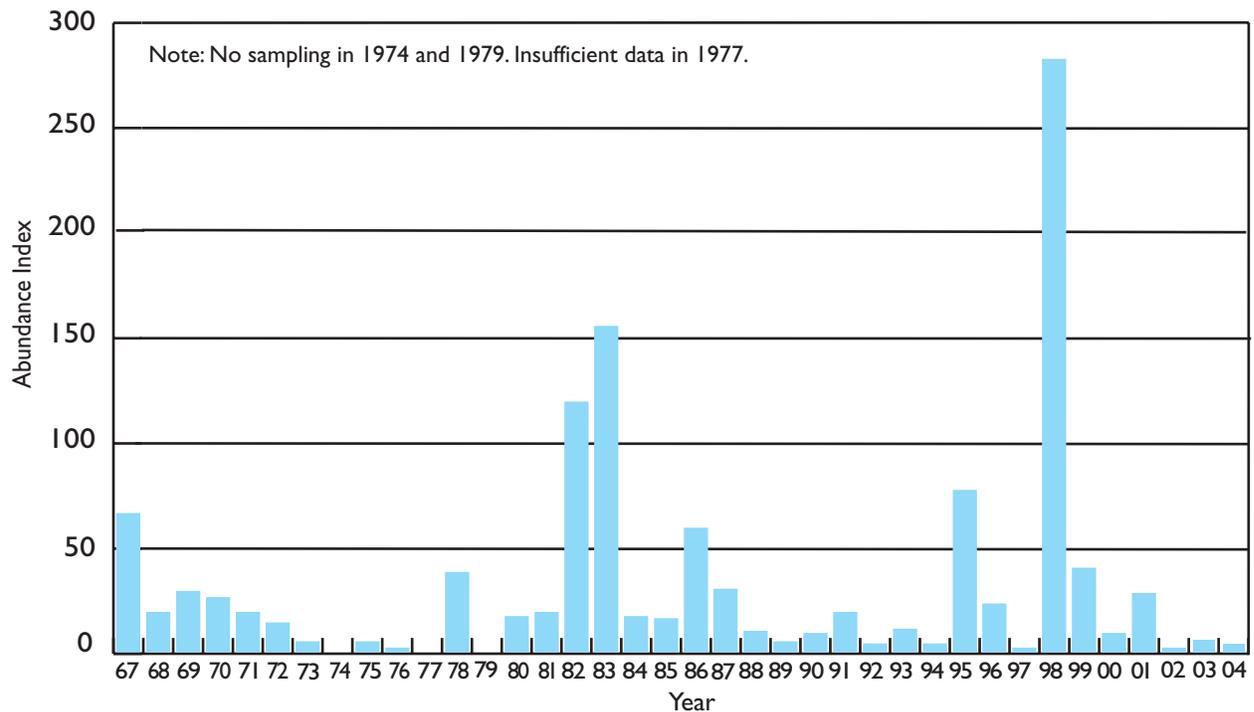
**Figure 3-1. Delta Smelt Fall Midwater Trawl Sampling Abundance Index, 1967 through 2004**



**Figure 3-2. Estimated Total Adult Winter-Run Chinook Salmon Escapement, 1967 through 2004**



**Figure 3-3. Estimated Spring-Run Chinook Salmon Escapement, 1990 through 2004.** Note: In 2004, the Feather River Fish Hatchery ladder was open for only 15 days (September 15-30) instead of the traditional 30 days.



**Figure 3-4. Young-of-the-Year Splittail Abundance Index, Fall Midwater Trawl, 1967 through 2004**

- 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 Chinook salmon.

In 1996, DWR 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, DWR 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 1, and \$3.6 million became available for other projects when DFG halted planning for a conservation salmon hatchery in the San Joaquin Basin. DWR and DFG amended the agreement again to provide 3 more years to spend the remaining \$5 million of the \$15 million lump sum, 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.

As of December 2004 about \$3.6 million of the funds allocated in the previous two extensions were still unexpended and the agreement was 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.

Other mitigation projects approved in 2004 for implementation from the agreement's annual mitigation funds and the \$15 million lump sum included:

- \$250,000 for the Delta Bay Enhanced Enforcement Project to cover the lost Tracy Fish Mitigation cost share for fiscal years 2004 and 2005.
- Augmentation of the Four Pumps Agreement annual funding for the Merced River Hatchery due to increased operating costs.
- \$4.3 million for a 3-year extension to the Delta Bay Enhanced Enforcement Project.
- \$896,000 for post construction activities related to permit compliance and cost-share requirements for the Robinson Reach salmon habitat project on the Merced River.

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

# Chapter 4

## Water Quality Programs



Water rushing through the Burlington Northern Santa Fe railroad trestle from Upper Jones Tract to Lower Jones Tract

## Significant Events in 2004

- On June 3, 2004, a levee failure on Jones Tract in the southern Delta inundated 12,000 acres of farmland creating a reservoir of about 180 taf. The rush of water pouring onto Jones Tract triggered concerns that high salinity water would be drawn into the central Delta. Export operations were cut and reservoir releases increased to help prevent reverse flows. The levee breach was closed on June 30, 2004, and this marked the beginning of a 5-month pumping operation to remove the water from the Delta island. The water removal from Jones Tract resulted in a number of other water quality concerns.



Many Californians rely on the State Water Project (SWP) 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 of Water Resources (DWR) 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.

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.

DWR 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 2004 was classified as *below normal* for California under criteria set forth by SWRCB in D-1641. (For a detailed discussion of water year 2004, 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*.

### 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. SWRCB dismissed Phase 8 on January 31, 2003.

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, 2004, was

4.83 million acre-feet (72 percent of average). The resulting Sacramento Valley 40-30-30 Index forecast was 7.7, resulting in the forecast classification of *below normal* for water year 2004. The forecast of the San Joaquin Valley 60-20-20 Index on May 1 was 2.3, resulting in the water year being classified as *dry* in the San Joaquin Basin. The Eight River Index forecast on May 1 was 7.2 million acre-feet for April through July.

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

During 2004, DWR and the Bureau of Reclamation (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 Acts.

CALFED's Record of Decision mandates an Environmental Water Account managed by DWR, Reclamation, 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 2004, the gates were open for 190 days. To reduce flooding potential on the Mokelumne River and to prevent scour on the downstream side of the gate structure, Reclamation'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 2004, the gates remained closed until May 28. The gates were open on the weekends of May 28-May 31 to allow for the passage of recreational boats, but closed again following Memorial Day weekend as Gate 2 was exhibiting some operational problems. On June 3, the gates were reopened and remained open until December 5 when they were closed for a fishery experiment. The gates were reopened on December 28 in response to water quality concerns but closed again the next day as

Sacramento River flows at Freeport increased substantially.

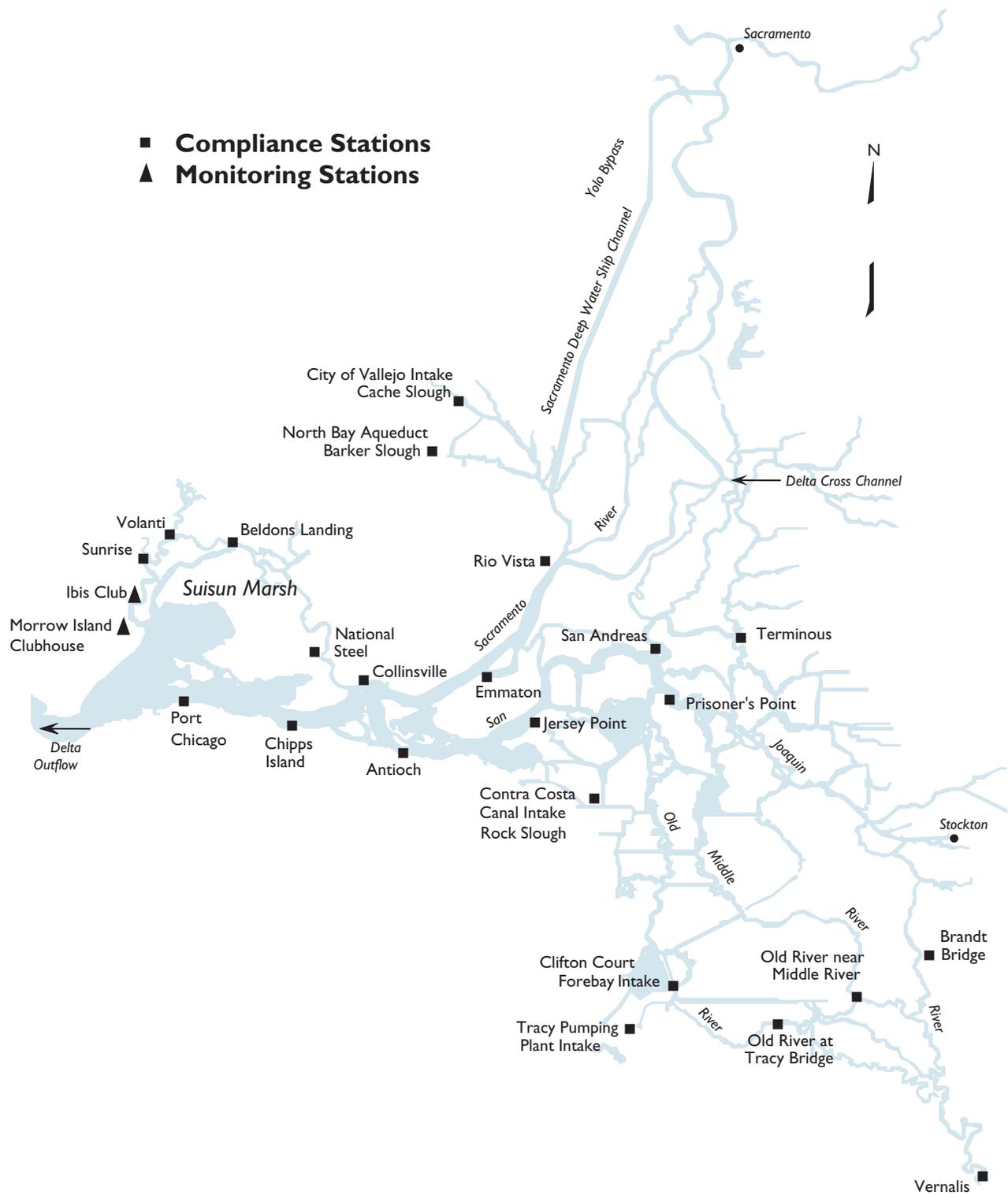
### **Jones Tract Levee Break**

Just before 8:00 AM on June 3, 2004, a levee breach occurred on the western levee of Upper Jones Tract. Jones Tract is in the southern Delta in San Joaquin County and is bordered on the western edge by Middle River and is about 10 river-miles from the Clifton Court Forebay intake. The 450-ft. break occurred about a quarter of a mile north of the Woodward Island ferry allowing Middle River water to pour over 12,000 acres of farmland. By the time the breach was closed on June 30, 2004, Jones Tract had been flooded to an average depth of 15 feet creating a reservoir of about 180 taf. The Jones Tract levee breach resulted in the Governor declaring a State of Emergency on June 4 and the President declaring a federal Declaration of Emergency on June 30, 2004.

On the same day the breach occurred, it was determined that the Trapper Slough levee, on the southeast border of Jones Tract, was not high enough to avoid being overtopped by the floodwater. If this were to happen, Highway 4 could be in jeopardy. A valiant and successful fight ensued to raise the Trapper Slough levee and on June 8, 2004 the project was complete. The flood fight continued on levees inside the Jones Tract to protect the islands' interior.

On June 28, 2004, DWR awarded a contract to dewater Upper and Lower Jones Tracts and on July 12, four 42-inch pumps began pumping off about 150,000 gallons per minute. During the next two weeks, six additional pumps were deployed bringing the total pump out rate to about 350,000 gpm.

A major concern at the outset of this incident was that the massive flow of Delta water into Jones Tract would pull in more saline water from San Pablo and San Francisco Bays causing a salinity problem in the south Delta. This problem did not develop to the extent feared, in part due to the quick response of the SWP and CVP



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

operators who cut water exports from the south Delta, and boosted releases into the Sacramento River. There was an initial rise in EC at the Victoria Island water quality station from about 350  $\mu\text{S}/\text{cm}$  to more than 420  $\mu\text{S}/\text{cm}$ , as saltier San Joaquin River water was drawn into the area. EC maximums were exceeded at Jersey Point and Emmaton, in the western Delta, for several days following the breach. By June 6, 2004, EC levels actually decreased to about 280  $\mu\text{S}/\text{cm}$  across the southern Delta.

DWR's Office of Municipal Water Quality Investigations Unit began a water quality monitoring effort on June 4 that continued into late-November 2004. Monitoring was done at more than 20 sites on or near Jones Tract and the samples analyzed for as many as 50 different water quality constituents. There was initial concern that the discharge from Jones Tract might contain high concentrations of pathogens, fertilizers, petroleum, or other constituents that can cause acute toxicity but monitoring revealed that no critical levels of compounds or toxicity were found which would warrant restricting the discharge into the Delta.

MWQI's Jones Tract water quality report focused on organic carbon, dissolved oxygen, and taste and odor producing compounds as they pertain to potential land use changes and current management challenges in the Delta.

Concern over the production of dissolved organic carbon within the Jones Tract floodwaters prompted MWQI staff to monitor and model the DOC loading associated with the inundation of peat soils in agricultural production. Field results measuring the increase of DOC and TOC concentrations on Jones Tract agreed with predictions shown by the model showing about 1 mg/L per week increase. This production rate appeared to decrease when cooler temperatures arrived in October and November.

Water sampling, as well as DSM2 modeling revealed that during the Jones Tract pump out, which lasted until December 18, 2004, the sustained impact on the water exported at Banks

Pumping Plant was about a 1 mg/L increase over the historical mean.

Dissolved oxygen was monitored in the Jones Tract water with an interest in determining how well flooded Delta islands could sustain aquatic ecosystems. DO concentrations increased during the daylight hours but were often less than 6 mg/L, especially on hot afternoons when there was little wind.

Jones Tract was also monitored for the production of taste and odor producing compounds. Methylisoborneol (MIB), produced by algae, was the taste and odor compound that was found in high concentrations on Jones Tract. During the pump out, water at Banks Pumping Plant was only made up of about 5 or 10 percent Jones Tract water but MIB concentrations on Jones Tract were one to two orders of magnitude greater than samples taken at Clifton Court Forebay and Banks. Though MIB is produced in the Delta and in Clifton Court Forebay itself, it appears that Jones Tract water added to the taste and odor problems at Banks.

The Jones Tract levee failure did have impacts on the SWP, most notably a 6-day reduction in exports at Banks Pumping Plant and a 13-day exceedance of electrical conductivity standards at two compliance locations in the western Delta: Jersey Point and Emmaton. Decision 1641 requires that electrical conductivity must remain below 0.45 mS/cm at Emmaton and Jersey Point from April 1 through June 20. The EC objectives are relaxed to 1.14 mS/cm and 0.74 mS/cm from June 20 to August 15 for Emaaton and Jersey Point, respectively. The 0.45 mS/cm objective was exceeded at both locations from about June 7 through June 20.

The reduction in pumping at Banks Pumping Plant occurred from June 3 through June 8, a period where the number of endangered delta smelt salvaged at the SWP and CVP had risen to a level that usually requires export cuts. Nevertheless, had this levee breach occurred in the fall, impacts to water supply and water quality could have been severe.

Total costs related to the Jones Tract levee failure are estimated to be approximately \$71 million.

## 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. DWR 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). Chloride levels remained below the objective throughout 2004.

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 below normal year requirement of 175 days was met on July 5, 2004.

### 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. Terminous and San Andreas met the objective in 2004, but the water quality standards at Emmaton and Jersey Point were exceeded during the salinity spike that immediately followed the Jones Tract Levee break. DWR petitioned SWRCB to relax the water quality standards at Emmaton and Jersey Point from 0.74 mS/cm and 1.14 mS/cm to 1.0 mS/cm and 1.34 mS/cm for the remainder of the control season which ended on August 15, 2004. 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.

### 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 (Chippis 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 Chippis 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 Chippis 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 2003 through May 2004, in acre-feet, was 2.13 million, 1.89 million, 3.94 million, 3.56 million, 2.65 million, and 2.30 million, respectively. On the last day of January 2004, 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 for 29 days due to the leap year. During March, the required 31 days were met at Port Chicago was met with both daily average EC and 14-day running average of EC below 2.64 mS/cm. X2 was also met at Port Chicago for April with the required 16 days met with a combination of flows and EC below the objective. In May, X2 was met for the required 16 days at Chipps Island. On the last day of May, the 14 day EC average at Chipps Island exceeded 2.64 mS/cm, triggering compliance at Collinsville for June. Collinsville is the X2 default location and NDOI flows of 7,100 cfs and/or EC below 2.64 mS/cm are required for the entire month, or 30 days for June.

### **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 2004. NDOI calculates 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 2004, Delta water conditions began and ended in excess conditions. 2004 accumulated 281 days in excess conditions.

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 below normal water years, July's NDOI objective of 6,500 cfs is the most stringent of all months. During 2004, monthly mean NDOI was highest in February at 61,802 cfs and monthly mean NDOI remained

above 4,300 cfs during all months of the year. The lowest monthly mean NDOI occurred in September with 4,318 cfs, and all NDOI standards were met in 2004.

### **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 2004 was forecast to be below 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 2004.

D-1641 contains minimum San Joaquin River base and pulse flows measured from Vernalis from the Winter-Run Salmon Biological Opinion that vary based upon the San Joaquin Valley water year type. 2004 was forecast to be dry in the San Joaquin Valley.

The dry year base flows are set at 2,280 cfs from February to April 14 and from May 16 through June 30, if the X2 objective is required to be at or west of the Chipps Island location. The base-flow objective is relaxed to 1,420 cfs when X2 is required to be east of Chipps Island. As stated previously, X2 was met at Port Chicago during March and April and at Chipps Island during February and May, resulting in the higher base flow requirement for all four months. During June, X2 was met at Collinsville, a location east of Chipps Island, thereby allowing the lower base flow objective to be in place. All Vernalis base flow objectives were met in 2004.

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 Reclamation and DWR typically use in lieu of D-1641 limits. The pulse flow objective for the spring 2004 VAMP period was 3,200 cfs. During October, D-1641 also 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 during balanced conditions with 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 2004, combined SWP and CVP exports averaged about 26 percent of Delta inflow, far below the 65 percent limitation. Excess conditions during January were beneficial to Delta water quality and prevented the need for export curtailments for water quality protection. However, exports were reduced in

January due the buildup of large woody debris at Skinner Fish Facility.

During the more restrictive February-through-June period (35 percent objective) exports averaged about 19 percent. In May following the April 15-May 15 VAMP period, exports were curtailed through the end of the month due to concern over delta smelt salvage. On June 3, the delta smelt yellow light level of concern was exceeded. That same day, the Jones Tract levee (described elsewhere in this chapter) failed flooding thousands of acres of farmland and causing the SWP and CVP to cut south Delta water exports to help avert salinity intrusion.

From July through the following January, the SWP and CVP are allowed to export at 65 percent of Delta inflow. During July-through-December 2004, the combined percent inflow diverted averaged 53 percent. During August, exports were cut due to concern over water levels in the south Delta. On September 9, 2004, Banks Pumping Plant was forced out of service for 8 hours when a boom truck, being used to remove aquatic weeds, fell into Clifton Court Forebay. During October, November and the first half of December, pumping was hampered in an effort to maintain compliance with Delta outflow requirements and water quality objectives. Also during mid-November, aquatic weeds obstructed water flow at Skinner Fish Facility. On November 10, 2004, a new trash rake was installed at Skinner.

### **Temporary Delta Barriers**

The Temporary Barriers Project began in 1991 and is now part of DWR'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 13, 2004, and the Old River barrier near Tracy installation was completed exactly one week later. 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 10. The Grant Line Canal barrier was partially installed in late April, and the complete installation finished on June 9. The Middle River barrier was notched on September 23 and removal was completed by November 12. The Old River near Tracy barrier was removed by December 1 and the Grant Line Canal barrier was completely removed by December 6, 2004.

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, and can help improve dissolved oxygen conditions in the Stockton Ship Channel. The fall Head of Old River barrier was notched on September 28, 2003, and the installation completed the next day. Removal of the fall barrier at Head of Old River was completed on November 12.

## Special Study and Biological Surveys

DWR conducts several special studies and biological surveys each year. These include 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 in the San Joaquin River. DWR also conducts biological surveys of benthic organism density and diversity, and of 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 at Stockton.

To help reduce the severity of these low DO conditions, DWR normally 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 the upstream diversion of flows down Old River.

During the late summer and early fall of 2004, flows in the Stockton Ship Channel were not projected to be sufficient to alleviate low DO concerns, and in-water construction of the barrier began in late September. The barrier was in place and fully operational on September 28, and was in place until removal on November 12, 2004.

**Methods.** Monitoring of DO concentrations in the Stockton Ship Channel was conducted by boat on eight monitoring runs, from August 11 to November 24, 2004. 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 August 11 sampling run, when Stations 9 through 14 were not sampled for bottom DO, due to an equipment malfunction.

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 to 9.0 mg/L) in the western channel; transitional, variable (4.0 to 7.0 mg/L), and stratified in the central channel; and low (3.0 to 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 November 24), DO levels varied considerably between regions within the channel (not including the turning basin) from a low of 2.1 mg/L to a high of 8.8 mg/L. In the western channel DO concentrations were relatively high and stable, ranging from 7.0 to 8.8 mg/L. The robustness of DO concentrations in this portion of the channel, in comparison to the east and central channels, is apparently due to the greater tidal mixing, the absence of conditions creating BOD, and shorter hydrological residence time. In the central channel, DO concentrations were more variable, ranging from 2.7 to 8.4 mg/L. In the eastern channel, the DO levels were the most variable and stratified, ranging from a low of 2.1 mg/L to a high of 7.8 mg/L.

DO concentrations in the Stockton Ship Channel fell below both the State's 5.0 mg/L and 6.0 mg/L objectives in August and September of 2004. This period coincided with warm temperatures and relatively low net flows in the San Joaquin River past Stockton.

Higher inflows in October coincided with improved DO conditions, with most stations showing levels above the 6.0 mg/L objective, except for bottom DO levels in the turning basin, which were below State objectives. DO levels remained high through the first half of November until the barrier was removed on November 12. The removal of the barrier coincided with a sharp reduction in net flows at Vernalis. Significant upstream diversions and exports resulted in net inflows at Stockton being reduced to below zero. Subsequent monitoring showed DO levels falling again in the east channel. Further monitoring operations for the fall 2004 special study were suspended after November 24, 2004.

**Benthic Survey.** 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 DWR. 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 at each site in January, April, July, and October of 2004. Samples were analyzed to identify organisms to the lowest possible identifiable taxon, and to count all organisms collected.

DWR maintains a database of benthic organisms located within the upper estuary. The benthic database is dynamic and is constantly

undergoing peer review and updates. When a new organism is identified at any of the sampling stations, the organism is added to the database. In addition, the taxonomic names of organisms on the list are updated when sufficient evidence is produced to warrant such changes.

A total of 180 species of benthic macrofauna were collected in 2004 at the 10 sampling sites. Of the 180 species, 10 species represented 91.8 percent of all organisms collected. The 10 dominant species were

- the amphipods: *Americorophium stimpsoni*, *Americorophium spinicorne*, *Corophium alienense*, *Ampelisca abdita*, and *Gammarus daiberi*;
- the cumacean crustacean: *Nippoleucon hinumensis*;
- the aquatic oligochaete: *Varichaetadrilus angustipenis*;
- the sabellide polychaete: *Manayunkia speciosa*; and
- the Asian clams: *Potamocorbula amurensis*, and *Corbicula fluminea*.

Of the 10 dominant species, three species, *Ampelisca abdita*, *Nippoleucon hinumensis*, 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 four species, *Manayunkia speciosa*, *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* Survey**

Monthly sampling of chlorophyll *a* concentrations and phytoplankton was conducted in 2004 by DWR's Bay-Delta Monitoring Branch at 13

stations throughout the Upper San Francisco estuary. These stations are

- Sacramento River at Greenes Landing/Hood 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
- Frank's Tract near Russo's Landing
- 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 and near Mouth of Petaluma River

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 13 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. Phytoplankton are small, free-floating or attached algae that can be tiny, single-celled organisms (less than 5 µm in diameter) to larger colonial organisms. Phytoplankton is an important source of food in the estuary for zooplankton, invertebrates and some species of fish. Phytoplankton biomass is an indicator of the status of primary productivity in the estuary.

Monthly chlorophyll *a* concentrations throughout much of the estuary were low, with 90 percent of the 135 samples taken in 2004 having levels below 10 µg/L, and 64 percent of all samples having levels below 3 µg/L. The average chlorophyll *a* concentration for all samples in 2004 was 5.3 µg/L, and the median value was 2.0 µg/L. In 2001-03, median chlorophyll *a* concentrations were higher, with median values measuring 2.4 µg/L for each year. The maximum chlorophyll *a* concentration in 2004 was 94.2 µg/L, recorded in July at the San Joaquin River at Vernalis monitoring site. This maximum was greater than the 2003 peak of 64.5 µg/L, but was below the peaks of 119 µg/L and 118 µg/L recorded in previous years at the

Vernalis station. Higher peak chlorophyll *a* concentrations from 2001-03 resulted in higher mean values in comparison to 2004. From 2001-03 mean values were 6.7 µg/L, 7.0 µg/L, and 5.7 µg/L, respectively. The minimum chlorophyll *a* concentration in 2004 was 0.4 µg/L, recorded in January at the Old River opposite Rancho Del Rio monitoring station.

The highest chlorophyll *a* concentrations were measured at in the San Joaquin River at Vernalis, Buckley Cove, and Disappointment Slough near Bishop Cut, with average concentrations of 29.3, 7.8, and 6.2 µg/L, respectively. Average chlorophyll *a* concentrations at these stations in 2003 were 23.8, 12.9, and 8.2 µg/L, respectively. Mean chlorophyll *a* concentrations recorded at the other estuary locations ranged from 1.6 µg /L in Suisun Bay off Middle Point near Nichols to 3.8 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 measured in 2004 ranged from 32 percent to 89 percent, with an average of 65 percent and a median of 66 percent. In addition, 69 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), Cryptophyceae (cryptomonads), Cyanophyceae (blue-green algae), unidentified flagellates, Dinophyceae (dinoflagellates), Euglenophyceae (euglenoids), Chrysophyceae (yellow-brown algae), and Xanthophyceae (yellow-green algae). Of the genera identified the following were the ten most common, in order of abundance: *Cyclotella*, *Rhodomonas*, *Skeletonema*, *Aulacoseira*, *Thalassiosira*, *Dispora*, *Ankistrodesmus*, unidentified flagellates, *Selenastrum*, and *Chlorella*.

## 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.

DWR maintains an analytical laboratory (Bryte Laboratory in West Sacramento), which processes most SWP laboratory water quality samples. DWR 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 DWR's Web site at <http://www.omwq.water.ca.gov>. Table 4-1 presents laboratory results of sampling at several representative stations during 2004.

### **Nonproject Water Turn-ins**

Turn-ins are authorized during periods of reductions in approved Table A amounts. DWR 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, DWR 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 DWR's 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 DWR.

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 2004, the SWP received 102,379 acre-feet of water via the nonproject water turn-ins compared to 19,808 acre-feet during 2003.

### **Municipal Water Quality Investigations Program**

The Sacramento-San Joaquin Delta provides drinking water for over 24 million people in California. Because the Delta and its tributaries 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 (MWQI) was established to evaluate the suitability of Delta water as a drinking water source, to identify sources of water quality degradation, and to evaluate means of eliminating or preventing degradation.

Participants in the program include the municipal water contractors of the SWP and Contra Costa Water District. Program advisors include representatives of participating agencies, including the Environmental Protection Agency, DHS, and California Urban Water Agencies.

Because water quality concerns change rapidly with new drinking water regulations and water quality issues, the MWQI Program must be flexible enough to adapt to changing requirements. The former Delta Health Aspects Monitoring and Delta Island Drainage Investigations Programs merged into the MWQI Program in 1990; the program continues to evolve.

The program's initial focus was to compile a comprehensive database on the quality of drinking water in the Delta. Since then, it has investigated ways of managing Delta lands and waters to minimize adverse impacts on drinking water

Table 4-1. 2004 Mean Water Quality at Selected State Water Project Locations

Constituents	Units	California Aqueduct									
		Thermalito Afterbay at Feather River	North Bay Aqueduct Barker Slough Pumping Plant	Delta- Mendota Canal Upstream of McCabe Road	Banks Pumping Plant	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 CaCO <sub>3</sub>	40	96	74	70	76	78	40	77		
Antimony	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NR		
Arsenic	mg/L	<0.001	0.003	0.003	0.002	0.003	0.003	<0.001	0.003		
Beryllium	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
Boron	mg/L	<0.1	0.1	0.1	<0.1	0.2	0.1	<0.1	0.2		
Bromide	mg/L	<0.01	0.03	0.17	0.15	0.18	0.19	<0.01	0.19		
Calcium	mg/L	8	16	19	17	19	21	8	21		
Carbon-Dissolved Organic	mg/L as C	NR	4.8	3.6	3.1	3.1	3.6	NR	3.4		
Carbon-Total Organic	mg/L as C	NR	5.6	3.5	3.3	3.2	3.4	NR	4.0		
Chloride	mg/L	<1	20	60	51	64	66	<1	70		
Chromium	mg/L	<0.001	0.001	0.003	0.001	0.002	0.003	<0.001	0.002		
Copper	mg/L	<0.001	0.002	0.002	0.002	0.002	0.002	<0.001	0.003		
Fluoride	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
Hardness	mg/L as CaCO <sub>3</sub>	35	94	95	85	96	99	35	101		
Iron	mg/L	<0.005	0.022	0.012	0.015	0.011	0.008	<0.005	0.006		
Lead	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
Magnesium	mg/L	4	13	12	10	12	11	4	12		
Manganese	mg/L	<0.005	0.019	<0.005	0.011	<0.005	<0.005	<0.005	0.006		
Nitrate + Nitrite	mg/L as N	<0.01	0.33	NR	0.51	0.45	0.54	<0.01	0.69		
Phosphorus - Ortho	mg/L as P	<0.01	0.12	NR	0.06	0.07	0.04	<0.01	0.08		
Phosphorus - Total	mg/L	0.0125	0.26	NR	0.10	0.08	0.07	0.01	0.13		
Selenium	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	0.001	<0.001	0.001		
Sodium	mg/L	3	24	43	37	45	48	3	49		
Electrical Conductivity	µS/cm	85	293	414	365	432	461	85	461		
Sulfate	mg/L	2	21	35	26	34	38	2	37		
Total Dissolved Solids	mg/L	52	171	236	210	244	261	52	258		
Turbidity	NTU	3	54	13	16	5	7	3	16		
Zinc	mg/L	<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 = microSiemens per centimeter

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 using Delta source waters because natural organic materials from agricultural drainage and watershed runoff potentially contain various contaminants of concern.

The current MWQI Program has progressed from 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 CALFED with expertise for assessing potential effects from proposed Delta projects. The *2001 California State Water Project Watershed Sanitary Survey Report*, the third in a series for the SWP, provides this information in the latest 5-year updates from the original sanitary survey required by DHS in 1990. A searchable CD-ROM version of the report is available on the MWQI Web site at <http://www.wq.water.ca.gov/mwq/index.htm>. The next update of the Sanitary Survey will be available in early 2007 and is currently in progress.

In 2002, CALFED funded a joint study between DWR and Lawrence Livermore National Laboratory, the University of New Orleans, and the University of Florida, Gainesville, examining whether carbon age (through radioactive decay of  $^{14}\text{C}$ ) and stable isotopes can be used as tracers of Delta peat island DOC at the Banks Pumping Plant. The generation of peat takes thousands of years; therefore, the isotopic signature of DOC from Delta peat islands may be substantially different from the isotopic signature of modern carbon generated from recent organic processes. Monthly samples were collected for a year beginning in April 2003 from surface waters and agricultural drains and were analyzed in summer 2004. Additionally, carbon was extracted from soil/water mixtures to explore the age of carbon leached from peat islands. Carbon combustion and purified  $\text{CO}_2$  isolation has also been ongoing. Preliminary results for samples collected between April and October 2003 were presented in October 2004 at the CALFED Science Conference. Results from this time period showed that carbon in the rivers is younger than

the carbon pumped off of Delta peat islands. Based on the limited dataset, it also appears that using carbon age to track peat carbon at the pumps may not be feasible. Since this is a working hypothesis based on a limited data set, we are awaiting the results from the rest of our samples and from our stable isotope analyses to confirm or reject this hypothesis.

DWR, the Bureau of Land Management, Ducks Unlimited, the Department of Fish and Game, and the Nature Conservancy partnered on a CALFED grant to develop a wildlife friendly farm management project on the Delta's Staten Island. The MWQI Program is responsible for the project's water quality monitoring component. Monitoring water quality on Staten Island provides a unique opportunity to examine the effects of agriculture management practices on water quality and the quantity of carbon exported off the island and provides an opportunity to look at the effects of water management practices on agricultural lands under different soil regimes found in the Delta. Access to the island's pump facilities provides an unprecedented opportunity to measure carbon loads directly. Results from these experiments will provide direct measurement of carbon quantities discharged off a Delta island.

By fall 2004, the new pump station on the eastern side of the island had not been constructed; therefore, loading studies off the island could not be conducted. Instead, DWR staff focused on weekly water quality monitoring of two flooded agricultural fields that Natural Resource Conservation Service soil maps indicated were different soil types—the main pumping plant on the island and the Mokelumne River. Starting at the end of October 2004 when the fields were first flooded, samples were collected weekly from two fields. Sampling will continue until the fields are drained of water, sometime in early 2005. It is anticipated that carbon loading studies will begin in fall 2005. Following the completion of this second portion of the monitoring, a report on the results will be prepared for Ducks Unlimited. It is anticipated that the carbon loading studies may be submitted to a journal for publication and wider dissemination in the scientific community.

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 website.

The second analyzer started operation in winter 2002, and is located at the Hood water quality monitoring station on the Sacramento River. The third analyzer started operation in March 2005 at the new San Joaquin River monitoring station near Vernalis (McCune Station). Construction of this station was partially funded by a 2002 CALFED grant.

Automated carbon analyzers can sample every hour compared to the historical grab-sample program that only sampled weekly or monthly. The more frequent data, coupled with flow measurements, will allow for the calculation of mass transport and loading of carbon from the two main Delta tributaries. These data, currently posted to DWR's CDEC website, will also be used by modelers to refine the Delta Simulation Model 2 for calculation of organic carbon transport through the Delta.

The MWQI Program, in partnership with the Dry Creek Conservancy, also received proposition 13/CALFED grant funding of \$595,000 in 2004 to assess water quality and loads of parameters of concern from an urban drain in metropolitan Sacramento in a watershed that includes several areas of rapid development. The Natomas East Main Drainage Canal (NEMDC), also known as Steelhead Creek, has been part of the routine MWQI monitoring program since 1997. The grant project expands the scope of monitoring to include installation of a real-time stage recorder to determine daily flows, installation of an autosampler station to more accurately determine loads, and preparation of a GIS of land use and impervious cover in the NEMDC watershed to serve as a basis for change detection analysis in subsequent years.

From 2003 to 2004, MWQI staff conducted a collaborative special study on trihalomethane (THM) reactivity of organic carbon for carbon-rich soils of the Delta. Organic carbon of soil origin in the Delta waterways results in elevated organic carbon levels in Delta waterways. Elevated organic carbon in drinking water source waters represents a major public health concern because organic carbon reacts with chlorine, a disinfectant currently used by most water utilities with entitlement to Delta source waters, and forms harmful disinfection by-products (DBPs), such as THMs. To date, the nature and properties of reactive organic carbon has been poorly characterized. MWQI staff collected representative soils from various Delta islands from the soil surface down to 10-feet deep. Organic carbon from the soils were extracted with different extractants and fractionated into relatively homogeneous isolates of distinct properties for determination of THM reactivity. MWQI staff has summarized findings of this study into three peer-reviewed manuscripts, one of which will appear in *Water Research* in May 2005. The other two manuscripts are being revised for publication in *The Journal of Environmental Quality*.

In July 2003, MWQI staff completed a 3-year data report entitled *The Municipal Water Quality Investigations Program Summary and Findings from Data Collected from August 1998 through September 2001*. This report summarized and interpreted grab sampling data from various water quality parameters from 14 stations in the Delta region. The report is available online at <http://www.wq.water.ca.gov/mwq/>. Hard copies and a searchable CD-ROM are also available from the MWQI Program.

A 2-year MWQI data summary report is scheduled for distribution in May 2005. This is a follow-up report on the above-mentioned 3-year summary report, and presents MWQI grab sampling data collected from 11 MWQI stations from October 2001 through September 2003. The report will also be available in both hard copies and searchable CD-ROM, and online on the MWQI website in May 2005.

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;
- Evaluation of water quality effects from the Jones Tract Flood;
- 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. 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 certified in 1990 by the California Department of Health Services Environmental Laboratory Accreditation 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 DWR'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.

A preliminary three-year water quality monitoring project required by the Federal Energy Regulatory Commission (FERC) for the future re-

licensing of Lake Oroville ended this year in May 2004. The water quality samples analyzed during this period by Bryte Chemical Laboratory were a major component of the Lab's analytical workload. The analytical results generated by Bryte Lab from this three-year project will be used to help establish a FERC-required, long-term environmental water quality monitoring program as part of the re-licensing of Lake Oroville.

Bryte Laboratory staff were also heavily involved with the Jones Tract levee break that occurred in June 2004, which resulted in the flooding of the Upper and Lower Jones Tracts. Staff collected and analyzed initial water quality samples on a rush basis to detect any impact of water quality in the Delta and to the SWP. Water samples were continually collected and analyzed during the break repair and the reinforcement of existing levees on the flooded Upper and Lower Jones Tracts to ensure the safety of personnel working in and around the flood waters. Once the break was closed, a water quality monitoring program was required by the Regional Water Quality Control Board and DWR to monitor and control the discharge of flood waters from the two tracts into the Middle River. The program was a necessary requirement to monitor any impacts on water quality to the surrounding Delta waters or to the water quality supplied to the SWP during the pumping of flood waters into the Middle River. Water quality samples were continually collected during the pump-off period and analyzed on a rush basis until finally completed in late 2004.

Bryte 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 2004, under DWR's master contract policy, Bryte Laboratory awarded a new three-year interagency contract to analyze fish tissue (to the Department of Fish and Game). Bryte Laboratory also extended the current interagency

contract with the Metropolitan Water District of Southern California (Laboratory) to perform taste and odor analyses involving water quality samples from the SWP until March 31, 2007.

Bryte Laboratory's Field and Laboratory Information Management System, (FLIMS), was implemented in 1997 and has continued to enhance the laboratory's data management capabilities. In 2004, several modules of FLIMS were changed and upgraded to conform to DWR's Water Data Library data base. Once a week, all the laboratory's completed analytical results are down loaded routinely from FLIMS directly into the Water Data Library.

Security and protection of the SWP has continued to be a primary goal for DWR 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 called the California Association of Mutual Aid Laboratories (CAMAL) and is headed by DHS. The laboratory group's main objective is to voluntarily assist DHS in the analysis of chemical agents in water quality samples should a natural disaster or terrorist event occur in California. The assistance to DHS would only be required if the analytical capacity of DHS is being exceeded and/or to confirm the presence or absence of chemical agents in water quality samples provided by DHS. If DHS is required to activate the CAMAL network, members will be notified and water quality samples determined to be safe to handle by DHS will be shipped to the participating CAMAL laboratories, according to their analytical capabilities and current capacities. Bryte Laboratory has been classified as a participating voluntary laboratory in the CAMAL organization.

### **Quality Assurance/Quality Control**

The QA/QC Program, established in 1992, ensures that data generated by DWR'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 DWR 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, which 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;
- Publishes QA/QC technical documents;
- Develops and maintains the drinking water quality database and associated QC metadata as part of DWR's Water Data Library; and
- Assists departmental programs in developing quality assurance project plans.

A class titled "Applied Environmental Statistics" was held in July 2004 with assistance from California State University, College of Continuing Education. The class provided training of up-to-date methods for analyzing environmental data. The class was a prerequisite of a follow-up class on statistical analysis of data below detection or reporting limits to be offered in the future. Data below reporting limits are generated in many departmental monitoring programs and such data require specialized statistical methods.

The Water Data Library was established in 2001, completing the development of FLIMS, established in 1998. All data from 1998 to date have been transferred into the data tables. Data from the water quality data management system (formally known as 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 Web 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. It is the largest contiguous brackish marsh remaining in the United States. Situated in southern Solano County, west of the Sacramento-San Joaquin Delta and north of Suisun Bay, the marsh encompasses more than 10 percent of California's remaining natural wetlands. In addition, the marsh is the resting and feeding ground for thousands of waterfowl migrating on the Pacific Flyway.

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

### Revised Suisun Marsh Preservation Agreement

In 2004, SMPA parties continued to work 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 standard to be consistent with D-1641; Drought Response Fund; portable pumps for drainage, replacing turnouts on the Roaring River Distri-

bution System, and revisions to the Suisun Marsh monitoring and mitigation agreements.

### Suisun Marsh Charter

CALFED requested that DWR, DFG, Reclamation, 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 2004, the agencies continued to work within a formal NEPA/CEQA planning process for development of the Habitat, Management, Preservation, and Restoration Plan for the Suisun Marsh. This plan addresses water quality; managed wetland enhancement; and levee and endangered species recovery needs, proposing to address these needs on an equal basis and integrate science throughout the process. The parties, with the assistance of a facilitator, are working through the myriad of complex issues 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. ECAT includes staff from DWR, Reclamation, 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

### Suisun Marsh Preservation Agreement

In 1986, federal legislation (Public Law 99-546) authorized funds to Reclamation to protect Suisun Marsh. On March 2, 1987, DWR, Reclamation, DFG, and SRCD signed the Suisun Marsh Preservation Agreement. The objective of SMPA is to assure that Reclamation and DWR 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 Reclamation, DWR, 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.

and permit terms and provides reports to SMPA coordinators.

Primarily, ECAT provides support for the Charter Group. At ECAT's bi-monthly meetings during 2004, discussions included Suisun Marsh monitoring efforts, maintenance of primary facilities, and restoration activities. Monitoring focused on the salt marsh harvest mouse, vegetation and the California clapper rail.

### Blacklock Habitat Restoration Project

DWR acquired 70 acres of the Blacklock Ranch in December 2003. This parcel was acquired with CALFED funds awarded as part of the Ecological Restoration Programs 2000 grant solicitation process. This grant funded acquisition, restoration plan development and interim management of the parcel.

Staff from DWR, DFG, USFWS, USBR, and SRCD continued working collaboratively to prepare a plan to restore tidal action to this parcel. In addition, a 1,000 foot-long interior levee separating the DWR parcel from the adjacent landowner was strengthened and raised to 9 feet NGVD. This work was done in preparation for this levee becoming an exterior levee when tidal influence is restored to the parcel. The levee was also vegetated with a native grass mix.

Scientific monitoring for the project included the installation of optical backscatter (OBS) devices to monitor sediment in the adjacent slough and bay, vegetation, fisheries, and wildlife monitoring. A water quality monitoring station was installed at the site.

### Modeling Support

**Calibration and Verification of the RMA2/11 Model for Suisun Marsh.** The RMA2/11 finite element model is being calibrated and verified for the Suisun Marsh. Field hydrodynamics data (flow, stage) and scalar concentrations (turbidity, salinity, chlorophyll *a*, temperature) were collected with *in situ* instrumentation during April-August 2004. The Suisun Marsh monitoring network will also provide stage, temperature, and salinity data. The *in situ* study included flow monitoring at thirteen sites around the Marsh. The RMA2/11 model will also take advantage of recent bathymetry surveys, and a Delta/Marsh wide datum realignment.

The model was most recently calibrated by RMA Associates under a series of CALFED funded contracts supporting the Suisun Marsh Levee Team. It is being used to plan alternatives for restoration of the Blacklock property in the northwest Marsh. We expect that the improved

calibration will improve local restoration planning alternative analysis as well as predictions about Marsh-wide impacts on water levels, velocities, and salinity.

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

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

### **Modeling Support**

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

being coordinated through the Suisun Marsh Charter process.

### **Operation and Maintenance**

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

**Gates Status for 2003-04.** During the 2003-04 control season (October 2003 through May 2004), the fall 2003 fish passage study continued with modification to the boat lock in its third year as an alternative for passage, instead of flashboards as in previous years. The gates were operated for both the fish study and for salinity control during this control season.

From September 30 through October 13, 2003, Phase I was in action with gates operated to full-bore, boatlock closed, and flashboards installed. In Phase II, from October 14 through October 28, 2003, the gates were operated full-bore with flashboards installed and boat lock open for fish passage study. Phase III operations began from October 29 through November 11, 2003. Phase III operation was with all three gates open and flashboards out, and boat lock closed. Thereafter, gate operations resumed normally (i.e. full-bore ops, with flashboards installed, boatlock closed) to control salinity through December 14, 2003. From December 15, 2003 through May 12, 2004, three gates were held open due to water quality levels being very low throughout the marsh; however the flashboards were still in place in the event that gate operation was needed again. Thereafter, conditions continued to be favorable with no water quality concerns that the flashboards were removed on May 13, 2004 and gate operations ceased for the remainder to the control season.

**Initial Facilities Maintenance.** Several facilities, constructed by DWR and Reclamation, operate in the Suisun Marsh. These facilities are identified in the Plan of Protection for the Suisun Marsh and the 1987 SMPA. These facilities provide lower salinity water to managed wetlands. The initial facilities, including the Roaring River Distribution System, Morrow Island Distribution System, and Goodyear Slough Outfall, were constructed in 1979 and 1980. The Suisun Marsh Salinity Control Gates were installed and became operational in 1988. During 2004, DWR's Delta Field Division performed routine maintenance on all initial facilities, including MIDS, in the Suisun Marsh.

The following routine maintenance was conducted, at all initial facilities, including the Montezuma Slough Facility:

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

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

## Monitoring

**Comprehensive Review of Suisun Marsh Monitoring Data.** SMPA and the Suisun Marsh Monitoring Agreement, signed in 1987, outlined a monitoring program for data collection in the Suisun Marsh. Monitoring was conducted from

water years 1985 through 1995. These agreements also stipulated that the monitoring data and the effectiveness of the agreements were to be reviewed every five 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). DWR 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, 2003, through May 31, 2004. See the DWR's annual report to SWRCB, *Suisun Marsh Monitoring Program Data Summary: 2004 Water Year*, for details.

**Station Maintenance, Repair, and Enhancements.** The following routine maintenance, repair, and enhancement activities were conducted for Suisun Marsh:

- flushing of tide wells to remove accumulated sediments;
- clearing/trimming of encroaching vegetation;
- repairing and resetting of staff gauges;
- repairing and painting station housing;



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

- calibrating monitoring instruments;
- quality control and assurance of collected data; and
- surveying the station elevation.

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

**Vegetation.** During 2003, DWR 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 two years. The 2001 change detection analysis showed less than one percent of the vegetation acreage had changed. Based on these results, DFG recommended conducting a change detection every three 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, DWR 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, DWR 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.

### **Aquatic Monitoring**

In 2002, DWR contracted with UC Davis and DFG to conduct fisheries monitoring in Suisun Marsh. The monitoring was conducted to meet Corps and San Francisco Bay Conservation and Development Commission permit

requirements for construction and operation of the Suisun Marsh Salinity Control Gates and the NOAA Fisheries 1993 Biological Opinion for Operation of the SWP and CVP.

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

Native species abundance has not fluctuated as widely as alien species abundance. Between 1980 and 1994, there was a prolonged decline in native species abundance. However, there was a considerable increase in abundance of native species from 1995 to 2003. This increase in native fish abundance was driven primarily by increased catches of Sacramento splittail and more recently tule perch; although longfin smelt and delta smelt have also increased in abundance since 1998. In 2004, there was a decline in native species abundance as compared to recent years, however, the numbers were still comparable to those observed since 1995.

In 2003 and 2004, the catch of alien fishes outnumbered that of native fishes, reversing a short-lived trend (2002) in native fish catch exceeding that of aliens. Since 1982, native fish catch only exceeded alien fish catch during times of exceptionally low alien fish catch rather than during periods of exceptionally high native fish catch. This was the case in 2002, where the dramatic decline in introduced fish catch and a continued moderate increase in native fish catch resulted in native species outnumbering introduced species. This has only happened seven times since 1980 and twice in the last fourteen years. Overall, it appears that current conditions, either physical or biotic, are improving for native fishes in Suisun Marsh, as is evident in their continued increase in abundance.

Catch of delta smelt has been relatively low since the early 1980s, although abundance increased slightly between 1990 and 2001. Catch in 2002 and 2003 declined to nearly one-third the catch in 2001. The downward trend continued in 2004, with the lowest catch (7 individuals) since 1998. Longfin smelt catch in 2004 was also the lowest catch (133 individuals) since 1998. This is a short downward trend that started in 2003, following a large longfin smelt catch in 2002. The total catch of Chinook salmon in 2004 was 17, similar to the 2003 total (15 individuals), but lower than the 2002 catch (27 individuals). All Chinook salmon captured from 1994 through 2004 were fall run.

DFG and the IEP Environmental Monitoring Program have monitored *Neomysis mercedis* densities and chlorophyll *a* concentrations in Suisun Marsh since 1972 and 1976, respectively. *N. mercedis* catch has undergone a general downward trend since sampling began, with the most dramatic decrease following 1991. Densities have remained relatively low since then. Mysid shrimp abundance was extremely low since 2001 and have declined considerably through 2004. *Neomysis kadiakensis* has recently moved up from San Pablo Bay into Suisun Marsh, perhaps in response to the decline in *N. mercedis*.

Chlorophyll *a* concentrations, which serve as an indicator of phytoplankton abundance, have shown an overall decline in Suisun Marsh since 1987. This decline has in part, been attributed to the efficient feeding habits of *Potamocorbula amurensis*, a suspension-feeding clam that invaded the San Francisco Bay and Estuary in 1986. In 1999, the average annual chlorophyll *a* concentration in Suisun Marsh fluctuated slightly, but remained low compared to levels measured prior to 1992. Chlorophyll *a* concentrations dropped off starting in 2000 and remained very low through 2002 with a slight increase in 2003. Data is unavailable for 2004. 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*.

### **Morrow Island Distribution System (MIDS) 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 DWR and approved by USFWS and the Corps. 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. 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. Subsequently, it was decided that the MIDS fish screen issue would be resolved within the CALFED Charter process. Reclamation requested USFWS reinitiate consultation in a November 2002 memorandum and committed to reinitiate Section 7 consultation on the MIDS maintenance project after completion of the Charter Implementation Plan PEIS/R. In March 2003, the USFWS reinitiated consultation and granted Reclamation and DWR until May 2006 to begin construction of a screen or implement and approved mitigation or conservation alternative.

Because the cost of installing a fish screen is anticipated to be high and the effectiveness of such screening is unknown, DWR is conducting a two-year fish entrainment study at the MIDS intake. The objectives of the study are to: (1) determine what species of fish and what life stages are entrained by the MIDS intake facility, and; (2) to quantitatively assess whether certain species of fish are more likely to be entrained than others. Sampling for the first year of the study began in September 2004 and will continue through May 2005. The second year of sampling will begin in October 2005 and continue through May 2006. A final report is anticipated by early 2007.

### **Suisun Marsh Expenditure History**

Suisun Marsh expenditures and reimbursements administered by DWR for calendar years 1968 through December 2004, are summarized in Table 4-2. From 1968 through December 31, 2004, DWR disbursed more than \$109.9 million SWP funds for planning, design, environmental documentation, construction, maintenance, monitoring, mitigation, and permit compliance in support of implementing the plan of protection for Suisun Marsh through the Suisun Marsh Preservation Agreement (SMPA), and meeting standards set by SWRCB. Reclamation

has reimbursed DWR about \$43.4 million (40 percent) and the State's General Fund has reimbursed about \$9.4 million (9 percent). These figures do not include up-front payments made by Reclamation for staff and other direct costs, as well as about \$5.7 million in Reclamation interest payments during 1988 and 1989.

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

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

Calendar Year (1)	Reach 305 Costs (2)	General Fund Payment <sup>a</sup> (3)	Adjustment for General Fund Payment <sup>a</sup> (4)	Reclamation Invoice Payments (5)	Interest Payment Credited to SWP Contractors <sup>b</sup> (6)	Net SWP Costs (2) thru (6) (7)	Recreation Costs (8)	SWP Contractors' Costs (7) minus (8) (9)
1968	10,571	0	0	0	0	10,571	1,480	9,091
1969	34,182	0	0	0	0	34,181	4,785	29,396
1970	23,343	0	0	0	0	23,343	3,268	20,075
1971	1,042	0	0	0	0	1,042	146	896
1972	47	0	0	0	0	47	7	40
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	2,709	0	0	0	0	2,709	379	2,330
1976	32,960	0	0	0	0	32,960	4,614	28,346
1977	37,475	0	0	0	0	37,475	5,246	32,229
1978	350,831	0	0	0	0	350,831	49,117	301,714
1979	3,660,099	0	0	0	0	3,660,099	512,568	3,147,531
1980	5,005,759	0	0	0	0	5,005,759	701,227	4,304,532
1981	2,964,974	0	0	0	0	2,964,974	415,096	2,549,878
1982	2,955,705	0	0	(2,500,000)	0	455,705	413,801	41,904
1983	2,754,094	0	0	0	0	2,754,094	385,574	2,368,520
1984	2,418,344	0	0	0	0	2,418,344	338,567	2,079,777
1985	2,332,773	0	0	0	0	2,332,773	326,587	2,006,186
1986	6,495,322	0	0	0	0	6,495,322	909,344	5,585,978
1987	13,600,701	0	0	0	0	13,600,701	1,904,099	11,696,602
1988	7,456,364	0	0	(17,368,725) <sup>b</sup>	(2,039,752)	(11,952,113)	1,043,891	(12,996,004)
1989	2,341,960	(9,478,000)	6,634,600	1,219,691 <sup>b</sup>	(283,857)	(2,004,988)	327,874	(2,332,862)
1990	3,030,010	0	0	(695,450)	0	2,334,560	424,202	1,910,358
1991	6,223,042	0	0	(2,925,429)	0	3,297,613	871,226	2,426,387
1992	2,737,259	0	0	(1,174,655)	0	1,562,604	383,218	1,179,386
1993	2,979,255	0	0	(238,130)	0	2,741,125	417,100	2,324,025
1994	3,192,213	0	0	(1,962,549)	0	1,229,664	446,914	782,750
1995	2,721,978	0	0	(647,138)	0	2,074,840	381,079	1,693,761
1996	3,391,678	0	0	(1,482,396)	0	1,909,282	474,838	1,434,444
1997	3,634,267	0	0	(1,520,219)	0	2,114,048	508,800	1,605,248
1998	5,342,834	0	0	(1,107,501)	0	4,235,333	748,000	3,487,333
1999	8,867,742	0	0	(2,696,200)	0	6,171,542	1,241,486	4,930,056
2000	2,857,534	0	0	(3,300,053)	0	(442,519)	400,055	(842,574)
2001	2,623,227	0	0	(444,009)	0	2,179,218	367,252	1,811,966
2002	3,752,486	0	0	(791,319)	0	2,960,946	525,317	2,435,629
2003	3,258,583	0	0	(2,389,979)	0	868,604	456,201	412,403
2004	2,874,629	0	0	(952,940)	0	1,921,689	402,448	1,519,241
<b>Total</b>	<b>109,965,770</b>	<b>(9,478,000)</b>	<b>6,634,600</b>	<b>(43,416,383)</b>	<b>(2,323,609)</b>	<b>61,382,378</b>	<b>15,395,806</b>	<b>45,986,571</b>

<sup>a</sup>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.

<sup>b</sup>Excludes interest payments made by Reclamation.

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

# Chapter 5

## Local Assistance



Agricultural water diversion pipe

## Significant Events in 2004

- During April 7 through May 27, the Department of Water Resources (DWR) and the California Urban Water Conservation Council conducted a series of Guidebook workshops for the *Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001*, attended by approximately 226 participants.
- DWR released a desalination Proposal Solicitation Package (PSP), pursuant to the provisions of Chapter 6(a) of Proposition 50 (Water Code Section 79545 (a), on July 8 for public comments, and held two public workshops (on August 12 in Northern California and August 17 in Southern California.) On September 9, the PSP was presented at the California Bay-Delta Public Advisory Committee (BDPAC). On October 14 the PSP was endorsed by the California Bay-Delta Authority (CBDA). On October 25 the final PSP was released and made available in hard copy and posted on DWR's Web site to accept proposals.
- DWR participated in public awareness and knowledge dissemination about water recycling and water desalination issues through presentations at various meetings and conferences, responding to public inquiries and the publication of articles and essays in *Water Conservation News* and other outlets.
- DWR completed 15 of the 22 subtasks in the Three-Way Cooperative Agreement between DWR, the U.S. Bureau of Reclamation (Reclamation), and CALFED.
- DWR published new water fact entitled *Water Recycling* (DWR Water Facts No. 23).
- DWR completed final funding cycles for the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act of 2000 (Proposition 13) Infrastructure Rehabilitation, Groundwater Recharge, and Groundwater Storage programs and fully obligated all program funds.
- DWR, in cooperation with the State Water Resources Control Board, completed draft guidelines and applications in preparation for launching the first funding cycle for the Integrated Regional Water Management Program authorized under Chapter 8 of the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50).
- DWR cooperated with the Westside Resource Conservation District and the Center for Irrigation Technology (a part of California State University, Fresno), in completing a manual for development of Integrated On-Farm Drainage Management System for landowners. A series of workshops were held in the SJV to introduce the manual to landowners.

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.

DWR'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 DWR'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.

DWR's CIMIS network remained at 126 stations in 2004. 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 over 6,500 in 2004.

Due to the growing demand for data and information, the CIMIS database and the Web application were upgraded to increase performance and enhance content and in February CIMIS released a new web page allowing for easier access and more data formats choices for users.

More than 167,000 reports were generated from the database with more than 20,000,000 visits to the Web site ([www.cimis.water.ca.gov](http://www.cimis.water.ca.gov)) for information in 2004. 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.

Ongoing activities include updating CIMIS brochures,  $ET_0$  calculation, other methods of data acquisition and dissemination, data quality refinements, and technical assistance.

### **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. 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 2004, the Branch

- participated in implementing the Recycled Water Task Force's recommendations helping to guide California's development of recycled water and facilitate the annual production of up to 1.2 million acre-feet of new water by 2030. For example, the branch assisted the SWRCB in developing new regulations leading to the issuance of an Executive Memorandum to Regional Board Executive Officers on February 24, 2004, setting a new framework for regulating of incidental runoff associated with recycled water use;
- disseminated information regarding AB 334 (Goldberg, Chapter 172, Statutes of 2003), which gives communities additional flexibility to regulate water softeners as a source-control measure;
- developed a Proposal Solicitation Package (PSP) pursuant to the provisions of Chapter 6 (a) of Proposition 50 (Water Code Section 79545 (a), which authorizes DWR to administer a \$50 million grant program to fund brackish and oceanwater desalination projects. (California voters passed Proposition 50, the Water Security, Clean Drinking

Water, Coastal and Beach Protection Act of 2002);

- released the desalination PSP on July 8, 2004 for public comments and held two public workshops On October 14, 2004, the PSP was endorsed by the California Bay-Delta Authority (CBDA). On October 25, 2004, the final PSP was released and made available in hard copy and posted on DWR's Web site to accept proposals;
- conducted a Public Workshop for the final PSP on November 15, 2004, calling for water desalination proposal submittals by January 13, 2005. The PSP called for desalination projects in four different categories: research and development; feasibility studies; pilots and demonstrations; and construction.
- program staff served on the Advisory Panel for Reclamation's geothermal-driven vertical tube evaporation (VTE) desalination test project at the Salton Sea, to be conducted by Sephton Water Technology (SWT). The purpose of project, entitled Salton Sea Desalination Demonstration Project Using Geothermal Heat, is to demonstrate the feasibility of controlling the salinity, nutrient, selenium, and other contaminant content of sea water by using geothermal waste steam to drive a VTE desalting system. The project satisfies one of the principal goals of the California Desalination Task Force, (i.e., to identify potential opportunities for brackish water desalination), as well as the Energy Commission's need to improve the energy efficiency of water and wastewater treatment facilities in California. The project also addresses the problem of concentrate disposal. In this case, the plan calls for the concentrate to be pumped "down hole" to help recharge the geothermal aquifer, resulting in zero liquid discharge from the desalting plant;
- program staff served on the Implementation of the Reclamation's Desalination Roadmap. In 2001, Congress directed Reclamation to partner with Sandia National Laboratories

(SNL) to develop a desalination technology research plan for the United States. With the help of a multidisciplinary committee of representatives from academia and the public, private, and non-profit sectors *The Desalination and Water Purification Technology Roadmap: A Report of the Executive Committee* (Roadmap) was published in January 2003. The Roadmap presents a summary of the water supply challenges facing our nation through 2020, and suggests areas of research that may lead to technological solutions to these challenges. The Roadmap may be used as a planning tool to facilitate science and technology investment decisions or as a management tool to help coordinate research efforts. To develop a mechanism to implement the recommendations of the Desalination Roadmap, the Joint Water Reuse & Desalination Task Force (JWR&DTF) was formed and is conducting workshops to establish a desalination research funding process. DWR Staff is member of the JWR&DTF planning committee to organize these workshops and will be participating in these workshops in near future;

- participated in outreach activities to explain and disseminate the 2003 DWR Desalination Task Force's findings and recommendations to help the planning and development of sustainable and environmentally conscious brackish and oceanwater desalination projects; and
- published new water fact entitled *Water Recycling* (DWR Water Facts No. 23).

### **Agricultural Water Management Plans**

By the end of 2004, 62 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 4.75 million acres of irrigated agricultural land statewide.

In 2004, the council endorsed an additional three Agricultural Water Management Plans that had been submitted 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. DWR staff provides technical review and evaluation of these plans. DWR also reviewed two biannual progress reports for the Ag Council.

DWR 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.** DWR set up a Three-Way Cooperative Agreement between itself, Reclamation, 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 Reclamation, Mid-Pacific Region. This activity, with a \$1.2 million budget, is shared equally between DWR and Reclamation.

The Ag Council is making progress on tasks identified in this cooperative agreement. The Ag. Council has hired a 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**

DWR received 13 Urban Water Management Plans in 2004. The 2005 Urban Water Management Plan Guidebook and DWR 2005

UWMP Review Sheets were developed during 2004.

**Three-Way Cooperative Agreement—Urban Council.** DWR set up a Three-Way Cooperative Agreement between itself, Reclamation, 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 Reclamation, Mid-Pacific Region. This is a \$1.5 million 3-year activity, of which \$600,000 is funded by Reclamation.

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. In 2004, fifteen of the twenty-two subtasks in the Three-Way Cooperative Agreement between DWR, Reclamation, and CALFED were completed. 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.

### **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.

### **Outreach**

OWUE's outreach extends to presentations, workshops, trade shows, expositions, and exhibits. In 2004, outreach included:

- Organized staff meeting with University California Rice Workgroup;
- Water and resource conservation exhibit at Genentech in Vacaville;
- Met with several University of California Cooperative Extensions;
- Sacramento Valley Exposition Trade Show;
- Participated at various California Urban Water Conservation Council Committees; and
- *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 solutions to 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 options, and reuse, reclamation, and disposal actions. DWR's agricultural drainage projects include:

- integrated on-farm drainage management research and demonstration;
- enhanced evaporation systems design and management improvements;
- development of BMPs to reduce or eliminate environmental impacts;
- pilot treatment, drainage water reclamation, and disposal facilities development;
- management of shallow groundwater and drainage reduction through use of economically viable salt tolerant crops; and

- educational outreach focused on improving irrigation efficiency, and drainage reduction.

The Agricultural Drainage Program was divided into two major components: the San Joaquin Valley Agricultural Drainage Program, and the Proposition 204 (Drainage Management Subaccount) activities.

### **Proposition 204 (Drainage Management Subaccount)**

In 1996, Proposition 204, The Safe, Clean, Reliable Water Supply Act, authorized the transfer of approximately \$6.2 million from the State Water Resources Control Board (SWRCB) to the California Department of Food and Agriculture (DFA). In 1997, DFA, SWRCB, and DWR signed an MOU that established a process for utilizing the funds designated for agricultural drainage activities. In 1999, DFA and DWR signed an interagency agreement to transfer the funds to DWR 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 DWR solicits proposals from public entities seeking funding for research activities. A Technical Review Committee reviews and screens the proposals for DWR. DWR then submits the proposal packages to an Oversight Committee comprised of representatives from DWR, DFA, and SWRCB for final approval. Due to a mandatory State contracting freeze, no new contracts were awarded in 2004. However, DWR continued to manage and monitor programs that had already been initiated under previously awarded contracts.

### **San Joaquin Valley Agricultural Drainage Program**

This program consists of several activities including drainage monitoring and evaluation, drainage treatment, integrated on-farm drainage management, on-farm drainage reduction

and reuse, and environmental monitoring and assessment activities.

**Drainage Monitoring and Evaluation.** Drainage monitoring and evaluation involves collecting and evaluating information on the quality, quantity, and movement of drainage water. In 2004, 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 and improve salinity management in the San Joaquin River and its tributaries;
- collection of flow and water quality data for drainage water sampled from westside San Joaquin Valley tile drain sumps and shallow groundwater elevation modeling;
- completion of the annual drainage report *The San Joaquin Valley Drainage Monitoring Program 2001 Report*;
- preparation of groundwater and irrigation maps using drainage monitoring, land use, and irrigation methods data;
- collection of groundwater, soil, and operational data for the integrated on-farm drainage management project at Red Rock Ranch (RRR) in western Fresno County; and
- maintenance of a Web site ([www.dpl.water.ca.gov/sjd/waterquality/index.html](http://www.dpl.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.** *Reverse Osmosis—Microfiltration Membrane Research.* DWR 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 evaluates and ranks antiscalants for inhibition of gypsum scale formation.

*Agricultural Subsurface Drainage: Salt Recovery, Purification, and Utilization.* These activities entail continuation of support of investigations of processes that concentrate and purify drainage salts for marketing purposes. These activities are performed in two ways. The first is managed by 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 RRR 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.* DWR entered into a multi-year cooperative agreement with Reclamation to investigate a promising new selenium (Se) biotreatment technology that could achieve greater selenium removal at a lower costs than other previously evaluated technologies. The pilot treatment plants were located with the pilot RO units described above. The pilot system treats about 3 gpm of subsurface agricultural drainage water having with selenium concentrations ranging from 500 to 1,000 mg/l. The bioreactors consist of tanks filled with granulated activated carbon coated with a biofilm coating. The activated carbon provides a large inoculation area for bacteria that are capable of metabolizing selenium. The bacteria reduce dissolved Se to a solid form causing it to drop to the bottom of the tanks along with other biomass. As with typical bioreactors, the treatment process is divided into two stages: nitrate reduction followed by Se reduction. The reducing bacteria are maintained with daily additions of a proprietary nutrient solution. The pilot study monitors a variety of parameters that could potentially affect the performance of the bioreactors. In 2004, despite encouraging initial tests where Se was reduced from 500 ppb to about 10 ppb, the pilot test encountered numerous design and operational deficiencies that impaired the performance of the units. Scientists and technicians worked

throughout the last quarter of 2004 to correct these deficiencies.

DWR continues to participate in cooperative research with the University of California Salinity/Drainage Program ([www.waterresources.ucr.edu](http://www.waterresources.ucr.edu)). Activities include a multiyear study on mitigating selenium ecotoxic risk in evaporation ponds (see the above Web site for specific details) and development of a Selenium Mass Balance Tulare Lake Drainage District evaporation ponds.

#### **Integrated On-Farm Drainage Management.**

With the creation of the Integrated Drainage Management Section in 2001, integrated on-Farm Drainage Management (IFDM) became a permanent activity. The objectives of this section are to provide technical assistance for 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 promote education develop and educate 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. 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.

## IFDM 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 at RRR;
- providing assistance for research projects developing salt tolerant crops for drainage reuse, including research performed at RRR 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 and development of biofuels from salt tolerant crops grown with reused drainage water.

DWR continues to work cooperatively with Reclamation 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 RRR. The project's data will be used to develop and calibrate an integrated surface groundwater hydrogeological model called IHSim (Integrated Hydrological Simulator). DWR installed a series of shallow observation wells at RRR, and the surrounding areas, monitored the movement and elevation of subsurface water, conducted land surveys and prepared detailed topographic maps of the project area.

## Other activities include

- assisting growers by providing information on salt-tolerant grasses and IFDM design specifications;
- continuing development of a pilot enhanced evaporation system called the solar evaporator for collection of the final brine produced in an IFDM system. Work on the solar evaporator includes collection of data on evaporation rates of subsurface drainage water using various configurations of nozzles, screens, and other devices and materials. The purpose of the study is to develop design specifications for evaporating and recovering salts from drainage water in solar evaporators, to determine optimum operating weather, 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 RRR and future IFDM systems in the Central Valley; and
- testing components of IFDM systems to manage drainage water and to separate and harvest salt from agricultural subsurface drainage water.

*IFDM Landowners Manual.* DWR staff assisted in the preparation of an IFDM manual for landowners. The manual was compiled by CSU Fresno's Center for Irrigation Technology, under contract to the Westside Resource Conservation District, using grant funds from the SWRCB. Technical information obtained from DWR's RRR activities were incorporated into the manual, including operation and maintenance requirements, salt management, monitoring and reporting requirements, and wildlife impact and regulatory information. The manual was completed in spring, 2004. Upon completion, DWR staff collaborated with various agencies in conducting seminars to distribute IFDM information to farmers and professionals. The seminars were held in Los Banos, Five Points, and Bakersfield. DWR is also participating in preparing a similar manual targeted for technical advisors. The intent of this manual is to focus

more closely on some of the regulatory aspects of designing, constructing, and operating an IFDM system.

*Agroforestry Database.* Developing an agroforestry database project using GIS technology to map locations of salt tolerant tree plantations and linking this information to growth, salinity tolerances, and survival. Agro forestry plantings began in the mid 1980s, while new plantings continue as components of the IFDM system. Salt tolerant trees are used to lower shallow groundwater, intercept regional groundwater, and in agricultural subsurface drainage reuse. The GIS database will be used to disseminate geographic locations of these plantings and will serve as the central information system for anyone seeking site specific information on performance of salt tolerant plantings in the San Joaquin Valley.

*Prosopis Alba.* Planning began for research and development of Prosopis Alba (Argentine mesquite) in cooperation the forestry research station at Catholic University of Santiago del Estero (CUSE) in Argentina. Prosopis Alba is a tree that is native to Argentina that grows in semi-dry saline areas and is used for production of lumber for furniture. Prosopis Alba lumber shrinks the same way in at all directions, it is very dense, and has a beautiful deep reddish color. In Argentina, large forested areas of this tree have been cut down because of the high demand for the lumber from all over the world. The plants to be used in DWR's research originated from selected seeds of plantations grown at CUSE. DWR applied for a USDA permit to import the seeds from the most salt-tolerant varieties. USDA will quarantine and inspect the seeds before it releases them. Prosopis Alba is a salt tolerant tree that holds promise of ameliorating subsurface drainage problems by withdrawing and intercepting saline shallow groundwater through its extensive root system from the soils of the western San Joaquin Valley. Selected seedlings will be evaluated on at least three farms affected by soil salinity and shallow groundwater.

**On-Farm Drainage Reduction and Reuse Program.** DWR'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's objective is being achieved through on-farm demonstration projects, studies, research, training, and workshops. Workshop topics include: on scheduling irrigation; management; advances in irrigation technology; evaluating irrigation systems; reusing drainage water; and managing salinity.

Several on-farm demonstrations and other studies of salinity and irrigation management are ongoing, and 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 contracts and preparing technical reports on the on-farm demonstrations projects and studies.

## Management of 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*—completed program to assist growers with irrigation system evaluations to improve distribution uniformity and irrigation efficiency.
  - *Pond-Shafter-Wasco Irrigation Training Workshops*—completed irrigation training workshops conducted in English and Spanish for growers and field workers.
  - *Center for Irrigation Technology Irrigation/Drainage Management Workshops*—conducted training and educational workshops on recent advances in irrigation and drainage management at CSU, Fresno
  - *Detrimental Salinity Buildup on the Periphery of the Wetted Areas Caused by Subsurface Drip Irrigation*—identified 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*—completed mapping of the salinity profile in a given crop field to assess the performance of irrigation management 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*—conducted 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.
  - *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*—conducted 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 2004, the section continued to assist CVRWQCB in assessing the biological implications of proposed and implemented modifications to evaporation basins. Environmental investigations include

- RRR research projects involving required biological monitoring activities in accordance with Waste Discharge Requirements;
- IFDM wildlife monitoring and development of BMPs; this activity involved avian wildlife and was monitored at the existing RRR’s IFDM terminal reuse areas, which include a solar evaporator, halophyte plots, and salt-tolerant grasses. Although DWR’s Environmental Services Section biological staff has monitored this site since 1994, an intensive multi-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 appropriately managed may cause selenium-induced avian developmental defects and fatalities.

IFDM appears to be a viable drainage management tool when managed in a way that avoids wildlife impacts posed by other drainage water management techniques such as evaporation ponds.

- participation in evaporation pond studies. DWR 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.
- reviewing and preparation of environmental documentation as it relates to DWR's mission and ongoing projects on drainage-impaired lands.

## 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 DWR'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 4,549 documents were screened by the Environmental Review Section; 958 were referred for detailed review. Of these referrals, 743 were made when the projects were at the Notice of Preparation or Early Consultation stage and 215 assignments were for negative declarations, environmental impact reports, and NEPA environmental assessments. O&M received 135 formal referrals

and 2 for information. The State Water Project Analysis Office (SWPAO) received 7 formal referrals and 21 for information. In addition to the information referrals made to O&M and SWPAO, 948 other information referrals were made to other departmental staff.

Comments submitted to the lead agencies addressed a number of issues, including runoff from proposed developments, safety and water supply, encroachment on physical facilities, and water quality. During 2004 several requests for additional data were made to lead agencies when the environmental document did not contain enough information. 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 2004, 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 2004, they have a potential for causing future concerns.

During 2004, the Environmental Review Section tracked documents related to development along the California Aqueduct (with marked increases in development along the East and West Branches over 2003), 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 over 220, the total number of documents submitted through the State Clearinghouse process increased slightly from 2003, resulting in increased formal referrals.

## Water Conservation Bond Laws

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

- The Clean Water Bond Law of 1984 (Proposition 25) authorized \$10.5 million for water conservation projects.
- The Water Conservation and Water Quality Bond Law of 1986 (Proposition 44) authorized \$75 million for water conservation and groundwater recharge projects.
- The Water Conservation Bond Law of 1988 (Proposition 82) authorized \$60 million for water conservation, groundwater recharge, and new local water supply improvements.
- The Safe, Clean, Reliable Water Supply Act of 1996 (Proposition 204) authorized \$55 million for water conservation, groundwater recharge, and local water supply projects.
- 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.
- 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 DWR 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 third and final evaluation cycle for the Infrastructure Rehabilitation Grant Program was completed and all remaining funds obligated to eligible construction projects or feasibility studies. To date, DWR has awarded \$56.4 million for 22 construction projects and 20 feasibility studies to assist disadvantaged communities in reaching long-term solutions to significant water delivery reliability and infrastructure needs.

The final groundwater recharge and groundwater storage program funding cycles were completed and all available funding for these programs fully obligated. Over the three year implementation period for these programs DWR has awarded \$180 million in Groundwater Storage grants to 41 projects and studies and \$27.3 million in Groundwater Recharge loans and grants for 24 projects and studies. One of the Groundwater Storage projects also received partial funding from the Integrated Regional Water Management Program.

All grant funds for the Urban Water Conservation Program have been obligated.

**Proposition 50.** DWR developed draft guidelines and applications in preparation for launching the first funding cycle for the Integrated Regional Water Management program. This program provides grants for water management projects that support integrated regional water management efforts and planning grants to complete or develop intergrated regional water management plans. This program is a joint process with SWRCB. Also funded from the Integrated Regional Water Management Program, the Local Groundwater Assistance Program awarded 28 grants totaling \$6.2 million to local public agencies for groundwater data collection, modeling, monitoring and management studies; monitoring programs and installation of equipment; basin management; and development of information systems

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

- 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 2004.

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

Bond Law	Type of Project	Number of Projects <sup>a</sup>	Funding <sup>a</sup> (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
	<i>Subtotal</i>	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
	<i>Subtotal</i>	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
	<i>Subtotal</i>	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	24	27.00
	Infrastructure rehabilitation	42	56.40
	Groundwater storage	41	180.00
	Interim reliable water supply	13	169.31
	<i>Subtotal</i>	187	462.29
Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002	Local Groundwater Assistance	54	12.00
	Integrated Regional Water Management	1	6.89
	<i>Subtotal</i>	55	18.89
	All water conservation	107	104.96
	All groundwater recharge	47	101.84
	All local water supply	26	29.58
	All infrastructure rehabilitation	42	56.40
	All groundwater storage	41	180.00
	All interim reliable water supply	13	169.31
	All local groundwater assistance	54	12.00
	All integrated regional water management	0	6.89
	<b>Total of all projects</b>	<b>331</b>	<b>660.98</b>

<sup>a</sup>Construction project and feasibility study loan and grant commitments as of December 31, 2004.

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



West elevation of the Capitol building, designed in the Roman  
Corinthian style

## Significant Events in 2004

- Senate Bill 1107 enacts statutory changes relating to the 2004-05 Budget Act.
- Senate Bill 1155 requires the Director of the Department of Water Resources, in collaboration with the Secretary of Interior, to prepare a plan to meet existing permit and license conditions for which DWR has an obligation under the State Water Resources Control Board (SWRCB) Decision 1641.
- Senate Bill 1214 provides further details of the Salton Sea Restoration Study required by the Salton Sea Restoration Act.
- There were several key judicial decisions on the role of the State Water Project in the energy field. In *Department of Water Resources v. Federal Energy Regulatory Commission*, (9th Cir. 2003) 341 F.3d 906, the Ninth Circuit invalidated a FERC order granting authority to the Independent System Operation (ISO) to control DWR's power outages. DWR intervened in *Sacramento Municipal Utility District v. Federal Energy Regulatory Commission*, (D.C. Cir.) No. 04-1171.), to support SMUD's claim that it has renewal rights to its extra-high voltage contract with PG&E, which terminates in 2005.

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

## Legislation

### State Legislation

#### **SB 1107 (Senate Budget and Fiscal Review) Resources (Chapter 230, Statutes Of 2004).**

This bill enacts statutory changes relating to the 2004-05 Budget Act. This summary addresses sections of the bill that amend existing provisions of law with respect to DWR programs for watermaster services and maintenance areas. Among other provisions, this bill: (1) provides DWR the option to form a maintenance area when requested by a local agency that wishes to give up its responsibility for maintaining a federally authorized flood control project; (2) authorizes the state to recover the costs of formation of a maintenance area; and (3) shifts watermaster services funding from the General Fund to water rights owners.

**SB 1155 (Machado) Water Quality Standards: Sacramento-San Joaquin Delta (Chapter 612, Statutes of 2004).** This bill requires the Director of DWR, in collaboration with the Secretary of Interior, to prepare a plan to meet existing permit and license conditions for which DWR has an obligation under the State Water Resources Control Board (SWRCB) Decision 1641. This bill requires the plan to be prepared on or before January 1, 2006, and submitted to SWRCB and the California Bay-Delta Authority prior to increasing the existing permitted diversion rate by the SWP at Banks Pumping Plant.

#### **SB 1214 (Kuehl) Salton Sea Restoration: Restoration Study (Chapter 614, Statutes Of 2004).**

This bill provides further details of the Salton Sea Restoration Study required by the Salton Sea Restoration Act and requires that alternatives be identified in a restoration plan to be developed by The Resources Agency. The bill also sets forth some of the functions and duties of the Salton Sea Advisory Committee created by SB 317 (Kuehl) Chapter 612, Statutes of 2003.

### Federal Legislation

There was no significant federal legislation affecting management of the SWP in 2004.

## Litigation

As of December 31, 2004, DWR was involved in a number of court cases related to management of the SWP.

### Delta

**CALFED Litigation.** The CALFED Record of Decision (ROD) issued on August 28, 2000, was challenged by environmental groups and agricultural interests in both state and federal courts: *Don Laub, et al. v. Davis, et al.* (C044267, app. pending, filed June 6, 2003); *Regional Council of Rural Counties, et al. v. State of California, et al.* (C044577, app. pending, filed July 17, 2003); *Don Laub, et al. v. Davis, et al.* (Super. Ct. Fresno County, 2003, No. 00CG1167); *Regional Council of Rural Counties, et al. v. State of California, et al.* (Super. Ct. Sacramento, 2003, No. 00CS01131).

The ROD set forth a number of program measures to help resolve conflicts over use of water in the Delta. Plaintiffs claim the CALFED Programmatic EIS/EIR violates CEQA. The RCRC case also alleges that the ROD is illegal under several water law theories. The State defendants won on all issues at the trial level and the two cases were consolidated and are pending on appeal.

Plaintiffs in the federal lawsuit allege violations of NEPA and the federal Administrative Procedures Act. In August 2001, the district court dismissed an earlier version of the complaint because the programmatic Environmental Impact Statement (EIS) was not ready for review. The plaintiffs appealed. In September 2003, the Ninth Circuit Court of Appeals reversed the district court's decision and remanded the case for trial. (*Laub v. U.S. Dept. of Interior* (9th Cir. 2003) 342 F.3d 1080.) The Ninth Circuit found that the EIS in question was in fact ready for review and the district court abused its discretion. The case is pending in federal district court.

**Environmental Water Account.** The Farm Bureau filed a CEQA action challenging the adoption of an EIS/EIR covering operation of the Environmental Water Account (EWA) through 2007, the end of the first stage of implementation of the CALFED Program. (*California Farm Bureau Federation v. Mike Chrisman, et al.*) (Super Ct., No. 04CS00490.) The Farm Bureau alleges the EIS/EIR does not adequately address "agricultural resources" when analyzing impacts, alternatives, mitigation, and other issues regarding operations of the EWA. (Similar issues are raised in the CALFED litigation, *supra*.)

**Term 91.** Two lawsuits were filed challenging State Water Resources Control Board Decision 2001-22, which approved an application by El Dorado Irrigation District to divert water for urban purposes. *El Dorado Irrigation District, et al. v. State Water Resources Control Board, et al.* (C046211, app. pending, filed February 19, 2004); see also *El Dorado Irrigation District, et al. v. State Water Resources Control Board, et al.*

(Super Ct., Sacramento, 2003, No. 01CS01319). El Dorado Irrigation District and El Dorado County Water Agency challenged the imposition of Term 91, which protects SWP stored water, as part of the decision. The cases are pending on appeal.

**Delta Wetlands.** A private initiative to develop two Delta islands into water storage facilities was challenged. (*Central Delta Water Agency, et al. v. State Water Resources Control Board, et al.* (2004) 124 Cal.App. 4th 245.) The proposal stated that once the project was built, purchasers of the stored water would be identified, and that likely purchasers would be users within the CVP or SWP service areas. The Court held that the SWRCB water right permit issued to Delta Wetlands was invalid. The Court held that the State Constitution and Water Code require that the SWRCB to determine actual intended beneficial use of the impounded water before issuing a permit, and that a general statement of potential beneficial use with limiting conditions is insufficient. In addition, the Court ruled invalid the SWRCB's purported delegation of authority to its Executive Officer to determine whether the conditions were met and the proposed use was beneficial.

**Arroyo Pasajero.** DWR sought cost-sharing for flood damages incurred by landowners in the operation of the San Luis Canal, which is jointly operated by DWR and the Bureau of Reclamation. The Court of Claims approved DWR's claim of \$2.5 million plus interest. (Court of Claims, No. 99-18C 1998).

**Hydropower.** There were several key judicial decisions on the role of the State Water Project in the energy field. In *Department of Water Resources v. Federal Energy Regulatory Commission* (9th Cir. 2003) 341 F.3d 906, the Ninth Circuit invalidated a FERC order granting authority to the Independent System Operation (ISO) to control DWR's power outages. "The question we address is whether FERC adequately responded to DWR's position that the ISO should not control DWR outages in the same way that it controls the outages of private companies. FERC's orders subject DWR's

generating units to the same outage control obligations that the ISO imposes on private companies selling power on the wholesale markets. These private companies, known as merchant generators, differ from a dedicated-purpose generator like DWR, a State agency whose primary mission is to store and deliver water throughout California. Creation of electrical power is essentially a by-product of DWR's storage and distribution of water." (Id. at 910.) On remand, FERC amended the order to exclude the SWP from ISO control for outages. FERC's petition for rehearing was denied. (See 361 F.3d 517 (9th Cir. 2004).) Pending resolution by the Ninth Circuit is a dispute over grid-wide charges, specifically whether certain PG&E transmission facilities should be integrated into grid-wide charges to ISO customers, including DWR. (*California Department of Water Resources v. Federal Energy Regulatory Commission*, (9th Cir. 2005) No. 04-76131.) In addition, DWR intervened in *Sacramento Municipal Utility District v. Federal Energy Regulatory Commission*, (D.C. Cir.,) No. 04-1171.), to support SMUD's claim that it has renewal rights to its extra-high voltage contract with PG&E, which terminates in 2005. DWR contends its similar contract with PG&E also provides renewal rights.

**Castaic Lake Water Agency.** Proposals for new developments in the Castaic Lake Water Agency in northern Los Angeles County generated a number of lawsuits, many focused on

issues relating to the water supply available for such development.

In *County of Ventura v. Castaic Lake Water Agency, et al.* (123 Cal.App.4th 1 (5th Dist. 2004), the plaintiffs challenged the Castaic Lake Water Agency's Urban Water Management Plan. The appellate court agreed with the plaintiffs' claim that the plan was not supported by substantial evidence due to its failure to adequately address the impacts of perchlorate contamination on the reliability of the groundwater supply.

In *California Water Network and Friends of the Santa Clara River v. Castaic Lake Water Agency, et al.* (Super. Ct. Ventura County, No. CIV 215327), the plaintiffs challenged an agreement among Castaic Lake Water Agency, Kern County Water Agency, the Semitropic Groundwater Storage District, and DWR. The agreement provided for 24,000 acre feet of Castaic Lake Water Agency's annual SWP deliveries to be stored in Semitropic groundwater storage basin. The petition was denied by the Superior Court and an appeal is pending. A related case, *Friends of the Santa Clara River v. Department of Water Resources* (Super. Ct. Sacramento, No. 03-CS-0028), was filed in Sacramento Superior Court and has been stayed pending resolution of the Ventura County case.

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



Delta waterway and fields

## Significant Events in 2004

- The President signed legislation authorizing the federal agencies to implement CALFED related activities already authorized, and authorizing an additional \$389 million in federal appropriations for the CALFED Bay-Delta Program over the next six years.
- The California Bay-Delta Authority adopted the Delta Improvements Package, a suite of coordinated actions in the Bay-Delta for improving water supply reliability, water quality, Delta levee stability, and ecosystem protection.
- The California Bay-Delta Authority adopted a 10-year Finance Plan that proposes budget and funding priorities for the next decade of CALFED Program implementation. The plan identifies estimated funding targets for CALFED programs; existing funding available to meet those targets, and proposes a set of finance tools to fill the gaps.
- The CALFED agencies agreed to extend for three additional years the Environmental Water Account program, as well as the regulatory commitments to continue state and federal Delta water exports without additional reductions to protect key fish species.

The Department of Water Resources (DWR) is working to improve the reliability of State Water Project supplies and the continuity of annual Table A water allocations delivered to SWP contractors. Staff are engaged in planning activities to develop additional water supplies and storage opportunities.

Planning, and developing supply and storage projects that are economically, environmentally, and technically sound while satisfying complex institutional and environmental requirements, presents 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.

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.

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

## Supply Development and Reliability

To meet the SWP contractors' increasing needs for water, DWR 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 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**

DWR 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 Reclamation and other water agencies, and proposes settlement agreements for potential impact on the SWP.

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

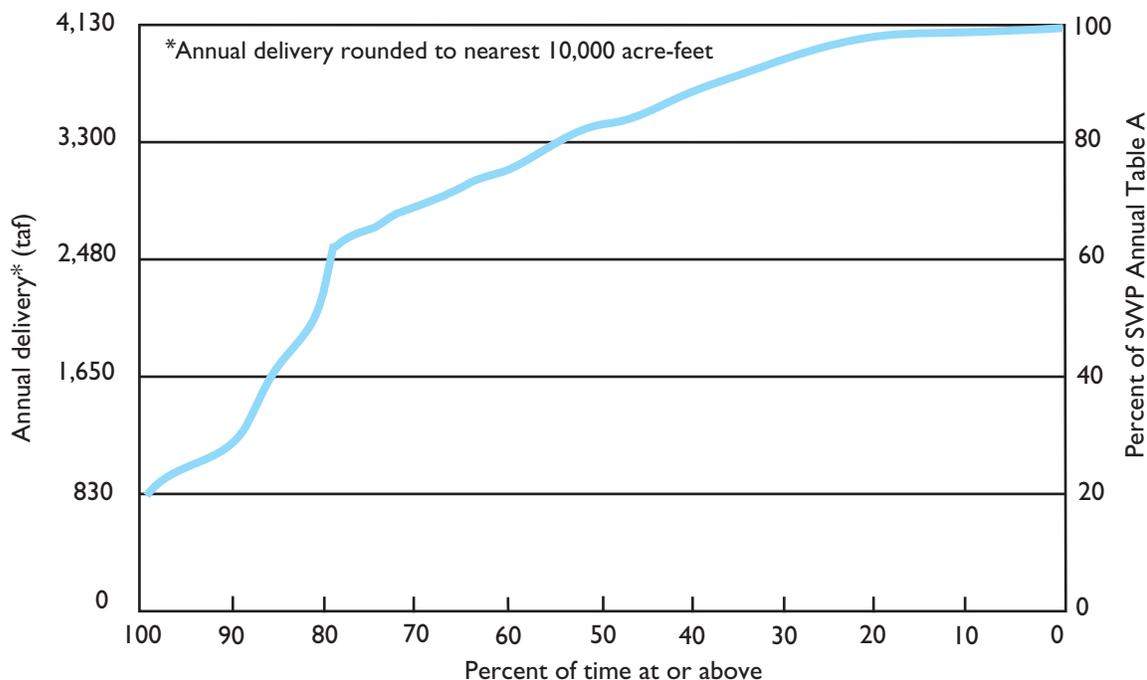
This team also explores potential transfer options available to the SWP and individual contractors. Analysis of contractor profiles helps DWR facilitate transfers and exchanges between individual contractors. In addition, DWR coordinates its participation in the CALFED Transfer Agency Group and the Bay-Delta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

### **SWP Delivery Reliability Report**

To assist local agencies assessing their overall water supplies, DWR 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 *State Water Project Delivery Reliability Report – 2002*, which was finalized in 2003 after an extensive public review. The 2002 report was the first of this biennial series. The next report is expected in 2005.

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:



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

- 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 the Reliability report, published on the Internet at <http://baydeltaoffice.water.ca.gov/swpreliability/index.cfm>.

### Conjunctive Use

*Conjunctive use* refers to the planned and coordinated management of surface water and groundwater in a complementary manner so that the available water resources are more fully and efficiently utilized, which improves supply reliability. Conceptually, groundwater basins

are recharged with surplus surface water in wetter years through natural and sometimes artificial processes. When the available surface water supplies decline in drier years, then the stored groundwater is extracted for use.

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 negligible impacts to the environment and third parties. Increasingly, conjunctive-use projects are being designed to have multiple benefits, including water supply reliability, water quality

improvement, environmental enhancement, and flood control.

DWR recognizes that conjunctive use project and transfers involving ground water substitution may have a potential problem. That is, where surface water in natural conveyances and groundwater are hydraulically connected, pumping nearby wells can potentially deplete SWP supplies and impact third parties. To prevent these impacts, the Sacramento Valley Groundwater Program evaluates water transfer, conjunctive use, and other proposals.

#### **Sacramento Valley Groundwater Program.**

The emphasis of the Sacramento Valley Groundwater Program, a component of the SWP Future Supply Program, has shifted from investigating potential conjunctive-use projects that augment SWP supplies to facilitating and evaluating transfers and development of conjunctive-use projects by local entities. It also supports CALFED's Water Transfer, Storage, and EWA Program components, the Sacramento Valley Water Management Program, and coordinates with DWR's Conjunctive Water Management Program in the geographic areas in which they overlap. A description of the CALFED program elements can be found in the CALFED Bay-Delta section.

Local agencies are increasingly active in developing groundwater management programs and asserting control over water supply development and management activities. DWR 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.

Sacramento Valley Groundwater Program activities involving local agencies in 2004 included the following:

*Yuba County.* DWR, in cooperation with the Yuba County Water Agency, continued to develop and operate an adaptive long-term groundwater monitoring and measurement pro-

gram. These activities focused on evaluating the interaction between the Yuba River, the Bear River and the local groundwater basin, 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.* DWR cancelled a feasibility study for a 20,000 acre-foot conjunctive-use project that staff re-designed from two originally proposed alternatives in a pre-feasibility report. Instead, Reclamation District 108 decided to proceed with a 20,000 acre-foot conjunctive-use project, which is part of the Sacramento Valley Water Management Program.

*Butte Basin.* DWR'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, DWR 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.* DWR is providing technical assistance to Glenn County during the process of developing basin management objectives under the county groundwater management ordinance. DWR 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 DWR's storage program.

### **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—2004 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.

For more than 40 years, DWR has worked intensely to develop the appropriate water quality standards for the Bay-Delta and identify which water sources are required to meet those standards. SWRCB has received and reviewed numerous testimony and evidence to establish water quality objectives for the Bay-Delta estuary to protect urban, agricultural, and fish and wildlife uses. The current water quality objectives are set forth in the 1995 Water Quality Control Plan, which is designed to implement the following:

- 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

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.

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, DWR, Reclamation, 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 DWR and Reclamation 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 2004, DWR, Reclamation, Sacramento Valley upstream water users, and certain downstream water users continued work to implement the Sacramento Valley Water Management Agreement 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 DWR and Reclamation 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 short-term projects will operate for 10 years. Consultants were hired to work on the EIR/EIS. DWR and Reclamation, in cooperation with the Sacramento Valley water users and downstream water users, are preparing environmental analysis and documentation for the projects as required prior to implementation.

SVWMA establishes a Technical Measurement and Monitoring Committee responsible for developing monitoring programs for the projects being developed, assessing their accomplishments and impacts, and recommending remediation activities if needed. The local agencies, DWR, and Reclamation 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 January 8, 2004, the SWRCB convened a 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. DWR presented its comments to the Board regarding the scope of issues, supporting the Board's review and urged them to consider the issues in context with recently proposed Delta Actions and progress that could provide useful information to help evaluate whether modifications to existing water quality objectives were needed. The SWRCB extended the comment period and encouraged the participants to provide the Board with their remarks.

The SWRCB staff prepared a report summarizing comments received from agencies. This report, adopted on September 20, 2004, recommended the following issues be considered during the upcoming workshops:

- Delta outflow;
- River flows: Sacramento River at Rio Vista;
- River Flows: San Joaquin River at Airport Way Bridge, Vernalis: February - April 14 and May 16 - June;
- Export limits;
- Flow objectives in the San Joaquin river at Airport Way Bridge, Vernalis: 31 day pulse flow April 15 - may 15;
- Southern Delta electrical conductivity;
- Chloride objectives, compliance location at Contra Costa Canal at Pumping Plant No. 1, and potential new objectives;
- Salmon protection;
- Delta Cross Channel gates closure;
- Changes to the water quality compliance and baseline monitoring program; and,
- Recommended Changes to the program of implementation.

The SWRCB has scheduled workshops commencing on January 10, 2005.

### **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. DWR 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. DWR 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 four of the five surface storage projects identified for further study in the CALFED ROD.

*In-Delta Storage Program.* In 2001 DWR, in coordination with the California Bay-Delta Authority (CBDA) and Reclamation, began a planning study to evaluate the Delta Wetlands Project and other In-Delta storage options. This study, completed in May 2002, concluded that the project concepts proposed by Delta Wetlands were generally well planned. However, design modifications and further evaluations were needed before considering public ownership of the project.

The In-Delta Storage Project would provide capacity to store approximately 217,000 acre-feet

### **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.

of water in the south Delta for a wide array of water supply, water quality and ecosystem benefits. The project would include two storage islands (Webb Tract and Bacon Island) and two habitat islands (Holland Tract and Bouldin Island), similar to that proposed by Delta Wetlands over a decade ago.

DWR, in coordination with CBDA and with technical assistance from Reclamation, completed the In-Delta Storage Program State Draft Feasibility Study in 2004. The State Draft Feasibility Report addresses the technical feasibility of the proposed In-Delta Storage Project.

*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 Reservoir Expansion would increase the reservoir storage up to 400,000 acre-feet, for a potential storage capability of 500,000 acre-feet.

The objectives of the Los Vaqueros Reservoir Expansion are: (1) improve Bay-Area water supply reliability, (2) provide an environmental water supply to the long-term Environmental Water Account, and (3) improve water quality for Bay-Area water users.

In 2004, Reclamation, DWR, and Contra Costa Water District continued with the feasibility study for the Los Vaqueros Reservoir Expansion Investigation. Reclamation, in coordination with DWR and Contra Costa Water District, began

developing the Federal Initial Alternatives Information Report. Contra Costa Water District ratepayers voted to support further studies of the Los Vaqueros Reservoir Expansion in the March 2004 advisory vote.

*Shasta Lake Enlargement.* Reclamation, in coordination with DWR 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 5093.542(c), the Wild and Scenic Rivers Act, states that, "Except for participation by the Department of Water Resources in studies involving the technical and economic feasibility of enlargement of Shasta Dam, no department or agency of the state shall assist or cooperate with, whether by loan, grant, license, or otherwise, any agency of the federal, state, or local government in the planning or construction of any dam, reservoir, diversion, or impoundment facility that could have an adverse effect on the free-flowing condition of the McCloud River, or on its wild trout fishery."

In 2004, Reclamation, in coordination with DWR and other federal agencies, continued with the feasibility study and National Environmental Policy Act (NEPA) process for the Shasta Lake Enlargement Investigation. Accomplishments for the Shasta Lake Enlargement Investigation in 2004 included completion of the Federal Initial Alternatives Information Report and completion of public workshops to seek public input on Shasta Lake Enlargement Investigation.

*North-of-the-Delta Offstream Storage.* DWR and Reclamation 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 in the Sacramento Valley and the Bay-Delta, reducing water diversions on the Sacramento River during critical fish migration periods, increasing the reliability of supplies for the Sacramento Valley and statewide, and providing storage and operational benefits for other CALFED programs including Delta water quality and the Environmental Water Account.

In 2004, DWR and Reclamation continued with the feasibility study and NEPA/California Environmental Quality Act (CEQA) process for the NODOS Investigation. Accomplishments for NODOS in 2004 included completion of engineering feasibility studies for dams and appurtenant structures for the Sites Reservoir and Newville Reservoir alternatives and completion of an administrative draft *Sacramento River Flow Regime Technical Advisory Group Summary and Evaluation Report*.

*Upper San Joaquin River Basin Storage Investigation.* DWR and Reclamation, 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 functionally equivalent storage program. Potential benefits of the Upper San Joaquin River Basin Investigation are: (1) contribute to restoration of the San Joaquin River, (2) improve water quality of the San Joaquin River, and (3) facilitate additional conjunctive management and water exchanges that improve the quality of water deliveries for urban communities. Other benefits could include hydropower, flood control, and recreation

In 2004, DWR and Reclamation continued with the feasibility study and initiated the NEPA/CEQA process for the Upper San Joaquin River Basin Storage Investigation. Accomplishments

for the Upper San Joaquin River Basin Storage Investigation in 2004 included completion of the NEPA scoping process and the scoping report and initiation of the Federal Initial Alternatives Information Report.

**Conjunctive-Use Programs.** The CALFED Storage Program component, like DWR'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

DWR 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.

In 2002, DWR drafted transfer white papers based on SWRCB's Guide and discussions with

Sacramento Valley water agencies. The white papers are updated as information becomes available.

### **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 and Franks Tract.

*North Delta.* Three 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, the second is a screened Through-Delta facility on the Sacramento River, and the third is the modification of Franks Tract, a flooded island in the central Delta, to improve water quality, enhance the ecosystem, and increase recreational opportunities. DWR is leading all three studies in cooperation with other agencies. The Franks Tract Project was incorporated in the North Delta actions due to its strong potential to improve water quality and fisheries protection in the Delta, either as a stand-alone project or in concert with the Delta Cross Channel Re-operation and the Through-Delta Facility projects.

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, while maintaining water supply reliability to the projects' water users. Responsibility for implementing EWA rests with NOAA Fisheries, U.S. Fish and Wildlife Service, and Department of Fish and Game (management agencies), as well as with Reclamation and DWR (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. The project agencies are responsible for acquiring EWA assets and cooperating 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 *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, DWR and Reclamation 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 EWA Project and Management Agencies completed and approved a joint (EIS/EIR) for the short-term (EWA) pertaining to the acquisition and management of EWA Assets between 2004 and 2007. In July 2004, the Agencies began the process of developing a long-term EWA EIS/EIR.

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



The Feather River near Verona

## Significant Events in 2004

- Statewide precipitation was approximately 85 percent of average compared to 110 percent of average last year. Neutral El Niño conditions prevailed during water year 2004.
- Runoff in the Sacramento River and San Joaquin River Regions was 85 and 60 percent of average, respectively. Feather River unimpaired inflow to Lake Oroville was 3.8 million acre-feet (80 percent of average) for the water year compared to 4.7 million acre-feet (98 percent of average) last year.
- Total storage in major SWP reservoirs was about 3.07 million acre-feet at the end of calendar year 2004, compared with 3.61 million acre-feet in 2003.
- San Luis Reservoir reached its maximum water year total storage on April 5, 2004, at 2,024,406 acre-feet—99.8 percent of normal maximum operating capacity.

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

## Water Year 2003-04

### Precipitation and Snowpack

All regions of the Sierra Nevada were below normal rainfall. Statewide precipitation was approximately 85 percent of average compared to 110 percent of average last year. Mountain snowpack peaked at about 30 inches of snow water content during the first week of March, about a month earlier than normal. The timing of the precipitation accumulation was unusual. Even though the northern Sierra experienced nearly 95 percent of average precipitation for the water year, only December and February were above average on a monthly basis. Neutral El Niño conditions prevailed during water year 2004.

Over the northern Sierra, the water year began with less than normal precipitation in October and November. December was significantly above normal (about 185 percent). Northern Sierra precipitation-to-date rose significantly during December and reached 120 percent of average on January 1, 2004. The statewide snowpack on New Year's Day was 140 percent of average for the date. Percent of average decreased from north to south.

Despite a storm on New Year's Day, January was drier than average statewide. The Northern Sierra Eight Station Precipitation Index registered about 65 percent of average, while regions to the south experienced 50 percent of average or less.

The dry pattern of January reversed during February. The Northern Sierra Eight Station

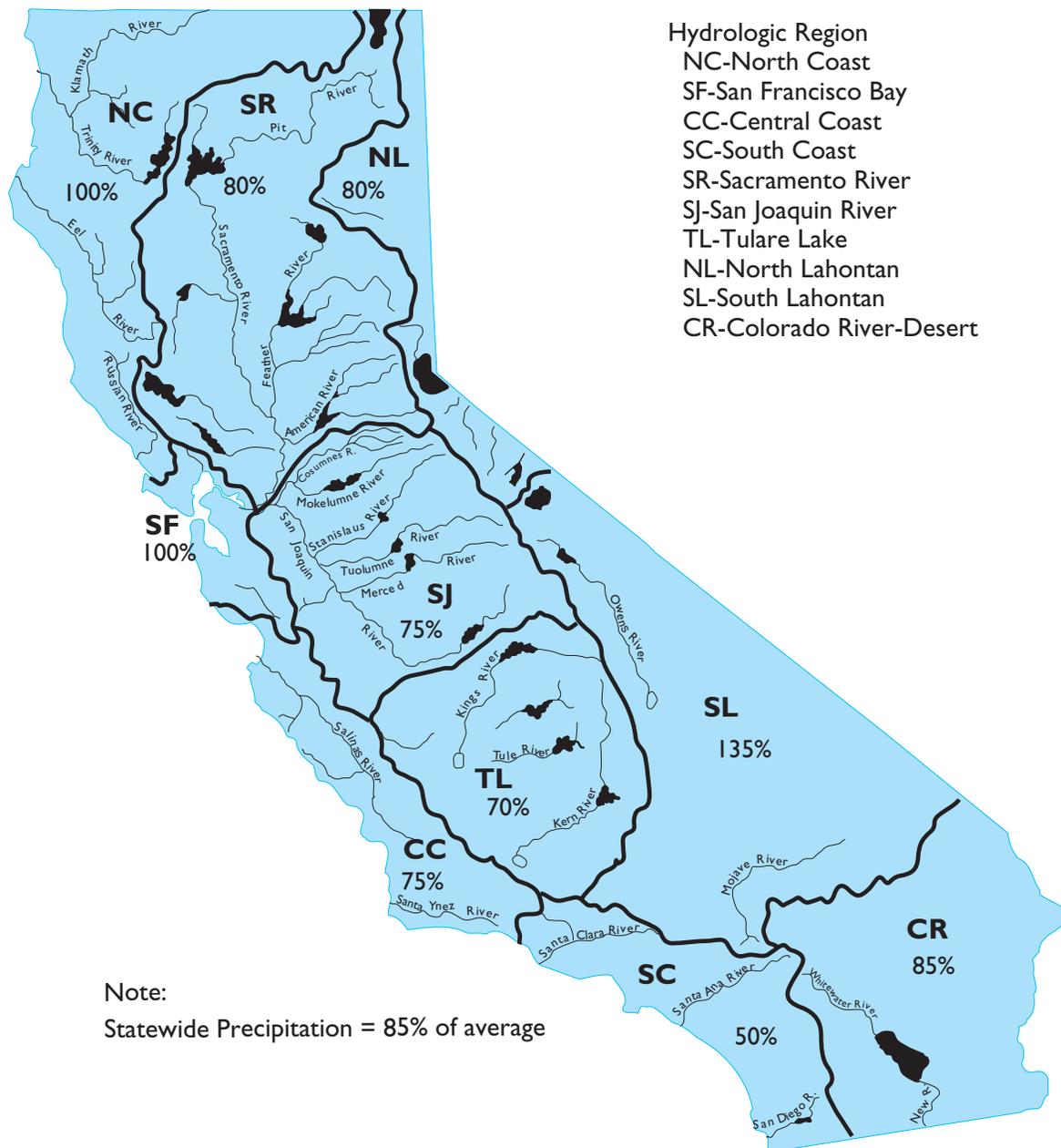
Precipitation Index experienced about 180 percent of average while precipitation in the central and southern Sierra was about 130 percent of average. As of March 1, the statewide water year-to-date precipitation and snow accumulation was 105 percent and 125 percent of average, respectively.

Precipitation in California was only about 40 percent of average during March. This caused the snowpack to drop from 115 to 85 percent of average during March.

As of April 1, statewide year-to-date precipitation and snow accumulations were 95 percent and 85 percent of average, respectively. During April, much below average rainfall was recorded statewide. Consequently, the May 1 statewide snowpack was 55 percent of average, a drop of 30 percent from April 1.

May began warmer and drier than average, causing peak snowmelt runoff to occur in early to mid-May in most Sierra basins. Temperatures averaged above normal inland and in Central and Southern California. The accumulated snow water content peaked earlier than average, in contrast to the late peak in 2003.

The Northern Sierra Eight Station Precipitation Index finished the water year with 47.3 inches (95 percent of average). December and February accounted for about 60 percent of the water year total. Usually, these months account for about 33 percent of the water year total. Figure 8-1 shows statewide precipitation by hydrologic region.



**Figure 8-1. Statewide Precipitation by Hydrologic Region, 2003-04 Water Year, in Percentage of Average**

## Runoff and Storage

Statewide river runoff totaled 80 percent of average in the 2003-04 water year. Runoff in the Sacramento River and San Joaquin River Regions was 85 and 60 percent of average, respectively. Feather River unimpaired inflow to Lake Oroville was 3.8 million acre-feet (80 percent of average) for the water year compared to 4.7 million acre-feet (98 percent of average) last year.

The Sacramento River Index for water year 2003-04 was 16.0 million acre-feet (85 percent of average). The Sacramento Valley Water Year Hydrologic Classification (40-30-30 Index) was below normal.

San Joaquin River system unimpaired runoff from the Stanislaus, Tuolumne, Merced, and San Joaquin Rivers was 3.8 million acre-feet (65 percent of average). The San Joaquin Valley Water Year Hydrologic Classification (60-20-20 Index) was dry.

The water year began dry with statewide runoff about 60 percent of average in October. Continued below normal runoff, especially in the San Joaquin Region, during November lowered the statewide runoff to 40 percent of average for the first 2 months of the water year. Season-to-date statewide runoff totals rose to 80 percent of average by the end of December due to very wet conditions over all Sierra basins. During December, reservoir storage statewide increased by 1.5 million acre-feet to 22.8 million acre-feet. During December, the percent of average storage in Shasta, Oroville, and Folsom reservoirs increased 5, 7, and 5 percent of average, respectively.

A series of six storms in December and January brought high water throughout Northern California, with some short duration localized flooding. The first significant storm of the season was from December 12 to 14, producing monitor stage on the Smith River at Jedediah Smith State Park and Dr. Fine Bridge, Mad River at Arcata, and on the Eel River at Fernbridge. Monitor stage at Colusa and Tisdale Weirs

caused the first overflow of the season into the Sutter Bypass. The next significant storm from December 23-25 was strong enough to cause monitor stage on the Sacramento River at Tehama, Colusa, Tisdale and Colusa Weirs. To finish December, a series of two back-to-back storms December 28-29 and December 31-January 2, caused flood stage on the Napa River at St. Helena and the Navarro River at Navarro. For the first time this year, overflow occurred at Fremont Weir January 2. During both December and January, Sacramento River inflow to the Delta was about 105 percent of average.

A series of warm subtropical storms between February 13 and February 18 caused high water throughout much of Northern California. Sacramento River basin flood stages were reached on the Sacramento River at Tehama, Vina-Woodson Bridge, and Ord Ferry. Monitor stages were reached on the Sacramento River at Bend Bridge, Red Bluff Diversion Dam, Hamilton City, Butte City, Colusa, Tisdale Weir, Colusa Weir, Moulton Weir, Fremont Weir, and the Yolo Bypass at Lisbon. A windy, late winter storm between February 24 and February 26, caused moderate to significant stream rises throughout California. On the North Coast, monitor stage was exceeded only on the Eel River at Fernbridge. However, Sacramento River basin flood stages were reached on the Sacramento River at Red Bluff, Tehama, Vina-Woodson Bridge, and Ord Ferry. In the Delta, monitor stage was reached on the Sacramento River at Rio Vista.

During March, the precipitation in the northern Sierra was about 30 percent of average. Less than 30 percent of average prevailed in Central California but statewide flows were 95 percent of average due to an early snowmelt. By April 1, reservoir storage was at 105 percent of average statewide, 5 percent greater than the previous year. April runoff in the Sacramento River Region was characterized by 75 percent of normal runoff, while closer to normal runoff was common farther south. During April, the statewide snowpack decreased from 85 percent to 55 percent of average. The final statewide water year flows were about 80 percent of normal. All

major basins from the Feather River southward were below average.

### **October-December Water Conditions**

The last 3 months of calendar year 2004 mark the beginning of a new water year, 2004-05. In contrast to the previous season, water year 2004-05 started with a wet October, more than twice the average for the Northern Sierra and more than 350 percent statewide. The southern half of the State was extremely wet for the month, a trend which would continue for the winter. November precipitation was below normal except in the southeastern desert regions, but December was quite wet at 150 percent of average overall. The accumulated statewide precipitation for the first quarter, October through December, was 155 percent of average. Seasonal runoff lagged at about two-thirds of average overall, but the relatively cool storms boosted the mountain snowpack to about 150 percent of normal and 50 percent of a full April 1 snowpack at the end of the calendar year. Southern California was very wet with high local runoff. In contrast, the far north in the upper Klamath River Basin remained dry. Statewide reservoir storage stood at 90 percent of average, a small improvement over the 85 percent at the end of September.

### **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 Central California, 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 peak-

ing demands in the summer months. The remaining 27 dams and reservoirs regulate the stored water supply into water delivery patterns designed to fit local needs.

### **Water Year 2003-04 Storage Totals**

Storage in all SWP reservoirs at the end of the 2003-04 water year was 2.99 million acre-feet or 76 percent of average, compared to 3.69 million acre-feet or 95 percent of average at the end of water year 2002-03. Average end of month total storage for the 2003-04 water year in major SWP reservoirs was 3.83 million acre-feet. End of water year storage on September 30, 2004, at Lake Oroville was 1.75 million acre-feet, about 531,000 acre-feet less than last year. The State's share of San Luis Reservoir storage at the end of the 2003-04 water year was 513,406 acre-feet, compared to 652,744 acre-feet last year. The combined storage in southern reservoirs was 646,828 acre-feet on September 30, compared to 662,999 acre-feet at the end of the 2002-03 water year.

### **Calendar Year 2004 Storage Totals**

Total storage in major SWP reservoirs was about 3.07 million acre-feet at the end of calendar year 2004 compared with 3.61 million acre-feet in 2003. The State's share of San Luis Reservoir storage was 672,181 acre-feet on December 31, 2004, as compared to about 615,763 acre-feet at the same time in 2003. The combined storage in the southern reservoirs was 642,042 acre-feet on December 31, 2004, compared to 635,284 acre-feet at the same time in 2003.

### **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 2003-04 Inflow.** Lake Oroville inflow for the 2003-04 water year totaled about 3.51 million acre-feet—83 percent of the 30-year

average (4.24 million acre-feet). Maximum daily inflow occurred on February 18, 2004, at 109,518 acre-feet. Minimum daily inflow occurred October 8, 2003, at 1,926 acre-feet. The maximum total in 30 years was in water year 1982-83 at 8,853,572 acre-feet. The minimum total in 30 years was in water year 1991-92 at 1,555,774 acre-feet. See Figures 8-2 and 8-3 for monthly and cumulative inflow, respectively, into Lake Oroville.

### **Calendar Year 2004 Inflow and Storage**

Total inflow into Lake Oroville during the calendar year was 3,385,549 acre-feet. Minimum storage occurred December 2, 2004, at 1,601,202 acre-feet—45 percent of its capacity. Maximum storage occurred April 4, 2004, at 3,090,478 acre-feet. End of year Lake Oroville storage was 1,644,209 acre-feet. Figure 8-4 compares end-of-month storage in Oroville Reservoir for the 2003 and 2004 calendar years.

### **2003-04 Water Year San Luis Reservoir Operations**

DWR and the Bureau of Reclamation (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 5, 2004, at 2,024,406 acre-feet—99.8 percent of normal maximum operating capacity. At the beginning of the water year, San Luis Reservoir contained 839,243 acre-feet—41 percent of its capacity. The beginning water year SWP storage share was 652,744 acre-feet. The highest end-of-month SWP share of storage during the 2003-04 water year was in March 2004, at 1,067,336 acre-feet (Figure 8-5).

### **2003-04 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 30,859 acre-feet—about

40 percent of its maximum capacity of 77,106 acre-feet. Its highest storage during the water year occurred May 3, 2004, with 41,388 acre-feet. Its lowest storage occurred November 30, 2003, with 25,953 acre-feet.

By the end of the water year, on September 30, 2004, storage in Lake Del Valle was 29,764 acre-feet—39 percent of maximum capacity. Water year releases to Arroyo Valle and South Bay Aqueduct from Lake Del Valle totaled 15,649 acre-feet.

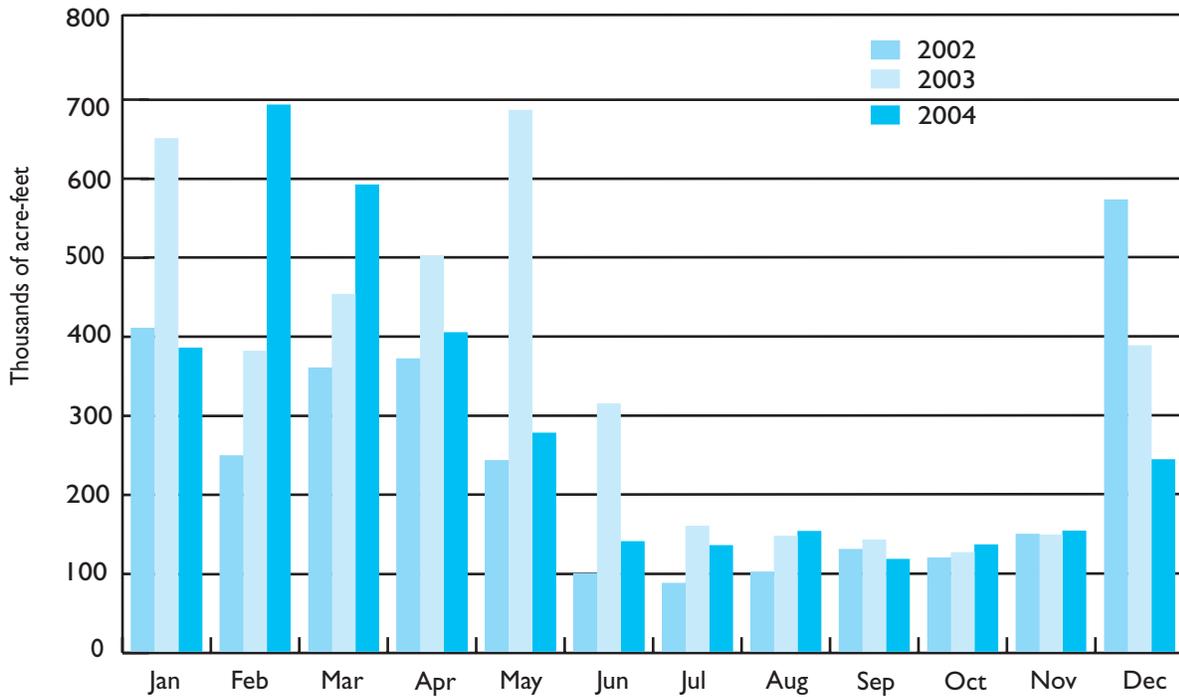
### **2003-04 Water Year Southern Reservoirs Operations**

During normal operating conditions, DWR 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.

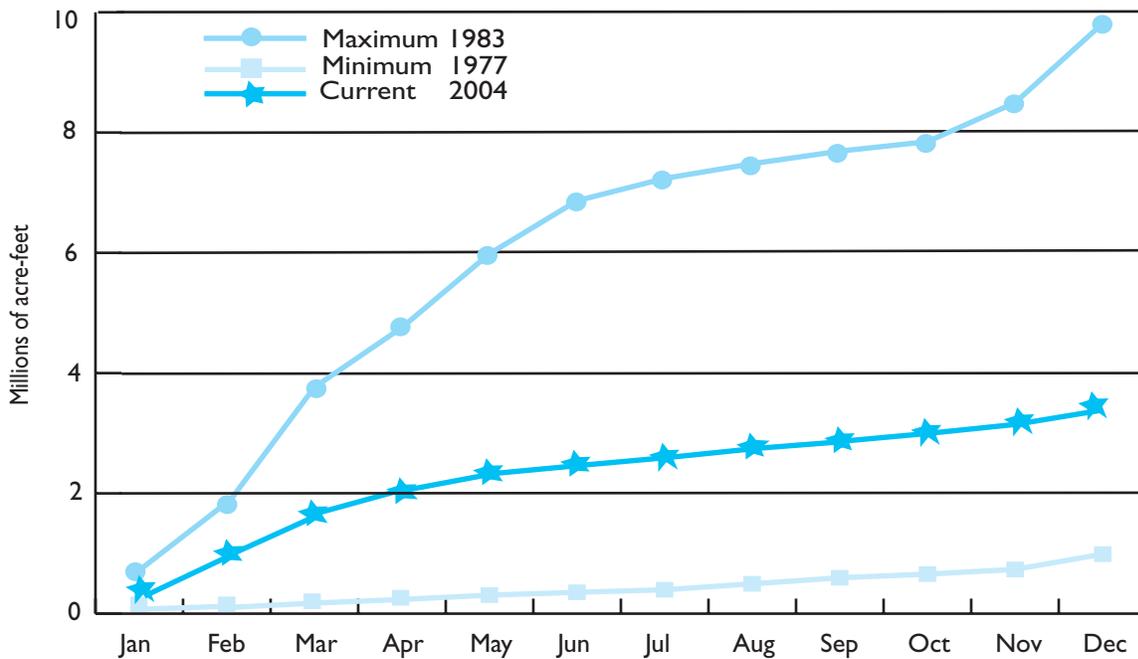
At the beginning of the water year, these reservoirs held about 662,999 acre-feet—94.5 percent of combined normal maximum operating capacity of 701,321 acre-feet. At the end of the water year, they held 646,828 acre-feet—92.2 percent of combined normal maximum operating capacity.

## **Diversions from the Delta**

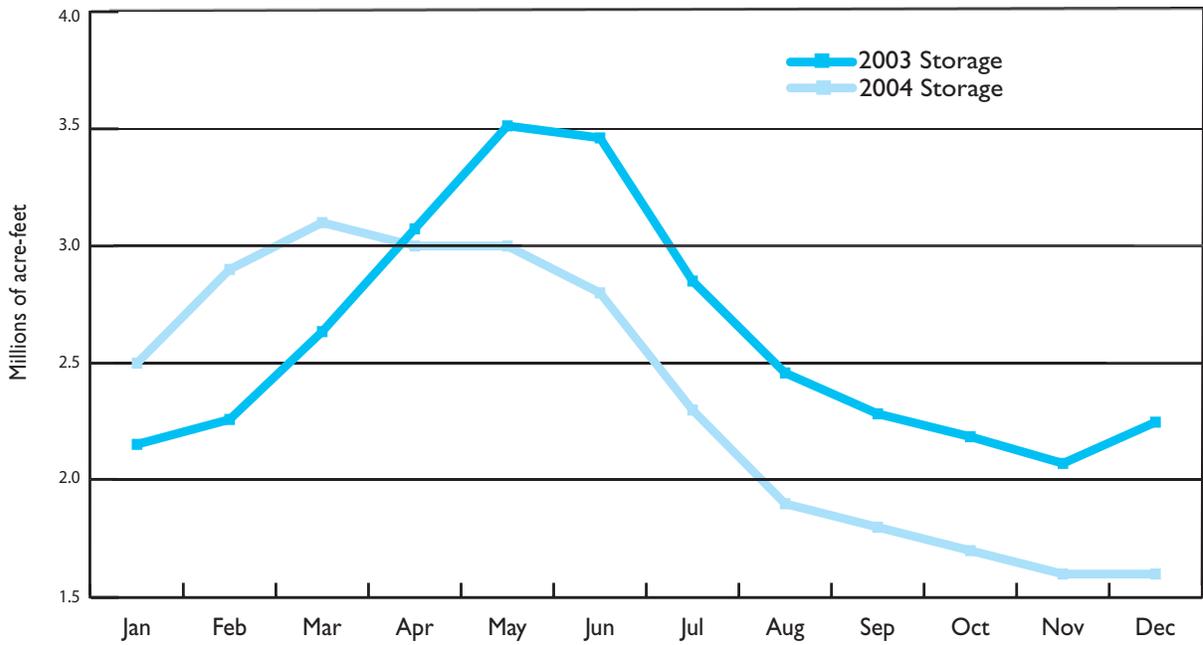
The SWP diverts water from the Sacramento-San Joaquin Delta through Banks and Barker Slough Pumping Plants for delivery to contractors and SWP storage facilities. In 2004, the SWP diverted 3,224,853 acre-feet at Banks Pumping Plant, including a combined total of 5,600 acre-feet of Central Valley Project and Cross Valley Canal water wheeled by DWR. Figure 8-6 shows the amounts of water pumped each month in 2004 at Banks Pumping Plant. Figure 8-7 shows the monthly amounts of water diverted from the Delta by the SWP and CVP in 2004. CVP diverts water to similar areas from the Delta through Tracy Pumping Plant and Contra Costa Pumping Plant. CVP diverted about 2,700,712 acre-feet at Tracy Pumping Plant and 122,499 acre-feet at Contra Costa Pumping Plant in 2004. Combined Delta exports include all of these plants.



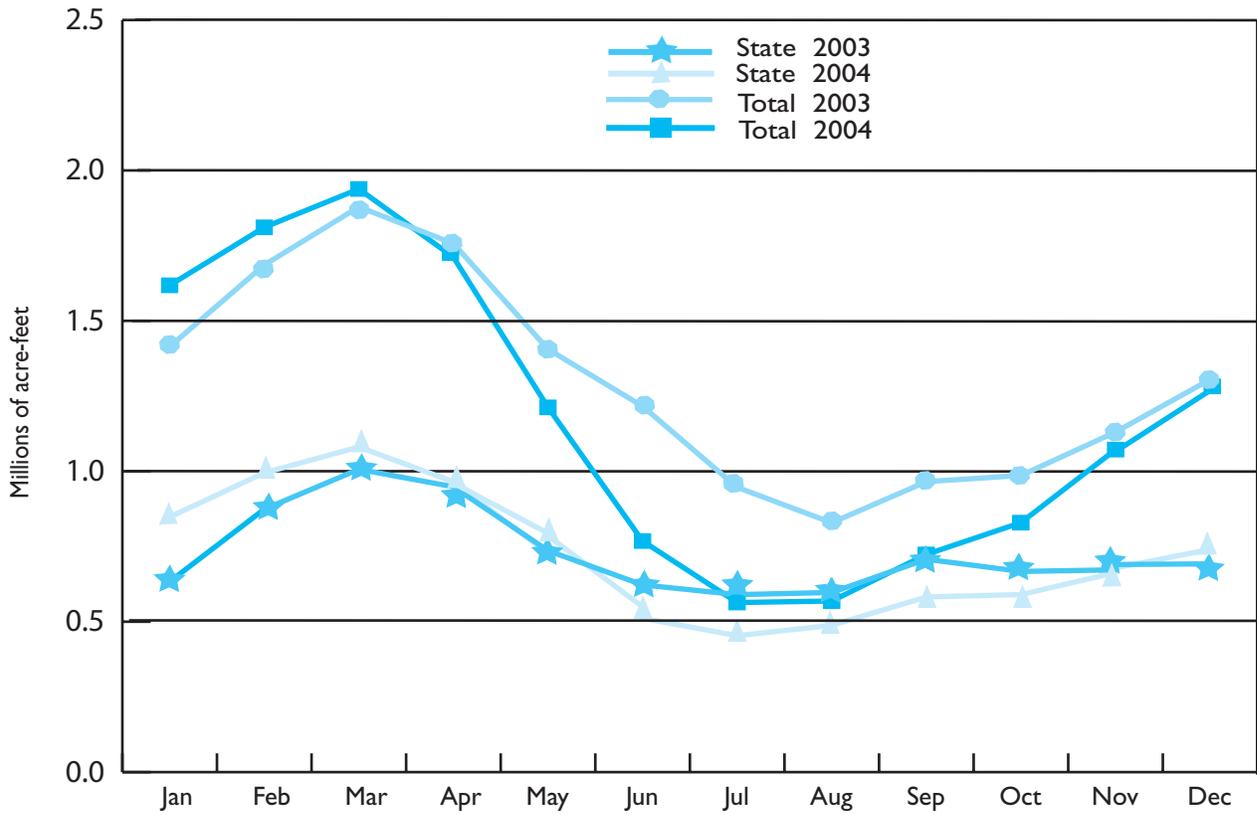
**Figure 8-2. Monthly Lake Oroville Inflow, 2002-04**



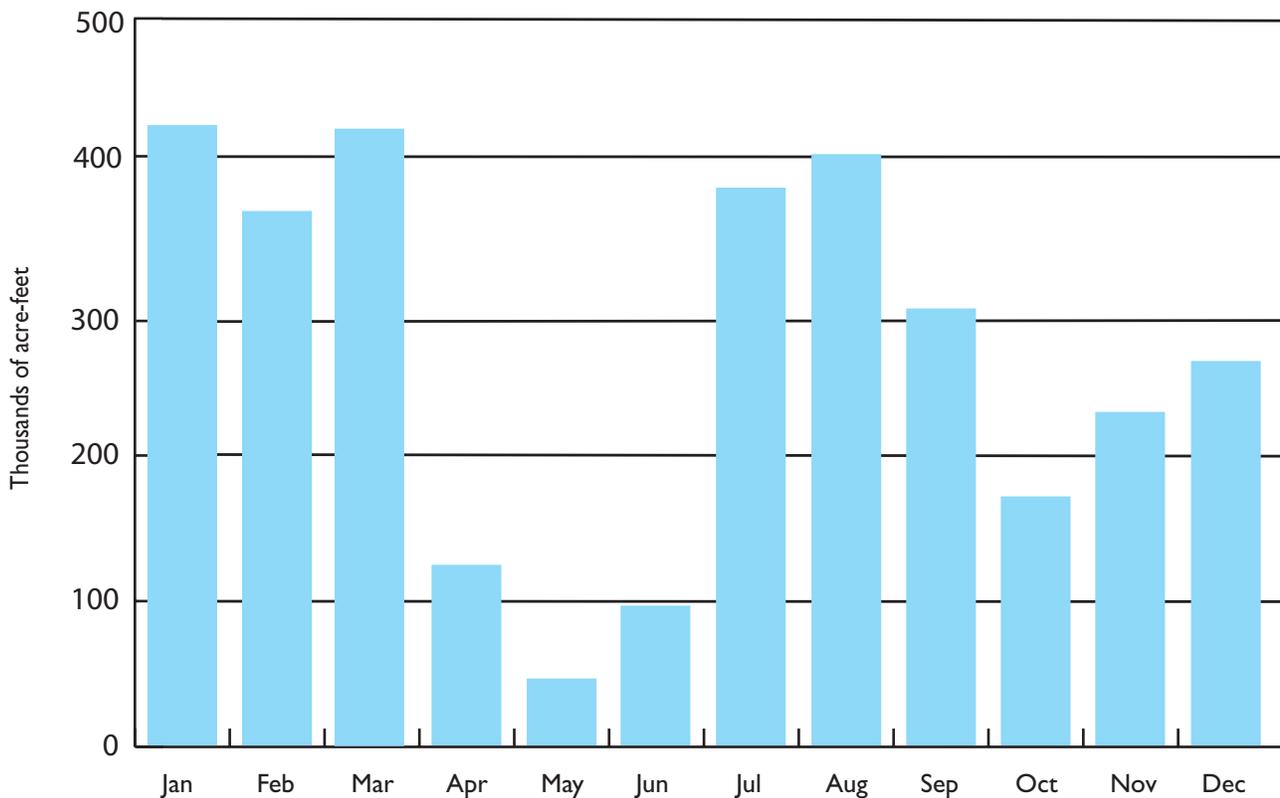
**Figure 8-3. Cumulative, Maximum, Minimum, and Current Lake Oroville Inflow**



**Figure 8-4. End-of-Month Storage in Lake Oroville, 2003 and 2004 Calendar Years**



**Figure 8-5. End-of-Month Storage in San Luis Reservoir, 2003 and 2004 Calendar Years**



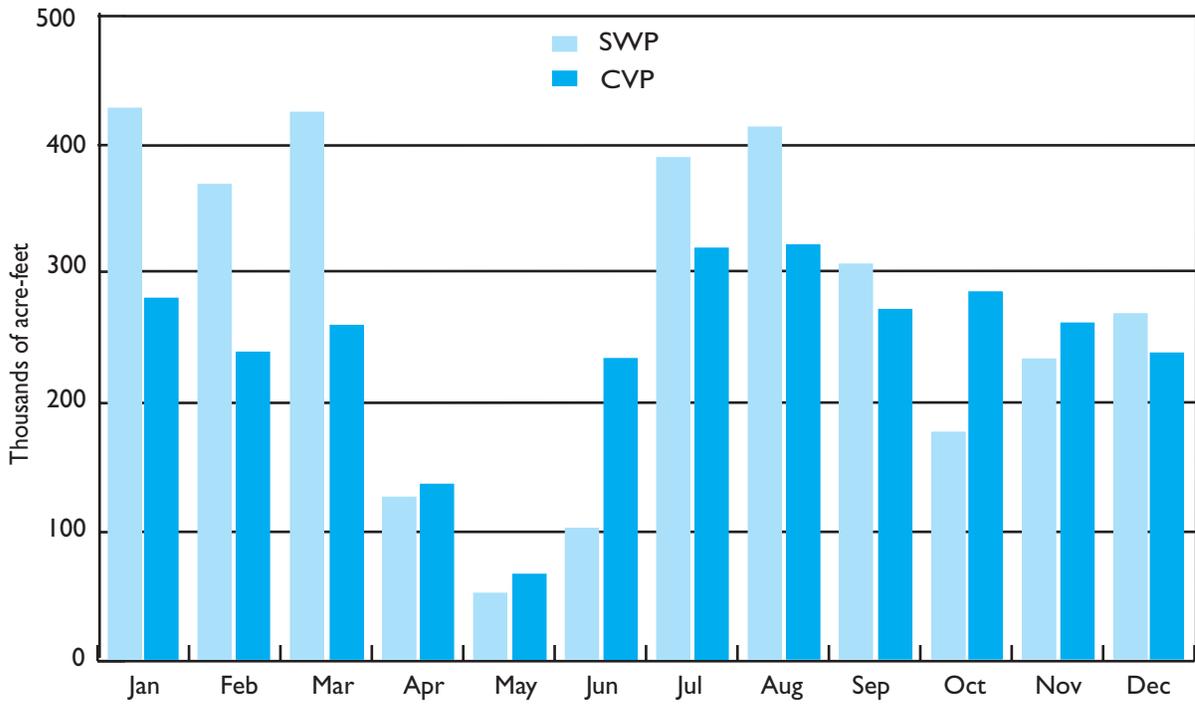
**Figure 8-6. Water Pumped at Banks Pumping Plant, 2004 by Month**

From Banks Pumping Plant, water is delivered either to the South Bay area through the South Bay Aqueduct or to the San Joaquin Valley, Central Coastal, and Southern California areas through the California Aqueduct. From Barker Slough Pumping Plant, the SWP diverts water to the North Bay Aqueduct; a total of 53,203 acre-feet was diverted in 2004.

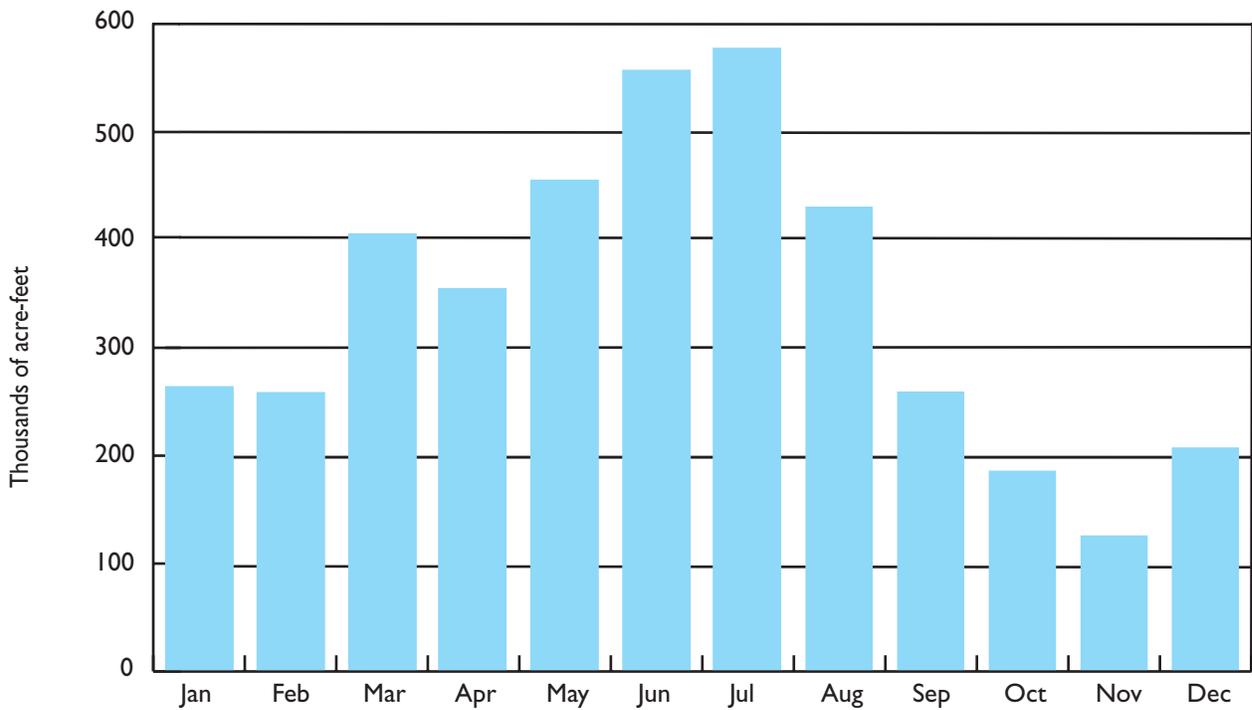
Maximum daily Delta exports occurred on March 15, 2004, at 24,582 acre-feet. Combined SWP and CVP monthly Delta exports in 2004 varied from a low of 110,659 acre-feet in May to a high of 704,283 acre-feet in January. Delta exports totaled about 5.99 million acre-feet for 2004.

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 2004, water pumped through Dos Amigos Pumping Plant to the San Joaquin Valley was 4,049,031 acre-feet. Included in that amount is 1,133,378 acre-feet pumped for Reclamation. Figure 8-8 shows the amount of water pumped each month at Dos Amigos Pumping Plant.

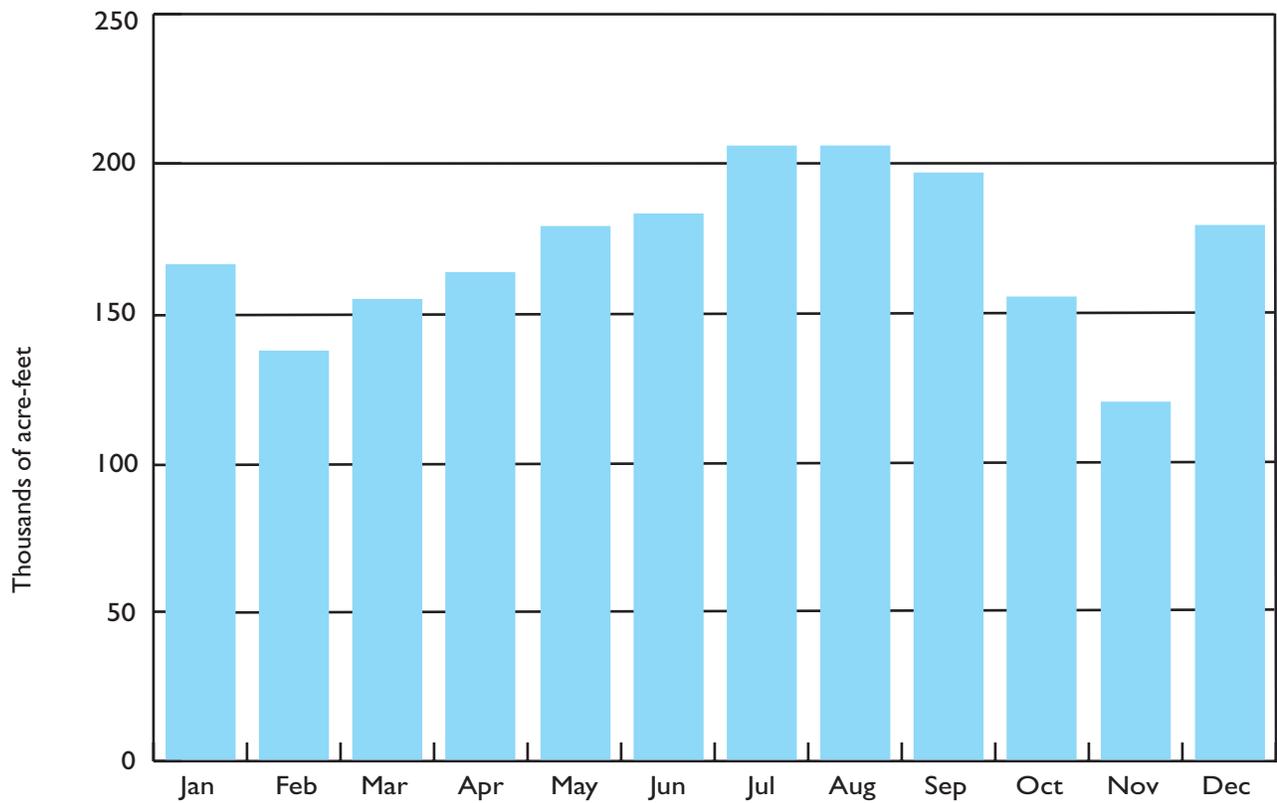
In 2004, water pumped through Edmonston Pumping Plant for delivery to Southern California totaled 2,032,080 acre-feet. Figure 8-9 shows the amount of water pumped each month.



**Figure 8-7. Sacramento-San Joaquin Delta Exports by State Water Project and Central Valley Project, 2004**



**Figure 8-8. Water Pumped at Dos Amigos Pumping Plant, 2004 by Month**



**Figure 8-9. Water Pumped at Edmonston Pumping Plant, 2004 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

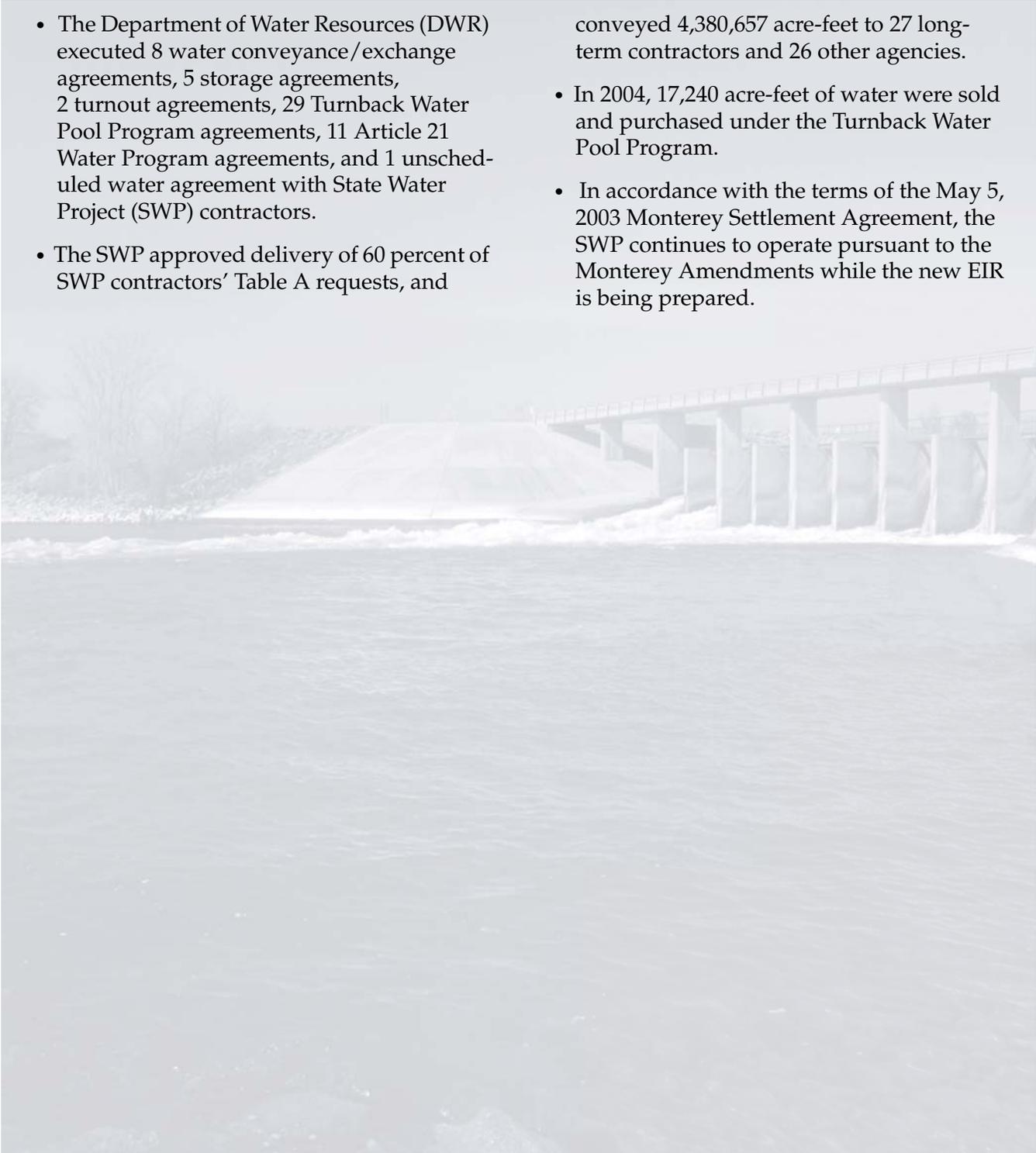
## Water Contracts and Deliveries



Thermalito Afterbay Outlet

## Significant Events in 2004

- The Department of Water Resources (DWR) executed 8 water conveyance/exchange agreements, 5 storage agreements, 2 turnout agreements, 29 Turnback Water Pool Program agreements, 11 Article 21 Water Program agreements, and 1 unscheduled water agreement with State Water Project (SWP) contractors.
- The SWP approved delivery of 60 percent of SWP contractors' Table A requests, and conveyed 4,380,657 acre-feet to 27 long-term contractors and 26 other agencies.
- In 2004, 17,240 acre-feet of water were sold and purchased under the Turnback Water Pool Program.
- In accordance with the terms of the May 5, 2003 Monterey Settlement Agreement, the SWP continues to operate pursuant to the Monterey Amendments while the new EIR is being prepared.



The long-term water supply contracts for water service from the State Water Project (SWP) between the Department of Water Resources (DWR) 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.

DWR delivers water to SWP contractors in accordance with their long-term water supply contracts.

can be found at <http://www.swpao.water.ca.gov/wsc/index.cfm>

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

*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.

### 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 DWR 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 DWR. 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.

*Approved Table A or approved Table A water* represents a portion of or all of the annual Table A requested by the contractors and approved for delivery by DWR, based on hydrologic conditions, current reservoir storage, and total requests by the SWP water contractors. DWR is not always able to deliver the quantity of water requested by the contractors; under certain conditions a lesser amount, allocated according to the long-term water supply contracts and the process noted above, is made available for delivery.

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

The Water Supply Contracts are amended as needed. During 2004, four amendments were executed.

DWR 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 2004, DWR executed 8 water conveyance/exchange agreements, 5 storage agreements, 10 turnout agreements, 29 Turnback Water Pool Program agreements, 11 Article 21 Water Program agreements, and 1 unscheduled water contract with SWP contractors. DWR also delivered water pursuant to 2 conveyance/exchange agreements and 5 storage agreements pending execution, and 8 conveyance/exchange agreements and 3 storage agreements executed prior to 2004.

The State Water Project Analysis Office has developed a numbering system for contracts, amendments, and agreements executed by DWR. 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 DWR 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 Water Supply Contracts were amended during 2004.

**Coachella Valley Water District.** DWR executed Amendment No. 19 to the Water Supply Contract between Coachella and DWR on February 23, 2004. The amendment provided for the permanent transfer of 9,900 acre-feet of Table A amounts from Tulare to Coachella, and set forth the conditions of the transfer. The transfer became effective January 1, 2004. (SWPAO #04006)

**County of Butte.** DWR executed Amendment No. 18 to the Water Supply Contract between Butte and DWR on December 23, 2004. The amendment provided for the reduction of Butte’s SWP Table A entitlement from 27,500 to 1,200 acre-feet for the years 2005 and 2006. The amendment becomes effective January 1, 2005. (SWPAO #04028)

**Plumas County Flood Control and Water Conservation District.** DWR executed Amendment No. 17 to the Water Supply Contract between Plumas and DWR on May 13, 2004. The amendment provided for the reduction of Plumas' 2004 and 2005 Table A entitlement amounts from 1,750 acre-feet and 1,810 acre-feet to zero, respectively. The amendment became effective January 1, 2004. (SWPAO #04018)

**Tulare Lake Basin Water Storage District.** DWR executed Amendment No. 31 to the Water Supply Contract between Tulare and DWR on February 23, 2004. The amendment provided for the permanent transfer of 9,900 acre-feet of Table A amounts from Tulare to Coachella, and set forth conditions for the transfer. The transfer became effective January 1, 2004. (SWPAO #04007)

The following long-term Water Supply Contract amendments (part of the 2003 Colorado River Quantification Settlement Agreement) were executed in 2003, become effective in 2005, and are listed here due to significant events in 2004.

**Coachella Valley Water District.** DWR executed Amendment No. 18 to the Water Supply Contract between Coachella and DWR on October 10, 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 that became effective on November 9, 2004, among Coachella, Metropolitan, and Desert, 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 transfer is consistent with the implementation of the 2003 Colorado River Quantification Settlement Agreement. The transfer takes effect on January 1, 2005. (SWPAO #04009)

**Desert Water Agency.** DWR executed Amendment No. 18 to the Water Supply Contract between Desert and DWR on November 3, 2003. The amendment provided for the permanent

transfer of 11,900 acre-feet of Table A amounts from Metropolitan to Desert, and set forth conditions for the transfer. This amendment is a result of the 2003 Exchange Agreement executed on November 9, 2004, 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 transfer takes effect on January 1, 2005. (SWPAO #04011)

**Metropolitan Water District of Southern California.** DWR executed Amendment No. 27 to the Water Supply Contract between Metropolitan and DWR on October 24, 2003. The amendment provided for the permanent transfer of 88,100 acre-feet of Table A amounts from Metropolitan to Coachella, and set forth conditions for the transfer. This amendment is a result of the 2003 Exchange Agreement that became effective on November 9, 2004, among Coachella, Metropolitan, and Desert, 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 transfer is consistent with the implementation of the 2003 Colorado River Quantification Settlement Agreement. The transfer takes effect on January 1, 2005. (SWPAO #04008)

DWR executed Amendment No. 28 to the Water Supply Contract between Metropolitan and DWR on October 24, 2003. The amendment provided for the permanent transfer of 11,900 acre-feet of Table A amounts from Metropolitan to Desert, and set forth conditions for the transfer. This amendment is a result of the 2003 Exchange Agreement that became effective on November 9, 2004 among Coachella, Metropolitan, and Desert, 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 transfer is consistent with the implementation of the 2003 Colorado River Quantification Settlement Agreement. The transfer takes effect on January 1, 2005. (SWPAO #04010)

## Monterey Amendments

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

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

Plumas and Empire remain the only long-term SWP contractors who have not signed the Monterey Amendment.

In accordance with the terms of the May 5, 2003 Monterey Settlement Agreement, the SWP continues to operate pursuant to the Monterey Amendments while the new EIR is being prepared. The draft EIR is expected to be released in early 2007. The Settlement Agreement is discussed in detail in Chapter 9, *Water Contracts and Deliveries*, of Bulletin 132-04, (available online at <http://www.swpao.water.ca.gov/publications/bulletin/04/Bulletin132-04.pdf>).

## Miscellaneous Agreements with Long-Term SWP Contractors

### 2004 Water Conveyance/Exchange Agreements

During 2004, water conveyance and exchange agreements were executed or pending execution with long-term SWP contractors as described below.

**Dudley Ridge Water District.** An exchange agreement pending execution among DWR, Dudley Ridge, and San Gabriel will provide for the delivery of up to 2,000 acre-feet of Dudley Ridge's approved 2004 Table A water for delivery to in San Gabriel's service area, and for the

return of such water by December 31, 2014 by exchange of San Gabriel's future Table A water. During 2004, a total of 1,059 acre-feet was delivered to San Gabriel. (SWPAO #05017)

**Empire West Side Irrigation District.** An agreement executed January 6, 2004, between DWR and Empire, provided for the delivery of unscheduled water to Empire in 2003 at times when SWP water was 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 at Reach 8C. (SWPAO #03012)

**Empire West Side Irrigation District.** An agreement executed October 22, 2004 between DWR and Empire, provided for the delivery of unscheduled water to Empire in 2004 at times when SWP water was not needed for fulfilling approved Table A deliveries or for meeting project operational commitments. A total of 626 acre-feet of unscheduled water was delivered to Empire in 2004 at Reach 8C. (SWPAO #04021)

**Kern County Water Agency.** A letter agreement pending execution among DWR, Kern, and Kern-Tulare and Rag Gulch Water Districts (Cross Valley Canal contractors) provided for the conveyance of up to 53,300 acre-feet of the Districts' 2004 non-Project CVP water to Kern. Kern requested the water to be delivered pursuant to Article 55 of its Water Supply Contract. The agreement provided for two transactions: a transfer of CVP water to Kern; and an exchange of CVP water for Kern's SWP water and/or local groundwater supplies. During 2004, a total of 12,710 acre-feet of CVP water was transferred to Kern of which 9,628 acre-feet was from Kern-Tulare and 3,082 acre-feet was from Rag Gulch. A total of 9,664 acre-feet of CVP water was exchanged with Kern of which 320 acre-feet was exchanged with Rag Gulch and 9,344 acre-feet was exchanged with Kern-Tulare. (SWPAO #04025)

**Mojave Water Agency.** A letter agreement executed November 30, 2004 among DWR, Mojave, and Solano provided for the transfer up to

2,000 acre-feet of Solano's approved 2004 Table A water to Mojave, in exchange for up to 1,000 acre-feet of Mojave's future Table A water. During 2004, DWR delivered 2,000 acre-feet of Solano's Table A water to Mojave at Reach 22B. (SWPAO #04023)

**Santa Clara Valley Water District.** A letter agreement, executed May 17, 2004, between DWR and Santa Clara, provided for the delivery in 2003 of up to 3,100 acre-feet of Brown's Valley Irrigation District's non-Project water to Santa Clara. This water, which is under Brown's Valley pre-1914 water rights, was 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 Water Supply Contract. (SWPAO #03058)

A letter agreement pending execution between DWR and Santa Clara provided for the delivery of up to 3,100 acre-feet of Brown's Valley Irrigation District's non-Project water to Santa Clara in 2004. This water, which is under Brown's Valley pre-1914 water rights, was 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 Water Supply Contract. During 2004, a total of 3,100 acre-feet of non-Project water was delivered to Santa Clara. (SWPAO #04026)

**Tulare Lake Basin Water Storage District.** A letter agreement dated June 5, 2003, and executed August 25, 2003, between DWR and Tulare, approved the delivery of up to 10,000 acre-feet of non-Project 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 Water Supply Contract. The water was made available at Banks Pumping Plant. During 2002, a total of 10,956 acre-feet of non-Project water was delivered to Tulare. The letter agreement was amended on June 24, 2004 to increase the 2002

delivery amounts to 10,956 acre-feet. (SWPAO #04022)

A letter agreement dated May 21, 2004, and executed June 9, 2004, between DWR and Tulare, approved the transfer of up to 6,000 acre-feet of Tulare's 2004 Table A water to Westlands at Reaches 5, 6, and 7 of the California Aqueduct. The transfer was made on behalf of two land-owners, Hansen Ranches (called Vista Verde Farms in Westlands) for up to 4,000 acre-feet, and Newton Farms for up to 2,000 acre-feet, both of which farm in Tulare's and Westlands' service areas. DWR petitioned the SWRCB on March 30, 2004, and received approval on June 8, 2004, for a temporary change of place of use. During 2004, a total of 3,850 acre-feet were delivered to Westlands at Reach 5. (SWPAO #04013)

A letter agreement dated August 11, 2004, and executed September 28, 2004, between DWR and Tulare, approved the transfer of up to 2,000 acre-feet of Tulare's 2004 Table A water to Westlands at Reach 7 of the California Aqueduct on behalf of Westlake Farms Inc., who farms in both Tulare's and Westlands' service areas. The water was to be delivered to Westlands for use on lands within the Kings County portion of Westland's service area. In 2004, no water was delivered pursuant to this agreement. (SWPAO #04014)

A letter agreement dated October 6, 2004, and executed October 28, 2004, between DWR and Tulare, approved the transfer of up to 4,000 acre-feet of San Joaquin River Exchange Contractor Authority's (SJREC) non-Project water to Madera Irrigation District and Chowchilla Water District, in accordance with Article 55 of Tulare's long-term water supply contract. To facilitate the transfer Tulare will take SJREC's water, in exchange for the delivery of an equal amount of their Kings River water to Fresno Irrigation District, a Kings River entity. Fresno Irrigation District will deliver an equal amount of its CVP water to Madera and Chowchilla. During 2004, a total of 4,000 acre-feet of water were delivered to Tulare at Reach 8D. (SWPAO #04024)

### **Water Conveyance/Exchange Agreements Prior to 2004**

During 2004, water delivered pursuant to agreements with SWP contractors that were executed prior to 2004, is described below.

**Dudley Ridge Water District.** A 2002 exchange agreement pending execution among DWR, Dudley Ridge, and San Gabriel Valley will provide for the delivery of up to 1,800 acre-feet of Dudley Ridge's approved 2002 Table A water for delivery to San Gabriel's service area and for the return of such water by December 31, 2012, by exchange of San Gabriel's future Table A water. During 2002, DWR delivered 1,800 acre-feet of Dudley Ridge's approved 2002 Table A water to San Gabriel Valley at Reach 26A, of which 1,710 acre-feet is recoverable after losses are applied. During 2004, a total of 1,710 acre-feet were returned to Dudley Ridge at Reach 8D, completing this agreement. (SWPAO #05017)

A dry-year exchange agreement dated November 19, 2003, and executed November 20, 2003, among DWR, Dudley Ridge, and San Gabriel, approved the delivery of up to 11,458 acre-feet of Dudley Ridge's 2003 Table A water to San Gabriel at Reach 26A of the California Aqueduct. In exchange, San Gabriel will return a like amount of its future Table A water to Dudley Ridge by December 31, 2013. During 2003, a total of 8,700 acre-feet of Dudley Ridge's 2003 Table A water were delivered to San Gabriel. During 2004, a total of 2,408 acre-feet were returned to Dudley Ridge at Reach 8D. (SWPAO #03055)

**Kern County Water Agency.** An agreement executed on June 8, 2000, among DWR, 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 approved Table A water 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. DWR petitioned SWRCB

and by SWRCB Order dated April 21, 2000, Western Hills' service area was included within the authorized SWP place of use. During 2004, a total of 786 acre-feet of Kern's Table A water was delivered to Western Hills at Reach 2A. (SWPAO #01001)

A letter agreement executed October 11, 2002, between DWR and Kern, approved the delivery to Kern in 2000 of up to 30,000 acre-feet of non-Project water from four CVP contractors, members of the San Luis and Delta Mendota Water Authority. In exchange, Kern would return a like amount of its approved Table A water to the Water Authority by December 31, 2003. At the end of the contract term, 22,154 acre-feet remained to be returned. In an August 1, 2003 letter to DWR, Kern requested an extension of the return period. Extension of the return period and other possible alternatives for Kern to return the remaining water were discussed among DWR, Kern, and the Water Authority. SRWCB approved a one year extension through September 26, 2004. During 2004, a total of 213 acre-feet were returned leaving a balance of 21,941 acre-feet to be returned to the CVP contractors. (SWPAO #00032)

**Mojave Water Agency.** An agreement executed November 13, 1997, among AVEK, Mojave, and DWR, 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 2004, DWR delivered 1,223 acre-feet of Mojave's approved 2004 Table A amounts through AVEK's turnout at Reach 19. (SWPAO #97003)

**Solano County Water Agency.** A settlement agreement executed May 19, 2003, among DWR, Solano, and the cities of Fairfield, Vacaville, and Benicia, and a conveyance agreement, executed concurrently between DWR and Solano, approved the delivery of up to 31,620 acre-feet annually of settlement water to Solano for

delivery to the three cities to assist in meeting their current and future municipal and industrial water needs through the existing North Bay Aqueduct. During 2004, a total of 10,801 acre-feet of settlement water was delivered to the three cities through Reaches 1 and 3A of the North Bay Aqueduct. (SWPAO #03017)

**San Bernardino Valley Municipal Water District.** San Bernardino and Metropolitan entered into a coordinated use agreement for conveyance facilities and SWP water supplies, on May 14, 2001. DWR 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, as permitted under Article 10 of the Water Supply Contract. During 2004, a total of 20,000 acre-feet of San Bernardino's approved Table A water, and a total of 20,000 acre-feet of San Bernardino's 2003 carry-over water were delivered to Metropolitan at Reach 26A. (SWPAO #02035)

**Santa Barbara County Flood Control and Water Conservation District.** A letter agreement dated September 13, 2002, and executed October 30, 2002, among DWR, Santa Barbara, and Dudley Ridge, approved the delivery of up to 745 acre-feet of Santa Barbara's 2002 SWP water supplies to Dudley Ridge at Reach 8D. In exchange, Dudley Ridge will return a like amount of its future SWP water supplies to Santa Barbara at Reaches 35, 37, and 38 of the Coastal Aqueduct by December 31, 2012. During 2002, a total of 745 acre-feet was delivered to Dudley Ridge. During 2004, Dudley Ridge returned 225 acre-feet of its approved Table A water to Santa Barbara, leaving a balance of 520 acre-feet to be returned. (SWPAO #02013)

**Tulare Lake Basin Water Storage District.** A letter agreement executed February 1, 2000, between DWR, Tulare, and Westlands approved the transfer of up to 13,770 acre-feet of approved 1999 Table A water from Tulare to Westlands. Westlands will return an equivalent amount of

local surface water to Tulare by December 31, 2009. Tulare delivered 13,770 acre-feet of approved 1999 Table A water to lands within Westlands' service area in both Kings County and Fresno County. During 2004, Westlands returned 6,020 acre-feet of water to Tulare at Reach 8D, leaving a balance of 7,750 acre-feet to be returned. (SWPAO #99015)

### **Turn-in Agreements**

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**Kern County Water Agency.** During 2004, a total of 43,988 acre-feet of local water from Kern's service area was introduced into the California Aqueduct from Reaches 10A, 12E, and 13B, and recovered from Reaches 9 through 16A and 31A. Water introduced into the California Aqueduct must meet current water quality criteria in effect at the time of delivery.

### **Turnout Agreements**

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**Alameda County Flood Control and Water Conservation District, Zone 7.** An agreement dated January 23, 2002, between DWR 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, and formally accepted in 2004.

**Antelope Valley-East Kern Water Agency.** An agreement dated March 28, 2000, between DWR 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 2004.

### **Agreements and Activities Related to the Monterey Amendments**

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**Turnback Water Pool Program.** Pursuant to Article 56(d) of the Monterey Amendments, the ninth year of the Turnback Water Pool Program was initiated through Notice to State Water Project Contractors No. 04-03, dated February 13, 2004. 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 2004 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 2004, 17,240 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 2004, respectively. Turnback water sold for \$11.79 per acre-foot—50 percent of the Delta Water Rate—through Pool A, and for \$5.89 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 2004 Turnback Water Pool Program closed April 1, 2004. Notices to State Water Project Contractors describing the Turnback Water Pool Program are available online at <http://www.swpao.water.ca.gov/notices/index.cfm>.

Table 9-1 lists contractors who participated in Pool A and Pool B of the 2004 Turnback Water Pool Program.

**Storage of Water Outside Service Area.** Pursuant to Article 56 of the Monterey Amendments, six SWP contractors have agreements with DWR to deliver and store SWP water outside their service area for later use within their service area. The following agreements include provisions concerning the conveyance and points of delivery of such water.

*Alameda County Flood Control and Water Conservation District, Zone 7.* A change in point of delivery agreement pending execution among DWR, Alameda-Zone 7, and Kern provides for the delivery of a portion of Alameda-Zone 7's approved 2004 SWP water supplies to Semitropic Water Storage District, and for the return of such water by future exchange of a like amount of Kern's Table A water or other SWP water supplies. Alameda-Zone 7 delivered

5,740 acre-feet to Semitropic in January 2004. (SWPAO #04017).

**Table 9-1. 2004 Turnback Water Pool Program (Acre-feet)**

Contractor	Sold	Purchased
<b>Pool A</b>		
Butte	700	
City of Yuba City	1,800	
Ventura County	5,500	
Alameda County		101
Dudley Ridge		137
Kern		2,390
Kings		22
Metropolitan		4,815
Napa		52
Oak Flat		14
Santa Clara		239
Tulare		230
<b>Total</b>	<b>8,000</b>	<b>8,000</b>
<b>Pool B</b>		
Butte	575	
City of Yuba City	1,400	
Ventura	2,250	
Alameda County		113
Coachella		89
Desert		102
Dudley Ridge		154
Kern		2,685
Kings		24
Littlerock	995	
Metropolitan		5,408
Oak Flat		15
San Gabriel	3,120	
San Geronio	900	
Santa Barbara		122
Santa Clara		269
Tulare		259
<b>Total</b>	<b>9,240</b>	<b>9,240</b>

*Alameda County Water District.* A change in point of delivery agreement pending execution among DWR, Alameda, and Kern, provided for the delivery of up to 20,000 acre-feet of Alameda's approved 2004 SWP water supplies for storage in Semitropic, and for the return of such water by future exchange of a like amount of Kern's Table A water or other SWP water supplies. During 2004, DWR delivered 4,000 acre-feet of Alameda's 2004 Table A water and 4,000 acre-feet of Alameda's 2003 carryover water for storage in Semitropic. (SWPAO #04019)

*Castaic Lake Water Agency.* A change in point of delivery agreement, executed February 13, 2004,

among DWR, Castaic Lake, and Kern, provided for the delivery of up to 35,000 acre-feet of Castaic Lake's approved 2003 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. From January through March 2004, DWR delivered 32,522 acre-feet of Castaic Lake's 2003 carryover water for storage in Semitropic. (SWPAO #03060)

*County of Kings.* A change in point of delivery agreement, executed March 24, 2004, among DWR, Kings, and Westlands, provides for the delivery of up to 5,000 acre-feet of County of Kings' Table A water through Westlands' turn-outs at Reach 6 and Reach 7. Water will be conveyed through Westlands and into Kings County for use at LeMoore Naval Air Station. The agreement became effective January 1, 2004, and remains in effect until December 31, 2035. During 2004, DWR delivered 3,250 acre-feet of Kings' Table A water to Westlands. (SWPAO #04005)

*Dudley Ridge Water District.* A long-term change in point of delivery agreement executed February 13, 2004, among DWR, Dudley Ridge, and Kern, approved the delivery of a portion of Dudley Ridge's annual Table A water to Kern for use within Cawelo Water District, a member unit of Kern, and the return of a like amount of water. Cawelo will return water to Dudley Ridge by in lieu exchange of a portion of its future allocation of Kern's approved Table A water. This agreement is effective July 1, 2003, and remains in effect until December 31, 2035. During 2004, DWR delivered 1,600 acre-feet of Dudley Ridge's approved Table A water to Kern at Reach 12E. (SWPAO #03053)

A letter agreement, executed November 10, 1997, among DWR, 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 water to the Kern Water Bank (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, of which 5,021 acre-feet is recoverable after losses were applied. The following amounts have been returned to Dudley Ridge: 721 acre-feet in 2002; 350 acre-feet in 2003; and 3,488 acre-feet in 2004. A balance of 462 acre-feet remains for return to Dudley Ridge. (SWPAO #97021)

A point of delivery agreement pending execution among DWR, Dudley Ridge, and Kern County Water Agency for the delivery of up to 10,000 acre-feet of 2004 Article 21 and Table A water for delivery to the KWB for storage and future recovery. During 2004, a total of 1,657 acre-feet of Dudley Ridge's Article 21 water was delivered to the KWB, of which 1,491 acre-feet is recoverable after losses were applied. During 2004, a total of 1,491 acre-feet were returned to Dudley Ridge at Reach 8D, completing this agreement. (SWPAO #04012)

*Metropolitan Water District of Southern California.* A long-term change in point of delivery agreement executed August 30, 2004, among DWR, 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. No water was delivered or recovered during 2004. (SWPAO #03019)

A long-term agreement, executed March 18, 2004, among DWR, Metropolitan, and Kern, approved 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. Prior to the

long-term agreement, water was delivered pursuant to three interim agreements dated December 29, 1997, September 17, 1998, and April 13, 1999. All water has been recovered pursuant to the 1997 and 1998 agreements. Pursuant to the 1999 agreement, Metropolitan delivered 62,162 acre-feet to Arvin-Edison, of which 55,946 acre-feet was recoverable after losses were applied. A total of 5,083 acre-feet in 2003 and 43,227 acre-feet in 2004 was recovered, leaving a balance of 7,636 acre-feet under the 1999 agreement. There was no water recovered in 2004 attributable to the long-term agreement. (SWPAO #01013)

A long-term agreement, executed on August 21, 1995, among DWR, 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 Water Banking Program Agreement. The long-term agreement remains in effect until November 4, 2035. During 2004, a total of 98,368 acre-feet was recovered and delivered to Metropolitan. (SWPAO #95010)

### Article 21 Water Program

Pursuant to Article 21 of the Monterey Amendments, Article 21 water replaces unscheduled, 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 DWR 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 2004 were described in the March 5, 2004, Notice to State Water Project Contractors No. 04-05. Ten participants signed the notice, which indicated acceptance of the criteria, procedures, and charges for the program, and collectively

received a total of 217,870 acre-feet of Article 21 water. (Table 9-2)

**Table 9-2. 2004 Article 21 Water Deliveries (Acre-feet)**

Contractor	Amount
Castaic Lake	1,618
Kings	3,157
Dudley Ridge	7,393
Kern	86,513
Metropolitan	91,601
Napa	1,450
San Luis Obispo	69
Santa Clara	2,983
Solano	7,787
Tulare	15,299
Subtotal	217,870
Empire <sup>a</sup>	626
<b>Total</b>	<b>218,496</b>

<sup>a</sup>Unscheduled agricultural water

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 626 acre-feet of unscheduled water in 2004 for agricultural purposes.

### 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 Table A 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 2004. At the end of 2003, Metropolitan had a zero balance in Castaic Lake and Lake Perris. Metropolitan withdrew 50,061 acre-feet from Castaic Lake in 2004, and replaced 50,061 acre-feet with its allocated Table A water in 2004, resulting in a zero water balance at the end of 2004.

### **Extended Carryover Program**

Pursuant to Article 56 of the Monterey Amendments, contractors can elect to store project water outside of their service area for later use within their service area. Qualified contractors can request Table A water carried over 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 water for that year. Eleven SWP contractors took delivery of 319,808 acre-feet of approved 2003 Table A water carried over into 2004 as extended carryover.

### **Dry Year Water Purchase Program**

In 2004, DWR initiated a Dry Year Water Purchase Program to reduce the possibility of adverse economic impacts and hardship associated with water shortages. Water being made available to the Dry Year Program in 2004 came from Yuba County Water Agency who made it available through reservoir water releases. Two Delta farmers participated in the program by signing a Memorandum of Understanding with DWR. The program participants requested a total of 535 acre-feet of dry year water.

The two participants and the amount of water purchased from the 2004 Dry Year Program are

- Phelps Brothers - 460 acre-feet; and
- Ronald Conn - 75 acre-feet.

### **Environmental Water Account**

EWA is a cooperatively managed program intended to provide protection to the fish of the Bay-Delta Estuary and water supply reliability to SWP/CVP water users through environmentally beneficial changes and increased flexibility in the operations of the SWP and CVP. Responsibility for implementing EWA rests with the NOAA Fisheries, U.S. Fish and Wildlife Service, and Department of Fish and Game (management agencies), as well as with the Bureau of Reclamation (Reclamation) and DWR (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 *operational assets*, which are acquired through changes in operations; *purchase assets*, which are acquired through purchases from willing water sellers; and *source shifting*, which involves deferral of scheduled delivery of water allocations by willing participants. EWA is considered operational for any year when these assets are in place and Endangered Species Act commitments are provided by the management agencies.

In 2004, EWA's fourth operational year, exports were curtailed at both the SWP and CVP export facilities between April 15 and May 31, 2004. These actions resulted in an EWA debt of about 54,400 acre-feet at the SWP and 67,970 acre-feet at the CVP. Earlier, on March 14, the CVP was able to export 202 acre-feet of water from the Delta for payback of an earlier EWA debt. On March 30, 657 acre-feet of EWA assets stored on

the SWP's share of San Luis Reservoir converted to Project water since San Luis Reservoir storage was physically filling on the state side. All purchase asset acquisitions in 2004 were made by DWR as single year transactions and environmental studies were carried out to ensure that the transactions complied with CEQA.

In fall 2003, the SWP carried over 398 acre-feet of EWA assets in Lake Oroville. In spring 2004 heavy rains forced Oroville Reservoir into flood control status. This led to the spill of 398 acre-feet of stored EWA water on February 18, 2004.

DWR and the Reclamation acquired 894 acre-feet and 202 acre feet, respectively, in variable assets and 155,217 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 a 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 fourth year of EWA ended with a 5,600 acre-foot credit for use during 2005 EWA actions.

### **Purchase Assets**

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The following SWP contractors and non-SWP contractors participated in the EWA Program in 2004.

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/SCVWD.** An agreement executed on June 8, 2004, between DWR and Kern approved the purchase of up to 84,000 acre-feet of water stored in KWB through the exchange of approved Table A water for support of EWA under the CALFED Program. A total of 35,000 acre-feet of Kern's water was purchased. (SWPAO #04702)

**Yuba County Water Agency.** An agreement executed on April 21, 2004, between DWR 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 100,000 acre-feet of Yuba's water was purchased (SWPAO #04701), however YCWA released and delivered to EWA 101,517 acre-feet.

**Placer County Water Agency.** An agreement executed on October 26, 2004, between DWR and Placer approved the transfer of up to 20,000 acre-feet of water from storage in Middle Fork Project (MFP) reservoirs. A total of 18,700 acre-feet of Placer's water was purchased. (SWPAO #04705)

### **Operational Assets**

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**EWA Share of State Gain.** DWR has the opportunity to pump half the CVPIA (b)(2) releases that reach the Delta on behalf of EWA. A total of 894 acre-feet of water was pumped at Banks Pumping Plant in 2004, and credited to EWA. (SWPAO #04740).

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, DWR also entered into several agreements with other agencies for water conveyance, or exchange, between January 1, 2004, and December 31, 2004.

### **Water Conveyance Agreements—CVP Water**

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DWR regularly enters into agreements to convey CVP water such as agreements with contractors receiving water from Reclamation 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 DWR and Reclamation, including the U.S. Department of Veterans Affairs, USFWS, and Musco Family Olive Company. Occasionally, DWR also enters into agreements with Reclamation to convey CVP or SWP water from the Delta to O'Neill Forebay through CVP or SWP facilities. Some of these agreements allow Reclamation to make up for curtailed water exports from Tracy Pumping Plant associated with improving conditions for fish in the Delta. Other agreements allow replacing water exports foregone during maintenance and repair of Tracy and Banks Pumping Plants and CVP and SWP conveyance facilities between the Delta and O'Neill Forebay.

**Cross Valley Canal.** Eight CVP water contractors use CVC to obtain water from the California Aqueduct either by exchange with other agencies or by direct delivery. The eight water contractors are: County of Fresno, County of Tulare, Hills Valley Irrigation District, Kern-Tulare Water District, Lower Tule River Irrigation District, Pixley Irrigation District, Rag Gulch Water District, and Tri-Valley Water District. These agencies have had water conveyance service by DWR since 1976 through

- *long-term 3-party contracts* with DWR and Reclamation, 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) March 1, 2003 through February 29, 2004, and (8) March 1, 2005 through February 28, 2005.

Between January 1, 2004, and December 31, 2004, DWR delivered CVP water to the CVC contractors as follows:

In August and October of 2004, the following three CVC contractors received part of their 2004-05 approved CVP water: Tri-Valley Water District (597 acre-feet), Hills Valley Irrigation District (1,751 acre-feet), and County of Tulare (2,778 acre-feet). The water delivered to these CVC contractors totaled 5,126 acre-feet. (SWPAO #04304, #04307, and #04302)

In March 2004, Lower Tule River Irrigation District (LTRID) and Tulare Lake Basin Water Storage District (TLBWSD) agreed to participate in a balanced exchange involving CVP water from the California Aqueduct and Tule River water. As a result, they requested that DWR and Reclamation approve a change in the point of delivery and convey up to 20,000 acre-feet of LTRID's entitlement water to TLBWSD turnouts. DWR delivered a total of 7,766 acre-feet of LTRID's 31,102 acre-feet of CVP approved water to TLBWSD in Reach 8D of the California Aqueduct in March 2004. This agreement is pending execution. (SWPAO #04308)

In two separate letters dated June 20 and October 13, 2004, LTRID requested that DWR convey up to 14,005 acre-feet of its CVP entitlement water to Westlands Water District (WWD). In August and October 2004, DWR delivered a total of 12,837 acre-feet of LTRID's 31,102 acre-feet of CVP approved water to WWD turnouts in Reaches 4 and 5 of the California Aqueduct. This agreement is pending execution. (SWPAO #04322)

Pixley Irrigation District (PID), in two separate letters dated June 20 and October 13, 2004, also requested that DWR convey up to 21,771 acre-feet of its CVP entitlement water to WWD. In August and October 2004, DWR delivered a total of 20,885 acre-feet of PID's 31,102 acre-feet of CVP approved water to WWD turnouts in Reaches 4 through 6 of the California Aqueduct. This agreement is pending execution. (SWPAO #04323)

On May 6, 2004, Kern-Tulare Water District requested that DWR and Reclamation approve a change in the point of delivery for up to 16,656 acre-feet of their 2004 approved CVP water from

the CVC turnout in Reach 12E to Reach 10A of the California Aqueduct for delivery to (Kern County water Agency) KCWA. Under a pending agreement, DWR conveyed 4,255 acre-feet of water in March of 2004. This agreement was part of an exchange of water between Kern-Tulare and KCWA. The return portion of this exchange took place without using SWP facilities. (SWPAO #04312)

On May 6, 2004, Rag Gulch Water District requested that DWR and Reclamation approve a change in the point of delivery for up to 8,325 acre-feet of their 2004 approved CVP water from the CVC turnout in Reach 12E to Reach 10A of the California Aqueduct for delivery to KCWA (Kern County Water Agency). Under a pending agreement, DWR conveyed 4,254 acre-feet of water in March of 2004. This agreement was part of an exchange of water between Rag Gulch and KCWA. The return portion of this exchange took place without using SWP facilities. (SWPAO #04313)

On July 28, 2004, County of Fresno requested that DWR approve a change in the point of delivery for up to 1,950 acre-feet of County of Fresno's 2004 CVP approved water to WWD. In August and October of 2004, DWR conveyed a total of 1,950 acre-feet of water to WWD's turnouts in Reach 4 of the California Aqueduct. The agreement is expected to be executed sometime in 2005. (SWPAO #04325)

**2004 Recirculation Study.** In a concurrence letter, dated August 20, 2004, Reclamation and DWR agreed to coordinate on the implementation of a Recirculation Study in 2004 and the sharing of costs to implement the study. This study included the release of up to 300 cubic feet per second of water from the Delta Mendota Canal into the Newman Wasteway. The water then traveled down the San Joaquin River into the Delta. The study was conducted in August 2004 and a total of 6,398 acre-feet of water was delivered. DWR signed and mailed the letter agreement to Reclamation on January 24, 2005. This agreement is yet to be executed sometime in 2005.

**Reclamation and DWR Joint Point of Diversion (JPOD) Agreement.** This agreement set forth the terms and conditions under which DWR agreed to convey up to 100,000 acre-feet of CVP water from the Sacramento-San Joaquin Delta to O'Neill Forebay for Reclamation, pursuant to the State Water Resources Control Board's Water Right Decision 1641 JPOD provisions. DWR conveyed a total of 20,810 acre-feet of water from Banks Pumping Plant to O'Neill Forebay in the months of July, August, and October of 2004. The agreement was executed on November 9, 2004. (SWPAO #04326)

**Musco Family Olive Company.** A pending agreement among Musco Family Olive Company, Plain View Water District, DWR, and Reclamation 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 542 acre-feet was delivered in 2004 under this pending agreement (SWPAO #04300). Construction of a permanent turnout is currently being pursued.

**U.S. Department of Veterans Affairs.** A pending letter agreement among the U.S. Department of Veterans Affairs, DWR, and Reclamation, 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 67 acre-feet was delivered to the National Cemetery in Reach 2B of the California Aqueduct in 2004 under this pending agreement. (SWPAO #02322)

**U.S. Fish and Wildlife Service Cooperative Agreement.** Reclamation initiated a cooperative agreement with DWR to deliver CVP water to the Kern National Wildlife Refuge for USFWS. Under the terms of this cooperative agreement, dated September 28, 2004, up to 30,500 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 May 1, 2002, to May 31, 2009. DWR conveyed 22,349 acre-feet of

CVP water to Kern National Wildlife Refuge in 2004.

**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 DWR and Plain View Water District, allowed the construction, operation, and maintenance of a permanent Musco Family Olive Company 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 DWR 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, 2003, SWP long-term contractors submitted initial requests for 2004.

DWR approved deliveries of 1.45 million acre-feet on December 1, 2003, resulting in initial approved Table A amounts of 35 percent of most SWP contractor requests. DWR increased the 2004 approved Table A amounts to 2.06 million acre-feet, or 50 percent on January 15, 2004.

As water conditions improved, approved Table A amounts were increased to 2.68 million acre-feet (60 percent) on March 01, 2004.

Notices to State Water Project Contractors informing them of increases or decreases in approved Table A amounts are online at <http://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 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 2004, 4,380,657 acre-feet of water were conveyed to 27 long-term contractors and 26 other agencies. That amount includes

- 2,599,536 acre-feet of approved Table A water;
- 217,870 acre-feet of Article 21 water and 626 acre-feet of unscheduled water;
- 2,865 acre-feet of SWP water for recreation, fish and wildlife; and
- 1,174,672 acre-feet of water delivered to satisfy water rights settlement agreements and agreements with SWP contractors for local water supplies.

Figure 9-1, shows amounts of water delivered to various locations during 2004.

Specific information about water deliveries made to long-term contractors and other agencies during 2004 and historical deliveries from 1962 through 2004 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 2004, by Service Area (Table 9-3);
- Water Delivered in 2004, by Month (Table 9-4); and
- Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-04 (Table 9-5).

### **Water Deliveries to Long-Term SWP Contractors**

Table 9-3 shows amounts of water delivered in 2004. The following information is arranged by column number.

#### **2004 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 2004.

**Turnback Pool Water.** Column 3 shows 17,240 acre-feet of turnback pool water was delivered to long-term water supply contractors in 2004.

**2003 Carryover Approved Table A Water Delivered During 2004.** Column 5 shows 439,660 acre-feet of water was carried over from 2003 for delivery in 2004. For several years, DWR 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.

**Total Table A Water Delivered.** Column 6 shows all approved Table A water delivered in 2004—a total of 2,599,536 acre-feet.

**2004 Water Bank Recoveries.** Column 7 shows 190,612 acre-feet of water bank recoveries in 2004.

**2004 Article 21 Water.** Column 8 shows 218,496 acre-feet of 2004 Article 21 water delivered to long-term water supply contractors in 2004 (includes 217,870 acre-feet of Article 21 water and 626 acre-feet of unscheduled water). Long-term water supply contractors who have not signed the Monterey Amendment receive unscheduled water.

**2004 Article 54 Flexible Storage Withdrawal Recoveries.** Column 9 shows 50,061 acre-feet of Article 54, Flexible Storage Withdrawal in 2004.

**Total SWP Water Delivered.** Column 11 shows 3,058,705 acre-feet of total SWP water delivered in 2004. This includes total approved Table A water, water bank recoveries, flexible storage withdrawal, and Article 21 and unscheduled water.

**Non-SWP Water Deliveries.** Column 12 includes deliveries of non-Project water to long term water contractors. Non-Project water is generally local, settlement, 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 2004, non-Project water deliveries totaled 63,780 acre-feet.

**Total Deliveries.** Column 13 shows total amounts of water delivered to long-term contractors. In 2004, the SWP delivered 3,122,485 acre-feet to 27 long-term contractors.

### **Water Delivered in 2004 by Month**

During 2004, the SWP provided water service to 53 agencies, including 27 SWP long-term water contractors. Those agencies and the amounts of water delivered to them by month are listed in Table 9-4, and are summarized below as SWP water and nonproject water.



**Figure 9-1. Water Delivered in 2004 and Delivery Locations of Long-Term Water Supply Contractors and Feather River Area Districts with Water Right Agreements with DWR**

**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. Detailed information concerning those conveyances is found under the *Miscellaneous Agreements with Long-Term SWP Contractors* section in this chapter.

### **Non-SWP Water**

In 2004, DWR 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, DWR 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 2004, DWR 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 2004, 1,181,915 acre-feet of water in this category were delivered to the Feather River, South Bay, North Bay, and Southern California, and is summarized below.

*Feather River Area.* Ten non-Project agencies in the Feather River area received 1,174,672 acre-feet. Those agencies are

- Last Chance Creek Water District, 9,429 acre-feet
- Thermalito Irrigation District, 2,669 acre-feet
- South Feather Water and Power Agency, formerly Oroville-Wyandotte Irrigation District, 5,997 acre-feet
- Western Canal Water District, 325,934 acre-feet
- Joint Water Districts Board, 799,833 acre-feet
- Oswald Water District, 782 acre-feet
- Tudor Mutual Water Company, 3,683 acre-feet
- Garden Highway Mutual Water Company, 16,153 acre-feet
- Plumas Mutual Water Company, 7,355 acre-feet
- Dana Brothers, 2,837 acre-feet

*North Bay Area.* In the North Bay Area, 8,376 acre-feet of Solano permit and 10,801 acre-feet of water pursuant to the May 19, 2003 Settlement Agreement among DWR, SCWA, and the Cities of Fairfield Vacaville, and Benicia, were delivered.

*South Bay Area.* In the South Bay Area, a total of 6,763 acre-feet of local water was delivered to Alameda-Zone 7 and Alameda County. These two South Bay Aqueduct contractors hold water rights to runoff from Lake Del Valle watershed.

*Southern California.* In Southern California, 480 acre-feet of local runoff from the Houston Creek watershed were stored and delivered to Crestline under water rights held by DWR on Houston Creek. The authorized place of use is limited to Crestline.

### **Annual Table A Water and Water Delivered Since 1962**

Information about annual Table A water and water conveyed for the past 40 years is contained in Table 9-5. The following discussion of conveyed Table A water is arranged according to column numbers.

**Annual Table A.** Columns 1 through 7 of Table 9-5 show the amount of long-term contractors' annual Table A water by area for years 1962 through 2004 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 2004.

**Article 21 and Unscheduled Water.** Column 9 shows amounts of Article 21 water, as defined under *SWP Deliveries*, and unscheduled water delivered from 1962 through 2004.

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.

**Other Water.** Column 10 includes amounts of water classified as other water delivered in 2004, including nonproject water conveyed through SWP facilities and regulated delivery of local supply.

In 2004, a total of 385,088 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 2004, a total of 1,174,672 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 2004, a total of 2,865 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.

**Table 9-3. Water Delivered to Long-Term Contractors through 2004 (Acre-Feet)**

Water Contractor or Agency	Table A Water Deliveries				Other SWP Water Deliveries				Total SWP Water (11)	Non-SWP Water (12)	Total (13)	
	2004 Table A Transfers, Exchanges, (1)	2004 Table A Transfers and Exchanges, (2)	2004 Turnback Pool (3)	Total 2004 Table A (4)	2003 Carryover (5)	Total Table A (6)	Water Bank Recoveries (7)	2004 Article 21 Water (8)				2004 Article 54 Flexible Withdrawal (9)
<b>Feather River Area</b>												
County of Butte	1,440			1,440		1,440					1,440	
Plumas County Flood Control and Water Conservation District	-			-		-					0	
City of Yuba City	1,434			1,434		1,434					1,434	
<b>North Bay Area</b>												
Napa County Flood Control and Water Conservation District	5,030	2,000	52	5,082	1,602	6,684		1,450	1,450	8,134	19,177	8,134
Solano County Water Agency	15,991			17,991	47	18,038		7,787	7,787	25,825		45,002
<b>South Bay Area</b>												
Alameda County Flood Control and Water Conservation District-Zone 7	39,898		214	39,898	11,466	51,364				51,364	2,133	53,497
Alameda County Water District	20,956		508	21,170	6,714	27,884				27,884	5,630	33,514
Santa Clara Valley Water District	52,867			53,375		53,375		2,983	2,983	56,358	3,100	59,458
<b>San Joaquin Valley Area</b>												
Castaic Lake Water Agency	2,158		46	2,158		2,158				2,158		2,158
County of Kings	5,850	7,002	291	5,896		5,896		3,157	3,157	9,053		9,053
Dudley Ridge Water District	33,493			40,786	2,185	42,971	4,979	7,393	12,372	55,343		55,343
Empire West Side Irrigation District	1,310			1,310		1,310		626	626	3,562		3,562
Kern County Water Agency	516,956		5,075	522,031	39,507	561,938	43,988	86,513	130,501	692,439	23,240	715,679
Oak Flat Water District	4,324		29	4,353	276	4,629				4,629		4,629
Tulare Lake Basin Water Storage District	54,725	7,850	489	63,064	5,638	68,702		15,299	15,299	84,001	10,020	94,021
<b>Central Coastal Area</b>												
San Luis Obispo County Flood Control and Water Conservation District	4,096			4,096		4,096		69	69	4,165		4,165
Santa Barbara County Flood Control and Water Conservation District	29,358		122	29,480		29,480				29,480		29,480
<b>Southern California</b>												
Antelope Valley-East Kern Water Agency	50,532			50,532	9,199	59,731				59,731		59,731
Castaic Lake Water Agency	44,200			44,200	33,785	79,985		1,618	1,618	81,603		81,603
Coachella Valley Water District	8,631		89	8,720	6,745	15,465				15,465		15,465
Crestline-Lake Arrowhead Water Agency	2,006		102	2,006		2,006				2,006	480	2,486
Desert Water Agency	9,966			10,068	11,122	21,190				21,190		21,190
Literock Creek Irrigation District				-		-				-		0
Pierropolitan Water District of Southern California	1,145,746		10,223	1,155,969	285,104	1,441,073	141,645	91,601	50,061	283,307		1,724,380
Mojave Water Agency	11,176			11,176		11,176				11,176		11,176
Palmdale Water District	10,349			10,349	1,613	12,162				12,162		12,162
San Bernardino Valley Municipal Water District	15,519	20,000		35,519	20,631	56,150				56,150		56,150
San Gabriel Valley Municipal Water District	11,482			11,482		11,482				11,482		11,482
San Geronimo Pass Water Agency	841			841		841				841		841
Ventura County Watershed Protection District	5,250			5,250		5,250				5,250		5,250
<b>Total</b>	<b>2,105,784</b>	<b>36,852</b>	<b>17,240</b>	<b>2,159,876</b>	<b>439,660</b>	<b>2,599,536</b>	<b>190,612</b>	<b>218,496</b>	<b>50,061</b>	<b>459,169</b>	<b>63,780</b>	<b>3,122,485</b>

**Table 9-4. Water Delivered in 2004, by Month (Acre-feet)**

Contracting Agency and Type of Service	2004 Total Deliveries												2004 Contract Table A		
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec			
<b>Feather River Area</b>															
City of Yuba	0	0	0	0	0	0	741	693	0	0	0	0	0	1,434	9,600
Approved Table A	1,800	0	0	0	0	0	0	0	0	0	0	0	0	1,800	
Pool A water sale <sup>a</sup>	1,400	0	0	0	0	0	0	0	0	0	0	0	0	1,400	
Pool B water sale <sup>a</sup>	0	0	0	0	0	0	741	693	0	0	0	0	0	1,434	
Agency total	0	0	0	0	0	0	741	693	0	0	0	0	0	1,434	
County of Butte	91	91	224	188	6	30	101	162	107	0	0	0	0	1,000	3,500
Approved Table A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Advanced Approved Table A	700	0	0	0	0	0	0	0	25	248	80	87	0	440	
Pool A water sale <sup>a</sup>	575	0	0	0	0	0	0	0	0	0	0	0	0	700	
Pool B water sale <sup>a</sup>	91	91	224	188	6	30	101	162	132	248	80	87	0	575	
Agency total	0	0	0	0	0	0	0	0	0	0	0	0	0	1,440	
Plumas County Flood Control and Water Conservation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,630
Recreation/Fish and Wildlife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Last Chance Creek Water District	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Regulated delivery of local supply	0	0	0	1,008	1,765	2,880	1,517	1,281	770	208	0	0	0	9,429	
Thermalito Irrigation District	3	70	135	195	323	391	425	390	324	197	108	108	0	2,669	
South Feather Water and Power Agency	79	44	136	275	912	904	984	984	918	554	121	86	0	5,997	
Regulated delivery of local supply	4,170	0	0	20,080	58,273	60,264	60,981	40,617	8,598	34,670	22,988	15,293	0	325,934	
Western Canal Water District	35,540	0	0	52,410	124,370	123,163	129,520	104,670	42,790	53,660	68,020	65,690	0	799,833	
Joint Water Districts Board	0	0	0	102	182	193	141	58	106	0	0	0	0	782	
Regulated delivery of local supply	0	0	0	338	763	890	879	576	237	0	0	0	0	3,683	
Tudor Mutual Water Company	0	0	0	1,813	3,156	3,554	3,803	1,853	614	1,360	0	0	0	16,153	
Garden Highway Mutual Water Company	0	0	0	610	1,782	1,293	1,437	980	1,253	0	0	0	0	7,355	
Regulated delivery of local supply	0	0	0	138	1,043	593	478	458	127	0	0	0	0	2,837	
Dana Brothers	91	91	224	189	7	31	843	855	132	248	81	87	0	2,879	
Regulated delivery of local supply	39,792	114	271	76,969	192,569	194,125	200,165	151,867	55,737	90,649	91,237	81,177	0	1,174,672	
Agency Total	39,883	205	495	77,158	192,576	194,156	201,008	152,722	55,869	90,897	91,318	81,264	0	1,177,551	14,730
<b>North Bay Area</b>															
Napa County Flood Control and Water Conservation District	1	0	0	116	11	515	592	680	771	530	892	922	0	5,030	20,725
Approved Table A	0	0	229	142	1,079	0	0	0	0	0	0	0	0	1,450	
Article 21	833	769	0	0	0	0	0	0	0	0	0	0	0	1,602	
Article 56C extended carryover	0	0	0	0	0	52	0	0	0	0	0	0	0	52	
Pool A water	834	769	229	258	1,090	567	592	680	771	530	892	922	0	8,134	
Agency Total	1,145	658	253	984	4,707	4,004	4,443	4,282	573	758	524	1,407	0	15,991	45,836
Solano County Water Agency	17	15	15	0	0	0	0	0	0	0	0	0	0	47	
Approved Table A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Article 56C extended carryover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exchange approved Table A to Mojave WA <sup>a</sup>	0	0	0	705	0	0	0	0	3,882	3,072	2,254	888	0	2,000	
Fairfield, Vacaville, and Benicia Settlement	0	0	0	0	0	0	0	0	1,197	1,099	863	530	0	8,376	
Vallejo Permit	1,162	673	268	1,844	4,707	5,347	6,043	5,871	5,652	4,929	3,641	2,865	0	43,002	
Agency Total	1,996	1,442	497	1,242	5,797	4,571	5,035	4,962	1,344	1,288	1,416	2,369	0	31,959	
SWP	0	0	0	860	0	1,343	1,600	1,589	5,079	4,171	3,117	1,418	0	19,177	
Non-SWP	1,996	1,442	497	2,102	5,797	5,914	6,635	6,551	6,423	5,459	4,533	3,787	0	51,136	66,561
<b>North Bay Area Total</b>															
Alameda County Flood Control and Water Conservation District, Zone 7	0	0	0	4,375	5,081	5,374	6,152	5,671	3,884	3,352	3,440	2,569	0	39,898	78,000
Approved Table A	1,573	1,391	2,762	0	0	0	0	0	0	0	0	0	0	5,726	
Article 56C extended carryover	5,740	0	0	0	0	0	0	0	0	0	0	0	0	5,740	
Article 56C extended carryover stored in Semitropic <sup>a</sup>	0	0	0	0	0	0	0	0	1,000	0	0	0	0	1,000	
Transfer water from Byron-Bethany	145	226	245	252	0	0	0	0	0	0	45	220	0	1,133	
Local Water	1,718	1,617	3,007	4,627	5,081	5,374	6,152	5,671	4,884	3,352	3,485	2,789	0	47,757	
Agency Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

<sup>a</sup> Excluded water from Agency Total

Table 9-4. Water Delivered in 2004, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2004 Total Deliveries	2004 Contract Table A
<b>Alameda County Water District</b>														
Approved Table A	0	53	1,746	0	0	85	2,805	3,256	3,026	2,435	2,306	1,244	16,956	42,000
Approved Table A stored in Semitropic <sup>a</sup>	0	0	0	0	0	0	2,000	2,000	0	0	0	0	4,000	
Article 56 extended carryover, stored in Semitropic <sup>a</sup>	1,388	1,326	0	0	0	0	0	0	0	0	0	0	2,714	
Article 56C extended carryover	0	4,000	0	0	0	0	0	0	0	0	0	0	4,000	
Local water	0	0	0	1,725	1,935	1,970	0	0	0	0	0	0	5,630	
Pool A water	0	0	0	0	0	101	0	0	0	0	0	0	101	
Pool B water	0	0	0	0	0	113	0	0	0	0	0	0	113	
Agency Total	1,388	1,379	1,746	1,725	1,935	2,269	2,805	3,256	3,026	2,435	2,306	1,244	25,514	
<b>Santa Clara Valley Water District</b>														
Approved Table A	3,081	2,677	3,375	6,470	6,066	4,264	6,061	5,740	6,572	2,847	992	4,722	52,867	100,000
Article 21	0	0	2,983	0	0	0	0	0	0	0	0	0	2,983	
Pool A water	0	0	0	0	0	239	0	0	0	0	0	0	239	
Pool B water	0	0	0	0	0	269	0	0	0	0	0	0	269	
Transfer water from Browns Valley Irrigation District	0	0	0	0	0	0	0	0	0	3,100	0	0	3,100	
Agency Total	3,081	2,677	6,358	6,470	6,066	4,772	6,061	5,740	6,572	5,947	992	4,722	59,458	
<b>Recreation/Fish and Wildlife</b>														
Recreation/fish and wildlife water, Lake Del Valle	3	3	3	13	19	22	24	21	18	15	6	3	150	
<b>SWP</b>														
SWP	6,045	5,450	10,869	10,858	11,166	10,467	15,042	14,688	13,500	8,649	6,744	8,538	122,016	
Non-SWP	145	226	245	1,977	1,935	1,970	0	0	1,000	3,100	45	220	10,863	
<b>South Bay Area Total</b>	6,190	5,676	11,114	12,835	13,101	12,437	15,042	14,688	14,500	11,749	6,789	8,758	132,879	220,000
<b>San Joaquin Valley Area</b>														
<b>Castaic Lake Water Agency</b>														
Approved Table A	1,570	434	0	154	0	0	0	0	0	0	0	0	2,158	
Article 21	0	0	1,618	0	0	0	0	0	0	0	0	0	1,618	
Agency total	1,570	434	1,618	154	0	0	0	0	0	0	0	0	3,776	
<b>County of Kings</b>														
Approved Table A	0	0	0	450	500	500	500	400	0	120	0	130	2,600	2,800
Approved Table A to Lemoore NAS	0	0	147	254	398	399	435	401	344	230	115	527	3,250	
Article 21	0	0	3,157	0	0	0	0	0	0	0	0	0	3,157	
Pool A water	0	0	0	0	0	0	0	22	0	0	0	0	22	
Pool B water	0	0	0	0	0	0	0	24	0	0	0	0	24	
Agency Total	0	0	3,304	704	898	899	935	847	344	350	115	657	9,053	
<b>Dudley Ridge Water District</b>														
Approved Table A	0	0	980	2,586	4,784	8,060	5,169	7,359	1,345	3,047	125	38	33,493	53,370
Article 21	0	0	5,736	0	0	0	0	0	0	0	0	0	5,736	
Article 21 stored in Kern Water Bank <sup>a</sup>	0	0	1,637	0	0	0	0	0	0	0	0	0	1,637	
Bank water recovery, Kern Water Bank	0	0	0	0	0	0	0	1029	3,850	100	0	0	4,979	
Article 56C extended carryover	707	1,253	225	0	0	0	0	0	0	0	0	0	2,185	
Exchange approved Table A from San Gabriel WA	0	0	0	0	0	0	4,118	0	0	0	0	0	4,118	
Exchange approved Table A to Kern Co. WA <sup>a</sup>	0	0	0	0	0	0	757	843	0	0	0	0	1,600	
Exchange approved Table A to San Gabriel <sup>b</sup>	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exchange approved Table A to Santa Barbara FC&WCD <sup>a</sup>	0	0	0	0	0	0	225	0	0	0	0	0	1,059	
Pool A water	0	0	0	0	0	0	137	0	0	0	0	0	225	
Pool B water	0	0	0	0	0	0	154	0	0	0	0	0	154	
Agency Total	707	1,253	6,941	2,586	4,784	8,060	9,578	8,388	5,195	3,147	125	38	50,802	
<b>Empire West Side Irrigation District</b>														
Approved Table A	0	0	282	87	0	0	0	211	0	0	30	700	1,310	3,000
Article 45F	985	468	173	0	0	0	0	0	0	0	0	0	1,626	
Unscheduled water	0	0	626	0	0	0	0	0	0	0	0	0	626	
Agency Total	985	468	1,081	87	0	0	0	211	0	0	30	700	3,562	
<b>Kern County Water Agency</b>														
Approved Table A	0	108	16,102	62,260	79,726	125,126	147,845	60,301	19,190	1,217	0	4,295	516,170	1,000,949
Approved Table A to EWA <sup>a</sup>	0	0	0	0	0	11,667	11,667	11,666	0	0	0	0	35,000	
Approved Table A to Western Hills	0	0	51	76	104	126	141	123	102	56	5	2	786	
Article 21	0	0	86,513	0	0	0	0	0	0	0	0	0	86,513	
Article 55 carryover from Kern-Tulare (stored in San Luis in Oct. 2004)	0	0	0	0	0	0	0	0	0	0	0	0	0	
Article 56C extended carryover	13,353	25,376	1,178	0	0	0	0	0	0	0	0	0	39,907	
CVP water from Kern-Tulare	0	0	4,255	0	0	0	0	0	0	0	0	0	4,255	
CVP water from Rag Gulch	0	0	5,254	0	0	0	0	0	0	0	0	0	5,254	
Exchange approved Table A from Dudley	0	0	0	0	0	0	757	843	0	0	0	0	1,600	
Exchange approved Table A for Arvin-Edison water <sup>a</sup>	0	0	0	0	0	0	0	0	6,532	9,332	1,901	0	17,765	
Exchange approved Table A for Kern Water Bank water <sup>a</sup>	0	0	0	0	0	0	0	1,029	3,850	100	0	0	4,979	
Exchange approved Table A for Semitropic water <sup>a</sup>	0	0	0	0	0	0	23,000	11,000	13,435	13,800	4,255	0	65,490	
Exchange Kern water bank water for Semitropic water <sup>a</sup>	0	0	0	0	0	0	0	0	0	0	4,813	0	4,813	

<sup>a</sup> Excluded water from Agency Total

**Table 9-4. Water Delivered in 2004, by Month (Acre-feet)**

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2004 Total Deliveries	2004 Contract Table A
Exchange Article 56C extended carryover to San Luis & Delta-Mendota for Tranquility ID <sup>a</sup>	0	213	0	0	0	0	0	0	0	0	0	0	213	
Pool A water	0	0	0	0	2,390	0	0	0	0	0	0	0	2,390	
Pool B water	0	0	0	0	2,685	0	0	0	0	0	0	0	2,685	
Turn-in water recovered by Kern	0	0	0	0	0	0	0	8,841	15,249	16,484	3,414	0	43,988	
Article 55 from Kern-Tulare	0	0	0	0	0	0	0	9,628	0	0	0	0	9,628	
Article 55 from Rag Gulch	0	0	0	0	0	0	0	3,082	0	0	0	0	3,082	
Article 55 from Kern-Tulare delivered to San Luis	0	0	0	0	0	0	0	0	0	9,344	0	0	9,344	
Article 55 from Rag Gulch delivered to San Luis	0	0	0	0	0	0	0	0	0	320	0	0	320	
Water Bank Deliveries														
Article 56C extended carryover from Alameda County stored in Semitropic	5,740	0	0	0	0	0	0	0	0	0	0	0	5,740	
Approved Table A from Alameda County stored in Semitropic	0	0	0	0	0	0	2,000	2,000	0	0	0	0	4,000	
Article 56C extended carryover from Alameda County stored in Semitropic	0	4,000	0	0	0	0	0	0	0	0	0	0	4,000	
Article 56C extended carryover from Castaic Lake stored in Semitropic	803	27,004	4,715	0	0	0	0	0	0	0	0	0	32,522	
Article 21 from Dudley Ridge stored in Kern Water Bank	0	0	1,657	0	0	0	0	0	0	0	0	0	1,657	
Agency Total <sup>a</sup>	19,896	56,488	119,725	62,336	84,905	125,252	150,743	84,818	34,541	18,077	3,419	5,163	765,363	
Oak Flat Water District														
Approved Table A	0	0	0	470	831	921	1,169	314	0	0	0	0	3,705	5700
Advanced Approved Table A	0	0	0	0	0	0	0	225	284	88	21	1	619	
Article 56C extended carryover	5	61	210	0	0	14	0	0	0	0	0	0	276	
Pool A water	0	0	0	0	0	15	0	0	0	0	0	0	15	
Pool B water	0	0	0	0	0	0	0	0	0	0	0	0	0	
Agency Total	5	61	210	470	831	950	1,169	539	284	88	21	1	4,629	
Tulare Lake Basin Water Storage District														
Approved Table A	0	547	0	3,566	10,844	18,662	8,938	7,660	1,908	530	1,476	594	54,725	118,500
Article 21	3,738	1,900	0	0	0	0	0	0	0	0	0	0	15,299	
Article 12E carryover	0	0	0	0	0	0	0	0	0	0	0	0	5,638	
Exchange water from Westlands	0	0	0	0	0	0	0	6,020	0	0	0	0	6,020	
CVP water from Lower Tulare	0	0	0	0	0	0	0	0	0	0	0	0	7,766	
Pool A water	0	0	0	0	0	0	0	230	0	0	0	0	230	
Pool B water	0	0	0	0	0	0	0	259	0	0	0	0	259	
Transfer water from Reclamation	0	0	0	0	0	0	4,000	0	0	0	0	0	4,000	
Transfer approved Table A to Westlands	0	0	0	0	0	0	2,000	1,000	0	0	400	450	3,850	
Transfer approved Table A to Reclamation	0	0	0	0	0	0	4,000	0	0	0	0	0	4,000	
Agency Total	3,738	2,447	23,065	3,566	10,844	18,662	12,938	8,149	1,908	530	1,476	594	87,917	
Westlands Water District														
CVP water from Lower Tulare	0	0	0	0	0	0	0	6,187	0	6,565	85	0	12,837	
CVP water from Pixley	0	0	0	0	0	0	0	10,094	0	10,706	85	0	20,885	
CVP water from Fresno County Public Works	0	0	0	0	0	0	0	1,567	0	383	0	0	1,950	
Exchange CVP water to Tulare	0	0	0	0	0	0	0	6,020	0	0	0	0	6,020	
Transfer approved Table A from Tulare	0	0	0	0	0	0	2,000	1,000	0	0	400	450	3,850	
Agency Total	0	0	0	0	0	0	2,000	18,848	0	17,654	570	450	39,522	
Recreation/Fish and Wildlife														
Department of Fish and Game, O'Neill Forebay/Lateral 4	34	36	38	42	16	21	42	63	40	58	45	89	524	
Department of Parks and Recreation, O'Neill Forebay/San Luis/Cattle	2	1	4	5	11	15	13	15	10	1	0	2	79	
Total	36	37	42	47	27	36	55	78	50	59	45	91	603	
Environmental Water Account Program														
Approved Table A from Kern to EWA	0	0	0	0	0	11,667	11,667	11,666	0	0	0	0	35,000	
Water Purchased from Yuba County WA	0	0	0	0	0	0	41,258	43,233	16,272	754	0	0	101,517	
Water Purchased from Placer County WA	0	0	0	0	0	0	0	7,900	7,900	2,900	2,900	0	18,700	
EWA share of State gain	0	600	0	0	0	0	0	0	0	0	294	0	894	
Total EWA water	0	600	0	0	0	11,667	52,925	54,899	24,172	8,654	3,194	0	156,111	
SWP														
Non-SWP	26,937	61,188	138,711	69,950	102,289	165,526	185,085	102,986	42,322	21,931	5,631	7,694	930,250	
	0	0	17,275	0	0	0	4,000	36,578	0	27,318	170	866	86,207	
San Joaquin Valley Area subtotal	26,937	61,188	155,986	69,950	102,289	165,526	189,085	139,564	42,322	49,249	5,801	8,560	1,016,457	
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	40	39	34	47	49	53	49	57	68	74	25	7	542	
Plain View Water District/ Musco Family Olive Products, Inc.	1	1	2	4	11	9	11	11	9	6	1	1	67	
U.S. Department of Veteran Affairs, S.J.V. National Cemetery	41	40	36	51	60	62	60	68	77	80	26	8	609	
Subtotal	41	40	36	51	60	62	60	68	77	80	26	8	609	

<sup>a</sup> Excluded water from Agency Total

**Table 9-4. Water Delivered in 2004, by Month (Acre-feet)**

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2004 Total Deliveries	2004 Contract Table A
<b>Cross Valley Canal Contractors</b>														
CVP water to County of Tulare	0	0	0	0	0	0	0	2,036	0	742	0	0	2,778	
CVP water to Hills Valley Irrigation District	0	0	0	0	0	0	0	1,283	0	468	0	0	1,751	
CVP water to Tri-Valley Water District	0	0	0	0	0	0	0	438	0	159	0	0	597	
CVP water from Lower Tule River ID to Westlands WD	0	0	0	0	0	0	0	6,187	0	6,565	85	0	12,837	
CVP water from Pixley ID to Westlands WD	0	0	0	0	0	0	0	10,094	0	10,706	85	0	20,885	
CVP water from Fresno County Public Works to Westlands WD	0	0	0	0	0	0	0	1,567	0	383	0	0	1,950	
CVP water from Lower Tule River ID to TLBWSD	0	0	7,766	0	0	0	0	0	0	0	0	0	7,766	
CVP water from Kern-Tulare WD to Kern County WA	0	0	4,235	0	0	0	0	0	0	0	0	0	4,235	
CVP water from Rag Gulch WD to Kern County WA	0	0	4,234	0	0	0	0	0	0	0	0	0	4,234	
Agency Total (*excluded water)	0	0	0	0	0	0	0	3,757	0	1,369	0	0	5,126	
<b>U.S. Bureau of Reclamation</b>														
Kern National Wildlife Refuge	1,355	870	970	0	0	468	0	1,317	3,177	5,687	5,095	3,410	22,349	
Recreation/fish and wildlife water	27	31	34	38	24	27	49	64	38	49	39	162	582	
Transfer approved Table A from TLBWSD	0	0	0	0	0	0	4,000	0	0	0	0	0	4,000	
Agency Total	1,382	901	1,004	38	24	495	4,049	1,381	3,215	5,736	5,134	3,572	26,931	
<b>SWP</b>														
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	4,000	
San Joaquin Valley Area subtotal	1,423	941	1,040	89	84	557	109	5,206	3,292	7,185	5,160	3,580	28,666	
	1,423	941	1,040	89	84	557	109	5,206	3,292	7,185	5,160	3,580	28,666	
<b>SWP (Total)</b>	26,937	61,188	138,711	69,950	102,289	165,526	189,085	102,986	42,322	21,931	5,631	7,694	934,250	
<b>Non-SWP (Total)</b>	1,423	941	1,040	89	84	557	109	5,206	3,292	7,185	5,160	3,580	28,666	
<b>San Joaquin Valley Area Total</b>	28,360	62,129	157,026	70,039	102,373	166,083	193,194	144,770	45,614	29,112	10,791	11,274	1,049,123	
<b>Central Coastal Area</b>														
San Luis Obispo County Flood Control and Water Conservation District														
Approved Table A	175	296	293	347	398	503	457	396	394	396	108	333	4,096	25,000
Article 21	0	0	69	0	0	0	0	0	0	0	0	0	69	
Agency Total	175	296	362	347	398	503	457	396	394	396	108	333	4,165	
Santa Barbara County Flood Control and Water Conservation District														
Approved Table A	1,185	1,162	1,438	2,498	3,245	3,618	3,544	3,421	3,377	2,746	1,129	1,995	29,358	45,486
Approved Table A from Dudley	0	0	0	0	0	0	225	0	0	0	0	0	225	
Pool B water	0	0	0	0	0	0	0	122	0	0	0	0	122	
Agency Total	1,185	1,162	1,438	2,498	3,245	3,618	3,769	3,543	3,377	2,746	1,129	1,995	29,705	
<b>SWP</b>														
Non-SWP	1,360	1,458	1,800	2,845	3,643	4,121	4,226	3,939	3,771	3,142	1,237	2,328	33,870	
Agency Total	1,360	1,458	1,800	2,845	3,643	4,121	4,226	3,939	3,771	3,142	1,237	2,328	33,870	70,486
<b>Central Coastal Area Total</b>														
	1,360	1,458	1,800	2,845	3,643	4,121	4,226	3,939	3,771	3,142	1,237	2,328	33,870	70,486
<b>Southern California Area</b>														
Antelope Valley-East Kern Water Agency														
Approved Table A	36	19	18	4,689	6,491	7,905	8,910	8,595	6,857	3,546	1,929	1,537	50,532	138,400
Article 12E Carryover	3,274	2,487	3,438	0	0	0	0	0	0	0	0	0	9,199	
Mojave's Approved Table A delivered through AVEK	40	24	81	87	158	166	206	156	157	103	44	1	1,223	
Agency Total	3,350	2,530	3,537	4,776	6,649	8,071	9,116	8,751	7,014	3,649	1,973	1,538	60,954	
Castaic Lake Water Agency														
Approved Table A	0	490	3,110	3,686	4,718	5,136	6,134	5,992	5,465	3,579	3,045	2,845	44,200	95,200
Article 56C extended Carryover	2,076	1,187	0	0	0	0	0	0	0	0	0	0	3,263	
Article 56C extended Carryover stored in Semitropic <sup>a</sup>	803	27,004	4,715	0	0	0	0	0	0	0	0	0	32,572	
Agency Total	2,076	1,677	3,110	3,686	4,718	5,136	6,134	5,992	5,465	3,579	3,045	2,845	47,463	79,985
Coachella Valley Water District														
Approved Table A	0	0	0	0	0	0	0	0	0	1,106	1,737	5,788	8,631	
Article 12E Carryover	6,745	0	0	0	0	89	0	0	0	0	0	0	6,745	
Pool B water	0	0	0	0	0	89	0	0	0	0	0	0	89	
Agency Total	6,745	0	0	0	0	89	0	0	0	1,106	1,737	5,788	15,465	
Crestline-Lake Arrowhead Water Agency														
Approved Table A	148	0	26	159	245	256	307	304	264	0	122	175	2,006	5,800
Local water	0	116	119	0	0	0	0	0	0	208	37	0	480	
Agency Total	148	116	145	159	245	256	307	304	264	208	159	175	2,486	
Desert Water Agency														
Approved Table A	11,122	0	0	0	0	0	0	0	0	1,278	2,006	6,682	9,966	38,100
Article 12E Carryover	0	0	0	0	0	102	0	0	0	0	0	0	11,122	
Pool B water	11,122	0	0	0	0	102	0	0	0	1,278	2,006	6,682	21,190	
Agency Total	22,244	0	0	0	0	102	0	0	0	1,278	2,006	6,682	32,318	
Litterock Creek Irrigation District														
Approved Table A	0	0	0	0	0	0	0	0	0	0	0	0	0	2,300
Pool B water sale <sup>a</sup>	995	0	0	0	0	0	0	0	0	0	0	0	995	
Agency Total	995	0	0	0	0	0	0	0	0	0	0	0	995	2,300

<sup>a</sup> Excluded water from Agency Total

**Table 9-4. Water Delivered in 2004, by Month (Acre-feet)**

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2004 Total Deliveries	2004 Contract Table A
<b>The Metropolitan Water District of Southern California</b>														
Approved Table A	0	0	0	75,897	155,308	154,386	139,568	147,280	131,970	103,868	108,078	129,391	1,145,746	2,011,500
Approved Table A transferred from San Bernardino	0	0	0	0	20,000	0	0	0	0	0	0	0	20,000	0
Article 21	0	0	91,601	0	0	0	0	0	0	0	0	0	91,601	0
Article 12E Carryover	15,000	0	0	0	0	0	0	0	0	0	0	0	15,000	0
Article 56C extended Carryover transferred from San Bernardino	0	20,000	0	0	0	0	0	0	0	0	0	0	20,000	0
Article 14B Carryover	0	0	0	70,104	0	0	0	0	0	0	0	0	70,104	0
Article 56C extended Carryover	100,746	97,652	1,602	0	0	0	0	0	0	0	0	0	200,000	0
Bank water recovery, Arvin-Edison	0	0	0	0	0	1,664	1,982	2,829	11,630	13,625	6,858	4,689	43,277	93,368
Bank water recovery, Semitropic	0	0	0	0	0	0	23,000	11,000	22,400	26,300	15,668	0	93,368	0
Flexible Storage replacement with Table A (Castaic) <sup>a</sup>	0	0	0	0	50,061	0	0	0	0	0	0	0	50,061	0
Flexible Storage withdrawal (Castaic)	0	0	50,061	0	0	0	0	0	0	0	0	0	50,061	0
Pool A water	0	0	0	48,115	0	0	0	0	0	0	0	0	48,115	0
Pool B water	0	0	0	0	0	5,408	0	0	0	0	0	0	5,408	0
Agency Total	100,746	97,652	93,203	80,712	155,308	161,458	141,550	150,109	143,600	117,493	114,936	134,080	1,490,847	75,800
<b>Mojave Water Agency</b>														
Approved Table A	502	1,117	851	855	537	544	819	1,103	1,220	1,039	720	646	9,953	75,800
Mojave's approved Table A delivered through AVEK <sup>a</sup>	40	24	81	87	158	166	206	156	157	103	44	1	1,223	0
Exchange approved Table A from Solano	0	0	0	0	0	0	0	0	0	0	789	1,211	2,000	0
Agency Total <sup>b</sup>	502	1,117	851	855	537	544	819	1,103	1,220	1,039	1,509	1,857	11,953	75,800
<b>Palmdale Water District</b>														
Approved Table A	251	456	906	661	1,286	1,745	1,843	1,926	1,774	515	383	416	10,549	21,300
Article 56C extended carryover	251	456	906	661	1,286	1,745	1,843	1,926	1,774	515	383	416	10,549	21,300
Agency Total	502	912	1,812	1,322	2,572	3,490	3,686	3,852	3,548	1,030	766	832	21,098	42,600
<b>San Bernardino Valley Municipal Water District</b>														
Approved Table A	0	0	0	136	516	2,837	3,789	3,427	2,764	1,907	0	143	15,519	102,600
Transfer approved Table A to Metropolitan <sup>a</sup>	0	0	0	0	20,000	0	0	0	0	0	0	0	20,000	0
Article 12E Carryover	359	56	216	0	0	0	0	0	0	0	0	0	631	0
Article 56C extended Carryover transferred to Metropolitan <sup>a</sup>	0	20,000	0	0	0	0	0	0	0	0	0	0	20,000	0
Agency Total	359	56	216	136	516	2,837	3,789	3,427	2,764	1,907	0	143	16,150	102,600
<b>San Gabriel Valley Municipal Water District</b>														
Approved Table A	0	12	0	0	1,599	1,371	1,587	2,834	1,539	2,173	0	367	11,482	28,800
Exchange approved Table A from Dudley	0	0	0	0	0	0	0	0	0	0	0	1,059	1,059	0
Exchange approved Table A to Dudley	0	0	0	0	0	0	4,118	0	0	0	0	0	4,118	0
Pool B water sale <sup>a</sup>	3,120	0	0	0	0	0	0	0	0	0	0	0	3,120	0
Agency Total	3,120	12	0	0	1,599	1,371	1,587	2,834	1,539	2,173	0	1,426	12,541	28,800
<b>San Geronimo Pass Water Agency</b>														
Approved Table A	42	81	24	122	123	101	68	65	63	36	58	58	841	4,000
Pool B water sale <sup>a</sup>	900	0	0	0	0	0	0	0	0	0	0	0	900	0
Agency Total	942	81	24	122	123	101	68	65	63	36	58	58	841	4,000
<b>Ventura County Watershed Protection District</b>														
Approved Table A	154	154	154	154	154	154	1,770	1,751	805	0	0	0	5,250	20,000
Pool A water sale <sup>a</sup>	5,500	0	0	0	0	0	0	0	0	0	0	0	5,500	0
Pool B water sale <sup>a</sup>	2,250	0	0	0	0	0	0	0	0	0	0	0	2,250	0
Agency Total	154	154	154	154	154	154	1,770	1,751	805	0	0	0	5,250	20,000
<b>Recreation/Fish and Wildlife</b>														
Castaic Lake	26	28	34	38	41	43	48	47	52	33	31	35	456	0
Castaic Lake Lagoon	0	0	0	3	484	302	300	0	394	0	0	0	1,480	0
Silverwood Lake	2	2	2	3	7	10	14	15	7	19	2	3	86	0
Lake Perris	19	16	27	23	0	0	0	0	0	0	0	0	85	0
Agency Total	47	46	63	64	532	355	362	62	453	52	33	38	2,107	0
<b>Recreation/Fish and Wildlife</b>														
USFWS recreation/fish and wildlife water (Pyramid Lake)	0	0	0	0	7	7	3	2	2	1	0	0	22	0
<b>SWP</b>														
SWP Approved Table A	140,523	123,765	152,124	161,406	191,667	182,219	190,345	187,324	187,361	159,127	141,470	155,046	1,972,377	0
Non-SWP	0	116	119	0	7	7	3	2	2	209	37	0	502	0
<b>Southern California Area Total</b>	140,523	123,881	152,243	161,406	191,674	182,226	190,348	187,326	187,363	159,336	141,507	155,046	1,972,879	2,623,785
<b>SWP Water</b>														
SWP Approved Table A	7,025	7,265	28,902	170,343	283,129	346,788	356,094	276,503	194,471	137,414	129,264	167,527	2,104,725	0
Agricultural and M&I approved water	0	0	0	0	0	0	0	225	309	336	101	88	1,059	0
Advanced Agricultural and M&I approved water	0	0	0	0	0	11,667	11,667	0	0	0	0	0	35,000	0
Agricultural and M&I approved water for EWA <sup>a</sup>	1,145	658	209,115	1,126	5,786	0	0	0	0	0	0	40	217,870	0
Article 21 water	40,238	4,443	3,654	0	0	0	0	0	0	0	0	0	48,333	0
Article 12E Carryover	0	0	0	70,104	0	0	0	0	0	0	0	0	70,104	0
Article 14B Carryover	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Article 56C extended Carryover	127,492	180,490	11,613	0	0	0	0	0	0	0	0	0	319,595	0

<sup>a</sup>Excluded water from Agency Total

**Table 9-4. Water Delivered in 2004, by Month (Acre-feet)**

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2004 Total Deliveries	2004 Contract Table A
Article 45F Carryover	985	468	173	0	0	0	0	0	0	0	0	0	1,626	
Flexible storage replacement with Approved Table A (Castaic Lake) <sup>a</sup>	0	0	0	0	50,061	0	0	0	0	0	0	0	50,061	
Flexible storage withdrawal (Castaic Lake)	0	0	50,061	0	0	0	0	0	0	0	0	0	50,061	
Unscheduled water	0	0	626	0	0	0	0	0	0	0	0	0	626	
Transfer approved water	0	0	0	0	20,000	0	2,000	1,000	0	0	400	450	23,850	
Exchange approved water	0	0	0	0	0	0	9,100	843	0	0	789	2,270	13,002	
Exchange approved water for banked water <sup>a</sup>	0	0	0	0	0	0	23,000	12,029	23,817	23,232	6,156	0	88,334	
Pool A water	0	0	4,815	0	2,390	406	137	232	0	0	0	0	8,000	
Pool B water	0	0	0	0	2,685	5,996	134	405	0	0	0	0	9,240	
Pool A water sale <sup>a</sup>	8,000	0	0	0	0	0	0	0	0	0	0	0	8,000	
Pool B water sale <sup>a</sup>	9,240	0	0	0	0	0	0	0	0	0	0	0	9,240	
Pump-in recoveries	0	0	0	0	0	0	0	8,841	15,249	16,484	3,414	0	43,988	
Water-bank water recoveries	0	0	0	0	1,664	0	24,982	14,858	37,880	40,025	22,526	4,689	146,624	
Exchange Kern water-bank water for Semitropic water <sup>a</sup>	0	0	0	0	0	0	0	0	0	0	4,813	0	4,813	
Agency Total	176,885	193,324	304,144	246,388	313,990	354,854	392,467	302,927	247,909	194,259	156,494	175,064	3,058,705	
SWP Table A-related water	86	86	108	125	579	414	442	161	521	126	85	132	2,865	
Recreation/fish and wildlife water	176,971	193,410	304,252	246,513	314,569	355,268	392,909	303,088	248,430	194,385	156,579	175,196	3,061,570	
Subtotal (SWP water)														
<b>Non-SWP Water</b>														
Other water														
Local (All local)	39,937	456	635	78,946	194,504	196,095	200,165	151,867	55,737	90,857	91,319	81,397	1,181,915	
Fairfield, Vacaville, and Benicia settlement water	0	0	0	705	0	0	0	0	3,882	3,072	2,254	888	10,801	
Vallejo permit water	0	0	0	155	0	1,343	1,600	1,589	1,197	1,099	863	530	8,376	
Subtotal (Other water)	39,937	456	635	79,806	194,504	197,438	201,765	153,456	60,816	95,028	94,436	82,815	1,201,092	
CVP Water														
Conveying water to CVP contractor	0	0	0	0	0	0	0	3,757	0	1,369	0	0	5,126	
Conveying CVP water annual contract	41	40	36	51	60	62	60	68	77	80	26	8	609	
Conveying CVP water (Kern National Wildlife Refuge-Reclamation)	1,355	870	970	0	0	468	0	1,317	3,177	5,687	5,095	3,410	22,349	
Conveying CVP water recreation/fish and wildlife water														
(San Luis/Pyramid)	27	31	34	38	31	34	52	66	40	50	39	162	604	
Delivery of CVP water from CVP/CVC to SWP contractor	0	0	0	0	0	0	18,730	0	0	9,664	0	866	29,260	
Transfer of CVP water to SWP contractor	0	0	0	0	0	0	4,000	0	1,000	3,100	0	0	8,100	
Transfer of CVP/CVC water to CVP contractor	0	0	16,275	0	0	0	17,848	0	0	17,654	170	0	51,947	
Subtotal (CVP water)	1,423	941	17,315	89	91	564	4,112	41,786	4,294	37,604	5,330	4,446	117,995	
<b>Total (Non-SWP water)</b>	41,360	1,397	17,950	79,895	194,595	198,002	205,877	195,242	65,110	132,632	99,766	87,261	1,319,087	
<b>Grand Total</b>	<b>218,331</b>	<b>194,807</b>	<b>322,202</b>	<b>326,408</b>	<b>509,164</b>	<b>553,270</b>	<b>598,786</b>	<b>498,330</b>	<b>313,540</b>	<b>327,017</b>	<b>256,345</b>	<b>282,457</b>	<b>4,380,657</b>	<b>2,995,562</b>

<sup>a</sup>Excluded water from Agency Total

**Table 9-5. Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-04 (Acre-feet)**

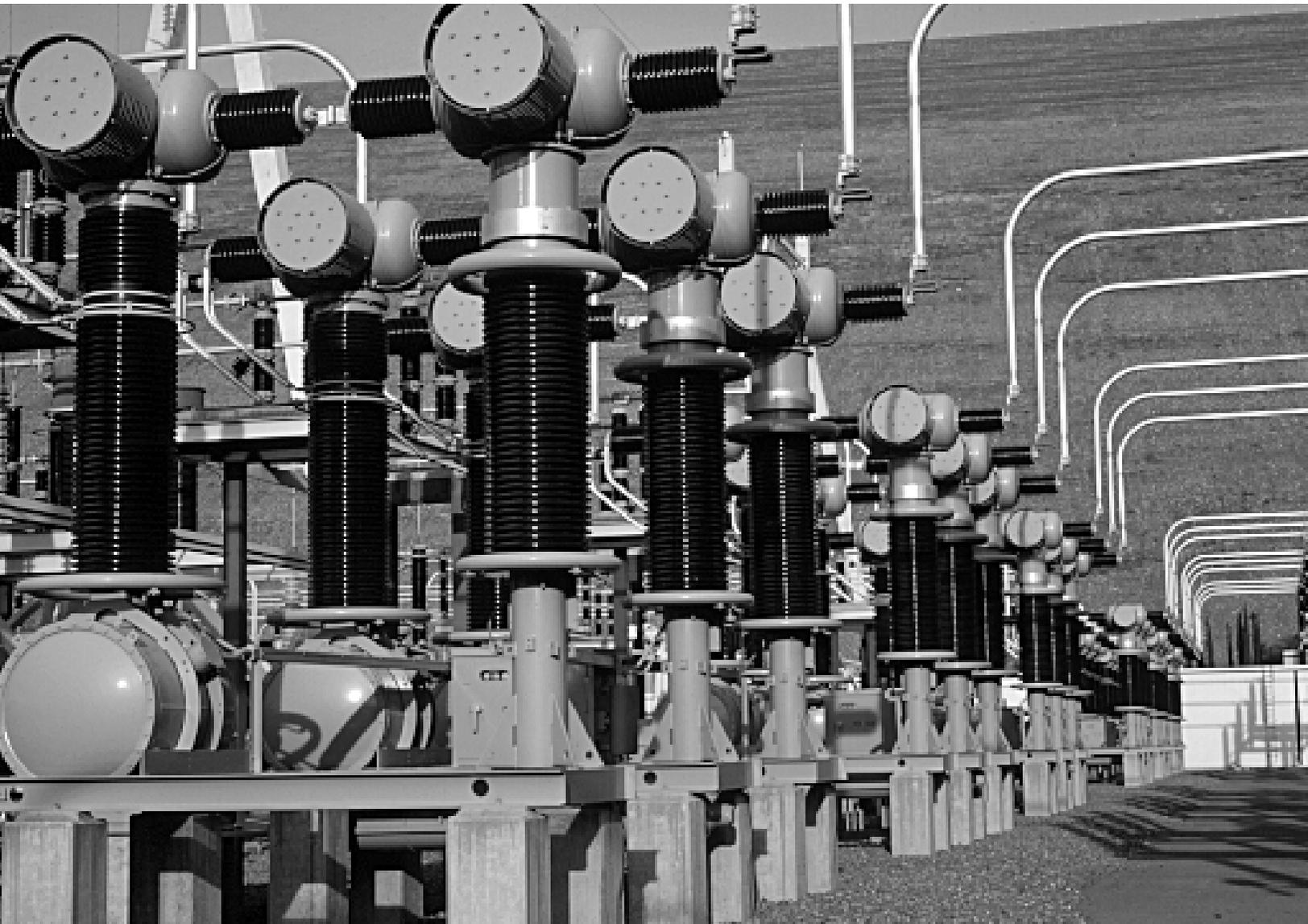
Year	Annual Table A Water According to Long-Term Water Supply Contract										Water Conveyed						Total (16)
	Water Supply										Deliveries						
	Upper Feather River Area (1)	North Bay Area (2)	South Bay Area (3)	San Joaquin Valley Area (4)	Central Coastal Area (5)	Southern California Area (6)	Total (7)	Annual Table A Water (8)	Article 21 Surplus and Unscheduled Water <sup>a</sup> (9)	Other Water <sup>b</sup> (10)	Feather River Diversions <sup>c</sup> (11)	Wildlife/Recreation Water (12)	Subtotal (13)	Initial Fill Water (14)	Operational Losses and Storage Changes <sup>d</sup> (15)		
1962	0	0	0	0	0	0	0	0	18,289	0	0	0	18,289	9	272	18,570	
1963	0	0	0	0	0	0	0	0	22,456	0	0	0	22,456	71	185	22,712	
1964	0	0	0	0	0	0	0	0	32,507	0	0	0	32,507	171	152	32,830	
1965	0	0	0	0	0	0	0	0	44,105	0	0	0	44,105	93	729	44,927	
1966	0	0	0	0	0	0	0	0	67,928	0	0	0	67,928	0	1,746	69,674	
1967	0	0	11,538	0	0	0	11,538	11,538	53,605	0	0	0	53,605	8,328	4,212	77,683	
1968	550	0	109,900	77,350	0	3,700	191,500	171,709	121,534	866,926	0	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	794,374	0	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	759,759	0	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	778,362	8	0	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	817,398	6,489	0	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	800,743	1,155	0	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	911,613	2,118	0	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	862,218	3,377	0	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	946,440	1,745	0	3,016,514	61,122	(68,1025)	2,396,611	
1977	2,420	0	128,600	581,400	0	954,901	1,667,321	1,452,699	16,914	786,517	1,111	0	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	800,743	1,691	0	2,379,046	64,443	(17,370)	3,160,859	
1979	2,130	0	132,700	702,685	0	1,190,573	2,028,088	1,659,896	648,389	882,549	1,766	0	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	2,131	0	2,857,941	0	(26,606)	2,831,335	
1981	1,940	650	137,000	818,000	2,813	1,432,065	2,397,468	1,909,562	908,428	838,557	4,688	0	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	776,330	6,446	0	2,901,755	0	(80,752)	3,382,507	
1983	2,000	950	141,400	867,118	8,439	1,681,257	2,701,164	1,848,669	13,019	602,905	7,849	0	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	7,040	0	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	6,772	3,462,204	0	(390,413)	3,071,791	
1988	5,060	1,547	152,500	1,246,100	43,722	2,225,982	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	2,4615	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	2,514,825	3,521	551,051	565,395	4,879	1,673,959	86	(167,435)	1,841,394	
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	2,473,030	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	1,086,772	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	43,335	1,078,656	2,929	3,293,781	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	
2004	13,100	69,056	222,619	1,182,700	70,486	2,569,100	4,127,061	2,599,536	218,496	385,088	1,174,672	2,865	4,380,657	0	(108,840)	4,489,497	
<b>Total</b>	<b>236,380</b>	<b>780,590</b>	<b>5,789,657</b>	<b>34,223,476</b>	<b>1,222,856</b>	<b>62,276,809</b>	<b>104,529,770</b>	<b>61,659,092</b>	<b>6,971,206</b>	<b>8,625,778</b>	<b>31,834,107</b>	<b>135,387</b>	<b>109,225,570</b>	<b>1,834,310</b>	<b>834,756</b>	<b>111,894,636</b>	

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

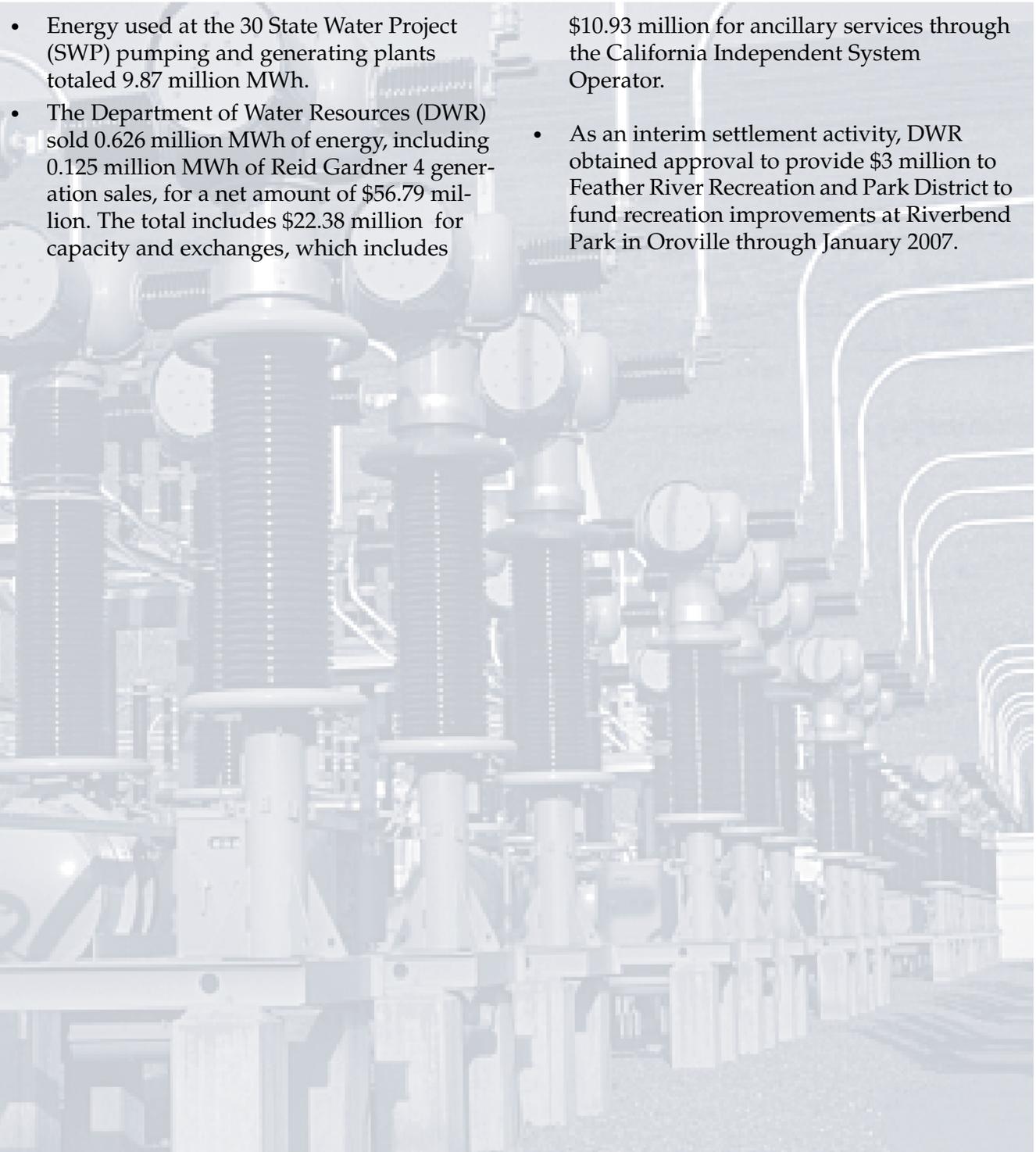
## Power Resources



Close-up of Hyatt Power Plant Switchyard

## Significant Events in 2004

- Energy used at the 30 State Water Project (SWP) pumping and generating plants totaled 9.87 million MWh.
- The Department of Water Resources (DWR) sold 0.626 million MWh of energy, including 0.125 million MWh of Reid Gardner 4 generation sales, for a net amount of \$56.79 million. The total includes \$22.38 million for capacity and exchanges, which includes \$10.93 million for ancillary services through the California Independent System Operator.
- As an interim settlement activity, DWR obtained approval to provide \$3 million to Feather River Recreation and Park District to fund recreation improvements at Riverbend Park in Oroville through January 2007.



**L**ong-term State Water Project (SWP) contractors depend on the SWP to provide economical sources of power to deliver affordable water. In response to that need, the Department of Water Resources (DWR) 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;
- meet responsibilities and criteria of the Western Electricity Coordinating Council; and
- conform with regulations of the Federal Energy Regulatory Commission (FERC).

To achieve these goals, DWR constructed its own power facilities, enters into long-term contracts with other electric utilities for transmission and purchases and sales of power, and enters into short-term arrangements with other electric utilities and the California Independent System Operator (CAISO) for transmission and purchases and sales of power.

DWR also participates in CAISO ancillary services markets by selling spinning, nonspinning, and replacement reserves to the CAISO. Pump load drop is also bid to the CAISO ancillary services markets to provide the CAISO more resources in case of system emergencies or contingencies.

The power resources program takes advantage of SWP water storage and conveyance capacities that allow DWR to operate the SWP in a cost-effective manner. This control of pumping loads and generation allows DWR to enter into advantageous agreements with other electric utilities that complement the use of SWP generation to meet SWP power requirements.

### **Major Electric Utility Industry Developments**

During 2004 the CAISO continued work on proposals for major redesign of its markets that became necessary as a result of the California Energy Crisis in 2000/01. Initially termed Market Design 2002 (MD02), the proposal was renamed Market Redesign and Technology Upgrade (MRTU).

During 2004, the CAISO developed a Transmission Economic Assessment Methodology (TEAM), which is a common methodology for assessing the need and economic benefits of major transmission upgrades to be used by California regulatory agencies.

During 2004, the California Public Utilities Commission (CPUC) adopted requirements that establish Resource Adequacy requirements on jurisdictional Load Serving Entities (LSEs) in 2006 (R.04-04-003).

During 2004, the FERC issued Order 2003: Standardization of Generator Interconnection Agreements and Procedures for electric

generating facilities having a capacity of more than 20 MW. Order 2003 deals with pricing and cost recovery mechanisms.

### **DWR's Participation in Electric Utility Industry Activities**

In 2004, DWR participated in the CAISO's MRTU stakeholder processes and litigation before FERC (ER02-1656) to help ensure that MRTU is fully functional and cost allocations are appropriate structured so that DWR is not disadvantaged. DWR's participation focused on the following primary elements:

- Integrated Forward Market
- Hour-Ahead and Real-Time Market
- Locational Marginal Pricing
- Allocation of Congestion Revenue Rights
- Trading Hubs and Load Aggregation Points
- Functionality of Participating Load
- Perfect Hedge for Existing Transmission Contracts
- Residual Unit Commitment
- Virtual or Convergence Bidding
- Marginal Losses

In 2004, DWR participated in a number of CAISO and non-CAISO electric utility stakeholder processes and FERC proceedings to help ensure that that various market requirements or cost allocation mechanisms are appropriately structured so that DWR is not disadvantaged either operationally or financially. The major processes and litigations included the following (with FERC docket number given in parenthesis):

- Transmission Access Charge (ER00-2019)
- Revisions to the Transmission Access Charge (ER04-370, ER04-1168, and ER04-1228)
- Amendment 55: Contingency Flag on "last resort" resources (ER03-1102)
- Amendment 60: Allocation of Minimum Load Reliability Costs (ER04-835)

- Amendment 62: Transmission Control Agreement Changes on Path 15 (ER04-61)
- Amendment 68: Station Power Protocol (ER05-849)
- Southern Cities Transmission Control Agreement (ER03-218)
- City of Pasadena Transmission Control Agreement (ER05-381)
- Grid Management Charge (EL03-131, ER04-115, ER05-346, and ER05-367)
- Definition of a Participating Transmission Owner's Service Area (ER04-632)
- Pacific Gas and Electric Company's (PG&E) Transmission Owner TO3, TO6 and TO7 Tariffs (ER99-2326, ER03-409, ER03-666, and ER04-109)
- PG&E's Transmission Revenue Balancing Account and TAC Adjustment Tariffs (ER04-337, ER05-82, ER05-378)
- Southern California Edison Company's (SCE) Reliability Services Tariffs (ER04-1176 and ER04-1209)
- SCE's Transmission Revenue Balancing Account and TAC Adjustment Tariffs (ER04-122, ER04-334, and ER05-207)
- Southern Cities Transmission Owner Tariffs (EL03-15 and EL03-20)
- City of Pasadena Transmission Owner Tariff (EL05-18)
- FERC's Large Generator Interconnection Agreements and Procedures (Order 2003: ER04-445)
- The CPUC's Resource Adequacy stakeholder process.
- In addition, in 2004, DWR participated in litigation before the DC Circuit Court on the following electric utility matters:
  - Termination of Extra High Voltage Agreements (04-1171)
  - SCE's Transmission Rates (04-1321)
  - Southern Cities Transmission Rates (04-73577)
  - CAISO Control over SWP Resources (04-72920)

- CAISO Control over SWP Outages (01-71405)

### **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. DWR must file a new application by January 31, 2005 to obtain a new license.

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. DWR selected the alternative licensing procedure that encourages a collaborative stakeholder approach throughout the multi-year relicensing process.

Participants in the relicensing activities indicated support for a collaborative approach in the Oroville facilities relicensing process, and on November 16, 2000, DWR, as licensee, submitted a request to FERC to use the alternative licensing procedures. On January 11, 2001, FERC approved DWR's request.

During calendar year 2004, primary achievements included

- hosting kick-off settlement negotiations and establishing the Oroville Facilities Relicensing Settlement Negotiations structure, process, and groundrules;
- providing negotiations training for settlement negotiations participants and hosting an issue-oriented site tour;
- establishing separate negotiation discussions with tribal representatives to supplement consultation compliance with the Federal Power Act and Section 106 of the National Historic Preservation Act;
- hosting an operations modeling seminar for stakeholders to discuss temperature sensitivity analyses;
- distributing the Oroville Facilities Draft Application for New License and Preliminary Draft Environmental Assessment Progress Summary for public, stakeholder, and agency review;
- releasing the Initial Settlement Agreement and initiating negotiation of substantive settlement issues with negotiation sub-groups and tribes;
- concluding and/or rescheduling Plenary and Resource Area Work Group meetings to coincide with completion of technical investigations and to accommodate and transition participants' focus on the settlement negotiations process;
- completing all Study Plan Reports except those dependent upon seasonal monitoring;
- continuing settlement negotiation meetings with Indian tribes, State and federal agencies, and other interested stakeholders and reaching tentative draft agreement on many issues;
- developing the No-Action Alternative, the Proposed Action Alternative, and Alternative 2 for the Preliminary Draft Environmental Assessment (PDEA) based upon collaborative discussions and studies; and
- preparing license application for the Oroville Facilities Relicensing process for submittal to FERC by January 31, 2005, including the PDEA.

As an interim settlement activity, DWR 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.

Ten SWP facilities will be subject to new license terms and conditions:

- 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 (WSCC) developed the voluntary Reliability Management System (RMS) Program, implemented in September 1999. In 2002, Western Electricity Coordinating Council (WECC) was formed from the merger of WSCC and two other transmission associations.

### **Existing SWP Power Facilities**

Figure 10-1 shows the names, locations, and nameplate capacity of DWR'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 Diver-

sion 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 DWR and Nevada Power Company (NPC), DWR has received energy from Reid Gardner Power Plant, a coal-fired facility near Las Vegas, Nevada. Reid Gardner consists of 4 units. DWR 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, DWR received up to 235 MW (90.4 percent of 260 MW total capacity) from Unit 4, subject to NPC's limited right to interrupt DWR's energy deliveries during specific periods. Whenever NPC interrupted DWR's scheduled energy, DWR received payment based on NPC's combustion turbine costs.

In June 1990, DWR began receiving an additional 15 MW of power from Reid Gardner Unit 4 due to plant capacity upgrades. However, new environmental restrictions in Nevada were imposed beginning in August 2004, which reduced Reid Gardner Unit 4 production back to its original capacity of 260 MW. Consequently, DWR no longer receives any energy associated with the upgrade capacity it had invested in.

### **Future SWP Power Facilities**

To meet future SWP power requirements, DWR also considers and evaluates new power resources. Factors considered include

- the ability to meet anticipated power requirements for pumping;
- transmission access availability;
- anticipated water deliveries to contractors;
- cost of the resource;
- availability and cost of financing;
- environmental impacts and costs of mitigation; and

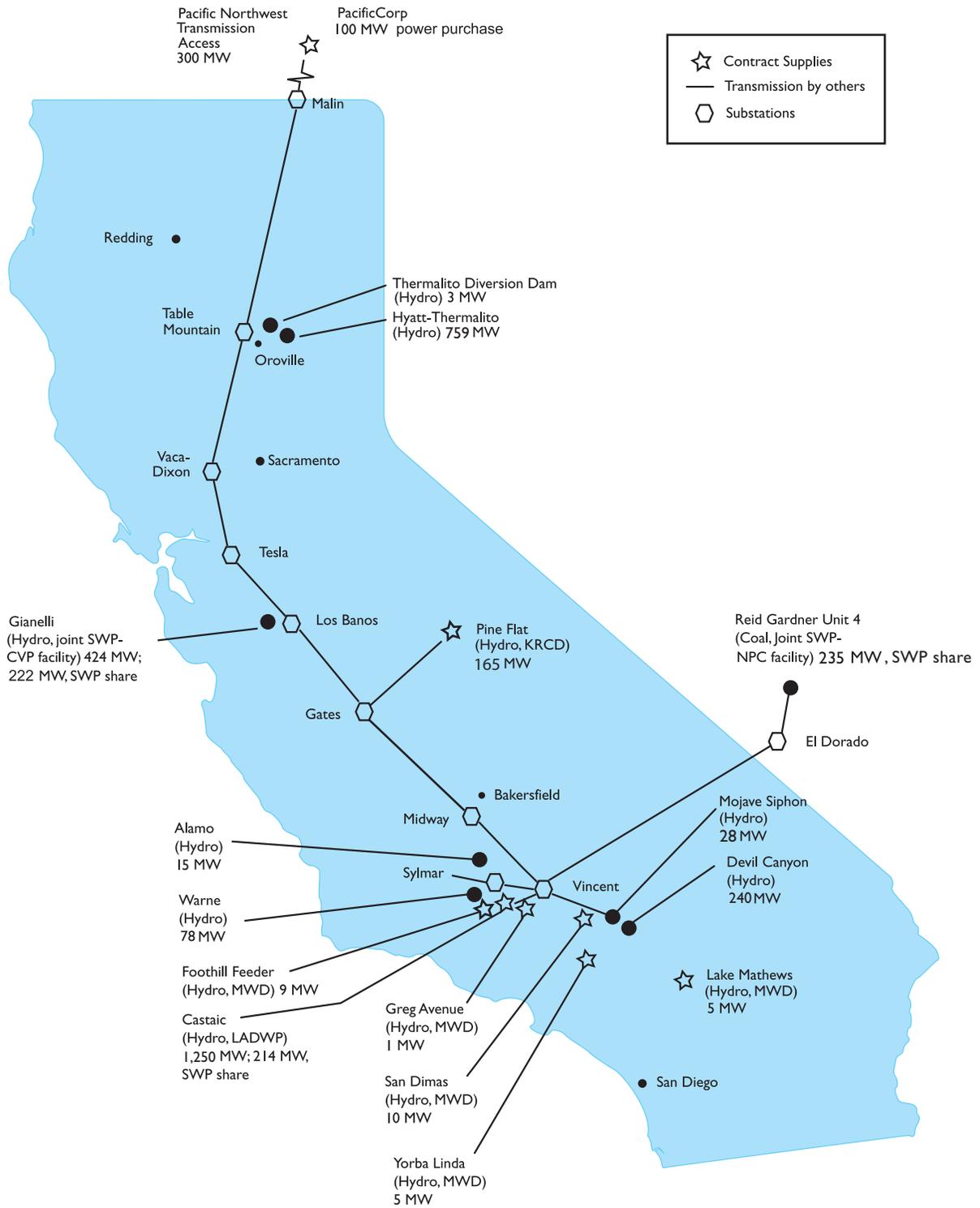


Figure 10-1. Names, Locations, and Nameplate Capacity of Primary Power Facilities

- operating characteristics.

In addition, DWR continues to consider several potential power resources at existing plants, including a second unit at Alamo Power Plant and a third unit at Warne Power Plant.

### **Contractual Resource Arrangements**

Through joint development, exchanges, and purchases, DWR obtains a significant amount of capacity and energy for SWP operations from other utilities throughout California, the Northwest, and the Southwest. Under these agreements, DWR can sell, buy, or exchange energy.

Some agreements allow DWR 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 economical use of DWR's generating resources and more efficient scheduling of energy deliveries.

**Joint Developments.** In 1966, DWR entered into a contract with the Los Angeles Department of Water and Power (LADWP) for the joint development of the West Branch of the California Aqueduct. LADWP constructed and operates Castaic Power Plant, which is connected to the LADWP transmission system at the Sylmar Substation.

DWR 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 (Reclamation) (202 MW) facility.

**Power Exchanges.** Until the end of 2004, the largest portion of the energy used by the SWP was provided by the 1979 Power Contract and the 1981 Capacity Exchange Agreement (CEA) with SCE. Service began in April 1983 under the Power Contract and in April 1987 under CEA.

Under the December 26, 2002, Settlement Agreement, DWR and SCE agreed to revise certain agreement provisions on SCE's right to curtail deliveries of energy to DWR, and SCE paid DWR \$30 million as compensation for curtailing exchange energy in 2000 and 2001. Both contracts to expire in 2004.

Consequently, DWR developed the Post 2004 Program to establish new power and transmission contracts to replace these expired contracts.

**Purchases.** DWR obtains a significant amount of energy through long-term and short-term purchase agreements.

*Long-Term Purchases.* DWR 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 with about 400 million kWh of energy in median water years.

DWR contracts for the energy output of five hydroelectric plants owned and operated by Metropolitan. The total capacity of these plants is 30 MW.

*Short-Term Purchases.* Through the Western Systems Power Pool Agreement, DWR transacts on a short term basis with member utilities. Additionally, according to the terms of the 1988 Coordination Agreement between DWR and Metropolitan, DWR may purchase surplus energy from Metropolitan's Colorado River Aqueduct system. The Coordination Agreement provides for coordinated operation between the SWP and Metropolitan's Colorado River Aqueduct system. It also provides for

- monthly surplus firm energy sales to Metropolitan;
- economy energy sales to Metropolitan;
- surplus energy purchases from the Colorado River Aqueduct system; and
- energy exchanges between DWR and Metropolitan.

## **Contractual Transmission Arrangements**

Although able to acquire transmission independently, DWR 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 also with interconnected utilities for purchases, sales, and exchanges of power.

Under the Comprehensive Agreement with PG&E, DWR 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 DWR to request and receive additional firm and interruptible transmission service if needed.

To interconnect the SWP loads and resources in Southern California, DWR receives transmission service from SCE over the SCE transmission system under the SCE/DWR Power Contract and Firm Transmission Service Agreement.

In August 1967, DWR 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. DWR retained its entire 300 MW share of EHV capacity for access to the Pacific Northwest Intertie through December 31, 2004; 100 MW of this capacity was committed to receiving the long-term purchase of 100 MW from PacifiCorp through 2004.

In December 1984, DWR 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, DWR 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. On December 31, 2004, DWR elected not to exercise this option.

## **Load Management**

The SWP controls the timing of its pumping load through an extensive computerized network. That control system allows DWR 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. Taking advantage of this flexibility in scheduling SWP pumping load and generation, reduces the net cost of power needed for SWP water deliveries.

**Sales of Excess Power.** When generation from SWP power resources exceeds requirements, DWR sells or exchanges the excess power through contracts with utilities and marketers.

## **SWP Power Operation in 2004**

Tables 10-1 through 10-4 present historical information about SWP power operation for calendar year 2004, including energy consumed, generated, exchanged, purchased, and sold.

### **Energy Consumed**

Energy used at the 28 SWP pumping and generating plants totaled 9.86 million MWh. 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. Reclamation furnishes additional energy for this purpose.

Table 10-1 shows the amount of energy used each month at SWP pumping and generating plants to operate the SWP in 2004, excluding transmission losses.

### **Energy Generated**

Table 10-2 shows amounts of energy generated at SWP facilities in 2004, as well as energy purchased for SWP operations.

**Hydroelectric and Coal.** The Hyatt-Thermalito power complex in Oroville generated 2.29 million MWh of energy in 2004.

Energy generated at SWP aqueduct recovery plants—Gianelli, Alamo, Devil Canyon, Mojave Siphon, and Warne—totaled 2.16 million MWh.

The SWP share of energy generated at the coal-fired Reid Gardner Unit 4 in Nevada 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, DWR receives energy based on the amount of water scheduled through the West Branch. In 2004, LADWP provided 830,683 MWh of energy for DWR's share of energy generated at Castaic Power Plant.

DWR's share of Gianelli Pumping-Generating Plant used 297,007 MWh and generated 183,205 MWh of energy.

**Energy Exchanges.** DWR had 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 Hyatt-Thermalito Complex and all of the output of Alamo Power Plant were delivered to SCE.

According to the terms of the Capacity Exchange Agreement (in effect since April 1987), DWR delivered energy to SCE each year during on-peak periods and, in return, received a greater amount of off-peak energy as well as transmission considerations. Those two exchange agreements resulted in a net of about 1,315,760 MWh of energy to the SWP in 2004.

**Purchases and Costs.** Table 10-3 shows amounts of power, transmission, and other services purchased in 2004 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).

DWR purchased 2.30 million MWh of energy at a cost of \$109.16 million. Associated costs for capacity totaled \$19.99 million. Other SWP power costs, including transmission, operation, maintenance, and ISO ancillary services totaled \$102.39 million. This amount includes \$2.375 million and \$2.89 million for debt service and operations and maintenance costs, respectively, at Pine Flat Power Plant. It also includes \$1.82 million for transmission at Reid Gardner Unit 4 and \$51.27 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, DWR receives the total output of the 165 MW Pine Flat Power Plant. In 2004, the power plant provided 226,497 MWh of energy to the SWP at a total cost of \$1.76 million.

DWR purchased 646,480 MWh of energy at a cost of \$19.35 million under a contract for firm energy with PacifiCorp, which ended in 2004. Under the Metropolitan Small Hydro Contract, DWR purchased 498,552 MWh of energy in 2004 from five small hydroelectric power plants on the Metropolitan system at a cost of \$23.17 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 2004, the SWP purchased short-term energy from 14 marketers. The short-term energy purchases totaled 745,739 MWh at a cost of \$36.36 million.

## Sales of Excess Power

DWR sold 625,886 MWh of energy to 16 utilities and 14 power marketers, for total revenues of \$56.79 million in 2004. DWR also received \$22.36 million in revenues for capacity, including \$10.93 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, DWR forecasts SWP power requirements through 2035.

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

DWR bases its forecast of power operations primarily 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.

Table 10-1. Energy Used at Pumping Plants and Power Plants in 2004, 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-Thermalco Pumping-Generating Plant (pumpback and station service)	4.170	11.328	3.726	6.436	0.109	0.043	0.003	0.000	0.646	0.083	0.012	0.161	26.715
North Bay Interim Pumping Plant	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
Cordelia Pumping Plant	0.679	0.602	0.207	0.497	1.183	1.064	1.227	1.222	1.219	0.983	0.980	0.967	10.831
Barker Slough Pumping Plant	0.381	0.279	0.111	0.400	1.266	1.355	1.564	1.562	1.532	1.202	0.910	0.737	11.299
South Bay Pumping Plant	4.984	4.590	9.446	12.449	10.323	10.069	12.131	9.717	7.354	7.048	5.099	7.383	100.593
Del Valle Pumping Plant	0.023	0.020	0.152	0.185	0.040	0.007	0.005	0.006	0.006	0.005	0.005	0.005	0.460
Banks Pumping Plant	121.190	103.801	119.998	34.989	13.077	27.321	99.294	99.260	93.402	40.259	65.034	74.985	892.609
Gianelli Pumping-Generating Plant (SWP share)	67.656	61.661	46.068	1.876	0.064	0.164	2.024	12.349	25.085	18.586	33.577	27.897	297.007
Dos Amigos Pumping Plant (SWP share)	27.868	24.948	44.035	31.318	39.725	43.831	52.876	42.317	28.334	19.806	16.879	25.147	397.083
Buena Vista Pumping Plant	40.222	33.780	40.345	43.509	49.227	50.209	55.725	53.606	48.993	37.778	28.248	42.513	524.156
Teerink Pumping Plant	45.021	37.536	43.233	46.337	51.113	52.726	58.365	57.930	54.947	43.217	33.009	48.605	572.039
Chrisman Pumping Plant	101.777	84.570	96.161	102.046	111.167	114.740	128.603	127.840	121.532	96.366	73.868	109.613	1,268.283
Edmonston Pumping Plant	377.608	312.608	352.111	371.937	405.866	417.060	468.005	467.751	447.422	353.626	274.163	407.507	4,655.664
Alamo Power Plant (station service)	0.002	0.004	0.002	0.003	0.018	0.003	0.000	0.001	0.001	0.002	0.004	0.003	0.043
Pearblossom Pumping Plant	57.756	48.674	56.341	55.594	65.664	58.516	64.767	63.867	64.053	59.291	54.168	59.749	708.440
Pine Flat Power Plant	0.051	0.225	0.059	0.000	0.000	0.000	0.000	0.081	0.211	0.169	0.000	0.096	0.893
Mojave Siphon Power Plant (station service)	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.002	0.009
Devil Canyon Power Plant (station service)	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.006
Oso Pumping Plant	20.293	16.343	17.060	19.217	18.306	22.274	25.156	25.557	23.571	16.259	9.356	23.285	236.677
Warne Power Plant (station service)	0.033	0.000	0.004	0.002	0.128	0.056	0.006	0.004	0.000	0.011	0.442	0.001	0.686
Las Perillas Pumping Plant	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
Badger Hill Pumping Plant	0.646	0.644	1.800	1.747	2.743	3.351	3.276	2.534	2.054	1.234	0.328	0.595	20.952
Devil's Den Pumping Plant	0.994	1.015	1.228	1.976	2.582	2.901	2.894	2.862	2.774	2.270	0.906	1.666	24.067
Bluestone Pumping Plant	0.938	0.956	1.157	1.882	2.460	2.796	2.754	2.707	2.635	2.137	0.878	1.559	22.857
Polonio Pass Pumping Plant	1.019	1.023	1.253	1.980	2.551	2.861	2.907	2.806	2.696	2.243	0.918	1.671	23.929
Greenspot Pumping Plant	0.307	0.353	0.088	0.333	0.294	0.255	0.363	0.392	0.378	0.256	0.109	0.126	3.254
Crafton Hills Pumping Plant	0.000	0.337	0.085	0.394	0.357	0.242	0.249	0.252	0.274	0.202	0.116	0.130	2.638
Cherry Valley Pumping Plant	0.021	0.028	0.016	0.031	0.033	0.030	0.026	0.027	0.025	0.021	0.022	0.021	0.301
<i>Subtotal</i>	873.640	745.329	834.685	735.139	778.298	811.875	982.217	974.649	929.145	703.053	599.039	834.426	9,801.495
High Voltage Transmission Line Losses and Deviation	6.776	2.766	7.954	(5.318)	70.235	1.739	11.736	4.221	(8.820)	(25.415)	5.634	(5.050)	66.458
<b>Total Energy Required for SWP</b>	<b>880.416</b>	<b>748.095</b>	<b>842.639</b>	<b>729.821</b>	<b>848.532</b>	<b>813.614</b>	<b>993.954</b>	<b>978.870</b>	<b>920.325</b>	<b>677.638</b>	<b>604.672</b>	<b>829.376</b>	<b>9,859.533</b>

**Table 10-2. Energy Generated and Purchased in 2004, by Month (Millions of Kilowatt-Hours)**

Sources of Energy	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
<b>SWP Energy Sources</b>													
Hyatt-Thermalito Power Plant	95.324	155.122	235.365	257.629	172.525	261.172	374.849	296.459	124.040	111.093	108.596	101.397	2,293.570
Gianelli Pumping-Generating Plant (SWP share)	0.002	1.716	2.923	35.529	62.790	47.143	11.744	3.016	0.026	8.165	6.876	3.274	183.205
Alamo Power Plant	10.012	8.492	10.038	9.830	8.344	11.077	11.906	11.539	11.310	9.551	9.031	9.828	120.958
Mojave Siphon Power Plant	6.547	5.483	6.491	5.769	7.491	6.676	7.581	7.354	7.316	6.605	6.118	6.753	80.185
Devil Canyon Power Plant	103.194	89.728	104.235	100.447	118.783	107.239	117.865	115.895	115.061	107.972	95.490	105.872	1,281.780
Reid Gardner Unit 4 <sup>a</sup>	170.672	129.444	129.616	63.869	95.920	143.967	176.138	171.873	152.262	89.729	149.680	131.862	1,605.032
Warne Power Plant	42.319	37.268	37.264	39.839	37.028	45.520	51.330	51.853	48.097	34.230	18.761	47.740	491.249
<i>Subtotal</i>	<i>428.071</i>	<i>427.253</i>	<i>525.932</i>	<i>512.911</i>	<i>502.881</i>	<i>622.794</i>	<i>751.412</i>	<i>657.990</i>	<i>458.112</i>	<i>367.345</i>	<i>394.553</i>	<i>406.725</i>	<i>6,055.978</i>
<b>Energy Sources from Long-Term Agreements</b>													
Castaic Power Plant	70.715	56.215	61.709	66.561	65.010	78.083	88.423	88.423	78.440	52.353	32.327	92.426	830.683
Metropolitan Small Hydro Generation	17.194	13.137	14.736	15.620	13.280	4.853	24.558	15.347	14.954	17.145	16.395	22.916	190.135
Pine Flat Power Plant KRCD	0.000	0.000	4.847	22.690	35.731	98.147	55.967	9.115	0.000	0.000	0.000	0.000	226.497
Power Exchange delivered to other entities	(4.339)	0.000	(1.550)	(0.060)	(20.450)	(50.419)	(32.067)	(37.480)	(20.650)	(19.664)	(0.400)	(16.544)	(203.623)
Power Exchange received from other entities	4.339	0.000	1.550	0.060	26.064	49.246	30.066	30.948	15.240	8.113	2.605	0.000	168.231
Power Exchange delivered to SCE	(156.883)	(176.755)	(233.233)	(226.930)	(207.285)	(227.708)	(304.839)	(271.592)	(192.392)	(180.974)	(157.573)	(167.936)	(2,504.100)
Power Exchange received from SCE	429.704	366.302	355.427	294.724	336.246	193.608	269.739	302.328	237.496	370.140	322.550	341.596	3819.860
Energy to Metropolitan for CRA Pumping	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(26.832)	(31.388)	(20.600)	(21.536)	(100.356)
Energy from Metropolitan for CRA	0.000	7.066	6.516	4.310	17.042	12.158	36.079	14.169	3.016	0.000	0.000	0.000	100.356
Power System Imbalances	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
<b>Purchases</b>													
Purchases (firm power contracts)	113.040	124.704	153.990	90.900	131.476	115.919	169.922	236.811	388.035	133.228	54.200	189.463	1,901.688
<i>Subtotal</i>	<i>473.770</i>	<i>390.669</i>	<i>363.992</i>	<i>267.875</i>	<i>397.114</i>	<i>273.887</i>	<i>337.848</i>	<i>388.069</i>	<i>497.307</i>	<i>348.953</i>	<i>249.504</i>	<i>440.385</i>	<i>4,429.371</i>
Total Resources	901.840	817.922	889.924	780.786	899.995	896.681	1,089.260	1,046.059	955.418	716.297	644.056	847.110	10,485.349
Less Energy Sales	(23.132)	(73.251)	(50.971)	(50.965)	(51.463)	(83.067)	(95.306)	(67.189)	(35.093)	(38.659)	(39.384)	(17.734)	(626.214)
<b>Total Energy Provided to the SWP</b>	<b>880.416</b>	<b>748.095</b>	<b>842.639</b>	<b>729.821</b>	<b>848.532</b>	<b>813.614</b>	<b>993.954</b>	<b>978.870</b>	<b>920.325</b>	<b>677.638</b>	<b>604.672</b>	<b>829.376</b>	<b>9,859.533</b>

<sup>a</sup> The upgrade energy of 2,095 MWh from Reid Gardner Unit 4 is included.

**Table 10-3. Power, Transmission, and Other Services Purchased in 2004 and Costs of Purchases, by Area**

Name of Supplier	Type of Service Purchased	Energy (MWh)	Energy Cost (Dollars)	Capacity Cost (Dollars)	Total Cost (Dollars)
<b>Power and Capacity Purchases</b>					
<i>Northwest Area</i>					
BC Hydro, Powerex	Firm and nonfirm energy	28,728.00	2,699,760.00		2,699,760.00
Bonneville Power Administration	Firm and nonfirm energy	2,700.00	147,100.00		147,100.00
PacifiCorp	Firm and nonfirm energy	646,480.00	19,356,066.40		19,356,066.40
	Capacity			21,024,000.00	21,024,000.00
	Interest payment		(41,310.67.00)		(41,310.67.00)
	Energy/capacity adjustment			(1,026,849.60)	(1,026,849.60)
<i>Northern California Area</i>					
Kings River Conservation District	Hydroelectric energy	226,497.00	1,769,554.65		1,769,554.65
Northern California Power Agency	Firm and nonfirm energy	1,320.00	65,815.00		65,815.00
Pacific Gas and Electric Company	Firm and nonfirm energy	2,034.00	73,395.25		73,395.25
Sacramento Municipal Utility District	Firm and nonfirm energy	4,575.00	187,525.00		187,525.00
City and County of San Francisco	Firm and nonfirm energy	3,903.00	198,400.00		198,400.00
<i>Southern California Area</i>					
City of Riverside		6,441.00	243,521.75		243,521.75
Metropolitan Water District of Southern California	Hydroelectric energy	498,552.00	23,173,234.18		23,173,234.18
San Diego Gas and Electric		82,450.00	2,981,712.50		2,981,712.50
Southern California Edison		28,537.00	1,053,550.00		1,053,550.00
<i>Southwest Area</i>					
Arizona Public Services		12,000.00	435,600.00		435,600.00
Nevada Power Company		2,095.00	63,848.66		63,848.66
Public Service of New Mexico		1,600.00	93,200.00		93,200.00
Salt River Project		7,200.00	298,800.00		298,800.00
<b>Energy Marketers</b>	Firm and nonfirm energy	745,739.00	36,367,612.97		36,367,612.97
<i>Subtotal</i>		2,300,851.00	89,167,385.69	19,997,150.40	109,164,536.09
<b>Transmission and Other Purchases</b>					
California Independent System Operator	Ancillary and other services				26,394,152.34
	FERC charges				411,699.32
California Power Exchange	Wind up charge				34.85
Kings River Conservation District	Pine Flat operation and maintenance				2,890,025.00
	Pine Flat debt service and refinancing fees (bonds)				2,375,621.55
Los Angeles Department of Water and Power	Hydro power plant scheduling for Grant Ave. Sylmar transmission service				1,150.00
	Reid Gardner Unit 4 transmission service				70,549.22
Nevada Power Company	Operations and maintenance				1,829,054.00
	Coal and diesel fuel				26,449,684.00
	Insurance				23,064,604.56
	Property taxes				719,602.00
Pacific Gas and Electric Company	EHV transmission				1,038,434.80
	Midway-Wheeler Ridge, transmission operation and maintenance				1,500,000.00
	Cost of ownership for Pine Flat				98,066.40
	Firm transmission				12,076.00
	Table Mountain—Tesla line credit				11,064,606.60
	Cost of ownership—special facilities				(2,126,696.29)
	Castle Rock Junction—Lakeville ownership charges				13,832.00
	Coastal Branch—ownership charge				101,589.00
Southern California Edison Company	Firm transmission—power contracts				156,463.00
	East Branch Extension—plants transmission				8,720,520.00
	East Branch Extension plants interconnection fees and adjustments				576,013.68
	Additional facilities charges (D.C. and Mojave)				23,326.80
	Mojave Siphon and Devil Canyon firm transmission				1,259,927.04
	East Branch Extension reliability charges				375,840.00
	Reliability services				1,469.80
	Firm transmission El Dorado-Vincent				928,360.86
	CEA transmission credit				1,579,200.00
	Ancillary service charges/credits				(6,856,200.00)
FERC charges for Oroville, Pine Flat, and southern facilities					4,057.36
					37,642.14
<b>Miscellaneous Fees</b>					1,955.25
<i>Subtotal</i>					102,414,878.89
<b>Total</b>					211,579,414.98

**Table 10-4. Energy Sold in 2004 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)
<b>Power Related Revenue</b>				
<i>Pacific Northwest Area</i>				
Bonneville Power Administration	2,198	74,382.00		74,382.00
Portland General Electric	2	91.00		91.00
Seattle City Light	80	3,680.00		3,680.00
<i>Northern California Area</i>				
CAISO—ancillary and other services			10,932,202.69	10,932,202.69
California Power Authority	2,800	224,000.00	7,600,000.00	7,824,000.00
City of Redding	23,953	1,217,962.00		1,217,962.00
City of Santa Clara			19,086.42	19,086.42
Northern California Power Agency	2,375	128,685.00	14,776.58	143,461.58
Sacramento Municipal Utility District	6,347	292,399.00		292,399.00
Pacific Gas and Electric Company	39,384	1,908,970.00		1,908,970.00
<i>Southern California Area</i>				
City of Azusa	22,339	1,039,852.25		1,039,852.25
City of Riverside	124,863	4,311,647.56	1,173,420.00	5,485,067.56
City of Vernon	1,046	46,510.00		46,510.00
Los Angeles Department of Water and Power			587,100.00	587,100.00
San Diego Gas and Electric	13,082	691,183.25		691,183.25
Southern California Edison	1,397	80,017.00	2,043,361.03	2,123,378.03
<i>Southwest Area</i>				
Nevada Power Company	124,990	9,589,905.35		9,589,905.35
<b>Miscellaneous</b>				
Pacific Gas and Electric scheduling fees			16,126.94	16,126.94
<b>Energy Marketers</b>				
Fifteen marketers	261,030	14,797,922.80		14,797,922.80
<b>Total</b>	<b>625,886</b>	<b>34,407,207.21</b>	<b>22,386,073.06</b>	<b>56,793,280.87</b>

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

# Chapter 11

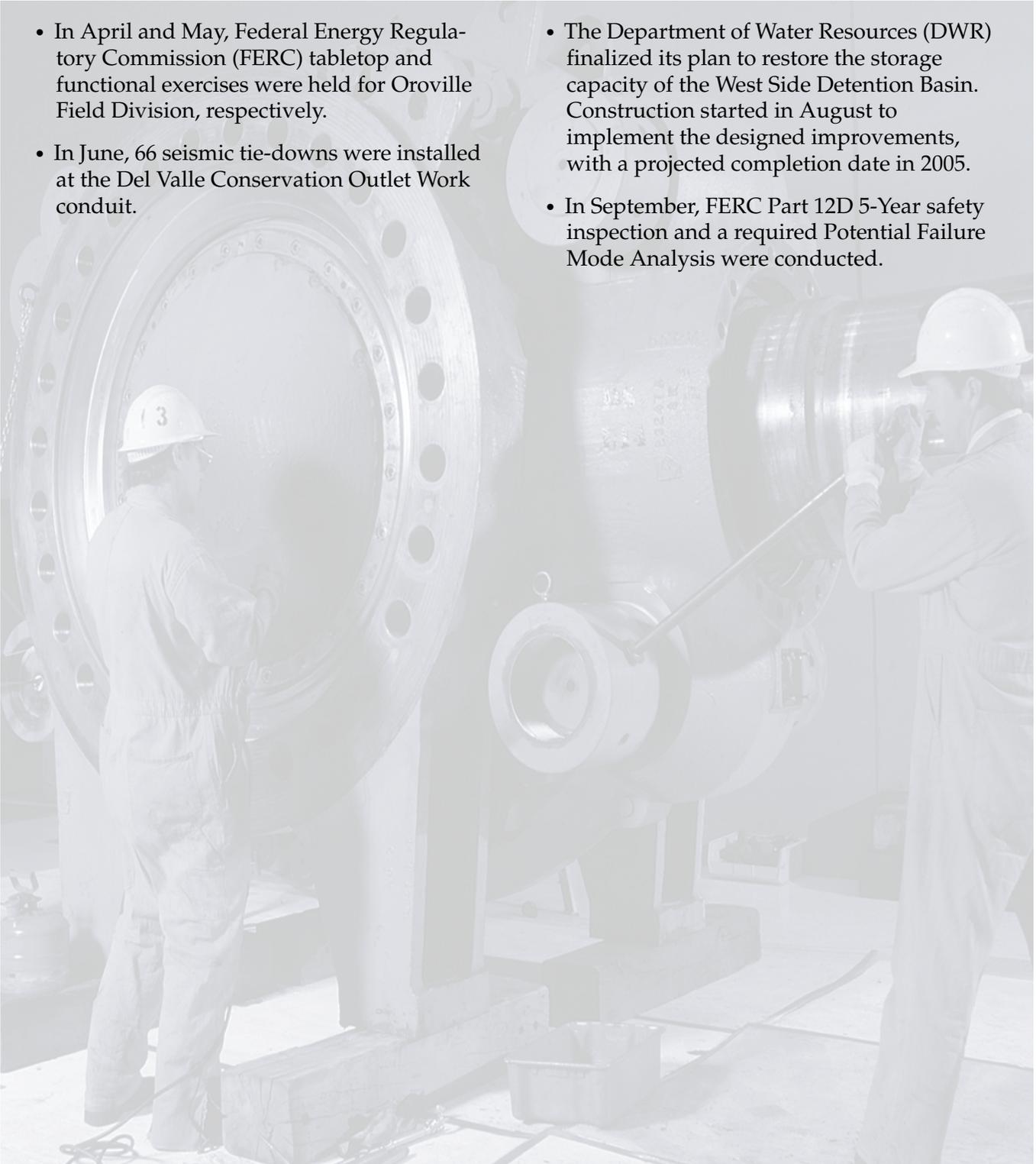
## Facilities Maintenance



Valve repair at Edmonston

## Significant Events in 2004

- In April and May, Federal Energy Regulatory Commission (FERC) tabletop and functional exercises were held for Oroville Field Division, respectively.
- In June, 66 seismic tie-downs were installed at the Del Valle Conservation Outlet Work conduit.
- The Department of Water Resources (DWR) finalized its plan to restore the storage capacity of the West Side Detention Basin. Construction started in August to implement the designed improvements, with a projected completion date in 2005.
- In September, FERC Part 12D 5-Year safety inspection and a required Potential Failure Mode Analysis were conducted.



The Department of Water Resources (DWR), through the Division of Operations and Maintenance (O&M), monitors all State Water Project (SWP) facilities to ensure safety and reliability. DWR 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

DWR 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 (DSOD) review instrumentation data and inspect jurisdictional SWP dams either semi-annually or annually. They evaluate proposed modifications to existing dams as well as the design and construction of new jurisdictional dams.

The Federal Energy Regulatory Commission (FERC) 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.

DWR 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 (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 2004, DSOD, along with O&M staff, inspected Frenchman, Antelope, and Grizzly Valley Dams in the Upper Feather River area; Oroville, Bidwell Bar, Parish Camp, and Thermalito Afterbay Dams in the Oroville Field Division; Clifton Court Forebay, Bethany, Patterson, and Del Valle Dams in the Delta Field Division; and Pyramid, Castaic, Cedar Springs, Devil Canyon Power Plant Second Afterbay, Perris, and Crafton Hills Dams in Southern Field Division.

### Joint-Use Facility Inspection

Reclamation conducts a comprehensive facility review of the four joint-use facility dams in the San Luis Field Division every 6 years. The last comprehensive facility review was conducted from April 28 through May 2, 2003.

### Underwater Inspection

No underwater inspections were conducted at dam-related facilities during 2004.

### Independent Reviews

**California Water Code Reviews.** To comply with the California Water Code and the California Code of Regulations, DWR is required to retain a consulting board to review

- (1) the adequacy of the design of any dam or reservoir DWR proposes to construct; and
- (2) the safety of the completed construction, including the terms and conditions for the Certificate of Approval.

These provisions require DWR to retain a board of three consultants to meet at least once every 5 years to review the operational performance of DWR-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 DWR. The consultants then prepare reports on each dam, approving whether the dams are safe for continued operation and making recommendations. Based on these recommendations, DWR prepares action plans.

In June 2003, DSOD and O&M agreed to allow substitution of FERC Part 12 independent review board reports in lieu of the independent review board reports required by the California Water Code and California Code of Regulations for the following dams: Oroville, Feather River Fish Hatchery, Thermalito Diversion, Thermalito Forebay, Thermalito Afterbay, Cedar Springs, Devil Canyon Second Afterbay, and Pyramid. However, DSOD reserved the right to impose additional requirements not presented by the FERC independent review board.

In 2004, an independent consulting review board met several times for review of the proposed Dyer Dam located in the East Bay Aqueduct, Alameda County. The joint FERC/DSRB (Part 12) for the Oroville Complex scheduled for 2004 was shifted to 2005.

**FERC Reviews.** These reviews, the FERC Part 12D safety inspections, which may be conducted by one or more consultants, are scheduled every 5 years. As a supplement to FERC Part 12D safety inspection, FERC's Dam Safety Performance Monitoring Program requires that a Potential Failure Mode Analysis (PFMA) be performed for FERC-licensed dams. The PFMA involves document review and site visits in order to develop a comprehensive list of potential failure modes at each dam. From this review process, three documents are generated: the FERC Part 12D safety inspection report; PFMA report; and Supporting Technical Information Document (STID), which summarizes the project elements and details that do not change significantly over time (formerly Appendix D of the FERC Part 12D safety inspection report).

The FERC Part 12D safety inspection and PFMA were performed for FERC Project #2100 including Oroville, Feather River Fish Hatchery, Thermalito Diversion, Thermalito Forebay, and Thermalito Afterbay dams in September 2004. The Part 12D Safety Inspection, PFMA and STID reports for FERC Project #2100, the Oroville-Thermalito Complex, are expected to be completed by April 2005.

## Maintaining Other Project Facilities

DWR 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.

Reclamation designed and constructed the San Luis Canal segment of the California Aqueduct

and DWR 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 floodwaters 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, DWR and Reclamation 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 DWR to adjust operating procedures to minimize runoff entering the Aqueduct.

### **Cooperative Efforts with the U.S. Army Corps of Engineers**

In 1990, DWR sought the assistance of the U.S. Army Corps of Engineers (the Corps) 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, DWR halted further cooperative studies with the Corps and began developing more cost effective solutions on its own.

### **DWR and DWR/Reclamation 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 inflows to the canal upstream of the Arroyo Pasajero.

DWR and Reclamation's version of the western Tulare Lakebed plan provides sufficient and acceptable levels of flood protection to the Aqueduct at considerably lower cost. This effort was in response to the State Water Contractors' proposal that DWR 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, DWR 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.

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

DWR'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, DWR 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.

In 2004 DWR finalized its plan to restore the storage capacity of the West Side Detention

Basin. The contract for these improvements was advertised in May 2004. Construction started in August 2004 to implement the designed improvements with a projected completion date of September 2005. These improvements will restore the storage capacity to the detention basin, and add control over releases of flood water into the aqueduct and into private farmland. DWR is also negotiating with local landowners to acquire the necessary easements and fee property interests required for the project.

### **Related Activities**

DWR, with the support of the State Water Contractors, continued during 2004 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 2004. The table includes information about incidents resulting in outages exceeding 14 days.

**Table 11-1. Outages for Maintenance and Repair of Facilities in 2004, by Month**

Month	Facility	Units Out of Service
January	Banks Pumping Plant	Unit 6 from January 5 to June 18 for annual maintenance, to rewind motor, refurbish discharge valve, and install automatic voltage regulator
	Dos Amigos Pumping Plant	Unit 6 from January 5 to March 19 for biennial maintenance, to replace rotor poles and recoat stay vanes,
	Buena Vista Pumping Plant	Unit 1 from January 5 to May 5 to overhaul unit
	Chrisman Pumping Plant	Unit 7 from January 6 to August 11 for annual maintenance and to overhaul pump, motor, and discharge valve
	Devil Canyon Power Plant	Unit 1 from January 20 to February 5 for annual maintenance
	Pine Flat Power Plant	Unit 1 from January 14 to January 30 for switchyard maintenance Unit 2 from January 5 to January 30 for switchyard maintenance and to clean carbon dust build-up Unit 3 from January 5 to February 12 for switchyard maintenance and to clean carbon dust build-up
February	Banks Pumping Plant	Unit 2 from February 15 to March 11 for maintenance on hydraulic oil system and to replace automatic voltage regulator
	Gianelli Pumping-Generating Plant	Unit 6 from February 22 to June 24 to overhaul unit, replace rotor poles, install automatic voltage regulator, and repair scroll case, head cover, and packing box
	Devil Canyon Power Plant	Unit 2 from February 9 to February 26 for annual maintenance and to replace damaged piping
	Oso Pumping Plant	Unit 3 from February 17 to March 27 for biennial maintenance and to install automatic voltage regulator
	Pine Flat Power Plant	Unit 2 from February 17 to March 4 to clean carbon dust build-up
March	Thermalito Power Plant	Unit 1 from March 23 to April 30 for annual maintenance, to recoat pump case, and weld-repair cavitation damage
	Barker Slough Pumping Plant	Units 1 through 9 from March 10 to March 26 to work on pipeline
	Cordelia Pumping Plant	Units 1 through 4 from March 10 to April 1 to work on pipeline
	Banks Pumping Plant	Unit 1 from March 15 to April 9 to replace automatic voltage regulator and remove hot water bypass
	Gianelli Pumping-Generating Plant	Unit 5 from March 24 to May 6 to repair stator ground and recoat cutwater vane
	Chrisman Pumping Plant	Unit 4 from March 29 to December 22 to overhaul unit, repair discharge valve, replace damaged piping, and repair and recoat pump case
Pine Flat Power Plant	Unit 1 from March 11 to March 26 to clean carbon dust build-up	
April	Hyatt Power Plant	Unit 5 from April 12 to April 30 to repair turbine shutoff valve downstream seat
	Banks Pumping Plant	Unit 7 from April 9 to April 29 for Unit 6 work
	Dos Amigos Pumping Plant	Unit 5 from April 12 to May 13 for biennial maintenance and to recoat pump case
	Edmonston Pumping Plant	Unit 9 from April 5 to expected completion date in 2005 for annual maintenance and to overhaul pump and motor
	Pearblossom Pumping Plant	Unit 4 from April 1 to August 13 to rewind motor, rebuild pump, and recoat pump case
	Mojave Siphon Power Plant	Unit 3 from April 16 to May 12 for annual maintenance and to replace shaft seal
	Oso Pumping Plant	Units 3, 5, and 6 from April 4 to April 23 to repair discharge valves, recoat discharge line, and work on Unit 4 Unit 4 from April 4 to May 13 for annual maintenance, to replace automatic voltage regulator, repair discharge valve, and recoat discharge line
	Reid Gardner Power Plant	Unit 4 from April 16 to May 25 for annual maintenance
May	No repairs	
June	Banks Pumping Plant	Unit 5 from June 24 to July 21 to replace automatic voltage regulator
	Gianelli Pumping-Generating Plant	Unit 1 from June 29 to November 11 to repair headgate and install automatic voltage regulator Unit 2 from June 29 to November 16 to repair headgate and install automatic voltage regulator
July	Banks Pumping Plant	Unit 11 from July 26 to August 10 for annual maintenance
	Oso Pumping Plant	Unit 5 from July 12 to August 18 for annual maintenance, to install automatic voltage regulator, and replace cooling water lines
August	Banks Pumping Plant	Unit 10 from August 11 to September 10 for annual maintenance
	Bluestone Pumping Plant	Unit 6 from August 16 to September 8 to repair discharge valve
	Teerink Pumping Plant	Unit 5 from August 23 to expected completion date in 2005 for annual maintenance, to overhaul pump and motor, and to recoat pump case
	Oso Pumping Plant	Unit 6 from August 23 to October 1 for annual maintenance, to install automatic voltage regulator, and replace cooling water lines

**Table 11-1. Outages for Maintenance and Repair of Facilities in 2004, by Month (Continued)**

Month	Facility	Units Out of Service
September	Hyatt Power Plant	Unit 4 from September 30 to expected completion date in 2005 to replace turbine runner
	Banks Pumping Plant	Unit 9 from September 13 to October 14 for annual maintenance and to replace cooling water strainer
	Dos Amigos Pumping Plant	Unit 4 from September 27 to November 3 for biennial maintenance
	Buena Vista Pumping Plant	Unit 2 from September 7 to December 28 to overhaul unit and repair water leaks in depressing air system and balance line
	Greenspot Pump Station Pine Flat Power Plant	Unit 4 from September 15 to November 3 to replace motor bearing Unit 2 from September 14 to expected completion date in 2005 for annual maintenance, to repair lightening damage to switchyard, and remove jammed stop log
October	Banks Pumping Plant	Unit 8 from October 14 to November 16 for annual maintenance and to replace discharge valve O-rings, cooling water pump, and cooling water strainer
	Devil's Den Pumping Plant	Unit 2 from October 18 to November 2 to recoat pump case and replace pump mechanical seals and bearings
	Pearblossom Pumping Plant	Unit 9 from October 4 to expected completion date in 2005 to replace mechanical seal
	Pine Flat Power Plant	Units 1 and 3 from October 24 to December 21 to repair lightening damage to switchyard
November	Gianelli Pumping-Generating Plant	Unit 5 from November 13 to expected completion date in 2005 for annual maintenance, to replace rotor poles, repair butterfly valve, weld scroll case and draft tube, and install automatic voltage regulator and speed selector switch
	Devil's Den Pumping Plant	Unit 3 from November 15 to December 2 to replace pump mechanical seals and bearings
	Devil Canyon Power Plant	Unit 3 from November 2 to November 29 for annual maintenance and to repair needle valves
	Oso Pumping Plant	Unit 1 from November 1 to expected completion date in 2005 for biennial maintenance, to repair discharge line, modify automatic voltage regulator, replace cooling water piping, and rebuild discharge valve and pump case
December	Hyatt Power Plant	Unit 5 from December 7 to December 22 to work on spiral case access door cracks
	Gianelli Pumping-Generating Plant	Unit 6 from December 1 to expected completion date in 2005 to repair motor surface air coolers and work on Unit 5
	Polonio Pass Pumping Plant	Unit 5 from December 14 to expected completion date in 2005 to repair discharge valve
	Chrisman Pumping Plant	Unit 9 from December 22 to expected completion date in 2005 to overhaul pump and motor, repair discharge line, replace damaged piping, and repair and recoat pump case

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

# Chapter 12

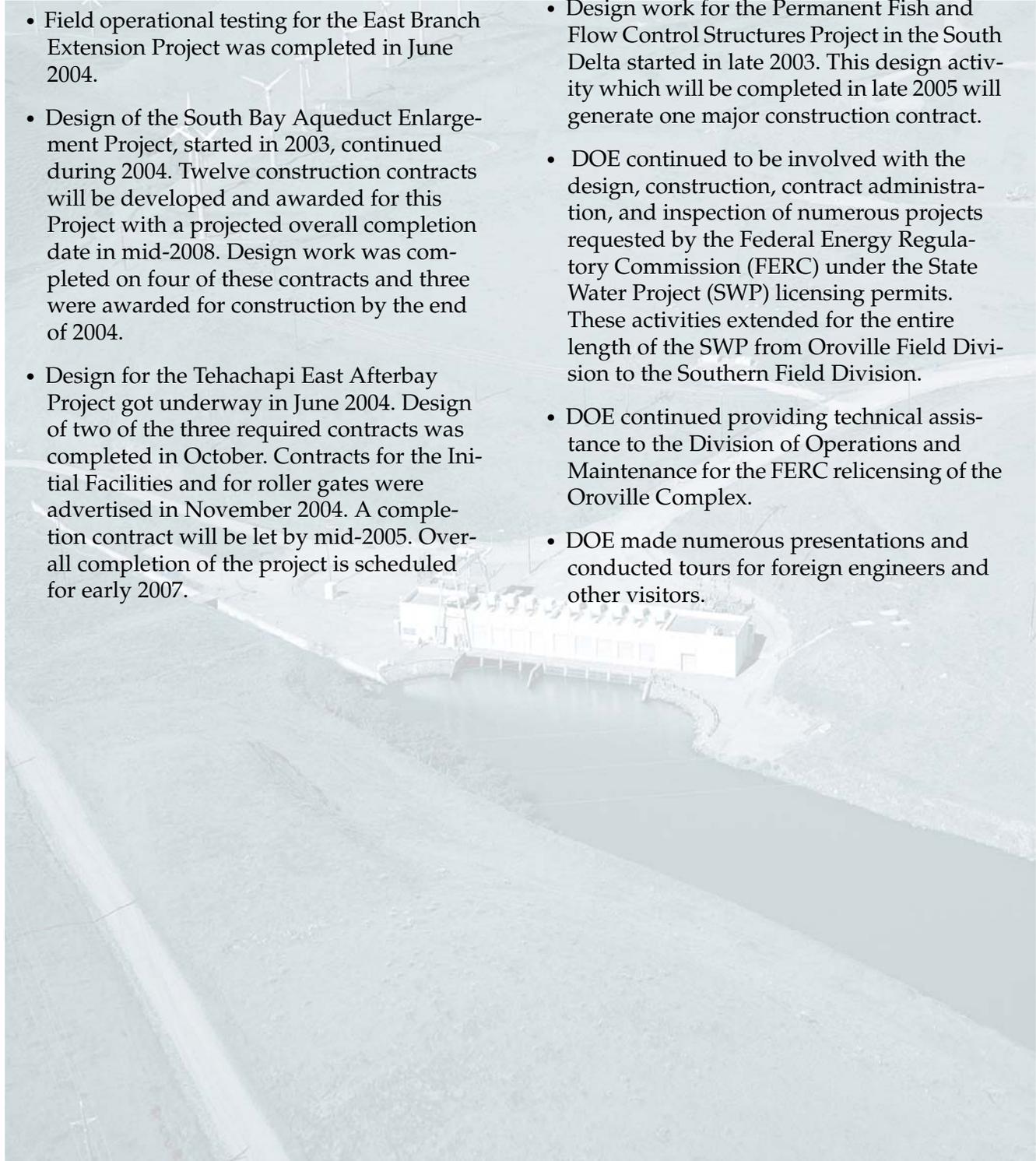
## Engineering and Right of Way



South Bay Pumping Plant

## Significant Events in 2004

- Field operational testing for the East Branch Extension Project was completed in June 2004.
- Design of the South Bay Aqueduct Enlargement Project, started in 2003, continued during 2004. Twelve construction contracts will be developed and awarded for this Project with a projected overall completion date in mid-2008. Design work was completed on four of these contracts and three were awarded for construction by the end of 2004.
- Design for the Tehachapi East Afterbay Project got underway in June 2004. Design of two of the three required contracts was completed in October. Contracts for the Initial Facilities and for roller gates were advertised in November 2004. A completion contract will be let by mid-2005. Overall completion of the project is scheduled for early 2007.
- Design work for the Permanent Fish and Flow Control Structures Project in the South Delta started in late 2003. This design activity which will be completed in late 2005 will generate one major construction contract.
- DOE continued to be involved with the design, construction, contract administration, and inspection of numerous projects requested by the Federal Energy Regulatory Commission (FERC) under the State Water Project (SWP) licensing permits. These activities extended for the entire length of the SWP from Oroville Field Division to the Southern Field Division.
- DOE continued providing technical assistance to the Division of Operations and Maintenance for the FERC relicensing of the Oroville Complex.
- DOE made numerous presentations and conducted tours for foreign engineers and other visitors.



**I**nitial construction of the State Water Project (SWP) facilities began in 1957 with the relocation of the Western Pacific Railroad facilities and Highway 70 near the City of Oroville to accommodate SWP Oroville facilities. Construction of the South Bay Aqueduct (SBA) facilities was started in 1960, and the first SWP water was delivered through the SBA 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 Geronio 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, 2004, through December 31, 2004, DOE worked on 35 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, Reclamation, 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. Some of the studies, reports and activities are new for this reporting period and others are continued from previous reporting periods.

- FERC requirements pertaining to operation of the SWP
- FERC requirements for relicensing of the Oroville Facilities
- Frenchmen Dam fault study
- Stability analysis for Oroville, Parish Camp Saddle, Bidwell Canyon Saddle, and Thermalito Dams
- ADA Oroville Recreation Sites survey for updating 1998 Facility Modification Transition Plan
- North Bay Aqueduct capacity enlargement from Cordelia Pumping Plant to Napa Terminal Tank
- North Bay Aqueduct reliability study
- Banks Pumping Plant cut slope evaluation
- Seismicity studies for Patterson Reservoir Dam
- South Bay Aqueduct reliability study
- South Bay Aqueduct enlargement and rehabilitation activities
- South Bay Aqueduct, Santa Clara Pipeline Repairs at Mile Post 39
- South Bay Aqueduct ADA Recreation Sites survey for updating 1998 Plan
- Clifton Court Forebay geological exploration drilling for new intake
- Mile Post 62 slide investigation and repair
- Devil's Den Pumping Plant trashrack/traveling screen modification
- Gianelli Pumping-Generating Plant power transformer second containment basin
- East Branch Enlargement, Phase II study activities
- East Branch Extension, Phase II feasibility study
- Valley String Storage operational model and fatal flow study
- North Bay Aqueduct Capacity study and pipeline inspection for possible enlargement
- Santa Clara Terminal Repair – geologic exploration and groundwater monitoring
- Mile Post 88.7 to Mile Post 89.5 seepage geologic exploration
- Gianelli pump/turbine runner replacement feasibility study
- Evaluate capacity of cross-drainage structure between Buena Vista and Teerink Pumping Plants
- Evaluate hydrology and capacity of cross-drainage facilities Buena Vista/Teerink Pumping Plants
- Develop pump refurbishing pilot program for A.D. Edmonston Pumping Plant
- Analysis of Castaic Dam Intake Tower
- William E. Warne Power Plant Penstock cooling water transient study
- Aqueduct Spill Basin Check 66 study
- Hesperia Master Drainage Plan for Antelope Wash and adjacent area
- Castaic, Pyramid, and Perris Dams – Emergency Release Facilities
- Castaic Dam and Perris Dam Breach Inundation study
- Pearblossom Disposal Area assessment study, Phase II
- Devil Canyon Second Afterbay Outlet Structure modification

DOE staff also completed the studies and activities listed below.

- Oroville Underground Storage Tank investigation and monitoring
- Delta seismicity study program
- Clifton Court Forebay and Dam re-evaluation report prepared for O&M

- Byron Road Bridge deck deterioration study and analysis
- Clifton Court Forebay radial gates rehabilitation
- Skinner Fish Protection Facility – evaluation of wing gate system
- Delta dams seismicity report – Bethany Dams and Del Valle dam
- South Bay Aqueduct landslide stabilization study
- Gianelli Pumping-Generating Plant runner replacement feasibility study
- Arroyo Passajero flood control study
- San Luis Dam trashrack access bridge vehicle load study
- Castaic Dam High Intake Tower and Access Bridge analysis
- Tehachapi East Afterbay and Dam geological exploration

### Environmental Activities

Environmental issues have concerned DWR since the inception of the SWP. These issues have increased in magnitude with enactment of numerous laws at both federal and State levels. DWR 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. In 2004, three contracts required continuing environmental review and are described below.

#### Emergency Levee Reach Closure – Upper Jones Tract

On June 3, 2004, the Upper Jones Tract levee broke in the Sacramento-San Joaquin Delta. As a result, water quality in the Delta and potential impacts to the State and federal water facilities were of major

concern. Action taken to mitigate water quality were:

- The Bureau of Reclamation (Reclamation) increased releases of fresh water from Shasta Dam to help control salinity.
- DWR and Reclamation reduced pumping at their South Delta export pumps to reduce the intrusion of sea water.
- Delta Cross Channel Gates were opened to move Sacramento River water into the central Delta to repel sea water intrusion.
- DWR monitored Delta water quality at more than 20 sites.

#### Westside Detention Basin – San Luis Canal

Work for this project was located along an approximate 8 mile section of the west side of the San Luis Canal, approximately 2 miles southeast of Huron, in Fresno County. Thousands of cubic yards of material were placed to raise levees along the San Luis Canal and modifications were made to the drain inlets to raise the gate controls. The construction activities had the potential to impact several known sensitive species and habitats known to exist in the area; such as Swainson's hawk; Western Burrowing Owl; Upland Valley saltbush scrub, and large riparian trees. The Upland Valley saltbush scrub was protected from any contractor activity. In addition, the large riparian trees were not removed or disturbed. These trees provided potential raptor nesting habitat.

#### Construction Activities

DOE worked on 43 construction contracts in 2004. 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 99 percent of the work completed by the end of 2004. Due to warranty issues, estimated completion is December 2006.

Refurbishment of pump-turbine Units 2, 4, and 6, which started in November 2001 (Specification No. 01-11), continued with approximately 25 percent of the work completed by the end of 2004. The estimated completion date is December 2007.

**Hyatt Power Plant and Thermalito Pumping-Generating Plant.** Furnishing governor replacements for the Hyatt Power Plant and the Thermalito Pumping-Generating Plant (Specification No. 99-19) was completed by October 2001; however, acceptance was delayed until January 2004, when equipment was installed, tested, and operational.

**Oroville Operations and Maintenance Center.** Work on a contract to replace the roof of the plant maintenance shop (Specification No. 03-08) began in September 2003, completed in October 2003, and accepted in April 2004. Work included selective demolition of existing roofing, insulation, and flashing, and removal and reinstallation of existing equipment.

**Thermalito Pumping-Generating Plant.** Work on a contract to furnish spare coils and materials (Specification No. 02-08) began in September 2002 and completed in February 2004. All work associated with Thermalito Unit No. 1 was deleted as a cost savings measure.

## Delta Facilities

**Temporary Rock Barriers.** Work on the multi-year 2004 through 2006 contract (Specification No. 03-07) for the installation and removal of seasonal temporary rock barriers in designated South Delta waterways (Middle River, Old River, and Grant Line Canal) continued

throughout the year with approximately 48 percent of the work completed by the end of December 2004. 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, but was not limited to:

- constructing two divider walls in the intake channel at Skinner Fish Facility;
- providing services to perform testing on the SBA pipeline to detect air pockets along the Brushy Creek Pipeline;
- removing harvested pond weed at Clifton Court Forebay;
- purchasing and installing piles, support beams and catwalk for the new Water Quality Monitoring Station at Vernalis; and
- obtaining equipment for the new Water Quality Monitoring Station at Vernalis.

**North Bay Aqueduct.** Phase I of pipeline rehabilitation and seismic repairs (Specification No. 03-09) began in February 2004 and completed in June 2004. Work included:

- providing cathodic protection and repairing coatings at the Napa Tank Reservoir, Cordelia Surge Tank, and Travis Surge Tank;
- constructing a reinforced ring foundation and anchorage system for the Creston Surge Tank; and
- replacing valves, sealing manhole riser structures, cathodic protection, and repairing coatings from damage during the performance of work on the pipeline.

Change order work included:

- removing sediment from the Napa Terminal Tank;
- fabricating two manhole covers;
- furnishing and installing 25 drain valves and a new corrosion test station;

- installing fences and gates at seven test locations; and
- providing shoring for excavation at five vineyard locations.

### **North San Joaquin Division**

**Skinner Fish Facility.** A contract to construct a Delta smelt testing and holding facility (Specification No. 03-06) began in September 2003 and completed in March 2004.

Replacement of the trashrake and trashrack systems (Specification No. 04-02) began in March 2004. Although the systems were installed and provisionally operational by November 2004, work added at the request of the Delta Field Division will delay acceptance until June 2005. Contract work included: furnishing and installing the trashrack, an automatic monorail traveling trashrake system, and metal catwalks and handrails.

**South Bay Aqueduct.** Work on a contract to furnish valves and sluice gates began in July 2001 (Specification No. 01-18) and completed in February 2004. Change order work included added valves and flanges for the South Bay and North Bay refurbishment projects.

Phase II of the rehabilitation of access structures and valves began in August 2002 (Specification No. 02-11). The original June 2003 completion was delayed until June 2004 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. The work included:

- 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 asbestos-containing pipe coating;
- installing soil anchors at the terminal tank, and backfilling and compacting to original grade; and
- repairing corrosion and relining steel sections

Work on a contract to repair the pipeline at Milepost 39 (Specification No. 04-07) began in July 2004 and is scheduled for completion in January 2005.

Work at the Santa Clara Pipeline included:

- removing and replacing existing roadway asphalt concrete and aggregate base;
- placing cast-in-drill-hole (CIDH) concrete piles along the pipeline;
- removing and salvaging three 40-foot steel pipe sections;
- furnishing and installing 72-inch steel pipe; and
- furnishing and delivering two 40-foot long, 73-inch I. D. spare steel pipe sections.

Work at Del Valle Branch Pipeline included:

- excavating to expose the pipeline for inspection;
- placing new shotcrete ditch with reinforcement;
- placing stone slope protection reinforcement; and
- resurfacing the excavated area with asphalt concrete.

**South Bay Aqueduct Enlargement/Improvement.** A contract (Specification No. 04-05) to furnish 45 cfs pump and motor units for Unit Nos. 10 through 13, and one spare pump and motor for the South Bay Pumping Plant began in November 2004 and has an expected completion in June 2007.

## San Luis Division

**Gianelli Pumping-Generating Plant.** Work on a contract to furnish electrical field poles and materials for the generating units at Gianelli (Specification No. 00-17) that began in September 2000 was completed in June 2004. One set of 48 new field poles and two additional spare field poles were added by change order.

**Gianelli Pumping-Generating Plant and Dos Amigos Pumping Plant.** A contract (Specification No. 04-08) to refurbish the existing carbon dioxide (CO<sub>2</sub>) fire suppression system for Motor-Generator Unit Nos. 1 through 8 and the Oil Purifier Room at Gianelli, and Motor Unit Nos. 1 through 6 and the Oil Purifier Room at Dos Amigos began in July 2004 and was approximately 48 percent complete by December 2004. The work includes removing the existing devices and CO<sub>2</sub> cylinders, inspecting piping and nozzles, providing welding and coating where required, and furnishing and installing the following:

- a fire alarm system including a fire alarm control panel to provide fully integrated automatic and remote monitoring;
- new motor air housing smoke and temperature detectors;
- audible and visual alarms;
- new fully charged CO<sub>2</sub> cylinders;
- LCD annunciators and new manual pull stations; and
- new discharge heads, manual release station, lockout valves with enclosure, relief vents, bleeder valves, equipment nameplates, CO<sub>2</sub> flexible hoses and router valves.

The estimated completion date is September 2006.

**San Luis Canal.** Work on a contract to restore the West Side Detention Basin (Specification No. 04-03) began in August 2004. The work, which was approximately 17 percent complete by December 2004, includes:

- earthwork;
- concrete and steel reinforcement;
- gravel surfacing on the embankment road;
- chip sealing on the operations and maintenance road;
- erosion protection;
- construction of a concrete weir with inflatable rubber dam, control system, and appurtenances; and
- rehabilitation of the existing drain inlets and evacuation culverts.

## 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 continued throughout 2004, with completion scheduled for 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; and
- applying coatings and providing liaison services.

A contract to furnish spare impellers and diffusers (Specification No. 04-09) was awarded in June 2004 and is scheduled for completion in December 2006. Work consists of the manufacture and delivery of:

- two complete sets of pump impellers and two additional impellers;
- one complete set of diffusers;
- two complete sets of stationary and rotating wearing rings;
- one complete set of upper and lower wear plates; and

- one complete set of interstage bushings and templates.

### **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 and completed in May 2004. Substantial remedial work at the Castaic Dam outlet works pipeline was needed before the contract could be accepted in June 2004.

**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. Approximately 97 percent of the work was completed by the end of 2004. Contract acceptance will occur after DWR installs the automatic voltage regulators and the contractor provides erecting engineer services.

### **Santa Ana Division**

**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 and completed in March 2004.

### **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.

**Pump Stations.** Work that 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) was completed in November 2000. Acceptance, which is expected in mid 2005, 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. DWR accepted the work in March 2004 after site acceptance testing was 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. Site acceptance testing was completed in June 2004 with acceptance to follow after the contractor submits the final programming and the global database.

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). The contract also calls for electric motors, variable frequency drives, appurtenant equipment, and associated training programs. Completion of this contract was scheduled for December 2003, but has been extended to 2006 due to a change order for additional pump units for Greenspot and Crafton Hills Pump Stations.

An October 2001 contract to furnish and install the control and communications systems for

Greenspot, Crafton Hills, and Cherry Valley Pump Stations (Specification No. 01-05) is scheduled for completion by September 2005.

**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 work on the three valve contracts was completed by December 2004.

### Construction Activities in Multiple Divisions

A May 2003 contract to design, manufacture, deliver, and install automatic digital voltage regulators for Banks Pumping Plant and Gianelli Pumping-Generating Plant (Specification No. 02-12) continued with approximately 64 percent of the work completed by the end of December 2004.

Work continues on a contract for revegetation of disturbed areas at Mojave Siphon Power Plant and Devil Canyon Second Afterbay (Specification No. 99-21). This work, which started in November 1999, fulfills FERC permit requirements, is scheduled for completion by December 2005. Due to the extensive fires in late 2003, erosion control at the areas surrounding Silverwood Lake, Devil Canyon Second Afterbay, and Mojave Siphon Power Plant was added by change order. Other change order work included revegetation at Crafton Hills.

A contract to coat bulkhead gates and radial gates using a metallized coating process at Oso and Pearblossom Pumping Plants and at Check 59 (Specification No. 03-02) began in August 2003 and completed in March 2004.

At Crafton Hills Reservoir, work added by change order included:

- 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.

At Devil Canyon Power Plant, change order work consisted of replacing fire-damaged guardrail posts along DWR's access road.

Work on a contract to furnish spare coils and associated materials for Pearblossom and Oso Pumping Plants (Specification No. 98-27) began in March 1999, completed in June 2003, and accepted in June 2004. Under a contract change order, additional coils were furnished for Pearblossom Pumping Plant.

In September 2003, work began on a contract to apply asphalt seal coat and asphalt concrete to paved areas in the San Luis and Southern Field Divisions, and to construct an oil containment basin at Gianelli Pumping-Generating Plant (Specification No. 03-04). Road work was delayed by wildfires and heavy rains, but was completed in August 2004 and accepted in November 2004.

In August 2004, work began on a contract to apply asphalt seal coat and asphalt concrete to paved areas in the San Luis and Southern Field Divisions (Specification No. 04-10). Approximately 93 percent of the contract work was completed by December 2004. Work added by change order included providing a temporary construction field office and soils and concrete laboratory building, and placement of rocks along Piru Creek Road, the Osito Adit Channel, and Devil Canyon Headquarters Road to stop the continuing erosion from high storm flows.

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 2004, approximately 95 per-

cent of the work had been completed. Completion of all contract work is scheduled for November 2005.

### **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 the 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 Department of Fish and Game.

#### **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 completed in March 2004, and accepted in June 2004. Work included:

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

#### **Upper Jones Tract Levee Breach**

Due to a breach in the levee at the Upper Jones Tract, the Governor officially declared a State of Emergency on June 4, 2004 for the Upper and Lower Jones Tracts flooding. In response, the following four emergency contracts were awarded in June 2004.

A contract to provide labor, materials, and equipment at Upper Jones Tract (Specification No. 04-13) was the first to be awarded. Although the breach in the levee was closed in October 2004, work to control seepage continued through the end of the year.

Levee protection support activities and other emergency work at Lower Jones Tract (Specification No. 04-14) continued through the end of 2004 with completion expected in February 2005.

An emergency contract to provide levee slope protection by placing rip rap on the interior levee slopes of the Lower Jones Tract (Specification No. 04-15) is expected to be completed in February 2005. Work was also performed at Trapper Slough levee to mitigate potential impacts from dredge spoil fill material.

Work on an emergency contract to dewater Upper and Lower Jones Tracts (Specification No. 04-16) began in July 2004 and completed in October 2004. Work consisted of installing, operating and maintaining two temporary pump stations, 24 hours a day, 7 days a week until the flood water was pumped down to an elevation established by the engineer.

### **Real Estate Branch Activities**

DWR has spent a net total of \$250 million to acquire rights of way, recreation, and mitigation land for the State Water Project from its inception to December 31, 2004. From January 1 through December 31, 2004, DWR:

- (1) acquired one parcel (0.25 acre in permanent easement) for a cost of \$5,000, for Arroyo Pasajero Flood Control Improvement;
- (2) acquired one parcel (1.23 acres in permanent easement) for a cost of \$1,347.96, South Bay Aqueduct;
- (3) acquired one parcel (3.69 acres in permanent easement and 4.63 acres in temporary easement) for a cost of \$14,301.53, Water Quality Misc.;

- (4) acquired one parcel (0.92 acre in permanent easement) for a cost of \$515.57, Deer Creek Water Exchange;
- (5) acquired one parcel (20 acres in permanent easement) for \$63,000, East Branch Extension, San Geronio Pass Pipeline;
- (6) acquired one parcel (0.25 acres permanent easement) from Union Pacific Railroad for \$5,000, Arroyo Pasajero Flood Control Improvement Project—Westside Detention Dam;
- (7) obtained 63 temporary permits:
- 2 for Bank Swallow Protection on Feather River
  - 1 for Bethel Island Water Quality Monitoring Station, Russo Marina
  - 13 for Calaveras River Fish Passage Study
  - 2 for CIMIS Weather Stations
  - 1 for Diversions Dredging
  - 1 for Groundwater Substation Water Transfer Monitoring Program
  - 3 for Jones Tract Emergency Levee Repair
  - 3 for Mile Post 62 Pipeline Relocation
  - 1 for Mojave Siphon Repair
  - 1 for Santa Ana Pipeline Repair
  - 12 for South Bay Aqueduct Improvement and Enlargement
  - 1 for South Bay Aqueduct Rehabilitation, Del Valle Pipeline Surge Tank
  - 2 for South Delta Diversions Dredging and Modification
  - 6 for South Delta Improvement Program, Permanent Barriers
  - 1 for Suisun Marsh Facilities Tidal Marsh Restoration
  - 2 for Suisun Marsh Tidal Datum Station
  - 2 for Temporary Barriers
  - 2 for Temporary Barriers, Emergency Pump Program
  - 1 for the Jensen River Ranch Habitat Enhancement and Public Access
  - 1 for West Delta Wildlife/Twitchell Island
  - 5 for Yolo Bypass Hydrologic Monitoring
- (8) Renewed 11 leases on State Water Project properties;
- (9) State Water Project income produced \$449,607;
- (10) Processed 47 Encroachment Permit applications; issued 31;
- (11) Collected fees of \$246,062 for review and inspection costs related to Encroachment Permit applications;
- (12) Received 8 encroachment reviews where applicant had prior property rights; completed 6;
- (13) Received 5 Encroachment Permit amendments; completed 7;
- (14) Coordinated review of 60 tentative tract map developments within one mile of the Aqueduct; and
- (15) Completed 27 appraisals, 3 lease updates, and 25 appraisal reviews.

**Table 12-1. Design Activities, January 1, 2004, through December 31, 2004, by Division**

Construction Division and Facility	Design Activity	Date Design Began	Design Actual/ Estimated Completion Date
<b>Oroville Division</b>			
Oroville O&M Center and Beckworth Subcenter	Roof replacement	April 2004	June 2004
Oroville Recreation Facilities	Brad B. Freeman bike trail realignment	December 2004	September 2005
<b>Delta Facilities</b>			
Permanent South Delta Control	Old River control structure	September 2003	December 2005
	Old River flow control structure	September 2003	December 2005
	Grant Line Canal flow control structure	September 2003	December 2005
	Middle River flow control structure	September 2003	December 2005
Skinner Fish Facility	Trashrake and trashrack replacement	August 2003	April 2005
<b>North San Joaquin Division</b>			
South Bay Aqueduct	Santa Clara pipeline repairs, Mile Post 39	January 2004	June 2004
South Bay Aqueduct Enlargement South Bay Pumping Plant	Furnish pumps and motors	March 2003	September 2004
	Initial plant structure	April 2003	July 2005
	Furnish valves and actuators	July 2003	April 2005
	Furnish power transformers	December 2003	March 2005
	Furnish switchyard equipment	December 2003	June 2005
	Furnish switchgear	December 2003	August 2005
	Furnish and install SCADA equipment	February 2004	July 2006
Discharge Line and Pipelines	Plant completion	January 2005	July 2006
	Construct plant discharge line and Brushy Creek Pipeline No. 3	May 2003	November 2005
Surge Tank No. 3	Construct surge tank	July 2003	January 2006
Canal	Canal modification	July 2003	April 2006
Dyer Reservoir	Modification	September 2003	February 2006
<b>San Luis Division</b>			
Arroyo Pasajero Project	West Side Detention Basin improvements	January 2003	March 2004
Gianelli Pumping-Generating Plant and Dos Amigos Pumping Plant	Refurbish CO <sub>2</sub> system	January 2004	April 2004
<b>Tehachapi Division</b>			
Edmonston Pumping Plant	Furnish spare impellers, guide wheels and diffusers for Pump Units 1, 3, 5, 7, 9, 11, and 13	March 2004	May 2004
	Add refurbishment discharge lines	August 2004	December 2004
Tehachapi East Afterbay	Initial facilities	June 2004	October 2004
	Roller gates	June 2004	October 2004
	Completion contract	June 2004	February 2005
<b>Mojave Division</b>			
Pearblossom O&M Subcenter and Plant Maintenance Building	Exit stairs and other modifications	Oct. 2003	January 2004
<b>Santa Ana Division</b>			
Devil Canyon Power Plant	Outlet structure modification and second cross channel	May 2004	Jan. 2005
<b>West Branch</b>			
Pyramid Dam and Piru Creek Warne Power Plant	Pyramid Dam bridge repair and Piru Creek repairs	October 2002	March 2004
	Sofit and fascia replacement	October 2003	January 2004
<b>Multiple Division</b>			
Delta, San Luis, and Southern Field Divisions	Roofing replacement and recoating	July 2003	May 2004
San Luis and Southern Field Divisions	Building maintenance and repairs contract—soffit and fascia replacement, Warne Power Plant; Vista del Lago Visitor Center; Pearblossom Pumping Plant; Investigate Vista del Lago Visitor Center roof structural problem and repair.	October 2003	February 2004
	Seal and pave roads and parking areas - 2001.	O&M Designed	May 2004
<b>Miscellaneous</b>			
San Joaquin River	Vernalis water quality monitoring station	November 2002	January 2004

**Table 12-3. Construction Activities, January 1, 2004, through December 31, 2004, by Division**

Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW <sup>a</sup> )	Acceptance Date (Expected or Actual)	Contract Costs (in Thousands of Dollars)
<b>Oroville Division</b>				
Hyatt Power Plant	Refurbish turbine Units 1, 3, and 5 (98-22)	February 1999	December 2006	11,825
	Refurbish pump-turbine Units 2, 4, and 6 (01-11)	November 2001	December 2007	1,800
Hyatt Power Plant and Thermalito Pumping-Generating Plant	Furnish governor replacement (99-19)	November 1999	January 2004	1,512
Oroville Operations and Maintenance Center	Replace plant maintenance shop roof (03-08)	September 2003	April 2004	219
Thermalito Pumping-Generating Plant	Furnish spare coils and materials (02-08)	September 2002	August 2004	686
<b>Delta Facilities</b>				
Temporary Rock Barriers	Construct temporary rock barriers: Middle River, Old River, and Grant Line Canal (03-07)	November 2003	February 2007	14,009
<b>North Bay Aqueduct</b>	Rehabilitate pipeline and perform seismic repairs (03-09)	February 2004	October 2004	535
<b>North San Joaquin Division</b>				
Skinner Fish Facility	Construct fish testing and holding facility (03-06)	September 2003	June 2004	731
	Replace trashrack and trashrake systems (04-02)	March 2004	June 2005	1,884
<b>South Bay Aqueduct</b>				
South Bay Aqueduct Enlargement	Furnish valves and sluice gates (01-18)	July 2001	April 2004	1,812
	Rehabilitate pipeline access structures and valves Phase II (02-11)	August 2002	October 2004	10,488
	Repair pipeline, Milepost 39 (04-07)	July 2004	April 2005	2,176
South Bay Aqueduct Enlargement	Furnish 45 cfs pump and motor units (04-05)	November 2004	August 2007	7,150
<b>San Luis Division</b>				
Gianelli Pumping-Generating Plant	Furnish field poles and materials (00-17)	September 2000	November 2004	4,394
Gianelli Pumping-Generating Plant and Dos Amigos Pumping Plant	Refurbish CO <sub>2</sub> system (04-08)	July 2004	July 2005	739
	San Luis Canal	Restore West Side Detention Basin (04-03)	August 2004	January 2006
<b>Tehachapi Division</b>				
Edmonston Pumping Plant	Replace pumps (02-10)	June 2003	May 2011	34,900
	Furnish spare impellers and diffusers (04-09)	July 2004	June 2006	3,900
<b>West Branch</b>				
Castaic Dam and Pastoria Siphon	Recoat Castaic Dam outlet works and Pastoria Siphon pipelines (01-03)	August 2001	June 2004	2,031
Oso Pumping Plant	Furnish automatic voltage regulators (00-06)	May 2000	June 2005	1,177
<b>Santa Ana Division</b>				
Santa Ana Pipeline East Branch Extension	Excavate, inspect, repair and replace pipeline (03-05)	September 2003	August 2004	5,000
<i>Pump Stations</i>				
Greenspot and Crafton Hills	Furnish power circuit breakers and switchgear equipment (98-16)	March 1999	July 2004	315
	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	July 2005	657
	Furnish pumps, motors, and variable frequency drives (99-17)	November 1999	December 2006	3,111
	Construct pump stations (99-27)	June 2000	May 2005	24,300
	Furnish and install supervisory control and communications systems (01-05)	October 2001	November 2005	5,500

**Table 12-3. Construction Activities, January 1, 2004, through December 31, 2004, by Division**

Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW <sup>a</sup> )	Acceptance Date (Expected or Actual)	Contract Costs (in Thousands of Dollars)
<i>Valve Facilities</i>				
Carter Street and Morton Canyon	Furnish ANSI ball valves (99-20)	October 1999	June 2005	1,145
	Furnish AWWA butterfly valves (99-22)	October 1999	June 2005	862
	Furnish ANSI butterfly valves (99-23)	November 1999	June 2005	1,417
<b>Multiple Divisions</b>				
Banks Pumping Plant and Gianelli Pumping-Generating Plant	Design, manufacture, deliver and install digital voltage regulators (02-12)	May 1999	February 2006	2,284
Mojave Siphon Power Plant and Devil Canyon Second Afterbay	Revegetation (99-21)	November 1999	February 2006	790
Oso and Pearblossom Pumping Plants and Check 59	Coat bulkhead gates and radial gates (03-02)	August 2003	August 2004	184
Pearblossom and Oso Pumping Plants	Furnish spare coils and materials (98-27)	March 1999	June 2004	903
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	November 2004	2,999
	Seal and pave roads (04-10)	August 2004	June 2005	3,281
Warne and Devil Canyon Power Plants	Furnish spare coils and materials (01-13)	October 2001	January 2006	1,130
<b>Miscellaneous Activities</b>				
Kern River	Schaeffer fish barrier, South Fork (02-05)	June 2002	March 2004	1,569
Castaic Lake State Recreation Area	Renovate boating facilities (02-09)	January 2003	June 2004	2,378
Upper and Lower Jones Tracts	Close levee breach at Upper Jones Tract (04-13)	June 2004	July 2005	10,920
	Support levee protection activities at Lower Jones Tract (04-14)	June 2004	April 2005	550
	Protect levee slope at Lower Jones Tract (04-15)	June 2004	April 2005	1,543
	Dewater Upper and Lower Jones Tract (14-16)	June 2004	July 2005	4,860

<sup>a</sup>Notice to Begin Work

Information for this chapter was provided by the Division of Engineering.
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# Chapter 13

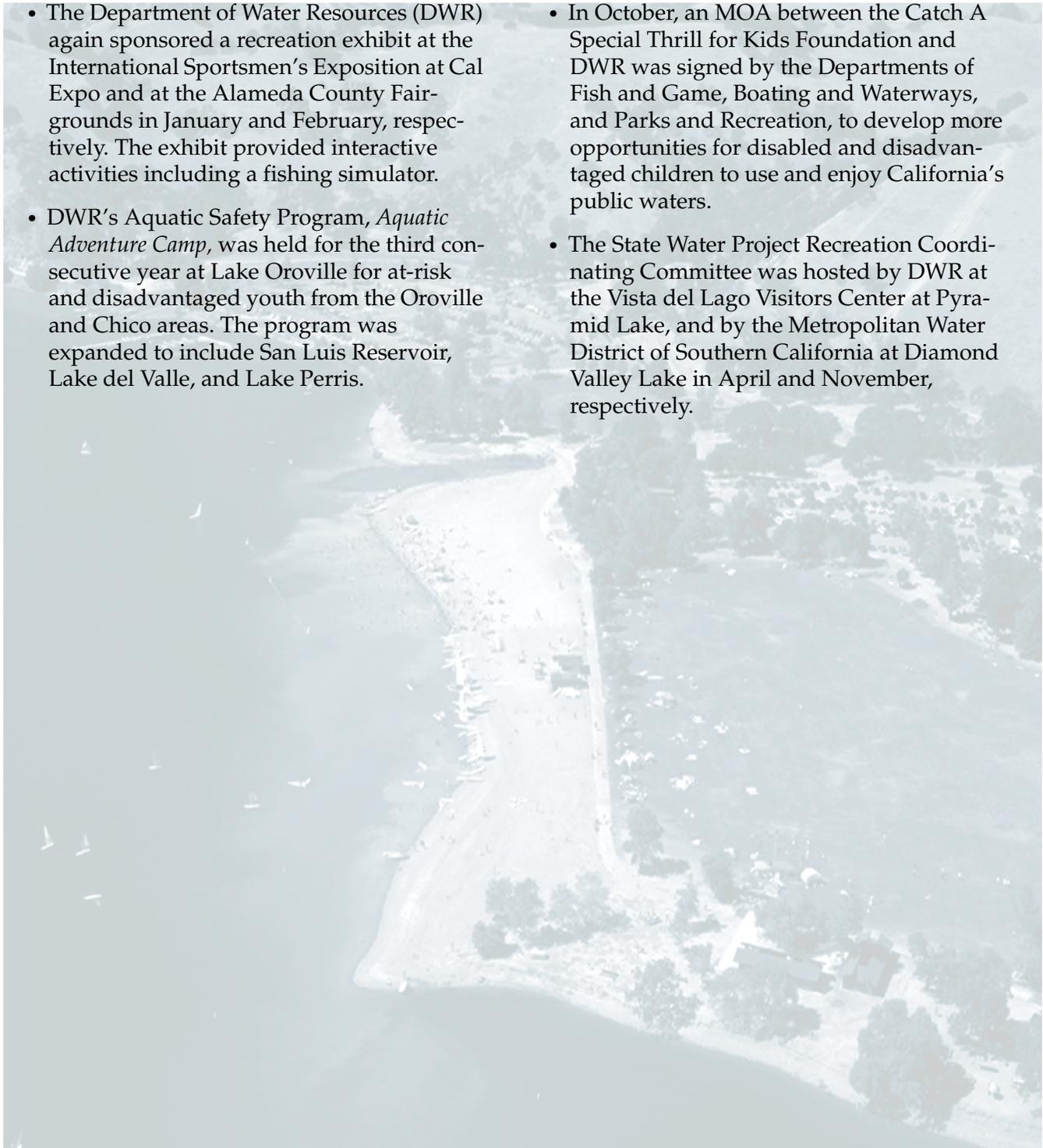
## Recreation



Aerial of beach at Lake Del Valle

## Significant Events in 2004

- The Department of Water Resources (DWR) again 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 fishing simulator.
- DWR's Aquatic Safety Program, *Aquatic Adventure Camp*, was held for the third consecutive year at Lake Oroville for at-risk and disadvantaged youth from the Oroville and Chico areas. The program was expanded to include San Luis Reservoir, Lake del Valle, and Lake Perris.
- In October, an MOA between the Catch A Special Thrill for Kids Foundation and DWR was signed by the Departments of Fish and Game, Boating and Waterways, and Parks and Recreation, to develop more opportunities for disabled and disadvantaged children to use and enjoy California's public waters.
- The State Water Project Recreation Coordinating Committee was hosted by DWR at the Vista del Lago Visitors Center at Pyramid Lake, and by the Metropolitan Water District of Southern California at Diamond Valley Lake in April and November, respectively.



**T**he State Water Project (SWP) is a multipurpose project that benefits millions of Californians. In addition to providing water supply, flood control, and habitat for fish and wildlife, the State Water Project 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 2004, SWP facilities recorded 4.27 million recreation days of use (Table 13-1), an 18 percent decrease from the 5.23 million recreation days recorded in 2003. Most of this decrease is attributable to the impact of the Southern California fires and the subsequent flooding on the four reservoirs in Southern California in addition to 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 2003. (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 was concentrated at the major reservoirs, despite Silverwood Lake being closed due to fire and subsequent floods for more than 2 months (reopening on Memorial Day weekend), and Pyramid Lake not reopening until the July 4 weekend. Fifty-one percent of the total SWP recreational use in 2004 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 180 million recreation days

have been recorded at SWP recreational facilities.

## Facilities

### Planning

During 2004, the Department of Boating and Waterways began plans for the following projects below.

**Pyramid Lake.** Plans are being developed for the Yellow Bar boat-in site renovation. Construction is anticipated to begin next year. At the Emigrant Landing boat ramp, boarding floats are under construction; installation is anticipated in summer 2005.

**Lake Oroville.** Planning began on fish cleaning stations and shelters at the Loafer Creek and Spillway areas.

### New Facilities

#### *Lake Oroville*

- Construction began on the North Forebay Aquatic Center; anticipated completion date is summer 2005.
- A new restroom and ramp repair at the Bidwell Canyon area is under construction with completion anticipated in summer 2005.
- A floating campground boarding float was retrofitted as a trial project to accommodate persons with disabilities.



- |   |  |
|---|--|
| 1. Antelope Lake Recreation Area  | 20. Three Rocks Fishing Access Site  |
| 2. Frenchman Lake Recreation Area                                       | 21. Huron Fishing Access Site  |
| 3. Lake Davis Recreation Area   | 22. Avenal Cutoff Fishing Access Site  |
| 4. Lake Oroville State Recreation Area                                  | 23. Kettleman City Fishing Access Site   |
| 5. White Slough Wildlife Area   | 24. Lost Hills Fishing Access Site   |
| 6. Bethany Reservoir  | 25. Buttonwillow Fishing Access Site   |
| 7. Lake del Valle State Recreation Area                                 | 26. Pyramid Lake State Recreation Area   |
| 8. Bikeway from Bethany Reservoir to O'Neill Forebay (70 miles)         | 27. Castaic Lake State Recreation Area   |
| 9. Grant Line Road Fishing Access Site                                  | 28. Munz Ranch Road Fishing Access Site  |
| 10. Niels Hansen Fishing Access Site                                    | 29. Bikeway from Quail Lake to Silverwood Lake (107 miles, not all accessible) |
| 11. Orestimba Fishing Access Site                                       | 30. 70th Street West Fishing Access Site                                       |
| 12. Access Walk-in Fishing (63 miles)                                   | 31. Access Walk-in Fishing (83 miles)  |
| 13. Cottonwood Road Fishing Access Site                                 | 32. Avenue S Fishing Access Site   |
| 14. San Luis Reservoir State Recreation Area                            | 33. 77th Street East Fishing Access Site                                       |
| 15. Los Banos Reservoir   | 34. Longview Road Fishing Access Site  |
| 16. Canyon Road Fishing Access Site                                     | 35. Silverwood Lake State Recreation Area                                      |
| 17. Mervel Avenue Fishing Access Site                                   | 36. Lake Perris State Recreation Area  |
| 18. Fairfax Fishing Access Site   | 37. San Jacinto Wildlife Area  |
| 19. Access to Walk-in Fishing (208 miles accessible along the aqueduct) |  |

**Figure 13-1. Names and Locations of SWP Recreation Areas**

**Table 13-1. Recreation Days Recorded in 2004, by Field Division and Facility**

Field Division	Number of Recreation Days
<b>Oroville Field Division</b>	
Frenchman Lake	240,000
Antelope Lake	70,000
Lake Davis	138,000
Lake Oroville and Thermalito Forebay	476,700
Thermalito Afterbay and Oroville Wildlife Area	300,000
Subtotal	1,224,700
<b>Delta Field Division</b>	
Lake del Valle	269,000
Bethany Reservoir	27,700
Fishing Access Site	
Neils Hansen	100
California Aqueduct	
Walk-In Fishing	600
Bikeway	100
White Slough Wildlife Area	12,000
Subtotal	309,500
<b>San Luis Field Division</b>	
San Luis Reservoir, including O'Neill Forebay and Los Banos Reservoir	532,000
California Aqueduct	
Walk-In Fishing	12,000
Wildlife Areas	11,000
Subtotal	555,000
<b>San Joaquin Field Division</b>	
Fishing Access Sites	
Kettleman City	1,000
Lost Hills	1,000
Buttonwillow	1,000
California Aqueduct	
Walk-In Fishing	9,500
Subtotal	12,500
<b>Southern Field Division</b>	
Silverwood Lake	243,600
Lake Perris	1,175,600
Pyramid Lake	100,000
Castaic Lake	643,100
Fishing Access Sites	
Quail Lake	1,300
77th Street East	400
Longview Road	100
California Aqueduct	
Walk-In Fishing	2,500
Bikeway	400
Subtotal	2,167,000
<b>Total</b>	<b>4,268,700</b>

*Castaic Lake.* Construction was completed on the boating instruction safety center at Castaic Lake Lagoon, and on the new access road and boat launching facility at the east ramp area. However, the boating instruction safety center remains unoccupied until a lease can be obtained.

*Lake Perris.* Construction was completed on a new restroom project at Ramps 6 and 7, and is expected to open in spring 2005.

*Lake Del Valle.* Valley Oak, a new reservable picnic area, was built, and the Eagles View reservable picnic area was converted to a group campsite.

### Improvements to Facilities

Improvements were made at the following facilities:

*Lake Del Valle.*

- sewage lift stations 1 and 3 were replaced;
- sprinklers on the east side were replaced with low-flow sprinkler heads;
- barbecues at Gray Pine and Shady Oak reservable picnic areas were upgraded by installing new concrete barbecue units; and
- the Punta Vaca area was upgraded with four benches, a fire ring, family-size barbecue, four permanent picnic tables, and a water fountain.

*Silverwood Lake.* Construction began on a boat-in site renovation project and is scheduled for completion in 2005.

*Pyramid Lake.* Eroded slopes were repaired at Emigrant Landing, and emergency repairs were completed on docks at boat-in sites.

*Lake Perris.* Repairs to the patrol dock were completed in spring 2004.

### Oroville Recreation Plan

The Federal Energy Regulatory Commission (FERC) Order 2100-052, issued on October 1, 1992, required DWR 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 DWR on recreation plan implementation, which included the following projects:

- ten floating campsites constructed and moored at various locations on the lake;
- an en route RV camping area added at the North Thermalito Forebay area;
- construction completed on a duck brood pond and restroom and picnic facilities at Thermalito Afterbay;
- buoys deployed around the water-ski slalom course;
- construction completed on the 41-mile bike trail main loop;
- construction completed on the Lime Saddle Boat Ramp improvements, an equestrian campground at Loafer Creek Recreation Area, and lighting on Oroville Dam; and
- fishery and fishing improvements 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 2004, the Department of Fish and Game continued its fish-planting activities at 10 of the 12 SWP facilities. Total plantings of trout increased by 89 percent in 2004 (see Table 13-2). At the Feather River fish hatchery and the Thermalito Afterbay rearing ponds, 10,792,000 fish were produced in 2004—10,431,600 Chinook salmon and 360,400 steelhead trout. Of the Chinook salmon reared, 638,100 were fingerlings and 9,793,500 were advanced fingerlings. Of the steelhead reared, all were yearlings.

### Recreation Financing

Previously, DWR reported capital costs allocated to fish and wildlife enhancement and recreation in Appendix D to Bulletin 132, *Costs of Recreation and Fish and Wildlife Enhancement*. This report is no longer mandated by the Legislature, and these capital costs, starting with fiscal year 2000-01, are reported in this bulletin.

The financing of recreation and fish and wildlife enhancement in connection with the SWP was provided for by the Davis-Dolwig Act, Assembly Bill 12, and the Environmental Water Act, Assembly Bills 1441 and 1442. The Davis-Dolwig Act declared the Legislature's intent to provide DWR with General Fund appropriations for SWP fish and wildlife enhancement and recreation. For fiscal years 1983-84 through 2003-04, 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. DWR 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 2004. Costs have decreased by \$45,687 since last reported. These costs are budgeted by DWR 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.

**Table 13-2. Fish Planted in 2004 (Thousands)**

Location and Size	Eagle Lake Trout	Brook Trout	Rainbow Trout	Brown Trout	Coho Salmon	Total
Antelope Lake Fingerlings	40.0					40.0
Lake Davis Catchables	38.0					38.0
Frenchman Reservoir Catchables	208.3					208.3
Lake Oroville Fingerlings			No fish planted			
Thermalito Forebay Catchables			18.5			
Lake del Valle Catchables			No fish planted			
Los Banos Reservoir Catchables			15.1			
Pyramid Lake Catchables			15.0			
Castaic Lake Catchables			53.5			
Castaic Lake Lagoon Catchables			41.2			
Silverwood Lake Catchables			51.1			
Lake Perris Catchables			50.9			
Lake Skinner <sup>a</sup> Catchables			No fish planted			
California Aqueduct			No fish planted			
<b>Total</b>	<b>286.3</b>		<b>245.3</b>			<b>531.6</b>

<sup>a</sup>Included in the SWP fish planting program, but not an SWP facility.

### Accrued Interest Charges

Table 13-4 details accrued interest charges included in the costs shown in Table 13-3, and reimbursements through December 2004. These interest accruals are calculated through December 31, 2004, 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

DWR's budget as appropriations from the General Fund.

For a more detailed discussion of these legislative provisions, and DWR'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 can be found on the Web at <http://www.swpao.water.ca.gov/publications/index.cfm>.

**Table 13-3. Recreation and Enhancement Capital Costs of the State Water Project, 2004**

Facility	Joint Costs Allocated to Recreation and Enhancement						Difference
	1952-2003	2004	Subtotal	Interest	Total Costs	B132-04 Costs	
Frenchman Dam and Lake (78.5%) <sup>a</sup>							
California Water Resources Development Bond Fund	102,997	0	102,997	2,097	105,094	105,094	0
All Other Funds	2,736,262	195	2,736,262	0	2,736,262	2,737,141	(684)
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	4,413,570	220	4,413,790	0	4,413,790	4,627,914	(214,124)
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	2,602,318	118	2,602,436	0	2,602,436	2,603,468	(1,032)
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	3,507,202	(5,946)	3,501,256	0	3,501,256	3,496,301	4,955
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	4,500,782	46,143	4,546,926	0	4,546,926	4,507,280	39,646
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	4,821,524	1,116	4,822,640	0	4,822,640	4,926,802	(104,161)
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	3,997,656	186,863	4,184,520	0	4,184,520	3,997,760	186,760
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	58,767,001	207,736	58,994,736	0	58,994,736	58,951,781	42,955
<b>Subtotal</b>	<b>160,616,381</b>	<b>436,446</b>	<b>161,052,827</b>	<b>85,626,954</b>	<b>246,679,781</b>	<b>246,725,468</b>	<b>(45,687)</b>
<b>Specific Costs of Acquiring Land for Recreation Development</b>							
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'Neil Forebay, and Los Banos Reservoir							
California Water Resources Development Bond Fund	395,284	0	395,284	33,467	428,751	428,751	0
All Other Funds	415,610	0	415,610	0	415,610	415,610	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	3,100,347	0
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
<b>Subtotal</b>	<b>23,894,895</b>	<b>0</b>	<b>23,894,895</b>	<b>11,953,381</b>	<b>35,848,276</b>	<b>35,848,276</b>	<b>0</b>
<b>Total Recreation and Enhancement Costs</b>							
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	436,446	96,423,941	0	96,423,941	96,469,628	(45,687)
<b>Total</b>	<b>184,511,276</b>	<b>436,446</b>	<b>184,947,722</b>	<b>97,580,335</b>	<b>282,528,057</b>	<b>282,573,744</b>	<b>(45,687)</b>

<sup>a</sup>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	1952-2003				2004				2005 Beginning of Year Balance to be Reimbursed						
	Disbursements		Reimbursements		Disbursements		Reimbursements		Disbursements		Reimbursements		Interest Accruals 1992-2005		
	WRD Bond Funds	All Other Funds	WRD Bond Funds	All Other Funds	WRD Bond Funds	All Other Funds	WRD Bond Funds	All Other Funds	WRD Bond Funds	All Other Funds	WRD Bond Funds	All Other Funds	WRD Bond Funds	All Other Funds	Interest Accrual
<b>Joint Costs Allocated to Recreation and Enhancement</b>															
Frenchman Dam and Lake	102,997	2,736,262	104,900	2,719,468	0	195	0	0	102,997	2,736,457	104,900	2,719,468	2,097	2,097	2,097
Antelope Dam and Lake	1,033,261	4,413,570	1,140,322	4,478,932	0	220	0	0	1,033,261	4,413,790	1,140,322	4,478,932	113,788	113,788	113,788
Grizzly Valley Dam and Lake Davis	4,003,092	2,602,318	4,444,594	2,568,667	0	118	0	0	4,003,092	2,602,436	4,444,594	2,568,667	486,754	486,754	486,754
Sisk Dam, San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir	988,910	3,507,202	1,938,244	2,725,578	0	(5,946)	0	0	988,910	3,501,256	1,938,244	2,725,578	169,085	169,085	169,085
California Aqueduct, Delta to Dos Amigos Pumping Plant	4,467,667	4,500,782	5,267,351	4,092,435	0	46,143	0	0	4,467,667	4,546,926	5,267,351	4,092,435	897,406	897,406	897,406
Oroville Division	5,725,216	4,821,524	7,324,529	4,570,269	0	1,116	0	0	5,725,216	4,822,640	7,324,529	4,570,269	1,790,491	1,790,491	1,790,491
Del Valle Dam and Lake del Valle	10,546,762	3,997,656	16,463,934	3,130,016	0	186,863	0	0	10,546,762	4,184,520	16,463,934	3,130,016	6,813,560	6,813,560	6,813,560
California Aqueduct, Dos Amigos Pumping Plant to Termini	48,382,162	58,787,001	113,035,518	49,410,851	0	207,736	0	0	48,382,162	58,994,736	113,035,518	49,410,851	75,353,773	75,353,773	75,353,773
<b>Subtotal</b>	<b>75,250,067</b>	<b>85,366,314</b>	<b>149,719,392</b>	<b>73,696,216</b>	<b>0</b>	<b>436,446</b>	<b>0</b>	<b>0</b>	<b>75,250,067</b>	<b>85,802,760</b>	<b>149,719,392</b>	<b>73,696,216</b>	<b>85,626,954</b>	<b>85,626,954</b>	<b>85,626,954</b>
<b>Specific Costs of Acquiring Land for Recreation Development</b>															
Frenchman Dam and Lake	3,379	49,947	3,520	49,947	0	0	0	0	3,379	49,947	3,520	49,947	160	160	160
Grizzly Valley Dam and Lake Davis	204,475	554,260	220,423	554,244	0	0	0	0	204,475	554,260	220,423	554,244	17,573	17,573	17,573
Abbey Bridge Dam and Reservoir	9	9,921	9	9,921	0	0	0	0	9	9,921	9	9,921	0	0	0
Sisk Dam, San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir	395,284	415,610	425,700	415,610	0	0	0	0	395,284	415,610	425,700	415,610	33,467	33,467	33,467
California Aqueduct, Delta to Dos Amigos Pumping Plant	461,086	(137,494)	603,887	(137,494)	0	0	0	0	461,086	(137,494)	603,887	(137,494)	158,456	158,456	158,456
Oroville Division	7,809,509	3,100,347	11,028,039	649,733	0	0	0	0	7,809,509	3,100,347	11,028,039	649,733	3,673,041	3,673,041	3,673,041
Del Valle Dam and Lake del Valle	519,425	(32,200)	917,078	(32,200)	0	0	0	0	519,425	(32,200)	917,078	(32,200)	448,292	448,292	448,292
California Aqueduct, Delta to Dos Amigos Pumping Plant to Termini	478,971	398,349	1,271,912	398,349	0	0	0	0	478,971	398,349	1,271,912	398,349	915,217	915,217	915,217
Castaic Dam and Lake	1,954,297	952,325	5,291,258	951,070	0	0	0	0	1,954,297	952,325	5,291,258	951,070	3,856,203	3,856,203	3,856,203
Cedar Spring Dam and Silverwood Lake	424,966	370,137	1,132,207	370,137	0	0	0	0	424,966	370,137	1,132,207	370,137	817,173	817,173	817,173
Perris Dam and Lake Perris	1,022,313	4,939,979	2,780,487	4,867,247	0	0	0	0	1,022,313	4,939,979	2,780,487	4,867,247	2,033,799	2,033,799	2,033,799
<b>Subtotal</b>	<b>13,273,714</b>	<b>10,621,181</b>	<b>23,674,520</b>	<b>8,096,564</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13,273,714</b>	<b>10,621,181</b>	<b>23,674,520</b>	<b>8,096,564</b>	<b>11,953,381</b>	<b>11,953,381</b>	<b>11,953,381</b>
<b>Total</b>	<b>88,523,781</b>	<b>95,987,495</b>	<b>173,393,912</b>	<b>81,792,780</b>	<b>0</b>	<b>436,446</b>	<b>0</b>	<b>0</b>	<b>88,523,781</b>	<b>96,423,941</b>	<b>173,393,912</b>	<b>81,792,780</b>	<b>97,580,335</b>	<b>97,580,335</b>	<b>97,580,335</b>

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

# Chapter 14

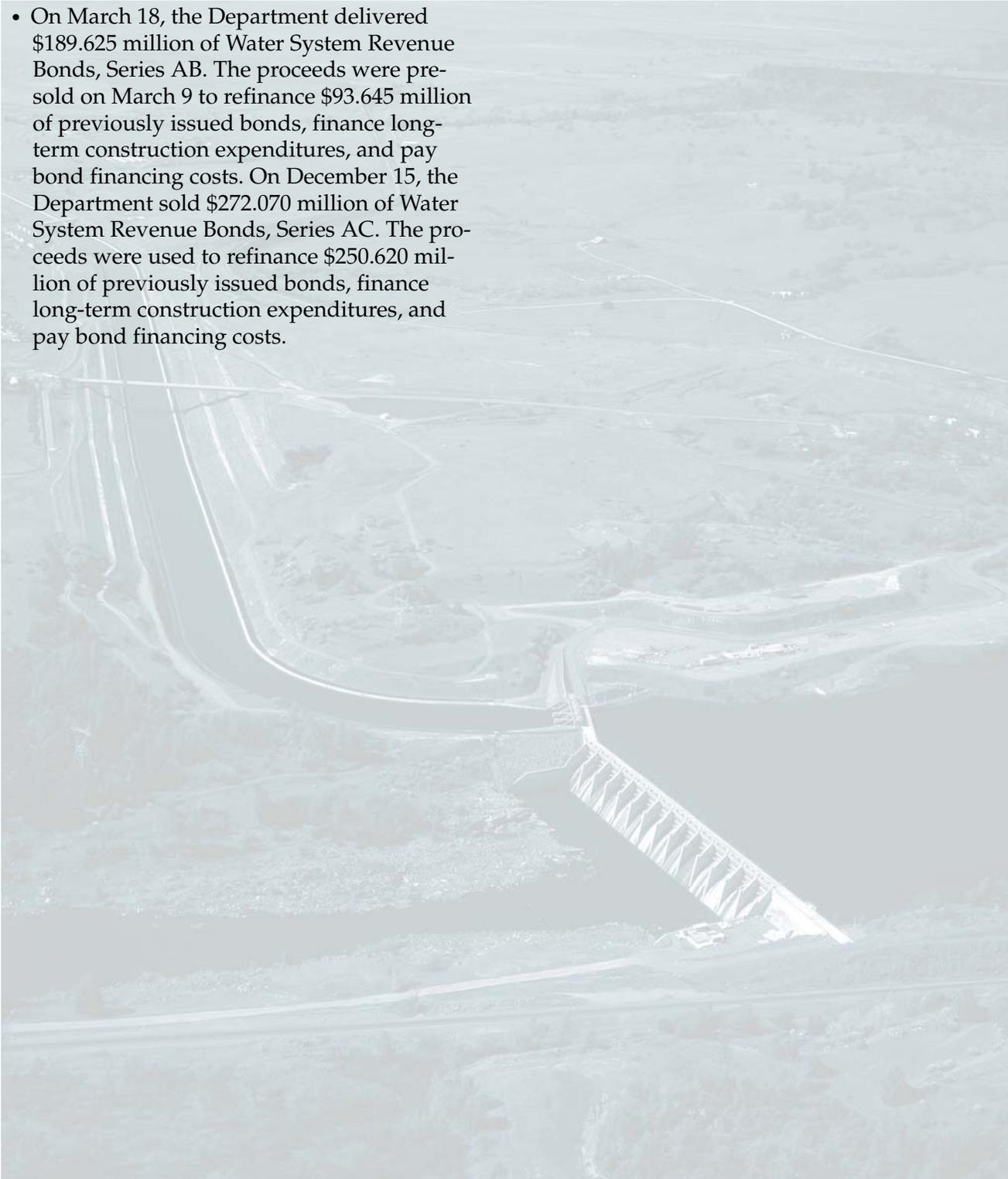
## Financial Analysis



Thermalito Power Canal

## Significant Events in 2004

- On March 18, the Department delivered \$189.625 million of Water System Revenue Bonds, Series AB. The proceeds were pre-sold on March 9 to refinance \$93.645 million of previously issued bonds, finance long-term construction expenditures, and pay bond financing costs. On December 15, the Department sold \$272.070 million of Water System Revenue Bonds, Series AC. The proceeds were used to refinance \$250.620 million of previously issued bonds, finance long-term construction expenditures, and pay bond financing costs.



**T**his chapter presents both a summary and a detailed explanation of State Water Project (SWP) current financial analysis, capital costs and requirements, revenues and expenses, and bond activities for years 2005 through 2015.

The Department of Water Resources (DWR) 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, 2004, are presented in Tables 14-1 and 14-2 on pages 201 and 202, 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, DWR projected that future construction costs through the year 2015 plus reimbursement of \$16 million interim financing for prior expenditures will total \$471 million. Special capital requirements for revenue bond financing of these construction costs are projected at \$48 million for a total capital requirement of \$519 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;
- enlargement of the South Bay Aqueduct; and
- construction of a new intake at Clifton Court Forebay.

Most of these capital requirements will be financed from the projected sale of \$473 million of revenue bonds. The remaining \$43 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 DWR. 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 3 percent per year from 2005 through 2015. Right-of-way costs are escalated at 4 percent per year from 2005 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). DWR 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, the reconstruction of the San Bernardino Tunnel Intake, and the construction of the Tehachapi East Afterbay. 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 2004	Future Expenditures	Total	Preliminary Allocation Among Project Purposes			
				Water Supply and Power Generation	Flood Control <sup>a</sup>	Recreation and Fish and Wildlife Enhancement	Other <sup>b</sup>
<b>Project Construction Expenditures</b>							
Upper Feather Division	18,289	0	18,289	1,414	0	16,875	0
Oroville Division	589,088	0	589,088	495,573	71,764	21,751	0
Delta Facilities Division	406,184	130,169	536,353	498,262	0	38,091	0
North Bay Aqueduct	94,432	2,889	97,321	97,321	0	0	0
South Bay Aqueduct	101,627	25,308	126,935	103,519	8,189	15,227	0
<i>California Aqueduct</i>							
North San Joaquin Division	274,104	9,299	283,403	274,106	0	9,297	0
San Luis Division	264,830	1,901	266,731	254,462	0	12,269	0
South San Joaquin Division	312,541	1,222	313,763	296,299	0	17,464	0
Tehachapi Division	327,630	7,710	335,340	317,013	0	18,327	0
Mojave Division	307,858	6,387	314,245	276,307	0	37,938	0
Santa Ana Division	256,070	8,129	264,199	232,251	0	31,948	0
West Branch	500,878	15,556	516,434	485,022	0	31,412	0
Coastal Branch	498,847	174	499,021	499,021	0	0	0
<i>Subtotal, California Aqueduct</i>	<i>2,742,758</i>	<i>50,378</i>	<i>2,793,136</i>	<i>2,634,481</i>	<i>0</i>	<i>158,655</i>	<i>0</i>
<i>Other Project Facilities</i>							
Small Hydroelectric Power Generating Facilities	97,308	0	97,308	97,308	0	0	0
Off-Aqueduct Power Generating Facilities	450,919	33,300	484,219	484,219	0	0	0
East Branch Enlargement	453,459	0	453,459	453,459	0	0	0
East Branch Extension	127,021	9,076	136,097	136,097	0	0	0
Coastal Power Allocation	30,708	0	30,708	30,708	0	0	0
San Joaquin Drainage Facilities	64,585	18,349	82,934	0	0	0	82,934
Planning and Preoperations	57,086	27,364	84,450	84,450	0	0	0
Unassigned/Miscellaneous	499	157,749	158,248	0	0	0	158,248
<i>Subtotal, Project Construction Expenditures</i>	<i>5,233,963</i>	<i>454,582</i>	<i>5,688,545</i>	<i>5,116,811</i>	<i>79,953</i>	<i>250,599</i>	<i>241,182</i>
<b>Other Capital Expenditures</b>							
Davis-Grunsky Act Program	130,000	0	130,000	0	0	0	130,000
<b>Total Capital Expenditures</b>	<b>5,363,963</b>	<b>454,582</b>	<b>5,818,545</b>	<b>5,116,811</b>	<b>79,953</b>	<b>250,599</b>	<b>371,182</b>

<sup>a</sup>Reflects DWR's allocation to this purpose, irrespective of federal payments.

<sup>b</sup>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 Geronio Pass Water Agency and the San Bernardino Valley Municipal Water District. Construction began in February 1999 and was completed in 2003. Construction of Phase II is anticipated to commence in 2007. 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 the service area of Alameda County Flood Control and Water Conservation District, Zone 7. Construction includes creating a third discharge line, creating a 500 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 2005 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. DWR assumes

that future costs of the CALFED program will continue to be financed from the General Fund.

*Line 13, Agricultural Drainage Facilities*, includes projected costs of the Agricultural Drainage Program. The activities in this program are monitoring, evaluating, reducing and treating drainage, and investigating treatment and reuse of drainage water.

DWR 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, 2004, DWR 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 assumed revenue bond sales is presented in Table 14-7.

**Table 14-1. Capital Requirements and Financing, December 31, 2004 (Thousands of Dollars)**

Line Number/Item	Calendar Year													
	1952-2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2005-2015	1952-2015
<b>Capital Requirements</b>														
1. Initial Project Facilities	2,202,316	0	0	0	0	0	0	0	0	0	0	0	0	2,202,316
2. North Bay Aqueduct	90,192	0	5	0	0	0	0	0	0	0	0	0	5	90,197
3. Delta and Suisun Marsh Facilities	267,120	27,076	41,139	35,056	7,906	7,056	3,906	1,606	1,606	1,606	1,606	1,606	130,169	397,289
4. Final 4 Units at Banks Pumping Plant	43,673	0	0	0	0	0	0	0	0	0	0	0	0	43,673
5. Coastal Branch Aqueduct	507,749	0	0	0	0	0	0	0	0	0	0	0	0	507,749
6. West Branch Aqueduct	192,311	374	598	615	885	650	150	0	0	0	0	0	3,271	195,582
7. East Branch Enlargement	453,459	0	0	0	0	0	0	0	0	0	0	0	0	453,459
8. East Branch Improvements	223,681	26,909	27,726	4,749	1,750	1,200	0	0	0	0	0	0	62,334	286,015
9. East Branch Extension	127,021	3,076	3,000	3,000	0	0	0	0	0	0	0	0	9,076	136,097
10. South Bay Aqueduct Enlargement	4,273	23,205	39,978	32,180	10,192	0	0	0	0	0	0	0	105,555	109,828
11. Power Generation and Transmission Facilities	680,168	3,800	3,500	11,000	2,500	2,500	2,500	2,500	2,500	2,500	0	0	33,300	713,468
12. Additional Conservation Facilities	144,812	4,544	4,564	4,564	4,564	4,564	4,564	0	0	0	0	0	27,364	172,176
13. San Joaquin Drainage Facilities	64,585	2,933	3,016	3,100	3,100	3,100	3,100	0	0	0	0	0	18,349	82,934
14. Other Costs	232,603	12,040	9,916	13,878	7,838	7,838	7,838	5,812	0	0	0	0	65,160	297,763
<i>15. Subtotal Project Construction Expenditures</i>	<i>5,233,963</i>	<i>103,957</i>	<i>133,441</i>	<i>108,142</i>	<i>38,735</i>	<i>26,908</i>	<i>22,058</i>	<i>9,918</i>	<i>4,106</i>	<i>4,106</i>	<i>1,606</i>	<i>1,606</i>	<i>454,582</i>	<i>5,688,545</i>
16. Davis-Grunsky Act Program Costs	130,000	0	0	0	0	0	0	0	0	0	0	0	0	130,000
17. Special Capital Requirements Under Revenue Bond Financing	595,332	12,785	14,559	4,320	11,304	0	4,234	582	0	0	0	0	47,784	643,116
<b>18. Total Capital Requirements</b>	<b>5,959,295</b>	<b>116,742</b>	<b>148,000</b>	<b>112,462</b>	<b>50,039</b>	<b>26,908</b>	<b>26,292</b>	<b>10,500</b>	<b>4,106</b>	<b>4,106</b>	<b>1,606</b>	<b>1,606</b>	<b>502,366</b>	<b>6,461,661</b>
19. Power Facilities Capital Requirements	680,168	3,800	3,500	11,000	2,500	2,500	2,500	2,500	2,500	2,500	0	0	33,300	713,468
20. Water Facilities Capital Requirements	5,279,127	112,942	144,500	101,462	47,539	24,408	23,792	8,000	1,606	1,606	1,606	1,606	469,066	5,748,193
<b>Financing of Capital Requirements</b>														
<b>Power Revenue Bond Proceeds</b>														
21. Power Revenue Bonds through Series H	1,162,458	0	0	0	0	0	0	0	0	0	0	0	0	1,162,458
<b>Water Revenue Bond Proceeds</b>														
22. East Branch Enlargement, Current Bonds	473,606	0	0	0	0	0	0	0	0	0	0	0	0	473,606
23. East Branch Extension, Current Bonds	138,467	0	0	0	0	0	0	0	0	0	0	0	0	138,467
24. East Branch Extension, Future Bonds		5,200	3,500	3,500	0	0	0	0	0	0	0	0	12,200	12,200
25. South Bay Aqueduct Enlargement, Current Bonds	8,270	0	0	0	0	0	0	0	0	0	0	0	0	8,270
26. South Bay Aqueduct Enlargement, Future Bonds	0	25,500	44,500	36,000	11,500	0	0	0	0	0	0	0	117,500	117,500
27. Water System Facilities, Current Bonds	1,436,969	0	0	0	0	0	0	0	0	0	0	0	0	1,436,969
28. Water System Facilities, Future Bonds	0	98,000	95,500	0	102,500	0	44,200	6,000	0	0	0	0	346,200	346,200
<i>29. Subtotal, Water Revenue Bonds</i>	<i>2,057,312</i>	<i>128,700</i>	<i>143,500</i>	<i>39,500</i>	<i>114,000</i>	<i>0</i>	<i>44,200</i>	<i>6,000</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>475,900</i>	<i>2,533,212</i>
<b>Other Capital Financing</b>														
30. Initial Project Facilities Bond Proceeds	1,452,452	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	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	508,056
33. Interim Financing	16,458	(16,458)	0	68,462	(68,462)	22,408	(22,408)	0	0	0	0	0	(16,458)	0
34. Application of Capital Resources Revenues to Construction	566,269	0	0	0	0	0	0	0	0	0	0	0	0	566,269
35. Revenue Transfers Applied	66,290	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,106	4,106	1,606	1,606	42,924	109,214
<i>36. Subtotal, Other Capital Financing</i>	<i>2,739,525</i>	<i>(11,958)</i>	<i>4,500</i>	<i>72,962</i>	<i>(63,962)</i>	<i>26,908</i>	<i>(17,908)</i>	<i>4,500</i>	<i>4,106</i>	<i>4,106</i>	<i>1,606</i>	<i>1,606</i>	<i>26,466</i>	<i>2,765,991</i>
<b>37. Total Financing of Capital Requirements</b>	<b>5,959,295</b>	<b>116,742</b>	<b>148,000</b>	<b>112,462</b>	<b>50,039</b>	<b>26,908</b>	<b>26,292</b>	<b>10,500</b>	<b>4,106</b>	<b>4,106</b>	<b>1,606</b>	<b>1,606</b>	<b>502,366</b>	<b>6,461,661</b>

**Table I4-2. State Water Project Revenues and Expenditures, December 31, 2004 (Thousands of Dollars)**

Line Number/Item	Calendar Year													1952-2015
	1952-2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
<b>Project Revenues</b>														
1. Capital resources revenues	814,701	0	0	0	0	0	0	0	0	0	0	0	0	814,701
<b>Water Contractor Payments</b>														
2. Transportation capital	3,366,133	138,693	136,483	138,190	139,936	140,242	140,404	140,404	140,404	139,003	137,958	136,213	1,527,930	4,894,063
3. Transportation minimum	2,601,855	110,703	147,227	154,815	130,070	130,752	130,534	131,213	130,936	130,845	131,906	130,478	1,459,479	4,061,334
4. Transportation variable	3,021,422	232,239	288,370	287,022	257,769	269,559	295,166	290,167	312,419	357,664	386,036	397,397	3,373,808	6,395,230
5. Off-Aqueduct Power Facilities Costs	2,120,931	100,703	106,629	108,644	125,961	126,189	127,005	120,354	120,562	69,226	21,121	13,142	1,039,536	3,160,467
6. Delta Water Charge	1,912,100	102,341	102,409	103,292	103,758	103,985	104,215	104,449	104,690	104,700	104,713	104,733	1,143,285	3,055,385
7. East Branch Enlargement	557,137	34,214	44,190	44,386	42,170	43,112	42,839	43,898	43,961	44,234	43,685	44,740	471,429	1,028,566
8. East Branch Extension	26,824	9,584	10,684	10,961	8,385	9,930	10,002	9,917	9,920	11,499	11,539	11,679	114,100	140,924
9. Coastal Extension	18,766	3,169	3,170	4,126	3,112	3,107	6,351	4,176	4,176	4,181	4,209	4,211	43,988	62,754
10. South Bay Aqueduct Enlargement	0	310	2,391	5,864	8,723	8,723	9,653	9,653	9,653	9,653	9,653	9,653	83,929	83,929
11. Tehachapi East Afterbay	0	185	259	260	260	260	260	260	260	260	260	260	2,784	2,784
12. Water Revenue bond surcharge	358,705	58,028	62,458	62,368	58,813	59,707	57,128	61,506	61,571	64,855	67,553	71,147	685,134	1,043,839
13. Subtotal water contractor payments	13,983,873	790,169	904,270	919,928	878,957	895,566	923,557	915,997	938,552	936,120	918,633	923,653	9,945,402	23,929,275
14. Revenue bond cover adjustments	(472,016)	(37,925)	(41,922)	(42,826)	(43,552)	(44,445)	(44,328)	(45,638)	(45,725)	(40,988)	(40,484)	(40,321)	(468,154)	(940,170)
15. Rate management adjustments	(222,933)	(36,000)	(25,000)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(425,230)	(648,163)
<b>Other Revenues</b>														
16. Federal payments for project operating costs	229,240	15,278	11,827	11,827	11,827	11,827	11,827	11,839	11,839	11,839	11,839	11,839	133,608	362,848
17. Appropriations for operating costs allocated to recreation	16,657	0	0	0	0	0	0	0	0	0	0	0	0	16,657
18. Davis-Grunsky loan repayments	52,616	2,435	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	16,435	69,051
19. Revenue bond proceeds	652,977	0	0	0	0	0	0	0	0	0	0	0	0	652,977
20. Interest earnings on operating revenues	560,271	9,642	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	49,642	609,913
21. Oroville-Thermalito payments	249,279	0	0	0	0	0	0	0	0	0	0	0	0	249,279
22. Miscellaneous revenues	184,264	0	0	0	0	0	0	0	0	0	0	0	0	184,264
23. Subtotal, other revenues	1,945,304	27,355	17,227	17,227	17,227	17,227	17,227	17,239	17,239	17,239	17,239	17,239	199,685	2,144,989
24. Total operating revenues	15,234,228	743,599	854,575	853,859	812,162	827,878	855,986	847,128	869,596	871,901	854,918	860,101	9,251,703	24,485,931
25. Total operating revenues and capital resources revenues	16,048,929	743,599	854,575	853,859	812,162	827,878	855,986	847,128	869,596	871,901	854,918	860,101	9,251,703	25,300,632
<b>Project Expenses</b>														
26. Project operations, maintenance, and power costs	7,560,505	494,793	562,777	574,925	515,335	527,791	552,393	547,103	567,637	594,890	579,056	587,084	6,103,784	13,664,289
27. Deposits to replacement reserves	132,950	0	0	0	0	0	0	0	0	0	0	0	0	132,950
28. Deposits to special reserves	581,715	(10,440)	11,864	(9,988)	5,432	(1,556)	2,281	(5,631)	(3,219)	(11,597)	(7,886)	(4,152)	(34,892)	546,823
29. Capital resources expenditures	686,932	0	0	0	0	0	0	0	0	0	0	0	0	686,932
<b>Payments of Debt Service</b>														
30. Principal repayments on bonds sold through December 31, 2003 (current bonds)	1,830,033	101,320	118,750	124,510	130,665	140,520	146,155	154,565	161,465	153,120	155,420	156,295	1,542,785	3,372,818
31. Interest on bonds sold through December 31, 2003 (current bonds)	4,890,817	153,426	148,783	143,054	136,863	130,623	123,912	116,866	109,074	100,847	93,688	86,235	1,343,371	6,234,188
32. Future water bond principal repayments	0	0	2,109	4,704	5,647	7,922	8,516	9,891	10,479	10,951	11,444	11,959	83,622	83,622
33. Future water bond interest payments	0	0	5,792	12,154	13,720	18,078	18,229	19,834	19,660	19,189	18,695	18,180	163,531	163,531
34. Total principal	1,830,033	101,320	120,859	129,214	136,312	148,442	154,671	164,456	171,944	164,071	166,864	168,254	1,626,407	3,456,440
35. Total interest	4,890,817	153,426	154,575	155,208	150,583	148,701	142,141	136,700	128,734	120,036	112,383	104,415	1,506,902	6,397,719
36. Subtotal debt service	6,720,850	254,746	275,434	284,422	286,895	297,143	296,812	301,156	300,678	284,107	279,247	272,669	3,133,309	9,854,159
<b>Net Revenues</b>														
37. Total Operating Expenses and Debt Service	15,682,952	739,099	850,075	849,359	807,662	823,378	851,486	842,628	865,096	867,400	850,417	855,601	9,202,201	24,885,153
38. Net system revenues	365,977	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,501	4,501	49,502	415,479
<b>Application of Net System Revenues</b>														
39. California Water Fund repayment	296,287	0	0	0	0	0	0	0	0	0	0	0	0	296,287
40. Revenues used for capital expenditures	69,690	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	49,500	119,190

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

Feature	Calendar Year													Total
	1962-2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016-2035	
<b>Project Facility</b>														
Feather River facilities	722,458	30,080	31,937	26,311	24,810	24,757	24,596	24,828	24,794	24,739	24,639	24,482	531,487	1,539,918
North Bay Aqueduct	40,399	3,196	3,507	3,652	3,335	3,377	3,420	3,453	3,503	3,632	3,735	3,764	77,543	156,515
Delta facilities	576	0	0	0	0	0	0	0	0	0	0	0	0	576
Suisun Marsh	23,993	756	2,634	2,753	2,596	2,590	2,574	2,090	2,087	2,081	2,071	2,058	44,683	92,967
South Bay Aqueduct	130,155	10,824	13,611	14,108	12,716	12,885	13,068	13,157	13,346	13,915	14,347	14,370	283,400	559,902
California Aqueduct														
Delta to Edmonston	2,775,391	169,289	198,404	205,074	184,084	184,996	198,910	195,944	199,841	224,291	230,438	236,514	4,887,718	9,890,896
Edmonston to Perris	2,422,745	188,237	228,113	238,096	203,417	215,068	225,169	225,515	239,978	263,472	284,496	286,282	5,776,465	10,797,053
West Branch	(67,374)	3,713	(9,006)	(11,515)	(10,496)	(10,977)	(10,685)	(10,264)	(8,531)	(9,699)	(9,856)	(9,618)	(284,110)	(448,417)
Coastal Branch	182,631	10,270	14,208	14,601	13,029	13,249	13,496	13,582	13,822	14,549	15,109	15,156	300,336	634,039
Off-Aqueduct power generating facilities	1,047,161	56,957	62,815	64,850	64,850	64,850	64,850	64,831	64,831	43,944	110	110	990	1,601,149
Recreation, planning, and CVP negotiations	2,615	683	683	683	683	683	683	683	683	683	683	683	13,669	23,797
Water quality monitoring	329,699	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	9,905	600	600	600	600	600	600	600	600	600	600	600	12,000	28,505
<i>Subtotal</i>	<i>7,620,354</i>	<i>494,793</i>	<i>562,777</i>	<i>574,925</i>	<i>515,335</i>	<i>527,791</i>	<i>552,393</i>	<i>547,103</i>	<i>567,637</i>	<i>594,890</i>	<i>579,056</i>	<i>587,084</i>	<i>11,871,753</i>	<i>25,595,891</i>
Payments to/credits from PG&E under Comprehensive Agreement	(59,848)	0	0	0	0	0	0	0	0	0	0	0	0	(59,848)
<b>Total OMP&amp;R Costs</b>	<b>7,560,506</b>	<b>494,793</b>	<b>562,777</b>	<b>574,925</b>	<b>515,335</b>	<b>527,791</b>	<b>552,393</b>	<b>547,103</b>	<b>567,637</b>	<b>594,890</b>	<b>579,056</b>	<b>587,084</b>	<b>11,871,753</b>	<b>25,536,043</b>
<b>Composition</b>														
Salaries and expenses of headquarters personnel	2,148,625	86,781	90,722	92,090	78,576	76,733	74,984	72,168	77,668	74,918	73,137	70,447	1,113,286	4,130,134
Salaries and expenses of field personnel	3,195,575	97,088	99,480	109,608	93,298	97,905	96,073	92,490	99,185	95,470	95,073	91,482	1,935,832	6,198,560
Pumping power														
Used by pumping plants	1,542,143	309,985	390,983	386,689	346,759	357,343	386,374	389,475	396,786	453,346	485,061	499,835	10,401,133	16,345,912
Produced by generation plants	(336,370)	(56,295)	(81,500)	(78,589)	(68,425)	(69,317)	(70,165)	(72,138)	(71,110)	(73,065)	(74,602)	(75,067)	(1,585,028)	(2,711,671)
Payments to/credits from PG&E under Comprehensive Agreement	(59,848)	0	0	0	0	0	0	0	0	0	0	0	0	(59,848)
Off-Aqueduct power generating facilities requirement	1,047,161	56,957	62,815	64,850	64,850	64,850	64,850	64,831	64,831	43,944	110	110	990	1,601,149
Oroville-Thermalito insurance premiums	11,320	277	277	277	277	277	277	277	277	277	277	277	5,540	19,907
Less: Portion of costs incurred during construction	(121,051)	0	0	0	0	0	0	0	0	0	0	0	0	(121,051)
<i>Subtotal</i>	<i>7,427,556</i>	<i>494,793</i>	<i>562,777</i>	<i>574,925</i>	<i>515,335</i>	<i>527,791</i>	<i>552,393</i>	<i>547,103</i>	<i>567,637</i>	<i>594,890</i>	<i>579,056</i>	<i>587,084</i>	<i>11,871,753</i>	<i>25,403,093</i>
Deposits to replacement reserves	132,950	0	0	0	0	0	0	0	0	0	0	0	0	132,950
<b>Total OMP&amp;R Costs</b>	<b>7,560,506</b>	<b>494,793</b>	<b>562,777</b>	<b>574,925</b>	<b>515,335</b>	<b>527,791</b>	<b>552,393</b>	<b>547,103</b>	<b>567,637</b>	<b>594,890</b>	<b>579,056</b>	<b>587,084</b>	<b>11,871,753</b>	<b>25,536,043</b>
<b>Project Purpose</b>														
Water supply and power generation	7,256,363	471,868	539,854	552,002	492,411	504,867	529,470	524,179	544,712	571,964	556,127	564,155	11,413,173	24,521,145
Payments to/credits from PG&E under Comprehensive Agreement	(59,848)	0	0	0	0	0	0	0	0	0	0	0	0	(59,848)
Recreation and fish and wildlife enhancement	151,839	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	200,000	461,839
Flood control	4,389	325	323	323	324	324	323	324	325	326	329	329	6,580	14,544
Miscellaneous purposes														
Federal share, San Luis, and Delta facilities	197,858	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)	9,905	600	600	600	600	600	600	600	600	600	600	600	12,000	28,505
<b>Total OMP&amp;R Costs</b>	<b>7,560,506</b>	<b>494,793</b>	<b>562,777</b>	<b>574,925</b>	<b>515,335</b>	<b>527,791</b>	<b>552,393</b>	<b>547,103</b>	<b>567,637</b>	<b>594,890</b>	<b>579,056</b>	<b>587,084</b>	<b>11,871,753</b>	<b>25,536,043</b>

**Table 14-11. Annual Debt Service on Bonds Sold through December 31, 2004 (Thousands of Dollars)**

Calendar Year	Series A through Y Water Bonds		Oroville Revenue Bonds <sup>a</sup>		Pyramid Project Revenue Bonds <sup>b</sup>		Alamo Project Revenue Bonds <sup>b</sup>		Small Hydro Project Revenue Bonds <sup>b</sup>		Water System Facilities Water System Revenue Bonds <sup>c</sup>		Devil Canyon-Castaic Project Revenue Bonds		Reid Gardner Project Revenue Bonds <sup>b,c</sup>		South Geysers Project Revenue Bonds <sup>b</sup>		Bottle Rock Project Revenue Bonds <sup>b</sup>		East Branch Enlargement Project Water System Revenue Bonds <sup>c</sup>		Coastal Extension Facilities Water System Revenue Bonds		East Branch Extension Facilities Water System Revenue Bonds <sup>c</sup>		South Bay Enlargement Facilities Water System Revenue Bonds <sup>c</sup>		Tehachapi East Afterbay Facilities Water System Revenue Bonds <sup>c</sup>		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	Principal	Interest
1964	0	3,333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,333	
1965	0	11,114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,114	
1966	0	18,764	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	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	0	0	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	0	0	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	0	0	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	0	0	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	0	0	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	7,708	0	0	0	0	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	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,400	90,210	
1975	5,000	69,366	1,475	12,893	0	0	0	0	0	0	0	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,475	89,967	
1976	7,000	69,657	1,555	12,811	0	0	0	0	0	0	0	0	7,708	0	0	0	0	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	7,708	0	0	0	0	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	7,708	0	0	0	0	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	7,708	0	0	0	0	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	7,708	0	0	0	0	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	7,708	0	5,312	0	0	0	0	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	7,708	0	14,347	0	0	0	0	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	2,449	0	3,727	0	900	7,708	0	35,719	0	4,777	0	6,017	0	0	0	0	0	0	0	0	0	0	42,530	142,947	
1984	21,785	64,036	10,005	9,013	640	7,292	0	4,198	0	3,727	0	955	7,647	0	35,719	0	5,647	0	10,315	0	0	0	0	0	0	0	0	0	0	33,385	147,594	
1985	22,555	62,892	12,700	8,628	675	7,238	0	4,198	0	3,727	0	1,010	7,583	9,425	27,209	0	5,647	0	10,315	0	0	0	0	0	0	0	0	0	0	46,365	137,437	
1986	23,830	61,705	11,435	7,859	715	7,377	0	4,263	0	3,537	0	1,070	7,515	3,805	32,882	0	5,516	1,240	10,315	0	4,021	0	0	0	0	0	0	0	0	42,095	144,990	
1987	25,495	60,452	11,715	7,188	790	7,513	265	4,329	0	3,348	0	4,952	1,135	7,442	4,860	32,605	0	5,386	1,305	10,253	0	9,651	0	0	0	0	0	0	0	45,565	153,119	
1988	26,770	59,120	6,685	6,664	830	7,447	280	4,314	345	3,348	710	11,037	1,205	7,366	5,065	32,295	580	5,521	1,390	10,849	995	9,875	0	0	0	0	0	0	0	44,855	157,836	
1989	28,145	57,790	33,705	5,513	875	7,378	295	4,298	365	3,328	1,148	14,373	1,275	7,284	7,820	27,557	709	5,646	1,565	11,592	1,078	10,104	0	0	0	0	0	0	0	76,980	154,863	
1990	29,385	56,436	10,385	4,301	930	7,305	320	4,279	405	3,304	1,227	19,555	1,355	7,198	6,675	29,781	761	5,596	1,678	11,491	1,134	10,048	0	0	0	0	0	0	0	54,255	159,294	
1991	30,365	55,034	12,055	3,922	980	7,227	335	4,257	430	3,276	2,129	27,569	1,435	7,107	7,170	29,302	818	5,535	1,791	11,376	1,197	16,856	0	0	0	0	0	0	0	58,705	171,461	
1992	31,745	54,193	14,135	2,985	2,395	5,308	1,260	3,086	960	2,553	5,108	28,411	1,520	7,010	8,950	27,188	1,934	4,136	4,575	7,942	2,583	22,241	0	0	0	0	0	0	0	75,165	165,053	
1993	33,390	52,670	13,755	2,237	1,525	5,688	755	3,300	445	2,640	4,577	29,965	1,610	6,907	8,820	26,953	901	4,256	3,264	8,385	3,040	21,428	0	0	0	0	0	0	0	72,082	164,429	
1994	35,075	51,231	35,225	934	1,580	5,634	780	3,274	695	2,569	5,910	38,223	1,705	6,799	77,105	26,273	1,588	4,072	3,374	8,270	4,567	20,752	0	0	0	0	0	0	0	167,604	168,031	
1995	36,280	49,703	0	0	1,635	5,570	805	3,242	745	2,536	8,064	37,879	1,810	6,684	5,420	19,230	1,695	4,004	3,521	8,133	4,979	20,499	0	0	0	0	0	0	0	64,954	157,480	
1996	37,520	48,024	0	0	2,320	5,486	1,055	3,203	3,135	2,464	10,459	58,170	1,920	6,561	49,465	18,130	3,043	3,908	3,682	7,974	4,771	23,240	0	0	0	0	0	0	0	117,370	177,160	
1997	37,215	46,365	0	0	1,695	5,274	875	3,073	585	2,283	14,375	67,910	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	0	0	0	76,281	183,795	
1998	37,295	44,736	0	0	1,770	5,237	910	3,059	625	2,258	16,754	68,585	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	0	0	0	77,279	183,484	
1999	38,220	43,132	0	0	1,845	5,141	960	3,005	680	2,229	18,701	68,085	2,285	6,160	9,310	11,659	2,081	3,549	4,240	7,318	6,718	25,033	0	1,808	65	2,931	0	0	0	85,905	180,050	
2000	39,510	41,469	0	0	1,925	5,045	1,010	2,955	610	2,197	19,536	66,902	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	0	0	0	91,190	175,733	
2001	40,600	39,751	0	0	2,250	4,948	1,155	2,901	780	2,272	20,944	66,417	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	0	0	0	95,799	172,364	
2002	41,740	37,984	0	0	2,460	4,651	1,280	2,763	950	2,213	23,918	62,846	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	0	0	0	103,140	164,754	
2003	43,590	36,159	0	0	2,500	4,493	1,315	2,680	940	2,152	23,442	59,875	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	0	0	0	95,925	154,609	
2004	45,730	34,244	0	0	2,500	4,355	1,330	2,606	970	2,101	26,396	60,388	3,055	5,470	2,210	9,468	2,425	2,838	5,610	5,744	9,883	20,824	220	2,315	2,045	5,538	0	232	0	139	102,374	156,262
2005	46,985	32,242	0	0	2,705	4,213	1,445	2,531	1,320	2,047	22,218	60,279	3,240	5,305	8,825	9,367	2,750	2,697	5,950	5,420	3,542	20,470	230	2,306	2,110	6,021	0	331	0	197	101,320	153,426
2006	48,275	30,186	0	0	2,865	4,058	1,525	2,447	1,370	1,973	28,635	59,295	3,435	5,130	9,340	8,864	2,920	2,535	6,325	5,067	11,625	20,316	240	2,296	2,195	6,056	0	351	0	209	118,750	148,783
2007	49,765	28,060	0	0	3,020	3,888	1,620	2,356	1,450	1,894	29,835	57,967	3,640	4,945	9,835	8,324	3,100	2,359	6,730	4,687	12,225	19,746	1,015	2,286	2,275	5,979	0	353	0	210	124,510	143,

**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
<b>Total</b>	<b>453.4</b>

**Table 14-5. Estimated Capital Costs for Power Generation and Transmission Facilities**

Facility	Dollar Amounts (in millions)
<b>Power Plants</b>	
Reid Gardner, Unit 4	306.8
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
<i>Subtotal</i>	<i>695.9</i>
<b>Transmission Lines</b>	
Midway-Wheeler Ridge	10.7
Geysers-Lakeville	6.9
<b>Total</b>	<b>713.5</b>

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

Activity	Dollar Amounts (in millions)
Bay-Delta Evaluation	10.8
Other Planning Costs	16.5
<b>Total</b>	<b>27.3</b>

*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 2004 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 2004.

**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). DWR'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, 2004, DWR had sold \$6.6 billion of revenue bonds. That amount includes \$3.2 billion of refunded bonds, leaving a total principal obligation of \$3.4 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 DWR's financial management policy, the capital resources revenues are used first to cover any general obligation bond debt service that exceeds available revenues.

**Table 14-7. Application of Revenue Bond Proceeds (Millions of Dollars)**

Bond Series <sup>a</sup>	Construction Expenditures	Other Capital Requirements				Subtotal	Total Principal Amount of Bonds
		Reimbursement of General Fund	Capitalized Interest	Capitalized Operating Costs	Bond Financing and Refunding Costs <sup>b</sup>		
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
Water System Facilities Series AB	92.2	0.0	3.9	0	93.5	97.4	189.6
<i>Subtotal</i>	2,654.3	2.6	253.5	14.8	3,686.7	3,957.6	6,611.9 <sup>c</sup>
Future East Branch Extension Bonds	10.6	0.0	0.7	0.0	0.9	1.6	12.2
Future South Bay Aqueduct Enlargement Bond	102.2	0.0	6.4	0.0	8.9	15.3	117.5
Future Water System Facilities Bonds	301.2	0.0	18.7	0.0	26.3	45.0	346.2
<b>Total</b>	<b>3,068.3</b>	<b>2.6</b>	<b>279.3</b>	<b>14.8</b>	<b>3,722.8</b>	<b>4,019.5</b>	<b>7,087.8</b>

<sup>a</sup>Actual bond issue for all except future water system facilities and future East Branch Extension bonds.

<sup>b</sup>Bond financing and refunding costs include funds applied to debt service reserve requirements.

<sup>c</sup>Includes \$3,226.5 million of refunded principal, leaving a net principal obligation of \$3,385.4 million.

## Capital Financing Sources

Capital financing sources include power revenue bonds, East Branch Enlargement bonds, East Branch Extension bonds, South Bay Aqueduct Enlargement bonds, water system facilities bonds, initial project facilities bonds, bond 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 \$474 million of Water System Revenue Bond proceeds have been applied to the East Branch Enlargement project through December 31, 2004. Of this total amount, \$417 million were used for construction expenditures and \$57 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 \$138 million of Water System Revenue Bond proceeds had been spent through December 31, 2004.

*Line 24, East Branch Extension, Future Bonds,* shows DWR's estimate of \$12 million 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 that \$8 million of Water System Revenue Bond proceeds had been spent through December 31, 2004.

*Line 26, South Bay Aqueduct Enlargement, Future Bonds,* shows DWR's estimate of \$118 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, 2004, \$1.4 billion of proceeds from Water System Revenue Bonds, Series A through Series AB, were applied to SWP projects other than the East Branch Enlargement, the East Branch Extension, and the South Bay Aqueduct Enlargement. Of this total amount, \$1.2 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 \$346 million of future water revenue bonds are needed to provide \$301 million for construction of SWP water system facilities and \$45 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.)

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, 2004, 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. DWR 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 40 in Table 14-2). Projected amounts for 2005 through 2015 include funds to finance expenditures for agricultural 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, DWR 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 2005 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 39).

*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 2005-2015. 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 39).

*Lines 2 through 12, 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 12.

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)						
<i>Facility</i>						
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 <sup>a</sup>	0.2	0.4	25.4	35.6	71.0
Water System Revenue Bonds (Series J)						
<i>Facility</i>						
Pyramid Project	0.0	0.0	75.9 <sup>b</sup>	75.9	99.2 <sup>b</sup>	77.0
Alamo Project	0.0	0.0	45.6 <sup>b</sup>	45.6	57.1 <sup>b</sup>	80.0
Small Hydro Project I	0.0	0.0	27.8 <sup>b</sup>	27.8	38.8 <sup>b</sup>	72.0
Water System Revenue Bonds (Series L)						
<i>Facility</i>						
Small Hydro Project I	0.0	0.0	1.5 <sup>b</sup>	1.5	2.1 <sup>b</sup>	71.0
Water System Revenue Bonds (Series Q)						
<i>Facility</i>						
Pyramid Project	0.0	0.0	3.0 <sup>b</sup>	3.0	3.9 <sup>b</sup>	77.0
Alamo Project	0.0	0.0	4.8 <sup>b</sup>	4.8	6.0 <sup>b</sup>	80.0
Water System Revenue Bonds (Series S)						
<i>Facility</i>						
Pyramid Project	0.0	0.0	8.0 <sup>b</sup>	8.0	10.4 <sup>b</sup>	77.0
Alamo Project	0.0	0.0	7.6 <sup>b</sup>	7.6	9.5 <sup>b</sup>	80.0
Water System Revenue Bonds (Series U)						
<i>Facility</i>						
Pyramid Project	0.0	0.0	2.4 <sup>b</sup>	2.4	3.2 <sup>b</sup>	75.0
Alamo Project	0.0	0.0	3.2 <sup>b</sup>	3.2	4.0 <sup>b</sup>	80.0
Water System Revenue Bonds (Series W)						
<i>Facility</i>						
Pyramid Project	0.0	0.0	27.7 <sup>b</sup>	27.7	36.0 <sup>b</sup>	77.0
Alamo Project	0.0	0.0	11.8 <sup>b</sup>	11.8	14.7 <sup>b</sup>	80.0
Small Hydro Project (construction)	3.4	0.0	0.0	3.4	3.7	92.0
Small Hydro Project (refunding)	0.0	0.0	16.3 <sup>b</sup>	16.3	22.7 <sup>b</sup>	72.0
Water System Revenue Bonds (Series X)						
<i>Facility</i>						
Pyramid Project	0.0	0.0	8.5 <sup>b</sup>	8.5	11.0 <sup>b</sup>	77.0
Alamo Project (Series H refunding)	0.0	0.0	0.3 <sup>b</sup>	0.3	0.3 <sup>b</sup>	100.0
Small Hydro Project (Series F refunding)	0.0	0.0	3.9 <sup>b</sup>	3.9	4.9 <sup>b</sup>	79.0
Small Hydro Project	0.0	0.0	4.6 <sup>b</sup>	4.6	6.4 <sup>b</sup>	72.0

<sup>a</sup>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]).

<sup>b</sup>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 DWR's determination of 2006 water charges to be billed July 1, 2005. However, information about significant differences between the sum of future charges included in Lines 2 through 12 of Table 14-2 and the substantiation of 2006 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, 2004. Those costs presented in the financial analysis include allowances for price escalation.
- Pre-2005 charges in Appendix B represent charges as they should have been according to currently known conditions. Pre-2005 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 2005 and thereafter have been adjusted for any apparent overpayments or underpayments of pre-2005 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 AC bonds. Charges in Table 14-2 apply to Series A through Series AB bonds and 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 AC bonds. Surcharge values included in Table 14-2 apply to Series B through Series AB bonds and to assumed future issues required to finance SWP construction costs included in Table 14-1.

*Line 13, Subtotal, Water Contractor Payments,* is the total of Lines 2 through 12.

*Line 14, 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 15, Rate Management Adjustments,* shows the projected amount of revenue reductions allocated to SWP contractors after repayment of the California Water Fund (see Line 39). 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.

**Table 14-9. Actual Bond Sales and Project Interest Rates, by Date of Sale**

Bond Sales	Date of Sale	Dollar-Years <sup>a</sup> (Thousands)	Interest Cost (Thousands)	Issue Interest Rate <sup>b</sup> (Percent)	Project Interest Rate <sup>c</sup> (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	4/20/68	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	7/11/81	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	8/04/97	4,093,110	203,755	4.978	4.615
\$135,665,000 Series T Water System Revenue Bonds	8/04/97	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	
\$189,625,000 Series AB Water System Revenue Bonds	3/09/04	4,344,942	173,788	4.000	
<b>Total</b>		<b>193,015,459</b>	<b>11,199,485</b>		
<b>Portion allocated to Project Interest Rate</b>		<b>63,903,487</b>	<b>2,945,789</b>	<b>4.610</b>	<b>4.610</b>

<sup>a</sup>A unit equivalent to one dollar of principal amount outstanding for 1 year.

<sup>b</sup>The total interest cost (without regard to discounts paid or premiums received) divided by the total dollar-years, expressed as a percent.

<sup>c</sup>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.

*Line 16, 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 DWR to operate and maintain the San Luis Joint-Use Facilities. According to the January 12, 1972, supplement to the agreement, the Bureau of Reclamation (Reclamation) initially paid 45 percent of OM&R costs for those activities. (The percentage does not apply to power costs; Reclamation and DWR provide their own power to pump water through the joint facilities.)

The percentage paid by Reclamation is periodically reviewed by Reclamation and DWR. The most recent review of the percentage paid by Reclamation 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 2005 through 2015.

*Line 17, 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), DWR's 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 2005 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 18, Davis-Grunsky Loan Repayments*, shows the repayments by local agencies for \$52.5 million of loans disbursed as of December 31, 2004. Repayment on any future loans was assumed to be beyond the period covered by the financial analysis.

*Line 19, 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 20, 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 21, 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 1952-2004 entry includes amounts of final settlement of payments made according to the contract.

*Line 22, Miscellaneous Revenues*, includes all other operating revenues not included in Lines 2 through 21.

*Line 23, Subtotal, Other Revenues*, is the total of Lines 16 through 22.

*Line 24, Total Operating Revenues*, is the total of Lines 13, 14, 15, and 23.

*Line 25, Total Operating Revenues and Capital Resources Revenues*, is the total of Lines 1 and 24.

## 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 26 through 36 of Table 14-2.

*Line 26, Project Operations, Maintenance, and Power Costs*, shows the OM&P portion of the historical and projected costs presented in Table 14-10 on page 203.

Table 14-10 and Line 26 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 16 and 17.

Allowances for cost escalations are included in OM&P costs through 2007. 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 26 also includes costs associated with power transactions that result in the sale of power not required for the delivery of water.

*Line 27, Deposits to Replacement Reserves*, shows funds set aside as required by contract for replacing existing SWP facilities. By December 31, 2004, \$67.2 million had been spent for replacement costs; the balance of the replacement reserve as of that date was \$65.8 million. Replacement reserve amounts are also included in Table 14-10.

*Line 28, 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 1952-2004 column also includes advances to DWR'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 29, 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 28 and do not affect net revenues shown in Line 38.

*Lines 30 and 31, Payment of Debt Service on Bonds Sold through December 31, 2004*, show the total principal and interest payments on bonds sold to date. Table 14-11 on page 204 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 AB).

*Lines 32 and 33, Payments on Projected Future Water Bonds*, include the projected annual debt

service amounts for future water revenue bonds included on Lines 24, 26, and 28 of Table 14-1 for the East Branch Extension, South Bay Aqueduct Enlargement and other water system facilities. Assumptions about the service on these future bonds are that

- interest costs for the water revenue bonds average 4.5 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 34 and 35, Total Payments of Bond Debt Service*, show the total of principal payments indicated on Lines 30 and 32 and the total of interest repayments indicated on Lines 31 and 33.

*Line 36, Subtotal, Debt Service*, is the total of Lines 34 and 35.

*Line 37, Total Operating Expenses and Debt Service*, is the total of Lines 26, 27, 28, 29, and 36.

*Line 38, Net System Revenues*, shows the annual amounts of revenues remaining after the payment of operating costs and bond debt service costs.

*Line 39, 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 39, \$211 million of reimbursement were credited to the SWP as offsets for recreation and fish and wildlife enhancement expenditures.

*Line 40, 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 2006 and 2011. 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 2006 and 2011, 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 2004 dollars and as escalated rates reflecting assumed future inflation.

DWR's estimates of future capital expenditures include allowances for escalation of construction costs at 3 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 2006 and 2011, by Service Area (Dollars per Acre-Foot)**

Service Area and Charge	2006		2011	
	Unescalated	Escalated	Unescalated	Escalated
<i>Feather River Area</i>				
Capital; OM&R	36	36	28	28
<i>North Bay Area</i>				
Capital; OM&R	230	230	145	148
Power	33	33	22	23
<b>Total</b>	<b>263</b>	<b>263</b>	<b>167</b>	<b>171</b>
<i>South Bay Area</i>				
Capital; OM&R	86	86	103	105
Power	43	43	46	48
<b>Total</b>	<b>129</b>	<b>129</b>	<b>149</b>	<b>153</b>
<i>Coastal Area</i>				
Capital; OM&R	472	472	495	497
Power	118	118	126	133
<b>Total</b>	<b>590</b>	<b>590</b>	<b>621</b>	<b>630</b>
<i>San Joaquin Area</i>				
Capital; OM&R	54	54	52	54
Power	20	20	21	22
<b>Total</b>	<b>74</b>	<b>74</b>	<b>73</b>	<b>76</b>
<i>Southern California Area</i>				
Capital; OM&R	131	131	123	125
Power	135	135	141	147
<b>Total</b>	<b>266</b>	<b>266</b>	<b>264</b>	<b>272</b>

Information for this chapter was provided by the State Water Project Analysis Office in conjunction with the Division of Fiscal Services.

# Chapter 15

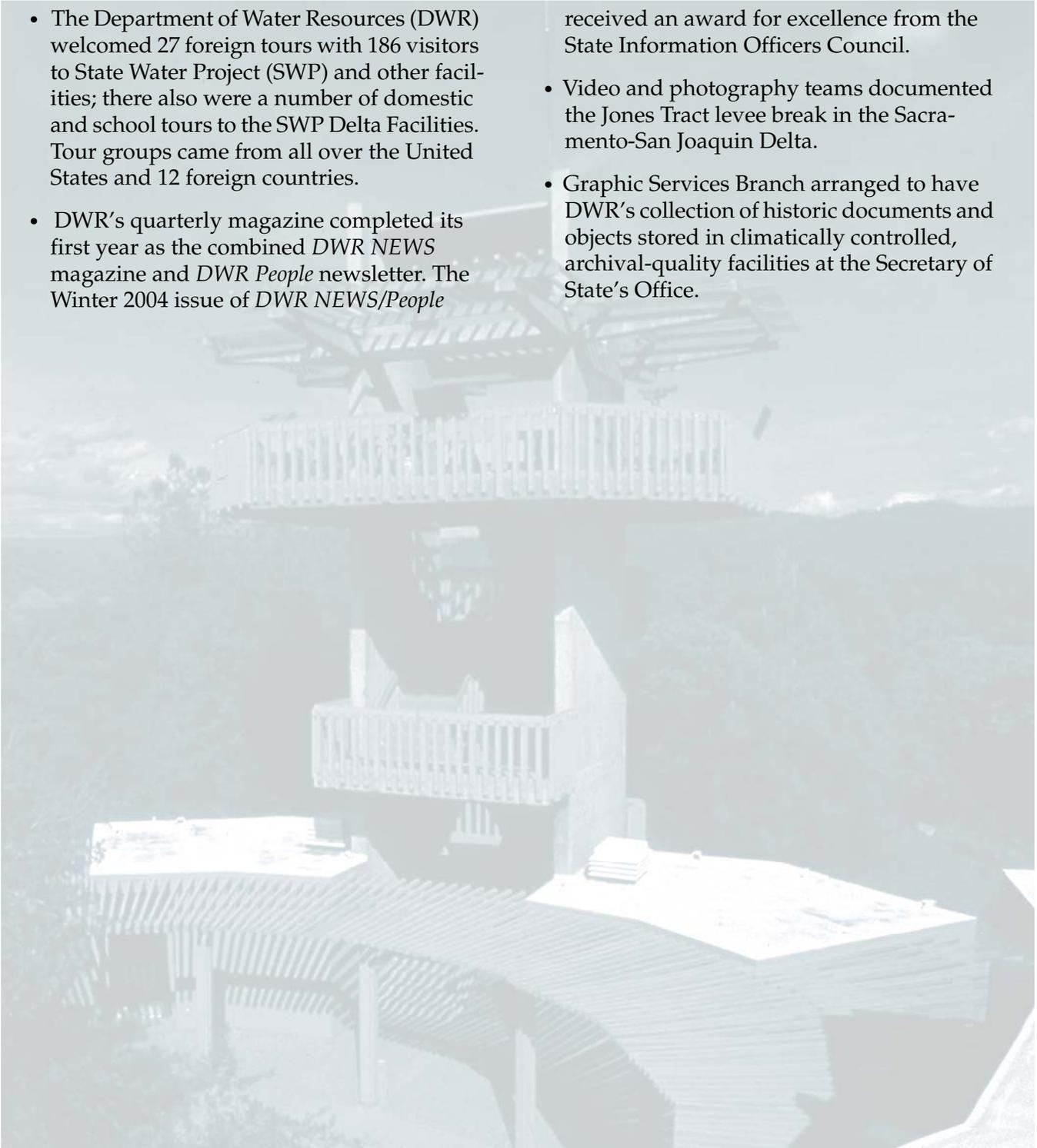
## SWP Education and Information



Lake Oroville Visitors Center's 47-foot viewing tower, where visitors can see the lake, the new Bidwell Bar Bridge, and the Sutter Buttes.

## Significant Events in 2004

- The Department of Water Resources (DWR) welcomed 27 foreign tours with 186 visitors to State Water Project (SWP) and other facilities; there also were a number of domestic and school tours to the SWP Delta Facilities. Tour groups came from all over the United States and 12 foreign countries.
- DWR's quarterly magazine completed its first year as the combined *DWR NEWS* magazine and *DWR People* newsletter. The Winter 2004 issue of *DWR NEWS/People* received an award for excellence from the State Information Officers Council.
- Video and photography teams documented the Jones Tract levee break in the Sacramento-San Joaquin Delta.
- Graphic Services Branch arranged to have DWR's collection of historic documents and objects stored in climatically controlled, archival-quality facilities at the Secretary of State's Office.



The Public Affairs Office (PAO) serves as liaison between the Department of Water Resources (DWR) and the news media and the public. PAO informs and educates about the value and the operations of the State Water Project (SWP) 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.

In 2004, the Office of Water Education became the Public Affairs Office. The mission remains the same: conducting public information and education programs and serving as liaison between DWR and the news media.

## **Media Outreach**

### **Flood Response and Preparedness**

PAO responded to the June flooding of Jones Tract in the Sacramento-San Joaquin Delta, assisted in briefings and tours at DWR's Flood Center and publicized flood season meetings.

### **Snow Surveys**

PAO continued to provide media outreach for the Division of Flood Management Snow Surveys Section.

### **California Bay-Delta Authority**

PAO assisted the California Bay-Delta Authority (CBDA) in media and outreach activities. That included providing public address system support for public hearings, meetings, and conferences.

PAO design group produced the 2004 CBDA Annual Report. The design group also created a traveling Delta exhibit used by CBDA at events such as Association of California Water Agency (ACWA) conferences. The video unit updated long and short versions of the CBDA Overview

video. The programs were duplicated and prepared for the Web.

### **News Events**

- In January, DWR announced an increase to 50 percent in the 2004 allocation for water delivery to the SWP contractors. The initial allocation, announced in December, was 35 percent of requested amounts.
- In February, DWR initiated a new Web site for implementation of the 2003 Colorado River Quantification Settlement Agreement and Salton Sea ecosystem restoration legislation. The legislation created new responsibilities for the Resources Agency and for the Department of Fish and Game (DFG) and DWR.
- In March, DWR and DFG began preparation of a Programmatic Environmental Impact Report on behalf of the Resources Agency for restoration of the Salton Sea ecosystem and preservation of its fish and wildlife resources.
- Also in March, top DWR officials were featured at the Water Education Foundation's 21st annual Executive Briefing in Sacramento.
- In April, DWR announced an agenda of Water Awareness Month activities slated for May, including free bus tours to Oroville Dam, a Kids Fishing Day at O'Neill Forebay near San Luis Reservoir, and student visits to the Edmonston Pumping Plant south of Bakersfield.

- In May, a new DWR Web site debuted, featuring photographs and graphics that explained the history, development and benefits of the SWP.
- On June 3, a section of a privately owned levee on Jones Tract in the Sacramento-San Joaquin Delta collapsed, inundating the 12,000-acre agricultural island. DWR worked with other agencies to fight the flood, close the breach, and pump floodwaters from the island.
- In July, the Governor announced that the President had approved his request for a major disaster declaration as a result of the Jones Tract levee break. DWR also began pumping floodwaters from the island.
- In the first week of August, DWR joined with the California Department of Parks and Recreation (DPR) to restrict vehicular access at Lake Oroville's Foreman Creek and Enterprise Boat Ramp areas because of declining lake levels that exposed culturally sensitive areas.
- Also in August, DWR initiated a Dry Year Water Purchase Program to help public water agencies and other entities supplement their water supplies should 2005 prove to be dry.
- In early September, DWR reported that the Jones Tract pumpout project had passed the halfway point. Later in the month, progress expanded to the three-quarter mark of completion.
- In October, it was announced that the Jones Tract floodwater pumpout project had been expanded and the completion date extended.
- In November, the Division of Planning and Local Assistance announced the availability of approximately \$4.6 million in Proposition 40 grant money for Urban Stream Restoration Projects.
- Also in November, DWR's Director was a featured speaker at a flood management workshop in Sacramento. The workshop was sponsored by the Water Education Foundation and co-sponsored by DWR and The Reclamation Board.
- In December, DWR officials reported that the agency's involvement in the Jones Tract pumpout project was completed and DWR's personnel began demobilizing.
- Also in December, DWR's Flood Management Division assisted Reclamation District 1601 with monitoring of a second sinkhole discovered in the Twitchell Island levee.

## Community Relations

### Oroville

PAO staff continued to provide media outreach for Oroville community meetings related to DWR's application for a new federal license to operate its Oroville Facilities. PAO maintained the Lake Oroville recreation Web site, <http://www.lakeoroville.water.ca.gov>, which provides information about the lake's recreational opportunities and other area facilities and attractions. In addition, DWR provided photography for the City of Oroville and the Oroville Area Chamber of Commerce for various community events.

After Lake Oroville was named as one of California's best bass fishing spots, a program was launched to promote the lake's bass fishing. The program includes a media kit for use by the City of Oroville and the Oroville Area Chamber of Commerce, along with a brochure touting the lake as a top spot to catch bass. Central District worked with the PAO on the project.

The PAO design group produced promotional materials for the Fourth of July community celebration, Feather River Fiesta Days, and the September Salmon Festival, all in the Oroville area. Products included posters, interactive educational displays, promotional displays, and informative handouts. The photography unit captured event activities for use in various publications, including *DWR NEWS/People*. The audio visual staff assisted the public in using a fishing simulator (an interactive device complete with fishing pole and video screen that provides participants with a virtual reality fishing experience). The video group created public service announcements about events and

distributed them to radio and television stations in the Oroville and Chico areas.

### **California Lakes and Reservoirs Appreciation Week**

DWR partnered with the Department of Boating and Waterways (DBW) to share expenses in publicizing California Lakes and Reservoirs Appreciation Week 2004. Magnets and flyers emphasizing the lakes' and reservoirs' recreational opportunities were distributed to State and local lakes and reservoirs with the cooperation of the DPR. A corresponding exhibit was placed in the Resources Building lobby and a DWR Web site, designed for Lakes and Reservoirs Appreciation Week, was made available to the public. In Southern California, a radio Public Service Announcement (PSA) was played on several stations, including a San Diego station that features a boating show and featured interviews with representatives of DWR and DBW.

**SWP Publications.** In 2004, the *State Water Project Recreation Facilities* brochure was revised and reprinted, to include contact information for SWP recreation facilities throughout California.

DWR's SWP and other PAO informational Web sites were translated into Spanish. Those translations are available at: <http://www.water.ca.gov/espanol.cfm>

The SWP and Water Safety Publications Catalog was posted to the Web to allow the public to order publications online. (<http://www.publicaffairs.water.ca.gov/swp/brochures/index.cfm>)

**E-News.** PAO continued to distribute "clips" of newspaper articles on California water issues via e-mail. The clips are e-mailed to DWR employees under the heading of *California Water News*.

DWR also answered a wide range of questions from the public and government agencies through its Web-based "comment line."

PAO administered *Recent News* at <http://www.dwr.water.ca.gov>, posted news releases, news advisories, and new Web sites.

**DWR NEWS/People Magazine.** DWR's quarterly magazine completed its first year as the combined *DWR NEWS* magazine and *DWR People* newsletter. In addition to a new profile section on State Water Contractors, the magazine includes feature articles on projects and programs. It also spotlights individual and team accomplishments, skills, awards, promotions, retirements, and other news items. The Winter 2004 issue of *DWR NEWS/People* received an award for excellence from the State Information Officers Council.

### **Video**

The video group produced aqueduct safety PSAs that aired on Spanish and English radio stations in areas along the SWP. The PSAs warn listeners to be cautious along the California Aqueduct and to stay out of the water.

PSAs promoting Lakes and Reservoirs Week, July 1-7 were produced. The goal was to increase awareness regarding the beauty of our reservoirs and to urge visitors to help keep them clean.

A video of Aquatic Adventure Camps for children at SWP facilities was used to encourage other communities to participate in the program. The events give children experience in water safety practices and lifesaving techniques.

In June, video and photography teams documented the Jones Tract levee break in the Sacramento-San Joaquin Delta. Aerial and ground videotape footage and still photographs were taken during several stages of damage and repair. They were later used in presentations and in news clips on DWR's Web site. Short videos about the Delta levee system and the Jones Tract break were produced for a California State Fair exhibit booth.

Production continued on the water safety video *Friends for Life*, designed for school age children

and featuring Albert and Einstein, DWR's water safety mascots. Three-dimensional digital models of Albert and Einstein were completed and will be used to animate the characters for this and future water safety videos.

The video group worked with DWR's webmaster to place video clips on DWR's "Aquanet" Web site and DWR's home page. The clips included SWP news, instructional presentations such as *Fighting floods with Sandbags*, and a water conservation message.

An eight-minute video was produced to accompany DWR's white paper, *Flood Warnings: Responding to California's Flood Crisis*, a report presented to the Governor and the Legislature. The video, called *Flood Advisory: Rough Water Ahead*, alerts viewers to potential dangers of the aging California levee system, and references recommendations from the report to the Legislature.

The treatment and outline for the documentary video *Weeds to Wetlands* was completed. The program depicts the process and success of habitat restoration and levee rehabilitation on Decker Island in the Delta.

The video group continued transitioning the video tape library to DVD.

### **Photography**

Photographs were taken throughout the State to supplement articles about DWR's programs and people written for *DWR NEWS/People*.

Photos were taken of the Salton Sea and Colorado River for use in departmental reports and presentations.

Photographic documentation was provided on construction progress for the Lake Castaic improvements and Tehachapi Afterbay.

Many photographs were taken to document the Jones Tract flooding.

Also continuing in 2004, were digital imaging and photographic support for Oroville Facilities relicensing.

### **Audio-Visual**

PAO's audio-visual unit provided public address system support for numerous meetings.

### **Community Outreach**

As one of the agencies supporting the "Catch A Special Thrill" (C.A.S.T.) program, DWR's design group created a C.A.S.T. logo and identity package. C.A.S.T. promotes fishing and boating opportunities for disabled and special needs children.

### **SWP Tours**

During 2004, DWR welcomed 27 foreign tours with 186 visitors to SWP and other facilities; there also were a number of domestic and school tours to the SWP Delta Facilities. Tour groups came from all over the United States and 12 foreign countries: Australia, China, Italy, Japan, Jordan, Mexico, Morocco, Romania, South Korea, Spain, Taiwan, and Turkmenistan. The Delta Tour program for DWR employees, as part of the DWR Training Program, continued with seven Delta Tours completed in 2004. Figure 15-1 shows visitors centers on the SWP.

### **Water Safety Education**

A revised Albert and Einstein activity book was printed, along with four new sticker designs. Water-soluble tattoos were produced for use at the California State Fair and for distribution by water safety presenters at schools and events.

### **Displays and Exhibits**

During 2004, the following water management and SWP-related exhibits and displays were provided:

- Graphic Services Branch arranged to have DWR's collection of historic documents and



**Figure 15-1. Visitors Centers on the SWP**

objects stored in climatically controlled, archival-quality facilities at the Secretary of State's Office. Ownership remains with DWR, but the items are now entered into the State archives database and available for loan to other agencies with DWR's permission.

- PAO developed and staffed a California State Fair display illustrating the importance of water.
- Booths were developed and staffed for the spring and fall conferences of the Association of California Water Agencies. The spring conference booth illustrated delivery areas of the State Water Contractors. The fall conference booth provided information regarding the Colorado River Basin drought.
- For a second year, PAO conducted a campaign promoting California Lakes and Reservoirs Appreciation Week, July 1-7. Materials included banners, brochures, a display for the Resources Building lobby, and a radio spot.
- A display promoting recreational opportunities at SWP facilities was designed and installed in the Resources Building lobby.
- At Vista del Lago, a large video menu board was designed to provide a continuously scrolling list of videos, each with a short clip, available for viewing.
- Also at Vista del Lago a 7-foot California map showing State, federal, and local water facilities was revised.
- At Romero Visitors Center, a full-scale diorama of a boat dock and wildlife was added to the photo mural of a Delta panorama. The dock invites the viewer into the space and provides support for informational panels about the Delta environment and wildlife enhancement.
- In 2004, DPR partnered with DWR to transform historic Bidwell Toll House into a visitor center. In the mid-1800s, the toll house was used to collect fees to cross the original Bidwell suspension bridge. It also served as a small mercantile outlet and post office. DWR was responsible for project design,

fabrication installation and interpretive panels.

### **Oral History Program**

Work continues on writing biographies from 150 interviews and completing a catalog of them. Retired annuitants Art Winslow and Ernie James have traveled hundreds of miles to compile oral histories of persons significant in DWR's development and history.

### **School Education Program**

Providing educators and students with a state-wide perspective on such water issues as conservation, conveyance systems, and the water cycle is the goal of the School Education Program. PAO develops and promotes high-quality materials and makes them available free to schools, educators, and water districts.

Program achievements for 2004 include:

- Interactive Children's Exhibits at the Sacramento Zoo Earth Day observance (April); the Urban Creeks Council's Creek Week event at the Sacramento Discovery Center (April); the American River Education Center's *Get Wet* event in Folsom (June); and the California Indian Days event at the State Capitol (September);
- 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 water cycle "passports" and bookmarks for the Creek Week Event, and Delta bookmarks in cooperation with the California Bay-Delta Authority;
- Presenting DWR's School Education Program to the California Regional Environmental Education Community (CREEC) Conference in Monterey (January);
- Participated in strategic planning for the CREEC network;

- Participated in a peer review of East Bay Municipal Utility District's education program;
- Participating on the Water Awareness Education Subcommittee and printing *Water Uses in California* for elementary students;
- Participating and assisting at Water Education Committee meeting hosted by the Alameda County Water Agency (April) and hosting the committee meeting and tour in Sacramento (October);
- Serving on the Water Education for Teachers (WET) Advisory Committee, the Creek Week Planning Committee, and the California Environmental Education Interagency Network Committee;
- Providing *Project WET* books to teachers who participate in Project WET training workshops; and
- Serving on Jiminy Cricket's Environmental-Challenge 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 Delta Studies Institute for teachers, co-sponsored with the San Joaquin County Office of Education.

### **Water Awareness Month Activities**

During May 2004, DWR observed Water Awareness Month for the 17th consecutive year.

PAO news releases highlighted activities at DWR's facilities and public information officers answered media inquiries regarding water awareness.

Information for this chapter was provided by the Public Affairs Office.

# **Appendix B**

## **Data and Computations Used to Determine 2006 Water Charges**

**Appendix B**  
**Data and Computations**  
**Used to**  
**Determine 2006 Water Charges**

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## Appendix B

### Data and Computations

#### Used to

### Determine 2006 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 2006. The information is based on established data about the SWP, both known and projected, as of June 30, 2005.

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)

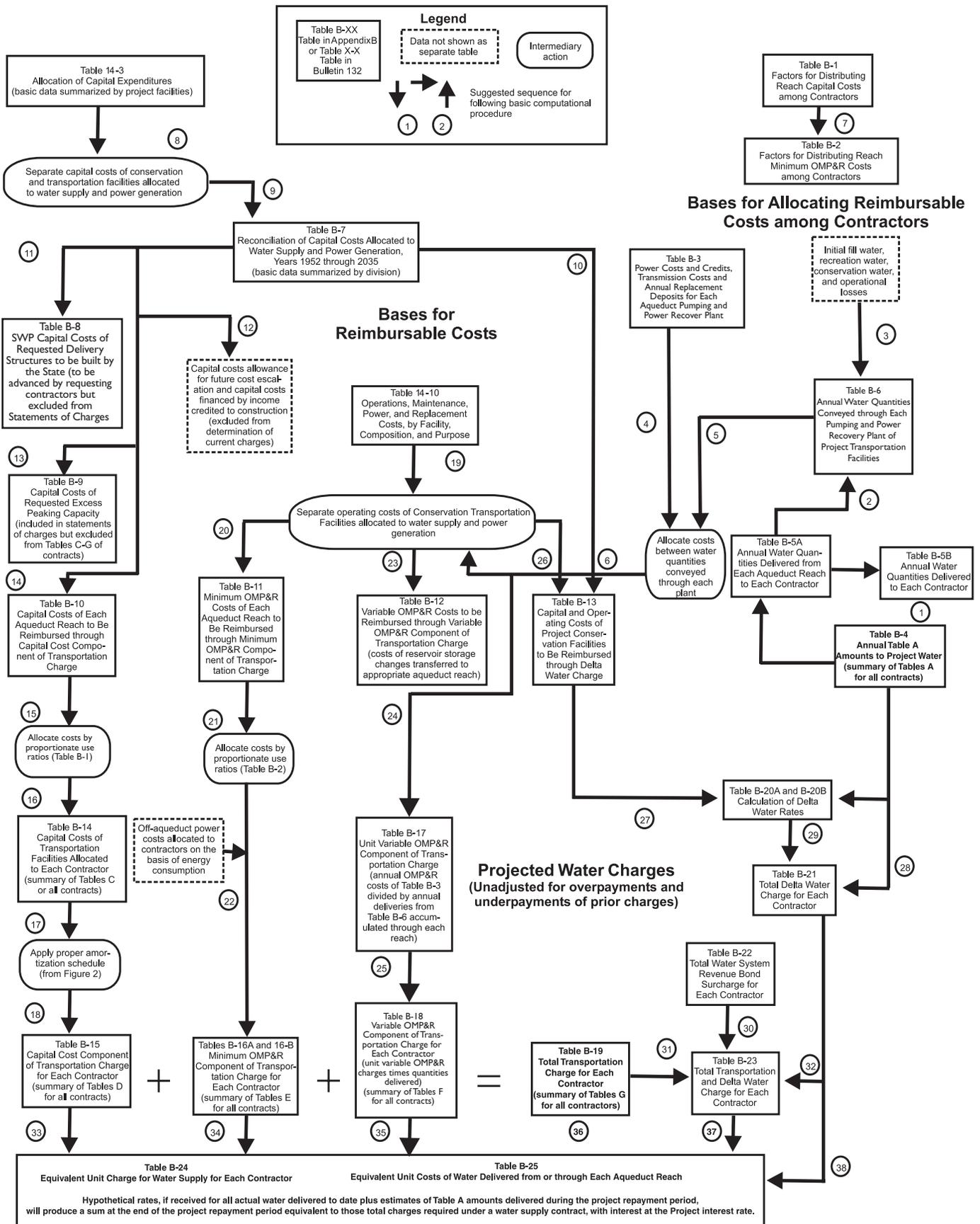
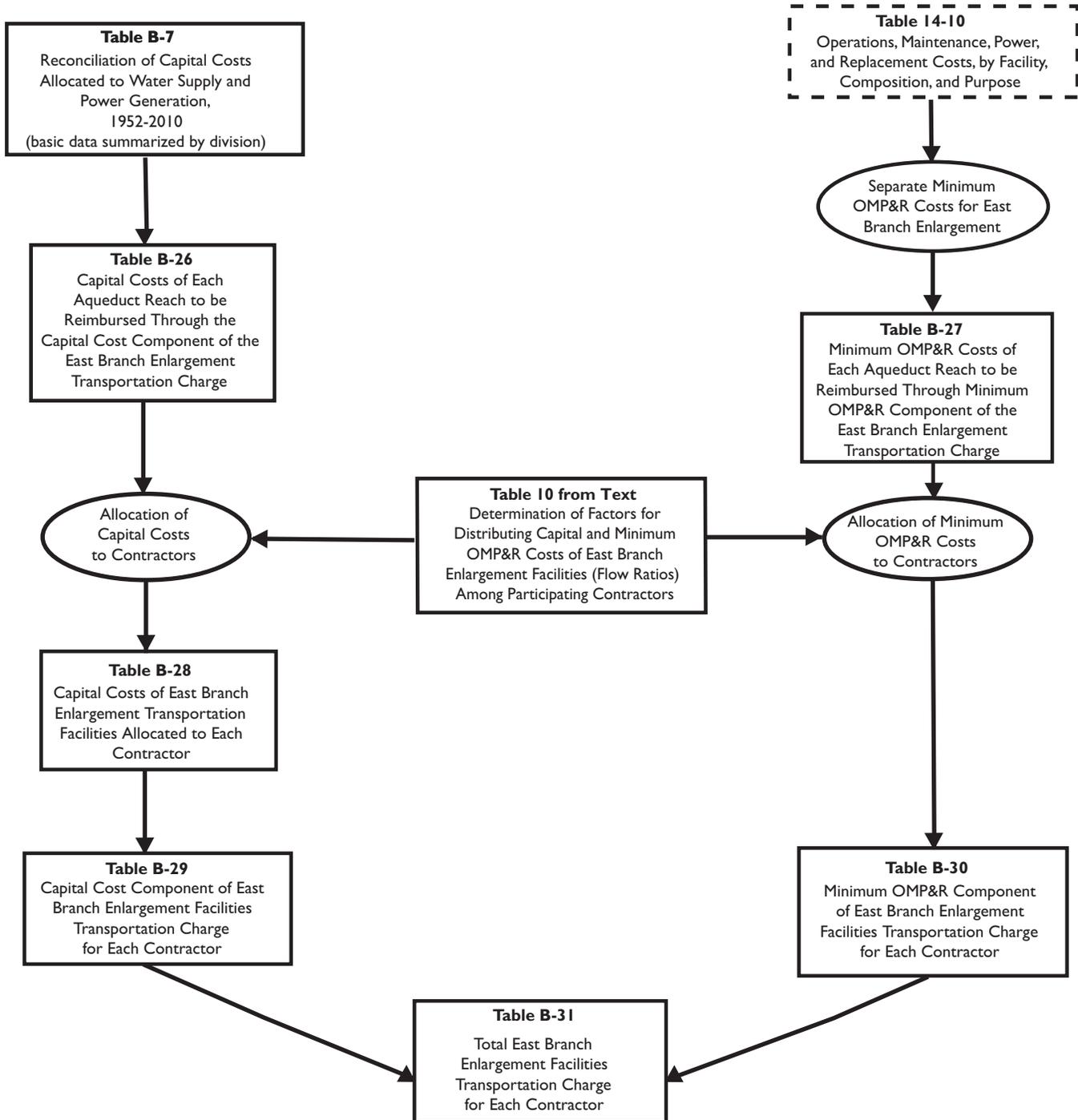
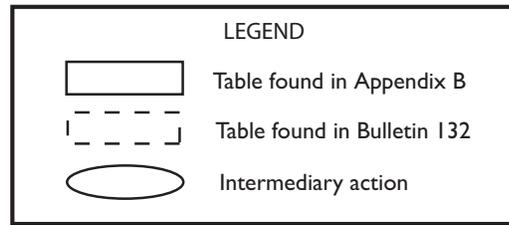


Figure B-I. Relationships of Data Used to Substantiate Statements of Charges



**Figure B-2. Relationships of Data Used to Substantiate East Branch Enlargement Charges**

The standard provisions provide for a Delta Water Charge and a Transportation Charge for project water.

The Delta Water Charge is a unit charge applied to each acre-foot of SWP water the contractors are entitled to receive according to their contracts. The unit charge, if applied to each acre-foot of all such 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.

Transportation charges for the Coastal Branch Extension, East Branch Extension, and South Bay Enlargement are being repaid by contractors in their respective service areas.

Transportation charges for the Tehachapi Afterbay is repaid by those contractors using electrical power for delivery of their Table A water.

## 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 2006.

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 2004 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 con-

**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 SVPP 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**

tracts, 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 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

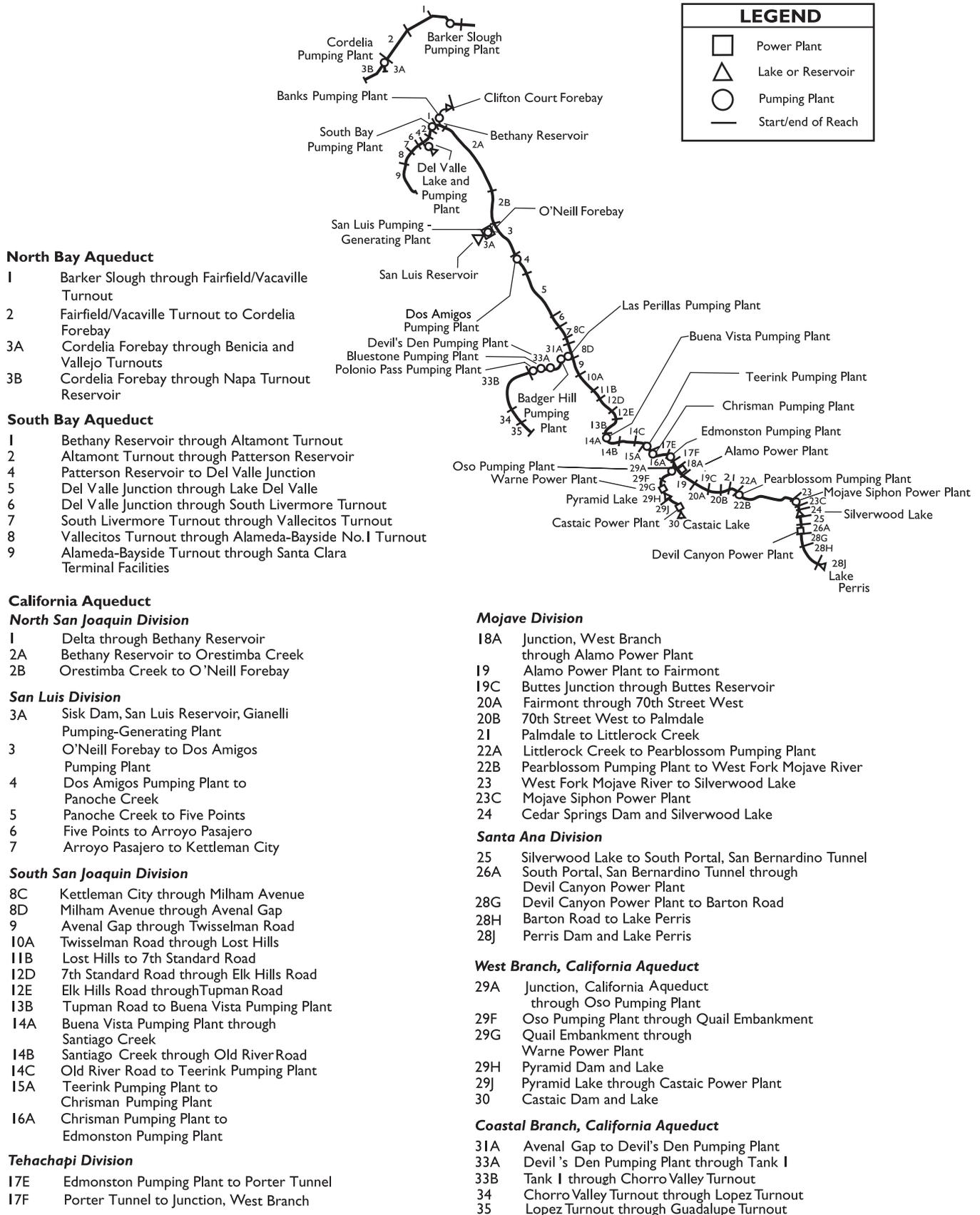


Figure B-4. Repayment Reaches and Descriptions

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, 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 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 2005 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);
- 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 I. Summary of Permanent Aqueduct Capacity Transfers**

Contractor		Capacity Transfer		Transfer Description
Seller	Buyer	Amount (acre-feet)	Effective Year	
<b>Transfers under Monterey Amendment</b>				
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
<i>Subtotal Under Article 53</i>		<i>114,000</i>		
<b>Transfers outside of Monterey Amendment</b>				
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
Tulare	Coachella	9,900	2004	Purchased capacity upstream of Reach 8D
MWDSC	Coachella	88,000	2005	Purchased capacity upstream of Reach 28J
MWDSC	Desert	11,900	2005	Purchased capacity upstream of Reach 28J
<i>Subtotal Outside of Article 53</i>		<i>122,273</i>		

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 2005 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

**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
<b>Project Conservation Facilities</b>				
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 <sup>a</sup>	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
<b>Transportation Facilities</b>				
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 <sup>b</sup>	78.0 <sup>c</sup>
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

<sup>a</sup> 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.

<sup>b</sup> Percentage indicated consists of 48.8 percent of costs allocated to recreation and 26.8 percent to flood control.

<sup>c</sup> Percentage indicated consists of 44.9 percent of costs allocated to recreation and 33.1 percent to flood control.

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.

### Capital Costs

Capital costs used in the redeterminations in this appendix reflect prices prevailing on December 31, 2004; 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 Con-

servation 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 2005, 2006, and 2007.

*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. 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.
- (2) 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.
- (3) 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.

- (4) 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. 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 3. Criteria for Amortizing Capital Costs of Transportation Facilities**

Contractor	Year of Initial Payment <sup>a</sup>
Alameda County Flood Control and Water Conservation District - Zone 7	1963 <sup>b</sup>
Alameda County Water District	1963
Antelope Valley-East Kern Water Agency	1963
Castaic Lake Water Agency	1964
City of Yuba City	<sup>c</sup>
Coachella Valley Water District	1964
County of Butte	<sup>c</sup>
County of Kings	1968
Crestline-Lake Arrowhead Water Agency	1964
Desert Water Agency	1963 <sup>d</sup>
Dudley Ridge Water District	1968 <sup>e</sup>
Empire-West Side Irrigation District	1968 <sup>e</sup>
Kern County Water Agency	
Agricultural Use	1968 <sup>e</sup>
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 <sup>e</sup>
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 <sup>d</sup>
San Geronio Pass Water Agency	1963 <sup>d</sup>
San Luis Obispo County Flood Control and Water Conservation District	1964 <sup>f</sup>
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 <sup>e</sup>
Ventura County Flood Control District	1964

<sup>a</sup> Allocated capital costs of transportation facilities amortized in equal annual installments unless otherwise noted.

<sup>b</sup> Principal payments on each annual capital cost prior to 1971 delayed until calendar year 1972, except payments for 1963.

<sup>c</sup> For Yuba City and Butte County payments for Delta Water Charge only.

<sup>d</sup> Payment deferred for 1963 and added to 1964 payment with accrued interest.

<sup>e</sup> 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.

<sup>f</sup> For San Luis Obispo and Santa Barbara County, all principal and interest payments for costs of the Coastal Stub were deferred until 1976.

**Table 4. Minimum OMP&R Costs of Reach 3 IA 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
<b>Total</b>	<b>3,997,767</b>

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 2004.

**Table 5. Summary of Off-Aqueduct Power Facility Charges and Credits**

Charges by Item	
Reid Gardner Power Plant	\$69,348,530
Bottle Rock Power Plant	\$14,310,872
South Geysers Power Plant	\$6,577,596
<i>Subtotal</i>	<b>\$90,236,998</b>
Credits by Item	
Power sales	\$7,478,989
Miscellaneous water (wheeling)	0
<i>Subtotal</i>	<b>\$7,478,989</b>
<b>Net Total Charge</b>	<b>\$82,758,009</b>

Table 6 shows projected charges for Off-Aqueduct Power Facilities and an amount equal to 25 percent of annual bond service for 2005 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.

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.

**Table 6. Projected Charges for Off-Aqueduct Facilities**

Year	Total Annual Cost	25% Bond Cover
2005	99,678,273	8,641,048
2006	106,087,444	8,654,489
2007	108,102,663	8,650,533
2008	122,365,076	11,503,015
2009	122,599,806	11,549,961
2010	123,422,095	11,714,419
2011	120,283,261	11,090,452
2012	120,492,497	11,132,299
2013	69,283,888	5,067,911
2014	20,055,436	3,989,087
2015	11,875,961	2,353,192
2016	10,170,645	2,012,130
2017	9,946,250	1,967,250
2018	4,245,948	827,190
2019	4,221,987	822,397
2020	4,549,252	887,850
2021	6,091,541	1,196,309
2022	6,083,232	1,194,647
2023	4,524,703	882,941
2024	3,297,593	637,519
2025	332,939	66,588
2026	478,862	95,773
2027	811,377	162,276
2028	502,000	100,400
2029	495,000	99,000

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 <sup>a</sup>	
	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
Greenspot	871	5,420
Crafton Hills	1,087	6,507
Cherry Valley	224	6,731
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

<sup>a</sup> 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.

**Table 8. Extra Peaking Charges for Additional Power, by Pumping Plant (Dollars)**

Year	Las Perillas and Badger Hill										Total				
	Cordelia Napa	Cordelia Solano	Barker Slough	South Bay	Banks	Dos Amigos	Badger Hill	Buena Vista	Teerink	Chrisman		Edmonston	Pearblossom	Oso	
1972	0	0	0	0	0	10,579	24,700	0	0	0	0	0	0	0	35,279
1973	0	0	0	0	0	0	6,016	0	0	0	0	0	0	0	6,016
1974	0	0	0	0	0	0	7,140	0	0	0	0	0	0	0	7,140
1975	0	0	0	0	0	494	6,397	0	0	0	0	0	0	0	6,891
1976	0	0	0	0	0	0	1,981	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
1978	0	0	0	0	0	45,145	3,680	0	0	0	0	0	0	0	48,825
1979	0	0	0	0	0	0	3,306	0	0	0	0	0	0	0	3,306
1980	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
1982	0	0	0	0	0	12,126	0	0	0	0	0	0	0	0	12,126
1983	0	0	0	0	0	89,339	0	0	0	0	0	0	0	0	89,339
1984	0	0	0	35	7,594	3,534	152	0	0	0	0	0	0	0	11,315
1985	0	0	0	2,096	84,396	38,607	7,203	11,173	3,823	3,593	28,353	0	0	0	150,891
1986	0	0	0	1,480	19,612	8,841	763	4,488	4,412	8,929	0	0	0	0	76,878
1987	0	0	0	0	1,864	863	0	291	354	766	2,683	0	0	0	6,821
1988	639	39	287	604	17,129	7,838	835	2,295	1,806	3,460	11,058	0	0	0	45,025
1989	2,491	566	1,483	894	43,475	20,082	2,213	5,792	4,367	8,272	25,886	0	0	0	111,946
1990	45	0	18	70	40,251	18,642	1,935	3,401	1,531	2,058	3,793	0	0	0	76,221
1991	903	0	281	0	21	8	0	15	17	39	139	41	0	0	1,464
1992	208	117	203	0	7,070	2,502	0	182	190	435	0	0	0	0	10,907
1993	0	681	889	4,483	123,080	54,741	0	8,898	5,458	10,900	35,068	1,139	0	0	255,337
1994	0	366	393	679	6,566	2,795	454	1,083	155	357	1,121	0	132	0	14,101
1995	0	0	0	1,717	24,464	9,422	27	1,865	3,475	782	1,104	400	0	0	43,256
1996	4	0	1	1,983	10,031	4,976	0	391	432	1,015	3,404	1,160	0	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	0	595,761
1998	0	0	0	20,966	235,693	106,251	2,354	697	848	1,836	6,426	0	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	0	145,010
2000	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
2002	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
<b>Total</b>	<b>4,290</b>	<b>3,549</b>	<b>5,707</b>	<b>38,457</b>	<b>1,041,323</b>	<b>637,838</b>	<b>70,909</b>	<b>78,719</b>	<b>43,445</b>	<b>67,625</b>	<b>172,056</b>	<b>20,480</b>	<b>132</b>	<b>0</b>	<b>2,184,530</b>

## **Delta Water Charges**

*Table B-20A* presents the calculation of the Delta Water Rate for the initial Conservation Facilities applicable in 2006 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 2006 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 AC. 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 contrac-

tors and are unadjusted for prior overpayments or underpayments.

## **Equivalent Total Water Charges**

*Table B-24* presents the Transportation Charge and Delta Water Charge in terms of the equivalent unit charge for each acre-foot of allocated water now projected for delivery to the respective contractors.

These equivalent charges would provide the same principal sum at the end of the project repayment period as annual payments to be made as part of the Delta Water Charge and Transportation Charge, plus interest at the Project Interest Rate, if applied to each acre-foot of allocated water delivered to date; all surplus water delivered prior to May 1, 1973; all interruptible water deliveries in 1994 and after; and all allocated water now projected to be delivered during the remainder of the project repayment period (Table B-5B).

The equivalent unit Delta Water Charges included in Table B-24 are greater than those in Table B-20A because current projections of allocated water service are less for most contractors than the amounts shown in Table A.

## **Equivalent Water Costs by Reach**

*Table B-25* presents a summary of the equivalent unit Transportation cost of conveying allocated water through respective aqueduct reaches of the Project Transportation Facilities.

Those unit costs provide the basis of charges assessed for extra service (such as for delivery of allocations down-aqueduct from a contractor's turnout) and for wheeling service to entities other than the long-term water supply contractors.

The cumulative unit conveyance costs indicated for reaches in Table B-25 do not necessarily equal the equivalent unit Transportation Charges to contractors served from such

**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	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
<b>Total</b>	<b>5,893</b>	<b>7,653</b>	<b>34,577</b>	<b>13,644</b>	<b>3,521</b>	<b>55,250</b>	<b>5,974</b>	<b>1,620,176</b>	<b>3,692</b>	<b>2,017</b>	<b>102,158</b>	<b>123,049</b>	<b>9,858</b>	<b>24,983</b>	<b>41,156</b>	<b>2,439</b>	<b>74,749</b>	<b>53,741</b>	<b>2,184,530</b>

**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

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 build-ups 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 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 developed by the

Department in consultation with the affected contractors.

*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 short-term agreements 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. 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	Barker Slough thru Fairfield/Vacaville Turnout	0.29667896	0.70332104				1.00000000	
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.38414552	0.61585448				1.00000000	
3A	Cordelia Forebay thru Benicia and Vallejo Turnouts		1.00000000				1.00000000	
3B	Cordelia Forebay thru Napa Turnout Reservoir	1.00000000					1.00000000	
	South Bay Aqueduct							
1	Bethany Reservoir thru Altamont Turnout			0.22599612	0.20663021	0.49237700	0.07499667	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.22599658	0.20663059	0.49237783	0.07499500	1.00000000
4	Patterson Reservoir to del Valle Junction			0.19504795	0.21450017	0.51113249	0.07931939	1.00000000
5	Del Valle Junction thru Lake del Valle			0.14436367	0.12972254	0.33715573	0.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				0.25176680	0.60218448	0.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355		1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	California Aqueduct							
1	Delta thru Bethany Reservoir			0.00954737	0.00872917	0.02080118	0.00342507	N/A

Reach No.	Reach Description	Central Coastal Area		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 I	0.10101221	0.89898779					
33B	Tank I 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)								
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District	San Geronimo Pass Water Agency	Metropolitan Water District of Southern California	Ventura County Flood Control District	Total
1	0.00049180	0.01101147	0.00369131	0.02362857	0.00650354	0.00398392	0.43929350	0.00429212	1.00000000
2A	0.00051413	0.01151136	0.00385891	0.02469101	0.00679699	0.00679699	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	1.00000000
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	0.00457883	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	0.00779906	1.00000000
19	0.00221522	0.04960300	0.01662640	0.10730707	0.02944876	0.01809230	0.57469556	0.00779906	1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161798	0.01942666	0.61700971	0.00779906	1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316986	0.02038045	0.64729087	0.00779906	1.00000000
21	0.00254199	0.05692053		0.12319480	0.03380324	0.02077093	0.65963498	0.00779906	1.00000000
22A		0.05773082		0.12495766	0.03428605	0.02106816	0.66905054	0.00779906	1.00000000
22B		0.05842136		0.12645207	0.03469614	0.02132008	0.67705256	0.00779906	1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614	0.00779906	1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404	0.00779906	1.00000000
25				0.14947726	0.03997502	0.02520426	0.78534346	0.00779906	1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346	0.00779906	1.00000000
28G				0.05126137			0.94873863	0.00779906	1.00000000
28H							1.00000000	0.00779906	1.00000000
28J							1.00000000	0.00779906	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&amp;R Costs Among Contractors

Sheet 1 of 2

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				0.00870649	0.02074716		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	0.00531809	0.00981123	0.03024584	0.02544228	0.02816849	0.00133276	0.01137611
2A	Bethany Reservoir to Orestimba Creek	0.00557064	0.01027715	0.03167950	0.02660600	0.02949522	0.00139543	0.01191224
2B	Orestimba Creek to O'Neill Forebay	0.00557674	0.01028844	0.03171597	0.02666338	0.02953453	0.00139736	0.01192792
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557568	0.01028648	0.03171043	0.02666659	0.02953095	0.00139720	0.01192641
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557456	0.01028442	0.03170463	0.02666996	0.02952719	0.00139705	0.01192482
5	Panoche Creek to Five Points	0.00557316	0.01028186	0.03169736	0.02667418	0.02952249	0.00139687	0.01192284
6	Five Points to Arroyo Pasajero	0.00557106	0.01027798	0.03168637	0.02668056	0.02951539	0.00139656	0.01191985
7	Arroyo Pasajero to Kettleman City	0.00557038	0.01027673	0.03168285	0.02668261	0.02951311	0.00139646	0.01191888
8C	Kettleman City thru Milham Avenue	0.00551452	0.01017368	0.03136136	0.02635187	0.02920164	0.00138158	0.01179354
8D	Milham Avenue thru Avenal Gap	0.00562672	0.01038066	0.03200083	0.02691148	0.02980153	0.00141001	0.01203564
9	Avenal Gap thru Twisselman Road			0.03436980	0.02785985	0.03125286	0.00153069	0.01306310
10A	Twisselman Road thru Lost Hills			0.03490578	0.02831966	0.03174218	0.00155504	0.01326985
11B	Lost Hills to 7th Standard Road			0.03824176	0.03115437	0.03478569	0.00170600	0.01455350
12D	7th Standard Road thru Elk Hills Road			0.04009312	0.03274031	0.03647572	0.00179001	0.01526741
12E	Elk Hills Road thru Tupman Road			0.04014397	0.03279589	0.03652306	0.00179253	0.01528847
13B	Tupman Road to Buena Vista Pumping Plant			0.04343323	0.03558110	0.03952321	0.00194122	0.01655295
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04552298	0.03718058	0.04143137	0.00203618	0.01735961
14B	Santiago Creek thru Old River Road			0.04617191	0.03342424	0.04202703	0.00206642	0.01761493
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04735241	0.03220394	0.04310736	0.00212063	0.01807432
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04804398	0.03267426	0.04374004	0.00215235	0.01834317
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.04964403	0.03376234	0.04520241	0.00222537	0.01896287
17E	Edmonston Pumping Plant to Porter Tunnel			0.05163545	0.03511660	0.04702307	0.00231640	0.01973513
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05173926	0.03518719	0.04711769	0.00232108	0.01977493
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13485569		0.11344457	0.00605083	0.05154915
19	Alamo Power Plant to Fairmont			0.13485222		0.11344290	0.00605098	0.05154980
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847930		0.12213523	0.00651583	0.05550703
20B	70th Street West to Palmdale			0.02276024		0.12812785	0.00683566	0.05823170
21	Palmdale to Littlerock Creek			0.02318952		0.13056387	0.00696663	0.05934507
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.13242454	0.00706632	0.06019328
22B	Pearblossom Pumping Plant to West Fork Mojave River					0.13400843	0.00715085	0.06091324
23	West Fork Mojave River to Silverwood Lake					0.12416451	0.00818135	0.02168414
24	Cedar Springs Dam and Silverwood Lake					0.02651510	0.01251569	0.01910229
25	Silverwood Lake to South Portal San Bernardino Tunnel					0.09751351		0.01317145
26A	South Portal, San Bernardino Tunnel thru Devil Canyon Pwp.					0.12013473		0.01622697
28G	Devil Canyon Power Plant to Barton Road					0.30672992		0.04143095
28H	Barton Road to Lake Perris					0.32330286		0.04366951
28J	Perris Dam and Lake Perris					0.32330202		0.04366970
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, 2005.

Table B-2

**Factors for Distributing Reach Minimum OMP&R Costs Among Contractors**

Sheet 2 of 2

Reach No.	North Bay Area		South Bay Area	San Joaquin Valley Area							
	Napa County FC&WCD	Solano County Water Agency	Alameda County FC&WCD-Zone 7	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
							Municipal and Industrial	Agricultural			
California Aqueduct											
1	0.00101503	0.00145926	0.02320270	0.01822142	0.00088480	0.00254119	0.02735295	0.27469091	0.00238144	0.00166749	0.02839384
2A	0.00106167	0.00152624	0.00868437	0.01903859	0.00092448	0.00266187	0.02863089	0.28700520	0.00248994	0.00174223	0.02966721
2B	0.00106383	0.00152939	0.00870009	0.01908895	0.00092696	0.00266478	0.02867562	0.28778242	0.00249558		0.02974725
3	0.00106393	0.00152954	0.00870024	0.01909529	0.00092722	0.00266427	0.02867409	0.28786364	0.00249595		0.02975556
4	0.00106401	0.00152968	0.00870041	0.01910089	0.00092750	0.00266374	0.02867248	0.28794903	0.00249635		0.02976428
5	0.00106413	0.00152986	0.00870062	0.01910789	0.00092783	0.00266308	0.02867046	0.28805564	0.00249686		0.02977517
6	0.00106431	0.00153014	0.00870096	0.01911848	0.00092835	0.00266207	0.02866740	0.28821695	0.00249762		0.02979167
7	0.00106438	0.00153022	0.00870107	0.01912188	0.00092852	0.00266174	0.02866642	0.28826869	0.00249786		0.02979697
8C	0.00105148	0.00151159	0.00859994	0.01886176	0.00091590	0.00263506	0.02834913	0.28434090	0.00246629		0.02979168
8D	0.00107370	0.00154358	0.00878005	0.01927090		0.00268867	0.02893698	0.29051112	0.00156161		0.01098651
9	0.00079826	0.00110157	0.00786471				0.03143148	0.29263291			
10A	0.00081139	0.00111953	0.00799211				0.03193731	0.28144288			
11B	0.00065052	0.00095254	0.00354792				0.03506894	0.21771722			
12D							0.03681479	0.18486151			
12E							0.03687019	0.18374304			
13B							0.01413733	0.14208658			
14A							0.00599913	0.10936622			
14B							0.00609042	0.10066378			
14C							0.00625275	0.07940837			
15A							0.00634765	0.06578229			
16A							0.00656553	0.03434119			
17E							0.00201100				
31A	0.00629812	0.00979558	0.02622386			0.05046240		0.43995900			

Southern California Area (continued)										
Reach No.	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley			San Geronio Pass Water Agency	Metropolitan Water District of Southern California	Ventura County Flood Control District	Total
				San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District	San Bernardino Valley Municipal Water District				
1	0.00049056	0.01818307	0.00458550	0.02356891	0.00648711	0.00397378	0.41547239	0.00427919	1.00000000	
2A	0.00051386	0.01902955	0.00480271	0.02467716	0.00679322	0.00416065	0.43517158	0.00448240	1.00000000	
2B	0.00051442	0.01906121	0.00480833	0.02471121	0.00680191	0.00416639	0.43566900	0.00448732	1.00000000	
3	0.00051433	0.01906075	0.00480752	0.02470855	0.00680098	0.00416594	0.43559198	0.00448648	1.00000000	
4	0.00051424	0.01906027	0.00480668	0.02470577	0.00680000	0.00416546	0.43551100	0.00448558	1.00000000	
5	0.00051412	0.01905966	0.00480562	0.02470229	0.00679878	0.00416488	0.43540988	0.00448447	1.00000000	
6	0.00051392	0.01905874	0.00480402	0.02469702	0.00679694	0.00416400	0.43525686	0.00448278	1.00000000	
7	0.00051385	0.01905846	0.00480349	0.02469533	0.00679634	0.00416372	0.43520780	0.00448224	1.00000000	
8C	0.00050870	0.01884319	0.00475452	0.02443210	0.00672541	0.00411933	0.44227753	0.00443730	1.00000000	
8D	0.00051904	0.01923555	0.00485156	0.02493497	0.00686329	0.00420412	0.45134389	0.00452759	1.00000000	
9	0.00056296	0.01845645	0.00526337	0.02706903	0.00744835	0.00456392	0.48981993	0.00491076	1.00000000	
10A	0.00057175	0.01874332	0.00534585	0.02749934	0.00756597	0.00463648	0.49755423	0.00498733	1.00000000	
11B	0.00062640	0.02052979	0.00585888	0.03016888	0.00829640	0.00508658	0.54559067	0.00546394	1.00000000	
12D	0.00065673	0.02152073	0.00605960	0.03165452	0.00870248	0.00533707	0.57229756	0.00572844	1.00000000	
12E	0.00065758	0.02154749	0.00606732	0.03169920	0.00871431	0.00534461	0.57307663	0.00573571	1.00000000	
13B	0.00071145	0.02230931	0.00656455	0.03432822	0.00943394	0.00578787	0.62040339	0.00620565	1.00000000	
14A	0.00074569	0.02442760	0.00688049	0.03600736	0.00989269	0.00607098	0.65057491	0.00650421	1.00000000	
14B	0.00075633	0.02477336	0.00697864	0.03654173	0.01003745	0.00616108	0.66009578	0.00659690	1.00000000	
14C	0.00077566	0.02540391	0.00715715	0.03750028	0.01029837	0.00632270	0.67725661	0.00676554	1.00000000	
15A	0.00078697	0.02577340	0.00726173	0.03806102	0.01045107	0.00641723	0.68730050	0.00686434	1.00000000	
16A	0.00081317	0.02662897	0.00750366	0.03935225	0.01080332	0.00663493	0.71046704	0.00709292	1.00000000	
17E	0.00084580	0.02769354	0.00780477	0.04096189	0.01124220	0.00690630	0.73933042	0.00737743	1.00000000	
17F	0.00084750	0.02774917	0.00782046	0.04104458	0.01126486	0.00692025	0.74082077	0.00739226	1.00000000	
18A	0.00220895	0.04946256	0.01657935	0.10699871	0.02936451	0.01804030	0.47144538		1.00000000	
19	0.00220892	0.04946131	0.01657891	0.10700135	0.02936470	0.01804074	0.47144817		1.00000000	
19C									1.00000000	
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161788	0.01942666	0.50762172		1.00000000	
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316974	0.02038045	0.53253657		1.00000000	
21	0.00254199	0.05692053		0.12319479	0.03380312	0.02077093	0.54270355		1.00000000	
22A		0.05773082		0.12495766	0.03428593	0.02106816	0.55045459		1.00000000	
22B		0.05842136		0.12645207	0.03469602	0.02132008	0.55703795		1.00000000	
23				0.14467451	0.03969010	0.02439237	0.63721302		1.00000000	
24				0.22243002	0.04339445	0.02843498	0.64760747		1.00000000	
25				0.11825184	0.03722720	0.01993915	0.71389685		1.00000000	
26A				0.14947726	0.03997501	0.02520426	0.64898177		1.00000000	
28G				0.05126136			0.60057777		1.00000000	
28H							0.63302763		1.00000000	
28J							0.63302828		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<sup>a</sup>**  
(Dollars)

Calendar Year	North Bay Aqueduct			South Bay Aqueduct	California Aqueduct					
	Reach 1	Reach 3A	Reach 3B	Reach 1 <sup>c</sup>	Reach 1	Reach 4	Reach 14A	Reach 15A	Reach 16A	Reach 17E
	Barker Slough Pumping Plant	Cordelia Pumping Plant Solano	Cordelia Pumping Plant Napa <sup>d</sup>	South Bay & Del Valle Pumping Plant	Banks Pumping Plant	Dos Amigos Pumping Plant	Buena Vista Pumping Plant	Teering Pumping Plant	Chrisman' Pumping Plant	edmonston Pumping Plant
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	1,212,723	2,503,167	8,677,123
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	30,134	25,304	10,031	516,969	4,990,929	2,288,240	1,554,041	1,241,803	3,233,705	12,571,140
2000	58,494	42,475	15,053	859,604	6,978,006	3,038,530	2,958,287	3,030,344	6,974,412	25,165,454
2001	358,775	248,951	213,029	4,046,300	24,052,371	9,827,656	14,786,375	15,168,691	34,173,052	126,270,631
2002	187,069	102,701	60,375	16,872,561	6,774,067	808,067	8,279,254	8,582,609	19,384,815	71,236,266
2003	176,140	115,182	95,116	2,490,167	20,944,500	8,778,235	10,373,297	10,803,483	24,628,876	90,650,822
2004	244,274	135,227	104,162	2,430,458	21,281,626	9,088,992	11,981,949	12,579,559	28,725,473	105,616,014
2005	321,273	209,870	144,479	3,564,486	27,993,175	14,403,942	16,784,932	19,581,500	41,754,909	148,696,809
2006	461,603	452,692	507,419	6,567,037	35,811,863	16,740,697	21,030,383	24,792,827	52,780,302	187,018,538
2007	486,431	314,077	782,592	5,482,851	36,807,379	16,479,534	20,778,409	24,494,019	52,145,072	184,844,636
2008	424,824	332,928	334,342	5,703,891	38,258,120	15,603,924	18,833,156	18,718,496	43,735,260	163,886,511
2009	439,994	344,673	354,194	5,894,530	34,603,342	16,272,513	19,711,661	19,587,483	45,790,446	171,605,548
2010	459,580	360,345	379,422	6,147,594	43,468,686	17,216,573	20,947,780	20,813,203	48,690,794	182,504,042
2011	462,376	360,477	386,460	6,149,736	39,975,570	17,455,032	21,359,736	21,237,279	49,707,847	186,356,273
2012	478,500	372,664	408,514	6,346,926	37,724,007	17,967,480	21,929,466	21,787,082	50,995,703	191,165,949
2013	520,588	408,432	459,407	6,925,717	49,079,264	20,113,023	24,716,233	24,548,703	57,530,019	215,717,068
2014	557,451	438,172	506,801	7,406,987	44,239,280	21,868,859	26,985,817	26,795,934	62,845,313	235,684,580
2015	571,243	444,697	533,786	7,512,565	49,562,014	22,290,704	27,544,440	27,351,613	64,161,949	240,635,499
2016	582,184	449,199	557,299	7,585,426	56,140,619	22,750,681	28,227,698	28,041,884	65,806,136	246,838,329
2017	580,498	442,772	565,804	7,481,402	50,661,489	22,466,578	27,904,502	27,728,640	65,070,873	244,089,471
2018	601,127	455,458	602,880	7,686,694	49,021,384	22,901,723	28,324,842	28,122,715	65,984,365	247,478,360
2019	620,280	466,611	639,157	7,867,173	58,131,452	24,395,331	30,630,494	30,464,552	71,573,142	268,586,682
2020	595,533	441,269	619,113	7,457,074	51,138,389	22,753,172	28,443,937	28,289,180	66,419,199	249,205,607
2021	595,772	440,550	621,001	7,445,462	50,284,843	22,809,292	28,559,587	28,410,647	66,712,330	250,320,134
2022	578,631	426,406	598,893	7,216,575	46,481,764	22,049,256	27,612,776	27,478,373	64,511,729	242,063,829
2023	581,678	428,919	602,821	7,257,246	49,977,791	22,201,558	27,810,332	27,674,211	64,975,261	243,805,599
2024	601,549	445,316	628,449	7,522,586	55,118,823	23,118,124	28,970,215	28,819,114	67,679,980	253,958,808
2025	599,022	443,230	625,190	7,488,845	46,084,256	22,903,899	28,653,229	28,498,810	66,917,063	251,080,760
2026	602,855	446,394	630,135	7,540,027	57,582,056	23,239,863	29,153,108	29,004,155	68,121,166	255,624,529
2027	594,366	439,389	619,186	7,426,669	51,189,857	22,786,976	28,551,565	28,406,021	66,704,040	250,295,318
2028	598,214	442,563	624,148	7,478,056	50,399,221	24,998,993	28,727,908	28,577,847	67,108,381	251,808,998
2029	591,106	436,700	614,983	7,383,163	49,916,769	24,628,321	28,346,715	28,202,995	66,224,014	248,492,100
2030	595,551	440,367	620,714	7,442,487	52,244,133	22,827,882	28,597,986	28,450,690	66,808,801	250,686,619
2031	587,951	434,097	610,913	7,341,023	46,383,383	21,998,185	27,317,665	27,150,579	63,706,131	238,968,322
2032	598,869	443,105	624,996	7,486,818	52,083,026	23,216,766	29,202,138	29,064,946	68,275,317	256,226,348
2033	626,982	466,302	661,250	7,862,178	53,485,752	23,887,336	29,753,088	29,561,227	69,407,235	260,383,388
2034	605,417	448,508	633,438	7,574,236	51,650,720	23,513,040	29,575,576	29,433,231	69,144,953	259,490,268
2035	593,869	438,978	618,544	7,420,038	51,298,310	22,826,323	28,630,190	28,488,317	66,902,399	251,049,023
<b>Total</b>	<b>18,479,410</b>	<b>13,883,541</b>	<b>18,095,636</b>	<b>247,967,485</b>	<b>1,659,379,563</b>	<b>731,827,033</b>	<b>899,291,308</b>	<b>907,187,511</b>	<b>2,104,428,866</b>	<b>7,837,835,373</b>

<sup>a</sup>Starting with 2005, transmission costs that vary and depend on power usage are included; therefore, they are recovered through the variable component.

<sup>b</sup>Power costs for the period 1968 through 1987 are for an interim facility.

<sup>c</sup>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<sup>a</sup>**  
(Dollars)

Sheet 2 of 2

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	0
1962	0	0	0	0	0	0	0	0	0	0	37,731
1963	0	0	0	0	0	0	0	0	0	0	56,414
1964	0	0	0	0	0	0	0	0	0	0	71,745
1965	0	0	0	0	0	0	0	0	0	0	138,653
1966	0	0	0	0	0	0	0	0	0	0	189,402
1967	0	0	0	0	0	0	0	0	0	0	248,881
1968	0	0	0	0	0	0	0	118,578	0	0	1,979,249
1969	0	0	0	0	0	0	0	76,920	0	0	1,296,935
1970	0	0	0	0	0	0	0	134,749	0	0	1,115,566
1971	0	0	0	0	0	0	0	168,689	0	0	1,500,385
1972	0	81,484	0	(3,112)	157,005	0	(385,696)	213,251	0	0	4,300,002
1973	0	586,209	0	(956,197)	238,650	0	(1,193,216)	120,014	0	0	5,369,270
1974	0	566,546	0	(963,572)	286,640	0	(1,823,397)	119,505	0	0	5,785,555
1975	0	587,227	0	(1,125,945)	421,687	0	(2,835,302)	92,012	0	0	6,669,772
1976	0	871,540	0	(1,567,312)	278,869	0	(2,512,021)	146,530	0	0	6,674,450
1977	0	275,980	0	(1,262,960)	17,319	0	(1,701,284)	84,225	0	0	327,513
1978	0	1,758,473	0	(3,345,147)	215,573	0	(2,361,377)	190,745	0	0	11,252,189
1979	0	1,770,844	0	(3,381,969)	122,134	0	(2,752,003)	203,143	0	0	9,752,263
1980	0	1,769,468	0	(3,508,195)	86,893	0	(2,728,494)	182,996	0	0	8,927,799
1981	0	2,049,947	0	(3,743,153)	382,330	0	(2,854,192)	189,573	0	0	14,811,510
1982	0	1,614,895	0	(3,149,352)	444,009	(973,898)	(3,476,126)	182,427	0	0	13,978,041
1983	0	301,180	0	(5,905,161)	59,561	(1,314,237)	(3,904,690)	18,936	0	0	(6,346,070)
1984	0	633,223	0	(7,865,341)	135,658	(2,285,362)	844,120	117,585	0	0	(568,150)
1985	0	1,140,057	0	(10,664,136)	739,708	(8,476,552)	(19,162,735)	155,931	0	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	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	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	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	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	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	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	0	(7,440,605)
1993	(84,856)	(370,935)	0	(7,956,659)	(244,261)	(4,607,075)	(9,740,511)	(122,190)	0	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)	0	10,567,549
1995	(1,297,179)	951,513	0	(10,256,635)	342,312	(3,827,718)	(7,403,219)	261,423	0	0	(5,229,408)
1996	(2,959,744)	2,725,712	(941,959)	(13,155,960)	908,180	(5,026,221)	(8,969,945)	321,137	0	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	0	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)	0	(25,947,387)
1999	(2,811,928)	1,780,322	(2,482,354)	(14,772,635)	667,194	(5,526,541)	(9,954,674)	156,292	234,221	0	(6,247,807)
2000	(5,129,549)	3,959,191	(4,429,149)	(25,857,029)	1,213,003	(9,464,490)	(17,958,033)	230,743	379,951	0	(7,934,703)
2001	(3,298,048)	18,939,291	(3,649,034)	(19,510,279)	6,409,868	(7,987,833)	(13,981,232)	1,080,321	2,152,606	0	209,301,491
2002	(4,926,146)	10,494,412	(5,255,302)	(24,676,762)	3,738,549	(10,286,902)	(18,455,024)	531,598	1,327,115	0	86,171,591
2003	(3,431,664)	14,446,597	(6,760,773)	(28,047,969)	4,382,986	(10,281,922)	(17,307,974)	621,756	1,483,990	0	124,160,785
2004	(6,227,543)	16,503,771	(7,691,607)	(31,246,141)	5,340,435	(12,033,953)	(20,022,179)	656,151	1,731,620	0	139,198,288
2005	(5,932,442)	26,281,794	(9,191,578)	(32,267,232)	6,236,289	(8,966,677)	(14,587,419)	1,064,595	2,947,016	0	239,039,721
2006	(7,089,600)	27,150,476	(10,591,000)	(32,577,500)	10,656,623	(16,607,500)	(29,284,600)	1,538,776	5,474,232	0	294,833,268
2007	(5,912,600)	26,930,965	(8,708,900)	(32,652,500)	10,592,562	(16,595,000)	(29,369,600)	1,484,157	5,066,604	0	293,450,688
2008	(5,758,051)	24,439,563	(6,548,625)	(31,216,650)	9,626,060	(14,833,825)	(24,897,600)	1,852,894	5,009,345	0	263,684,563
2009	(5,582,798)	25,605,225	(6,526,500)	(31,566,025)	10,035,362	(15,056,975)	(25,235,050)	1,912,055	5,186,089	0	273,375,656
2010	(5,630,503)	27,418,519	(6,596,625)	(31,860,925)	10,554,741	(15,179,275)	(25,547,250)	1,991,006	5,421,949	0	301,559,656
2011	(5,676,281)	27,719,374	(6,650,250)	(32,188,175)	10,889,406	(15,783,600)	(26,489,900)	1,991,674	5,423,943	0	302,686,977
2012	(5,769,388)	29,053,634	(6,829,725)	(32,405,200)	10,895,944	(15,166,000)	(25,589,750)	2,053,060	5,607,331	0	311,026,197
2013	(5,758,155)	32,733,201	(6,846,000)	(32,831,750)	12,215,333	(15,745,900)	(26,533,450)	2,233,246	6,145,623	0	365,630,602
2014	(5,782,172)	35,317,756	(6,862,800)	(32,782,050)	13,437,539	(16,350,900)	(27,474,150)	2,383,069	6,593,216	0	395,808,702
2015	(5,871,801)	36,621,848	(7,063,725)	(33,390,200)	13,497,089	(16,195,075)	(27,196,050)	2,415,937	6,691,403	0	410,117,936
2016	(5,934,499)	37,765,088	(7,156,875)	(34,005,575)	13,771,035	(16,378,000)	(27,521,050)	2,438,618	6,759,171	0	426,717,368
2017	(5,889,990)	37,084,923	(7,174,350)	(33,978,600)	13,734,215	(16,553,625)	(27,844,950)	2,406,236	6,662,422	0	415,438,310
2018	(5,952,829)	38,337,863	(7,497,975)	(34,012,075)	13,603,731	(15,866,450)	(26,739,700)	2,470,146	6,853,353	0	422,375,612
2019	(5,999,923)	40,163,647	(7,434,300)	(34,727,425)	15,324,614	(17,564,050)	(29,744,150)	2,526,332	7,021,203	0	462,940,822
2020	(5,968,950)	37,899,185	(7,439,925)	(34,666,150)	14,031,548	(16,962,875)	(28,605,000)	2,398,663	6,639,799	0	422,688,768
2021	(5,995,458)	38,001,374	(7,505,625)	(34,811,350)	14,126,163	(17,103,250)	(28,864,150)	2,395,049	6,628,998	0	423,071,369
2022	(6,023,188)	36,581,208	(7,496,625)	(34,809,700)	13,760,094	(17,179,400)	(28,996,400)	2,323,793	6,416,126	0	404,594,140
2023	(6,038,651)	36,909,276	(7,534,575)	(34,804,325)	13,828,829	(17,170,050)	(28,980,700)	2,336,454	6,453,954	0	410,315,628
2024	(6,012,989)	38,545,453	(7,548,000)	(34,803,550)	14,324,450	(17,174,325)	(28,988,450)	2,419,057	6,700,724	0	434,325,334
2025	(5,984,836)	37,841,749	(7,450,050)	(34,514,225)	14,261,923	(17,174,375)	(28,988,500)	2,408,553	6,669,345	0	420,363,888
2026	(6,048,709)	38,964,575	(7,632,075)	(35,124,800)	14,356,859	(17,174,325)	(28,988,450)	2,424,487	6,716,951	0	439,438,801
2027	(6,006,644)	37,892,651	(7,471,275)	(34,768,475)	14,168,976	(17,206,350)	(29,039,650)	2,389,199	6,611,523	0	423,583,302
2028	(5,985,400)	38,190,452	(7,494,675)	(34,815,075)	14,219,498	(17,146,300)	(28,938,450)	2,405,194	6,659,314	0	427,858,887
2029	(5,995,317)	37,639,869	(7,507,125)	(34,810,950)	14,065,821	(17,174,300)	(28,988,500)	2,375,653	6,571,060	0	419,013,080
2030	(5,985,494)	37,984,124	(7,494,825)	(34,815,050)	14,175,945	(17,174,350)	(28,988,550)	2,394,122	6,626,236	0	425,437,388
2031	(5,989,113)	37,075,702	(7,813,125)	(34,452,000)	13,181,708	(16,066,325)	(27,113,650)	2,362,535	6,531,869	0	402,215,850
2032	(6,059,237)	38,303,946	(7,908,300)	(34,774,175)	14,687,795	(16,670,050)	(29,942,350)	2,407,922	6,667,462	0	432,935,342
2033	(6,024,927)	40,341,101	(7,942,800)	(34,611,900)	14,307,148	(16,256,200)	(27,577,100)	2,524,776	7,016,556	0	447,871,392
2034	(6,054,396)	38,754,179	(7,981,350)	(34,688,400)	14,874,799	(17,689,125)	(29,983,550)	2,435,136	6,748,763	0	438,485,443
2035	(6,056,370)	38,063,540	(7,716,375)	(35,001,675)	14,194,637	(17,192,050)	(29,116,400)	2,387,133	6,605,351	0	424,433,782
<b>Total</b>	<b>(225,943,082)</b>	<b>1,190,612,889</b>	<b>(268,143,941)</b>	<b>(1,402,253,620)</b>	<b>438,745,376</b>	<b>(653,915,933)</b>	<b>(1,140,272,589)</b>	<b>77,622,205</b>	<b>200,557,107</b>	<b>12,655,384,137</b>	

**Table B-4**  
**Annual Table A Amounts to Project Water**  
(Acre-Feet)

Calendar Year	North Bay Area			South Bay Area <sup>a</sup>				Central Coastal Area		
	Napa County FC&WCD <sup>b</sup> (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
<b>Total</b>	<b>1,048,440</b>	<b>2,049,856</b>	<b>3,098,296</b>	<b>3,720,815</b>	<b>2,459,248</b>	<b>6,510,783</b>	<b>12,690,846</b>	<b>1,189,430</b>	<b>2,218,494</b>	<b>3,407,924</b>

<sup>a</sup>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.

<sup>b</sup>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)

Sheet 2 of 4

Calendar Year	San Joaquin Valley Area								
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	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 (13)	Agricultural (14)	Total (15)				
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	95,488	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	96,227	1,170,000
2005	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2006	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2007	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2008	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2009	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2010	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2011	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2012	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2013	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2014	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2015	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2016	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2017	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2018	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2019	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2020	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2021	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2022	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2023	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2024	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2025	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2026	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2027	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2028	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2029	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2030	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2031	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2032	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2033	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2034	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
2035	57,343	3,000	134,600	864,130	998,730	9,000	5,700	96,227	1,170,000
<b>Total</b>	<b>3,361,478</b>	<b>199,000</b>	<b>7,693,900</b>	<b>52,271,303</b>	<b>59,965,203</b>	<b>393,900</b>	<b>352,822</b>	<b>6,182,973</b>	<b>70,455,376</b>

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	33,000	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2005	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2006	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2007	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2008	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2009	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2010	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2011	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2012	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2013	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2014	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2015	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2016	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2017	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2018	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2019	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2020	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2021	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2022	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2023	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2024	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2025	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2026	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2027	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2028	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2029	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2030	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2031	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2032	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2033	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2034	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2035	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
<b>Total</b>	<b>7,432,000</b>	<b>4,545,098</b>	<b>4,334,011</b>	<b>321,556</b>	<b>2,476,500</b>	<b>127,210</b>	<b>3,760,043</b>	<b>1,127,720</b>	<b>5,909,177</b>	<b>1,641,322</b>

**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 Geronio 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	597,200	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	2,581,800	9,600	3,500	0	13,100	0	4,127,061
2005	6,500	1,911,500	20,000	2,582,300	9,600	1,200	0	10,800	0	4,125,686
2006	7,000	1,911,500	20,000	2,582,800	9,600	1,200	1,880	12,680	0	4,128,441
2007	7,500	1,911,500	20,000	2,583,300	9,600	27,500	1,950	39,050	0	4,155,686
2008	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,020	39,120	0	4,165,931
2009	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,090	39,190	0	4,166,376
2010	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,160	39,260	0	4,166,821
2011	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,240	39,340	0	4,167,276
2012	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,320	39,420	0	4,167,731
2013	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,410	39,510	0	4,168,146
2014	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,500	39,600	0	4,168,661
2015	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,600	39,700	0	4,169,486
2016	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,170,211
2017	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,170,836
2018	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,171,461
2019	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,086
2020	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,686
2021	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2022	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2023	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2024	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2025	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2026	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2027	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2028	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2029	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2030	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2031	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2032	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2033	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2034	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2035	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
<b>Total</b>	<b>747,200</b>	<b>109,260,272</b>	<b>988,000</b>	<b>142,670,109</b>	<b>449,900</b>	<b>852,580</b>	<b>109,260</b>	<b>1,411,740</b>	<b>0</b>	<b>233,734,291</b>

Table B-5A

## Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor (Acre-Feet)

Sheet 1 of 12

Calendar Year	Grizzly Valley Pipeline PC FC&WCD (1)	North Bay Aqueduct				South Bay Aqueduct							
		Reach 1	Reach 3A	Reach 3B	Total (5)	Reach 1	Reach 2	Reach 4	Reach 5	Reach 6	Reach 7		
		SCWA (2)	SCWA (3)	NC FC&WCD <sup>a</sup> (4)		ACWD (6)	AC FC&WCD (7)	AC FC&WCD (8)	AC FC&WCD (9)	ACWD (10)	AC FC&WCD (11)	AC FC&WCD (12)	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	20,951	22,051	8,134	51,136	0	72	11,754	9,737	0	3,763	21,260	4,968
2005	1,810	19,947	24,589	18,297	62,833	0	140	16,918	17,808	0	5,472	13,390	5,632
2006	1,880	14,670	20,900	14,180	49,750	0	112	46,376	31,476	0	4,226	17,568	7,563
2007	1,950	14,570	12,650	22,550	49,770	0	112	28,466	33,325	0	4,236	18,188	5,382
2008	2,020	14,570	12,650	22,875	50,095	0	112	25,959	31,579	0	4,236	18,778	5,382
2009	2,090	14,570	12,650	23,200	50,420	0	112	27,001	31,315	0	4,236	15,734	5,382
2010	2,160	19,275	28,231	23,850	71,356	0	375	15,798	33,301	0	2,605	19,803	4,000
2011	2,240	19,344	28,212	24,175	71,731	0	375	18,017	33,301	0	2,605	19,803	4,000
2012	2,320	22,954	24,652	24,500	72,106	0	375	18,017	33,301	0	2,605	19,803	4,000
2013	2,410	22,970	24,686	24,775	72,431	0	375	18,017	33,301	0	2,605	19,803	4,000
2014	2,500	22,970	24,736	25,150	72,856	0	375	18,017	33,301	0	2,605	19,803	4,000
2015	2,600	23,009	24,747	25,825	73,581	0	375	18,017	33,301	0	2,605	19,803	4,000
2016	2,700	23,009	24,747	26,450	74,206	0	375	18,017	33,301	0	2,605	19,803	4,000
2017	2,700	23,009	24,747	27,075	74,831	0	375	18,017	33,301	0	2,605	19,803	4,000
2018	2,700	23,009	24,747	27,700	75,456	0	375	18,017	33,301	0	2,605	19,803	4,000
2019	2,700	23,009	24,747	28,325	76,081	0	375	18,017	33,301	0	2,605	19,803	4,000
2020	2,700	23,009	24,747	28,925	76,681	0	375	18,017	33,301	0	2,605	19,803	4,000
2021	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2022	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2023	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2024	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2025	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2026	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2027	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2028	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2029	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2030	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2031	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2032	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2033	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2034	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
2035	2,700	23,009	24,747	29,025	76,781	0	375	18,017	33,301	0	2,605	19,803	4,000
<b>Total</b>	<b>89,590</b>	<b>857,542</b>	<b>1,006,881</b>	<b>1,015,764</b>	<b>2,880,187</b>	<b>53,844</b>	<b>29,359</b>	<b>809,564</b>	<b>1,184,551</b>	<b>11,722</b>	<b>130,874</b>	<b>870,806</b>	<b>419,661</b>

<sup>a</sup>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)

Sheet 2 of 12

Calendar Year	South Bay Aqueduct <sup>b</sup> (continued)				California Aqueduct									
					North San Joaquin Division						San Luis Division			
	Reach 7	Reach 8	Reach 9	Total (17)	Reach 1	Reach 2A				Reach 3				
	AC FC&WCD (14)	ACWD (15)	SCVWD (16)		AC FC&WCD (18)	OFWDC <sup>c</sup> (19)	KCWA		AC FC&WCD (22)	TLBWSD (23)	SCVWD (24)	MWDSC (25)	DRWD (26)	SCVWD (27)
					(M&I) (20)	AG (21)								
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	602	0	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	0	0
2003	0	12,753	75,981	132,714	0	4,266	917	0	7	0	0	29,596	0	0
2004	0	14,916	59,458	125,928	0	4,629	786	0	38	0	0	0	0	0
2005	0	21,865	79,487	160,712	0	3,920	1,524	0	53	0	0	0	0	0
2006	0	28,437	123,400	259,158	0	5,700	0	4,200	53	0	0	0	0	0
2007	0	31,518	100,000	221,227	0	5,700	0	4,200	53	0	0	0	0	0
2008	0	31,518	100,000	217,564	0	5,700	0	4,200	53	0	0	0	0	0
2009	0	31,518	100,000	215,298	0	5,700	0	4,200	0	0	0	0	0	0
2010	0	30,500	100,000	206,382	50	5,700	0	4,200	0	0	0	0	0	0
2011	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2012	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2013	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2014	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2015	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2016	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2017	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2018	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2019	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2020	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2021	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2022	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2023	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2024	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2025	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2026	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2027	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2028	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2029	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2030	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2031	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2032	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2033	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2034	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
2035	0	30,500	100,000	208,601	50	5,700	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>1,233,245</b>	<b>5,918,581</b>	<b>10,662,207</b>	<b>1,300</b>	<b>335,931</b>	<b>4,638</b>	<b>16,800</b>	<b>257</b>	<b>300</b>	<b>200</b>	<b>29,596</b>	<b>602</b>	<b>30,000</b>

<sup>b</sup>For the period June 1962 through November 1967, deliveries were supplied by non-Project water.<sup>c</sup>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							
	TLBWSD (28)	AC FC&WCD (29)	ACWWD (30)	KCWA		KCWA		DRWD (35)	TLBWSD (36)	DRWD (37)	KCWA		MWDSC (40)	CLWA (41)	TLBWSD (42)	OFWD (43)
(M&I) (31)				(Ag) (32)	(M&I) (33)	(Ag) (34)	(M&I) (38)				(Ag) (39)					
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	8,790	131,452	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	3,900	0
2004	0	0	0	0	44,877	0	0	0	0	0	0	0	0	0	3,850	0
2005	2,640	0	0	0	7,932	0	0	0	0	0	0	0	0	0	3,500	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	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>33,160</b>	<b>443,476</b>	<b>2,642</b>	<b>9,732</b>	<b>16,344</b>	<b>2,800</b>	<b>38,023</b>	<b>18,335</b>	<b>362,901</b>	<b>21,500</b>	<b>5,095</b>	<b>35,381</b>	<b>2,000</b>

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)										South San Joaquin Division			
	Reach 6				Reach 7						Reach 8C			
	KCWA		MWDSC (46)	TLBWSD (47)	KCWA		CLWA (50)	DRWD (51)	TLBWSD (52)	MWDSC (53)	KCWA		DRWD (56)	TLBWSD (57)
	(M&I) (44)	(Ag) (45)			(M&I) (48)	(Ag) (49)					(M&I) (54)	(Ag) (55)		
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	25,100	
1969	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	
1971	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	144,843	
1973	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	32,603	
1975	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	26,595	
1977	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	3,934	
1979	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	35,140	
1981	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	4,405	
1983	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	3,677	
1985	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	40,017	
1987	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	46,281	
1989	0	8,260	0	0	0	5,262	0	0	0	0	0	2,391	63,703	
1990	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	1,697	
1992	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	57,112	
1994	0	0	0	0	0	0	2,100	0	0	0	0	0	21,510	
1995	0	3,932	0	0	10,875	20,595	0	0	0	0	989	10,527	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	20,970	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	0	0	0	0	0	34,009
2003	0	0	0	0	0	0	0	0	0	0	0	0	0	25,317
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	30,546
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	32,633
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	38,510
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	38,510
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	38,510
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	38,510
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2026	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2027	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2028	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2030	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2031	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2032	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2033	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2034	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
2035	0	0	0	0	0	0	0	0	0	0	0	0	0	38,490
<b>Total</b>	<b>21,857</b>	<b>146,355</b>	<b>11,000</b>	<b>29,600</b>	<b>71,456</b>	<b>240,618</b>	<b>3,300</b>	<b>200</b>	<b>49,159</b>	<b>20,500</b>	<b>989</b>	<b>15,327</b>	<b>3,122</b>	<b>2,538,819</b>

Table B-5A

**Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor**  
(Acre-Feet)

California Aqueduct (continued)																
South San Joaquin Division (continued)																
Calendar Year	Reach 8C (cont.)		Reach 8D								Reach 9				Reach 10A	
	EWSID (58)	CK (59)	KCWA		DRWD (62)	CK (63)	SBC FC&WCD (64)	SGVMW D (65)	SLOC FC&WCD (66)	TLBWSD (67)	DRWD (68)	KCWA		TLBWSD (71)	KCWA	
			(M&I) (60)	(Ag) (61)								(M&I) (69)	(Ag) (70)		(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	39,801	0	0	0	0	58,369	0	0	54,198	0	160	97,623
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	2,648	172,243
2004	3,562	5,803	0	4,979	45,823	3,250	0	0	0	55,625	0	0	54,330	0	65,743	121,873
2005	3,555	5,270	0	0	56,332	4,108	0	0	0	59,684	0	0	96,630	0	84	193,198
2006	3,000	3,800	0	0	59,343	5,200	0	0	0	57,717	0	0	106,549	0	110	243,909
2007	3,000	3,800	0	0	57,343	5,200	0	0	0	57,717	0	0	106,549	0	110	238,246
2008	3,000	3,800	0	0	57,343	5,200	0	0	0	57,717	0	0	106,549	0	110	238,246
2009	3,000	3,800	0	0	57,343	5,200	0	0	0	57,717	0	0	106,549	0	110	238,246
2010	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2011	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2012	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2013	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2014	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2015	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2016	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2017	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2018	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2019	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2020	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2021	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2022	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2023	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2024	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2025	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2026	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2027	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2028	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2029	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2030	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2031	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2032	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2033	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2034	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
2035	3,000	8,548	0	0	57,343	452	0	0	0	57,737	0	0	100,236	0	162	233,661
<b>Total</b>	<b>172,768</b>	<b>331,850</b>	<b>2,959</b>	<b>88,052</b>	<b>3,254,864</b>	<b>40,124</b>	<b>745</b>	<b>0</b>	<b>200</b>	<b>3,422,576</b>	<b>5,097</b>	<b>31,309</b>	<b>5,455,539</b>	<b>1,855</b>	<b>220,827</b>	<b>11,805,519</b>

**Table B-5A**  
**Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor**  
(Acre-Feet)

Calendar Year	California Aqueduct (continued)															
	South San Joaquin Division (continued)															
	Reach 10A								Reach 11B			Reach 12D		Reach 12E		
	DRWD (74)	AC		CLWA (76)	SCVWD (77)	ACWD (78)	MWDSC (79)	AVEKWA (80)	TLBWS (81)	KCWA		DRWD (84)	KCWA		KCWA	
FC&WCD (75)			(M&I) (82)							(Ag) (83)	(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	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	24,776	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	2,842	0	64,682	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	4,315	0	72,279	0	0	0	0	0	9,279
1971	0	0	0	0	0	0	0	0	0	63,773	0	0	0	0	0	28,056
1972	0	0	0	0	0	0	0	0	0	72,358	0	0	0	0	0	62,342
1973	0	0	0	0	0	0	0	0	0	67,544	0	0	0	0	0	13,082
1974	0	0	0	0	0	0	0	0	0	87,476	0	0	0	2,651	0	4,248
1975	0	0	0	0	0	0	0	0	0	85,675	0	0	0	0	0	10,787
1976	0	0	0	0	0	0	0	0	0	85,067	0	0	0	37,519	0	20,555
1977	0	0	0	0	0	0	0	0	3,981	29,603	0	0	0	20,280	0	1,737
1978	0	0	0	0	0	0	0	0	0	88,753	0	0	0	47,133	0	15,011
1979	0	0	0	0	0	0	0	0	484	108,379	0	0	0	50,740	0	61,567
1980	0	0	0	0	0	0	0	0	3,112	103,207	0	0	0	32,039	0	22,252
1981	0	0	0	0	0	0	0	0	494	104,395	0	0	0	59,917	0	58,470
1982	0	0	0	0	0	0	0	0	798	99,081	0	0	0	36,139	0	75,587
1983	0	0	0	0	0	0	0	0	2,069	94,117	0	0	0	0	0	10,950
1984	0	0	0	0	0	0	0	0	2,349	124,819	0	0	0	63,941	0	39,929
1985	0	0	0	0	0	0	0	0	10,666	118,646	0	0	0	69,839	0	84,117
1986	0	0	0	0	0	0	0	0	8,673	124,836	0	0	0	62,109	0	51,540
1987	0	0	0	0	0	0	0	0	13,074	111,877	0	0	0	95,297	0	86,223
1988	0	0	0	0	0	0	0	0	13,509	114,031	0	0	0	86,390	0	123,249
1989	0	0	0	0	0	0	0	0	9,986	127,058	0	0	0	83,965	0	146,544
1990	0	0	0	0	0	0	0	0	9,319	104,107	0	0	0	82,164	0	38,973
1991	0	0	0	0	0	0	0	0	6,099	118	0	0	0	8,842	0	303
1992	0	0	0	0	0	0	0	0	7,419	35,093	0	0	0	47,181	0	57,048
1993	0	0	0	0	0	44,496	0	0	2,696	72,645	0	0	0	84,822	0	285,554
1994	0	0	0	0	0	0	0	0	3,506	71,202	0	0	0	66,188	0	77,839
1995	0	0	0	0	0	50,000	0	0	1,154	97,072	0	0	0	107,130	0	181,997
1996	0	0	0	45,000	6,200	95,000	0	0	1,185	96,250	0	0	0	89,257	0	134,138
1997	900	0	0	35,000	10,000	125,000	0	0	1,111	104,823	0	0	0	32,061	0	128,329
1998	0	1,970	0	23,800	3,780	39,500	0	0	1,311	72,646	0	0	0	28,258	0	88,998
1999	0	22,910	0	30,000	16,100	75,850	0	0	2,127	92,262	0	0	0	110,161	0	255,343
2000	0	23,940	0	23,730	13,380	9,208	0	0	3,793	89,623	1,500	21	0	78,285	0	89,702
2001	0	5,000	0	0	0	0	0	0	636	73,105	0	41	0	5,256	0	46,205
2002	0	14,287	24,000	3,311	2,083	0	0	0	1,457	91,123	0	760	6	39,104	0	96,231
2003	0	6,500	0	33,000	18,800	70,940	0	0	1,379	87,174	0	2,431	152	64,196	0	87,339
2004	0	5,740	32,522	0	8,000	0	0	0	1,299	97,722	0	3,419	768	45,052	0	103,378
2005	0	4,895	0	7,079	16,306	0	0	0	1,109	94,984	0	4,165	212	71,751	0	247,836
2006	0	0	0	0	8,000	0	0	0	1,390	101,500	0	6,000	0	89,378	0	158,785
2007	0	0	0	0	5,100	0	0	0	1,390	101,500	0	6,000	0	89,378	0	158,785
2008	0	0	0	0	5,100	0	0	0	1,390	101,500	0	6,000	0	89,378	0	158,785
2009	0	0	0	0	5,100	0	0	0	1,390	101,500	0	6,000	0	89,378	0	158,785
2010	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2011	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2012	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2013	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2014	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2015	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2016	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2017	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2018	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2019	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2020	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2021	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2022	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2023	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2024	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2025	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2026	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2027	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2028	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2029	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2030	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2031	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2032	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2033	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2034	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
2035	0	6,468	0	0	7,500	0	0	0	2,140	113,943	0	7,044	0	105,057	0	136,491
<b>Total</b>	<b>900</b>	<b>253,410</b>	<b>56,522</b>	<b>200,920</b>	<b>312,949</b>	<b>509,994</b>	<b>0</b>	<b>7,157</b>	<b>175,995</b>	<b>6,620,899</b>	<b>1,500</b>	<b>217,981</b>	<b>1,138</b>	<b>4,796,661</b>	<b>7,027,744</b>	

Table B-5A  
**Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor**  
 (Acre-Feet)

Calendar Year	California Aqueduct (continued)													
	South San Joaquin Division (continued)													
	Reach 12E		Reach 13B					Reach 14A		Reach 14B		Reach 14C		
	DRWD (89)	MWDSC (90)	KCWA		MWDSC (93)	DRWD (94)	TLBWSD (95)	KCWA		KCWA		KCWA		MWDSC (102)
(M&I) (91)			(Ag) (92)	(M&I) (96)				(Ag) (97)	(M&I) (98)	(Ag) (99)	(M&I) (100)	(Ag) (101)		
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	23,844	0	49,929	0	24,187	0	0
1972	0	0	0	17,388	0	0	0	26,621	0	77,034	0	35,016	0	0
1973	0	0	0	9,297	0	0	0	15,328	0	47,400	0	19,043	0	0
1974	0	0	8,038	4,246	0	0	0	7,794	0	32,356	0	12,601	0	0
1975	0	0	8,538	7,059	0	0	0	10,306	0	27,736	0	12,783	0	0
1976	0	0	5,626	8,855	0	0	0	268	0	35,296	0	9,005	0	0
1977	0	0	0	5,024	0	0	0	8,299	0	13,539	0	3,757	0	0
1978	0	0	21,773	7,601	0	0	0	34,029	0	72,351	0	24,542	0	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	159,731	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	45,989	35,239	91,739	1,865	350	0	0	13,685	0	44,576	0	24,783	12,911
2004	1,600	0	1,922	73,801	0	1,657	0	0	13,030	0	52,012	0	30,313	0
2005	0	0	15,736	142,724	0	6,955	0	0	12,766	0	41,412	0	21,881	0
2006	0	0	19,000	45,800	0	0	0	0	13,600	0	42,000	0	28,300	0
2007	0	0	19,000	45,800	0	0	0	0	13,600	0	42,000	0	28,300	0
2008	0	0	19,000	45,800	0	0	0	0	13,600	0	42,000	0	28,300	0
2009	0	0	19,000	45,800	0	0	0	0	13,600	0	42,000	0	28,300	0
2010	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2011	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2012	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2013	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2014	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2015	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2016	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2017	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2018	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2019	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2020	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2021	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2022	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2023	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2024	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2025	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2026	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2027	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2028	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2029	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2030	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2031	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2032	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2033	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2034	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
2035	0	0	7,894	44,585	0	0	0	0	19,414	0	64,001	0	28,269	0
<b>Total</b>	<b>22,942</b>	<b>299,106</b>	<b>594,968</b>	<b>2,804,108</b>	<b>7,365</b>	<b>11,431</b>	<b>3,500</b>	<b>24,474</b>	<b>1,242,551</b>	<b>3,714</b>	<b>3,802,924</b>	<b>1,034</b>	<b>1,733,213</b>	<b>12,911</b>

Table B-5A

**Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor**  
(Acre-Feet)

Calendar Year	California Aqueduct (continued)												
	South San Joaquin Division (continued)					Mojave Division							
	Reach 15A		Reach 16A			Reach 18A	Reach 19		Reach 20A			Reach 20B	
	KCWA		KCWA		AVEKWA (107)	AVEKWA (108)	MWA (109)	AVEKWA (110)	PWD (111)	MWA (112)	AVEKWA (113)	PWD (114)	AVEKWA (115)
	(M&I) (103)	(Ag) (104)	(M&I) (105)	(Ag) (106)									
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	22,465	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	40,184	2,239	19,714	0	0	1,223	11,201	0	0	40,408	12,139	1,774
2005	0	32,864	1,991	15,297	0	1	1,331	19,385	231	0	41,248	11,562	975
2006	0	43,200	3,572	19,600	0	0	1,500	93,304	17,843	0	50,221	7,079	920
2007	0	43,200	3,572	19,600	0	0	1,500	80,448	21,300	0	52,733	3,457	965
2008	0	43,200	3,572	19,600	0	0	1,500	77,419	21,300	0	55,369	0	1,012
2009	0	43,200	3,572	19,600	0	0	1,500	74,113	21,300	0	57,938	0	1,065
2010	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2011	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2012	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2013	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2014	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2015	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2016	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2017	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2018	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2019	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2020	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2021	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2022	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2023	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2024	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2025	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2026	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2027	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2028	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2029	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2030	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2031	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2032	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2033	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2034	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
2035	0	38,401	4,524	19,840	0	0	1,500	38,329	0	0	88,822	21,300	1,569
<b>Total</b>	<b>24</b>	<b>2,217,401</b>	<b>236,398</b>	<b>990,720</b>	<b>2,000</b>	<b>15,226</b>	<b>56,133</b>	<b>1,861,672</b>	<b>9,429</b>	<b>824,590</b>	<b>59,268</b>	<b>86,033</b>	<b>2,349</b>

**Table B-5A**  
**Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor**  
**(Acre-Feet)**

Calendar Year	California Aqueduct (continued)											
	Mojave Division (continued)											
	Reach 21			Reach 22A		Reach 22B						Reach 23
	LCID (116)	PWD (117)	AVEKWA (118)	AVEKWA (119)	LCID (120)	MWDSC <sup>d</sup> (121)	SCWA (122)	MWA (123)	CVWD <sup>e</sup> (124)	DWA <sup>e</sup> (125)	AVEKWA <sup>f</sup> (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	14
1974	400	0	0	0	0	(16,400)	0	0	6,400	10,000	0	0
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	58
1977	111	0	0	0	0	0	0	22	0	0	0	0
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	13,150	0	0	0	0
2004	0	23	0	6,095	0	0	0	11,953	0	0	253	0
2005	700	0	0	6,909	0	0	0	12,729	0	0	0	0
2006	2,300	0	0	10,932	0	0	0	49,335	0	0	0	0
2007	2,300	0	0	11,480	0	0	0	49,600	0	0	0	0
2008	2,300	0	0	12,054	0	0	0	49,600	0	0	0	0
2009	2,300	0	0	12,656	0	0	0	50,600	0	0	0	0
2010	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2011	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2012	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2013	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2014	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2015	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2016	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2017	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2018	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2019	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2020	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2021	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2022	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2023	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2024	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2025	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2026	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2027	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2028	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2029	2,300	0	0	12,680	0	0	0	74,300	0	0	0	0
2030	2,300	0	0	12,680	0	0	0	74,300	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
<b>Total</b>	<b>82,938</b>	<b>2,372</b>	<b>5,002</b>	<b>471,655</b>	<b>5</b>	<b>(653,216)</b>	<b>0</b>	<b>2,254,018</b>	<b>251,189</b>	<b>402,027</b>	<b>1,063</b>	<b>272</b>

<sup>d</sup>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.

<sup>e</sup>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.

<sup>f</sup>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 <sup>e</sup> (130)	MWDSC <sup>e</sup> (131)	SBVMWD <sup>g</sup> (132)	SGVMWD (133)	SGPWA (134)	CVWD <sup>e</sup> (135)	DWA <sup>e</sup> (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	326,647	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	1,563	0	17,249	532,198	27,415	21,934	116	14,443	23,819	0	0	0	246,485
2004	2,006	0	0	548,654	56,150	12,541	841	15,465	21,190	0	0	0	357,995
2005	3,160	0	0	437,885	72,876	10,996	5,222	95,285	36,611	0	0	0	156,613
2006	5,980	0	0	535,737	102,500	28,925	7,000	121,100	50,000	0	0	0	124,048
2007	5,920	0	0	535,737	113,700	28,925	7,500	121,100	50,000	0	0	0	124,048
2008	5,940	0	0	535,737	120,100	28,800	17,300	121,100	50,000	0	0	0	124,048
2009	5,919	0	0	535,737	74,100	28,800	17,300	121,100	50,000	0	0	0	124,048
2010	5,800	0	0	578,135	91,200	28,800	17,300	104,600	38,100	0	0	0	410,306
2011	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2012	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2013	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2014	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2015	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2016	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2017	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2018	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2019	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2020	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2021	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2022	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2023	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2024	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2025	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2026	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2027	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2028	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2029	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2030	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2031	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2032	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2033	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2034	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
2035	5,800	0	0	578,135	102,600	28,800	17,300	121,100	50,000	0	0	0	410,306
<b>Total</b>	<b>214,850</b>	<b>22,185</b>	<b>17,249</b>	<b>24,552,326</b>	<b>3,617,968</b>	<b>1,191,562</b>	<b>505,079</b>	<b>4,119,072</b>	<b>2,041,983</b>	<b>18,942</b>	<b>6,582</b>	<b>7,708</b>	<b>15,174,525</b>

<sup>g</sup>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)

Sheet 11 of 12

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)	VCFCF (145)	CVWD (146)	DWA (147)	MWDSC <sup>h</sup> (148)	VCFCF (149)	SBVMWD <sup>g</sup> (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	20,437	0	4,047	0	0	797,294	1,203	0	47,463	0
2005	0	0	187,172	0	0	0	0	835,040	1,480	0	47,339	0
2006	0	0	224,480	0	3,150	0	0	1,027,235	16,850	0	97,500	0
2007	0	0	224,480	0	3,150	0	0	1,027,235	16,850	0	92,200	0
2008	0	0	224,480	0	3,150	0	0	1,027,235	16,850	0	92,200	0
2009	0	0	224,480	0	3,150	0	0	1,027,235	16,850	0	92,200	0
2010	0	0	3,396	0	3,150	0	0	919,663	16,850	0	81,070	0
2011	0	0	3,396	0	3,150	0	0	919,663	16,850	0	89,177	0
2012	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2013	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2014	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2015	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2016	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2017	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2018	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2019	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2020	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2021	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2022	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2023	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2024	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2025	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2026	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2027	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2028	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2029	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2030	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2031	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2032	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2033	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2034	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
2035	0	0	3,396	0	3,150	0	0	919,663	16,850	0	95,200	0
<b>Total</b>	<b>1,027</b>	<b>4,839</b>	<b>1,197,288</b>	<b>183</b>	<b>112,869</b>	<b>10,240</b>	<b>16,890</b>	<b>40,830,151</b>	<b>521,133</b>	<b>8,601</b>	<b>3,377,251</b>	<b>1,240</b>

<sup>h</sup>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)

Sheet 12 of 12

Calendar Year	California Aqueduct (continued)								Total	Grand Total
	Coastal Branch									
	Reach 31A			Reach 33A	Reach 34	Reach 35				
	KCWA		CLWA (155)	SLOCFC& WCD (156)	SLOCFC& WCD (157)	SLOCFC& WCD (158)	SBCFC& WCD (159)			
	(M&I) (153)	(Ag) (154)								
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	0	87,554	8,395	5,662	0	3,962	22,741	3,360,734	3,538,240	
2001	0	63,448	1,238	0	0	4,283	18,946	2,033,444	2,172,710	
2002	0	65,055	2,737	0	0	4,355	27,636	2,742,315	2,911,327	
2003	0	65,691	4,001	0	0	4,453	26,968	3,138,285	3,312,596	
2004	0	66,498	3,776	0	4,165	0	29,705	3,054,585	3,232,787	
2005	0	60,147	4,512	0	0	4,101	37,280	3,301,816	3,527,171	
2006	0	77,500	3,000	0	0	25,000	51,365	3,843,020	4,153,808	
2007	0	77,500	3,000	0	0	25,000	45,486	3,823,267	4,096,214	
2008	0	77,500	3,000	0	0	25,000	45,486	3,836,133	4,105,812	
2009	0	77,500	3,000	0	0	25,000	45,486	3,790,977	4,058,785	
2010	0	73,068	14,130	0	0	25,000	45,486	3,807,804	4,087,702	
2011	0	73,068	6,023	0	0	25,000	45,486	3,847,604	4,130,176	
2012	0	73,068	0	0	0	25,000	45,486	3,847,604	4,130,631	
2013	0	73,068	0	0	0	25,000	45,486	3,847,604	4,131,046	
2014	0	73,068	0	0	0	25,000	45,486	3,847,604	4,131,561	
2015	0	73,068	0	0	0	25,000	45,486	3,847,604	4,132,386	
2016	0	73,068	0	0	0	25,000	45,486	3,847,604	4,133,111	
2017	0	73,068	0	0	0	25,000	45,486	3,847,604	4,133,736	
2018	0	73,068	0	0	0	25,000	45,486	3,847,604	4,134,361	
2019	0	73,068	0	0	0	25,000	45,486	3,847,604	4,134,986	
2020	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,586	
2021	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2022	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2023	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2024	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2025	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2026	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2027	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2028	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2029	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2030	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2031	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2032	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2033	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2034	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
2035	0	73,068	0	0	0	25,000	45,486	3,847,604	4,135,686	
<b>Total</b>	<b>200</b>	<b>5,380,159</b>	<b>376,900</b>	<b>5662</b>	<b>8,856</b>	<b>774,897</b>	<b>1,579,929</b>	<b>179,423,769</b>	<b>193,055,753</b>	

**Table B-5B**  
**Annual Water Quantities Delivered to Each Contractor**  
(Acre-Feet)

Calendar Year	North Bay Area			South Bay Area <sup>b</sup>				Central Coastal Area		
	Napa County FC&WCD <sup>a</sup> (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	8,134	43,002	51,136	52,364	27,884	59,458	139,706	4,165	29,705	33,870
2005	18,297	44,536	62,833	58,676	43,803	86,566	189,045	4,101	37,280	41,381
2006	14,180	35,570	49,750	99,811	44,000	123,400	267,211	25,000	51,365	76,365
2007	22,550	27,220	49,770	84,380	42,000	100,000	226,380	25,000	45,486	70,486
2008	22,875	27,220	50,095	80,717	42,000	100,000	222,717	25,000	45,486	70,486
2009	23,200	27,220	50,420	78,398	42,000	100,000	220,398	25,000	45,486	70,486
2010	23,850	47,506	71,356	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2011	24,175	47,556	71,731	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
<b>Total</b>	<b>1,015,764</b>	<b>1,864,423</b>	<b>2,880,187</b>	<b>3,280,121</b>	<b>2,031,421</b>	<b>6,149,701</b>	<b>11,461,243</b>	<b>783,953</b>	<b>1,581,914</b>	<b>2,365,867</b>

<sup>a</sup>For the period 1968 through 1987, deliveries are non-Project water pumped through an interim facility.

<sup>b</sup>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								Total (19)
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Kern County Water Agency			County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	
			Municipal and Industrial (13)	Agricultural (14)	Total (15)				
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	1,055,885	1,178,369	3,600	4,508	198,313	1,447,128
2001	41,548	1,360	21,460	632,279	653,739	1,560	3,592	84,726	786,525
2002	48,170	1,405	90,967	737,864	828,831	2,854	4,885	96,502	982,647
2003	46,082	1,436	107,978	856,252	964,230	3,692	4,266	105,841	1,125,547
2004	49,080	3,562	120,460	723,479	843,939	9,053	4,629	90,021	1,000,284
2005	63,287	3,555	96,360	967,883	1,064,243	9,378	3,920	98,457	1,242,840
2006	59,343	3,000	119,450	884,943	1,004,393	9,000	5,700	96,227	1,177,663
2007	57,343	3,000	119,450	879,280	998,730	9,000	5,700	96,227	1,170,000
2008	57,343	3,000	119,450	879,280	998,730	9,000	5,700	96,227	1,170,000
2009	57,343	3,000	119,450	879,280	998,730	9,000	5,700	96,227	1,170,000
2010	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2011	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2012	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2013	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2014	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2015	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2016	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2017	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2018	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2019	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2020	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2021	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2022	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2023	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2024	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2025	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2026	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2027	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2028	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2029	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2030	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2031	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2032	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2033	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2034	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
2035	57,343	3,000	126,821	871,909	998,730	9,000	5,700	96,227	1,170,000
<b>Total</b>	<b>3,355,025</b>	<b>172,768</b>	<b>6,442,190</b>	<b>50,517,532</b>	<b>56,959,722</b>	<b>371,974</b>	<b>337,931</b>	<b>6,093,787</b>	<b>67,291,207</b>

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 <sup>c</sup> (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	1,422	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	14,443	1,563	23,819	0	14,435	11,547	27,415	21,934
2004	59,731	83,761	15,465	2,006	21,190	0	13,176	12,162	56,150	12,541
2005	68,518	51,851	95,285	3,160	36,611	700	14,060	11,793	72,876	10,996
2006	155,377	100,500	121,100	5,980	50,000	2,300	50,835	24,922	102,500	28,925
2007	145,626	95,200	121,100	5,920	50,000	2,300	51,100	24,757	113,700	28,925
2008	145,854	95,200	121,100	5,940	50,000	2,300	51,100	21,300	120,100	28,800
2009	145,772	95,200	121,100	5,919	50,000	2,300	52,100	21,300	74,100	28,800
2010	141,400	95,200	104,600	5,800	38,100	2,300	75,800	21,300	91,200	28,800
2011	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2012	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2013	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2014	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2015	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2016	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2017	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2018	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2019	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2020	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2021	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2022	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2023	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2024	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2025	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2026	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2027	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2028	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2029	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2030	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2031	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2032	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2033	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2034	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2035	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
<b>Total</b>	<b>5,732,911</b>	<b>3,819,068</b>	<b>4,388,110</b>	<b>214,850</b>	<b>2,473,447</b>	<b>82,943</b>	<b>2,341,707</b>	<b>825,398</b>	<b>3,626,569</b>	<b>1,191,562</b>

<sup>c</sup>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)

Sheet 4 of 4

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	1,541,816	4,050	1,825,853	901	586	0	1,487	0	3,539,727
2001	0	1,023,169	1,850	1,188,690	1,065	513	0	1,578	0	2,174,288
2002	0	1,408,919	4,998	1,707,251	1,181	419	0	1,600	0	2,912,927
2003	116	1,686,973	5,000	1,923,010	1,324	551	0	1,875	0	3,314,471
2004	841	1,724,380	5,250	2,006,653	1,434	1,440	1,138	4,012	0	3,235,661
2005	5,222	1,616,710	1,480	1,989,262	2,560	520	1,810	4,890	0	3,530,251
2006	7,000	1,911,500	20,000	2,580,939	9,600	1,200	1,880	12,680	0	4,164,608
2007	7,500	1,911,500	20,000	2,577,628	9,600	27,500	1,950	39,050	0	4,133,314
2008	17,300	1,911,500	20,000	2,590,494	9,600	27,500	2,020	39,120	0	4,142,912
2009	17,300	1,911,500	20,000	2,545,391	9,600	27,500	2,090	39,190	0	4,095,885
2010	17,300	1,911,500	20,000	2,553,300	9,600	27,500	2,160	39,260	0	4,124,802
2011	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,240	39,340	0	4,167,276
2012	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,320	39,420	0	4,167,731
2013	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,410	39,510	0	4,168,146
2014	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,500	39,600	0	4,168,661
2015	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,600	39,700	0	4,169,486
2016	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,170,211
2017	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,170,836
2018	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,171,461
2019	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,086
2020	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,686
2021	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2022	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2023	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2024	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2025	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2026	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2027	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2028	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2029	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2030	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2031	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2032	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2033	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2034	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
2035	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,700	39,800	0	4,172,786
<b>Total</b>	<b>505,079</b>	<b>83,132,013</b>	<b>634,002</b>	<b>108,967,659</b>	<b>297,561</b>	<b>803,015</b>	<b>89,590</b>	<b>1,190,166</b>	<b>0</b>	<b>194,156,329</b>

Table B-6

## Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities (Acre-Feet)

Sheet 1 of 9

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 <sup>a</sup> (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	2,181	51,136	53,317	0	0	22,051	22,051	0	0	8,134	8,134
2005	0	51	62,833	62,884	0	0	24,589	24,589	0	5	18,297	18,302
2006	0	51	49,750	49,801	0	0	20,900	20,900	0	5	14,180	14,185
2007	0	51	49,770	49,821	0	0	12,650	12,650	0	5	22,550	22,555
2008	0	51	50,095	50,146	0	0	12,650	12,650	0	5	22,875	22,880
2009	0	51	50,420	50,471	0	0	12,650	12,650	0	5	23,200	23,205
2010	0	51	71,356	71,407	0	0	28,231	28,231	0	5	23,850	23,855
2011	0	51	71,731	71,782	0	0	28,212	28,212	0	5	24,175	24,180
2012	0	51	72,106	72,157	0	0	24,652	24,652	0	5	24,500	24,505
2013	0	51	72,431	72,482	0	0	24,686	24,686	0	5	24,775	24,780
2014	0	51	72,856	72,907	0	0	24,736	24,736	0	5	25,150	25,155
2015	0	51	73,581	73,632	0	0	24,747	24,747	0	5	25,825	25,830
2016	0	51	74,206	74,257	0	0	24,747	24,747	0	5	26,450	26,455
2017	0	51	74,831	74,882	0	0	24,747	24,747	0	5	27,075	27,080
2018	0	51	75,456	75,507	0	0	24,747	24,747	0	5	27,700	27,705
2019	0	51	76,081	76,132	0	0	24,747	24,747	0	5	28,325	28,330
2020	0	51	76,681	76,732	0	0	24,747	24,747	0	5	28,925	28,930
2021	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2022	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2023	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2024	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2025	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2026	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2027	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2028	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2029	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2030	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2031	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2032	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2033	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2034	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030
2035	0	51	76,781	76,832	0	0	24,747	24,747	0	5	29,025	29,030

<sup>a</sup>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)

Sheet 2 of 9

Calendar Year	South Bay Aqueduct						California Aqueduct								
	South Bay Pumping Plant						North San Joaquin Division								
													Banks Pumping Plant		
													Transportation Water		
							Initial Fill Water (13)	Opera- tional Losses (14)	Reservoir Storage Changes (15)	Deliveries		Total (18)	Initial Fill Water (19)	Opera- tional Losses (20)	Reservoir Storage Changes (21)
Water Supply <sup>b</sup> (16)	Recreation (17)	Water Supply (22)	Recreation (23)	Total (24)											
1961	0	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	0
1963	71	185	0	12,645	0	12,901	0	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	0
1965	93	729	0	34,026	0	34,848	0	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	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	(83)	(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	122,749	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	1,388,600	
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	70,776	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)	3,471,397	5,182	3,579,242	(15,487)	3,563,755	
2001	0	2,784	1,301	95,335	196	99,616	0	222,144	(17,529)	1,903,190	1,978	2,109,783	86,928	2,196,711	
2002	0	2,534	(13,938)	123,577	146	112,319	0	225,032	36,404	2,807,771	4,672	3,073,879	(151,719)	2,922,160	
2003	0	2,920	(1,399)	132,714	131	134,366	0	226,713	(49,580)	3,198,537	11,362	3,387,032	328,334	3,715,366	
2004	0	2,982	(7,240)	125,928	150	121,820	0	40,711	(4,079)	2,979,181	1,337	3,017,150	146,888	3,164,038	
2005	0	3,264	(3,733)	160,712	400	160,643	0	(12,160)	(6,672)	3,462,528	8,660	3,452,356	75,034	3,527,390	
2006	0	2,709	63	259,158	400	262,330	0	139,262	127	4,102,178	8,660	4,250,227	(326,645)	3,923,582	
2007	0	2,709	63	221,227	400	224,399	0	141,295	127	4,044,494	8,660	4,194,576	(117,116)	4,077,460	
2008	0	3,351	0	217,564	400	221,315	0	289,339	6,985	4,053,697	8,660	4,198,281	222,755	4,421,036	
2009	0	3,351	0	215,298	400	219,049	0	129,619	(15,186)	4,006,275	8,660	4,129,368	(140,708)	3,988,660	
2010	0	3,351	0	206,382	400	210,133	0	128,523	4,288	4,014,186	8,660	4,155,657	182,970	4,338,627	
2011	0	3,351	0	208,601	400	212,352	0	128,364	64,678	4,056,205	8,660	4,257,907	137,242	4,395,149	
2012	0	3,351	0	208,601	400	212,352	0	128,100	(67,943)	4,056,205	8,660	4,125,022	(260,827)	3,864,195	
2013	0	3,351	0	208,601	400	212,352	0	128,264	9,749	4,056,205	8,660	4,202,878	145,525	4,348,403	
2014	0	3,351	0	208,601	400	212,352	0	130,280	16,625	4,056,205	8,660	4,211,770	(186,678)	4,025,092	
2015	0	3,351	0	208,601	400	212,352	0	130,445	32,003	4,056,205	8,660	4,227,313	(31,516)	4,195,797	
2016	0	3,351	0	208,601	400	212,352	0	128,415	(28,401)	4,056,205	8,660	4,164,879	205,134	4,370,013	
2017	0	3,351	0	208,601	400	212,352	0	128,602	61,309	4,056,205	8,660	4,254,776	119,885	4,374,661	
2018	0	3,351	0	208,601	400	212,352	0	128,369	(80,817)	4,056,205	8,660	4,112,417	(194,534)	3,917,883	
2019	0	3,351	0	208,601	400	212,352	0	128,613	50,179	4,056,205	8,660	4,243,657	77,224	4,320,881	
2020	0	3,351	0	208,601	400	212,352	0	128,690	(366)	4,056,205	8,660	4,193,189	(8,687)	4,184,502	
2021	0	3,351	0	208,601	400	212,352	0	128,769	10,725	4,056,205	8,660	4,204,359	(1,095)	4,203,264	
2022	0	3,351	0	208,601	400	212,352	0	128,846	(3,483)	4,056,205	8,660	4,190,228	(185,907)	4,004,321	
2023	0	3,351	0	208,601	400	212,352	0	128,818	(18,971)	4,056,205	8,660	4,174,712	115,791	4,290,503	
2024	0	3,351	0	208,601	400	212,352	0	128,625	11,289	4,056,205	8,660	4,204,779	79,858	4,284,637	
2025	0	3,351	0	208,601	400	212,352	0	130,380	(12,518)	4,056,205	8,660	4,182,727	(247,205)	3,935,522	
2026	0	3,351	0	208,601	400	212,352	0	128,700	24,308	4,056,205	8,660	4,217,873	246,850	4,464,723	
2027	0	3,351	0	208,601	400	212,352	0	128,692	(17,799)	4,056,205	8,660	4,175,758	(12,304)	4,163,454	
2028	0	3,351	0	208,601	400	212,352	0	128,783	12,291	4,056,205	8,660	4,205,939	15,430	4,221,369	
2029	0	3,351	0	208,601	400	212,352	0	128,671	(9,046)	4,056,205	8,660	4,184,490	(10,778)	4,173,712	
2030	0	3,351	0	208,601	400	212,352	0	128,777	20,756	4,056,205	8,660	4,214,398	124,586	4,338,984	
2031	0	3,351	0	208,601	400	212,352	0	128,134	(97,726)	4,056,205	8,660	4,095,273	(259,831)	3,835,442	
2032	0	3,351	0	208,601	400	212,352	0	128,005	84,999	4,056,205	8,660	4,277,869	138,527	4,416,396	
2033	0	3,351	0	208,601	400	212,352	0	127,876	(94,652)	4,056,205	8,660	4,098,089	(18		

**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					
	Initial Fill Water (27)	Operational Losses (28)	Reservoir Storage Changes (29)	Deliveries		Total (32)	Initial Fill Water (33)	Operational Losses (34)	Reservoir Storage Changes (35)	Deliveries		Total (38)
Water Supply (30)				Recreation (31)	Water Supply (36)					Recreation (37)		
1961	0	0	0	0	0	0	0	0	0	0	0	
1962	0	0	0	0	0	0	0	0	0	0	0	
1963	0	0	0	0	0	0	0	0	0	0	0	
1964	0	0	0	0	0	0	0	0	0	0	0	
1965	0	0	0	0	0	0	0	0	0	0	0	
1966	0	0	0	0	0	0	0	0	0	0	0	
1967	0	0	0	0	0	0	0	0	0	0	0	
1968	11,079	25,126	0	189,104	0	225,309	0	0	0	0	0	
1969	3,887	9,922	0	192,689	0	206,498	0	0	0	0	0	
1970	7,668	1,901	0	270,300	0	279,869	4,779	1,012	0	3	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	3,270,211	4,222	3,416,390	0	37,514	7,726	1,809,219	4,216	1,858,675
2001	0	150,830	(18,830)	1,614,870	1,218	1,748,088	0	31,361	(18,830)	1,318,987	1,211	1,332,729
2002	0	92,905	50,342	2,625,006	3,968	2,772,221	0	41,565	50,342	1,831,874	3,961	1,927,742
2003	0	85,360	(48,181)	2,879,993	10,656	2,927,828	0	43,352	(48,181)	1,895,852	10,645	1,901,668
2004	0	25,865	3,161	2,807,789	652	2,837,467	0	41,551	3,161	2,102,335	649	2,147,696
2005	0	75,497	(2,939)	3,285,747	7,210	3,365,515	0	46,035	(2,939)	2,110,961	7,010	2,161,067
2006	0	75,463	64	3,833,067	7,210	3,915,804	0	46,001	64	2,728,211	7,010	2,781,286
2007	0	75,463	64	3,813,314	7,210	3,896,051	0	46,001	64	2,724,900	7,010	2,777,975
2008	0	70,205	6,985	3,826,180	7,210	3,910,580	0	40,743	6,985	2,737,766	7,010	2,792,504
2009	0	70,102	(15,186)	3,781,077	7,210	3,843,203	0	40,640	(15,186)	2,692,663	7,010	2,725,127
2010	0	70,198	4,288	3,802,054	7,210	3,883,750	0	40,736	4,288	2,713,619	7,010	2,765,653
2011	0	70,389	64,678	3,841,854	7,210	3,984,131	0	40,927	64,678	2,761,526	7,010	2,874,141
2012	0	70,279	(67,943)	3,841,854	7,210	3,851,400	0	40,817	(67,943)	2,767,549	7,010	2,747,433
2013	0	70,217	9,749	3,841,854	7,210	3,929,030	0	40,755	9,749	2,767,549	7,010	2,825,063
2014	0	70,525	16,625	3,841,854	7,210	3,936,214	0	41,063	16,625	2,767,549	7,010	2,832,247
2015	0	70,654	32,003	3,841,854	7,210	3,951,721	0	41,192	32,003	2,767,549	7,010	2,847,754
2016	0	70,354	(28,401)	3,841,854	7,210	3,891,017	0	40,892	(28,401)	2,767,549	7,010	2,787,050
2017	0	70,586	61,309	3,841,854	7,210	3,980,959	0	41,124	61,309	2,767,549	7,010	2,876,992
2018	0	70,740	(80,817)	3,841,854	7,210	3,838,987	0	41,278	(80,817)	2,767,549	7,010	2,735,020
2019	0	70,564	50,179	3,841,854	7,210	3,969,807	0	41,102	50,179	2,767,549	7,010	2,865,840
2020	0	70,628	(366)	3,841,854	7,210	3,919,326	0	41,166	(366)	2,767,549	7,010	2,815,359
2021	0	70,711	10,725	3,841,854	7,210	3,930,500	0	41,249	10,725	2,767,549	7,010	2,826,533
2022	0	70,705	(3,483)	3,841,854	7,210	3,916,286	0	41,243	(3,483)	2,767,549	7,010	2,812,319
2023	0	70,696	(18,971)	3,841,854	7,210	3,900,789	0	41,234	(18,971)	2,767,549	7,010	2,796,822
2024	0	70,575	11,289	3,841,854	7,210	3,930,928	0	41,113	11,289	2,767,549	7,010	2,826,961
2025	0	70,638	(12,518)	3,841,854	7,210	3,907,184	0	41,176	(12,518)	2,767,549	7,010	2,803,217
2026	0	70,650	24,308	3,841,854	7,210	3,944,022	0	41,188	24,308	2,767,549	7,010	2,840,055
2027	0	70,563	(17,799)	3,841,854	7,210	3,901,828	0	41,101	(17,799)	2,767,549	7,010	2,797,861
2028	0	70,703	12,291	3,841,854	7,210	3,932,058	0	41,241	12,291	2,767,549	7,010	2,828,091
2029	0	70,630	(9,046)	3,841,854	7,210	3,910,648	0	41,168	(9,046)	2,767,549	7,010	2,806,681
2030	0	70,694	20,756	3,841,854	7,210	3,940,514	0	41,232	20,756	2,767,549	7,010	2,836,547
2031	0	70,566	(97,726)	3,841,854	7,210	3,821,904	0	41,104	(97,726)	2,767,549	7,010	2,717,937
2032	0	70,168	84,999	3,841,854	7,210	4,004,231	0	40,706	84,999	2,767,549	7,010	2,900,264
2033	0	70,373	(94,652)	3,841,854	7,210	3,824,785	0	40,911	(94,652)	2,767,549	7,010	2,720,818
2034	0	69,865	69,593	3,841,854	7,210	3,988,522	0	40,403	69,593	2,767,549	7,010	2,884,555
2035	0	69,205	(242,659)	3,841,854	7,210	3,675,610	0	39,743	(242,659)	2,767,549	7,010	2,571,643

Table B-6

**Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities (Acre-Feet)**

California Aqueduct (continued)												
South San Joaquin Division (continued)												
Calendar Year	Teerink Pumping Plant						Chrisman Pumping Plant					
	Initial Fill Water (39)	Operational Losses (40)	Reservoir Storage Changes (41)	Deliveries		Total (44)	Initial Fill Water (45)	Operational Losses (46)	Reservoir Storage Changes (47)	Deliveries		Total (50)
				Water Supply (42)	Recreation (43)					Water Supply (48)	Recreation (49)	
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	658,926
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	1,685,654	4,216	1,784,680	0	49,690	7,726	1,645,591	4,216	1,707,223
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	106,973	(48,181)	1,812,277	10,645	1,881,714	0	57,291	(48,181)	1,775,675	10,645	1,795,430
2004	0	122,559	3,161	2,032,492	649	2,158,861	0	60,847	3,161	1,992,308	649	2,056,965
2005	0	42,405	(2,939)	2,034,902	7,010	2,081,378	0	42,155	(2,939)	2,002,038	7,010	2,048,264
2006	0	42,371	64	2,644,311	7,010	2,693,756	0	42,121	64	2,601,111	7,010	2,650,306
2007	0	42,371	64	2,641,000	7,010	2,690,445	0	42,121	64	2,597,800	7,010	2,646,995
2008	0	37,113	6,985	2,653,866	7,010	2,704,974	0	36,863	6,985	2,610,666	7,010	2,661,524
2009	0	37,010	(15,186)	2,608,763	7,010	2,637,597	0	36,760	(15,186)	2,565,563	7,010	2,594,147
2010	0	37,106	4,288	2,601,935	7,010	2,650,339	0	36,856	4,288	2,563,534	7,010	2,611,688
2011	0	37,297	64,678	2,649,842	7,010	2,758,827	0	37,047	64,678	2,611,441	7,010	2,720,176
2012	0	37,187	(67,943)	2,655,865	7,010	2,632,119	0	36,937	(67,943)	2,617,464	7,010	2,593,468
2013	0	37,125	9,749	2,655,865	7,010	2,709,749	0	36,875	9,749	2,617,464	7,010	2,671,098
2014	0	37,433	16,625	2,655,865	7,010	2,716,933	0	37,183	16,625	2,617,464	7,010	2,678,282
2015	0	37,562	32,003	2,655,865	7,010	2,732,440	0	37,312	32,003	2,617,464	7,010	2,693,789
2016	0	37,262	(28,401)	2,655,865	7,010	2,671,736	0	37,012	(28,401)	2,617,464	7,010	2,633,085
2017	0	37,494	61,309	2,655,865	7,010	2,761,678	0	37,244	61,309	2,617,464	7,010	2,723,027
2018	0	37,648	(80,817)	2,655,865	7,010	2,619,706	0	37,398	(80,817)	2,617,464	7,010	2,581,055
2019	0	37,472	50,179	2,655,865	7,010	2,750,526	0	37,222	50,179	2,617,464	7,010	2,711,875
2020	0	37,536	(366)	2,655,865	7,010	2,700,045	0	37,286	(366)	2,617,464	7,010	2,661,394
2021	0	37,619	10,725	2,655,865	7,010	2,711,219	0	37,369	10,725	2,617,464	7,010	2,672,568
2022	0	37,613	(3,483)	2,655,865	7,010	2,697,005	0	37,363	(3,483)	2,617,464	7,010	2,658,354
2023	0	37,604	(18,971)	2,655,865	7,010	2,681,508	0	37,354	(18,971)	2,617,464	7,010	2,642,857
2024	0	37,483	11,289	2,655,865	7,010	2,711,647	0	37,233	11,289	2,617,464	7,010	2,672,996
2025	0	37,546	(12,518)	2,655,865	7,010	2,687,903	0	37,296	(12,518)	2,617,464	7,010	2,649,252
2026	0	37,558	24,308	2,655,865	7,010	2,724,741	0	37,308	24,308	2,617,464	7,010	2,686,090
2027	0	37,471	(17,799)	2,655,865	7,010	2,682,547	0	37,221	(17,799)	2,617,464	7,010	2,643,896
2028	0	37,611	12,291	2,655,865	7,010	2,712,777	0	37,361	12,291	2,617,464	7,010	2,674,126
2029	0	37,538	(9,046)	2,655,865	7,010	2,691,367	0	37,288	(9,046)	2,617,464	7,010	2,652,716
2030	0	37,602	20,756	2,655,865	7,010	2,721,233	0	37,352	20,756	2,617,464	7,010	2,682,582
2031	0	37,474	(97,726)	2,655,865	7,010	2,602,623	0	37,224	(97,726)	2,617,464	7,010	2,563,972
2032	0	37,076	84,999	2,655,865	7,010	2,784,950	0	36,826	84,999	2,617,464	7,010	2,746,299
2033	0	37,281	(94,652)	2,655,865	7,010	2,605,504	0	37,031	(94,652)	2,617,464	7,010	2,566,853
2034	0	36,773	69,593	2,655,865	7,010	2,769,241	0	36,523	69,593	2,617,464	7,010	2,730,590
2035	0	36,113	(242,659)	2,655,865	7,010	2,456,329	0	35,863	(242,659)	2,617,464	7,010	2,417,678

Table B-6

**Annual Water Quantities Conveyed through Each Pumping  
and Power Recovery Plant of Project Transportation Facilities**  
(Acre-Feet)

Sheet 5 of 9

Calendar Year	California Aqueduct (continued)											
	Tehachapi Division						Mojave Division					
	Edmonston Pumping Plant						Alamo Power Plant					
	Initial Fill Water (51)	Opera- tional Losses (52)	Reservoir Storage Changes (53)	Deliveries		Total (56)	Initial Fill Water (57)	Opera- tional Losses (58)	Reservoir Storage Changes (59)	Deliveries		Total (62)
Water Supply (54)				Recrea- tion (55)	Water Supply (60)					Recrea- tion (61)		
1961	0	0	0	0	0	0	0	0	0	0	0	
1962	0	0	0	0	0	0	0	0	0	0	0	
1963	0	0	0	0	0	0	0	0	0	0	0	
1964	0	0	0	0	0	0	0	0	0	0	0	
1965	0	0	0	0	0	0	0	0	0	0	0	
1966	0	0	0	0	0	0	0	0	0	0	0	
1967	0	0	0	0	0	0	0	0	0	0	0	
1968	0	0	0	0	0	0	0	0	0	0	0	
1969	0	0	0	0	0	0	0	0	0	0	0	
1970	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	
1972	100,274	16,067	(6,558)	74,123	6,481	190,387	0	0	0	0	0	
1973	204,638	34,051	1,329	207,808	1,147	448,973	0	0	0	0	0	
1974	237,554	18,181	(15,295)	313,634	2,108	556,182	0	0	0	0	0	
1975	103,352	20,183	(693)	573,219	3,358	699,419	0	0	0	0	0	
1976	61,122	21,096	(152,171)	685,768	1,581	617,396	0	0	0	0	0	
1977	0	18,424	(116,219)	236,086	560	138,851	0	0	0	0	0	
1978	65,027	20,887	121,904	590,329	674	798,821	0	0	0	0	0	
1979	12,302	46,332	(51,299)	568,338	502	576,175	0	0	0	0	0	
1980	0	52,967	(134,009)	639,743	1,262	559,963	0	0	0	0	0	
1981	0	40,602	23,359	938,482	4,112	1,006,555	0	0	0	0	0	
1982	0	37,244	117,296	812,206	4,045	970,791	0	0	0	0	0	
1983	0	40,690	(101,155)	431,182	7,291	378,008	0	0	0	0	0	
1984	0	42,112	(115,214)	556,830	5,244	488,972	0	0	0	0	0	
1985	0	45,265	139,988	792,477	4,804	982,534	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	1,621,657	4,216	1,676,671	0	8,983	(10,472)	953,531	449	952,491
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	53,320	(48,181)	1,757,708	10,645	1,773,492	0	13,676	(20,787)	1,022,009	355	1,015,253
2004	0	57,962	3,161	1,970,355	649	2,032,127	0	15,581	17,207	1,120,348	171	1,153,307
2005	0	40,605	(2,939)	1,984,750	7,010	2,029,426	0	23,180	(1,008)	1,100,891	1,630	1,124,693
2006	0	40,571	64	2,577,939	7,010	2,625,584	0	23,179	(8)	1,433,204	1,630	1,458,005
2007	0	40,571	64	2,574,628	7,010	2,622,273	0	23,179	(8)	1,435,193	1,630	1,459,994
2008	0	35,313	6,985	2,587,494	7,010	2,636,802	0	21,000	(934)	1,448,059	1,630	1,469,755
2009	0	35,210	(15,186)	2,542,391	7,010	2,569,425	0	20,905	(9,404)	1,402,956	1,630	1,416,087
2010	0	35,306	4,288	2,539,170	7,010	2,585,774	0	21,001	3,921	1,518,437	1,630	1,544,989
2011	0	35,497	64,678	2,587,077	7,010	2,694,262	0	20,971	26,001	1,558,237	1,630	1,606,839
2012	0	35,387	(67,943)	2,593,100	7,010	2,567,554	0	20,962	(41,797)	1,558,237	1,630	1,539,032
2013	0	35,325	9,749	2,593,100	7,010	2,645,184	0	20,835	4,742	1,558,237	1,630	1,585,444
2014	0	35,633	16,625	2,593,100	7,010	2,652,368	0	21,002	2,759	1,558,237	1,630	1,603,628
2015	0	35,762	32,003	2,593,100	7,010	2,667,875	0	21,066	22,604	1,558,237	1,630	1,603,537
2016	0	35,462	(28,401)	2,593,100	7,010	2,607,171	0	20,829	(21,084)	1,558,237	1,630	1,559,612
2017	0	35,694	61,309	2,593,100	7,010	2,697,113	0	20,895	33,266	1,558,237	1,630	1,614,028
2018	0	35,848	(80,817)	2,593,100	7,010	2,555,141	0	20,998	(50,078)	1,558,237	1,630	1,530,787
2019	0	35,672	50,179	2,593,100	7,010	2,685,961	0	20,924	31,508	1,558,237	1,630	1,612,299
2020	0	35,736	(366)	2,593,100	7,010	2,635,480	0	20,947	(3,398)	1,558,237	1,630	1,577,416
2021	0	35,819	10,725	2,593,100	7,010	2,646,654	0	20,946	(1,117)	1,558,237	1,630	1,579,696
2022	0	35,813	(3,483)	2,593,100	7,010	2,632,440	0	20,940	(3,434)	1,558,237	1,630	1,577,373
2023	0	35,804	(18,971)	2,593,100	7,010	2,616,943	0	20,939	(18,638)	1,558,237	1,630	1,562,168
2024	0	35,683	11,289	2,593,100	7,010	2,647,082	0	20,881	21,309	1,558,237	1,630	1,602,057
2025	0	35,746	(12,518)	2,593,100	7,010	2,623,338	0	20,965	(11,624)	1,558,237	1,630	1,569,208
2026	0	35,758	24,308	2,593,100	7,010	2,660,176	0	20,930	13,030	1,558,237	1,630	1,593,827
2027	0	35,671	(17,799)	2,593,100	7,010	2,617,982	0	20,861	(6,161)	1,558,237	1,630	1,574,567
2028	0	35,811	12,291	2,593,100	7,010	2,648,212	0	20,961	4,006	1,558,237	1,630	1,584,834
2029	0	35,738	(9,046)	2,593,100	7,010	2,626,802	0	20,955	(913)	1,558,237	1,630	1,579,909
2030	0	35,802	20,756	2,593,100	7,010	2,656,668	0	20,930	8,528	1,558,237	1,630	1,589,325
2031	0	35,674	(97,726)	2,593,100	7,010	2,538,058	0	20,956	(31,057)	1,558,237	1,630	1,549,766
2032	0	35,276	84,999	2,593,100	7,010	2,720,385	0	20,865	43,953	1,558,237	1,630	1,624,685
2033	0	35,481	(94,652)	2,593,100	7,010	2,540,939	0	20,854	(37,929)	1,558,237	1,630	1,542,792
2034	0	34,973	69,593	2,593,100	7,010	2,704,676	0	20,769	28,588	1,558,237	1,630	1,609,224
2035	0	34,313	(242,659)	2,593,100	7,010	2,391,764	0	20,892	(49,219)	1,558,237	1,630	1,531,540

Table B-6

**Annual Water Quantities Conveyed through Each Pumping  
and Power Recovery Plant of Project Transportation Facilities**  
(Acre-Feet)

Sheet 6 of 9

Calendar Year	California Aqueduct (continued)											
	Mojave Division (continued)											
	Pearblossom Pumping Plant						Mojave Siphon Power Plant					
	Initial Fill Water (63)	Opera- tional Losses (64)	Reservoir Storage Changes (65)	Deliveries		Total (68)	Initial Fill Water (69)	Opera- tional Losses (70)	Reservoir Storage Changes (71)	Deliveries		Total (74)
Water Supply (66)				Recrea- tion (67)	Water Supply (72)					Recrea- tion (73)		
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)	859,533	449	826,214	0	4,896	(10,472)	849,514	449	844,387
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	2,814	(20,787)	949,148	355	931,530	0	(6,586)	(20,787)	935,998	355	908,980
2004	0	(15,558)	17,207	1,047,485	171	1,049,305	0	5,034	17,207	1,035,279	171	1,057,691
2005	0	17,830	(1,008)	1,018,549	1,430	1,036,801	0	14,360	(1,008)	1,005,820	1,430	1,020,602
2006	0	17,829	(8)	1,249,105	1,430	1,268,356	0	14,359	(8)	1,199,770	1,430	1,215,551
2007	0	17,829	(8)	1,261,010	1,430	1,280,261	0	14,359	(8)	1,211,410	1,430	1,227,191
2008	0	15,650	(934)	1,277,105	1,430	1,293,251	0	12,180	(934)	1,227,505	1,430	1,240,181
2009	0	15,555	(9,404)	1,232,084	1,430	1,239,665	0	12,085	(9,404)	1,181,484	1,430	1,185,595
2010	0	15,651	3,921	1,351,937	1,430	1,372,939	0	12,181	3,921	1,277,637	1,430	1,295,169
2011	0	15,621	26,001	1,391,737	1,430	1,434,789	0	12,151	26,001	1,317,437	1,430	1,357,019
2012	0	15,612	(41,797)	1,391,737	1,430	1,366,982	0	12,142	(41,797)	1,317,437	1,430	1,289,212
2013	0	15,485	4,742	1,391,737	1,430	1,413,394	0	12,015	4,742	1,317,437	1,430	1,335,624
2014	0	15,652	2,759	1,391,737	1,430	1,411,578	0	12,182	2,759	1,317,437	1,430	1,333,808
2015	0	15,716	22,604	1,391,737	1,430	1,431,487	0	12,246	22,604	1,317,437	1,430	1,353,717
2016	0	15,479	(21,084)	1,391,737	1,430	1,387,562	0	12,009	(21,084)	1,317,437	1,430	1,309,792
2017	0	15,545	33,266	1,391,737	1,430	1,441,978	0	12,075	33,266	1,317,437	1,430	1,364,208
2018	0	15,648	(50,078)	1,391,737	1,430	1,358,737	0	12,178	(50,078)	1,317,437	1,430	1,280,967
2019	0	15,574	31,508	1,391,737	1,430	1,440,249	0	12,104	31,508	1,317,437	1,430	1,362,479
2020	0	15,597	(3,398)	1,391,737	1,430	1,405,366	0	12,127	(3,398)	1,317,437	1,430	1,327,596
2021	0	15,596	(1,117)	1,391,737	1,430	1,407,646	0	12,126	(1,117)	1,317,437	1,430	1,329,876
2022	0	15,590	(3,434)	1,391,737	1,430	1,405,323	0	12,120	(3,434)	1,317,437	1,430	1,327,553
2023	0	15,589	(18,638)	1,391,737	1,430	1,390,118	0	12,119	(18,638)	1,317,437	1,430	1,312,348
2024	0	15,531	21,309	1,391,737	1,430	1,430,007	0	12,061	21,309	1,317,437	1,430	1,352,237
2025	0	15,615	(11,624)	1,391,737	1,430	1,397,158	0	12,145	(11,624)	1,317,437	1,430	1,319,388
2026	0	15,580	13,030	1,391,737	1,430	1,421,777	0	12,110	13,030	1,317,437	1,430	1,344,007
2027	0	15,511	(6,161)	1,391,737	1,430	1,402,517	0	12,041	(6,161)	1,317,437	1,430	1,324,747
2028	0	15,611	4,006	1,391,737	1,430	1,412,784	0	12,141	4,006	1,317,437	1,430	1,335,014
2029	0	15,605	(913)	1,391,737	1,430	1,407,859	0	12,135	(913)	1,317,437	1,430	1,330,089
2030	0	15,580	8,528	1,391,737	1,430	1,417,275	0	12,110	8,528	1,317,437	1,430	1,339,505
2031	0	15,606	(31,057)	1,391,737	1,430	1,377,716	0	12,136	(31,057)	1,317,437	1,430	1,299,946
2032	0	15,515	43,953	1,391,737	1,430	1,452,635	0	12,045	43,953	1,317,437	1,430	1,374,865
2033	0	15,504	(37,929)	1,391,737	1,430	1,370,742	0	12,034	(37,929)	1,317,437	1,430	1,292,972
2034	0	15,419	28,588	1,391,737	1,430	1,437,174	0	11,949	28,588	1,317,437	1,430	1,359,404
2035	0	15,542	(49,219)	1,391,737	1,430	1,359,490	0	12,072	(49,219)	1,317,437	1,430	1,281,720

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					
	Initial Fill Water (75)	Operational Losses (76)	Reservoir Storage Changes (77)	Deliveries		Total (80)	Initial Fill Water (81)	Operational Losses (82)	Reservoir Storage Changes (83)	Deliveries		Total (86)
Water Supply (78)				Recreation (79)	Water Supply (84)					Recreation (85)		
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)	848,320	375	845,062	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	9,198	(18,298)	917,186	260	908,346	0	39,495	(27,394)	735,699	10,290	758,090
2004	0	11,166	15,150	1,033,273	85	1,059,674	0	41,947	(14,046)	850,007	478	878,386
2005	0	10,176	1,992	1,002,660	1,250	1,016,078	0	17,375	(1,931)	883,859	5,380	904,683
2006	0	10,177	(8)	1,193,790	1,250	1,205,209	0	17,342	72	1,144,735	5,380	1,167,529
2007	0	10,177	(8)	1,205,490	1,250	1,216,909	0	17,342	72	1,139,435	5,380	1,162,229
2008	0	8,481	(2,332)	1,221,565	1,250	1,228,964	0	14,263	7,919	1,139,435	5,380	1,166,997
2009	0	8,508	3,506	1,175,565	1,250	1,188,829	0	14,255	(5,782)	1,139,435	5,380	1,153,288
2010	0	8,504	10,523	1,271,837	1,250	1,292,114	0	14,255	367	1,020,733	5,380	1,040,735
2011	0	8,519	1,352	1,311,637	1,250	1,322,758	0	14,476	38,677	1,028,840	5,380	1,087,373
2012	0	8,482	(22,894)	1,311,637	1,250	1,298,475	0	14,375	(26,146)	1,034,863	5,380	1,028,472
2013	0	8,499	16,733	1,311,637	1,250	1,338,119	0	14,440	5,007	1,034,863	5,380	1,059,690
2014	0	8,522	(4,585)	1,311,637	1,250	1,316,824	0	14,581	13,866	1,034,863	5,380	1,068,690
2015	0	8,499	2,964	1,311,637	1,250	1,324,350	0	14,646	9,399	1,034,863	5,380	1,064,288
2016	0	8,483	(1,269)	1,311,637	1,250	1,320,101	0	14,583	(7,317)	1,034,863	5,380	1,047,509
2017	0	8,502	9,828	1,311,637	1,250	1,331,217	0	14,749	28,043	1,034,863	5,380	1,083,035
2018	0	8,484	(19,777)	1,311,637	1,250	1,301,594	0	14,800	(30,739)	1,034,863	5,380	1,024,304
2019	0	8,492	17,408	1,311,637	1,250	1,338,787	0	14,698	18,671	1,034,863	5,380	1,073,612
2020	0	8,483	(17,305)	1,311,637	1,250	1,304,065	0	14,739	3,032	1,034,863	5,380	1,058,014
2021	0	8,486	(398)	1,311,637	1,250	1,320,975	0	14,823	11,842	1,034,863	5,380	1,066,908
2022	0	8,486	13,735	1,311,637	1,250	1,335,108	0	14,823	(49)	1,034,863	5,380	1,055,017
2023	0	8,482	(8,417)	1,311,637	1,250	1,312,952	0	14,815	(333)	1,034,863	5,380	1,054,725
2024	0	8,462	689	1,311,637	1,250	1,322,038	0	14,752	(10,020)	1,034,863	5,380	1,044,975
2025	0	8,489	4,591	1,311,637	1,250	1,325,967	0	14,731	(894)	1,034,863	5,380	1,054,080
2026	0	8,475	(3,819)	1,311,637	1,250	1,317,543	0	14,778	11,278	1,034,863	5,380	1,066,299
2027	0	8,479	745	1,311,637	1,250	1,322,111	0	14,760	(11,638)	1,034,863	5,380	1,043,365
2028	0	8,481	(5,355)	1,311,637	1,250	1,316,013	0	14,800	8,285	1,034,863	5,380	1,063,328
2029	0	8,481	2,909	1,311,637	1,250	1,324,277	0	14,733	(8,133)	1,034,863	5,380	1,046,843
2030	0	8,480	296	1,311,637	1,250	1,321,663	0	14,822	12,228	1,034,863	5,380	1,067,293
2031	0	8,475	(1,976)	1,311,637	1,250	1,319,386	0	14,668	(66,669)	1,034,863	5,380	988,242
2032	0	8,449	18,821	1,311,637	1,250	1,340,157	0	14,361	41,046	1,034,863	5,380	1,095,650
2033	0	8,449	(23,419)	1,311,637	1,250	1,297,917	0	14,577	(56,723)	1,034,863	5,380	998,997
2034	0	8,443	21,651	1,311,637	1,250	1,342,981	0	14,154	41,005	1,034,863	5,380	1,095,402
2035	0	8,451	(31,434)	1,311,637	1,250	1,289,904	0	13,371	(193,440)	1,034,863	5,380	860,174

Table B-6

**Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities (Acre-Feet)**

Calendar Year	California Aqueduct (continued)										
	West Branch, California Aqueduct (continued)										
	Warne Power Plant					Castaic Power Plant					
	Initial Fill Water (87)	Operational Losses (88)	Reservoir Storage Changes (89)	Deliveries		Total (92)	Initial Fill Water (93)	Operational Losses (94)	Reservoir Storage Changes (95)	Deliveries	
Water Supply (90)				Recreation (91)	Water Supply (96)					Recreation (97)	
1961	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	57,364	1,788	(6,162)	71,938	6,481	131,409
1973	0	0	0	0	0	37,198	6,430	4,542	155,297	1,075	204,542
1974	0	0	0	0	0	82,364	1,772	(950)	209,136	541	292,863
1975	0	0	0	0	0	90,460	5,002	(1,534)	374,280	1,563	469,771
1976	0	0	0	0	0	55,990	(7,695)	(132,036)	420,684	1,429	338,372
1977	0	0	0	0	0	0	(1,485)	(102,532)	122,447	(20)	18,410
1978	0	0	0	0	0	45,105	(2,264)	129,523	171,139	176	343,679
1979	0	0	0	0	0	0	(2,339)	(20,400)	145,598	0	122,859
1980	0	0	0	0	0	0	991	(118,026)	165,931	481	49,377
1981	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	(60,135)	59,069	360,878	1,187	360,999
1983	0	20,780	(74,308)	166,995	6,111	119,578	(33,418)	(46,904)	166,995	2,618	89,291
1984	0	13,572	(139,219)	275,212	2,208	151,773	(29,618)	(139,545)	275,212	2,201	108,250
1985	0	29,286	141,492	403,097	874	574,749	(4,622)	135,007	403,097	844	534,326
1986	0	21,579	25,288	393,203	1,777	441,847	(6,664)	21,520	393,203	623	408,682
1987	0	20,885	(10,252)	433,452	5,698	449,783	(519)	(6,241)	433,452	2,734	429,426
1988	0	23,253	(31,453)	507,169	3,389	502,358	12,650	(28,498)	507,169	1,359	492,680
1989	0	27,131	(40,463)	611,681	6,083	604,432	634	(40,154)	611,681	3,161	575,322
1990	0	34,208	(9,176)	791,355	7,491	823,878	(14,012)	(15,101)	786,519	3,419	760,825
1991	0	16,908	70,754	263,909	4,166	355,737	(871)	89,637	262,921	2,283	353,970
1992	0	9,638	(75,008)	435,661	1,572	371,863	(609)	(71,795)	435,661	1,543	364,800
1993	0	1,922	(124,283)	451,257	1,233	330,129	21,959	(77,428)	451,257	1,211	396,999
1994	0	23,151	(91,606)	490,819	2,488	424,852	5,205	(95,738)	490,819	2,465	402,751
1995	0	15,860	14,330	157,629	1,242	189,061	20,400	75,863	157,629	1,223	255,115
1996	0	21,191	26,848	286,066	2,363	336,468	(5,621)	19,088	286,066	2,362	301,895
1997	0	23,437	1,892	323,201	1,569	350,099	11,119	(1,802)	323,201	1,566	334,084
1998	0	26,864	(122,848)	208,909	1,222	114,147	24,544	(57,726)	208,909	1,222	176,949
1999	0	21,822	8,120	357,664	2,883	390,489	(3,670)	6,280	357,664	2,865	363,139
2000	0	27,237	18,198	668,126	3,767	717,328	(19,645)	9,320	665,926	1,556	657,157
2001	0	17,404	(22,308)	477,315	759	473,170	(5,949)	(16,588)	477,315	746	455,524
2002	0	35,058	41,944	779,284	3,471	859,757	10,071	35,623	776,136	305	822,135
2003	0	28,167	(27,394)	735,699	10,290	746,762	9,075	(17,034)	732,549	356	724,946
2004	0	31,034	(14,046)	850,007	478	867,473	9,120	(11,440)	845,960	456	844,096
2005	0	15,465	(1,931)	883,859	5,380	902,773	9,740	(1,931)	883,859	2,330	893,998
2006	0	15,432	72	1,144,735	5,380	1,165,619	9,707	72	1,141,585	2,330	1,153,694
2007	0	15,432	72	1,139,435	5,380	1,160,319	9,707	72	1,136,285	2,330	1,148,394
2008	0	12,353	7,919	1,139,435	5,380	1,165,087	6,068	7,919	1,136,285	2,330	1,152,602
2009	0	12,345	(5,782)	1,139,435	5,380	1,151,378	6,060	(5,782)	1,136,285	2,330	1,138,893
2010	0	12,345	367	1,020,733	5,380	1,038,825	6,060	367	1,017,583	2,330	1,026,340
2011	0	12,566	38,677	1,028,840	5,380	1,085,463	6,281	38,677	1,025,690	2,330	1,072,978
2012	0	12,465	(26,146)	1,034,863	5,380	1,026,562	6,180	(26,146)	1,031,713	2,330	1,014,077
2013	0	12,530	5,007	1,034,863	5,380	1,057,780	6,245	5,007	1,031,713	2,330	1,045,295
2014	0	12,671	13,866	1,034,863	5,380	1,066,780	6,386	13,866	1,031,713	2,330	1,054,295
2015	0	12,736	9,399	1,034,863	5,380	1,062,378	6,451	9,399	1,031,713	2,330	1,049,893
2016	0	12,673	(7,317)	1,034,863	5,380	1,045,599	6,388	(7,317)	1,031,713	2,330	1,033,114
2017	0	12,839	28,043	1,034,863	5,380	1,081,125	6,554	28,043	1,031,713	2,330	1,068,640
2018	0	12,890	(30,739)	1,034,863	5,380	1,022,394	6,605	(30,739)	1,031,713	2,330	1,009,909
2019	0	12,788	18,671	1,034,863	5,380	1,071,702	6,503	18,671	1,031,713	2,330	1,059,217
2020	0	12,829	3,032	1,034,863	5,380	1,056,104	6,544	3,032	1,031,713	2,330	1,043,619
2021	0	12,913	11,842	1,034,863	5,380	1,064,998	6,628	11,842	1,031,713	2,330	1,052,513
2022	0	12,913	(49)	1,034,863	5,380	1,053,107	6,628	(49)	1,031,713	2,330	1,040,622
2023	0	12,905	(333)	1,034,863	5,380	1,052,815	6,620	(333)	1,031,713	2,330	1,040,330
2024	0	12,842	(10,020)	1,034,863	5,380	1,043,065	6,557	(10,020)	1,031,713	2,330	1,030,580
2025	0	12,821	(894)	1,034,863	5,380	1,052,170	6,536	(894)	1,031,713	2,330	1,039,685
2026	0	12,868	11,278	1,034,863	5,380	1,064,389	6,583	11,278	1,031,713	2,330	1,051,904
2027	0	12,850	(11,638)	1,034,863	5,380	1,041,455	6,565	(11,638)	1,031,713	2,330	1,028,970
2028	0	12,890	8,285	1,034,863	5,380	1,061,418	6,605	8,285	1,031,713	2,330	1,048,933
2029	0	12,823	(8,133)	1,034,863	5,380	1,044,933	6,538	(8,133)	1,031,713	2,330	1,032,448
2030	0	12,912	12,228	1,034,863	5,380	1,065,383	6,627	12,228	1,031,713	2,330	1,052,898
2031	0	12,758	(66,669)	1,034,863	5,380	986,332	6,473	(66,669)	1,031,713	2,330	973,847
2032	0	12,451	41,046	1,034,863	5,380	1,093,740	6,166	41,046	1,031,713	2,330	1,081,255
2033	0	12,667	(56,723)	1,034,863	5,380	996,187	6,382	(56,723)	1,031,713	2,330	983,702
2034	0	12,244	41,005	1,034,863	5,380	1,093,492	5,959	41,005	1,031,713	2,330	1,081,007
2035	0	11,461	(193,440)	1,034,863	5,380	858,264	5,176	(193,440)	1,031,713	2,330	845,779

Table B-6

**Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities**  
(Acre-Feet)

Sheet 9 of 9

California Aqueduct (continued)								
Coastal Branch, California Aqueduct								
Calendar Year	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)	122,652	122,223	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	492	104,144	104,636	0	480	33,870	34,350
2005	0	802	106,040	106,842	0	212	41,381	41,593
2006	0	802	156,865	157,667	0	212	76,365	76,577
2007	0	802	150,986	151,788	0	212	70,486	70,698
2008	0	802	150,986	151,788	0	212	70,486	70,698
2009	0	802	150,986	151,788	0	212	70,486	70,698
2010	0	802	157,684	158,486	0	212	70,486	70,698
2011	0	802	149,577	150,379	0	212	70,486	70,698
2012	0	802	143,554	144,356	0	212	70,486	70,698
2013	0	802	143,554	144,356	0	212	70,486	70,698
2014	0	802	143,554	144,356	0	212	70,486	70,698
2015	0	802	143,554	144,356	0	212	70,486	70,698
2016	0	802	143,554	144,356	0	212	70,486	70,698
2017	0	802	143,554	144,356	0	212	70,486	70,698
2018	0	802	143,554	144,356	0	212	70,486	70,698
2019	0	802	143,554	144,356	0	212	70,486	70,698
2020	0	802	143,554	144,356	0	212	70,486	70,698
2021	0	802	143,554	144,356	0	212	70,486	70,698
2022	0	802	143,554	144,356	0	212	70,486	70,698
2023	0	802	143,554	144,356	0	212	70,486	70,698
2024	0	802	143,554	144,356	0	212	70,486	70,698
2025	0	802	143,554	144,356	0	212	70,486	70,698
2026	0	802	143,554	144,356	0	212	70,486	70,698
2027	0	802	143,554	144,356	0	212	70,486	70,698
2028	0	802	143,554	144,356	0	212	70,486	70,698
2029	0	802	143,554	144,356	0	212	70,486	70,698
2030	0	802	143,554	144,356	0	212	70,486	70,698
2031	0	802	143,554	144,356	0	212	70,486	70,698
2032	0	802	143,554	144,356	0	212	70,486	70,698
2033	0	802	143,554	144,356	0	212	70,486	70,698
2034	0	802	143,554	144,356	0	212	70,486	70,698
2035	0	802	143,554	144,356	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 <sup>a</sup> (1)	Allowance for Future Price Escalation <sup>b</sup> (2)	Costs of Construction of Delivery Structures <sup>c</sup> (3)	Costs of Requested Excess Capacity and Future Enlargement <sup>d</sup> (4)	Capital Cost Component of Delta Water Charge <sup>e</sup> (5)	Capital Cost Component of Transportation Water Charge <sup>f</sup> (6)	Water Supply and Power Total (7)		
<b>Conservation Facilities</b>									
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	3,152	0	0	0	366,303	0	369,455	86,922	456,377
Specific Power Facilities	24,944	0	0	0	101,209	0	126,153	6,558	132,711
Total, Oroville Division	28,096	0	0	0	467,512	0	495,608	93,480	589,088
California Aqueduct									
North San Joaquin Division	1,210	0	0	0	79,829	0	81,039	2,880	83,919
San Luis Division	13,152	0	0	0	104,884	0	118,036	3,827	121,863
Total, California Aqueduct	14,362	0	0	0	184,713	0	199,075	6,707	205,782
Delta Facilities	37,311	0	0	0	294,213	0	331,524	42,268	373,792
Planning and Pre-operation	5,302	0	0	0	75,860	0	81,162	0	81,162
Total, Conservation Facilities	85,317	0	0	0	1,022,941	0	1,108,258	159,010	1,267,268
<b>Transportation Facilities</b>									
Upper Feather Division									
Grizzly Valley Pipeline	303	0	201	0	0	341	845	0	845
North Bay Aqueduct	357	0	681	0	0	96,283	97,321	0	97,321
South Bay Aqueduct	(2,638)	0	1,757	0	0	106,350	105,469	21,466	126,935
California Aqueduct									
North San Joaquin Division	8,753	0	57	0	0	184,257	193,067	6,417	199,484
San Luis Division	8,011	0	0	0	0	130,344	138,355	6,513	144,868
South San Joaquin Division	713	0	3,670	2,093	0	289,958	296,434	17,329	313,763
Tehachapi Division	235	0	0	5,230	0	311,585	317,050	18,290	335,340
Mojave Division	(20,859)	0	791	0	0	296,372	276,304	37,941	314,245
Santa Ana Division	(2,093)	0	5,972	5,331	0	223,593	232,803	31,396	264,199
West Branch	3,025	0	460	37	0	481,586	485,108	31,326	516,434
Coastal Branch	1,549	0	176	0	0	497,296	499,021	0	499,021
Total, California Aqueduct	(666)	0	11,126	12,691	0	2,414,991	2,438,142	149,212	2,587,354
Total, Transportation Facilities	(2,644)	0	13,765	12,691	0	2,617,965	2,641,777	170,678	2,812,455
East Branch Enlargement	0	0	0	0	0	453,459	453,459	0	453,459
East Branch Extension	0	0	0	0	0	136,097	136,097	0	136,097
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	82,934	82,934
Off-Aqueduct Power Generation Facilities	0	0	0	0	14,095	83,213	97,308	0	97,308
Small Hydro Power Generation Facilities	0	0	0	0	0	484,219	484,219	0	484,219
Land Purchase - Kern Water Bank	0	0	0	0	34,686	0	34,686	0	34,686
Unassigned/Miscellaneous	0	0	0	0	0	0	0	158,248	158,248
Davis - Grunsky	0	0	0	0	0	0	0	130,000	130,000
<b>Total through 2015</b>	<b>82,673</b>	<b>0</b>	<b>13,765</b>	<b>12,691</b>	<b>1,071,722</b>	<b>3,805,661</b>	<b>4,986,512</b>	<b>700,870</b>	<b>5,687,382</b>

<sup>a</sup>Miscellaneous project receipts that are applied for accounting purposes to reduce the capital costs of the particular facilities.

<sup>b</sup>These allowances are included for planning the future financial program, but not for determining current water charges.

<sup>c</sup>See Table B-8.

<sup>d</sup>See Table B-9.

<sup>e</sup>See Table B-13.

<sup>f</sup>See Table B-10. Mojave Division total reduced by \$88,213,000 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 <sup>a</sup>						Total (7)
	1952-2002 (1)	2003 (2)	2004 (3)	2005 (4)	2006 (5)	2007 (6)	
<b>Feather River Area</b>							
County of Butte	136,546	0	0	0	10,000	10,000	156,546
Plumas County Flood Control and Water Conservation District	645	0	0	0	0	0	645
Thermalito Irrigation District <sup>b</sup>	43,939	0	0	0	0	0	43,939
Subtotal	181,130	0	0	0	10,000	10,000	201,130
<b>North Bay Area</b>							
Napa County Flood Control and Water Conservation District	13,590	0	0	5,000	0	0	18,590
Solano County Water Agency	662,113	0	0	0	0	0	662,113
Subtotal	675,703	0	0	5,000	0	0	680,703
<b>South Bay Area</b>							
Alameda County Flood Control and Water Conservation District, Zone 7	373,149	4,874	6,142	10,000	25,000	10,000	429,165
Alameda County Water District	239,579	0	0	0	0	0	239,579
Santa Clara Valley Water District	21,500	0	0	0	0	0	21,500
San Francisco Water Department <sup>b</sup>	1,066,680	0	0	0	0	0	1,066,680
Subtotal	1,700,908	4,874	6,142	10,000	25,000	10,000	1,756,924
<b>Central Coastal Area</b>							
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
<b>San Joaquin Valley Area</b>							
Castaic Lake Water Agency	82,567	0	0	0	0	0	82,567
Dudley Ridge Water District	304,541	0	0	0	0	0	304,541
Empire West Side Irrigation District	6,358	0	0	0	0	0	6,358
Green Valley Water District <sup>c</sup>	5,292	0	0	0	0	0	5,292
Kern County Water Agency	3,007,022	10,824	12,082	12,000	20,000	20,000	3,081,928
Oak Flat Water District	46,882	0	0	0	0	0	46,882
Tracy Golf and Country Club <sup>c</sup>	6,932	0	0	0	0	0	6,932
Tulare Lake Basin Water Storage District	277,483	0	0	0	0	0	277,483
Veterans Administration Cemetery <sup>b</sup>	3,342	0	0	0	0	0	3,342
Subtotal	3,740,419	10,824	12,082	12,000	20,000	20,000	3,815,325
<b>Southern California Area</b>							
Antelope Valley-East Kern Water Agency	402,882	0	13,029	17,000	15,000	10,000	457,911
Castaic Lake Water Agency	354,745	0	4,830	10,000	5,000	0	374,575
Coachella Valley Water District	14,206	0	0	0	0	0	14,206
Crestline-Lake Arrowhead Water Agency	25,298	0	0	0	0	0	25,298
Desert Water Agency	23,438	0	0	0	0	0	23,438
Litlerock Creek Irrigation District	23,732	0	0	0	0	0	23,732
Mojave Water Agency	211,765	0	0	0	0	0	211,765
Palmdale Water District	34,173	0	0	0	0	0	34,173
San Bernardino Valley Municipal Water District	960,685	0	0	0	0	0	960,685
San Gabriel Valley Municipal Water District	131,052	0	0	0	0	0	131,052
San Geronio Pass Water Agency	66,530	0	0	0	0	0	66,530
The Metropolitan Water District of Southern California	4,814,078	0	0	0	0	0	4,814,078
Ventura County Flood Control District	79,699	0	0	0	0	0	79,699
Subtotal	7,142,283	0	17,859	27,000	20,000	10,000	7,217,142
<b>Total</b>	<b>13,533,705</b>	<b>15,698</b>	<b>36,083</b>	<b>54,000</b>	<b>75,000</b>	<b>50,000</b>	<b>13,764,486</b>

<sup>a</sup>Approximate only, not to be construed as invoice amounts

<sup>b</sup>Not an SWP water supply contractor.

<sup>c</sup>Not an SWP water supply contractor, but has contracted for water

Table B-9  
**Capital Costs of Requested Excess Peaking Capacity**  
(Dollars)

Sheet 1 of 2

Calendar Year	Total Advance Payments and Credits for Excess Capacity (1)	Incremental Costs for Excess Capacity (2)	Overpayment (+) or Underpayment (-) <sup>a</sup> (3)	Annual Surplus Money Investment Fund Interest Rate <sup>b</sup>		Net Over or Underpayment With Interest <sup>c</sup> (6)
				Jan-Jun (4)	Jul-Dec (5)	
<b>Metropolitan Water District of Southern California</b>						
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
<b>Total</b>	<b>11,339,011</b>	<b>12,514,776</b>	<b>(1,175,765)</b>	<b>-</b>	<b>-</b>	<b>10,461,314</b>
<b>San Gabriel Valley Municipal Water District</b>						
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
<b>Total</b>	<b>139,245</b>	<b>138,552</b>	<b>693</b>	<b>-</b>	<b>-</b>	<b>86,133</b>
<b>Antelope Valley-East Kern Water Agency</b>						
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
<b>Total</b>	<b>55,682</b>	<b>37,407</b>	<b>18,275</b>	<b>-</b>	<b>-</b>	<b>134,869</b>

<sup>a</sup>Overpayment or underpayment for each calendar year - column (1) minus column (2).

<sup>b</sup>Interest rates shown are annual rates. Interest is credited daily at applicable rates on funds deposited in the State's Surplus Money Investment Fund.

<sup>c</sup>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													Reach Total (20)
	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)	
<b>Metropolitan Water District of Southern California</b>														
<b>Incremental Costs</b>														
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
<b>Current Adjustment</b>														
8C through 25	1. Advance Payments Applied to Incremental Costs Amendment 2 <sup>d</sup>													
	0	8,056,000	9,094,963	1,523,252	8,310,651	3,426,736	1,086,045	(4,244,807)	(14,381,396)				(356,668)	12,514,776
28J	2. Interest Credits-Amendment 2 <sup>e</sup>													
									(1,532,433)				(10,104,646)	(11,637,079)
	3. Advance Payments Applied to Incremental Costs Amendment 5 <sup>f</sup>													
	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 <sup>g</sup>													
										(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
<b>San Gabriel Valley Municipal Water District</b>														
<b>Incremental Costs</b>														
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
<b>Current Adjustments</b>														
	1. Advance Payments Applied to Incremental Costs <sup>d</sup>													
	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) <sup>h</sup>	53,112
<b>Antelope Valley-East Kern Water Agency</b>														
<b>Incremental Costs</b>														
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
<b>Current Adjustment</b>														
	1. Advance Payments Applied to Incremental Costs <sup>d</sup>													
			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) <sup>h</sup>	(79,187)

<sup>d</sup> Actual payments are shown for 1965 through 1976, with 1981 adjusted to reflect overpayments and underpayments without interest for prior years.  
<sup>e</sup> Interest for overpayments and underpayments under provisions of Amendment 2 of the contract.  
<sup>f</sup> Actual payments are shown for 1965 through 1973, with 1974 adjusted to reflect overpayments and underpayments without interest for prior years.  
<sup>g</sup> Interest for overpayments and underpayments under provisions of Amendment 5 of the contract.  
<sup>h</sup> 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)

Sheet 1 of 8

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	33,102
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	19,632
2001	20	8,959	2,162	3,892	980	15,993	435,729	4,161	118,393	4,062
2002	14	25,376	17,224	15,254	3,637	61,491	3,067,506	5,536	325,641	64,277
2003	0	11,131	5,411	4,658	44,172	65,372	4,464,210	199,879	196,128	360,063
2004	0	6,173	1,002	831	137,218	145,224	3,382,857	105,743	238,360	98,895
2005	0	15,189	5,847	5,185	2,251	28,472	5,018,130	113,558	341,011	19,041
2006	0	24,383	9,948	8,833	1,378,444	1,421,608	7,528,267	286,070	923,673	32,334
2007	0	24,953	10,254	9,107	1,378,502	1,422,816	5,877,924	411,793	1,321,270	33,322
2008	0	6,095	124	57	1,574	7,850	1,158,435	187,014	602,825	634
2009	0	6,095	124	57	1,574	7,850	16,956	586	640	634
2010	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>341,125</b>	<b>41,930,198</b>	<b>33,070,223</b>	<b>4,633,067</b>	<b>16,649,639</b>	<b>96,283,127</b>	<b>49,939,022</b>	<b>3,097,427</b>	<b>9,375,402</b>	<b>11,824,433</b>

Table B-10

## Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Sheet 2 of 8

Calendar Year	South Bay Aqueduct (continued)					California Aqueduct			
	Reach 6 (11)	Reach 7 (12)	Reach 8 (13)	Reach 9 (14)	Total (15)	North San Joaquin Division			Subtotal (19)
						Reach 1 (16)	Reach 2A (17)	Reach 2B (18)	
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	183,082	(706,522)	57,209	39,982	(609,331)
2001	91,681	68,598	403,873	1,189,678	2,316,175	371,372	89,809	7,549	468,730
2002	229,369	453,007	1,107,226	2,976,962	8,229,524	388,747	42,554	21,259	452,560
2003	67,127	509,412	475,605	1,407,084	7,679,508	178,078	18,416	10,537	207,031
2004	1,719	1,459	38,226	3,275,929	7,143,188	851,090	8,412	46,238	905,740
2005	1,198	1,392	1,248	1,403,378	6,898,956	239,300	19,347	842,895	1,101,542
2006	2,013	2,346	2,087	5,642	8,782,432	392,400	32,434	2,575,720	3,000,554
2007	2,073	2,416	2,147	5,803	7,656,748	402,652	33,373	1,744,838	2,180,863
2008	120	113	165	488	1,949,794	63,373	2,300	1,036	66,709
2009	120	113	165	488	19,702	63,373	2,300	1,036	66,709
2010	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>960,924</b>	<b>4,924,109</b>	<b>6,953,524</b>	<b>19,275,015</b>	<b>106,349,856</b>	<b>112,895,920</b>	<b>42,724,465</b>	<b>28,636,197</b>	<b>184,256,582</b>

Table B-10

## Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Sheet 3 of 8

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	(10,513)	(47,832)	518,046	(3,777)	59,373	515,297	2,279	16,521	20,761
2002	12,237	23,712	6,078,355	3,222	(2,455,712)	3,661,814	3,626	43,500	19,786
2003	8,863	78,058	(5,374,663)	7,414	2,178,907	(3,101,421)	2,127	17,675	15,759
2004	(15,306)	(45,667)	(55,400)	(4,011)	(463,588)	(583,972)	22,794	2,626	2,273
2005	20,080	624,831	23,564	9,365	11,663	689,503	1,340	10,189	9,022
2006	140,177	551,293	35,751	14,215	17,657	759,093	1,990	15,372	13,621
2007	148,056	187,580	44,405	17,676	21,853	419,570	2,379	18,911	16,775
2008	286	11,328	2,368	866	1,470	16,318	489	1,724	1,452
2009	286	11,328	2,368	866	1,470	16,318	489	1,724	1,452
2010	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>21,128,642</b>	<b>32,718,744</b>	<b>23,525,847</b>	<b>5,982,703</b>	<b>46,987,776</b>	<b>130,343,712</b>	<b>892,556</b>	<b>13,122,756</b>	<b>11,167,532</b>

Table B-10

## Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Sheet 4 of 8

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	39,867	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	270,265
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	42,281	13,886	21,836	34,646	7,862	68,435	4,153	4,177	65,401
2002	87,355	19,039	6,666	78,249	47,340	272,942	22,247	35,169	163,075
2003	21,957	7,992	7,857	17,345	14,945	129,370	5,827	10,101	107,153
2004	5,145	1,557	1,014	3,865	3,339	25,106	2,109	1,965	26,264
2005	11,384	4,318	2,247	8,686	11,801	65,662	2,871	8,831	57,921
2006	17,296	6,541	3,340	13,178	17,176	100,171	4,291	12,762	87,371
2007	21,535	8,102	4,000	16,368	19,779	125,610	5,194	14,494	107,458
2008	944	520	794	874	7,135	2,051	808	6,082	9,891
2009	944	520	794	874	7,135	2,051	808	6,082	9,891
2010	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>10,460,404</b>	<b>12,594,487</b>	<b>11,235,919</b>	<b>8,402,724</b>	<b>16,198,578</b>	<b>66,433,570</b>	<b>9,108,611</b>	<b>7,232,554</b>	<b>47,172,839</b>

Table B-10

## Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Sheet 5 of 8

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	165,140	467,378	254,030	9,132	263,162	63,118	185,890	2,223	342,940
2002	284,187	1,083,181	235,166	7,823	242,989	33,319	(140,419)	1,374	(112,511)
2003	154,356	512,464	160,899	8,472	169,371	79,020	(21,201)	0	(13,203)
2004	267,952	366,009	249,989	1,854	251,843	15,301	10,273	0	25,651
2005	86,218	280,490	2,768,027	11,845	2,779,872	60,934	6,542	0	7,743
2006	130,077	423,186	2,592,058	16,815	2,608,873	92,981	9,865	0	11,720
2007	160,018	520,623	2,278,466	18,416	2,296,882	116,625	12,128	0	14,503
2008	14,590	47,354	1,629	10,640	12,269	1,783	1,139	0	985
2009	14,590	47,354	1,629	10,640	12,269	1,783	1,139	0	985
2010	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>75,935,772</b>	<b>289,958,302</b>	<b>256,923,910</b>	<b>54,661,449</b>	<b>311,585,359</b>	<b>51,090,466</b>	<b>23,651,841</b>	<b>759,941</b>	<b>18,346,439</b>

Table B-10

## Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Sheet 6 of 8

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	45,466	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	121,114	77,432	57,140	555,712	339,949	32,066	1,777,584	70,116	445,110
2002	(83,458)	(7,737)	(40,809)	275,268	266,115	77,094	268,236	51,893	1,751,376
2003	(9,309)	(4,047)	2,740	392,726	140,027	41,878	608,631	80,322	346,217
2004	8,554	5,493	5,714	241,369	38,466	16,178	366,999	10,660	254,565
2005	7,108	5,699	29,471	237,229	835,450	413,703	1,603,879	53,634	79,465
2006	10,740	8,638	40,693	847,532	802,148	779,691	2,604,008	55,400	121,300
2007	13,246	10,713	41,954	905,195	99,418	450,484	1,664,266	6,466	152,246
2008	1,074	632	35,831	125,117	3,392	87,345	257,298	1,288	1,936
2009	1,074	632	35,831	125,117	3,392	87,345	257,298	1,288	1,936
2010	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>17,709,575</b>	<b>8,385,832</b>	<b>13,086,732</b>	<b>127,605,724</b>	<b>65,428,021</b>	<b>53,520,970</b>	<b>379,585,541</b>	<b>60,757,909</b>	<b>45,055,919</b>

Table B-10

## Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Sheet 7 of 8

Calendar Year	California Aqueduct (continued)										
	Santa Ana Division (continued)				West Branch						
	Reach 28G <sup>a</sup> (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	207,977	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	18,724	12,527	86,471	632,948	41,401	8,288	100,282	107,743	7,430	17,175	282,319
2002	52,314	11,508	194,758	2,061,849	169,305	32,612	249,057	57,031	4,565	55,993	568,563
2003	1,093,434	2,479,743	174,660	4,174,376	46,382	13,185	94,703	50,801	43,728	19,607	268,406
2004	1,731,609	858,002	6,923	2,861,759	24,962	5,571	23,460	96,576	215,003	10,754	376,326
2005	5,680	1,507,439	17,358	1,663,576	688,771	31,756	423,548	40,384	763,557	806,025	2,754,051
2006	1,508,623	1,510,745	25,714	3,221,782	1,359,560	43,952	680,354	61,601	767,623	1,197,646	4,110,736
2007	1,510,728	1,512,191	30,618	3,212,249	723,050	45,559	717,670	77,218	13,620	5,417,862	6,994,979
2008	507	5,167	6,798	15,696	1,667	37,756	913,278	1,367	5,848	5,601	965,517
2009	507	5,167	6,798	15,696	1,667	37,756	678,778	1,367	5,848	5,601	731,017
2010	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>30,248,105</b>	<b>31,585,634</b>	<b>55,945,629</b>	<b>223,593,196</b>	<b>39,772,749</b>	<b>32,132,873</b>	<b>128,781,970</b>	<b>63,805,095</b>	<b>76,953,060</b>	<b>143,729,777</b>	<b>485,175,524</b>

<sup>a</sup>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)

Sheet 8 of 8

California Aqueduct (continued)										
Calendar Year	Coastal Branch									Grand Total (76)
	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)	
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	13,748,072
2001	102,285	79,245	559,917	15,389	11,334	0	0	768,170	5,175,588	7,507,776
2002	97,023	234,364	96,896	88,726	25,599	0	0	542,608	8,881,800	17,172,829
2003	39,881	232,501	11,802	50,788	33,642	0	0	368,614	3,207,472	10,952,352
2004	21,806	72,896	14,931	11,841	11,370	0	0	132,844	4,677,548	11,965,960
2005	38,630	739,081	0	119,472	114,714	0	0	1,011,897	11,884,810	18,812,238
2006	58,888	1,012,012	0	162,820	156,336	0	0	1,390,056	18,118,288	28,322,328
2007	73,743	1,023,361	0	162,820	156,336	0	0	1,416,260	18,705,692	27,785,256
2008	1,588	968,237	0	162,820	156,336	0	0	1,288,981	2,670,142	4,627,786
2009	1,588	968,237	0	162,820	156,336	0	0	1,288,981	2,435,642	2,463,194
2010	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>20,749,993</b>	<b>139,805,267</b>	<b>171,236,985</b>	<b>81,971,257</b>	<b>50,852,497</b>	<b>16,067,297</b>	<b>16,612,628</b>	<b>497,295,924</b>	<b>2,501,794,140</b>	<b>2,704,768,248</b>

Table B-11

## Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Sheet 1 of 8

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	395,240	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	667,972	325,945	296,605	287,585	1,578,107	3,701,015	472,731	428,817	414,753
2000	505	917,663	251,792	658,168	412,772	2,240,395	3,815,434	542,677	441,608	553,523
2001	319	1,070,906	228,109	455,808	180,500	1,935,323	2,908,050	272,766	289,895	391,037
2002	3,627	1,582,266	411,714	410,771	395,769	2,800,520	3,855,996	342,801	467,061	543,189
2003	3,393	1,775,523	541,385	569,041	353,217	3,239,166	2,356,968	366,064	574,995	964,918
2004	3,455	1,587,781	624,675	736,345	812,021	3,760,822	3,322,011	510,163	744,726	695,162
2005	3,523	1,609,263	551,143	494,959	369,607	3,024,972	3,193,206	393,294	574,516	803,322
2006	3,546	1,635,234	559,366	504,844	377,349	3,076,793	3,252,776	398,866	582,268	941,181
2007	3,592	1,690,780	576,093	527,559	393,145	3,187,577	3,387,746	410,949	600,091	977,186
2008	3,887	923,699	257,648	461,474	389,066	2,031,887	4,087,641	477,460	770,527	665,206
2009	3,884	923,494	257,552	461,375	388,958	2,031,379	4,086,219	477,291	770,267	665,120
2010	3,885	923,230	257,582	461,234	388,906	2,030,952	4,086,389	477,319	770,278	664,769
2011	3,884	926,780	258,455	463,002	390,221	2,038,458	4,099,712	478,982	773,009	669,951
2012	3,884	927,034	258,494	463,134	390,311	2,038,973	4,100,435	479,064	773,154	670,185
2013	3,884	927,851	258,511	463,558	390,541	2,040,461	4,101,300	479,149	773,365	671,100
2014	3,883	928,510	258,367	463,916	390,636	2,041,429	4,099,953	478,970	773,189	672,082
2015	3,885	929,200	258,570	464,260	390,930	2,042,960	4,103,128	479,341	773,785	672,566
2016	3,882	927,932	258,297	463,619	390,442	2,040,290	4,098,566	478,813	772,906	671,525
2017	3,883	928,465	258,394	463,890	390,637	2,041,386	4,100,243	479,006	773,233	671,989
2018	3,884	929,422	258,413	464,390	390,906	2,043,131	4,101,260	479,106	773,482	673,065
2019	3,879	928,025	258,174	463,677	390,400	2,040,276	4,097,029	478,622	772,650	671,821
2020	3,884	928,787	258,445	464,055	390,754	2,042,041	4,101,168	479,109	773,418	672,283
2021	3,887	929,117	258,646	464,209	390,953	2,042,925	4,104,027	479,453	773,932	672,354
2022	3,883	929,188	258,375	464,270	390,821	2,042,654	4,100,558	479,026	773,345	672,853
2023	3,882	927,980	258,331	463,641	390,476	2,040,428	4,099,040	478,871	772,991	671,526
2024	3,882	928,496	258,329	463,911	390,612	2,041,348	4,099,425	478,904	773,097	672,124
2025	3,887	929,426	258,627	464,372	391,024	2,043,449	4,104,022	479,444	773,954	672,738
2026	3,878	927,752	258,101	463,541	390,287	2,039,681	4,095,860	478,486	772,430	671,619
2027	3,892	930,663	258,999	464,989	391,562	2,046,213	4,109,859	480,129	775,049	673,591
2028	3,878	927,727	258,034	463,534	390,245	2,039,540	4,094,972	478,378	772,275	671,693
2029	3,884	928,790	258,495	464,049	390,781	2,042,115	4,101,820	479,190	773,529	672,207
2030	3,882	927,809	258,300	463,553	390,413	2,040,075	4,098,501	478,806	772,885	671,377
2031	3,891	931,158	258,943	465,251	391,664	2,047,016	4,109,538	480,077	775,033	674,247
2032	3,876	927,220	257,876	463,282	390,021	2,038,399	4,092,515	478,089	771,816	671,353
2033	3,885	928,785	258,604	464,040	390,842	2,042,271	4,103,246	479,364	773,773	672,032
2034	3,884	929,154	258,523	464,239	390,893	2,042,809	4,102,471	479,261	773,668	672,584
2035	3,876	927,338	257,921	463,339	390,077	2,038,675	4,093,186	478,170	771,942	671,421
<b>Total</b>	<b>198,320</b>	<b>43,645,353</b>	<b>13,704,461</b>	<b>19,697,351</b>	<b>20,171,938</b>	<b>97,219,103</b>	<b>196,485,030</b>	<b>22,504,860</b>	<b>34,967,512</b>	<b>31,102,908</b>

Table B-11

## Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Sheet 2 of 8

Calendar Year	South Bay Aqueduct (continued)					California Aqueduct			
	Reach 6 (11)	Reach 7 (12)	Reach 8 (13)	Reach 9 (14)	Total (15)	North San Joaquin Division			Subtotal (19)
						Reach 1 (16)	Reach 2A (17)	Reach 2B (18)	
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	1,067,708	585,008	8,448,333
1992	26,787	332,012	98,670	98,670	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	49,738	34,679	426,483	2,030,020	7,558,236	11,446,655	1,364,758	1,300,744	14,112,157
2000	135,762	87,319	185,287	639,511	6,401,121	12,636,481	1,585,091	638,708	14,860,280
2001	112,930	188,743	197,399	1,047,234	5,408,054	17,553,964	1,373,228	751,381	19,678,573
2002	143,769	170,765	500,607	2,778,609	8,802,797	14,379,574	855,356	618,550	15,853,439
2003	77,969	97,304	247,142	985,222	5,670,582	16,590,467	1,718,778	746,050	19,055,295
2004	156,382	177,648	203,309	448,175	6,257,576	14,395,413	1,416,750	787,091	16,599,254
2005	107,687	128,097	345,224	1,549,358	7,094,704	13,153,641	993,652	761,685	14,908,978
2006	109,292	130,005	350,368	1,572,444	7,337,200	13,453,770	999,471	770,287	15,223,528
2007	112,565	133,900	360,863	1,619,544	7,602,844	14,175,276	1,033,419	794,586	16,003,281
2008	90,586	83,940	102,033	500,684	6,778,077	11,323,058	2,157,474	719,106	14,199,638
2009	90,551	83,908	101,995	500,494	6,775,845	11,320,655	2,157,215	719,013	14,196,883
2010	90,562	83,919	102,007	500,555	6,775,798	11,320,018	2,156,575	718,821	14,195,414
2011	90,868	84,205	102,352	502,247	6,801,326	11,356,910	2,164,930	721,276	14,243,116
2012	90,882	84,217	102,367	502,322	6,802,626	11,358,611	2,165,412	721,431	14,245,454
2013	90,884	84,222	102,373	502,347	6,804,740	11,362,283	2,167,168	721,971	14,251,422
2014	90,833	84,173	102,313	502,056	6,803,569	11,362,735	2,168,901	722,476	14,254,112
2015	90,903	84,237	102,394	502,449	6,808,803	11,368,843	2,170,020	722,852	14,261,715
2016	90,809	84,150	102,287	501,921	6,800,977	11,359,184	2,167,772	722,120	14,249,076
2017	90,842	84,182	102,323	502,107	6,803,925	11,362,943	2,168,752	722,434	14,254,129
2018	90,848	84,186	102,329	502,135	6,806,411	11,367,255	2,170,817	723,068	14,261,140
2019	90,764	84,108	102,235	501,675	6,798,904	11,357,587	2,168,220	722,237	14,248,044
2020	90,859	84,197	102,345	502,206	6,805,585	11,365,110	2,169,359	722,627	14,257,096
2021	90,931	84,263	102,424	502,597	6,809,981	11,369,679	2,169,681	722,760	14,262,120
2022	90,834	84,173	102,314	502,059	6,805,162	11,365,638	2,170,376	722,929	14,258,943
2023	90,820	84,162	102,299	501,985	6,801,694	11,359,910	2,167,806	722,135	14,249,851
2024	90,818	84,159	102,297	501,977	6,802,801	11,362,035	2,168,948	722,483	14,253,466
2025	90,922	84,256	102,414	502,556	6,810,306	11,370,655	2,170,398	722,976	14,264,029
2026	90,738	84,086	102,207	501,532	6,796,958	11,355,278	2,167,762	722,085	14,245,125
2027	91,054	84,378	102,563	503,282	6,819,905	11,381,791	2,172,387	723,643	14,277,821
2028	90,715	84,064	102,179	501,401	6,795,677	11,354,106	2,167,841	722,097	14,244,044
2029	90,877	84,214	102,365	502,304	6,806,506	11,365,918	2,169,258	722,606	14,257,782
2030	90,810	84,151	102,288	501,926	6,800,744	11,358,705	2,167,492	722,034	14,248,231
2031	91,034	84,359	102,540	503,167	6,819,995	11,382,974	2,173,578	723,997	14,280,549
2032	90,659	84,012	102,117	501,093	6,791,654	11,349,464	2,167,040	721,827	14,238,331
2033	90,916	84,250	102,408	502,521	6,808,510	11,367,659	2,169,031	722,555	14,259,245
2034	90,887	84,223	102,374	502,354	6,807,822	11,367,883	2,170,006	722,840	14,260,729
2035	90,675	84,027	102,135	501,180	6,792,736	11,350,668	2,167,211	721,885	14,239,764
<b>Total</b>	<b>3,916,261</b>	<b>4,960,660</b>	<b>7,456,310</b>	<b>33,215,179</b>	<b>334,608,720</b>	<b>589,305,320</b>	<b>96,410,036</b>	<b>45,727,623</b>	<b>731,442,979</b>

Table B-11

## Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Sheet 3 of 8

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	697,893	5,684,526	1,219,186	531,830	668,637	8,802,072	104,821	396,310	409,143
2000	711,653	5,848,299	1,032,373	528,203	871,694	8,992,222	104,300	461,574	508,439
2001	(558,917)	7,147,613	850,989	372,797	677,615	8,490,097	58,434	552,782	602,708
2002	1,071,710	5,162,606	670,276	254,476	731,842	7,890,910	55,243	728,417	415,802
2003	1,026,535	6,072,155	747,711	303,565	614,821	8,764,787	62,614	673,092	642,787
2004	698,244	6,969,917	717,867	343,041	591,921	9,320,990	36,999	480,190	334,694
2005	420,017	6,131,721	1,062,834	402,567	757,903	8,775,042	61,823	575,798	426,640
2006	449,192	6,474,180	1,107,531	418,222	775,064	9,224,189	62,647	579,410	428,345
2007	436,548	6,843,594	1,103,080	418,262	789,318	9,590,802	64,592	600,208	444,399
2008	806,886	4,560,964	976,502	460,024	628,216	7,432,592	272,730	1,036,582	850,191
2009	807,004	4,560,580	976,132	459,964	628,116	7,431,796	272,630	1,036,372	850,040
2010	806,201	4,557,638	976,249	459,730	627,828	7,427,646	272,653	1,036,022	849,698
2011	814,685	4,583,723	981,264	462,526	631,599	7,473,797	273,590	1,040,257	853,253
2012	815,039	4,585,477	981,414	462,685	631,806	7,476,421	273,635	1,040,560	853,518
2013	816,850	4,592,860	981,463	463,296	632,580	7,487,049	273,667	1,041,582	854,469
2014	819,292	4,601,311	980,893	463,943	633,371	7,498,810	273,540	1,042,489	855,388
2015	819,663	4,604,571	981,661	464,280	633,832	7,504,007	273,753	1,043,260	856,016
2016	818,374	4,597,021	980,630	463,567	632,883	7,492,475	273,456	1,041,794	854,769
2017	819,027	4,600,482	980,992	463,884	633,300	7,497,685	273,563	1,042,420	855,309
2018	821,158	4,609,146	981,049	464,602	634,210	7,510,165	273,602	1,043,620	856,428
2019	819,360	4,599,848	980,150	463,758	633,101	7,496,217	273,337	1,041,975	854,999
2020	819,468	4,602,688	981,184	464,083	633,560	7,500,983	273,620	1,042,801	855,642
2021	818,996	4,602,598	981,951	464,141	633,671	7,501,357	273,824	1,043,114	855,843
2022	820,845	4,607,557	980,901	464,459	634,021	7,507,783	273,558	1,043,342	856,185
2023	818,274	4,596,918	980,758	463,569	632,893	7,492,412	273,491	1,041,834	854,791
2024	819,504	4,601,800	980,741	463,972	633,397	7,499,414	273,500	1,042,490	855,409
2025	819,840	4,605,791	981,870	464,397	633,988	7,505,886	273,812	1,043,512	856,226
2026	819,170	4,598,445	979,872	463,619	632,912	7,494,018	273,259	1,041,665	854,742
2027	820,441	4,611,488	983,289	464,992	634,807	7,515,017	274,203	1,044,892	857,342
2028	819,527	4,599,263	979,615	463,665	632,956	7,495,026	273,194	1,041,668	854,777
2029	819,156	4,601,905	981,378	464,034	633,507	7,499,980	273,670	1,042,775	855,596
2030	818,064	4,595,815	980,642	463,468	632,759	7,490,748	273,457	1,041,638	854,618
2031	821,940	4,616,980	983,066	465,424	635,343	7,522,753	274,158	1,045,543	857,981
2032	819,315	4,597,013	979,015	463,428	632,627	7,491,398	273,027	1,041,107	854,324
2033	818,465	4,600,129	981,803	463,924	633,390	7,497,711	273,777	1,042,716	855,487
2034	819,842	4,604,877	981,478	464,288	633,834	7,504,319	273,705	1,043,223	856,003
2035	819,317	4,597,420	979,184	463,475	632,697	7,492,093	273,073	1,041,233	854,421
<b>Total</b>	<b>36,446,985</b>	<b>258,195,702</b>	<b>49,501,128</b>	<b>23,708,560</b>	<b>44,986,509</b>	<b>412,838,884</b>	<b>10,705,372</b>	<b>44,661,924</b>	<b>37,274,932</b>

Table B-11

## Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Sheet 4 of 8

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	1,125,237	373,453	171,194	399,116	503,919	5,039,027	351,315	231,699	4,752,920
2000	918,482	403,182	324,574	648,051	562,601	5,956,859	347,628	145,162	5,371,358
2001	870,288	412,425	892,576	518,675	660,202	4,694,709	(134,183)	(94,228)	6,002,297
2002	1,308,366	379,561	294,508	958,730	862,137	5,928,176	38,145	256,727	5,560,060
2003	815,968	337,369	232,449	689,482	611,856	6,209,679	(129,278)	25,323	7,006,933
2004	606,083	240,130	169,463	621,248	581,105	7,201,310	(110,718)	(143,259)	8,772,016
2005	940,070	292,084	178,551	673,523	601,264	6,162,229	284,982	332,256	8,048,523
2006	949,083	293,684	176,754	680,684	606,155	6,313,642	284,520	333,763	10,697,679
2007	980,972	304,388	185,137	703,065	627,131	6,707,248	297,128	346,749	8,576,127
2008	864,225	647,069	587,841	914,547	961,313	5,945,377	811,398	560,509	5,663,712
2009	863,900	646,925	587,781	914,305	961,098	5,943,786	811,266	560,428	5,661,952
2010	864,004	646,741	587,428	914,141	960,826	5,942,792	810,912	560,165	5,661,640
2011	866,920	649,331	590,067	917,650	964,674	5,963,177	814,349	562,568	5,680,078
2012	867,052	649,510	590,288	917,874	964,938	5,964,605	814,610	562,752	5,681,242
2013	867,095	650,082	591,189	918,481	965,781	5,968,401	815,576	563,459	5,683,564
2014	866,593	650,540	592,202	918,822	966,458	5,970,383	816,543	564,188	5,683,435
2015	867,271	651,024	592,623	919,515	967,177	5,974,886	817,139	564,596	5,687,785
2016	866,359	650,135	591,669	918,333	965,858	5,967,281	815,926	563,745	5,681,039
2017	866,680	650,509	592,105	918,814	966,412	5,970,348	816,457	564,118	5,683,638
2018	866,729	651,178	593,160	919,527	967,403	5,974,804	817,593	564,946	5,686,359
2019	865,934	650,199	591,998	918,285	965,590	5,966,843	816,184	563,950	5,679,702
2020	866,850	650,736	592,378	919,096	966,747	5,972,155	816,786	564,355	5,685,121
2021	867,526	650,964	592,390	919,525	967,090	5,975,014	816,948	564,444	5,688,513
2022	866,600	651,012	592,964	919,319	967,157	5,973,466	817,352	564,778	5,685,250
2023	866,473	650,167	591,661	918,401	965,907	5,967,719	815,945	563,751	5,681,584
2024	866,457	650,530	592,256	918,775	966,443	5,970,039	816,572	564,211	5,682,891
2025	867,455	651,181	592,777	919,728	967,409	5,976,274	817,341	564,737	5,689,064
2026	865,690	650,009	591,819	918,017	965,665	5,965,104	815,941	563,779	5,678,064
2027	868,707	652,049	593,518	920,982	968,701	5,984,437	818,397	565,463	5,697,006
2028	865,462	649,990	591,910	917,935	965,638	5,964,531	815,989	563,823	5,677,151
2029	867,020	650,733	592,287	919,144	966,748	5,972,506	816,726	564,305	5,685,763
2030	866,370	650,047	591,521	918,248	965,730	5,966,735	815,774	563,630	5,680,748
2031	868,511	652,393	594,180	921,290	969,208	5,986,285	819,060	565,954	5,697,581
2032	864,932	649,635	591,618	917,418	965,109	5,961,153	815,562	563,532	5,673,834
2033	867,396	650,732	592,086	919,246	966,749	5,973,248	816,593	564,192	5,687,149
2034	867,109	650,990	592,654	919,435	967,126	5,974,343	817,135	564,602	5,687,056
2035	865,081	649,717	591,670	917,545	965,233	5,961,995	815,652	563,593	5,674,706
<b>Total</b>	<b>46,408,240</b>	<b>27,395,973</b>	<b>23,817,285</b>	<b>40,190,909</b>	<b>41,526,590</b>	<b>301,969,978</b>	<b>32,131,052</b>	<b>23,272,310</b>	<b>301,147,735</b>

Table B-11

## Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Sheet 5 of 8

Calendar Year	California Aqueduct (continued)								
	South San Joaquin Division (continued)		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)
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	8,716,106	22,574,260	19,682,247	151,561	19,833,808	3,102,497	631,993	0	5,312,874
2000	12,477,814	28,230,024	23,232,412	241,308	23,473,720	1,870,871	736,007	0	1,378,963
2001	15,775,819	30,812,504	24,018,941	616,484	24,635,425	2,437,892	2,548,600	0	1,842,319
2002	11,394,125	28,179,997	20,506,782	467,573	20,974,355	1,398,033	796,835	0	755,746
2003	11,585,159	28,763,433	21,100,664	278,505	21,379,169	3,728,225	671,022	0	705,314
2004	14,483,654	33,272,915	26,071,695	230,369	26,302,064	1,803,183	1,341,102	0	1,297,924
2005	13,366,921	31,944,664	20,440,426	305,390	20,745,816	2,217,624	918,070	0	1,101,129
2006	13,054,286	34,460,652	22,150,227	309,940	22,460,167	2,248,417	889,856	0	1,091,674
2007	12,922,061	32,759,205	24,172,677	319,224	24,491,901	2,317,969	951,254	0	1,149,709
2008	8,177,466	27,292,960	23,190,667	340,360	23,531,027	1,956,630	1,046,241	0	1,573,999
2009	8,175,321	27,285,804	23,183,007	340,273	23,523,280	1,956,193	1,047,314	0	1,574,347
2010	8,173,860	27,280,882	23,182,907	340,207	23,523,114	1,955,649	1,043,789	0	1,572,192
2011	8,200,214	27,376,128	23,231,119	341,520	23,572,639	1,963,521	1,052,974	0	1,581,122
2012	8,202,205	27,382,789	23,235,229	341,602	23,577,131	1,964,060	1,054,333	0	1,582,133
2013	8,207,636	27,400,982	23,242,613	341,835	23,584,448	1,965,772	1,062,057	0	1,587,141
2014	8,210,679	27,411,260	23,238,358	341,968	23,580,326	1,967,131	1,073,185	0	1,593,767
2015	8,216,866	27,431,911	23,256,253	342,224	23,598,477	1,968,597	1,073,743	0	1,594,833
2016	8,206,338	27,396,702	23,229,579	341,785	23,571,364	1,965,922	1,069,847	0	1,591,378
2017	8,210,607	27,410,980	23,239,612	341,965	23,581,577	1,967,052	1,072,160	0	1,593,198
2018	8,216,974	27,432,323	23,247,929	342,232	23,590,161	1,969,054	1,081,106	0	1,598,996
2019	8,205,889	27,395,245	23,222,403	341,771	23,564,174	1,966,114	1,074,882	0	1,594,170
2020	8,213,136	27,419,423	23,245,243	342,070	23,587,313	1,967,733	1,073,807	0	1,594,430
2021	8,216,965	27,432,160	23,260,343	342,227	23,602,570	1,968,440	1,070,729	0	1,593,161
2022	8,215,121	27,426,104	23,243,682	342,158	23,585,840	1,968,570	1,080,239	0	1,598,304
2023	8,206,933	27,398,657	23,232,041	341,810	23,573,851	1,966,032	1,069,407	0	1,591,214
2024	8,210,267	27,409,840	23,235,725	341,952	23,577,677	1,967,119	1,074,704	0	1,594,599
2025	8,218,794	27,438,310	23,261,397	342,307	23,603,704	1,969,084	1,074,439	0	1,595,472
2026	8,203,503	27,387,257	23,215,748	341,673	23,557,421	1,965,541	1,074,599	0	1,593,731
2027	8,229,985	27,475,682	23,294,195	342,771	23,636,966	1,971,711	1,074,956	0	1,597,109
2028	8,202,779	27,384,847	23,211,338	341,643	23,552,981	1,965,476	1,076,381	0	1,594,640
2029	8,213,569	27,420,842	23,248,430	342,088	23,590,518	1,967,747	1,072,321	0	1,593,658
2030	8,205,565	27,394,081	23,228,814	341,752	23,570,566	1,965,678	1,068,732	0	1,590,671
2031	8,232,716	27,484,860	23,294,357	342,889	23,637,246	1,972,739	1,081,728	0	1,601,257
2032	8,198,148	27,369,399	23,197,577	341,450	23,539,027	1,964,401	1,076,315	0	1,594,043
2033	8,214,481	27,423,852	23,255,369	342,122	23,597,491	1,967,750	1,068,796	0	1,591,783
2034	8,216,168	27,429,549	23,252,883	342,197	23,595,080	1,968,508	1,075,053	0	1,595,504
2035	8,199,290	27,373,209	23,201,270	341,499	23,542,769	1,964,663	1,076,290	0	1,594,181
<b>Total</b>	<b>463,243,786</b>	<b>1,393,746,086</b>	<b>1,188,188,740</b>	<b>15,545,731</b>	<b>1,203,734,471</b>	<b>95,527,121</b>	<b>51,117,207</b>	<b>0</b>	<b>81,601,654</b>

Table B-11

**Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge**

(Dollars)

Sheet 6 of 8

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	2,847,320
1988	400,005	331,099	149,876	6,910,472	253,833	970,052	11,403,401	36,576	3,087,873
1989	345,614	194,047	138,825	5,963,386	349,544	1,242,144	9,932,830	30,881	3,190,809
1990	202,412	273,748	49,174	6,905,442	436,785	1,891,053	11,755,736	25,518	3,330,913
1991	516,257	478,555	231,223	7,488,366	263,723	1,561,051	13,662,067	32,172	3,847,579
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	1,583,398	1,344,578	159,737	9,551,761	2,025,296	1,343,968	25,056,102	188,085	5,955,734
2000	1,433,609	972,439	170,386	9,556,888	1,707,700	1,531,533	19,358,396	347,710	4,201,719
2001	1,525,939	1,070,939	478,967	7,684,975	1,891,103	30,911	19,511,645	295,390	2,433,530
2002	581,349	1,155,953	288,849	11,255,430	1,688,486	962,348	18,883,029	500,450	3,418,494
2003	619,247	466,761	285,090	13,401,540	2,090,763	(397,797)	21,570,165	360,791	3,744,807
2004	1,019,312	1,040,013	409,865	10,354,872	2,114,083	952,926	20,333,280	408,368	5,441,165
2005	621,147	762,766	260,476	12,474,926	1,866,837	1,902,483	22,125,458	400,056	3,877,574
2006	604,540	759,512	252,888	12,712,163	1,894,653	2,278,744	22,732,447	406,017	3,935,350
2007	647,984	796,583	271,699	13,442,808	1,951,405	2,444,646	23,974,057	418,178	4,053,228
2008	922,544	693,632	382,271	8,289,511	449,617	1,610,887	16,925,332	68,118	6,068,049
2009	923,136	693,902	382,547	8,290,304	449,699	2,163,957	17,481,399	68,091	6,066,086
2010	920,903	692,660	381,551	8,281,419	449,101	1,769,426	17,066,690	68,100	6,065,951
2011	927,707	697,068	384,484	8,319,704	450,521	2,228,147	17,605,248	68,330	6,084,849
2012	928,619	697,607	384,885	8,324,144	450,787	1,902,878	17,289,446	68,340	6,086,040
2013	933,592	700,425	387,086	8,345,186	452,145	1,002,930	16,436,334	68,343	6,088,120
2014	940,597	704,285	390,210	8,372,071	453,955	2,624,288	18,119,489	68,303	6,087,357
2015	941,152	704,737	390,436	8,377,799	454,246	997,312	16,502,855	68,357	6,092,033
2016	938,384	702,989	389,237	8,361,445	453,264	2,860,672	18,333,138	68,285	6,084,959
2017	939,963	703,946	389,927	8,369,672	453,761	1,670,688	17,160,367	68,311	6,087,643
2018	945,724	707,213	392,479	8,394,143	455,352	1,968,859	17,512,926	68,314	6,090,087
2019	941,495	704,663	390,631	8,372,219	453,991	2,845,238	18,343,403	68,253	6,083,403
2020	941,066	704,603	390,412	8,375,149	454,092	1,740,303	17,241,595	68,323	6,089,160
2021	939,288	703,733	389,603	8,371,128	453,760	773,315	16,263,157	68,377	6,092,999
2022	945,130	706,850	392,219	8,390,798	455,118	1,819,413	17,356,641	68,303	6,088,947
2023	938,135	702,872	389,124	8,360,851	453,192	2,810,316	18,281,143	68,294	6,085,582
2024	941,531	704,787	390,630	8,374,999	454,110	1,664,906	17,167,385	68,293	6,086,704
2025	941,652	705,052	390,651	8,380,684	454,390	1,851,750	17,363,174	68,372	6,093,388
2026	941,241	704,472	390,528	8,369,808	453,842	2,913,013	18,406,775	68,233	6,081,493
2027	942,346	705,699	390,924	8,390,009	454,867	1,500,294	17,027,915	68,470	6,101,950
2028	942,323	705,036	391,012	8,373,246	454,101	806,117	16,308,332	68,215	6,080,404
2029	940,166	704,128	390,005	8,372,154	453,868	2,750,066	18,244,113	68,337	6,089,942
2030	937,670	702,589	388,919	8,358,344	453,034	2,860,610	18,326,247	68,286	6,084,719
2031	946,640	708,084	392,831	8,406,978	455,983	225,180	15,791,420	68,455	6,102,197
2032	942,125	704,820	390,939	8,369,724	453,929	2,725,173	18,221,469	68,173	6,076,815
2033	938,007	702,983	389,038	8,365,003	453,360	1,435,202	16,911,922	68,368	6,091,641
2034	941,946	705,154	390,795	8,380,103	454,380	1,230,585	16,742,028	68,344	6,091,186
2035	942,152	704,865	390,947	8,370,445	453,934	4,208,597	19,706,074	68,185	6,077,771
<b>Total</b>	<b>49,147,690</b>	<b>36,582,044</b>	<b>17,183,478</b>	<b>465,068,933</b>	<b>40,453,471</b>	<b>87,979,603</b>	<b>924,661,201</b>	<b>6,742,628</b>	<b>278,110,708</b>

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	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	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	684,850	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	492,588	1,963,455	843,997	9,443,859	4,767,232	4,339,307	4,921,809	1,389,115	998,334	
2000	841,569	1,002,316	1,125,160	7,518,474	5,456,487	785,167	4,270,051	2,338,879	164,533	
2001	1,666,714	810,046	5,686,708	10,892,388	5,904,823	1,535,178	5,133,536	4,390,849	237,518	
2002	1,246,746	421,093	2,191,429	7,778,212	5,315,722	1,485,769	4,071,137	4,433,042	(61,701)	
2003	531,290	373,310	1,273,556	6,283,754	4,479,272	1,294,610	3,718,377	3,328,017	(636,351)	
2004	1,196,032	431,479	3,447,847	10,924,891	8,865,781	1,317,237	3,457,320	5,038,729	(638,904)	
2005	3,286,495	725,481	2,506,148	10,795,754	6,133,918	545,859	4,129,681	4,125,927	785,684	
2006	3,298,856	718,647	2,250,946	10,609,816	6,258,116	553,992	4,194,147	3,982,267	797,391	
2007	3,324,640	797,980	2,612,285	11,206,311	6,557,421	570,586	4,305,209	4,208,867	821,276	
2008	632,475	440,965	1,960,121	9,169,728	6,130,104	653,941	2,990,446	3,618,055	723,254	
2009	632,236	440,798	2,013,002	9,220,213	6,128,095	655,264	2,989,785	3,622,212	722,980	
2010	632,312	440,852	2,331,199	9,538,414	6,128,037	651,360	2,988,934	3,609,164	723,068	
2011	634,341	442,341	1,918,234	9,148,095	6,146,376	659,729	2,999,524	3,643,186	724,611	
2012	634,438	442,407	2,099,654	9,330,879	6,147,556	661,052	3,000,347	3,647,809	724,722	
2013	634,469	442,429	2,363,429	9,596,790	6,149,500	669,333	3,002,983	3,676,248	724,758	
2014	634,101	442,172	1,979,515	9,211,448	6,148,486	681,730	3,005,109	3,717,967	724,337	
2015	634,598	442,519	2,230,681	9,468,188	6,153,217	681,878	3,007,339	3,719,513	724,903	
2016	633,930	442,054	1,913,300	9,142,528	6,146,132	678,092	3,003,238	3,704,956	724,141	
2017	634,166	442,217	2,520,186	9,752,523	6,148,810	680,383	3,004,959	3,713,301	724,410	
2018	634,201	442,243	2,041,479	9,276,324	6,151,092	690,083	3,008,052	3,746,489	724,452	
2019	633,620	441,837	2,541,029	9,767,979	6,144,292	683,674	3,003,532	3,723,066	723,787	
2020	634,290	442,304	1,791,736	9,025,813	6,150,315	682,068	3,005,997	3,718,649	724,552	
2021	634,785	442,649	2,103,950	9,342,760	6,154,274	678,356	3,007,064	3,707,098	725,118	
2022	634,107	442,176	2,922,557	10,156,090	6,149,964	689,004	3,007,285	3,742,216	724,344	
2023	634,015	442,112	2,045,917	9,275,920	6,146,783	677,449	3,003,384	3,702,496	724,238	
2024	634,001	442,104	2,363,746	9,594,848	6,147,810	683,157	3,005,055	3,722,018	724,224	
2025	634,732	442,612	1,719,903	8,959,007	6,154,587	682,395	3,008,054	3,720,599	725,057	
2026	633,441	441,712	2,843,638	10,068,517	6,142,533	683,398	3,002,645	3,721,527	723,582	
2027	635,649	443,252	1,452,018	8,701,339	6,163,252	682,220	3,012,073	3,721,889	726,106	
2028	633,275	441,596	2,283,384	9,506,874	6,141,384	685,589	3,002,570	3,729,222	723,394	
2029	634,414	442,390	2,156,817	9,391,900	6,151,139	680,243	3,005,997	3,712,382	724,695	
2030	633,939	442,059	2,221,861	9,450,864	6,145,927	676,733	3,002,833	3,699,851	724,152	
2031	635,506	443,152	2,964,067	10,213,377	6,163,358	689,594	3,013,664	3,747,048	725,941	
2032	632,887	441,326	1,631,199	8,850,400	6,137,752	685,834	3,000,927	3,729,248	722,950	
2033	634,689	442,582	2,400,141	9,637,421	6,152,936	676,207	3,005,988	3,699,255	725,008	
2034	634,478	442,436	2,174,887	9,411,331	6,152,344	683,206	3,007,182	3,723,251	724,770	
2035	632,997	441,402	2,884,216	10,104,571	6,138,723	685,467	3,001,301	3,727,565	723,075	
<b>Total</b>	<b>43,041,743</b>	<b>33,163,576</b>	<b>106,769,493</b>	<b>467,828,148</b>	<b>302,396,487</b>	<b>40,582,274</b>	<b>176,345,581</b>	<b>173,912,281</b>	<b>37,966,832</b>	

Table B-11

**Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed  
through Minimum OMP&R Component of Transportation Charge  
(Dollars)**

Sheet 8 of 8

Calendar Year	California Aqueduct (continued)								Total (73)	Grand Total (74)
	West Branch (cont'd.)		Coastal Branch							
	Reach 30 (65)	Subtotal (66)	Reach 31A <sup>a</sup> (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	2,055,859	18,471,656	4,186,293	2,002,480	11,222	191,174	94,832	6,486,001	124,779,915	133,916,674
2000	1,518,439	14,533,556	2,885,539	2,704,017	2,833	276,164	133,968	6,002,521	122,969,193	131,611,214
2001	(949,438)	16,252,466	3,112,060	2,323,432	5,541	165,099	71,094	5,677,226	135,950,324	143,294,020
2002	3,399,274	18,643,243	3,180,783	2,849,657	23,546	222,431	117,644	6,394,061	124,597,246	136,204,190
2003	951,054	13,134,979	3,342,290	3,010,491	17,294	230,654	117,243	6,717,972	125,669,554	134,582,695
2004	1,468,768	19,508,931	3,528,788	2,892,490	13,170	260,503	139,286	6,834,237	143,096,562	153,118,415
2005	2,630,436	18,351,505	3,447,672	2,924,993	8,969	230,438	121,324	6,733,396	134,380,613	144,503,812
2006	2,455,994	18,241,907	3,505,408	2,976,257	9,103	233,872	123,132	6,847,772	139,800,478	150,218,017
2007	2,664,813	19,128,172	3,635,132	3,108,269	9,375	240,877	126,820	7,120,473	144,274,202	155,068,215
2008	2,913,293	17,029,093	3,994,682	1,936,020	0	1,654	4,392	5,936,748	121,517,118	130,330,969
2009	3,009,015	17,127,351	3,993,495	1,935,418	0	1,675	4,451	5,935,039	122,201,765	131,012,873
2010	2,917,250	17,017,813	3,993,132	1,935,308	0	1,614	4,289	5,934,343	121,984,316	130,794,951
2011	3,084,498	17,257,924	4,007,417	1,940,704	0	1,716	4,562	5,954,399	122,631,346	131,475,014
2012	2,912,964	17,094,450	4,008,282	1,941,102	0	1,735	4,614	5,955,733	122,352,303	131,197,786
2013	3,319,519	17,542,341	4,010,215	1,941,905	0	1,863	4,953	5,958,936	122,258,302	131,107,387
2014	3,006,035	17,283,664	4,010,584	1,941,879	0	2,060	5,473	5,959,996	123,319,105	132,167,986
2015	2,866,733	17,153,583	4,013,638	1,943,363	0	2,056	5,461	5,964,518	121,885,254	130,740,902
2016	3,422,420	17,678,979	4,008,766	1,941,054	0	2,004	5,328	5,957,152	123,821,414	132,666,563
2017	3,245,644	17,517,507	4,010,672	1,941,945	0	2,036	5,412	5,960,065	123,134,833	131,984,027
2018	3,155,806	17,475,974	4,012,939	1,942,888	0	2,186	5,811	5,963,824	123,022,837	131,876,263
2019	3,692,406	17,970,757	4,008,031	1,940,603	0	2,095	5,565	5,956,294	124,742,113	133,585,172
2020	3,497,387	17,778,968	4,011,774	1,942,455	0	2,060	5,476	5,961,765	122,772,956	131,624,466
2021	2,714,267	16,986,177	4,014,014	1,943,609	0	1,997	5,306	5,964,926	121,355,227	130,212,020
2022	2,735,661	17,048,474	4,012,119	1,942,507	0	2,170	5,769	5,962,565	123,302,440	132,154,139
2023	3,093,137	17,347,487	4,009,120	1,941,240	0	1,994	5,295	5,957,649	123,576,970	132,422,974
2024	3,864,859	18,147,123	4,010,250	1,941,693	0	2,081	5,528	5,959,552	123,609,305	132,457,336
2025	2,110,406	16,401,098	4,014,550	1,943,801	0	2,060	5,476	5,965,887	121,501,095	130,358,737
2026	3,893,017	18,166,702	4,006,874	1,940,045	0	2,092	5,559	5,954,570	125,280,385	134,120,902
2027	37,114	14,342,654	4,020,114	1,946,515	0	2,045	5,437	5,974,111	118,951,505	127,821,515
2028	7,054,681	21,336,840	4,006,312	1,939,738	0	2,126	5,653	5,953,829	125,782,773	134,621,868
2029	1,770,299	16,044,755	4,012,156	1,942,671	0	2,030	5,400	5,962,257	122,412,147	131,264,652
2030	3,112,423	17,361,919	4,008,509	1,940,953	0	1,983	5,270	5,956,715	123,799,371	132,644,072
2031	95,058	14,434,663	4,020,791	1,946,716	0	2,163	5,743	5,975,413	119,340,208	128,211,183
2032	7,037,260	21,313,971	4,003,996	1,938,603	0	2,136	5,678	5,950,413	126,974,481	135,808,337
2033	2,077,119	16,336,513	4,012,980	1,943,141	0	1,963	5,220	5,963,304	121,627,459	130,482,125
2034	3,026,420	17,317,173	4,013,173	1,943,116	0	2,076	5,517	5,963,882	122,224,091	131,078,606
2035	3,950,163	18,226,294	4,004,591	1,938,901	0	2,130	5,659	5,951,281	126,636,055	135,471,342
<b>Total</b>	<b>135,748,877</b>	<b>866,952,332</b>	<b>194,977,401</b>	<b>81,076,319</b>	<b>102,439</b>	<b>2,267,707</b>	<b>1,282,409</b>	<b>279,706,275</b>	<b>6,280,910,376</b>	<b>6,712,936,519</b>

<sup>a</sup>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<sup>a</sup>

(Dollars)

Sheet 1 of 3

Calendar Year	North Bay Aqueduct				South Bay Aqueduct	California Aqueduct				
	Reach 1	Reach 3A	Reach 3B	Total (4)	Reach 1	Reach 1	Reach 4	Reach 1 4A	Reach 1 5A	
	Barker Slough Pumping Plant (1)	Cordelia Pumping Plant (Solano) (2)	Cordelia Pumping Plant (Napa) <sup>b</sup> (3)		South Bay & Del Valle Pumping Plants <sup>c</sup> (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	8,551	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	138,001	17,664	
1972	0	0	14,434	14,434	598,702	933,292	502,196	241,714	97,004	
1973	0	0	14,449	14,449	493,490	688,030	381,232	306,268	278,923	
1974	0	0	17,473	17,473	565,575	783,562	447,772	358,739	367,266	
1975	0	0	14,779	14,779	349,758	1,341,019	518,816	550,860	595,252	
1976	0	0	20,856	20,856	571,361	1,638,453	641,115	755,747	756,175	
1977	0	0	22,635	22,635	512,996	1,013,307	284,828	298,300	337,889	
1978	0	0	21,692	21,692	586,355	2,339,502	607,042	732,036	658,404	
1979	0	0	16,237	16,237	605,136	3,554,256	1,008,564	818,816	791,488	
1980	0	0	19,945	19,945	523,369	2,083,336	1,129,152	1,051,629	1,047,495	
1981	0	0	23,842	23,842	567,692	3,952,931	1,939,189	1,336,867	1,319,739	
1982	0	0	12,157	12,157	605,780	3,082,031	1,363,705	1,200,226	1,213,660	
1983	0	0	2,342	2,342	82,222	879,916	343,597	341,584	304,715	
1984	0	0	4,822	4,822	271,543	1,695,568	885,941	678,307	602,408	
1985	0	0	10,188	10,188	451,020	3,171,920	1,613,745	1,397,490	1,397,098	
1986	0	0	15,501	15,501	807,984	6,601,752	2,627,407	2,405,224	2,432,322	
1987	0	0	27,223	27,223	886,956	5,753,132	2,523,544	2,240,552	2,223,371	
1988	17,813	0	24,020	41,833	909,300	6,280,898	2,611,297	2,562,330	2,560,462	
1989	29,819	43,846	26,519	100,184	1,161,160	9,748,180	3,910,492	3,964,188	3,974,290	
1990	52,210	67,109	40,775	160,094	1,834,626	10,467,177	4,501,309	5,785,069	6,019,952	
1991	10,429	10,118	5,252	25,799	378,966	1,923,595	490,766	903,923	1,031,345	
1992	13,319	13,070	9,406	35,795	311,251	3,211,086	1,168,304	1,255,567	1,314,358	
1993	(11,941)	(8,753)	(5,392)	(26,086)	(158,214)	532,899	345,215	(124,821)	(102,311)	
1994	46,538	39,910	29,105	115,553	799,370	5,658,038	2,298,300	2,504,629	2,516,185	
1995	20,014	20,620	11,791	52,425	247,645	4,017,881	1,513,362	919,965	841,178	
1996	57,320	47,288	23,483	128,091	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	58,494	42,475	15,053	116,022	859,604	6,978,006	3,038,530	2,958,287	3,030,344	
2001	358,775	248,951	213,029	820,755	4,046,300	24,052,371	9,827,656	14,786,375	15,168,691	
2002	187,069	102,701	60,375	350,145	2,200,336	16,872,561	6,774,067	8,279,254	8,582,609	
2003	176,140	115,182	95,116	386,438	2,490,167	20,944,500	8,778,235	10,373,297	10,803,483	
2004	244,274	135,227	104,162	483,663	2,430,458	21,281,626	9,088,992	11,981,949	12,579,559	
2005	321,012	209,870	144,440	675,322	3,566,017	28,075,654	14,062,546	16,395,760	19,144,256	
2006	461,130	452,692	507,240	1,421,062	6,487,631	34,564,421	16,386,983	20,629,062	24,337,744	
2007	485,933	314,077	782,419	1,582,429	5,405,348	35,490,410	16,129,573	20,381,424	24,043,868	
2008	424,392	332,928	334,269	1,091,589	5,607,218	36,940,554	15,267,153	18,463,993	18,364,827	
2009	439,548	344,673	354,118	1,138,340	5,793,592	33,571,845	16,009,465	19,476,839	19,373,354	
2010	459,252	360,345	379,342	1,198,939	6,037,856	41,988,882	16,854,416	20,553,661	20,433,085	
2011	462,047	360,477	386,380	1,208,904	6,041,107	38,081,881	16,831,697	20,522,816	20,398,319	
2012	478,162	372,664	408,431	1,259,257	6,234,813	37,094,664	17,922,946	22,090,028	21,983,637	
2013	520,222	408,432	459,314	1,387,968	6,803,381	47,366,485	19,666,762	24,213,048	24,060,546	
2014	557,061	438,172	506,700	1,501,933	7,276,149	42,605,268	21,344,613	26,369,371	26,193,647	
2015	570,847	444,697	533,683	1,549,227	7,379,863	47,555,903	21,670,971	26,768,670	26,585,100	
2016	581,784	449,199	557,194	1,588,177	7,451,437	54,675,744	22,463,226	28,030,189	27,875,306	
2017	580,103	442,772	565,700	1,588,575	7,349,250	48,297,110	21,681,538	26,842,993	26,666,224	
2018	600,721	455,458	602,771	1,658,950	7,550,916	48,351,318	22,918,826	28,661,724	28,510,884	
2019	619,864	466,611	639,044	1,725,519	7,728,207	55,563,653	23,609,032	29,579,946	29,416,096	
2020	595,137	441,269	619,006	1,655,412	7,325,352	49,467,789	22,303,418	27,960,906	27,826,293	
2021	595,377	440,550	620,894	1,656,821	7,313,945	48,512,896	22,294,866	27,963,607	27,830,597	
2022	578,247	426,406	598,790	1,603,443	7,089,101	44,995,061	21,630,193	27,173,201	27,059,219	
2023	581,292	428,919	602,717	1,612,928	7,129,054	48,559,078	21,866,126	27,519,255	27,409,565	
2024	601,150	445,316	628,341	1,674,807	7,389,707	53,171,224	22,594,272	28,361,371	28,226,268	
2025	598,624	443,230	625,082	1,666,936	7,356,562	44,690,268	22,520,935	28,288,647	28,159,123	
2026	602,455	446,394	630,026	1,678,875	7,406,839	55,374,978	22,637,845	28,408,835	28,270,988	
2027	593,971	439,389	619,079	1,652,439	7,295,484	49,724,278	22,436,684	28,242,238	28,123,480	
2028	597,817	442,563	624,040	1,664,420	7,345,963	48,604,978	24,425,500	28,112,919	27,978,305	
2029	590,714	436,700	614,877	1,642,291	7,252,746	48,386,458	22,230,259	27,951,492	27,830,967	
2030	595,156	440,367	620,607	1,656,130	7,311,022	50,283,080	22,256,332	27,902,350	27,767,263	
2031	587,561	434,097	610,808	1,632,466	7,211,351	45,940,896	22,113,014	27,816,309	27,706,000	
2032	598,471	443,105	624,888	1,666,464	7,354,570	49,384,268	22,275,295	27,865,859	27,717,757	
2033	626,566	466,302	661,136	1,754,004	7,723,300	52,939,108	23,993,939	30,264,108	30,132,609	
2034	605,015	448,508	633,329	1,686,852	7,440,444	49,154,602	22,648,406	28,375,904	28,228,200	
2035	593,475	438,978	618,437	1,650,890	7,288,970	52,683,120	23,858,734	30,811,218	30,802,520	
<b>Total</b>	<b>18,451,721</b>	<b>13,861,601</b>	<b>18,092,072</b>	<b>50,405,394</b>	<b>244,187,110</b>	<b>1,615,808,950</b>	<b>725,652,629</b>	<b>889,349,424</b>	<b>896,929,303</b>	

<sup>a</sup>Excludes extra peaking costs assigned directly to contractors. Refer to Appendix B text discussion of Table B-17 under "Project Water Charges."<sup>b</sup>Costs for the period 1968 through 1987 are for an interim facility.<sup>c</sup>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<sup>a</sup>

(Dollars)

Sheet 2 of 3

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 <sup>d</sup> (15)	Devil Canyon Power Plant (16)	Lake Perris <sup>d</sup> (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	180,602	542,625	0	25,568	0	0	(3,024)	0	102,315
1973	441,598	1,548,428	0	231,389	0	0	(436,768)	0	158,587
1974	618,864	2,164,223	0	354,093	0	0	(521,656)	0	193,311
1975	1,149,731	4,010,395	0	604,161	0	0	(1,071,023)	0	350,436
1976	1,561,385	5,443,936	0	932,444	0	0	(1,519,156)	0	362,767
1977	703,802	2,360,624	0	358,028	0	0	(1,175,966)	0	111,135
1978	1,186,696	4,180,131	0	1,551,015	0	0	(3,038,194)	0	125,183
1979	1,581,250	5,475,688	0	1,881,587	0	0	(3,419,581)	0	138,384
1980	2,102,439	7,028,235	0	1,762,063	0	0	(3,318,152)	0	236,768
1981	2,838,773	9,351,931	0	2,296,771	0	0	(3,842,971)	0	444,280
1982	2,424,920	8,352,207	0	1,498,620	0	0	(2,736,072)	0	539,245
1983	540,330	1,582,582	0	341,957	0	384,275	(5,478,830)	0	71,197
1984	1,129,131	3,448,759	0	622,123	0	0	(7,326,265)	(10,080)	240,134
1985	2,781,953	9,261,674	0	1,195,768	0	0	(10,477,567)	(56,570)	874,069
1986	4,999,949	16,956,023	(1,013,756)	2,359,599	0	0	(11,484,996)	0	1,269,590
1987	4,456,059	14,684,476	(1,026,193)	1,831,238	0	131,606	(10,814,483)	53,242	1,325,936
1988	5,126,229	16,819,159	(744,374)	2,375,784	0	0	(14,495,967)	0	1,421,097
1989	8,369,623	28,090,313	(766,443)	4,102,557	0	686,468	(18,532,961)	89,890	2,013,335
1990	13,630,073	48,369,421	(834,673)	6,504,876	0	89,075	(20,911,839)	147,163	2,857,409
1991	2,426,220	8,641,086	(269,625)	996,352	0	0	(4,884,013)	0	534,818
1992	2,642,161	8,854,347	(934,311)	1,167,670	0	156,847	(9,513,281)	(61,233)	717,740
1993	(582,580)	(2,649,876)	(56,908)	(253,503)	0	(34,870)	(7,502,549)	0	68,719
1994	5,276,189	18,302,830	(58,712)	2,572,826	0	0	(11,662,318)	147,989	1,203,006
1995	1,677,210	5,571,517	(1,242,189)	1,025,717	0	467,095	(9,742,248)	0	247,869
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	6,974,414	25,165,452	(5,129,549)	3,959,191	(4,429,149)	(4)	(25,857,029)	(4)	1,213,003
2001	34,173,054	126,270,629	(3,298,048)	18,939,291	(3,649,034)	(3)	(19,510,279)	(3)	6,409,868
2002	19,384,817	71,236,264	(4,926,146)	10,494,412	(5,255,302)	(2)	(24,676,762)	(2)	3,738,549
2003	24,628,818	90,650,820	(3,431,664)	14,446,597	(6,760,773)	(1)	(28,047,969)	(1)	4,382,986
2004	28,725,475	105,616,012	(6,227,543)	16,503,771	(7,691,607)	0	(31,246,141)	0	5,340,435
2005	40,812,565	145,423,383	(5,806,893)	25,819,125	(9,058,451)	0	(31,841,121)	0	6,092,742
2006	51,800,592	183,624,818	(6,969,004)	26,738,388	(10,453,501)	0	(32,268,838)	0	10,448,571
2007	51,175,944	181,486,127	(5,812,162)	26,526,010	(8,596,908)	0	(32,346,102)	0	10,384,817
2008	42,899,537	160,821,848	(5,495,710)	24,134,440	(6,481,691)	0	(31,028,710)	0	9,398,713
2009	45,285,895	169,800,016	(5,531,030)	25,448,640	(6,503,870)	0	(31,213,837)	0	9,914,820
2010	47,793,039	179,214,729	(5,533,738)	26,999,095	(6,507,330)	0	(31,360,935)	0	10,351,888
2011	47,720,852	178,942,517	(5,504,591)	26,887,632	(6,456,273)	0	(31,917,555)	0	10,303,232
2012	51,467,538	193,067,965	(5,841,382)	29,579,773	(6,979,250)	0	(32,733,675)	0	10,963,652
2013	56,374,851	211,469,573	(5,659,342)	32,231,640	(6,752,779)	0	(32,181,994)	0	11,929,145
2014	61,418,231	230,418,135	(5,689,464)	34,821,333	(6,778,567)	0	(32,652,921)	0	13,012,204
2015	62,343,999	233,890,986	(5,705,922)	35,604,921	(6,874,415)	0	(33,069,673)	0	13,123,927
2016	65,415,731	245,506,137	(5,929,267)	37,878,718	(7,198,648)	0	(33,787,544)	0	13,604,785
2017	62,548,281	234,676,268	(5,686,395)	35,792,820	(6,928,382)	0	(33,478,831)	0	13,123,335
2018	66,915,156	251,154,882	(6,059,575)	39,268,985	(7,711,447)	0	(34,274,510)	0	13,743,965
2019	69,081,403	259,300,909	(5,798,740)	38,810,812	(7,188,531)	0	(34,023,168)	0	14,771,515
2020	65,322,860	245,198,240	(5,896,377)	37,531,645	(7,382,993)	0	(34,867,438)	0	13,724,516
2021	65,336,828	245,255,006	(5,914,014)	37,571,888	(7,435,421)	0	(34,565,268)	0	13,701,878
2022	63,519,427	238,446,351	(5,950,117)	36,227,558	(7,439,500)	0	(34,197,751)	0	13,497,235
2023	64,350,962	241,584,287	(6,023,456)	36,952,262	(7,563,792)	0	(34,769,466)	0	13,568,412
2024	66,273,919	248,779,817	(5,848,520)	37,513,895	(7,353,751)	0	(34,529,737)	0	14,185,835
2025	66,114,129	248,186,671	(5,942,993)	37,694,922	(7,439,033)	0	(34,514,223)	0	14,001,913
2026	66,380,762	249,178,989	(5,913,642)	38,141,312	(7,481,195)	0	(34,967,350)	0	13,933,599
2027	66,037,178	247,916,443	(5,944,348)	37,601,401	(7,430,048)	0	(34,493,033)	0	14,053,518
2028	65,686,427	246,568,595	(5,884,952)	37,621,508	(7,395,999)	0	(34,699,308)	0	13,838,846
2029	65,343,958	245,303,935	(5,913,078)	37,208,839	(7,435,716)	0	(34,478,685)	0	13,904,853
2030	65,187,059	244,688,262	(5,868,415)	37,299,685	(7,371,350)	0	(34,550,947)	0	13,745,205
2031	65,035,227	244,150,747	(6,021,849)	37,453,021	(7,918,252)	0	(34,249,657)	0	13,803,564
2032	65,072,370	244,237,686	(5,811,420)	36,698,151	(7,577,971)	0	(34,034,143)	0	13,872,912
2033	70,775,744	265,728,601	(6,085,243)	40,958,986	(8,093,090)	0	(34,977,775)	0	14,834,168
2034	66,280,337	248,785,519	(5,862,567)	37,528,946	(7,734,953)	0	(33,878,803)	0	14,052,721
2035	72,430,914	272,182,045	(6,161,941)	38,966,404	(7,931,403)	0	(35,591,402)	0	17,077,364
<b>Total</b>	<b>2,076,306,522</b>	<b>7,729,305,017</b>	<b>(221,904,145)</b>	<b>1,177,082,794</b>	<b>(265,441,210)</b>	<b>3,765,480</b>	<b>(1,384,930,240)</b>	<b>377,756</b>	<b>436,100,045</b>

<sup>d</sup>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<sup>a</sup>

(Dollars)

Sheet 3 of 3

Calendar Year	California Aqueduct (continued)							Total (25)	Grand Total (26)
	Reach 29G	Reach 29H	Reach 29J	Reach 30	Reach 31A	Reach 33A			
	Warne Power Plant (19)	Pyramid Lake <sup>d</sup> (20)	Castaic Power Plant (21)	Castaic Lake <sup>d</sup> (22)	Las Perillas & Badger Hill Pumping Plants (23)	Devil's Den, Bluestone, & Polonio Pumping Plants (24)			
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	1,121,164	1,513,435	
1972	0	0	(211,144)	0	237,638	0	2,648,786	3,261,922	
1973	0	0	(1,057,564)	0	120,913	0	2,661,036	3,168,975	
1974	0	0	(1,547,884)	0	118,582	0	3,336,872	3,919,920	
1975	0	0	(2,455,461)	0	94,848	0	5,689,034	6,053,571	
1976	0	0	(2,827,557)	0	141,260	0	7,886,569	8,478,786	
1977	0	0	(3,734,462)	0	71,311	0	628,796	1,164,427	
1978	0	0	(1,542,479)	0	179,925	0	6,979,261	7,587,308	
1979	0	0	(2,773,323)	0	192,126	0	9,249,255	9,870,628	
1980	0	0	(3,408,863)	0	168,458	0	9,882,560	10,425,874	
1981	0	0	(2,834,322)	0	169,177	0	16,972,365	17,563,899	
1982	(783,626)	0	(3,463,971)	0	168,390	0	12,859,335	13,477,272	
1983	(495,041)	65,741	(3,260,764)	(3,176,515)	17,920	0	(7,537,336)	(7,452,772)	
1984	(2,027,345)	0	(2,336,089)	(2,151,129)	112,679	0	(4,435,858)	(4,159,493)	
1985	(5,930,176)	0	(15,698,638)	0	146,843	0	(10,322,391)	(9,861,183)	
1986	(5,579,301)	0	(11,072,448)	0	297,886	0	10,799,251	11,622,736	
1987	(6,304,539)	68,410	(11,562,269)	(41,897)	245,082	0	5,787,267	6,701,446	
1988	(6,993,235)	54,038	(12,292,638)	(211,526)	214,519	0	5,288,073	6,239,206	
1989	(8,235,085)	14,390	(14,514,469)	126,791	282,180	0	23,323,739	24,585,083	
1990	(11,011,065)	0	(20,116,506)	245,180	416,832	0	46,159,453	48,154,173	
1991	(3,600,495)	439,068	(6,579,194)	0	3,610	0	2,057,456	2,462,221	
1992	(5,508,780)	0	(9,493,502)	(935,650)	101,665	0	(5,857,012)	(5,509,966)	
1993	(4,525,955)	(13,291)	(9,266,007)	(446,527)	(111,306)	0	(24,723,671)	(24,907,971)	
1994	(5,813,538)	20,518	(10,547,914)	(86,993)	206,258	0	12,537,293	13,452,216	
1995	(1,934,202)	0	(4,049,615)	0	243,434	0	(443,026)	(142,956)	
1996	(4,248,531)	0	(8,457,232)	0	296,170	0	15,023,643	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	(9,464,490)	(4)	(17,958,033)	(4)	230,743	379,951	(8,910,345)	(7,934,719)	
2001	(7,987,833)	(3)	(13,981,232)	(3)	1,080,321	2,152,606	204,434,424	209,301,479	
2002	(10,286,902)	(2)	(18,455,024)	(2)	531,598	1,327,115	83,621,102	86,171,583	
2003	(10,281,922)	(1)	(17,307,974)	(1)	621,756	1,483,990	121,284,176	124,160,781	
2004	(12,033,953)	0	(20,022,179)	0	656,151	1,731,620	136,284,167	139,198,288	
2005	(8,778,816)	0	(14,421,980)	0	1,056,604	2,931,995	229,907,369	234,148,708	
2006	(16,309,949)	0	(28,977,233)	0	1,530,949	5,459,077	280,542,080	288,450,773	
2007	(16,296,315)	0	(29,059,918)	0	1,476,315	5,051,411	280,034,494	287,022,271	
2008	(14,507,225)	0	(24,545,133)	0	1,843,104	4,994,324	251,070,024	257,768,831	
2009	(14,900,792)	0	(25,177,263)	0	1,901,952	5,170,538	262,626,572	269,558,504	
2010	(14,914,915)	0	(25,329,274)	0	1,980,931	5,405,690	287,929,224	295,166,019	
2011	(14,960,251)	0	(25,322,444)	0	1,981,052	5,407,678	282,916,562	290,166,573	
2012	(15,288,636)	0	(26,034,786)	0	2,041,654	5,590,516	304,924,644	312,418,714	
2013	(15,404,762)	0	(26,188,689)	0	2,220,839	6,127,194	349,472,517	357,663,866	
2014	(15,861,697)	0	(26,885,680)	0	2,369,829	6,573,445	377,257,747	386,035,829	
2015	(15,775,632)	0	(26,725,122)	0	2,402,515	6,671,338	388,467,566	397,396,656	
2016	(16,209,834)	0	(27,483,729)	0	2,425,070	6,738,902	414,004,786	423,044,400	
2017	(15,845,285)	0	(26,882,764)	0	2,392,868	6,642,444	389,842,224	398,780,049	
2018	(16,059,955)	0	(27,317,012)	0	2,456,423	6,832,802	417,392,466	426,602,332	
2019	(16,960,298)	0	(28,971,803)	0	2,512,296	7,000,149	436,703,271	446,156,997	
2020	(16,621,707)	0	(28,278,663)	0	2,385,337	6,619,888	405,293,714	414,274,478	
2021	(16,619,299)	0	(28,293,730)	0	2,381,743	6,609,120	404,630,697	413,601,463	
2022	(16,881,784)	0	(28,748,155)	0	2,310,883	6,396,886	388,038,707	396,731,251	
2023	(16,877,276)	0	(28,740,654)	0	2,323,473	6,434,601	396,593,377	405,335,359	
2024	(17,039,277)	0	(29,020,319)	0	2,405,617	6,680,631	414,401,245	423,465,759	
2025	(16,891,876)	0	(28,766,225)	0	2,395,172	6,649,346	405,519,776	414,543,274	
2026	(16,697,912)	0	(28,432,025)	0	2,411,017	6,696,809	417,943,010	427,028,724	
2027	(17,097,441)	0	(29,117,063)	0	2,375,925	6,591,697	409,020,909	417,968,832	
2028	(16,717,327)	0	(28,463,377)	0	2,391,831	6,639,345	408,707,291	417,717,674	
2029	(17,008,792)	0	(28,967,863)	0	2,362,455	6,551,356	403,270,438	412,165,475	
2030	(16,682,357)	0	(28,405,281)	0	2,380,821	6,606,366	405,238,073	414,205,225	
2031	(16,856,845)	0	(28,724,743)	0	2,349,409	6,512,282	399,109,123	407,952,940	
2032	(16,718,855)	0	(28,570,422)	0	2,394,544	6,647,468	403,453,501	412,474,535	
2033	(16,887,331)	0	(28,923,040)	0	2,510,749	6,995,516	444,167,047	453,644,351	
2034	(16,740,700)	0	(28,616,298)	0	2,421,607	6,728,526	411,371,447	420,498,743	
2035	(20,729,538)	0	(35,517,279)	0	2,373,871	6,585,544	441,840,171	450,780,031	
<b>Total</b>	<b>(635,253,303)</b>	<b>(282,441)</b>	<b>(1,129,779,577)</b>	<b>(8,787,977)</b>	<b>76,929,548</b>	<b>199,973,696</b>	<b>12,181,202,271</b>	<b>12,475,794,775</b>	

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 <sup>a, f</sup>	Total
	Capital Costs <sup>a</sup> (1)	Capital Cost Credits <sup>b</sup> (2)	Operating Costs <sup>c</sup> (3)	Application of Oroville Power Revenues to: Capital Costs <sup>d</sup> (4)      Operating Costs <sup>e</sup> (5)			
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	72,477,985
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	(1,007,000)	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	3,706,236	0	53,230,282	(14,650,000)	(8,155,000)	1,193,198	35,324,716
1999	5,754,178	0	54,066,030	(14,650,000)	(9,198,000)	9,686	35,981,894
2000	8,942,335	0	56,070,580	(14,650,000)	(10,452,028)	13,491	39,924,378
2001	7,736,163	0	75,223,898	(14,650,000)	(15,231,433)	23,866	53,102,494
2002	13,368,343	0	67,657,865	(14,650,000)	(22,034,770)	24,426	44,365,864
2003	14,673,235	0	77,583,053	(14,650,000)	(30,910,299)	9,833	46,705,822
2004	12,278,317	0	91,262,868	(14,650,000)	(34,155,125)	7,548	54,743,608
2005	14,435,384	0	65,388,725	(14,650,000)	(20,073,300)	3,129,000	48,229,809
2006	18,958,950	0	61,623,898	(14,650,000)	(15,476,800)	3,129,000	53,585,048
2007	19,546,958	0	65,487,224	(14,650,000)	(11,207,088)	3,129,000	62,306,094
2008	6,908,286	0	57,059,476	(14,650,000)	(8,380,112)	3,129,000	44,066,650
2009	6,058,286	0	57,043,330	(14,650,000)	(8,380,112)	3,129,000	43,200,504
2010	395,480	0	56,257,014	(14,650,000)	(8,380,112)	3,129,000	36,751,382
2011	395,480	0	55,303,981	(14,650,000)	(8,380,112)	0	32,669,349
2012	395,480	0	53,861,673	(14,650,000)	(8,380,112)	0	31,227,041
2013	395,480	0	56,846,834	(14,650,000)	(8,380,112)	0	34,212,202
2014	395,480	0	55,410,551	(14,650,000)	(8,380,112)	0	32,775,919
2015	395,480	0	53,504,908	(14,650,000)	(8,380,112)	0	30,870,276
2016	395,480	0	57,050,235	(14,650,000)	(8,380,112)	0	34,415,603
2017	395,480	0	56,262,199	(14,650,000)	(8,380,112)	0	33,627,567
2018	395,480	0	56,683,361	(14,650,000)	(8,380,112)	0	34,048,729
2019	395,480	0	55,588,026	(14,650,000)	(8,380,112)	0	32,953,394
2020	395,480	0	53,228,289	(14,650,000)	(8,380,112)	0	30,593,657
2021	395,480	0	57,217,510	(14,650,000)	(8,380,112)	0	34,582,878
2022	395,480	0	56,035,730	(14,650,000)	(8,380,112)	0	33,401,098
2023	395,480	0	53,188,683	(14,650,000)	(8,380,112)	0	30,554,051
2024	395,480	0	54,091,271	(14,650,000)	(8,380,112)	0	31,456,639
2025	395,480	0	58,428,104	(14,650,000)	(8,380,112)	0	35,793,472
2026	395,480	0	55,910,967	(14,650,000)	(8,380,112)	0	33,276,335
2027	395,480	0	52,785,036	(14,650,000)	(8,380,112)	0	30,150,404
2028	395,480	0	53,223,347	(14,650,000)	(8,380,112)	0	30,588,715
2029	395,480	0	59,006,216	(14,650,000)	(8,380,112)	0	36,371,584
2030	395,480	0	54,934,738	(14,650,000)	(8,380,112)	0	32,300,106
2031	395,480	0	53,131,895	(14,650,000)	(8,380,112)	0	30,497,263
2032	395,480	0	52,661,719	(14,650,000)	(8,380,112)	0	30,027,087
2033	395,480	0	57,471,287	(14,650,000)	(8,380,112)	0	34,836,655
2034	395,480	0	54,361,598	(14,650,000)	(8,380,112)	0	31,726,966
2035	395,480	0	54,883,250	(14,650,000)	(8,380,112)	0	32,248,618
<b>Total</b>	<b>1,089,645,257</b>	<b>(11,528,320)</b>	<b>2,878,130,450</b>	<b>(1,002,213,000)</b>	<b>(552,638,722)</b>	<b>75,859,905</b>	<b>2,477,255,570</b>

<sup>a</sup> Reimbursed through the capital cost component of the Delta Water Charge.<sup>b</sup> Negotiated settlements as to the magnitude of SWP planning costs from 1952 through 1978.<sup>c</sup> Reimbursed through the minimum OMP&R component of the Delta Water Charge. Credits for Gianelli power generation are reflected in these net costs.<sup>d</sup> Revenues credited through the capital cost component of the Delta Water Charge.<sup>e</sup> Revenues credited through the minimum OMP&R component of the Delta Water Charge.<sup>f</sup> Under amendments of Articles 22(e) and 22(g), planning and pre-operating costs of additional Project Conservation Facilities incurred through the previous year (2004) are reflected in the Delta Water Charge.

**Table B-14**  
**Capital Costs of Transportation Facilities Allocated to Each Contractor**  
(Dollars)

Sheet 1 of 4

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency <sup>a</sup> (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	3,504,755	3,865,965
1993	122,423	128,634	251,057	129,344	125,312	342,416	597,072	1,170,649	11,997,954	13,168,603
1994	71,274	83,270	154,544	46,042	58,050	229,649	333,741	4,260,734	46,401,596	50,662,330
1995	30,605	29,271	59,876	97,808	97,063	257,484	452,355	12,268,787	155,255,849	167,524,636
1996	20,275	19,069	39,344	49,854	48,056	127,493	225,403	11,284,548	145,409,409	156,693,957
1997	20,039	107,784	127,823	82,598	78,996	209,517	371,111	3,184,506	38,158,718	41,343,224
1998	17,309	21,447	38,756	27,114	23,949	62,646	113,709	883,014	10,563,182	11,446,196
1999	67,542	106,333	173,875	74,358	73,714	208,601	356,673	929,883	9,605,029	10,534,912
2000	15,937	37,603	53,540	27,391	28,767	80,016	136,174	489,386	5,542,764	6,032,150
2001	4,469	11,525	15,994	140,023	269,536	1,854,608	2,264,167	80,654	631,609	712,263
2002	17,782	43,709	61,491	804,490	1,188,416	5,872,984	7,865,890	71,502	468,992	540,494
2003	49,553	15,819	65,372	1,155,801	1,329,380	4,612,380	7,097,561	15,577	279,413	294,990
2004	139,435	5,789	145,224	857,555	803,646	5,195,812	6,857,013	13,524	108,984	122,508
2005	9,003	19,469	28,472	1,231,464	1,139,020	4,118,146	6,488,630	95,277	918,030	1,013,307
2006	1,389,499	32,109	1,421,608	1,954,879	1,822,025	4,348,360	8,125,264	138,338	1,270,183	1,408,521
2007	1,389,844	32,972	1,422,816	1,688,120	1,592,542	3,801,720	7,082,382	134,607	1,271,388	1,405,995
2008	3,430	4,420	7,850	422,360	408,052	972,859	1,803,271	107,353	1,181,825	1,289,178
2009	3,430	4,420	7,850	4,803	4,497	11,232	20,532	107,353	1,181,825	1,289,178
2010	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>42,117,351</b>	<b>50,563,735</b>	<b>92,681,086</b>	<b>16,739,891</b>	<b>18,874,729</b>	<b>64,978,426</b>	<b>100,593,046</b>	<b>39,585,483</b>	<b>448,333,036</b>	<b>487,918,519</b>

Note: Allocated capital costs as a result of permanent water transfers under Monterey are not reflected on this Table.

<sup>a</sup>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)

Sheet 2 of 4

Calendar Year	San Joaquin Valley Area									Total (20)
	Dudley Ridge Water District (11)	Empire West Side Irrigation District <sup>b</sup> (12)	Future Contractor San Joaquin Valley (13)	Kern County Water Agency			County of Kings (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	
				Municipal and Industrial (14)	Municipal and Industrial <sup>c</sup> (15)	Agricultural (16)				
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	17,632	900	7,790	35,687	5,017	428,254	920	777	35,867	532,844
2002	74,060	3,804	15,942	132,582	20,004	1,494,264	3,891	724	151,158	1,896,429
2003	(51,492)	(2,691)	(5,668)	(76,971)	(13,187)	(832,512)	(2,752)	330	(106,022)	(1,090,965)
2004	5,522	284	1,927	12,149	1,489	130,963	291	1,437	11,282	165,344
2005	32,015	1,653	6,725	60,156	8,486	617,515	1,691	434	65,510	794,185
2006	67,158	3,473	12,993	117,688	17,724	1,265,323	3,553	712	137,536	1,626,160
2007	46,517	2,397	10,662	84,863	12,387	919,346	2,453	731	95,104	1,174,460
2008	1,474	75	300	2,856	400	31,627	77	110	2,991	39,910
2009	1,474	75	300	2,856	400	31,627	77	110	2,991	39,910
2010	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>5,787,373</b>	<b>(45,116)</b>	<b>1,910,077</b>	<b>13,321,545</b>	<b>1,698,805</b>	<b>148,060,544</b>	<b>294,612</b>	<b>263,145</b>	<b>11,624,228</b>	<b>182,915,213</b>

<sup>b</sup>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.

<sup>c</sup>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)

Sheet 3 of 4

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (21)	Castaic Lake Water Agency <sup>d</sup> (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	1,959,986	530,656
1996	299,764	206,742	110,520	44,965	182,270	4,885	211,872	35,808	4,004,066	972,829
1997	438,898	249,699	103,382	24,640	170,497	7,397	214,534	54,452	2,819,566	397,103
1998	231,375	201,318	61,853	40,974	102,009	3,938	104,688	29,174	3,547,590	302,471
1999	272,187	177,666	88,999	38,450	146,777	4,878	169,400	35,895	5,453,212	228,739
2000	138,739	77,710	54,773	23,902	90,332	2,660	103,134	19,109	13,635,919	171,058
2001	128,753	43,584	50,665	15,634	83,557	2,951	101,850	20,674	19,270,173	95,921
2002	165,050	106,305	34,254	11,387	56,492	2,415	67,803	18,275	9,602,339	126,093
2003	(50,016)	(14,096)	2,639	2,113	4,351	(882)	3,353	(6,544)	3,747,327	26,520
2004	45,421	30,356	16,149	4,528	26,633	820	32,803	6,053	2,029,472	32,299
2005	226,011	182,932	55,727	24,349	91,909	3,813	100,941	28,510	693,312	116,321
2006	289,091	255,350	88,458	36,013	145,891	4,885	161,251	36,502	741,462	168,363
2007	245,050	312,127	76,678	24,594	126,460	4,161	148,482	31,028	536,585	117,925
2008	6,244	36,508	6,548	2,548	10,800	102	11,667	755	45,660	10,979
2009	6,244	28,196	6,548	2,548	10,800	102	11,667	755	45,660	10,979
2010	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>51,974,368</b>	<b>33,332,638</b>	<b>14,819,396</b>	<b>4,758,993</b>	<b>24,440,387</b>	<b>932,521</b>	<b>29,091,346</b>	<b>6,839,172</b>	<b>156,693,255</b>	<b>26,403,049</b>

<sup>d</sup>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)

Sheet 4 of 4

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (39)	Grand Total (40)
	San Geronio Pass Water Agency (31)	Metropolitan Water District of Southern California <sup>a</sup> (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	155,360,662	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	69,080,338	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	35,041,234
1993	646,980	29,471,748	105,693	37,283,390	0	0	30	30	59,324	53,921,791
1994	394,936	16,392,019	50,941	21,180,325	0	0	14	14	34,208	74,225,376
1995	331,399	16,078,395	72,214	20,450,220	0	0	3	3	42,395	191,525,105
1996	1,100,219	23,237,696	49,282	30,460,918	0	0	0	0	21,388	188,829,047
1997	1,987,864	13,530,777	72,335	20,071,144	0	0	3	3	34,976	65,660,156
1998	3,351,560	11,234,515	65,270	19,276,735	0	0	7	7	11,162	32,620,229
1999	6,135,848	8,999,050	55,105	21,806,206	0	0	2	2	34,683	35,099,559
2000	17,011,956	5,386,696	23,952	36,739,940	0	0	0	0	16,880	43,652,355
2001	24,660,997	2,944,670	12,652	47,432,081	0	0	0	0	67,794	51,025,143
2002	11,951,414	5,253,452	34,427	27,429,706	0	0	0	0	380,158	38,174,168
2003	4,685,949	3,859,566	(5,032)	12,255,248	0	0	0	0	589,518	19,211,724
2004	2,388,394	3,919,616	10,309	8,542,853	0	0	0	0	322,349	16,155,291
2005	387,140	8,649,358	63,778	10,624,101	0	0	0	0	420,497	19,369,192
2006	104,905	12,946,628	88,131	15,066,930	0	0	0	0	673,846	28,322,329
2007	73,329	14,311,780	99,925	16,108,124	0	0	0	0	591,479	27,785,256
2008	6,902	1,186,273	13,375	1,338,361	0	0	0	0	149,216	4,627,786
2009	6,902	963,152	10,308	1,103,861	0	0	0	0	1,863	2,463,194
2010	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>88,504,849</b>	<b>1,487,849,320</b>	<b>11,185,574</b>	<b>1,936,824,868</b>	<b>0</b>	<b>0</b>	<b>341,067</b>	<b>341,067</b>	<b>10,555,357</b>	<b>2,811,829,156</b>

<sup>a</sup>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<sup>a, b, c</sup>**  
(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	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	507,795	361,935	1,309,946	2,179,676	104,160	208,037	312,197
1969	165,289	0	165,289	609,926	397,386	1,411,701	2,419,013	122,043	242,426	364,469
1970	169,077	0	169,077	644,246	412,322	1,450,660	2,507,228	125,963	250,808	376,771
1971	171,286	0	171,286	651,054	415,439	1,457,564	2,524,057	128,402	256,371	384,773
1972	172,649	0	172,649	652,338	416,368	1,461,847	2,530,553	129,861	260,482	390,343
1973	173,649	31,366	205,015	653,659	417,018	1,465,086	2,535,763	130,843	263,040	393,883
1974	176,527	32,938	209,465	654,633	417,636	1,467,092	2,539,361	132,015	265,901	397,916
1975	184,973	36,291	221,264	656,909	418,878	1,470,816	2,546,603	133,290	269,028	402,318
1976	189,650	40,836	230,486	658,221	419,683	1,472,924	2,550,828	134,041	272,155	406,196
1977	192,592	45,096	237,688	660,871	421,449	1,478,570	2,560,827	135,754	278,799	414,553
1978	195,860	49,178	245,038	664,427	423,747	1,485,299	2,573,473	141,271	292,281	433,552
1979	199,390	53,340	252,730	669,705	427,108	1,494,207	2,591,020	142,362	297,569	439,931
1980	209,132	67,748	276,880	673,474	429,296	1,499,843	2,602,613	143,530	303,969	447,499
1981	222,599	87,408	310,007	683,598	435,629	1,515,357	2,634,584	148,789	327,544	476,333
1982	234,191	106,918	341,109	681,456	434,108	1,512,014	2,627,578	148,004	320,657	468,661
1983	262,160	151,259	413,419	682,671	434,532	1,513,393	2,630,596	148,213	317,658	465,871
1984	326,072	224,245	550,317	693,750	441,230	1,530,671	2,665,651	149,853	323,275	473,128
1985	455,836	364,305	820,141	706,142	448,410	1,548,594	2,703,146	151,658	328,761	480,419
1986	819,636	692,479	1,512,115	708,013	449,390	1,551,318	2,708,721	152,545	332,779	485,324
1987	1,360,688	1,559,243	2,919,931	710,569	451,007	1,555,828	2,717,404	154,805	348,472	503,277
1988	1,771,651	2,208,121	3,979,772	714,765	453,514	1,562,985	2,731,264	161,346	417,591	578,937
1989	1,891,484	2,433,160	4,324,644	723,635	459,332	1,578,655	2,761,622	169,453	494,247	663,700
1990	1,955,330	2,514,151	4,469,481	731,668	464,692	1,592,216	2,788,576	177,387	557,384	734,771
1991	1,978,582	2,557,403	4,535,985	748,776	476,459	1,625,032	2,850,267	189,050	639,235	828,285
1992	1,983,860	2,562,121	4,545,981	779,375	496,722	1,675,047	2,951,144	204,822	754,678	959,500
1993	1,986,897	2,565,427	4,552,324	793,734	505,773	1,698,585	2,998,092	224,056	941,300	1,165,356
1994	1,993,467	2,572,330	4,565,797	804,165	512,498	1,716,961	3,033,624	286,878	1,585,162	1,872,040
1995	1,997,323	2,576,836	4,574,159	808,640	515,638	1,729,386	3,053,664	517,412	4,095,799	4,613,211
1996	1,998,994	2,578,433	4,577,427	816,545	520,936	1,743,439	3,080,920	1,187,010	12,569,247	13,756,257
1997	2,000,110	2,579,484	4,579,594	820,595	523,583	1,750,461	3,094,639	1,808,546	20,578,178	22,386,724
1998	2,001,225	2,585,478	4,586,703	827,325	527,976	1,762,113	3,117,414	1,985,645	22,700,288	24,685,933
1999	2,002,197	2,586,683	4,588,880	829,543	529,321	1,765,633	3,124,497	2,035,255	23,293,757	25,329,012
2000	2,006,033	2,592,721	4,598,754	986,959	533,508	1,777,480	3,297,947	2,088,064	23,839,244	25,927,308
2001	2,325,254	2,780,540	5,105,794	1,114,905	535,160	1,782,076	3,432,141	2,116,176	24,157,637	26,273,813
2002	2,325,551	2,781,244	5,106,795	1,129,256	550,831	1,889,904	3,569,991	2,120,866	24,194,359	26,315,225
2003	2,326,753	2,783,916	5,110,669	1,213,810	620,816	2,235,757	4,070,383	2,125,076	24,221,978	26,347,054
2004	2,330,117	2,784,903	5,115,020	1,346,627	700,169	2,511,079	4,557,875	2,126,006	24,238,656	26,364,662
2005	2,338,689	2,785,269	5,123,958	1,423,354	748,835	2,825,719	4,997,908	2,126,825	24,245,256	26,372,081
2006	2,339,324	2,786,528	5,125,852	1,544,412	818,871	3,078,935	5,442,218	2,132,683	24,301,704	26,434,387
2007	2,437,968	2,788,633	5,226,602	1,740,555	932,735	3,350,678	6,023,468	2,141,329	24,381,081	26,522,410
2008	2,538,254	2,790,834	5,329,187	1,912,390	1,033,990	3,592,394	6,538,774	2,149,887	24,461,917	26,611,804
2009	2,538,609	2,791,146	5,329,755	1,956,333	1,060,415	3,655,396	6,672,144	2,156,839	24,538,452	26,695,291
2010	2,538,868	2,791,464	5,330,332	1,956,851	1,060,712	3,656,138	6,673,701	2,163,929	24,616,501	26,780,430
2011	2,538,868	2,791,464	5,330,332	1,956,851	1,060,712	3,656,138	6,673,701	2,163,929	24,616,501	26,780,430
2012	2,538,868	2,791,464	5,330,332	1,956,851	1,060,712	3,656,138	6,673,701	2,163,929	24,616,501	26,780,430
2013	2,538,868	2,791,464	5,330,332	1,783,388	955,039	3,291,311	6,029,738	2,163,929	24,616,501	26,780,430
2014	2,538,868	2,791,464	5,330,332	1,713,433	889,784	3,126,102	5,729,319	2,157,233	24,594,834	26,752,067
2015	2,538,868	2,791,464	5,330,332	1,638,113	800,769	2,756,767	5,195,649	2,150,173	24,580,471	26,730,644
2016	2,518,295	2,791,464	5,309,759	1,599,282	769,904	2,582,868	4,952,054	2,137,405	24,555,151	26,692,556
2017	2,491,573	2,791,464	5,283,037	1,525,021	739,723	2,468,519	4,733,263	2,107,460	24,498,238	26,605,698
2018	2,400,763	2,791,464	5,192,227	1,405,450	698,778	2,346,192	4,450,420	2,059,769	24,408,464	26,468,233
2019	2,351,012	2,791,464	5,142,476	1,299,973	663,326	2,244,437	4,207,736	2,041,886	24,374,075	26,415,961
2020	2,346,689	2,791,464	5,138,153	1,264,200	648,390	2,205,478	4,118,068	2,037,966	24,365,692	26,403,658
2021	2,344,157	2,791,464	5,135,621	1,257,009	645,273	2,198,574	4,100,856	2,035,527	24,360,129	26,395,656
2022	2,342,597	2,791,464	5,134,061	1,255,644	644,345	2,194,291	4,094,280	2,034,068	24,356,019	26,390,087
2023	2,341,454	2,757,932	5,099,386	1,254,237	643,695	2,191,051	4,088,983	2,033,086	24,353,460	26,386,546
2024	2,338,174	2,756,297	5,094,471	1,253,183	643,077	2,189,046	4,085,306	2,031,914	24,350,599	26,382,513
2025	2,328,558	2,752,720	5,081,278	1,250,849	641,834	2,185,322	4,078,005	2,030,639	24,347,473	26,378,112
2026	2,323,214	2,747,967	5,071,181	1,249,378	641,029	2,183,214	4,073,621	2,029,888	24,344,345	26,374,233
2027	2,319,843	2,743,532	5,063,375	1,246,397	639,263	2,177,631	4,063,291	2,028,175	24,337,702	26,365,877
2028	2,316,103	2,739,273	5,055,376	1,242,397	636,966	2,170,838	4,050,201	2,022,558	24,324,220	26,346,878
2029	2,312,066	2,734,905	5,046,971	1,236,410	633,604	2,161,931	4,031,945	2,021,567	24,318,932	26,340,499
2030	2,300,909	2,719,443	5,020,352	1,232,254	631,417	2,156,295	4,019,966	2,020,399	24,312,532	26,332,931
2031	2,285,493	2,698,377	4,983,870	1,220,812	625,084	2,140,781	3,986,677	2,015,140	24,288,956	26,304,096
2032	2,272,196	2,677,432	4,949,628	1,223,337	626,604	2,144,123	3,994,064	2,015,925	24,295,844	26,311,769
2033	2,240,136	2,629,981	4,870,117	1,222,140	626,180	2,142,745	3,991,065	2,015,716	24,298,843	26,314,559
2034	2,167,040	2,553,365	4,720,405	1,209,890	619,482	2,125,467	3,954,839	2,014,076	24,293,226	26,307,302
2035	2,018,897	2,407,062	4,425,959	1,196,130	612,303	2,107,544	3,915,977	2,012,271	24,287,740	26,300,011
<b>Total</b>	<b>114,722,550</b>	<b>132,735,329</b>	<b>247,457,879</b>	<b>75,005,800</b>	<b>42,000,692</b>	<b>145,066,662</b>	<b>262,073,154</b>	<b>86,800,115</b>	<b>971,917,419</b>	<b>1,058,717,534</b>

<sup>a</sup>Unadjusted for prior overpayments or underpayments of charges.  
<sup>b</sup>Determined at the current Project Interest Rate of 4.610 percent per annum.  
<sup>c</sup>Reflects the transfers of permanent Aqueduct capacity among contractors.

Table B-15

## Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Sheet 2 of 4

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 (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	Total (20)
				Municipal and Industrial (14)	Municipal and Industrial <sup>d</sup> (15)	Agricultural (16)				
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	79,598
1966	0	0	12,039	120,256	17,073	0	0	0	0	149,369
1967	0	0	26,257	233,262	34,350	0	0	0	0	293,868
1968	77,079	1,731	48,950	335,771	48,966	421,881	8,504	4,697	64,960	1,012,539
1969	77,214	5,193	57,418	392,005	52,536	866,394	9,011	5,106	245,783	1,710,659
1970	84,626	5,193	59,224	423,404	53,922	1,053,796	9,261	5,310	181,885	1,876,620
1971	96,484	5,193	60,329	444,522	54,712	1,399,630	9,402	5,719	193,551	2,269,543
1972	107,803	5,193	60,945	454,227	55,075	2,095,826	9,470	10,959	597,091	3,396,588
1973	118,584	5,193	61,370	458,449	55,248	2,417,213	9,500	6,331	230,946	3,362,834
1974	179,978	5,193	61,890	460,485	55,349	2,706,918	9,518	7,089	383,333	3,869,752
1975	218,598	5,193	62,452	462,798	55,490	3,242,147	9,542	7,304	457,407	4,520,931
1976	166,669	5,193	62,719	464,655	55,679	3,495,002	9,577	8,249	327,217	4,594,960
1977	163,861	5,193	63,362	467,359	55,965	3,829,518	9,621	7,557	312,862	4,915,298
1978	175,180	0	65,796	469,216	56,156	4,256,832	9,644	7,965	335,665	5,376,454
1979	207,759	5,193	66,111	471,978	56,491	4,674,186	9,705	8,170	377,776	5,877,369
1980	220,997	5,193	66,399	474,721	56,828	5,100,594	9,773	11,642	380,208	6,326,355
1981	220,997	5,193	67,986	491,115	58,770	5,582,226	10,164	8,782	403,012	6,848,245
1982	220,997	5,193	67,996	488,835	58,707	6,026,741	10,149	9,191	425,283	7,313,092
1983	231,238	5,193	68,332	493,076	59,377	6,532,816	10,283	7,700	50,631	7,458,646
1984	243,096	5,193	68,950	498,702	60,083	6,853,301	10,424	9,803	332,012	8,081,565
1985	254,416	5,193	69,678	506,586	61,243	7,297,816	10,657	10,008	241,536	8,457,133
1986	265,735	5,193	69,966	508,983	61,587	7,425,849	10,725	10,416	515,430	8,873,885
1987	277,055	5,193	70,471	512,652	62,116	8,187,748	10,828	10,620	537,702	9,674,385
1988	288,374	5,193	70,832	515,513	62,526	8,606,913	10,906	11,029	559,974	10,131,260
1989	299,693	5,193	71,717	519,169	63,150	8,909,291	11,056	11,437	582,775	10,473,481
1990	155,506	5,193	73,153	537,527	65,389	9,223,438	11,483	11,642	628,380	10,711,712
1991	287,894	5,193	75,796	566,573	69,966	9,223,438	12,296	11,642	628,380	10,881,179
1992	311,013	5,193	78,990	597,260	74,817	9,223,438	13,275	11,642	628,380	10,944,008
1993	311,013	5,193	80,482	610,123	76,657	9,223,438	13,626	11,642	628,380	10,960,553
1994	311,013	5,193	82,105	619,494	77,936	9,223,438	13,866	11,642	628,380	10,973,067
1995	311,013	5,193	83,398	626,231	78,890	9,223,438	14,050	11,642	628,380	10,982,235
1996	287,674	5,193	87,367	635,384	80,221	9,539,719	14,287	11,642	628,380	11,289,868
1997	287,674	5,193	90,231	639,177	80,707	9,605,002	14,366	11,642	628,380	11,362,372
1998	287,674	5,193	92,940	652,602	82,732	8,583,419	14,767	11,642	628,380	10,359,349
1999	287,674	5,193	94,235	659,484	83,776	8,583,419	14,976	11,642	628,380	10,368,779
2000	287,674	5,193	95,758	667,712	85,022	7,941,905	15,223	11,642	628,380	9,738,509
2001	287,674	5,193	96,322	670,334	85,367	7,814,040	15,286	11,642	628,380	9,614,238
2002	309,498	5,193	96,774	672,409	85,659	7,814,040	15,339	11,642	590,209	9,600,763
2003	309,498	5,193	97,713	680,217	86,837	7,814,040	15,568	11,642	588,017	9,608,725
2004	309,498	5,193	97,375	675,622	86,050	7,802,149	42,667	11,642	506,773	9,536,969
2005	309,498	5,193	97,492	676,358	86,140	7,802,149	42,685	11,642	506,773	9,537,930
2006	332,837	5,193	97,905	680,057	86,662	8,174,290	42,789	11,642	506,773	9,938,147
2007	332,836	5,193	98,717	687,411	87,769	8,174,289	43,011	11,642	506,773	9,947,641
2008	332,836	5,193	99,395	692,807	88,557	8,174,289	43,167	11,642	506,773	9,954,659
2009	332,836	5,193	99,414	692,992	88,583	8,174,289	43,172	11,642	506,773	9,954,894
2010	332,836	5,193	99,434	693,181	88,609	8,174,289	43,177	11,642	506,773	9,955,134
2011	332,836	5,193	99,434	693,181	88,609	8,174,289	43,177	11,642	506,773	9,955,134
2012	332,836	5,193	99,434	693,181	88,609	8,174,289	43,177	11,642	506,773	9,955,134
2013	332,836	5,193	99,434	693,181	88,609	8,174,289	43,177	11,642	506,773	9,955,134
2014	332,836	5,193	96,710	693,181	88,609	8,174,289	43,177	11,642	506,773	9,952,410
2015	332,836	5,193	93,405	628,896	79,325	8,174,289	43,177	11,642	506,773	9,875,536
2016	332,836	5,193	87,395	572,924	71,536	8,174,289	43,177	11,642	506,773	9,805,765
2017	332,836	5,193	73,177	459,919	54,259	8,174,289	43,177	11,642	506,773	9,661,265
2018	332,836	5,193	50,484	357,410	39,643	8,174,289	34,673	11,642	506,773	9,512,943
2019	332,836	5,193	42,016	301,176	36,074	8,174,289	34,166	11,642	506,773	9,444,165
2020	332,836	5,193	40,210	269,777	34,687	8,174,289	33,916	11,642	506,773	9,409,323
2021	332,836	5,193	39,105	248,658	33,897	8,174,289	33,774	11,642	506,773	9,386,167
2022	332,836	5,193	38,489	238,953	33,535	8,174,289	33,707	11,642	506,773	9,375,417
2023	332,836	5,193	38,064	234,732	33,361	8,174,289	33,677	11,642	506,773	9,370,567
2024	332,836	5,193	37,544	232,696	33,260	8,174,289	33,659	11,642	506,773	9,367,892
2025	332,836	5,193	36,982	230,383	33,119	8,174,289	33,635	11,642	506,773	9,364,852
2026	332,836	5,193	36,715	228,526	32,930	8,174,289	33,599	11,642	506,773	9,362,503
2027	332,836	5,193	36,072	225,822	32,644	8,174,289	33,556	11,642	506,773	9,358,827
2028	332,836	5,193	33,638	223,964	32,453	8,174,289	33,533	11,642	506,773	9,354,321
2029	332,836	5,193	33,324	221,203	32,118	8,174,289	33,472	11,642	506,773	9,350,850
2030	332,836	5,193	33,035	218,459	31,781	8,174,289	33,404	11,642	506,773	9,347,412
2031	332,836	5,193	31,448	202,065	29,839	8,174,289	33,013	11,642	506,773	9,327,098
2032	332,836	5,193	31,438	204,346	29,902	8,174,289	33,028	11,642	506,773	9,329,447
2033	332,836	5,193	31,102	200,104	29,232	8,174,289	32,894	11,642	506,773	9,324,065
2034	332,836	5,193	30,484	194,478	28,526	8,174,289	32,753	11,642	506,773	9,316,974
2035	332,836	5,193	29,756	186,594	27,367	8,174,289	32,520	11,642	506,773	9,306,970
<b>Total</b>	<b>18,833,002</b>	<b>344,469</b>	<b>4,683,834</b>	<b>33,018,791</b>	<b>4,190,953</b>	<b>484,851,819</b>	<b>1,622,014</b>	<b>720,616</b>	<b>32,672,561</b>	<b>580,938,059</b>

<sup>d</sup>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)

Sheet 3 of 4

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (21)	Castaic Lake Water Agency (22)	Coachella Valley Water District (23)	Crestline-Lake Arrowhead Water Agency (24)	Desert Water Agency (25)	Littlerock Creek Irrigation District (26)	Mojave Water Agency (27)	Palmdale Water District (28)	San Bernardino Valley Municipal Water District (29)	San Gabriel Valley Municipal Water District (30)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,321	0	0	0	0	0	0	51,729	0	0
1964	62,868	27,447	16,292	4,370	37,158	1,143	28,437	8,205	82,811	34,987
1965	118,604	53,007	28,469	7,194	40,770	2,082	50,317	15,222	135,068	35,344
1966	215,783	101,265	51,201	12,478	73,153	3,753	90,398	27,679	232,502	61,465
1967	417,481	210,814	98,936	23,472	141,411	7,284	175,176	54,023	433,500	115,574
1968	679,349	419,662	165,044	38,551	231,908	11,781	286,735	87,293	729,849	194,527
1969	986,622	623,337	249,458	57,301	345,362	17,249	426,608	127,220	1,136,415	302,649
1970	1,288,451	780,176	352,449	84,796	487,337	23,427	592,646	171,297	1,691,461	443,708
1971	1,549,446	947,119	471,344	120,210	659,595	28,845	790,211	208,821	2,395,028	619,778
1972	1,683,231	1,056,477	533,729	137,454	749,598	31,306	897,195	226,497	2,825,630	720,983
1973	1,733,737	1,070,910	553,568	142,143	777,464	32,281	931,557	233,340	2,963,053	756,530
1974	1,752,133	1,117,481	562,788	146,331	790,785	32,602	943,964	235,688	3,052,719	777,084
1975	1,775,561	1,131,795	577,380	150,105	812,554	33,017	970,896	238,700	3,135,093	798,777
1976	1,788,692	1,144,354	587,955	152,796	828,818	33,269	991,109	240,432	3,213,203	819,552
1977	1,800,992	1,157,359	595,518	154,692	840,304	33,485	1,005,589	242,010	3,262,212	832,585
1978	1,811,326	1,176,286	600,570	156,009	847,980	33,676	1,015,355	243,377	3,292,334	840,506
1979	1,826,974	1,200,239	605,183	157,141	854,580	33,943	1,023,798	245,346	3,314,183	846,199
1980	1,845,505	1,248,070	609,971	158,251	861,451	34,247	1,032,720	247,608	3,334,737	851,720
1981	1,942,277	1,338,597	636,217	164,015	897,044	35,899	1,077,206	259,877	3,438,673	879,634
1982	1,934,026	1,369,712	632,263	163,563	893,087	35,768	1,072,408	258,879	3,431,345	877,416
1983	2,014,902	1,413,621	649,077	167,582	918,182	37,104	1,104,155	268,895	3,503,738	897,190
1984	2,122,000	1,440,178	671,098	173,473	951,446	38,871	1,141,607	282,134	3,612,031	926,815
1985	2,200,738	1,455,251	686,982	177,807	976,439	40,260	1,172,913	291,738	3,690,801	948,379
1986	2,247,258	1,463,347	698,440	180,992	994,676	40,927	1,204,598	297,214	3,747,687	963,927
1987	2,291,036	1,468,726	710,153	183,970	1,013,355	41,390	1,219,542	301,992	3,801,684	978,588
1988	2,308,450	1,474,173	718,960	186,235	1,027,463	41,677	1,237,485	304,089	3,841,746	989,568
1989	2,322,061	1,483,202	722,630	187,412	1,033,088	41,852	1,244,435	305,475	3,863,999	995,456
1990	2,377,371	1,505,857	741,851	192,472	1,060,874	42,727	1,278,607	312,010	3,935,728	1,014,854
1991	2,413,170	1,525,503	760,115	197,604	1,089,661	43,112	1,313,896	315,536	4,014,970	1,036,359
1992	2,457,325	1,546,749	780,037	203,996	1,121,670	43,744	1,352,663	320,432	4,119,592	1,064,914
1993	2,491,392	1,565,756	795,146	210,989	1,145,453	44,253	1,379,374	324,519	4,231,061	1,095,444
1994	2,525,873	1,583,578	807,906	220,171	1,165,132	44,800	1,398,343	328,488	4,437,565	1,151,617
1995	2,551,485	1,592,538	815,601	225,248	1,176,964	45,193	1,410,165	331,367	4,564,586	1,186,123
1996	2,576,885	1,608,546	823,577	229,526	1,188,908	45,599	1,422,847	334,344	4,671,557	1,215,084
1997	2,593,652	1,619,933	830,462	232,003	1,198,947	45,868	1,434,517	336,316	4,892,095	1,268,666
1998	2,618,276	1,633,820	836,832	233,373	1,208,428	46,279	1,959,370	339,344	5,048,898	1,290,750
1999	2,631,400	1,645,130	840,690	235,675	1,214,160	46,500	1,966,183	340,984	5,248,212	1,307,744
2000	2,646,989	2,799,183	846,106	237,859	1,222,495	46,777	1,976,673	404,715	5,557,910	1,320,734
2001	2,655,069	2,805,110	849,519	239,232	1,227,684	46,930	1,983,238	405,916	6,341,199	1,330,516
2002	2,679,048	2,808,305	852,609	240,141	1,232,542	47,102	1,989,502	407,172	7,461,579	1,336,137
2003	2,688,827	2,815,847	854,888	240,811	1,235,869	47,244	1,994,116	408,346	8,027,048	1,343,563
2004	2,685,888	2,815,545	909,158	240,938	1,236,129	47,191	1,994,626	408,006	8,250,734	1,345,146
2005	2,688,673	2,817,826	6,471,792	241,212	1,988,966	47,241	1,996,886	408,418	8,373,632	1,347,102
2006	2,702,786	2,834,757	6,525,182	242,709	2,001,272	47,475	2,004,805	410,455	8,416,262	1,354,254
2007	2,721,077	2,857,862	6,617,798	244,959	2,022,056	47,781	2,016,604	413,021	8,462,598	1,364,776
2008	2,736,872	2,883,610	6,704,040	246,523	2,040,998	48,045	2,027,654	415,260	8,496,714	1,372,273
2009	2,737,281	2,887,424	6,706,248	246,688	2,041,937	48,052	2,028,440	415,314	8,499,671	1,372,984
2010	2,737,697	2,890,413	6,708,500	246,856	2,042,894	48,059	2,029,243	415,369	8,502,687	1,373,710
2011	2,737,697	2,890,413	6,708,500	246,856	2,042,894	48,059	2,029,243	415,369	8,502,687	1,373,710
2012	2,737,697	2,890,413	6,708,500	246,856	2,042,894	48,059	2,029,243	415,369	8,502,687	1,373,710
2013	2,704,376	2,890,413	6,646,647	246,856	2,021,173	48,059	2,029,243	415,369	8,450,957	1,360,608
2014	2,674,829	2,856,271	6,581,307	242,486	2,004,738	46,916	1,996,344	406,466	8,419,876	1,352,428
2015	2,619,093	2,825,449	6,523,842	239,663	1,981,026	45,977	1,970,816	398,871	8,367,618	1,338,365
2016	2,521,914	2,768,315	6,419,824	234,378	1,937,664	44,305	1,923,338	385,279	8,270,184	1,312,245
2017	2,320,216	2,634,417	6,195,400	223,385	1,845,539	40,775	1,823,826	356,839	8,069,337	1,258,136
2018	2,058,348	2,346,603	5,877,858	208,306	1,721,080	36,277	1,686,249	319,617	7,772,838	1,179,182
2019	1,751,076	2,050,562	5,449,110	189,555	1,561,115	30,810	1,508,920	273,510	7,366,272	1,071,060
2020	1,449,247	1,819,852	4,928,942	162,061	1,362,790	24,632	1,301,809	222,579	6,811,226	930,002
2021	1,188,252	1,572,773	4,281,895	126,647	1,119,192	19,214	1,069,327	179,188	6,107,659	753,931
2022	1,054,466	1,413,238	3,387,569	109,403	916,815	16,752	943,956	158,339	5,677,056	652,727
2023	1,003,961	1,405,513	2,688,936	104,713	797,260	15,778	902,728	150,302	5,539,634	617,180
2024	985,565	1,346,640	2,574,361	100,526	769,708	15,457	887,812	147,491	5,449,968	596,625
2025	962,136	1,328,775	2,461,533	96,751	734,670	15,042	858,014	143,915	5,367,593	574,933
2026	949,006	1,310,528	2,358,906	94,061	705,972	14,790	836,307	141,896	5,289,484	554,158
2027	936,705	1,292,016	2,283,596	92,164	685,335	14,573	820,716	140,083	5,240,475	541,125
2028	926,371	1,264,180	2,247,072	90,847	673,408	14,382	810,419	138,567	5,210,352	533,203
2029	910,723	1,225,867	2,215,807	89,716	663,208	14,116	800,898	136,354	5,188,504	527,511
2030	892,192	1,148,653	2,190,303	88,606	653,539	13,812	790,879	133,840	5,167,950	521,990
2031	795,420	1,005,600	2,059,819	82,842	603,866	12,160	735,490	119,678	5,064,014	494,075
2032	803,670	954,095	2,069,911	83,293	608,652	12,291	744,515	121,310	5,071,342	496,294
2033	722,796	881,544	1,991,166	79,275	575,192	10,955	709,369	110,645	4,998,949	476,520
2034	615,698	839,308	1,881,834	73,383	530,134	9,188	663,911	96,656	4,890,656	446,895
2035	536,959	817,586	1,799,180	69,049	496,122	7,779	631,262	86,758	4,811,886	425,331
<b>Total</b>	<b>132,528,270</b>	<b>117,194,922</b>	<b>163,395,550</b>	<b>11,759,006</b>	<b>77,002,033</b>	<b>2,337,288</b>	<b>89,189,448</b>	<b>18,832,676</b>	<b>359,376,296</b>	<b>64,763,678</b>

Table B-15

**Capital Cost Component of Transportation Charge for Each Contractor**

(Dollars)

Sheet 4 of 4

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (39)	Grand Total (40)
	San Geronio Pass Water Agency (31)	Metropolitan Water District of Southern California (32)	Ventura County Flood Control District (33)	Total (34)	City of Yuba City (35)	County of Butte (36)	Plumas County FC&WCD (37)	Total (38)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	690,812	0	775,863	0	0	0	0	0	1,400,141
1964	21,736	1,260,513	9,378	1,595,346	0	0	0	0	0	2,543,602
1965	21,866	2,180,589	17,767	2,706,298	0	0	405	405	0	4,279,769
1966	37,964	3,900,172	33,426	4,841,237	0	0	564	564	0	6,781,568
1967	71,283	7,693,703	68,155	9,510,662	0	0	562	562	0	11,921,268
1968	120,094	14,345,147	133,299	17,443,240	0	0	564	564	0	21,069,724
1969	187,059	21,857,456	202,599	26,519,335	0	0	3,191	3,191	0	31,181,956
1970	275,010	28,992,595	257,859	35,441,212	0	0	15,121	15,121	0	40,386,029
1971	385,025	37,242,413	316,307	45,734,143	0	0	15,947	15,947	0	51,099,749
1972	448,055	44,062,125	353,936	53,726,216	0	0	17,332	17,332	0	60,233,681
1973	470,185	46,299,581	357,342	56,321,690	0	0	17,333	17,333	0	62,836,519
1974	483,259	48,322,678	372,112	58,589,624	0	0	17,334	17,334	0	65,623,452
1975	496,722	49,285,084	376,511	59,782,196	0	0	17,336	17,336	0	67,490,647
1976	509,650	50,137,295	380,788	60,827,912	0	0	17,338	17,338	0	68,627,720
1977	517,741	50,827,166	385,098	61,654,752	0	0	17,340	17,340	0	69,800,457
1978	522,656	51,426,581	390,742	62,357,397	0	0	17,342	17,342	0	71,003,257
1979	526,178	52,230,344	399,649	63,263,757	0	0	17,344	17,344	0	72,442,152
1980	529,583	53,637,412	417,136	64,808,411	0	0	17,345	17,345	0	74,479,102
1981	546,787	56,667,437	449,812	68,333,474	0	0	17,346	17,346	0	78,619,989
1982	545,445	57,465,063	461,234	69,140,210	0	0	17,348	17,348	0	79,907,999
1983	557,607	59,037,472	477,333	71,046,859	0	0	17,348	17,348	0	82,032,740
1984	575,830	60,313,580	486,863	72,735,925	0	0	17,349	17,349	0	84,523,935
1985	589,089	61,144,629	492,117	73,867,144	0	0	17,351	17,351	0	86,345,333
1986	598,648	61,665,958	494,977	74,598,649	0	0	17,352	17,352	0	88,196,045
1987	607,664	62,094,321	496,758	75,208,880	0	0	17,354	17,354	0	91,041,232
1988	614,418	62,452,524	498,619	75,695,407	0	0	17,355	17,355	0	93,133,995
1989	618,059	62,795,848	501,579	76,115,096	0	0	17,358	17,358	0	94,355,901
1990	629,934	63,762,071	509,566	77,363,921	0	0	17,360	17,360	0	96,085,821
1991	643,118	64,676,967	516,147	78,546,158	0	0	17,364	17,364	0	97,659,238
1992	660,626	65,775,964	523,154	79,970,864	0	0	17,367	17,367	0	99,388,864
1993	679,343	66,904,653	529,384	81,396,768	0	0	17,369	17,369	0	101,090,463
1994	714,062	68,486,234	535,055	83,398,823	0	0	17,370	17,370	0	103,860,721
1995	735,431	69,373,152	537,812	84,545,665	0	0	17,371	17,371	0	107,786,306
1996	753,518	70,250,668	541,753	85,662,812	0	0	17,371	17,371	0	118,384,655
1997	814,117	71,530,565	544,467	87,341,607	0	0	17,371	17,371	0	128,782,307
1998	924,667	72,283,048	548,490	88,971,575	0	0	17,372	17,372	0	131,738,346
1999	1,112,966	72,914,234	552,157	90,056,034	0	0	17,372	17,372	0	133,484,575
2000	1,461,432	73,425,306	555,287	92,501,466	0	0	17,372	17,372	0	136,081,357
2001	2,438,652	73,734,735	556,663	94,614,508	0	0	17,372	17,372	0	139,057,867
2002	3,872,457	73,905,940	557,398	97,389,932	0	0	17,372	17,372	0	142,000,078
2003	4,576,261	74,215,309	559,426	99,007,556	0	0	17,372	17,372	0	144,161,759
2004	4,855,976	74,445,694	559,125	99,794,157	0	0	17,372	17,372	0	145,386,055
2005	5,000,608	68,370,283	559,749	100,312,389	0	0	17,372	17,372	0	146,361,637
2006	5,024,412	68,846,199	563,671	100,974,240	0	0	17,372	17,372	0	147,932,216
2007	5,030,968	69,557,228	569,179	101,925,908	0	0	17,372	17,372	0	149,663,401
2008	5,035,630	70,375,575	575,532	102,958,726	0	0	17,372	17,372	0	151,410,522
2009	5,036,077	70,450,387	576,398	103,046,902	0	0	17,372	17,372	0	151,716,358
2010	5,036,533	70,511,944	577,079	103,120,984	0	0	17,372	17,372	0	151,877,953
2011	5,036,533	70,511,944	577,079	103,120,984	0	0	17,372	17,372	0	151,877,953
2012	5,028,381	69,891,339	577,079	102,310,501	0	0	17,372	17,372	0	150,423,507
2013	5,023,326	69,377,313	567,701	101,550,001	0	0	17,372	17,372	0	149,331,501
2014	5,014,667	68,508,643	559,312	100,393,342	0	0	16,967	16,967	0	147,542,470
2015	4,998,569	66,881,325	543,653	98,240,993	0	0	16,808	16,808	0	145,017,935
2016	4,965,251	63,288,349	508,923	93,530,394	0	0	16,810	16,810	0	139,830,467
2017	4,916,439	56,922,301	443,780	85,488,879	0	0	16,808	16,808	0	131,129,510
2018	4,849,474	49,800,837	374,480	76,276,782	0	0	14,181	14,181	0	121,501,301
2019	4,761,523	43,139,225	319,219	67,233,108	0	0	2,252	2,252	0	112,304,562
2020	4,651,508	35,488,899	260,772	56,819,257	0	0	1,425	1,425	0	101,838,982
2021	4,588,478	29,613,503	223,143	48,755,445	0	0	40	40	0	93,749,330
2022	4,566,349	28,146,530	219,737	46,158,622	0	0	39	39	0	91,104,143
2023	4,553,274	26,243,018	204,966	43,875,412	0	0	38	38	0	88,805,632
2024	4,539,811	25,392,118	200,568	42,675,859	0	0	36	36	0	87,578,142
2025	4,526,883	24,644,393	196,291	41,622,676	0	0	34	34	0	86,504,248
2026	4,518,793	24,031,418	191,981	40,788,981	0	0	32	32	0	85,640,383
2027	4,513,877	23,467,728	186,337	40,076,744	0	0	30	30	0	84,883,550
2028	4,510,355	22,694,216	177,430	39,154,706	0	0	29	29	0	83,925,000
2029	4,506,951	21,310,662	159,943	37,579,321	0	0	27	27	0	82,300,009
2030	4,489,746	18,398,955	127,267	33,988,933	0	0	26	26	0	78,590,700
2031	4,491,088	17,594,363	115,845	33,166,669	0	0	24	24	0	77,751,601
2032	4,478,927	16,092,249	99,746	31,227,334	0	0	24	24	0	75,727,164
2033	4,460,703	14,915,248	90,216	29,513,831	0	0	23	23	0	73,813,374
2034	4,447,445	14,159,987	84,962	28,374,326	0	0	21	21	0	72,323,264
2035	4,447,445	14,159,987	84,962	28,374,326	0	0	21	21	0	72,323,264
<b>Total</b>	<b>183,389,292</b>	<b>3,552,851,159</b>	<b>27,966,397</b>	<b>4,800,586,015</b>	<b>0</b>	<b>0</b>	<b>868,500</b>	<b>868,500</b>	<b>0</b>	<b>6,950,641,142</b>

Table B-16A

**Minimum OMP&R Component of Transportation Charge for Each Contractor**

(Dollars)

Sheet 1 of 4

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	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	403,880	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	605,754	993,840	1,599,594	1,221,279	1,262,915	5,074,641	7,558,835	793,094	3,042,686	3,835,780
2000	771,931	1,488,515	2,260,446	2,177,424	1,294,837	3,751,108	7,223,369	734,698	3,636,608	4,371,306
2001	650,346	1,443,083	2,093,429	2,030,762	1,036,465	3,539,438	6,606,665	740,566	3,215,247	3,955,813
2002	1,090,242	1,864,221	2,954,463	2,445,187	1,355,161	6,051,180	9,851,528	784,717	3,776,542	4,561,259
2003	1,164,350	2,243,029	3,407,379	2,257,566	1,057,089	3,545,124	6,859,779	840,300	3,994,729	4,835,029
2004	1,603,027	2,326,391	3,929,418	2,573,204	1,272,777	3,512,373	7,358,354	839,172	3,950,818	4,789,990
2005	1,130,703	2,047,600	3,178,303	2,425,519	1,205,026	4,462,764	8,093,309	816,782	3,892,849	4,709,631
2006	1,152,830	2,086,588	3,239,418	2,544,204	1,245,771	4,587,090	8,377,065	834,678	3,963,123	4,797,801
2007	1,181,183	2,134,546	3,315,729	2,599,369	1,269,769	4,693,024	8,562,162	854,264	4,129,325	4,983,589
2008	818,295	1,340,358	2,158,653	2,675,585	1,299,235	3,621,240	7,596,060	742,510	2,755,314	3,497,824
2009	818,075	1,340,040	2,158,115	2,674,796	1,298,814	3,620,043	7,593,653	742,304	2,754,581	3,496,885
2010	817,949	1,339,717	2,157,666	2,674,612	1,298,812	3,620,090	7,593,514	742,219	2,754,131	3,496,350
2011	820,870	1,344,801	2,165,671	2,685,303	1,303,512	3,633,146	7,621,961	744,820	2,763,136	3,507,956
2012	821,062	1,345,152	2,166,214	2,685,851	1,303,754	3,633,804	7,623,409	744,982	2,763,786	3,508,768
2013	821,570	1,346,212	2,167,782	2,686,997	1,304,136	3,634,765	7,625,898	745,372	2,765,525	3,510,897
2014	821,817	1,346,980	2,168,797	2,687,076	1,303,894	3,633,923	7,624,893	745,503	2,766,436	3,511,939
2015	822,433	1,347,983	2,170,416	2,689,060	1,304,875	3,636,673	7,630,608	746,051	2,768,489	3,514,540
2016	821,399	1,346,196	2,167,595	2,685,941	1,303,415	3,632,629	7,621,985	745,158	2,765,019	3,510,177
2017	821,815	1,346,937	2,168,752	2,687,151	1,303,963	3,634,137	7,625,251	745,511	2,766,417	3,511,928
2018	822,410	1,348,181	2,170,591	2,688,499	1,304,413	3,635,266	7,628,178	745,968	2,768,459	3,514,427
2019	821,331	1,346,246	2,167,577	2,685,390	1,303,016	3,631,438	7,619,844	745,056	2,764,823	3,509,879
2020	822,062	1,347,381	2,169,443	2,687,846	1,304,272	3,634,980	7,627,098	745,717	2,767,245	3,512,962
2021	822,463	1,347,917	2,170,380	2,689,352	1,305,103	3,637,358	7,631,813	746,099	2,768,548	3,514,647
2022	822,229	1,347,857	2,170,086	2,687,979	1,304,181	3,634,630	7,626,790	745,816	2,767,850	3,513,666
2023	821,465	1,346,277	2,167,742	2,686,182	1,303,551	3,633,017	7,622,750	745,218	2,765,221	3,510,439
2024	821,770	1,346,940	2,168,710	2,686,840	1,303,748	3,633,496	7,624,084	745,450	2,766,278	3,511,728
2025	822,628	1,348,304	2,170,932	2,689,646	1,305,156	3,637,455	7,632,257	746,216	2,769,124	3,515,340
2026	821,094	1,345,854	2,166,948	2,684,641	1,302,652	3,630,420	7,617,713	744,847	2,764,032	3,508,879
2027	823,747	1,350,107	2,173,854	2,693,268	1,306,957	3,642,504	7,642,729	747,212	2,772,844	3,520,056
2028	821,013	1,345,784	2,166,797	2,684,248	1,302,408	3,629,708	7,616,364	744,758	2,763,771	3,508,529
2029	822,113	1,347,410	2,169,523	2,688,118	1,304,448	3,635,497	7,628,063	745,776	2,767,406	3,513,182
2030	821,331	1,346,038	2,167,369	2,685,792	1,303,374	3,632,532	7,621,698	745,105	2,764,773	3,509,878
2031	823,987	1,350,711	2,174,698	2,693,613	1,306,961	3,642,416	7,642,990	747,371	2,773,687	3,521,058
2032	820,548	1,345,043	2,165,591	2,682,738	1,301,653	3,627,588	7,611,979	744,344	2,762,233	3,506,577
2033	822,223	1,347,467	2,169,690	2,688,706	1,304,831	3,636,624	7,630,161	745,902	2,767,737	3,513,639
2034	822,359	1,347,896	2,170,255	2,688,741	1,304,690	3,636,134	7,629,565	745,974	2,768,244	3,514,218
2035	820,664	1,345,219	2,165,883	2,683,133	1,301,857	3,628,163	7,613,153	744,449	2,762,615	3,507,064
<b>Total</b>	<b>40,126,307</b>	<b>61,700,941</b>	<b>101,827,248</b>	<b>112,594,436</b>	<b>64,219,858</b>	<b>187,781,236</b>	<b>364,595,000</b>	<b>35,214,984</b>	<b>126,297,065</b>	<b>161,512,049</b>

Table B-16A

**Minimum OMP&R Component of Transportation Charge for Each Contractor**

(Dollars)

Sheet 2 of 4

Calendar Year	San Joaquin Valley Area								
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Kern County Water Agency		County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
				Municipal and Industrial (14)	Agricultural (15)				
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	37,806	1,963	5,639	60,701	678,086	2,008	2,073	77,591	865,867
1969	45,479	2,235	30,158	80,554	1,197,126	2,286	2,085	90,773	1,450,696
1970	46,969	2,292	35,450	96,673	1,381,493	2,344	2,158	93,408	1,660,787
1971	47,997	2,314	35,366	106,654	1,643,163	2,366	2,288	94,874	1,935,022
1972	49,866	2,414	37,844	122,313	1,729,169	2,469	2,254	98,777	2,045,106
1973	50,006	2,385	36,180	125,553	1,719,873	2,440	2,310	98,330	2,037,077
1974	52,818	2,556	36,570	135,661	1,823,065	2,614	2,529	104,609	2,160,422
1975	66,963	3,243	44,251	162,738	2,235,242	3,317	3,191	132,663	2,651,608
1976	66,504	3,328	45,364	159,303	2,215,999	3,404	2,919	133,940	2,630,761
1977	75,595	3,812	49,192	189,661	2,522,290	3,898	3,708	152,838	3,000,994
1978	70,688	3,503	49,725	174,897	2,427,163	3,583	3,644	141,672	2,874,875
1979	68,879	3,436	48,142	173,677	2,378,315	3,514	3,492	138,493	2,817,948
1980	95,898	4,722	59,551	235,741	3,146,570	4,830	4,777	191,582	3,743,671
1981	118,448	5,965	66,183	266,353	3,440,557	6,099	5,187	239,323	4,148,115
1982	134,083	6,711	67,061	311,879	3,848,922	6,862	6,382	270,061	4,651,961
1983	184,902	9,242	80,869	426,485	5,030,031	9,450	8,494	372,182	6,121,655
1984	194,228	9,656	95,555	471,854	5,636,134	9,874	8,719	389,892	6,815,912
1985	200,694	9,957	115,227	486,162	6,042,593	10,182	8,982	402,457	7,276,254
1986	207,028	10,302	110,479	530,803	6,372,710	10,536	10,341	415,776	7,667,975
1987	205,002	10,259	109,401	533,451	6,378,437	10,493	10,517	412,889	7,670,449
1988	203,711	10,223	122,903	516,432	6,388,497	10,455	10,341	410,868	7,673,430
1989	224,049	11,269	116,197	564,169	6,747,046	11,526	11,102	452,406	8,137,764
1990	271,051	13,666	148,238	664,040	8,111,616	13,976	13,206	547,974	9,783,767
1991	275,748	13,854	144,486	662,755	8,111,610	14,168	13,218	556,474	9,792,313
1992	317,889	16,027	162,466	764,224	9,115,453	16,393	18,209	642,672	11,053,333
1993	359,879	17,989	184,477	831,662	10,372,245	18,399	19,560	724,397	12,528,608
1994	309,099	15,487	224,254	738,622	9,789,905	15,840	16,434	622,912	11,732,553
1995	395,441	19,918	220,899	898,339	11,190,121	20,373	21,551	799,070	13,565,712
1996	392,055	19,968	301,835	902,162	12,199,788	20,424	21,664	796,711	14,654,607
1997	396,222	20,154	186,450	942,987	10,974,350	20,613	19,344	806,084	13,366,204
1998	489,209	24,563	288,941	1,098,336	12,675,458	25,125	21,596	995,325	15,618,553
1999	409,335	20,884	272,299	963,313	11,345,079	21,360	21,509	832,557	13,886,336
2000	426,203	21,699	209,180	1,038,489	10,570,064	22,194	23,875	865,936	13,177,640
2001	499,697	25,430	231,567	1,207,471	11,744,060	26,009	31,667	1,015,035	14,780,936
2002	455,965	21,459	224,102	1,074,965	10,649,399	21,947	25,470	809,417	13,282,724
2003	530,887	25,149	242,707	1,175,709	11,771,119	25,723	30,661	942,445	14,744,600
2004	492,314	23,456	246,737	1,143,471	11,362,559	25,723	26,473	758,012	14,116,907
2005	453,038	21,460	237,161	1,058,787	10,759,157	25,723	23,665	694,989	13,306,916
2006	467,447	22,156	242,084	1,112,156	11,187,001	25,723	24,175	717,373	13,832,930
2007	489,144	23,190	251,656	1,063,973	11,497,059	25,723	25,438	750,787	14,164,601
2008	428,238	19,824	261,316	969,299	10,689,253	25,723	22,640	647,570	13,093,119
2009	428,166	19,821	261,247	969,106	10,687,014	25,723	22,635	647,462	13,090,421
2010	428,053	19,816	261,212	968,878	10,684,670	25,723	22,633	647,293	13,087,511
2011	429,912	19,902	262,193	972,791	10,727,969	25,723	22,709	650,109	13,140,780
2012	430,012	19,907	262,250	973,020	10,730,471	25,723	22,713	650,259	13,143,839
2013	430,346	19,922	262,394	973,738	10,738,077	25,723	22,722	650,760	13,153,209
2014	430,637	19,935	262,453	974,296	10,743,662	25,723	22,726	651,195	13,160,191
2015	430,895	19,947	262,644	974,930	10,750,765	25,723	22,738	651,583	13,168,822
2016	430,408	19,925	262,330	973,778	10,738,058	25,723	22,718	650,852	13,153,327
2017	430,615	19,934	262,455	974,259	10,743,327	25,723	22,726	651,162	13,159,762
2018	431,007	19,952	262,624	975,102	10,752,256	25,723	22,737	651,750	13,170,762
2019	430,462	19,927	262,300	973,842	10,738,472	25,723	22,716	650,933	13,153,917
2020	430,741	19,940	262,528	974,549	10,746,492	25,723	22,731	651,351	13,163,632
2021	430,850	19,945	262,656	974,866	10,750,239	25,723	22,739	651,515	13,168,124
2022	430,915	19,948	262,570	974,890	10,749,932	25,723	22,733	651,612	13,167,923
2023	430,422	19,926	262,350	973,823	10,738,601	25,723	22,719	650,873	13,153,974
2024	430,636	19,935	262,436	974,277	10,743,383	25,723	22,725	651,194	13,159,873
2025	430,979	19,951	262,701	975,133	10,753,021	25,723	22,742	651,709	13,171,567
2026	430,359	19,923	262,228	973,591	10,735,682	25,723	22,712	650,778	13,150,525
2027	431,441	19,972	263,047	976,274	10,765,815	25,723	22,764	652,403	13,187,106
2028	430,358	19,923	262,199	973,560	10,735,212	25,723	22,710	650,776	13,149,989
2029	430,734	19,940	262,546	974,557	10,746,676	25,723	22,732	651,342	13,163,827
2030	430,356	19,923	262,310	973,669	10,736,914	25,723	22,717	650,774	13,151,914
2031	431,652	19,982	263,110	976,699	10,770,182	25,723	22,768	652,718	13,192,528
2032	430,169	19,914	262,056	973,093	10,729,959	25,723	22,701	650,493	13,143,612
2033	430,718	19,939	262,586	974,569	10,747,034	25,723	22,734	651,318	13,164,196
2034	430,881	19,947	262,618	974,881	10,750,150	25,723	22,736	651,562	13,168,093
2035	430,212	19,916	262,092	973,202	10,731,209	25,723	22,703	650,557	13,145,124
<b>Total</b>	<b>21,928,410</b>	<b>1,046,132</b>	<b>12,762,297</b>	<b>50,537,847</b>	<b>569,063,019</b>	<b>2,200,587</b>	<b>1,151,287</b>	<b>37,015,677</b>	<b>695,705,256</b>

Table B-16A

## Minimum OMP&amp;R Component of Transportation Charge for Each Contractor

(Dollars)

Sheet 3 of 4

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaika 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 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	2,208,176	561,294	6,077,011	1,635,115
1999	3,757,844	2,077,696	1,097,945	308,176	1,810,727	74,274	3,177,408	538,581	6,389,002	1,718,172
2000	3,768,362	3,394,252	1,038,864	292,573	1,713,294	68,709	3,010,894	597,268	5,887,859	1,575,060
2001	4,453,592	3,765,197	1,110,017	297,731	1,830,629	80,751	3,282,199	698,992	5,749,224	1,553,661
2002	3,614,560	3,472,886	1,013,030	281,369	1,670,688	62,130	2,985,845	545,630	5,610,850	1,505,056
2003	4,078,714	3,399,844	1,126,626	299,698	1,858,020	68,208	3,303,577	610,269	5,929,070	1,608,955
2004	4,414,037	4,007,430	1,428,472	318,062	1,887,428	76,196	3,399,517	671,997	6,548,568	1,742,866
2005	3,922,541	3,609,553	8,237,578	316,025	2,758,736	66,999	3,213,122	593,003	6,385,971	1,657,697
2006	4,166,652	3,786,427	8,416,711	333,318	2,857,524	70,729	3,363,166	629,537	6,702,165	1,735,154
2007	4,166,872	3,828,976	8,778,181	342,129	2,965,765	72,226	3,422,382	629,928	6,878,518	1,796,176
2008	3,699,409	3,415,250	6,567,566	264,885	2,325,205	65,514	2,924,266	567,979	5,633,422	1,503,264
2009	3,698,704	3,417,714	6,598,577	271,790	2,337,881	65,504	2,923,860	567,881	5,755,831	1,527,102
2010	3,697,499	3,413,680	6,688,072	266,697	2,342,942	65,475	2,922,509	567,671	5,665,301	1,509,219
2011	3,710,557	3,430,909	6,589,251	273,418	2,342,416	65,722	2,933,640	569,721	5,787,626	1,534,649
2012	3,711,616	3,426,263	6,641,313	269,443	2,344,953	65,743	2,934,612	569,891	5,717,150	1,521,046
2013	3,715,184	3,442,608	6,710,539	258,576	2,342,635	65,824	2,938,277	570,490	5,524,308	1,484,004
2014	3,718,340	3,435,182	6,637,633	279,322	2,360,579	65,906	2,942,051	571,053	5,892,830	1,556,531
2015	3,721,000	3,433,036	6,679,929	259,132	2,342,038	65,952	2,944,144	571,460	5,534,725	1,486,956
2016	3,715,977	3,446,576	6,617,861	282,059	2,360,296	65,857	2,939,838	570,670	5,941,121	1,565,616
2017	3,718,142	3,442,758	6,786,530	267,350	2,365,678	65,900	2,941,770	571,015	5,680,114	1,514,982
2018	3,722,303	3,443,514	6,648,760	271,544	2,354,371	65,993	2,946,039	571,713	5,754,973	1,530,261
2019	3,716,656	3,455,882	6,822,972	282,026	2,388,688	65,881	2,940,971	570,811	5,940,234	1,565,651
2020	3,719,469	3,452,095	6,555,397	268,340	2,336,224	65,926	2,942,983	571,228	5,697,929	1,518,640
2021	3,720,529	3,427,642	6,631,375	256,228	2,331,422	65,937	2,943,411	571,365	5,483,282	1,476,788
2022	3,721,394	3,429,005	6,927,997	269,598	2,389,332	65,976	2,945,238	571,569	5,720,214	1,523,362
2023	3,716,152	3,436,008	6,659,533	281,428	2,365,141	65,859	2,939,914	570,693	5,930,010	1,563,454
2024	3,718,438	3,463,085	6,737,025	267,355	2,359,351	65,911	2,942,305	571,079	5,680,047	1,515,069
2025	3,721,921	3,409,235	6,539,067	269,897	2,336,685	65,970	2,944,928	571,604	5,726,247	1,524,434
2026	3,715,622	3,461,445	6,920,936	282,805	2,402,574	65,863	2,940,148	570,652	5,953,813	1,568,186
2027	3,726,643	3,346,129	6,450,516	265,794	2,320,977	66,051	2,948,589	572,323	5,654,643	1,510,965
2028	3,715,621	3,564,179	6,684,483	256,478	2,338,181	65,867	2,940,367	570,666	5,485,753	1,476,920
2029	3,719,399	3,395,909	6,699,642	280,938	2,371,151	65,921	2,942,746	571,207	5,921,955	1,562,297
2030	3,715,472	3,436,019	6,716,503	282,001	2,373,288	65,843	2,939,313	570,585	5,940,056	1,565,325
2031	3,728,931	3,350,009	6,911,119	250,133	2,365,126	66,108	2,951,163	572,721	5,376,310	1,457,086
2032	3,713,693	3,561,878	6,521,548	280,379	2,345,280	65,835	2,938,890	570,373	5,909,973	1,559,482
2033	3,719,175	3,405,709	6,742,025	264,385	2,355,904	65,909	2,942,142	571,146	5,628,043	1,504,837
2034	3,720,939	3,438,109	6,668,382	262,078	2,344,255	65,955	2,944,255	571,461	5,586,948	1,497,174
2035	3,714,171	3,461,956	6,966,705	298,972	2,428,593	65,843	2,939,248	570,446	6,240,566	1,624,026
<b>Total</b>	<b>190,728,988</b>	<b>153,885,113</b>	<b>233,406,693</b>	<b>14,185,086</b>	<b>108,145,636</b>	<b>3,389,699</b>	<b>140,741,736</b>	<b>28,182,558</b>	<b>295,540,159</b>	<b>78,583,435</b>

Table B-16A

# Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Sheet 4 of 4

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Geronio 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	75,240,998
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	1,054,800	84,857,717	627,858	107,490,200	0	0	416	416	559,344	134,930,505
2000	966,436	82,659,498	637,787	105,610,856	0	0	505	505	0	132,644,122
2001	948,273	92,780,926	707,568	117,258,760	0	0	319	319	0	144,695,922
2002	919,181	84,832,090	652,484	107,165,799	0	0	3,627	3,627	0	137,819,400
2003	998,682	82,506,845	622,711	106,411,219	0	0	3,393	3,393	0	136,261,399
2004	1,085,142	98,404,530	755,438	124,739,683	0	0	3,455	3,455	0	154,937,807
2005	1,031,046	84,091,669	678,190	116,562,130	0	0	3,523	3,523	0	145,853,812
2006	1,080,839	87,714,855	711,182	121,568,259	0	0	3,546	3,546	0	151,819,019
2007	1,108,845	89,319,833	728,670	124,038,541	0	0	3,592	3,592	0	155,068,214
2008	929,750	75,448,117	636,798	103,981,425	0	0	3,887	3,887	0	130,330,968
2009	945,376	75,922,178	637,514	104,669,912	0	0	3,884	3,884	0	131,012,870
2010	933,689	75,746,778	636,494	104,456,026	0	0	3,885	3,885	0	130,794,952
2011	950,137	76,206,598	640,118	105,034,762	0	0	3,884	3,884	0	131,475,014
2012	941,203	75,969,604	638,833	104,751,670	0	0	3,884	3,884	0	131,197,784
2013	916,849	76,033,447	642,978	104,645,719	0	0	3,884	3,884	0	131,107,389
2014	964,284	76,633,637	640,935	105,698,283	0	0	3,883	3,883	0	132,167,986
2015	918,655	75,655,429	640,178	104,252,634	0	0	3,885	3,885	0	130,740,905
2016	970,284	77,089,372	644,069	106,209,596	0	0	3,882	3,882	0	132,666,562
2017	937,066	76,580,215	642,932	105,514,452	0	0	3,883	3,883	0	131,984,028
2018	946,983	76,489,024	642,941	105,388,419	0	0	3,884	3,884	0	131,876,261
2019	970,277	77,763,488	646,539	107,130,076	0	0	3,879	3,879	0	133,585,172
2020	939,437	76,434,461	645,316	105,147,445	0	0	3,884	3,884	0	131,624,464
2021	912,011	75,264,426	638,752	103,723,168	0	0	3,887	3,887	0	130,212,019
2022	942,479	76,526,453	639,175	105,671,792	0	0	3,883	3,883	0	132,154,140
2023	968,867	76,825,863	641,266	105,964,188	0	0	3,882	3,882	0	132,422,975
2024	937,108	77,083,982	648,301	105,989,056	0	0	3,882	3,882	0	132,457,333
2025	943,197	75,177,721	633,848	103,864,754	0	0	3,887	3,887	0	130,358,737
2026	971,954	78,170,884	648,078	107,672,960	0	0	3,878	3,878	0	134,120,903
2027	934,304	76,880,071	616,874	101,293,879	0	0	3,892	3,892	0	127,821,516
2028	912,143	79,490,484	675,171	108,176,313	0	0	3,878	3,878	0	134,621,870
2029	968,052	75,656,458	630,497	104,786,172	0	0	3,884	3,884	0	131,264,651
2030	970,105	76,973,508	641,311	106,189,332	0	0	3,882	3,882	0	132,644,073
2031	898,939	73,130,556	617,817	101,676,018	0	0	3,891	3,891	0	128,211,183
2032	966,270	80,268,392	674,708	109,376,701	0	0	3,876	3,876	0	135,808,336
2033	930,417	75,237,812	633,048	104,000,552	0	0	3,885	3,885	0	130,482,123
2034	925,346	75,926,153	641,537	104,592,592	0	0	3,884	3,884	0	131,078,607
2035	1,008,558	79,068,815	648,344	109,036,243	0	0	3,876	3,876	0	135,471,343
<b>Total</b>	<b>48,581,828</b>	<b>4,073,693,060</b>	<b>33,061,251</b>	<b>5,402,125,242</b>	<b>0</b>	<b>0</b>	<b>198,320</b>	<b>198,320</b>	<b>8,723,612</b>	<b>6,734,686,727</b>

Table B-16B

## Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

Sheet 1 of 4

(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	50,258	128,102	178,360	447,529	209,965	546,009	1,203,503	92,779	661,706	754,485
2005	148,011	212,043	360,054	666,222	402,521	984,664	2,053,407	119,276	1,084,275	1,203,551
2006	96,389	147,045	243,434	1,005,224	392,737	1,243,288	2,641,249	611,002	1,255,366	1,866,368
2007	157,095	102,460	259,555	870,871	400,635	1,032,567	2,304,073	626,187	1,139,310	1,765,497
2008	176,301	113,354	289,655	921,616	443,229	1,142,342	2,507,191	692,762	1,260,439	1,953,201
2009	185,591	117,655	303,246	929,559	460,048	1,185,692	2,575,299	719,049	1,308,266	2,027,315
2010	191,170	232,981	424,151	882,772	443,072	1,188,051	2,513,895	720,479	1,310,868	2,031,347
2011	152,940	183,907	336,847	717,547	349,700	937,685	2,004,932	568,647	1,034,620	1,603,267
2012	187,971	208,060	396,031	870,203	424,098	1,137,175	2,431,476	689,626	1,254,733	1,944,359
2013	109,295	119,779	229,074	500,362	243,854	653,870	1,398,086	396,531	721,465	1,117,996
2014	32,115	34,725	66,840	144,835	70,586	189,269	404,690	114,780	208,835	323,615
2015	19,527	20,577	40,104	85,761	41,796	112,072	239,629	67,965	123,658	191,623
2016	17,127	17,621	34,748	73,443	35,793	95,975	205,211	58,203	105,897	164,100
2017	17,144	17,232	34,376	71,820	35,002	93,854	200,676	56,917	103,556	160,473
2018	7,487	7,356	14,843	30,658	14,941	40,064	85,663	24,296	44,205	68,501
2019	7,613	7,314	14,927	30,484	14,856	39,836	85,176	24,158	43,954	68,112
2020	8,376	7,881	16,257	32,846	16,007	42,922	91,775	26,030	47,359	73,389
2021	11,255	10,552	21,807	43,981	21,434	57,473	122,888	34,854	63,415	98,269
2022	11,239	10,538	21,777	43,921	21,405	57,395	122,721	34,806	63,328	98,134
2023	8,360	7,838	16,198	32,668	15,921	42,690	91,279	25,889	47,104	72,993
2024	6,093	5,712	11,805	23,808	11,603	31,113	66,524	18,868	34,329	53,197
2025	615	577	1,192	2,404	1,172	3,141	6,717	1,905	3,466	5,371
2026	885	830	1,715	3,457	1,685	4,518	9,660	2,740	4,985	7,725
2027	1,499	1,406	2,905	5,858	2,855	7,655	16,368	4,642	8,447	13,089
2028	928	870	1,798	3,624	1,766	4,736	10,126	2,872	5,226	8,098
2029	915	857	1,772	3,574	1,742	4,670	9,986	2,832	5,153	7,985
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
<b>Total</b>	<b>2,944,180</b>	<b>4,651,175</b>	<b>7,595,355</b>	<b>17,766,475</b>	<b>12,151,872</b>	<b>39,714,199</b>	<b>69,632,546</b>	<b>6,518,473</b>	<b>16,370,999</b>	<b>22,889,472</b>

Table B-16B

**Minimum OMP&R Component of Transportation Charge  
for Each Contractor for Off-Aqueduct Power Facilities**

(Dollars)

Sheet 2 of 4

Calendar Year	San Joaquin Valley Area							Total (18)
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Kern County Water Agency		County of Kings (15)	Oak Flat Water District (16)	Tulare Lake Basin Water Storage District (17)	
			Municipal and Industrial (13)	Agricultural (14)				
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	167,903	12,186	431,994	2,937,167	30,970	10,800	278,035	3,869,055
2005	282,681	15,879	452,338	5,039,596	41,888	11,942	436,023	6,280,347
2006	222,736	11,260	484,668	4,077,716	33,780	14,591	361,175	5,205,926
2007	220,578	11,540	496,713	4,157,274	34,620	14,954	370,151	5,305,830
2008	244,029	12,767	549,522	4,599,264	38,300	16,544	409,504	5,869,930
2009	253,289	13,251	570,374	4,773,783	39,754	17,172	425,043	6,092,666
2010	253,793	13,278	615,548	4,789,212	39,833	17,206	425,888	6,154,758
2011	200,309	10,480	485,830	3,779,948	31,439	13,580	336,138	4,857,724
2012	242,925	12,709	589,189	4,584,125	38,127	16,469	407,651	5,891,195
2013	139,680	7,308	338,780	2,635,847	21,923	9,470	234,397	3,387,405
2014	40,432	2,115	98,063	762,972	6,346	2,741	67,848	980,517
2015	23,941	1,253	58,066	451,779	3,758	1,623	40,175	580,595
2016	20,502	1,073	49,726	386,891	3,218	1,390	34,405	497,205
2017	20,049	1,049	48,627	378,340	3,147	1,359	33,644	486,215
2018	8,558	448	20,758	161,503	1,343	580	14,362	207,552
2019	8,510	445	20,640	160,585	1,336	577	14,280	206,373
2020	9,169	480	22,239	173,026	1,439	622	15,387	222,362
2021	12,278	642	29,778	231,684	1,927	832	20,603	297,744
2022	12,261	641	29,737	231,368	1,924	831	20,575	297,337
2023	9,120	477	22,119	172,091	1,431	618	15,303	221,159
2024	6,646	348	16,120	125,420	1,043	451	11,153	161,181
2025	671	35	1,628	12,663	105	45	1,126	16,273
2026	965	50	2,341	18,213	151	65	1,620	23,405
2027	1,635	86	3,966	30,860	257	111	2,744	39,659
2028	1,012	53	2,454	19,093	159	69	1,698	24,538
2029	998	52	2,420	18,827	157	68	1,674	24,196
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
<b>Total</b>	<b>9,419,517</b>	<b>415,233</b>	<b>21,378,951</b>	<b>195,512,632</b>	<b>815,703</b>	<b>620,581</b>	<b>17,610,549</b>	<b>245,773,166</b>

Table B-16B  
**Minimum OMP&R Component of Transportation Charge  
for Each Contractor for Off-Aqueduct Power Facilities**  
(Dollars)

Sheet 3 of 4

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	1,812,210	1,676,067	554,535	71,930	759,819	0	465,681	368,704	2,071,504	449,688
2005	2,712,099	2,043,218	4,460,997	147,943	1,714,032	27,708	648,623	466,794	3,411,865	514,804
2006	5,168,051	3,497,528	4,764,209	235,260	1,967,056	76,501	1,990,786	828,940	4,032,465	1,137,942
2007	4,964,098	3,390,631	4,882,612	238,688	2,015,942	78,402	2,050,947	843,916	4,584,252	1,166,223
2008	5,500,465	3,751,114	5,401,717	264,956	2,230,271	86,738	2,268,997	803,268	5,357,112	3,497,066
2009	5,705,970	3,893,449	5,606,685	274,038	2,314,899	90,029	2,401,392	833,748	3,430,680	1,333,382
2010	5,545,846	3,513,584	4,852,401	269,062	1,767,462	90,208	3,505,614	835,407	4,230,775	1,336,034
2011	4,377,131	2,995,976	4,433,951	212,361	1,830,698	71,198	2,766,851	659,356	3,756,593	22,222,297
2012	5,308,357	3,834,137	5,377,266	257,540	2,220,176	86,345	3,355,494	799,632	4,555,801	1,380,949
2013	3,052,277	2,204,608	3,091,899	148,084	1,276,589	49,648	1,929,391	459,784	2,619,561	794,038
2014	883,512	638,145	894,981	42,864	369,521	14,371	558,481	133,089	758,258	229,842
2015	523,154	377,865	529,945	25,381	218,805	8,510	330,694	78,806	448,988	136,097
2016	448,015	323,593	453,830	21,736	187,378	7,287	283,197	67,487	384,500	116,549
2017	438,113	316,441	443,800	21,255	183,237	7,126	276,938	65,996	376,002	113,973
2018	187,018	135,080	189,446	9,073	78,219	3,042	118,217	28,172	160,505	48,652
2019	185,955	134,312	188,369	9,022	77,774	3,025	117,545	28,012	159,593	48,376
2020	200,362	144,718	202,963	9,721	83,800	3,259	126,652	30,182	171,957	52,123
2021	268,287	193,779	271,770	13,016	112,209	4,364	169,588	40,414	230,252	69,794
2022	267,921	193,515	271,399	12,998	112,056	4,358	169,357	40,359	229,938	69,699
2023	199,279	143,936	201,866	9,668	83,347	3,241	125,968	30,019	171,028	51,842
2024	145,234	104,900	147,120	7,046	60,743	2,362	91,805	21,878	124,645	37,782
2025	14,663	10,591	14,854	711	6,133	239	9,269	2,209	12,585	3,815
2026	21,090	15,233	21,364	1,023	8,821	343	13,332	3,177	18,100	5,487
2027	35,735	25,811	36,199	1,734	14,946	581	22,589	5,383	30,669	9,296
2028	22,109	15,969	22,396	1,073	9,247	360	13,976	3,330	18,975	5,752
2029	21,801	15,747	22,084	1,058	9,118	355	13,781	3,284	18,710	5,671
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
<b>Total</b>	<b>107,755,611</b>	<b>62,782,136</b>	<b>91,067,110</b>	<b>4,166,574</b>	<b>80,401,909</b>	<b>1,410,553</b>	<b>32,826,797</b>	<b>16,435,413</b>	<b>59,650,171</b>	<b>53,626,484</b>

Table B-16B  
**Minimum OMP&R Component of Transportation Charge  
for Each Contractor for Off-Aqueduct Power Facilities**  
(Dollars)

Sheet 4 of 4

Calendar Year	Southern California Area (continued)				Feather River Area				Total State Water Project <sup>a</sup> (37)
	San Geronio 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)	
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	44,621	58,640,223	170,747	67,085,729	0	0	0	0	73,091,132
2005	244,481	72,054,891	62,846	88,510,301	0	0	0	0	98,407,660
2006	275,388	71,442,683	713,658	96,130,467	0	0	0	0	106,087,444
2007	302,391	73,218,212	731,394	98,467,708	0	0	0	0	108,102,663
2008	771,674	81,002,566	809,154	111,745,098	0	0	0	0	122,365,075
2009	800,955	84,076,199	839,857	111,601,283	0	0	0	0	122,599,809
2010	802,548	84,707,476	841,528	112,297,945	0	0	0	0	123,422,096
2011	633,422	66,856,474	664,187	111,480,495	0	0	0	0	120,283,265
2012	768,181	81,080,066	805,491	109,829,435	0	0	0	0	120,492,496
2013	441,700	46,620,596	463,153	63,151,328	0	0	0	0	69,283,889
2014	127,854	13,494,791	134,064	18,279,773	0	0	0	0	20,055,435
2015	75,706	7,990,677	79,383	10,824,011	0	0	0	0	11,875,962
2016	64,833	6,842,992	67,982	9,269,379	0	0	0	0	10,170,643
2017	63,400	6,691,749	66,479	9,064,509	0	0	0	0	9,946,249
2018	27,064	2,856,523	28,378	3,869,389	0	0	0	0	4,245,948
2019	26,910	2,840,289	28,217	3,847,399	0	0	0	0	4,221,987
2020	28,995	3,060,336	30,403	4,145,471	0	0	0	0	4,549,254
2021	38,824	4,097,826	40,710	5,550,833	0	0	0	0	6,091,541
2022	38,771	4,092,237	40,654	5,543,262	0	0	0	0	6,083,231
2023	28,838	3,043,802	30,239	4,123,073	0	0	0	0	4,524,702
2024	21,017	2,218,316	22,038	3,004,886	0	0	0	0	3,297,593
2025	2,122	223,971	2,225	303,387	0	0	0	0	332,940
2026	3,052	322,134	3,200	436,356	0	0	0	0	478,861
2027	5,171	545,819	5,422	739,355	0	0	0	0	811,376
2028	3,199	337,699	3,355	457,440	0	0	0	0	502,000
2029	3,155	332,990	3,308	451,062	0	0	0	0	495,001
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
<b>Total</b>	<b>5,647,657</b>	<b>1,910,502,175</b>	<b>7,956,776</b>	<b>2,434,229,366</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,780,119,905</b>

<sup>a</sup>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&amp;R Component of Transportation Charge

(Dollars per Acre-Foot)

Sheet 1 of 4

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 <sup>a</sup>		South Bay and Del Valle Pumping Plants <sup>b</sup>		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	-1.0512643	-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	1.2974895	2.2753763	3.0298529	2.5018274	2.0080374	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	1.3936095	1.3936095	1.9733008	3.3669103	3.0361517	4.4297612	6.3423992	8.3525426	2.0101434	2.0101434
2001	8.1667777	8.1667777	12.6134387	20.7802164	22.7960342	30.9628119	42.4429593	55.0808835	12.6379242	12.6379242
2002	4.1172928	4.1172928	5.2082479	9.3255407	8.7818240	12.8991168	17.8053859	23.8146228	6.0092369	6.0092369
2003	4.2344506	4.2344506	6.9008532	11.1353038	12.4399137	16.6743643	18.7634120	25.3115619	6.5481499	6.5481499
2004	4.7769517	4.7769517	6.1324770	10.9094287	12.8056971	17.5826488	19.3003816	26.4438302	7.1434486	7.1434486
2005	5.1089784	5.1089784	8.5351173	13.6440957	7.8941646	13.0031430	22.1888660	30.2972925	8.1084265	8.1084265
2006	9.2689504	9.2689504	21.6599043	30.9288547	35.7715192	45.4040696	25.0334960	33.4593667	8.4258707	8.4258707
2007	9.7635736	9.7635736	24.8282213	34.5917949	34.6970517	44.4606253	24.4334912	33.2084851	8.7749939	8.7749939
2008	8.4717425	8.4717425	26.3184190	34.7901615	14.6128497	23.0845922	25.7727267	34.8855326	9.1128059	9.1128059
2009	8.7177587	8.7177587	27.2468775	35.9646362	15.2636932	23.9814519	26.9096412	35.2894567	8.3798155	8.3798155
2010	6.4360637	6.4360637	12.7641600	19.2002237	15.9053448	22.3414085	29.2557285	39.7158521	10.4601236	10.4601236
2011	6.4413920	6.4413920	12.7774351	19.2188271	15.9826303	22.4240223	28.9601040	38.3486534	9.3885494	9.3885494
2012	6.6313733	6.6313733	15.1169885	21.7483618	16.6706387	23.3020120	29.8887037	39.0338687	9.1451650	9.1451650
2013	7.1823073	7.1823073	16.5450863	23.7273936	18.5394270	25.7217343	32.6143243	44.2918615	11.6775372	11.6775372
2014	7.6460559	7.6460559	17.7139392	25.3599951	20.1471278	27.7931837	34.8807028	45.3844293	10.5037265	10.5037265
2015	7.7580807	7.7580807	17.9697337	25.7278144	20.6653504	28.4234311	35.3778867	47.1021224	11.7242357	11.7242357
2016	7.8401228	7.8401228	18.1516548	25.9917776	21.0659233	28.9060461	35.7210010	49.2005328	13.4795318	13.4795318
2017	7.7521701	7.7521701	17.8919465	25.6441166	20.8937962	28.6456966	35.2311351	47.1381048	11.9069697	11.9069697
2018	7.9612089	7.9612089	18.4045743	26.3657832	21.7606930	29.7219019	36.1978884	48.1182224	11.9203340	11.9203340
2019	8.1474282	8.1474282	18.8552552	27.0026834	22.5611366	30.7085648	37.0477933	50.7462265	13.6984332	13.6984332
2020	7.7612078	7.7612078	17.8312119	25.5924197	21.4003802	29.1615880	35.1165706	47.3121547	12.1955841	12.1955841
2021	7.7542170	7.7542170	17.8021578	25.5563748	21.3916982	29.1459152	35.0618878	47.0220565	11.9601687	11.9601687
2022	7.5311199	7.5311199	17.2306138	24.7617337	20.6301412	28.1612611	33.9840218	45.0769179	11.0928961	11.0928961
2023	7.5707778	7.5707778	17.3321615	24.9029393	20.7654495	28.3362273	34.1755482	46.1471024	11.9715542	11.9715542
2024	7.8294070	7.8294070	17.9947468	25.8241538	21.6482604	29.4776674	35.4250772	48.5336908	13.1086136	13.1086136
2025	7.7965171	7.7965171	17.9104538	25.7069709	21.5359972	29.3325143	35.2661854	46.2839391	11.0177537	11.0177537
2026	7.8464051	7.8464051	18.0383077	25.8847128	21.7063383	29.5527434	35.5072097	49.1591276	13.6519179	13.6519179
2027	7.7359173	7.7359173	17.7552431	25.4911604	21.3291767	29.0650940	34.9733885	47.2322064	12.2588179	12.2588179
2028	7.7860006	7.7860006	17.8835010	25.6695016	21.5001033	29.2861039	35.2153782	47.1982484	11.9828702	11.9828702
2029	7.6934871	7.6934871	17.6465834	25.3400705	21.1843955	28.8778826	34.7685117	46.6975088	11.9289971	11.9289971
2030	7.7513406	7.7513406	17.7947630	25.5461036	21.3818119	29.1331525	35.0478781	47.4444607	12.3965826	12.3965826
2031	7.6524235	7.6524235	17.5413990	25.1938225	21.0441957	28.6966192	34.5700676	45.8961460	11.3260784	11.3260784
2032	7.7945257	7.7945257	17.9054027	25.6999284	21.5293145	29.3238402	35.2566399	47.4316331	12.1749932	12.1749932
2033	8.1604280	8.1604280	18.8427688	27.0031968	22.7781605	30.9385885	37.0242710	50.0756596	13.0513886	13.0513886
2034	7.8797506	7.8797506	18.1237322	26.0034828	21.8201171	29.6998677	35.6683055	47.8667777	12.1183722	12.1183722
2035	7.7294487	7.7294487	17.7386350	25.4680837	21.3070617	29.0365104	34.9421621	47.9304406	12.9882785	12.9882785

<sup>a</sup>For the period 1968 through 1987, rates are for an interim facility.<sup>b</sup>The relatively minor costs of Del Valle Pumping Plant have been combined with those of South Bay Pumping Plant to simplify the allocation procedure.

Table B-17  
**Unit Variable OMP&R Component of Transportation Charge**  
(Dollars per Acre-Foot)

Calendar Year	California Aqueduct (continued)									
	Reach 4		Reach 14A		Reach 15A		Reach 16A		Reach 17E	
	Dos Amigos Pumping Plant		Buena Vista Pumping Plant		Teerink Pumping Plant		Chrisman Pumping Plant		Edmonston Pumping Plant	
	Unit Rate (11)	Cumulative Unit Rate (12)	Unit Rate (13)	Cumulative Unit Rate (14)	Unit Rate (15)	Cumulative Unit Rate (16)	Unit Rate (17)	Cumulative Unit Rate (18)	Unit Rate (19)	Cumulative Unit Rate (20)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	1.0745886	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	30.688208
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	31.2124200	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	4.2379005	2.5012144	6.7409149	2.6893394	9.4302722	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	12.5892138	22.3788694
2000	0.9291542	2.9392976	1.6351182	4.5744158	1.7977257	6.3721415	4.2382415	10.6103830	15.5183583	26.1287413
2001	6.0857257	18.7236499	11.2104026	29.9340525	12.2921544	42.2262069	28.4107311	70.6369380	106.3374611	176.9743991
2002	2.5805909	8.5898278	4.5195544	13.1093822	4.9302304	18.0396126	11.4077914	29.4474040	42.3895702	71.8369742
2003	3.0480058	9.5961557	5.4715753	15.0677310	5.9612758	21.0290068	13.8701147	34.8991215	51.5733111	86.4724326
2004	3.2370637	10.3805123	5.6993528	16.0798651	6.1892291	22.2690942	14.4181890	36.6872832	53.6025304	90.2898136
2005	4.2798627	12.3882892	7.7669651	20.1552543	9.4079499	29.5632042	20.3855113	49.9487155	73.2703774	123.2190929
2006	4.2751621	12.7010328	7.5613882	20.2624210	9.2038132	29.4662342	19.9147955	49.3810297	71.2293105	120.6103402
2007	4.2298045	13.0047984	7.4796962	20.4844946	9.1040772	29.5885718	19.6997244	49.2882962	70.4902335	119.7785297
2008	3.9901815	13.1029874	6.7441823	19.8471997	6.9200281	26.7671978	16.4324124	43.1996102	62.1535148	105.3531246
2009	4.2341019	12.6139174	7.2333000	19.8472171	7.4262607	27.2734781	17.6514461	44.9249242	66.7875295	111.7124537
2010	4.4329766	14.8931002	7.5742619	22.4673624	7.8530343	30.3203964	18.6434191	48.9638155	70.5800437	119.5438592
2011	4.3811391	13.7696885	7.4316939	21.2013824	7.6979379	28.8993203	18.2737613	47.1730816	69.1678363	116.3409179
2012	4.6651815	13.8103465	7.9818019	21.7921484	8.2773925	30.0695409	19.6631318	49.7326727	74.4544999	124.1871726
2013	5.1190811	16.7966183	8.7489139	25.5455322	9.0594011	34.6049333	21.5379664	56.1428997	81.5508743	137.6937740
2014	5.5558105	16.0595370	9.5280592	25.5875962	9.8625671	35.4501633	23.4647856	58.9149489	88.8581750	147.7731239
2015	5.6407586	17.3649943	9.6723383	27.0373326	10.0099592	37.0472918	23.8184761	60.8657679	90.1974414	151.0632093
2016	5.8469755	19.3265073	10.1281635	29.4546708	10.4957541	39.9504249	24.9920287	64.9424536	94.6766932	159.6191468
2017	5.6435090	17.5504787	9.6991935	27.2496722	10.0405044	37.2901766	23.8965214	61.1866980	90.5002760	151.6869740
2018	5.9655641	17.8858981	10.3563564	28.2422545	10.7350653	38.9773198	25.5648814	64.5420212	96.8550698	161.3972710
2019	6.1452184	19.8436516	10.6881382	30.5317898	11.0759004	41.6076902	26.3924930	68.0001832	99.9964936	167.9966786
2020	5.8053788	18.0009629	10.1031297	28.1040926	10.4772995	38.5813921	24.9565450	63.5379371	94.5579579	158.0958950
2021	5.8031528	17.7633215	10.1041053	27.8674268	10.4789200	38.3463468	24.9618831	63.3082299	94.5798844	157.8880783
2022	5.6301445	16.7230406	9.8185078	26.5415484	10.1884769	36.7300253	24.2675464	60.9975717	91.9541676	151.9517393
2023	5.6915557	17.6631099	9.9435474	27.6066573	10.3203910	37.9270483	24.5852352	62.5122835	93.1642757	155.6765592
2024	5.8810856	18.9896992	10.2478297	29.2375289	10.6279003	39.8654292	25.3198957	65.1853249	95.9391541	161.1244790
2025	5.8619965	16.8797502	10.2215522	27.1013024	10.6026185	37.7039209	25.2588516	62.9627725	95.7104117	158.6731842
2026	5.8924273	19.5443452	10.2649801	29.8093253	10.6447383	40.4540636	25.3607161	65.8147797	96.0930890	161.9078687
2027	5.8400668	18.0988847	10.2047832	28.3036679	10.5891979	38.8928658	25.2294493	64.1223151	95.6062028	159.7285179
2028	6.3577376	18.3406078	10.1580564	28.4986642	10.5345360	39.0332002	25.0954446	64.1286448	95.0864198	159.2150646
2029	5.7863362	17.7153333	10.0997281	27.8150614	10.4790595	38.2941209	24.9646076	63.2587285	94.5987174	157.8574459
2030	5.7931229	18.8970555	10.0819715	28.2716770	10.4550731	38.7267501	24.9046631	63.6314132	94.3612898	157.9927030
2031	5.7558183	17.0818967	10.0508823	27.1327790	10.4320061	37.5647851	24.8466563	62.4114414	94.1540036	156.5654450
2032	5.7980586	17.9730518	10.0687862	28.0418380	10.4364337	38.4782717	24.8608462	63.3391179	94.1875315	157.5266494
2033	6.2454062	19.2967948	10.9353467	30.2321415	11.3456848	41.5778263	27.0398169	68.6176432	102.4752613	171.0929045
2034	5.8951762	18.0135484	10.0253081	28.2666294	10.6286275	38.8952569	25.3223490	64.2176059	95.9413505	160.1589564
2035	6.2102135	19.1984920	11.1330344	30.3315264	11.5979240	41.9294504	27.6721710	69.6016214	104.9639609	174.5655823

Table B-17  
**Unit Variable OMP&R Component of Transportation Charge**  
(Dollars per Acre-Foot)

Calendar Year	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	
	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	22.095404	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	-6.5302091	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	-5.3795304	20.7492109	4.6062121	25.3554230	-5.2137446	20.1416784	-30.4802775	-10.3385991	1.8155308	27.9442721
2001	-4.6442419	172.3301572	29.8036895	202.1338467	-5.7699535	196.3638932	-30.9018409	165.4620523	13.4290093	190.4034084
2002	-5.4660253	66.3709489	12.7407302	79.1116791	-6.4072093	72.7044698	-30.1661581	42.5383117	4.7974153	76.6343895
2003	-3.3577630	83.1146696	15.2205944	98.3352640	-7.2230635	91.1122005	-30.5804591	60.5317414	5.9575805	92.4300131
2004	-5.5585791	84.7312345	15.7556155	100.4868500	-7.4295016	93.0573484	-30.2399666	62.8173818	6.2828126	96.5726262
2005	-5.2747212	117.9443717	25.3489281	143.2932998	-9.0060357	134.2872641	-31.7566486	102.5306155	6.8933417	130.1124346
2006	-4.8625348	115.7478054	21.4060374	137.1538428	-8.7129211	128.4409217	-27.0305814	101.4103403	9.1275018	129.7378420
2007	-4.0497427	115.7287870	21.0355271	136.7643141	-7.0966133	129.6677008	-26.8323268	102.8353740	9.1140059	128.8925357
2008	-3.7952251	101.5578995	18.8977724	120.4556719	-5.2803784	115.1752935	-25.4007847	89.7745088	8.2485731	113.6016937
2009	-3.9424117	107.7700420	20.6549552	128.4249972	-5.5048309	122.9201663	-26.5521997	96.3679666	8.7015230	120.4139767
2010	-3.6443645	115.8994947	19.9706753	135.8701700	-5.0932542	130.7769158	-24.6579830	106.1189328	10.1416220	129.6854812
2011	-3.5325761	112.8083418	19.3194776	132.1278194	-4.9006315	127.2271879	-24.3341375	102.8930504	10.0144164	126.3553343
2012	-3.7487122	120.4384604	21.2538527	141.6923131	-5.2975965	136.3947166	-24.9563526	111.4383640	10.5943030	134.7814756
2013	-3.6318880	134.0618860	23.1592896	157.2211756	-5.1256941	152.0954815	-24.5357476	127.5597339	11.5272702	149.2210442
2014	-3.6512186	144.1219053	25.0200527	169.1419580	-5.1452683	163.9966897	-24.8947847	139.1019050	12.5738418	160.3469657
2015	-3.6617808	147.4014285	25.5830811	172.9845096	-5.2180219	167.7664877	-25.2125194	142.5539683	12.6818014	163.7450107
2016	-3.8051124	155.8140344	27.2168653	183.0308997	-5.4641310	177.5667687	-25.7598282	151.8069405	13.1464598	172.7656066
2017	-3.6492490	148.0377250	25.7180921	173.7558171	-5.2589854	168.4968317	-25.5244637	142.9723680	12.6812291	164.3682031
2018	-3.8887376	157.5085334	28.2158085	185.7243419	-5.8533709	179.8709710	-26.1310939	153.7398771	13.2809508	174.6782218
2019	-3.7213464	164.2753304	27.8865995	192.1619299	-5.4564511	186.7054788	-25.9394698	160.7660090	14.2738848	182.2705616
2020	-3.7840050	154.3118900	26.9674839	181.2793739	-5.6040580	175.6753159	-26.5831458	149.0921701	13.2621572	171.3580522
2021	-3.7953239	154.0927544	26.9963997	181.0891541	-5.6438533	175.4453008	-26.3527697	149.0925311	13.2402822	171.1283605
2022	-3.8184932	149.1332461	26.0304628	175.1637089	-5.6469497	169.5167592	-26.0725724	143.4441868	13.0425330	165.9942723
2023	-3.8655580	151.8110012	26.5511820	178.3621832	-5.7412935	172.6208897	-26.5084520	146.1124377	13.1113124	168.7878716
2024	-3.7532928	157.3711862	26.9547303	184.3259165	-5.5818618	178.7440547	-26.3256805	152.4183742	13.7079356	174.8324146
2025	-3.8139214	154.8592628	27.0848029	181.9440657	-5.6465952	176.2974705	-26.0294751	150.2679954	13.5302093	172.2033935
2026	-3.7950850	158.1127837	27.4055460	185.5183297	-5.6785977	179.8397320	-26.6593197	153.1804123	13.4641963	175.3720650
2027	-3.8147910	155.9137269	27.0176055	182.9313324	-5.6397750	177.2915574	-26.2976974	150.9938600	13.5800760	173.3085930
2028	-3.7766731	155.4383915	27.0320530	182.4704445	-5.6139299	176.8565146	-26.4549628	150.4015518	13.3726357	172.5877003
2029	-3.7947230	154.0627229	26.7355389	180.7982618	-5.6440772	175.1541846	-26.2867587	148.8674259	13.4364188	171.2938647
2030	-3.7660604	154.2266426	26.8008142	181.0274568	-5.5952199	175.4322369	-26.3418511	149.0903588	13.2821493	171.2748523
2031	-3.8645273	152.7009177	26.9109904	179.6119081	-6.0103458	173.6015623	-26.1121461	147.4894162	13.3385426	169.9039876
2032	-3.7294842	153.7971652	26.3685964	180.1657616	-5.7520557	174.4137059	-25.9478367	148.4658692	13.4055338	170.9322032
2033	-3.9052102	167.1876943	29.4301196	196.6178139	-6.1430565	190.4745754	-26.6672676	163.8074898	14.3344264	185.4273309
2034	-3.7623078	156.3966486	26.9655442	183.3621928	-5.8712127	177.4909801	-25.8294049	151.6615752	13.5793060	173.7382624
2035	-3.9544315	170.6111508	27.9983965	198.6095473	-6.0203282	192.5892191	-27.1351008	165.4541183	16.5020531	191.0676354

Table B-17  
**Unit Variable OMP&R Component of Transportation Charge**  
(Dollars per Acre-Foot)

Calendar Year	California Aqueduct (continued)							
	Reach 29G		Reach 29J		Reach 31A		Reach 33A	
	Warne Power Plant		Castaic Power Plant		Las Perillas and Badger Hill Pumping Plants		Devil's Den, Bluestone, and Polonio Pass Pumping Plants, and San Luis Obispo Power Plant	
	Unit Rate (31)	Cumulative Unit Rate (32)	Unit Rate (33)	Cumulative Unit Rate (34)	Unit Rate (35)	Cumulative Unit Rate (36)	Unit Rate (37)	Cumulative Unit Rate (38)
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	1.5014866	4.1196074	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	-14.1657262	13.7785459	-26.9670099	-13.1884640	1.8812840	4.8205816	14.2287810	19.0493626
2001	-16.7349298	173.6684786	-29.2914155	144.3770631	12.2882474	31.0118973	92.6688880	123.6807853
2002	-13.2004532	63.4339363	-23.7780801	39.6558562	5.3275412	13.9173690	41.4839974	55.4013664
2003	-13.9757183	78.4542948	-23.6270529	54.8272419	6.1491220	15.7452777	47.2292476	62.9745253
2004	-14.1574752	82.4151510	-23.6679973	58.7471537	6.3004236	16.6809359	51.1254724	67.8064083
2005	-9.9323717	120.1800629	-16.3170600	103.8630029	9.9641995	22.3524887	70.8536533	93.2061420
2006	-14.2477945	115.4900475	-25.3833339	90.1067136	9.7596580	22.4606908	71.4866344	93.9473252
2007	-14.3021014	114.5904342	-25.5744980	89.0159362	9.7778283	22.7826267	71.6654502	94.4480769
2008	-12.7319462	100.8697515	-21.6012119	79.2685396	12.2071178	25.3101052	70.8555405	96.1656457
2009	-13.0773517	107.3366250	-22.1575249	85.1791001	12.5968785	25.2107959	73.3555263	98.5663222
2010	-14.6119654	115.0735158	-24.8916051	90.1819107	12.5626617	27.4557619	76.6916886	104.1474505
2011	-14.5408918	111.8144425	-24.6882042	87.1262383	13.2443626	27.0140511	76.7198931	103.7339442
2012	-14.7735841	120.0078915	-25.2345236	94.7733679	14.2222007	28.0325472	79.3138561	107.3464033
2013	-14.8857986	134.3352456	-25.3836955	108.9515501	15.4704065	32.2670248	86.9278197	119.1948445
2014	-15.3273402	145.0196255	-26.0592624	118.9603631	16.5082782	32.5678152	93.2588758	125.8266910
2015	-15.2441739	148.5008368	-25.9036397	122.5971971	16.7359653	34.1009596	94.6476987	128.7486583
2016	-15.6637487	157.1018579	-26.6389285	130.4629294	16.8930838	36.2195911	95.6062548	131.8258459
2017	-15.3114811	149.0567220	-26.0564362	123.0002858	16.6687633	34.2192420	94.2377719	128.4570139
2018	-15.5189193	159.1593025	-26.4773361	132.6819664	17.1114883	34.9973864	96.9384282	131.9358146
2019	-16.3889309	165.8816307	-28.0812619	137.8003688	17.5007066	37.3443582	99.3126114	136.6569696
2020	-16.0617468	155.2963054	-27.4094282	127.8868772	16.6163028	34.6172657	93.9177770	128.5350427
2021	-16.0594198	155.0689407	-27.4240318	127.6449089	16.5912674	34.3545889	93.7650004	128.1195893
2022	-16.3130622	149.6812101	-27.8644887	121.8167214	16.0976544	32.8206950	90.7539959	123.5746909
2023	-16.3087057	152.4791659	-27.8572184	124.6219475	16.1853612	33.8484711	91.2890605	125.1375316
2024	-16.4652491	158.3671655	-28.1282870	130.2388785	16.7575785	35.7472777	94.7795412	130.5268189
2025	-16.3228138	155.8805797	-27.8820027	127.9985770	16.6848139	33.5645641	94.3356955	127.9002596
2026	-16.1353838	159.2366812	-27.5580756	131.6786056	16.7951938	36.3395390	95.0090667	131.3486057
2027	-16.5214532	156.7871407	-28.2220570	128.5650837	16.5507426	34.6496273	93.5178223	128.1674496
2028	-16.1541447	156.4335556	-27.5884637	128.8450919	16.6615451	35.0021529	94.1938103	129.1959632
2029	-16.4357906	154.8580741	-28.0774431	126.7806310	16.4569052	34.1722385	92.9454864	127.1177249
2030	-16.1203530	155.1544993	-27.5321541	127.6223452	16.5848458	34.7745513	93.7259328	128.5004841
2031	-16.2889625	153.6150251	-27.8417965	125.7732286	16.3660326	33.4479293	92.3911426	125.8390719
2032	-16.1556220	154.7765812	-27.6922188	127.0843624	16.6804428	34.6534946	94.3090611	128.9625557
2033	-16.3184221	169.1089088	-28.0339981	141.0749107	17.4899277	36.7867225	99.2468811	136.0336036
2034	-16.1767302	157.5615322	-27.7366844	129.8248478	16.8689628	34.8825112	95.4590370	130.3415482
2035	-20.0311909	171.0364445	-34.4255414	136.6109031	16.5364308	35.7349228	93.4305214	129.1654442

Table B-18

## Variable OMP&amp;R Component of Transportation Charge for Each Contractor

(Dollars)

Sheet 1 of 4

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	21,963	94,060	116,023	360,008	228,079	723,403	1,311,490	75,474	433,202	508,676
2001	289,347	531,408	820,755	1,679,658	991,676	2,836,152	5,507,486	529,725	2,343,256	2,872,981
2002	88,681	261,464	350,145	1,048,458	628,877	1,426,176	3,103,511	241,273	1,537,472	1,778,745
2003	127,492	258,946	386,438	1,048,129	630,700	2,239,871	3,918,700	280,426	1,698,297	1,978,723
2004	143,017	340,646	483,663	1,291,768	608,853	1,572,297	3,472,918	282,414	2,014,189	2,296,603
2005	237,919	437,403	675,322	1,688,883	1,035,088	2,495,938	5,219,909	382,238	3,474,725	3,856,963
2006	638,674	782,389	1,421,063	3,338,286	1,306,145	4,128,886	8,773,317	2,348,683	4,825,604	7,174,287
2007	1,002,587	579,841	1,582,428	2,800,837	1,291,718	3,320,849	7,413,404	2,361,202	4,296,065	6,657,267
2008	528,060	563,529	1,091,589	2,814,490	1,354,101	3,488,553	7,657,144	2,404,141	4,374,191	6,778,332
2009	556,370	581,970	1,138,340	2,766,623	1,366,512	3,528,946	7,662,081	2,464,158	4,483,388	6,947,546
2010	532,843	666,097	1,198,940	2,951,706	1,481,895	3,971,585	8,405,186	2,603,686	4,737,251	7,340,937
2011	542,101	666,804	1,208,905	2,931,205	1,426,301	3,834,865	8,192,371	2,593,349	4,718,442	7,311,791
2012	570,899	688,357	1,259,256	2,982,231	1,450,246	3,903,387	8,335,864	2,683,660	4,882,759	7,566,419
2013	637,256	750,712	1,387,968	3,391,296	1,654,044	4,429,186	9,474,526	2,979,871	5,421,697	8,401,568
2014	698,999	802,935	1,501,934	3,467,430	1,686,209	4,538,443	9,692,082	3,145,667	5,723,353	8,869,020
2015	734,035	815,192	1,549,227	3,603,217	1,755,261	4,710,212	10,068,690	3,218,716	5,856,261	9,074,977
2016	764,565	823,612	1,588,177	3,771,487	1,842,367	4,920,053	10,533,907	3,295,646	5,996,230	9,291,876
2017	775,590	812,985	1,588,575	3,607,093	1,757,893	4,713,810	10,078,796	3,211,425	5,842,996	9,054,421
2018	823,297	835,654	1,658,951	3,681,890	1,794,223	4,811,822	10,287,935	3,298,395	6,001,232	9,299,627
2019	869,820	855,700	1,725,520	3,889,380	1,899,572	5,074,623	10,863,575	3,416,424	6,215,979	9,632,403
2020	843,499	811,913	1,655,412	3,622,918	1,767,277	4,731,215	10,121,410	3,213,376	5,846,545	9,059,921
2021	845,960	810,860	1,656,820	3,599,873	1,755,486	4,702,206	10,057,565	3,202,990	5,827,648	9,030,638
2022	817,381	786,062	1,603,443	3,448,964	1,680,576	4,507,692	9,637,232	3,089,367	5,620,918	8,710,285
2023	822,459	790,469	1,612,928	3,534,390	1,724,548	4,614,710	9,873,648	3,128,438	5,692,006	8,820,444
2024	855,589	819,217	1,674,806	3,719,876	1,816,835	4,853,369	10,390,080	3,263,170	5,937,143	9,200,313
2025	851,376	815,560	1,666,936	3,539,415	1,723,394	4,628,394	9,891,203	3,197,506	5,817,671	9,015,177
2026	857,768	821,107	1,678,875	3,769,836	1,842,572	4,915,913	10,528,321	3,283,715	5,974,523	9,258,238
2027	843,614	808,825	1,652,439	3,617,630	1,765,253	4,723,221	10,106,104	3,204,186	5,829,825	9,034,011
2028	850,029	814,391	1,664,420	3,616,664	1,765,894	4,719,825	10,102,383	3,229,899	5,876,608	9,106,507
2029	838,181	804,110	1,642,291	3,575,511	1,743,929	4,669,751	9,989,191	3,177,943	5,782,077	8,960,020
2030	845,590	810,540	1,656,130	3,623,953	1,773,257	4,744,446	10,151,656	3,212,512	5,844,973	9,057,485
2031	832,919	799,546	1,632,465	3,512,002	1,711,531	4,589,615	9,813,148	3,145,977	5,723,916	8,869,893
2032	851,124	815,340	1,666,464	3,631,590	1,771,189	4,743,163	10,145,942	3,224,064	5,865,991	9,090,055
2033	897,993	856,011	1,754,004	3,836,121	1,872,336	5,007,566	10,716,023	3,400,840	6,187,624	9,588,464
2034	862,039	824,813	1,686,852	3,658,158	1,783,742	4,778,668	10,220,568	3,258,539	5,928,716	9,187,255
2035	842,785	808,106	1,650,891	3,676,519	1,797,589	4,793,044	10,267,152	3,229,136	5,875,219	9,104,355
<b>Total</b>	<b>24,702,040</b>	<b>25,716,953</b>	<b>50,418,993</b>	<b>114,991,050</b>	<b>58,523,279</b>	<b>163,739,338</b>	<b>337,253,667</b>	<b>93,349,415</b>	<b>178,934,415</b>	<b>272,283,830</b>

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)

Sheet 2 of 4

Calendar Year	San Joaquin Valley Area								
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Kern County Water Agency		County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
				Municipal and Industrial (14)	Agricultural (15)				
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	68,977	5,176	0	0	440,922	2,355	4,760	65,680	587,870
1969	56,774	101	0	0	321,387	181	3,338	17,956	399,737
1970	69,818	6,811	0	0	470,867	0	5,595	16,550	569,641
1971	53,097	7,747	0	0	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	4,200,194	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	15,055	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	177,942	5,288	0	380,060	3,714,591	10,581	9,062	582,901	4,880,425
2001	777,930	25,464	0	442,768	11,536,646	29,209	45,395	1,115,218	13,972,630
2002	420,202	12,069	0	813,240	7,325,490	24,515	29,355	797,224	9,422,095
2003	442,210	13,780	0	1,062,933	9,261,611	35,429	27,934	1,015,667	11,859,564
2004	509,476	36,975	0	1,306,793	8,810,817	93,975	33,067	843,400	11,634,503
2005	784,018	44,040	0	1,261,996	14,285,529	116,177	31,785	1,208,415	17,731,960
2006	753,717	38,103	0	1,648,159	14,055,693	114,309	48,027	1,222,182	17,880,190
2007	745,734	39,014	0	1,683,028	14,229,998	117,043	50,017	1,251,413	18,116,247
2008	751,365	39,309	0	1,672,657	14,196,512	117,927	51,943	1,260,861	18,090,574
2009	723,320	37,842	0	1,622,147	13,923,103	113,525	47,765	1,213,799	17,681,501
2010	854,015	44,679	0	2,042,894	16,017,667	134,038	59,623	1,433,118	20,586,034
2011	789,595	41,309	0	1,897,403	15,047,372	123,927	53,515	1,325,016	19,278,137
2012	791,927	41,431	0	1,913,955	15,309,061	124,293	52,127	1,328,928	19,561,722
2013	963,168	50,390	0	2,308,166	18,217,115	151,170	66,562	1,616,288	23,372,859
2014	920,902	48,179	0	2,230,564	17,867,684	144,536	59,871	1,545,361	22,817,097
2015	995,761	52,095	0	2,399,043	19,062,679	156,285	66,828	1,670,981	24,403,672
2016	1,108,240	57,980	0	2,657,374	20,913,453	173,939	76,833	1,859,732	26,847,551
2017	1,006,397	52,651	0	2,423,180	19,227,385	157,954	67,870	1,688,830	24,624,267
2018	1,025,631	53,658	0	2,479,381	19,737,410	160,973	67,946	1,721,106	25,246,105
2019	1,137,895	59,531	0	2,734,452	21,565,481	178,593	78,081	1,909,495	27,663,528
2020	1,032,229	54,003	0	2,488,909	19,731,442	162,009	69,515	1,732,179	25,270,286
2021	1,018,602	53,290	0	2,458,807	19,522,777	159,870	68,173	1,709,311	24,990,830
2022	958,949	50,169	0	2,321,131	18,500,458	150,507	63,230	1,609,208	23,653,652
2023	1,012,856	52,989	0	2,442,951	19,361,755	158,968	68,238	1,699,668	24,797,425
2024	1,088,926	56,969	0	2,617,282	20,644,421	170,907	74,719	1,827,322	26,480,546
2025	967,936	50,639	0	2,349,186	18,792,272	151,918	62,801	1,624,288	23,999,040
2026	1,120,731	58,633	0	2,687,961	21,135,475	175,899	77,816	1,880,694	27,137,209
2027	1,037,844	54,297	0	2,503,529	19,841,236	162,890	69,875	1,741,601	25,411,272
2028	1,051,705	55,022	0	2,533,119	20,046,310	165,065	68,302	1,764,862	25,684,385
2029	1,015,850	53,146	0	2,452,715	19,470,437	159,438	67,995	1,704,693	24,924,274
2030	1,043,052	54,569	0	2,512,415	19,887,791	163,707	70,661	1,750,341	25,482,536
2031	979,527	51,246	0	2,371,414	18,898,117	153,737	64,559	1,643,740	24,162,340
2032	1,030,629	53,919	0	2,484,596	19,701,678	161,757	69,397	1,729,493	25,231,469
2033	1,106,536	57,890	0	2,670,366	21,158,446	173,671	74,393	1,856,873	27,098,175
2034	1,032,951	54,041	0	2,493,523	19,802,428	162,122	69,075	1,733,390	25,347,530
2035	1,100,899	57,595	0	2,662,796	21,063,893	172,786	74,033	1,847,413	26,979,415
<b>Total</b>	<b>35,945,946</b>	<b>1,846,048</b>	<b>0</b>	<b>82,884,386</b>	<b>683,370,783</b>	<b>5,095,744</b>	<b>2,392,092</b>	<b>61,850,474</b>	<b>873,385,474</b>

Table B-18

## Variable OMP&amp;R Component of Transportation Charge for Each Contractor

(Dollars)

Sheet 3 of 4

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	1,734,157	(365,967)	(437,561)	24,049	(602,058)	0	282,276	187,988	(190,220)	(156,526)
2001	10,829,311	4,470,913	1,505,705	207,557	2,483,585	0	854,781	1,796,887	4,382,759	390,490
2002	3,867,197	1,912,966	712,729	159,150	1,175,759	0	326,365	1,227,597	3,040,902	1,057,120
2003	4,989,291	2,899,484	874,260	142,408	1,441,806	0	1,399,911	959,725	1,659,478	1,327,703
2004	5,065,068	3,188,898	971,471	186,673	1,331,100	0	1,304,746	1,030,501	3,527,196	787,793
2005	8,081,312	5,017,625	9,769,630	424,348	3,753,748	82,561	1,980,964	1,390,918	7,472,021	1,127,427
2006	17,984,547	8,852,787	12,280,792	768,077	5,070,517	266,220	6,940,107	2,884,667	10,394,560	2,933,294
2007	16,853,120	8,275,617	12,453,364	767,633	5,141,769	266,176	6,957,103	2,865,098	11,692,382	2,974,513
2008	14,812,626	7,384,490	10,871,693	684,141	4,488,725	233,583	6,126,938	2,163,183	10,781,919	2,585,506
2009	15,709,855	7,929,145	11,670,161	727,564	4,818,398	247,871	6,659,960	2,295,502	7,140,866	2,775,397
2010	16,388,189	7,698,997	11,100,040	758,506	4,043,131	266,569	10,269,003	2,468,659	9,678,047	3,056,225
2011	15,951,100	7,932,362	12,460,348	737,918	5,144,653	259,459	9,986,309	2,402,818	10,556,827	2,963,320
2012	17,029,998	9,022,425	13,495,186	791,089	5,571,918	277,008	10,708,397	2,565,339	11,433,574	3,209,425
2013	18,956,351	10,372,188	15,447,484	882,154	6,377,987	308,342	11,882,626	2,855,518	13,087,629	3,673,720
2014	20,378,837	11,325,027	16,845,241	951,181	6,955,095	331,480	12,783,430	3,069,797	14,271,855	4,006,135
2015	20,842,562	11,671,253	17,263,286	973,046	7,127,698	339,023	13,073,851	3,139,650	14,626,037	4,105,554
2016	22,032,104	12,420,071	18,383,820	1,029,887	7,590,347	358,372	13,832,917	3,318,839	15,575,392	4,372,040
2017	20,932,534	11,709,627	17,313,954	977,282	7,148,618	340,487	13,132,114	3,153,204	14,668,965	4,117,604
2018	22,271,707	12,631,323	18,617,899	1,043,252	7,686,994	362,270	14,035,581	3,354,932	15,773,711	4,427,708
2019	23,228,532	13,118,595	19,468,764	1,082,892	8,038,300	377,833	14,524,044	3,499,065	16,494,593	4,630,061
2020	21,819,701	12,174,831	18,055,062	1,018,917	7,454,609	354,917	13,700,525	3,286,843	15,296,857	4,293,855
2021	21,788,715	12,151,795	18,055,106	1,017,583	7,454,627	354,413	13,686,063	3,282,176	15,296,894	4,293,865
2022	21,087,441	11,596,952	17,371,091	983,197	7,172,209	343,006	13,238,363	3,176,538	14,717,374	4,131,193
2023	21,466,076	11,864,009	17,694,216	1,001,201	7,305,622	349,165	13,480,027	3,233,574	14,991,136	4,208,038
2024	22,252,286	12,398,741	18,457,865	1,036,716	7,620,919	361,954	13,931,472	3,352,006	15,638,125	4,389,649
2025	21,897,100	12,185,465	18,197,454	1,022,525	7,513,400	356,176	13,750,733	3,298,502	15,417,496	4,327,718
2026	22,357,148	12,535,803	18,550,148	1,043,070	7,659,021	363,659	14,021,181	3,367,802	15,716,310	4,411,596
2027	22,046,201	12,239,396	18,285,356	1,028,291	7,549,693	358,602	13,825,669	3,320,962	15,491,970	4,348,623
2028	21,978,989	12,266,053	18,213,628	1,025,768	7,520,078	357,508	13,790,712	3,310,838	15,431,199	4,331,565
2029	21,784,469	12,069,516	18,027,845	1,015,894	7,443,371	354,344	13,664,405	3,281,536	15,273,798	4,287,382
2030	21,807,647	12,149,647	18,054,846	1,017,507	7,454,519	354,721	13,681,680	3,285,027	15,296,674	4,293,803
2031	21,591,910	11,973,611	17,860,968	1,006,889	7,374,471	351,212	13,574,216	3,252,530	15,132,414	4,247,695
2032	21,746,919	12,098,431	17,979,217	1,011,599	7,423,293	353,733	13,617,012	3,275,880	15,232,598	4,275,817
2033	23,640,340	13,430,331	19,837,087	1,104,754	8,190,374	384,532	14,859,485	3,561,098	16,806,648	4,717,656
2034	22,114,486	12,359,326	18,366,217	1,029,448	7,583,079	359,712	13,858,400	3,331,249	15,600,478	4,367,853
2035	24,124,417	13,005,358	20,036,494	1,117,017	8,272,706	392,406	15,012,606	3,634,018	16,975,593	4,765,079
<b>Total</b>	<b>674,500,667</b>	<b>352,410,498</b>	<b>516,997,123</b>	<b>30,630,041</b>	<b>223,609,555</b>	<b>10,410,982</b>	<b>381,305,662</b>	<b>102,624,393</b>	<b>446,613,667</b>	<b>124,506,407</b>

Table B-18

## Variable OMP&amp;R Component of Transportation Charge for Each Contractor

(Dollars)

Sheet 4 of 4

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	(15,233,365)	5,914	(14,751,313)	0	0	0	0	0	(7,934,699)
2001	0	158,938,552	267,098	186,127,638	0	0	0	0	0	209,301,490
2002	0	57,764,258	273,053	71,517,096	0	0	0	0	0	86,171,592
2003	7,022	89,967,712	348,561	106,017,361	0	0	0	0	0	124,160,786
2004	52,829	103,460,119	404,207	121,310,601	0	0	0	0	0	139,198,288
2005	535,415	166,874,868	153,717	206,664,554	0	0	0	0	0	234,148,708
2006	709,872	182,234,384	1,882,092	253,201,916	0	0	0	0	0	288,450,773
2007	771,265	182,374,007	1,860,878	253,252,925	0	0	0	0	0	287,022,271
2008	1,553,099	160,811,874	1,653,415	224,151,192	0	0	0	0	0	257,768,831
2009	1,667,166	172,713,773	1,773,378	236,129,036	0	0	0	0	0	269,558,504
2010	1,835,858	188,189,651	1,882,047	257,634,922	0	0	0	0	0	295,166,019
2011	1,780,050	182,179,912	1,820,293	254,175,369	0	0	0	0	0	290,166,573
2012	1,927,884	197,688,252	1,974,956	275,695,453	0	0	0	0	0	312,418,714
2013	2,206,783	226,717,173	2,258,990	315,026,945	0	0	0	0	0	357,663,866
2014	2,406,463	247,369,861	2,461,294	343,155,696	0	0	0	0	0	386,035,829
2015	2,466,184	254,138,406	2,533,540	352,300,090	0	0	0	0	0	397,396,656
2016	2,626,260	270,549,669	2,693,171	374,782,889	0	0	0	0	0	423,044,400
2017	2,473,422	254,924,096	2,542,083	353,433,990	0	0	0	0	0	398,780,049
2018	2,659,700	274,507,594	2,737,043	380,109,714	0	0	0	0	0	426,602,332
2019	2,781,252	286,183,577	2,844,463	396,271,971	0	0	0	0	0	446,156,997
2020	2,579,295	265,487,960	2,644,077	368,167,449	0	0	0	0	0	414,274,478
2021	2,579,301	265,265,788	2,639,284	367,865,610	0	0	0	0	0	413,601,463
2022	2,481,584	254,303,583	2,524,108	353,126,639	0	0	0	0	0	396,731,251
2023	2,527,745	259,529,916	2,580,189	360,230,914	0	0	0	0	0	405,335,359
2024	2,636,838	270,950,061	2,693,382	375,720,014	0	0	0	0	0	423,465,759
2025	2,599,636	266,756,913	2,647,800	369,970,918	0	0	0	0	0	414,543,274
2026	2,650,021	273,029,942	2,720,380	378,426,081	0	0	0	0	0	427,028,724
2027	2,612,194	267,997,848	2,660,201	371,765,006	0	0	0	0	0	417,968,832
2028	2,601,947	267,667,888	2,663,806	371,159,979	0	0	0	0	0	417,717,674
2029	2,575,406	264,247,676	2,624,057	366,649,699	0	0	0	0	0	412,165,475
2030	2,579,264	265,242,910	2,639,173	367,857,418	0	0	0	0	0	414,205,225
2031	2,551,567	261,954,445	2,603,166	363,475,094	0	0	0	0	0	407,952,940
2032	2,568,460	264,128,728	2,628,918	366,340,605	0	0	0	0	0	412,474,535
2033	2,833,870	292,211,705	2,909,805	404,487,685	0	0	0	0	0	453,644,351
2034	2,623,745	269,818,671	2,683,868	374,056,538	0	0	0	0	0	420,498,743
2035	2,862,356	289,739,509	2,840,659	402,778,218	0	0	0	0	0	450,780,031
<b>Total</b>	<b>70,323,753</b>	<b>7,935,533,597</b>	<b>75,196,590</b>	<b>10,944,662,937</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12,478,004,900</b>

**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	663,752	603,483	1,985,220	3,252,455	115,960	229,807	345,767
1969	254,715	0	254,715	787,196	539,340	2,083,254	3,409,790	185,156	358,861	544,017
1970	277,547	0	277,547	822,926	532,567	2,202,767	3,558,260	200,150	387,675	587,825
1971	227,474	0	227,474	787,967	552,113	2,169,897	3,509,977	202,413	392,912	595,325
1972	224,978	0	224,978	829,583	678,520	2,320,421	3,828,524	209,057	406,589	615,646
1973	221,091	31,366	252,457	794,795	549,393	2,338,619	3,682,807	206,557	402,723	609,280
1974	240,498	32,938	273,436	818,567	564,594	2,506,358	3,889,519	208,545	407,090	615,635
1975	237,459	36,291	273,750	868,402	605,730	2,409,923	3,884,055	225,895	439,873	665,768
1976	271,292	40,836	312,128	959,159	734,811	2,500,506	4,194,476	228,976	447,299	676,275
1977	293,627	45,096	338,723	923,318	713,558	2,476,400	4,113,276	238,699	468,721	707,420
1978	273,870	49,178	323,048	978,639	692,588	2,785,987	4,457,214	245,331	484,259	729,590
1979	289,479	53,340	342,819	1,043,792	736,358	2,813,578	4,593,728	243,110	483,437	726,547
1980	310,846	67,748	378,594	1,161,792	866,372	3,028,204	5,056,368	269,858	537,074	806,932
1981	347,781	87,408	435,189	1,127,443	879,357	2,917,582	4,924,382	288,997	586,256	875,253
1982	438,335	106,918	545,253	1,165,315	850,483	3,262,104	5,277,902	290,049	582,758	872,807
1983	354,787	151,259	506,046	1,176,851	900,363	3,795,446	5,872,660	319,214	633,181	952,395
1984	467,336	224,245	691,581	1,468,980	1,097,480	5,737,802	8,304,262	351,621	695,559	1,047,180
1985	736,074	364,305	1,100,379	1,919,407	1,789,369	6,551,546	10,260,322	394,593	776,994	1,171,587
1986	1,084,728	692,479	1,777,207	1,746,594	1,528,732	6,863,229	10,138,555	385,545	762,683	1,148,228
1987	1,773,801	1,559,243	3,333,044	2,236,438	2,011,876	6,675,355	10,923,669	385,289	812,310	1,197,599
1988	2,231,563	2,333,792	4,565,355	2,238,055	2,210,523	6,368,850	10,817,428	420,153	978,621	1,398,774
1989	2,397,272	3,326,435	5,723,707	2,154,352	1,872,030	5,916,713	9,943,095	414,225	1,162,723	1,576,948
1990	2,746,134	3,433,321	6,179,455	2,573,640	2,261,914	6,668,440	11,503,994	487,609	1,234,409	1,722,018
1991	2,748,636	3,682,311	6,430,947	1,753,268	1,621,188	4,527,928	7,902,384	491,419	1,476,387	1,967,806
1992	2,554,528	3,528,958	6,083,486	2,074,449	2,003,327	5,385,858	9,463,634	551,042	1,491,155	2,042,197
1993	2,592,888	3,504,240	6,097,128	2,879,691	2,011,222	6,511,865	11,402,778	610,116	1,675,438	2,285,554
1994	2,718,330	3,537,462	6,255,792	2,906,428	2,642,454	7,314,499	12,863,381	767,900	2,473,450	3,241,350
1995	2,649,273	3,509,935	6,159,208	3,034,802	2,289,027	5,893,667	11,217,496	995,341	4,977,122	5,972,463
1996	2,699,210	3,891,715	6,590,925	2,583,945	2,137,443	6,675,491	11,396,879	1,837,384	13,766,531	15,603,915
1997	2,641,890	3,631,175	6,273,065	2,657,201	2,007,332	6,551,468	11,216,001	2,294,918	21,860,553	24,155,471
1998	2,539,293	3,479,662	6,018,955	2,266,232	2,066,776	6,303,465	10,636,473	2,978,238	26,609,547	29,587,785
1999	2,680,701	3,828,726	6,509,427	2,853,882	2,432,640	8,330,002	13,616,524	3,027,264	27,406,591	30,433,855
2000	2,828,686	4,303,689	7,132,375	3,899,199	2,293,562	7,000,811	13,193,572	2,980,864	28,383,322	31,364,186
2001	3,346,247	4,911,522	8,257,769	5,219,887	2,795,459	9,018,344	17,033,690	3,520,438	30,308,763	33,829,201
2002	3,544,858	5,035,148	8,580,006	5,007,675	2,764,991	9,888,989	17,661,655	3,238,832	30,094,452	33,333,284
2003	3,657,146	5,380,925	9,038,071	4,828,642	2,493,892	8,680,442	16,002,976	3,326,526	30,403,881	33,730,407
2004	4,126,419	5,580,042	9,706,461	5,659,128	2,791,764	8,141,758	16,592,650	3,340,371	30,865,369	34,205,740
2005	3,855,322	5,482,315	9,337,637	6,203,978	3,391,470	10,769,085	20,364,533	3,445,121	32,697,105	36,142,226
2006	4,227,217	5,802,550	10,029,767	8,432,126	3,763,524	13,038,199	25,233,849	5,927,046	34,345,797	40,272,843
2007	4,778,833	5,605,481	10,384,314	8,011,132	3,894,857	12,397,118	24,303,107	5,982,982	33,945,781	39,298,763
2008	4,061,010	4,808,074	8,869,084	8,324,081	4,130,555	11,844,533	24,299,169	5,989,300	32,851,861	38,841,161
2009	4,098,645	4,830,811	8,929,456	8,327,311	4,185,789	11,990,077	24,503,177	6,082,350	33,084,687	39,167,037
2010	4,080,830	5,030,259	9,111,089	8,465,941	4,284,491	12,435,864	25,186,296	6,230,313	33,418,751	39,649,064
2011	4,054,779	4,986,976	9,041,755	8,290,906	4,140,225	12,061,834	24,492,965	6,070,745	33,132,699	39,203,444
2012	4,118,800	5,033,033	9,151,833	8,495,136	4,238,810	12,330,508	25,064,450	6,282,197	33,517,779	39,799,976
2013	4,106,989	5,008,167	9,115,156	8,362,043	4,157,073	12,009,132	24,528,248	6,285,703	33,525,188	39,810,891
2014	4,091,799	4,976,104	9,067,903	8,012,774	3,950,473	11,487,737	23,450,984	6,163,183	33,293,458	39,456,641
2015	4,114,863	4,975,216	9,090,079	8,016,151	3,902,701	11,215,724	23,134,576	6,182,905	33,328,879	39,511,784
2016	4,121,386	4,978,893	9,100,279	8,130,153	3,951,479	11,231,525	23,313,157	6,236,412	33,422,297	39,658,709
2017	4,106,122	4,968,618	9,074,740	7,891,085	3,836,581	10,910,320	22,637,986	6,121,313	33,211,207	39,332,520
2018	4,053,957	4,982,655	9,036,612	7,806,497	3,812,355	10,833,344	22,452,196	6,128,428	33,222,360	39,350,788
2019	4,049,776	5,000,724	9,050,500	7,905,227	3,880,770	10,990,334	22,776,331	6,227,524	33,398,831	39,626,355
2020	4,020,626	4,958,639	8,979,265	7,607,810	3,735,946	10,614,595	21,958,351	6,023,089	33,026,841	39,049,930
2021	4,023,835	4,960,793	8,984,628	7,590,215	3,727,296	10,595,611	21,913,122	6,019,470	33,019,740	39,039,210
2022	3,993,446	4,935,921	8,929,367	7,436,508	3,650,507	10,394,008	21,481,023	5,904,057	32,808,115	38,712,172
2023	3,993,738	4,902,516	8,896,254	7,507,477	3,687,715	10,481,468	21,676,660	5,932,631	32,857,791	38,790,422
2024	4,021,626	4,928,166	8,949,792	7,683,707	3,775,263	10,707,024	22,165,994	6,059,402	33,088,349	39,147,751
2025	4,003,177	4,917,161	8,920,338	7,482,314	3,671,556	10,454,312	21,608,182	5,976,266	32,937,734	38,914,000
2026	4,002,961	4,915,758	8,918,719	7,707,312	3,787,938	10,734,065	22,229,315	6,061,190	33,087,885	39,149,075
2027	3,988,703	4,903,870	8,892,573	7,563,153	3,714,328	10,551,011	21,828,492	5,984,215	32,948,818	38,933,033
2028	3,988,073	4,900,318	8,888,391	7,546,933	3,707,034	10,525,107	21,779,074	6,000,187	32,969,825	38,970,012
2029	3,973,275	4,887,282	8,860,557	7,503,613	3,683,723	10,471,849	21,659,185	5,948,118	32,873,568	38,821,686
2030	3,967,830	4,876,021	8,843,851	7,551,999	3,708,048	10,533,273	21,793,320	5,978,016	32,922,278	38,900,294
2031	3,942,399	4,848,634	8,791,033	7,426,427	3,643,576	10,372,812	21,442,815	5,908,488	32,786,559	38,695,047
2032	3,943,868	4,837,815	8,781,683	7,537,665	3,699,446	10,514,874	21,751,985	5,984,333	32,924,068	38,908,401
2033	3,960,352	4,833,459	8,793,811	7,746,967	3,803,347	10,786,935	22,337,249	6,162,458	33,254,204	39,416,662
2034	3,851,438	4,726,074	8,577,512	7,556,789	3,707,914	10,540,269	21,804,972	6,018,589	32,990,186	39,008,775
2035	3,682,346	4,560,387	8,242,733	7,555,782	3,711,749	10,528,751	21,796,282	5,985,856	32,925,574	38,911,430
<b>Total</b>	<b>182,495,077</b>	<b>224,804,398</b>	<b>407,299,475</b>	<b>320,357,761</b>	<b>176,895,171</b>	<b>536,301,435</b>	<b>1,033,554,367</b>	<b>221,882,987</b>	<b>1,293,519,898</b>	<b>1,515,402,885</b>

Table B-19  
**Total Transportation Charge for Each Contractor**  
(Dollars)

Calendar Year	San Joaquin Valley Area								Total (19)
	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)	
				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	73,569	0	0	0	0	79,598
1966	0	0	12,039	137,330	0	0	0	0	149,369
1967	0	0	26,257	267,611	0	0	0	0	293,868
1968	183,862	8,870	54,589	445,438	1,540,889	12,867	11,530	208,231	2,466,276
1969	179,467	7,529	87,576	525,094	2,384,907	11,478	10,529	354,512	3,561,092
1970	201,413	14,296	94,674	573,999	2,906,156	11,605	13,063	291,843	4,107,048
1971	197,578	15,254	95,695	605,889	3,811,847	16,553	14,360	446,844	5,204,020
1972	220,034	16,122	98,789	631,615	4,976,783	13,996	20,588	1,075,554	7,053,481
1973	202,521	12,193	97,550	639,250	4,907,207	14,247	11,658	496,906	6,291,532
1974	281,910	12,162	98,460	698,246	5,207,643	14,338	12,732	594,274	6,919,765
1975	348,701	13,107	106,703	715,606	6,325,638	15,350	14,415	724,365	8,263,885
1976	304,024	13,653	108,083	774,290	6,677,821	15,718	16,078	561,754	8,471,422
1977	266,021	10,763	112,554	797,859	6,850,432	17,163	13,867	508,767	8,577,426
1978	354,812	4,441	115,521	890,945	8,300,970	17,546	17,903	502,238	10,204,375
1979	384,594	13,500	114,253	896,195	9,423,676	18,821	24,834	950,741	11,826,614
1980	405,641	11,850	125,950	888,893	9,978,752	19,365	24,185	735,091	12,189,727
1981	469,132	29,691	134,169	1,079,315	11,421,122	23,538	22,873	906,257	14,086,097
1982	463,641	12,841	135,057	1,004,667	12,251,067	21,552	22,336	743,481	14,654,642
1983	636,774	14,435	149,201	1,027,258	15,456,215	38,569	29,099	427,764	17,779,315
1984	909,265	14,849	164,505	1,063,180	23,581,203	53,018	59,573	782,001	27,627,594
1985	1,097,633	87,410	184,905	2,350,593	27,885,639	68,071	70,102	2,169,220	33,913,573
1986	1,261,691	33,866	180,445	2,365,159	30,464,233	79,353	75,959	2,179,302	36,640,009
1987	1,120,088	50,661	179,872	2,804,775	25,827,314	76,595	74,204	2,238,133	35,789,525
1988	1,105,516	61,456	193,735	2,750,424	29,155,654	72,740	60,077	2,195,595	35,595,197
1989	1,140,855	49,138	187,914	2,435,634	29,215,968	65,604	68,538	2,438,792	35,602,443
1990	864,724	34,300	221,391	2,541,316	27,329,801	49,604	48,966	1,865,305	32,955,407
1991	581,083	23,205	220,282	2,055,250	17,529,193	26,464	26,735	1,225,870	21,688,082
1992	950,372	39,041	241,456	2,369,788	25,827,314	54,314	50,789	1,903,010	31,436,084
1993	1,162,662	53,568	264,959	2,799,482	31,341,483	71,391	69,472	2,636,598	38,399,614
1994	1,017,767	43,695	306,359	2,808,831	29,217,366	58,930	57,239	2,112,561	35,622,748
1995	1,514,440	46,552	304,297	3,499,611	36,340,849	87,317	80,062	2,766,638	44,639,765
1996	1,373,712	48,184	389,202	3,560,139	37,287,563	84,418	73,710	4,312,529	47,129,458
1997	1,415,555	25,341	276,681	3,107,763	33,678,732	34,948	68,570	1,666,606	40,274,196
1998	1,268,528	34,325	381,881	2,734,119	29,689,144	40,018	60,014	1,797,969	36,005,998
1999	1,218,890	53,842	366,534	3,051,480	30,998,415	71,305	62,282	4,000,773	39,823,521
2000	1,085,714	37,942	304,938	2,563,942	26,442,332	59,528	54,426	2,744,344	33,293,166
2001	1,766,587	62,620	327,889	2,632,224	33,934,761	77,998	100,472	3,044,753	41,947,303
2002	1,339,534	43,278	320,876	2,955,961	28,592,406	71,058	77,273	2,497,892	35,898,278
2003	1,410,887	48,120	340,420	3,261,070	31,591,493	86,999	78,337	2,838,345	39,655,671
2004	1,479,191	77,810	344,112	3,643,930	30,912,692	231,497	81,982	2,386,220	39,157,434
2005	1,829,235	86,572	334,653	3,535,619	37,886,431	259,409	79,034	2,846,200	46,857,153
2006	1,776,737	76,712	339,989	4,011,701	37,494,700	251,416	98,435	2,807,503	46,857,193
2007	1,788,292	78,937	350,373	4,018,894	38,058,620	258,028	102,051	2,879,124	47,534,319
2008	1,756,468	77,093	360,711	3,972,842	37,659,318	254,373	102,769	2,824,708	47,008,282
2009	1,737,611	76,107	360,661	3,943,202	37,558,189	251,421	99,214	2,793,077	46,819,482
2010	1,868,697	82,966	360,646	4,409,110	39,665,838	272,004	111,104	3,013,072	49,783,437
2011	1,752,652	76,884	361,627	4,137,814	37,729,578	253,738	101,446	2,818,036	47,231,775
2012	1,797,700	79,240	361,684	4,257,954	38,797,946	260,804	102,951	2,893,611	48,551,890
2013	1,866,030	82,813	361,828	4,402,474	39,765,328	271,520	110,396	3,008,218	49,868,607
2014	1,724,807	75,422	359,163	4,084,713	37,548,607	249,346	96,980	2,771,177	46,910,215
2015	1,783,433	78,488	356,049	4,140,260	38,439,512	258,540	102,831	2,869,512	48,028,625
2016	1,891,986	84,171	349,725	4,325,338	40,212,691	275,592	112,583	3,051,762	50,303,848
2017	1,789,897	78,827	335,632	3,960,244	38,523,341	259,562	103,597	2,880,409	47,931,509
2018	1,798,032	79,251	313,108	3,872,294	38,825,458	252,323	102,905	2,893,991	48,137,362
2019	1,909,703	85,096	304,316	4,066,184	40,638,827	269,360	113,016	3,081,481	50,467,983
2020	1,804,975	79,616	302,738	3,790,161	38,825,249	252,664	104,510	2,905,690	48,065,603
2021	1,794,566	79,070	301,761	3,746,006	38,678,989	250,885	103,386	2,888,202	47,842,865
2022	1,734,961	75,951	301,059	3,598,246	37,656,047	241,461	98,436	2,788,168	46,494,329
2023	1,785,234	78,585	300,414	3,706,986	38,446,736	249,336	103,217	2,872,617	47,543,125
2024	1,859,044	82,445	299,980	3,873,635	39,687,513	260,896	109,537	2,996,442	49,169,492
2025	1,732,422	75,818	299,683	3,589,449	37,732,245	240,989	97,230	2,783,896	46,551,732
2026	1,884,891	83,799	298,943	3,925,349	40,063,659	264,901	112,235	3,039,865	49,673,642
2027	1,803,756	79,548	299,119	3,742,235	38,812,200	252,093	104,392	2,903,521	47,996,864
2028	1,815,911	80,191	295,837	3,765,550	38,974,904	254,008	102,723	2,924,109	48,213,233
2029	1,780,418	78,331	295,870	3,683,013	38,410,229	248,367	102,437	2,864,482	47,463,147
2030	1,806,244	79,685	295,345	3,736,324	38,798,994	252,362	105,020	2,907,888	47,981,862
2031	1,744,015	76,421	294,558	3,580,017	37,842,588	242,167	98,969	2,803,231	46,681,966
2032	1,793,634	79,026	293,494	3,691,937	38,605,926	250,012	103,740	2,886,759	47,704,528
2033	1,870,090	83,022	293,688	3,874,271	40,079,769	261,863	108,769	3,014,964	49,586,436
2034	1,796,668	79,181	293,102	3,691,408	38,726,867	250,193	103,453	2,891,725	47,832,597
2035	1,863,947	82,704	291,848	3,849,959	39,969,391	260,539	108,378	3,004,743	49,431,509
<b>Total</b>	<b>86,126,875</b>	<b>3,651,882</b>	<b>17,446,131</b>	<b>192,010,929</b>	<b>1,932,798,253</b>	<b>9,734,048</b>	<b>4,884,576</b>	<b>149,149,261</b>	<b>2,395,801,955</b>

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 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	16,292	4,370	37,158	1,143	28,437	8,205	82,811	34,987
1965	118,604	53,007	28,469	7,194	40,770	2,082	50,317	15,222	135,068	35,344
1966	215,783	101,265	51,201	12,478	73,153	3,753	90,398	27,679	232,502	61,465
1967	417,481	210,814	98,936	23,472	141,411	7,284	175,176	54,023	433,350	115,574
1968	744,423	478,148	176,741	41,509	251,199	12,870	311,115	95,466	782,164	208,926
1969	1,072,961	724,306	264,980	61,226	370,960	18,694	458,956	138,064	1,205,834	321,755
1970	1,396,258	904,183	371,841	89,700	519,318	25,231	633,037	184,837	1,778,188	467,573
1971	1,728,266	1,087,969	503,572	128,360	712,746	31,837	857,210	231,280	2,539,164	659,414
1972	2,047,567	1,306,673	640,469	181,206	925,635	42,403	1,111,743	274,599	3,405,860	865,096
1973	2,138,684	1,322,643	777,721	183,713	1,137,116	43,482	1,174,877	287,315	3,989,032	946,686
1974	2,202,559	1,381,991	794,370	193,283	1,163,959	45,211	1,206,920	292,071	4,015,999	990,604
1975	2,379,538	1,449,864	836,664	206,039	1,231,748	48,490	1,274,004	304,280	4,176,583	1,088,342
1976	2,732,795	1,445,139	883,917	215,085	1,307,416	51,463	1,316,621	313,685	4,317,081	1,141,598
1977	2,675,663	1,514,114	780,331	226,033	1,145,096	47,349	1,388,452	329,365	4,571,321	1,197,216
1978	2,993,398	1,598,782	961,714	231,040	1,420,607	47,118	1,388,547	321,681	4,477,656	1,208,719
1979	3,547,001	1,633,251	1,029,884	237,955	1,518,767	48,395	1,516,070	332,472	4,439,871	1,152,375
1980	4,093,661	1,714,784	1,119,820	259,401	1,679,887	53,349	1,635,461	360,461	4,853,142	1,269,447
1981	4,424,142	1,968,267	1,195,336	271,181	1,797,318	77,806	1,755,820	391,869	5,241,672	1,357,680
1982	3,986,642	2,059,781	1,245,875	280,313	1,883,595	55,961	1,952,220	406,891	5,428,365	1,565,182
1983	5,177,487	2,321,843	1,837,260	333,081	2,827,449	69,382	2,026,227	494,688	6,038,419	1,556,652
1984	7,213,475	3,363,432	2,920,907	445,338	4,553,458	75,773	2,253,803	553,321	7,066,939	2,331,850
1985	8,929,000	3,747,677	3,717,757	540,388	5,828,183	79,232	2,364,222	759,053	7,757,848	2,378,394
1986	8,828,003	4,315,112	4,143,406	577,474	6,515,952	102,399	2,473,404	1,000,062	7,875,058	3,047,740
1987	8,844,743	4,155,597	3,998,599	604,982	6,363,370	211,808	2,505,749	1,026,398	9,242,097	3,034,142
1988	8,319,630	4,218,751	3,997,283	615,999	6,426,525	124,667	2,560,184	779,820	9,522,748	2,828,998
1989	8,696,682	4,098,543	3,641,644	586,595	5,896,494	170,570	2,507,480	1,442,627	8,961,755	2,930,396
1990	9,984,740	4,538,850	4,316,751	620,394	6,957,035	289,349	2,703,052	1,639,829	9,812,509	3,678,107
1991	6,485,510	3,507,781	2,823,587	567,449	4,492,938	175,137	3,462,175	1,294,608	8,939,328	3,035,639
1992	8,586,450	4,465,346	2,895,179	470,165	4,610,064	121,335	4,263,610	1,129,578	8,590,851	2,980,091
1993	8,970,087	4,096,762	3,093,040	472,817	4,935,312	157,747	4,142,476	1,347,511	9,523,173	3,320,012
1994	11,156,938	4,709,755	3,137,745	554,800	5,007,501	225,808	5,135,439	1,698,985	10,229,192	4,077,199
1995	10,758,143	4,966,813	3,910,617	509,163	6,281,598	155,561	4,223,230	1,527,248	9,460,717	3,715,377
1996	11,126,949	5,154,893	6,847,516	553,231	11,124,415	150,613	4,290,081	1,867,203	9,886,813	3,807,422
1997	11,377,243	4,921,614	6,408,935	579,281	7,362,993	144,833	4,593,528	1,869,307	11,284,729	4,037,861
1998	9,919,725	4,560,880	5,509,633	546,772	5,890,021	146,260	5,631,561	1,477,975	11,206,251	3,324,156
1999	11,302,656	4,886,273	4,453,101	633,831	5,918,913	145,102	5,812,279	1,835,653	12,278,483	4,158,349
2000	10,521,638	6,821,864	2,868,215	594,564	4,288,678	115,486	5,644,815	1,447,117	11,873,213	3,247,526
2001	20,606,839	12,453,036	3,923,432	797,741	6,297,661	127,681	6,332,645	3,345,667	17,806,870	3,393,540
2002	11,835,392	9,584,078	3,147,974	755,078	5,018,644	109,232	5,442,262	2,712,019	18,536,212	4,743,152
2003	13,237,811	10,521,067	3,344,637	730,598	5,341,926	115,452	7,335,533	2,263,217	16,423,082	4,920,268
2004	13,977,203	11,687,940	3,863,636	817,603	5,214,476	123,387	7,164,570	2,479,208	20,398,002	4,325,493
2005	17,404,625	13,488,222	28,939,997	1,129,528	10,215,482	224,509	7,839,595	2,859,133	25,643,489	4,647,030
2006	30,022,036	18,971,499	31,986,894	1,579,364	11,896,369	460,925	14,298,864	4,753,599	29,545,452	7,160,644
2007	28,705,167	18,353,086	32,731,955	1,593,409	12,145,532	464,625	14,447,036	4,751,963	31,617,750	7,301,688
2008	26,749,372	17,434,464	29,545,016	1,460,505	11,085,199	433,880	13,347,855	3,949,690	30,269,167	8,958,109
2009	27,851,810	18,127,732	30,581,671	1,520,080	11,513,115	451,456	14,013,652	4,112,445	24,827,048	7,008,865
2010	28,369,231	17,516,674	29,349,013	1,541,121	10,196,429	470,311	18,726,369	4,287,106	28,076,818	7,275,188
2011	26,776,485	17,249,660	30,192,050	1,470,553	11,360,661	444,438	17,716,043	4,047,264	28,603,733	28,093,976
2012	28,787,668	19,173,238	32,222,265	1,564,928	12,179,941	477,155	19,027,746	4,350,231	30,209,214	7,485,130
2013	28,428,188	18,909,817	31,896,569	1,535,670	12,018,384	471,873	18,779,537	4,301,161	29,682,455	7,312,370
2014	27,655,518	18,254,625	30,959,162	1,515,853	11,689,933	458,673	18,280,306	4,180,405	29,342,819	7,144,936
2015	27,705,809	18,307,603	30,997,002	1,497,222	11,669,567	459,462	18,319,505	4,188,787	28,977,368	7,066,972
2016	28,718,010	18,958,555	31,875,335	1,568,060	12,075,685	475,821	18,979,290	4,342,275	30,171,197	7,366,450
2017	27,409,005	18,103,243	30,739,684	1,489,272	11,543,072	454,288	18,174,648	4,147,054	28,794,418	7,004,695
2018	28,239,376	18,556,520	31,333,963	1,532,175	11,840,664	467,582	18,786,086	4,274,434	29,462,027	7,185,803
2019	28,882,219	18,759,351	31,929,215	1,563,495	12,065,877	477,549	19,091,480	4,371,398	29,960,692	7,315,148
2020	27,188,779	17,591,496	29,742,364	1,459,039	11,237,423	448,734	18,071,969	4,110,832	27,977,969	6,794,620
2021	26,965,783	17,345,989	29,240,146	1,413,474	11,017,450	443,928	17,868,389	4,073,143	27,118,087	6,594,378
2022	26,131,222	16,632,710	27,958,056	1,375,196	10,590,412	430,092	17,296,914	3,946,805	26,344,582	6,376,981
2023	26,385,468	16,849,466	27,244,551	1,397,010	10,551,370	434,043	17,448,637	3,984,588	26,631,808	6,440,514
2024	27,101,523	17,313,366	27,916,371	1,411,643	10,810,721	445,684	17,853,394	4,092,454	26,892,785	6,539,125
2025	26,595,820	16,934,066	27,212,908	1,389,884	10,590,888	437,427	17,562,944	4,016,230	26,523,921	6,430,900
2026	27,042,866	17,323,009	27,851,354	1,420,959	10,776,388	444,655	17,810,968	4,083,527	26,977,707	6,539,427
2027	26,745,284	16,903,352	27,055,667	1,387,983	10,570,951	439,807	17,617,563	4,038,751	26,417,757	6,410,009
2028	26,643,090	17,110,381	27,167,579	1,374,166	10,540,914	438,117	17,555,474	4,023,401	26,146,279	6,347,440
2029	26,436,392	16,707,039	26,965,378	1,387,606	10,486,848	434,736	17,421,830	3,992,381	26,402,967	6,382,861
2030	26,415,311	16,734,319	26,961,652	1,388,114	10,481,346	434,379	17,411,872	3,989,452	26,404,680	6,381,118
2031	26,116,261	16,329,220	26,831,906	1,339,864	10,343,463	429,480	17,260,869	3,944,929	25,572,738	6,198,856
2032	26,264,282	16,614,404	26,570,676	1,375,271	10,377,225	431,859	17,300,417	3,967,563	26,213,913	6,331,593
2033	28,082,311	17,717,584	28,570,278	1,448,414	11,121,470	461,396	18,510,996	4,242,889	27,433,640	6,699,013
2034	26,451,123	16,636,743	26,916,433	1,364,909	10,457,468	434,855	17,466,572	3,999,366	26,038,082	6,311,922
2035	28,375,547	17,284,900	28,802,379	1,485,038	11,197,421	466,048	18,583,116	4,291,222	28,028,045	6,814,436
<b>Total</b>	<b>1,105,513,537</b>	<b>686,272,668</b>	<b>1,004,866,476</b>	<b>60,740,708</b>	<b>489,159,133</b>	<b>17,548,522</b>	<b>644,063,643</b>	<b>166,075,020</b>	<b>1,161,180,293</b>	<b>321,480,004</b>

Table B-19

## Total Transportation Charge for Each Contractor (Dollars)

Sheet 4 of 4

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Geronio 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	775,863	0	0	0	0	12,626	1,626,210
1964	21,736	1,260,513	9,378	1,595,346	0	0	0	0	13,938	2,802,465
1965	21,866	2,180,589	17,767	2,706,298	0	0	405	405	28,937	4,801,253
1966	37,964	3,900,172	33,426	4,841,237	0	0	564	564	31,321	7,382,570
1967	71,283	7,693,703	68,155	9,510,662	0	0	562	562	47,718	12,792,771
1968	128,915	15,317,881	142,803	18,692,161	0	0	564	564	46,945	24,932,795
1969	198,763	23,153,063	215,209	28,204,771	0	0	3,191	3,191	52,963	36,030,539
1970	289,633	30,617,164	273,605	37,550,568	0	0	15,121	15,121	69,744	46,166,113
1971	409,327	39,958,997	342,425	49,190,568	0	0	16,001	16,001	55,532	58,798,897
1972	537,186	52,948,599	422,305	64,709,341	0	0	17,372	17,372	80,412	76,529,753
1973	587,964	57,273,225	435,655	70,298,113	0	0	17,334	17,334	54,219	81,205,742
1974	611,428	61,776,466	455,565	75,129,886	0	0	17,477	17,477	76,783	86,922,501
1975	644,621	66,756,784	478,404	80,875,361	0	0	18,405	18,405	84,547	94,065,771
1976	668,314	68,485,047	475,587	83,353,748	0	0	17,477	17,477	106,717	97,132,242
1977	696,515	66,234,179	507,064	81,312,698	0	0	18,232	18,232	98,618	95,166,393
1978	709,040	72,934,779	523,177	88,816,257	0	0	17,381	17,381	100,786	104,648,651
1979	712,866	72,666,594	526,405	89,361,906	0	0	20,579	20,579	119,352	106,991,545
1980	777,982	79,926,555	571,232	98,315,182	0	0	17,761	17,761	178,812	116,943,375
1981	806,031	91,261,393	636,404	111,184,918	0	0	21,193	21,193	185,347	131,712,379
1982	853,400	93,144,741	670,375	113,533,342	0	0	28,423	28,423	173,894	135,086,264
1983	952,131	101,787,700	803,591	126,225,911	0	0	19,276	19,276	220,926	151,576,530
1984	1,072,638	137,507,077	868,967	170,226,977	0	0	21,114	21,114	225,959	208,144,667
1985	1,120,854	173,442,297	908,769	211,573,675	0	0	20,239	20,239	340,322	258,380,096
1986	1,149,714	193,241,638	937,311	234,207,273	0	0	20,139	20,139	279,227	284,210,637
1987	1,172,016	178,764,050	908,034	220,831,586	0	0	19,742	19,742	345,116	272,440,282
1988	1,208,205	190,243,135	904,867	231,750,812	0	0	17,900	17,900	365,207	284,510,673
1989	1,194,911	193,234,872	932,599	234,295,168	0	0	19,158	19,158	422,329	287,582,848
1990	1,297,621	239,540,029	1,486,754	286,865,019	0	0	18,148	18,148	474,284	339,718,325
1991	1,354,921	179,950,595	1,141,118	217,230,786	0	0	21,018	21,018	214,683	255,455,706
1992	1,349,184	196,166,588	1,025,285	236,653,726	0	0	18,014	18,014	443,676	286,140,817
1993	1,507,551	169,492,940	1,068,135	212,127,564	0	0	20,999	20,999	599,571	270,933,209
1994	1,498,079	209,312,763	1,009,188	257,753,991	0	0	19,649	19,649	609,932	316,366,243
1995	1,520,622	173,419,876	1,061,324	221,510,289	0	0	20,277	20,277	534,971	290,054,470
1996	1,527,171	181,403,641	1,103,254	238,843,202	0	0	25,378	25,378	571,857	320,161,614
1997	1,731,489	186,736,138	1,216,560	242,264,510	0	0	24,820	24,820	428,638	324,636,701
1998	1,925,332	168,733,750	1,238,443	220,110,759	0	0	18,170	18,170	465,140	302,843,280
1999	2,167,766	189,488,631	1,251,064	244,332,100	0	0	17,788	17,788	559,344	335,292,560
2000	2,427,868	184,829,316	1,322,306	236,002,606	0	0	17,877	17,877	0	321,003,783
2001	3,386,925	374,637,818	1,615,816	454,725,671	0	0	17,691	17,691	0	555,811,326
2002	4,791,638	262,082,121	1,637,048	330,394,850	0	0	20,999	20,999	0	425,889,072
2003	5,585,350	289,672,836	1,663,034	361,154,812	0	0	20,765	20,765	0	459,602,702
2004	6,038,568	334,950,566	1,889,517	412,930,170	0	0	20,827	20,827	0	512,613,282
2005	6,811,550	391,391,711	1,454,502	512,049,374	0	0	20,895	20,895	0	624,771,817
2006	7,090,511	410,238,121	3,870,603	571,874,882	0	0	20,918	20,918	0	694,289,452
2007	7,213,469	414,469,280	3,890,121	577,685,082	0	0	20,964	20,964	0	699,856,549
2008	8,290,153	387,638,132	3,674,899	542,836,441	0	0	21,259	21,259	0	661,875,396
2009	8,449,574	403,162,537	3,827,147	555,447,133	0	0	21,256	21,256	0	674,887,541
2010	8,608,628	419,155,849	3,937,148	577,509,877	0	0	21,257	21,257	0	701,261,020
2011	8,400,142	395,754,928	3,701,677	573,811,610	0	0	21,256	21,256	0	693,802,805
2012	8,673,801	425,249,866	3,996,359	593,397,542	0	0	21,256	21,256	0	715,986,947
2013	8,593,713	419,262,555	3,942,200	585,134,493	0	0	21,256	21,256	0	708,478,651
2014	8,521,927	406,875,602	3,803,994	568,683,753	0	0	21,255	21,255	0	687,590,751
2015	8,475,212	406,293,155	3,812,413	567,770,077	0	0	20,852	20,852	0	687,555,993
2016	8,659,946	421,363,358	3,948,875	588,502,857	0	0	20,690	20,690	0	710,899,540
2017	8,439,139	401,484,409	3,760,417	561,543,345	0	0	20,693	20,693	0	680,540,793
2018	8,550,186	410,775,442	3,852,142	574,856,401	0	0	20,692	20,692	0	693,854,051
2019	8,627,913	416,588,191	3,893,699	583,526,228	0	0	18,060	18,060	0	705,465,457
2020	8,309,250	388,121,982	3,639,015	544,693,473	0	0	6,136	6,136	0	662,752,758
2021	8,181,644	380,116,939	3,579,518	533,958,868	0	0	5,312	5,312	0	651,744,005
2022	8,051,312	364,535,776	3,427,080	513,097,138	0	0	3,923	3,923	0	628,717,952
2023	8,091,799	367,546,111	3,471,431	516,476,797	0	0	3,921	3,921	0	633,387,179
2024	8,148,237	376,495,377	3,568,687	528,589,368	0	0	3,920	3,920	0	648,026,317
2025	8,084,766	367,550,723	3,484,441	516,814,918	0	0	3,923	3,923	0	632,813,093
2026	8,151,910	376,167,353	3,567,949	528,158,073	0	0	3,912	3,912	0	648,132,736
2027	8,070,462	365,455,156	3,474,478	514,587,221	0	0	3,924	3,924	0	632,242,107
2028	8,031,166	370,963,799	3,528,669	519,870,476	0	0	3,908	3,908	0	637,725,094
2029	8,056,968	362,931,340	3,435,292	511,041,639	0	0	3,913	3,913	0	627,850,127
2030	8,056,320	363,527,080	3,440,427	511,626,071	0	0	3,909	3,909	0	629,149,307
2031	7,940,252	353,483,956	3,348,250	499,140,045	0	0	3,917	3,917	0	614,754,823
2032	8,025,818	361,991,483	3,419,471	508,883,975	0	0	3,900	3,900	0	626,034,472
2033	8,243,214	383,541,766	3,642,599	539,715,571	0	0	3,909	3,909	0	659,853,638
2034	8,009,794	360,660,072	3,415,621	508,162,961	0	0	3,907	3,907	0	625,390,724
2035	8,318,359	382,968,311	3,573,965	540,188,787	0	0	3,897	3,897	0	658,574,638
<b>Total</b>	<b>307,942,530</b>	<b>17,472,579,991</b>	<b>144,181,014</b>	<b>23,581,603,560</b>	<b>0</b>	<b>0</b>	<b>1,066,820</b>	<b>1,066,820</b>	<b>8,723,612</b>	<b>28,943,452,674</b>

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 2005 at 4.610 percent per annum)

Procedure	Capital Cost Component (1)		Minimum Operation Maintenance, Power and Replacement Component <sup>a</sup> (2)		Total Delta Water Rate (3)	
Commencing in 2006 Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Table A Amounts during the Project Repayment Period	\$4,553.53 <sup>b</sup>	283.96 AF	\$2,993.51 <sup>c</sup>	283.96 AF	\$7,547.04	283.96 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period	(1,655.78)	--	(636.57)	--	(2,292.35)	--
Less, Delta Water Charges Paid and Project Table A Amounts, Prior to 2006	(2,083.40) <sup>d</sup>	(216.95) AF	(1,509.18)	(216.95) AF	(3,592.58)	(216.95) AF
Total	\$814.35	67.01 AF	\$847.76	67.01 AF	\$1,662.11	67.01 AF
Rate Applicable in 2006	\$12.15	per acre-foot	\$12.65	per acre-foot	\$24.80	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 <sup>a</sup> (5)		Total Delta Water Rate (6)	
Commencing in 2006 Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Table A Amounts during the Project Repayment Period	\$4,542.15 <sup>b</sup>	283.96 AF	\$2,980.30	283.96 AF	\$7,522.45	283.96AF
Less, Project Power Revenues to be Realized During the Project Repayment Period	(1,655.78)	--	(636.57)	--	(2,292.35)	--
Less, Delta Water Charges Paid and Table A Amounts, Prior to 2006	(2,083.40) <sup>d</sup>	(216.95) AF	(1,509.18)	(216.95) AF	(3,592.58)	(216.95) AF
Total	\$802.97	67.01 AF	\$834.55	67.01	\$1,637.52	67.01 AF
Rate Applicable in 2006	\$11.98	per acre-foot	\$12.46	per acre-foot	\$24.44	per acre-foot

<sup>a</sup> 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.

<sup>b</sup> 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.

<sup>c</sup> Includes conservation power costs and credits at San Luis.

<sup>d</sup> 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)

<i>Item</i>	<i>Capital Cost Component (1)</i>	<i>Minimum Operation, Maintenance, Power and Replacement Component (2)</i>	<i>Total Delta Water Rate (3)</i>
<b>Initial Conservation Facilities</b>			
Oroville Division			
Water Supply and Power Costs <sup>a</sup>	41.27	22.91	64.17
Less, Oroville Power Revenues	<u>-24.71</u>	<u>-9.50</u>	<u>-34.21</u>
<i>Subtotal</i>	16.55	13.41	29.96
Delta Facilities <sup>b</sup>	11.80	10.46	22.26
California Aqueduct, portion			
Reach 1	2.62	4.30	6.92
Reach 2A	1.57	0.69	2.27
Reach 2B	0.83	0.38	1.21
Reach 3	0.57	0.21	0.78
<i>Subtotal</i>	5.60	5.58	11.18
San Luis Facilities	7.93	5.53	13.47
Planning and preoperating costs through 2001	2.30	0.00	2.30
45,000 AF relinquished costs	0.17	0.20	0.37
Less, Capital Cost Credits	-1.11	0.00	-1.11
Less, Delta Water Charges paid prior to 2006	<u>-31.09</u>	<u>-22.52</u>	<u>-53.62</u>
Rate applicable in 2006	12.15	12.65	24.80

Note: The OMP&R unit rates do not include amounts for conservation RAS.

<sup>a</sup>Includes revenue received from non-contractors.

<sup>b</sup>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	569,615	1,441,431	2,011,046	2,043,834	1,094,911	2,606,931	5,745,676	651,732	1,185,788	1,837,520
2005	573,730	1,219,893	1,793,623	2,081,144	1,084,212	2,581,456	5,746,812	645,364	1,174,201	1,819,565
2006	606,342	1,272,002	1,878,344	2,167,747	1,129,330	2,688,880	5,985,957	672,220	1,223,064	1,895,284
2007	567,430	1,174,698	1,742,128	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2008	575,492	1,175,938	1,751,430	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2009	583,554	1,177,179	1,760,733	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2010	591,616	1,178,419	1,770,035	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2011	599,678	1,179,659	1,779,337	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2012	607,739	1,180,900	1,788,639	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2013	614,561	1,182,140	1,796,701	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2014	623,863	1,183,380	1,807,243	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2015	640,607	1,184,620	1,825,227	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2016	656,110	1,184,620	1,840,730	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2017	671,614	1,184,620	1,856,234	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2018	687,118	1,184,620	1,871,738	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2019	702,621	1,184,620	1,887,241	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2020	717,505	1,184,620	1,902,125	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2021	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2022	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2023	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2024	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2025	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2026	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2027	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2028	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2029	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2030	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2031	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2032	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2033	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2034	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
2035	719,985	1,184,620	1,904,605	1,999,810	1,041,839	2,480,569	5,522,218	620,142	1,128,312	1,748,454
<b>Total</b>	<b>25,503,850</b>	<b>49,640,721</b>	<b>75,144,571</b>	<b>85,407,624</b>	<b>52,499,088</b>	<b>131,417,934</b>	<b>269,324,646</b>	<b>28,224,416</b>	<b>51,971,429</b>	<b>80,195,845</b>

Table B-21  
**Total Delta Water Charge for Each Contractor**  
(Dollars)

Calendar Year	San Joaquin Valley Area								Total (19)
	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 Storage District (18)	
				Municipal and Industrial (14)	Agricultural (15)				
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	1,494,892	77,810	0	3,845,137	22,248,916	104,277	148,595	2,897,005	30,816,632
2005	1,480,284	77,153	0	3,653,945	22,127,832	232,331	147,143	2,739,621	30,458,309
2006	1,541,885	80,379	0	3,619,232	23,235,419	242,000	153,266	2,587,429	31,459,610
2007	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2008	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2009	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2010	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2011	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2012	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2013	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2014	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2015	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2016	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2017	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2018	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2019	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2020	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2021	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2022	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2023	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2024	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2025	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2026	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2027	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2028	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2029	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2030	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2031	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2032	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2033	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2034	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
2035	1,422,433	73,316	0	3,338,846	21,435,340	223,251	141,392	2,386,977	29,021,555
<b>Total</b>	<b>71,792,778</b>	<b>3,990,403</b>	<b>0</b>	<b>165,488,953</b>	<b>1,128,799,059</b>	<b>8,892,757</b>	<b>7,355,389</b>	<b>130,808,627</b>	<b>1,517,127,966</b>

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	1,172,006	394,387	2,338,963	656,551
1999	3,262,870	1,277,800	544,598	136,739	898,233	54,224	1,187,034	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	59,960	1,976,053	555,277	2,674,711	750,797
2005	3,650,179	2,457,547	596,316	149,725	983,535	59,374	2,018,049	549,850	2,648,574	743,459
2006	3,802,076	2,559,814	3,256,234	155,955	1,344,441	61,844	2,038,172	572,731	2,758,791	774,398
2007	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2008	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2009	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2010	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2011	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2012	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2013	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2014	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2015	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2016	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2017	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2018	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2019	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2020	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2021	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2022	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2023	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2024	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2025	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2026	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2027	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2028	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2029	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2030	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2031	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2032	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2033	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2034	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
2035	3,507,524	2,361,502	3,003,969	143,873	1,240,284	57,053	1,880,271	528,361	2,545,064	714,404
<b>Total</b>	<b>167,707,861</b>	<b>103,940,446</b>	<b>101,582,787</b>	<b>7,137,267</b>	<b>55,633,896</b>	<b>2,827,686</b>	<b>86,145,815</b>	<b>25,179,788</b>	<b>128,674,109</b>	<b>35,924,901</b>

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 Geronio 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	67,047,663	250,266	92,048	0	342,314	0	107,800,851
2005	167,795	51,925,988	516,291	66,466,682	247,820	31,300	0	279,120	0	106,564,111
2006	188,222	51,397,939	537,775	69,448,392	258,133	32,607	50,485	341,225	0	111,008,812
2007	186,043	47,416,074	496,114	64,080,536	238,135	682,156	47,656	967,947	0	103,082,838
2008	429,138	47,416,074	496,114	64,323,631	238,135	682,156	49,366	969,657	0	103,336,945
2009	429,138	47,416,074	496,114	64,323,631	238,135	682,156	51,077	971,368	0	103,347,959
2010	429,138	47,416,074	496,114	64,323,631	238,135	682,156	52,788	973,079	0	103,358,972
2011	429,138	47,416,074	496,114	64,323,631	238,135	682,156	54,743	975,034	0	103,370,229
2012	429,138	47,416,074	496,114	64,323,631	238,135	682,156	56,698	976,989	0	103,381,486
2013	429,138	47,416,074	496,114	64,323,631	238,135	682,156	58,897	979,188	0	103,391,747
2014	429,138	47,416,074	496,114	64,323,631	238,135	682,156	61,097	981,388	0	103,404,489
2015	429,138	47,416,074	496,114	64,323,631	238,135	682,156	63,541	983,832	0	103,424,917
2016	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,442,864
2017	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,458,368
2018	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,473,872
2019	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,489,375
2020	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,504,259
2021	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2022	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2023	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2024	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2025	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2026	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2027	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2028	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2029	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2030	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2031	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2032	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2033	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2034	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
2035	429,138	47,416,074	496,114	64,323,631	238,135	682,156	65,985	986,276	0	103,506,739
<b>Total</b>	<b>16,868,490</b>	<b>2,411,592,296</b>	<b>23,005,011</b>	<b>3,166,220,353</b>	<b>10,560,668</b>	<b>20,778,870</b>	<b>2,452,123</b>	<b>33,791,661</b>	<b>0</b>	<b>5,141,805,042</b>

**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	268,425	408,444	676,869	636,070	301,214	840,312	1,777,596	230,883	1,442,252	1,673,135
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	466,224	709,422	1,175,646	1,123,655	523,176	1,459,528	3,106,359	401,017	2,505,032	2,906,049
2007	465,307	708,026	1,173,333	1,121,444	522,146	1,456,657	3,100,247	400,228	2,500,103	2,900,331
2008	437,608	665,877	1,103,485	1,054,685	491,063	1,369,943	2,915,691	376,403	2,351,273	2,727,676
2009	444,290	676,046	1,120,336	1,070,791	498,562	1,390,864	2,960,217	382,151	2,387,180	2,769,331
2010	425,050	646,769	1,071,819	1,024,420	476,972	1,330,631	2,832,023	365,602	2,283,801	2,649,403
2011	458,951	698,353	1,157,304	1,106,124	515,013	1,436,757	3,057,894	394,761	2,465,949	2,860,710
2012	459,433	699,088	1,158,521	1,107,287	515,555	1,438,269	3,061,111	395,176	2,468,543	2,863,719
2013	484,317	736,952	1,221,269	1,167,260	543,479	1,516,169	3,226,908	416,580	2,602,245	3,018,825
2014	502,297	764,310	1,266,607	1,210,593	563,654	1,572,454	3,346,701	432,044	2,698,849	3,130,893
2015	528,309	803,891	1,332,200	1,273,285	592,844	1,653,885	3,520,014	454,418	2,838,611	3,293,029
2016	533,692	812,082	1,345,774	1,286,259	598,884	1,670,737	3,555,880	459,048	2,867,534	3,326,582
2017	525,125	799,047	1,324,172	1,265,612	589,271	1,643,919	3,498,802	451,680	2,821,507	3,273,187
2018	463,463	705,220	1,168,683	1,117,000	520,077	1,450,885	3,087,962	398,642	2,490,197	2,888,839
2019	499,933	760,713	1,260,646	1,204,895	561,001	1,565,053	3,330,949	430,011	2,686,146	3,116,157
2020	459,690	699,478	1,159,168	1,107,906	515,843	1,439,072	3,062,821	395,397	2,469,922	2,865,319
2021	467,509	711,376	1,178,885	1,126,750	524,617	1,463,549	3,114,916	402,122	2,511,932	2,914,054
2022	451,069	686,361	1,137,430	1,087,129	506,169	1,412,085	3,005,383	387,982	2,423,602	2,811,584
2023	449,428	683,863	1,133,291	1,083,173	504,327	1,406,946	2,994,446	386,570	2,414,783	2,801,353
2024	431,642	656,800	1,088,442	1,040,307	484,369	1,351,267	2,875,943	371,272	2,319,219	2,690,491
2025	389,339	592,431	981,770	938,353	436,899	1,218,838	2,594,090	334,886	2,091,927	2,426,813
2026	349,879	532,387	882,266	843,249	392,618	1,095,306	2,331,173	300,944	1,879,906	2,180,850
2027	387,638	589,842	977,480	934,252	434,989	1,213,511	2,582,752	333,422	2,082,784	2,416,206
2028	314,758	478,946	793,704	758,604	353,207	985,360	2,097,171	270,736	1,691,202	1,961,938
2029	315,057	479,401	794,458	759,324	353,543	986,295	2,099,162	270,993	1,692,807	1,963,800
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
<b>Total</b>	<b>13,548,961</b>	<b>20,752,368</b>	<b>34,301,329</b>	<b>30,869,066</b>	<b>15,488,278</b>	<b>43,267,582</b>	<b>89,624,926</b>	<b>11,865,851</b>	<b>71,047,837</b>	<b>82,913,688</b>

Table B-22  
**Water System Revenue Bond Surcharge for Each Contractor**  
(Dollars)

Calendar Year	San Joaquin Valley Area								Total (19)
	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)	
				Municipal and Industrial (14)	Agricultural (15)				
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	285,125	12,408	0	589,259	3,644,059	17,446	23,251	543,748	5,115,296
2005	460,727	20,049	0	952,172	5,873,956	67,582	37,571	836,088	8,248,145
2006	495,230	21,551	0	1,023,478	6,313,845	72,643	40,384	898,701	8,865,832
2007	494,256	21,508	0	1,021,465	6,301,423	72,500	40,305	896,933	8,848,390
2008	464,833	20,228	0	960,657	5,926,302	68,184	37,905	843,539	8,321,648
2009	471,932	20,537	0	975,328	6,016,805	69,225	38,484	856,421	8,448,732
2010	451,494	19,648	0	933,090	5,756,241	66,227	36,818	819,333	8,082,851
2011	487,504	21,215	0	1,007,510	6,215,339	71,509	39,754	884,680	8,727,511
2012	488,017	21,237	0	1,008,570	6,221,877	71,585	39,796	885,611	8,736,693
2013	514,449	22,387	0	1,063,196	6,558,867	75,462	41,951	933,577	9,209,889
2014	533,547	23,218	0	1,102,666	6,802,355	78,263	43,509	968,235	9,551,793
2015	561,177	24,421	0	1,159,768	7,154,620	82,316	45,762	1,018,376	10,046,440
2016	566,895	24,669	0	1,171,586	7,227,521	83,155	46,228	1,028,752	10,148,806
2017	557,796	24,274	0	1,152,780	7,111,510	81,820	45,486	1,012,239	9,985,905
2018	492,297	21,423	0	1,017,417	6,276,454	72,213	40,145	893,379	8,813,328
2019	531,035	23,109	0	1,097,476	6,770,338	77,895	43,304	963,678	9,506,835
2020	488,289	21,249	0	1,009,133	6,225,352	71,625	39,818	886,105	8,741,571
2021	496,594	21,610	0	1,026,297	6,331,237	72,843	40,495	901,177	8,890,253
2022	479,132	20,850	0	990,209	6,108,606	70,281	39,071	869,488	8,577,637
2023	477,389	20,774	0	986,605	6,086,377	70,026	38,929	866,324	8,546,424
2024	458,496	19,952	0	947,561	5,845,512	67,254	37,389	832,040	8,208,204
2025	413,562	17,997	0	854,696	5,272,629	60,663	33,724	750,496	7,403,767
2026	371,647	16,173	0	768,071	4,738,238	54,515	30,306	674,432	6,653,382
2027	411,754	17,918	0	850,961	5,249,584	60,398	33,577	747,216	7,371,408
2028	334,341	14,549	0	690,973	4,262,616	49,043	27,264	606,733	5,985,519
2029	334,658	14,563	0	691,628	4,266,662	49,089	27,290	607,309	5,991,199
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
<b>Total</b>	<b>14,610,309</b>	<b>641,722</b>	<b>0</b>	<b>30,989,850</b>	<b>194,629,897</b>	<b>1,911,187</b>	<b>1,198,548</b>	<b>27,160,756</b>	<b>271,142,269</b>

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)	Little Rock 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	1,016,092	1,216,978	222,523	63,666	366,803	17,432	778,379	144,960	1,259,877	335,033
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	1,764,840	2,113,756	2,063,426	110,581	852,281	30,278	1,351,959	251,779	2,188,268	581,916
2007	1,761,367	2,109,598	2,059,366	110,363	850,604	30,218	1,349,299	251,284	2,183,963	580,771
2008	1,656,514	1,984,014	1,936,773	103,793	799,968	28,419	1,268,976	236,325	2,053,952	546,198
2009	1,681,811	2,014,313	1,966,350	105,378	812,184	28,853	1,288,355	239,934	2,085,319	554,539
2010	1,608,979	1,927,081	1,881,195	100,815	777,012	27,604	1,232,561	229,543	1,995,012	530,524
2011	1,737,305	2,080,778	2,031,233	108,855	838,984	29,805	1,330,866	247,851	2,154,127	572,837
2012	1,739,133	2,082,967	2,033,370	108,970	839,866	29,837	1,332,266	248,112	2,156,393	573,440
2013	1,833,328	2,195,785	2,143,501	114,872	885,355	31,453	1,404,424	261,550	2,273,188	604,498
2014	1,901,387	2,277,300	2,223,075	119,136	918,223	32,620	1,456,561	271,260	2,357,577	626,939
2015	1,999,852	2,395,232	2,338,199	125,306	965,773	34,310	1,531,990	285,307	2,479,666	659,406
2016	2,020,229	2,419,638	2,362,024	126,583	975,614	34,659	1,547,601	288,214	2,504,932	666,125
2017	1,987,802	2,380,800	2,324,110	124,551	959,954	34,103	1,522,760	283,588	2,464,724	655,433
2018	1,754,388	2,101,239	2,051,206	109,926	847,233	30,098	1,343,952	250,288	2,175,309	578,470
2019	1,892,438	2,266,582	2,212,612	118,576	913,901	32,467	1,449,706	269,983	2,346,480	623,989
2020	1,740,104	2,084,130	2,034,505	109,031	840,335	29,853	1,333,010	248,250	2,157,598	573,760
2021	1,769,701	2,119,579	2,069,109	110,885	854,628	30,361	1,355,683	252,473	2,194,296	583,519
2022	1,707,471	2,045,046	1,996,351	106,986	824,576	29,293	1,308,012	243,595	2,117,136	563,000
2023	1,701,258	2,037,604	1,989,087	106,597	821,576	29,187	1,303,252	242,708	2,109,431	560,951
2024	1,633,932	1,956,967	1,910,370	102,378	789,062	28,032	1,251,676	233,103	2,025,952	538,752
2025	1,473,800	1,765,177	1,723,146	92,345	711,731	25,285	1,129,007	210,258	1,827,401	485,952
2026	1,324,427	1,586,273	1,548,502	82,985	639,596	22,722	1,014,580	188,948	1,642,190	436,700
2027	1,467,358	1,757,462	1,715,615	91,941	708,620	25,174	1,124,073	209,339	1,819,414	483,828
2028	1,191,482	1,427,043	1,393,064	74,655	575,393	20,441	912,737	169,982	1,477,348	392,864
2029	1,192,613	1,428,398	1,394,386	74,726	575,940	20,460	913,603	170,143	1,478,750	393,237
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
<b>Total</b>	<b>52,218,570</b>	<b>59,355,057</b>	<b>50,001,712</b>	<b>3,282,100</b>	<b>23,866,651</b>	<b>899,846</b>	<b>38,738,506</b>	<b>7,384,150</b>	<b>64,947,467</b>	<b>17,254,559</b>

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 Geronio 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	74,138	20,941,743	177,910	26,615,534	34,121	10,356	8,456	52,933	0	35,911,363
2005	119,798	33,839,340	287,480	43,007,501	55,136	16,733	13,663	85,532	0	58,028,435
2006	128,769	34,565,228	309,009	46,312,090	59,265	17,986	14,686	91,937	0	62,457,913
2007	128,516	34,497,228	308,401	46,220,978	59,149	17,951	14,657	91,757	0	62,335,036
2008	120,866	32,443,617	290,042	43,469,457	55,628	16,882	13,785	86,295	0	58,624,252
2009	122,711	32,939,082	294,472	44,133,301	56,477	17,140	13,995	87,612	0	59,519,529
2010	117,397	31,512,615	281,719	42,222,057	54,031	16,398	13,389	83,818	0	56,941,971
2011	126,760	34,025,958	304,188	45,589,547	58,341	17,706	14,457	90,504	0	61,483,470
2012	126,894	34,061,747	304,508	45,637,503	58,402	17,724	14,472	90,598	0	61,548,145
2013	133,767	35,906,605	321,001	48,109,327	61,565	18,684	15,256	95,505	0	64,881,723
2014	138,732	37,239,581	332,918	49,895,309	63,851	19,378	15,822	99,051	0	67,290,354
2015	145,917	39,168,059	350,158	52,479,175	67,157	20,381	16,642	104,180	0	70,775,038
2016	147,404	39,567,159	353,726	53,013,908	67,842	20,589	16,811	105,242	0	71,496,192
2017	145,038	38,932,052	348,048	52,162,963	66,753	20,258	16,541	103,552	0	70,348,581
2018	128,007	34,360,533	307,179	46,037,828	58,914	17,880	14,599	91,393	0	62,088,033
2019	138,079	37,064,304	331,351	49,660,468	63,550	19,287	15,748	98,585	0	66,973,640
2020	126,965	34,080,771	304,678	45,662,990	58,435	17,734	14,480	90,649	0	61,582,518
2021	129,124	34,660,441	309,860	46,439,659	59,429	18,036	14,726	92,191	0	62,629,958
2022	124,584	33,441,642	298,965	44,806,657	57,339	17,402	14,209	88,950	0	60,427,641
2023	124,130	33,319,948	297,877	44,643,606	57,130	17,338	14,157	88,625	0	60,207,745
2024	119,218	32,001,335	286,088	42,876,865	54,869	16,652	13,597	85,118	0	57,825,063
2025	107,534	28,865,075	258,051	38,674,762	49,492	15,020	12,264	76,776	0	52,157,978
2026	96,635	25,939,545	231,897	34,755,000	44,476	13,498	11,021	68,995	0	46,871,666
2027	107,064	28,738,913	256,925	38,505,726	49,276	14,954	12,211	76,441	0	51,930,013
2028	86,935	23,335,745	208,617	31,266,306	40,011	12,143	9,915	62,069	0	42,166,707
2029	87,018	23,357,898	208,816	31,295,988	40,049	12,154	9,924	62,127	0	42,206,734
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
<b>Total</b>	<b>4,184,555</b>	<b>1,039,524,021</b>	<b>9,185,390</b>	<b>1,370,842,584</b>	<b>1,745,932</b>	<b>502,314</b>	<b>431,072</b>	<b>2,679,318</b>	<b>0</b>	<b>1,851,504,114</b>

Table B-23

## Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Sheet 1 of 4

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	682,908	633,184	2,178,465	3,494,557	115,960	229,807	345,767
1969	254,715	0	254,715	817,520	583,436	2,298,737	3,699,693	185,156	358,861	544,017
1970	277,547	0	277,547	903,834	640,297	2,787,967	4,332,098	200,150	387,675	587,825
1971	227,474	0	227,474	845,287	675,193	2,807,017	4,327,497	202,413	392,912	595,325
1972	224,978	0	224,978	929,251	822,397	3,027,749	4,779,397	209,057	406,589	615,646
1973	221,091	31,366	252,457	915,675	716,492	3,120,786	4,752,953	206,557	402,723	609,280
1974	240,498	32,938	273,436	956,251	746,933	3,325,022	5,028,206	208,545	407,090	615,635
1975	237,459	36,291	273,750	1,014,606	793,054	3,214,046	5,021,706	225,895	439,873	665,768
1976	271,292	40,836	312,128	1,127,648	943,463	3,362,542	5,433,653	228,976	447,299	676,275
1977	293,627	45,096	338,723	1,096,249	922,203	3,303,462	5,321,914	238,699	468,721	707,420
1978	273,870	49,178	323,048	1,185,017	935,819	3,712,581	5,833,417	245,331	484,259	729,590
1979	289,479	53,340	342,819	1,281,563	1,009,566	3,819,533	6,110,662	243,110	483,437	726,547
1980	310,846	86,073	396,919	1,434,509	1,173,798	4,119,071	6,727,378	282,254	540,553	822,807
1981	347,781	112,848	460,629	1,543,007	1,349,125	4,507,566	7,399,698	307,065	596,670	903,735
1982	438,335	141,835	580,170	1,623,303	1,369,536	4,941,393	7,934,232	328,215	682,546	1,010,761
1983	354,787	163,294	518,081	1,493,554	1,260,138	4,910,241	7,663,933	357,218	702,083	1,059,301
1984	467,336	246,698	714,034	1,803,567	1,478,394	6,870,250	10,152,211	409,530	801,057	1,210,587
1985	736,074	386,306	1,122,380	2,301,377	2,225,097	7,796,485	12,322,959	500,696	969,931	1,470,627
1986	1,120,086	714,246	1,834,332	2,169,972	2,014,104	8,193,844	12,377,920	536,751	1,038,030	1,574,781
1987	1,773,801	1,582,227	3,356,028	2,666,462	2,505,662	7,980,255	13,152,379	570,644	1,148,974	1,719,618
1988	2,349,572	2,524,763	4,874,335	2,727,605	2,774,430	7,830,285	13,332,320	673,071	1,439,620	2,112,691
1989	2,548,764	3,701,384	6,250,148	2,711,548	2,515,471	7,578,849	12,805,868	772,571	1,814,759	2,587,330
1990	2,900,023	3,848,935	6,748,958	3,146,834	2,929,775	8,355,392	14,432,001	933,367	2,046,370	2,979,737
1991	2,941,321	4,170,227	7,111,548	2,418,766	2,384,246	6,430,834	11,233,846	979,709	2,366,841	3,346,550
1992	2,797,727	4,144,993	6,942,720	2,893,241	2,927,114	7,656,940	13,477,295	1,118,807	2,526,860	3,645,667
1993	2,855,497	4,172,491	7,027,988	3,750,017	2,977,354	8,849,995	15,577,366	1,185,666	2,726,057	3,911,723
1994	2,987,939	4,225,294	7,213,233	3,787,096	3,586,249	9,613,529	16,986,874	1,335,974	3,158,043	4,854,017
1995	2,961,322	4,405,219	7,366,541	4,035,748	3,313,351	8,393,827	15,742,926	1,647,816	3,519,416	7,843,232
1996	3,045,020	4,898,210	7,943,230	3,643,588	3,178,398	9,228,554	16,050,540	2,592,043	15,232,541	17,824,584
1997	3,028,004	4,734,808	7,762,812	3,870,097	3,145,550	9,338,015	16,353,662	3,002,833	23,737,163	26,739,996
1998	2,936,591	4,590,497	7,527,088	3,479,572	3,204,217	9,085,221	15,769,010	3,256,282	28,312,394	31,568,676
1999	3,153,896	5,068,601	8,222,497	4,165,434	3,670,849	11,379,398	19,215,681	3,805,490	29,603,063	33,408,553
2000	3,458,193	5,616,891	9,075,084	5,788,367	3,584,215	10,190,250	19,562,832	3,797,900	30,836,598	34,634,498
2001	4,077,432	6,368,018	10,445,450	7,650,135	4,081,798	12,195,656	23,927,589	4,334,130	32,740,563	37,074,693
2002	4,315,306	6,552,428	10,867,734	7,514,039	4,074,964	13,126,105	24,715,108	4,068,071	32,583,851	36,651,922
2003	4,436,356	6,901,644	11,338,000	7,320,296	3,794,309	11,899,682	23,014,287	4,152,119	32,927,132	37,079,251
2004	4,964,459	7,429,917	12,394,376	8,339,032	4,187,889	11,589,001	24,115,922	4,222,986	33,493,409	37,716,395
2005	4,862,794	7,362,204	12,224,998	9,330,491	4,962,408	14,708,383	29,001,282	4,463,563	36,201,810	40,665,373
2006	5,299,783	7,783,974	13,083,757	11,723,528	5,416,030	17,186,607	34,326,165	7,000,283	38,073,893	45,074,176
2007	5,811,570	7,488,205	13,299,775	11,132,386	5,458,842	16,334,344	32,925,572	7,003,352	37,574,196	44,575,548
2008	5,074,110	6,649,889	11,723,999	11,378,576	5,663,457	15,695,045	32,737,078	6,985,845	36,331,446	43,317,291
2009	5,126,489	6,684,036	11,810,525	11,397,912	5,726,190	15,861,510	32,985,612	7,084,643	36,600,179	43,684,822
2010	5,097,496	6,855,447	11,952,943	11,490,171	5,803,302	16,247,064	33,540,537	7,216,057	36,830,864	44,046,921
2011	5,113,408	6,864,988	11,978,396	11,396,840	5,697,077	15,979,160	33,073,077	7,085,648	36,726,960	43,812,608
2012	5,185,972	6,913,021	12,098,993	11,602,233	5,796,204	16,249,342	33,647,779	7,297,515	37,114,634	44,412,149
2013	5,205,867	6,927,259	12,133,126	11,529,113	5,742,391	16,005,870	33,277,374	7,322,425	37,255,745	44,578,170
2014	5,217,959	6,923,794	12,141,753	11,223,177	5,555,966	15,540,760	32,319,903	7,215,369	37,120,619	44,335,988
2015	5,283,779	6,963,727	12,247,506	11,289,246	5,537,384	15,350,178	32,176,808	7,257,465	37,295,802	44,553,267
2016	5,311,188	6,975,595	12,286,783	11,416,222	5,592,202	15,382,831	32,391,255	7,315,602	37,418,143	44,733,745
2017	5,302,861	6,952,285	12,255,146	11,156,507	5,467,691	15,034,808	31,659,006	7,193,135	37,161,026	44,354,161
2018	5,204,538	6,872,495	12,077,033	10,923,307	5,374,271	14,764,798	31,062,376	7,147,212	36,840,869	43,988,081
2019	5,252,330	6,946,057	12,198,387	11,109,932	5,483,610	15,035,956	31,629,498	7,277,677	37,213,289	44,490,966
2020	5,197,821	6,842,737	12,040,558	10,715,526	5,293,628	14,534,236	30,543,390	7,038,628	36,625,075	43,663,703
2021	5,211,329	6,856,789	12,068,118	10,716,775	5,293,752	14,539,729	30,550,256	7,041,734	36,659,984	43,701,718
2022	5,164,510	6,806,902	11,971,412	10,523,447	5,198,510	14,286,662	30,008,624	6,912,181	36,360,029	43,272,210
2023	5,163,151	6,770,999	11,934,150	10,590,460	5,233,881	14,368,983	30,193,324	6,939,343	36,400,886	43,340,229
2024	5,173,253	6,769,586	11,942,839	10,723,824	5,301,471	14,538,860	30,564,155	7,050,816	36,535,880	43,586,696
2025	5,112,501	6,694,212	11,806,713	10,420,477	5,150,294	14,153,719	29,724,490	6,931,294	36,157,973	43,089,267
2026	5,072,825	6,632,765	11,705,590	10,550,371	5,222,395	14,309,940	30,082,706	6,982,276	36,096,103	43,078,379
2027	5,096,326	6,678,332	11,774,658	10,497,215	5,191,156	14,245,091	29,933,462	6,937,779	36,159,914	43,097,693
2028	5,022,816	6,563,884	11,586,700	10,305,347	5,102,080	13,991,036	29,398,463	6,891,065	35,789,339	42,680,404
2029	5,008,317	6,551,303	11,559,620	10,262,747	5,079,105	13,938,713	29,280,565	6,839,253	35,694,687	42,533,940
2030	4,687,815	6,060,641	10,748,456	9,551,809	4,749,887	13,013,842	27,315,538	6,598,158	34,050,590	40,648,748
2031	4,662,384	6,033,254	10,695,638	9,426,237	4,685,415	12,853,381	26,965,033	6,528,630	33,914,871	40,443,501
2032	4,663,853	6,022,435	10,686,288	9,537,475	4,741,285	12,995,443	27,274,203	6,604,475	34,052,380	40,656,855
2033	4,680,337	6,018,079	10,698,416	9,746,777	4,845,186	13,267,504	27,859,467	6,782,600	34,382,516	41,165,116
2034	4,571,423	5,910,694	10,482,117	9,556,599	4,749,753	13,020,838	27,327,190	6,638,731	34,118,498	40,757,229
2035	4,402,331	5,745,007	10,147,338	9,555,592	4,753,588	13,009,320	27,318,500	6,605,998	34,053,886	40,659,884
<b>Total</b>	<b>221,547,888</b>	<b>295,197,487</b>	<b>516,745,375</b>	<b>436,634,451</b>	<b>244,882,537</b>	<b>710,986,951</b>	<b>1,392,503,939</b>	<b>261,973,254</b>	<b>1,416,539,164</b>	<b>1,678,512,418</b>

Table B-23

## Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Sheet 2 of 4

Calendar Year	San Joaquin Valley Area								Total (19)
	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)	
				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	73,569	0	0	0	0	79,598
1966	0	0	12,039	137,330	0	0	0	0	149,369
1967	0	0	26,257	267,611	0	0	0	0	293,868
1968	224,557	19,339	54,589	445,438	1,706,411	16,044	19,603	306,839	2,792,820
1969	240,734	10,810	87,576	525,094	2,722,593	15,678	19,334	456,990	4,078,809
1970	305,818	34,246	94,674	573,999	3,871,071	20,250	30,353	519,938	5,450,348
1971	327,174	36,974	95,695	605,889	5,189,619	25,965	34,632	711,104	7,027,052
1972	380,790	40,235	98,789	631,615	7,152,618	25,249	63,719	1,980,611	10,373,626
1973	398,062	38,857	97,550	1,025,888	7,280,374	27,580	39,211	780,213	9,687,735
1974	506,112	40,071	98,460	1,144,791	7,989,238	28,292	42,502	1,039,412	10,888,878
1975	678,389	40,520	106,703	1,197,166	9,366,686	29,970	48,117	1,551,956	13,019,507
1976	718,269	43,041	108,083	1,323,839	10,609,606	31,391	52,044	1,438,905	14,325,179
1977	578,553	38,958	112,554	1,367,404	10,921,650	33,140	54,156	1,134,977	14,241,392
1978	697,020	36,029	115,521	1,565,884	13,251,929	37,552	58,968	1,168,754	16,931,656
1979	780,117	47,794	114,253	1,668,952	15,325,662	41,684	70,559	1,722,354	19,771,375
1980	960,982	49,529	125,950	1,770,264	16,962,778	46,637	94,843	1,668,572	21,679,555
1981	1,209,921	83,895	134,169	2,430,802	22,561,852	65,094	100,565	2,279,425	28,865,723
1982	1,246,037	70,089	135,057	2,523,660	24,954,503	69,259	108,209	2,273,924	31,380,738
1983	1,180,236	52,439	149,201	2,085,407	24,597,530	74,040	87,372	506,270	28,732,135
1984	1,489,644	28,421	164,505	3,396,380	33,322,826	92,911	121,343	1,538,133	40,154,163
1985	1,765,373	129,851	184,905	3,891,204	39,289,559	116,171	139,422	2,813,603	48,330,088
1986	2,007,138	79,228	180,445	4,079,838	43,389,346	135,299	153,074	3,649,027	53,673,396
1987	1,882,268	95,146	179,872	4,570,840	42,656,014	135,909	151,312	3,741,734	53,413,095
1988	1,967,171	109,524	193,735	4,734,502	44,589,918	136,850	146,468	3,896,023	55,774,191
1989	2,121,749	101,651	187,914	4,677,356	46,779,781	135,641	166,290	4,377,221	58,547,603
1990	1,882,361	86,855	221,391	4,827,893	45,554,111	119,700	148,592	3,954,806	56,795,709
1991	1,686,709	80,144	220,282	4,535,869	37,429,766	102,443	134,602	3,495,816	47,685,631
1992	2,232,237	104,963	241,456	5,550,167	48,626,862	142,302	175,585	4,534,646	61,608,218
1993	2,454,392	119,966	264,959	5,806,060	54,528,029	160,024	195,150	5,288,500	68,817,079
1994	2,259,230	107,472	306,359	5,210,311	51,998,641	144,095	177,962	4,661,233	64,865,303
1995	2,855,676	115,388	304,297	6,621,491	60,458,725	179,243	212,295	5,520,034	76,265,148
1996	2,077,863	125,078	389,202	6,671,115	59,502,618	176,799	189,907	7,085,799	76,218,382
1997	2,789,440	100,483	276,681	6,521,956	58,501,552	136,350	212,107	4,707,930	73,246,499
1998	2,644,210	119,804	381,881	5,812,841	54,330,630	141,616	203,865	4,962,349	68,597,196
1999	2,695,907	134,189	366,534	6,357,025	57,193,829	179,984	215,829	7,270,505	74,413,802
2000	2,615,109	120,620	304,938	6,344,517	51,282,915	171,816	212,914	6,128,480	67,181,309
2001	3,292,261	145,225	327,889	6,045,348	58,506,291	190,045	258,640	6,420,812	75,186,510
2002	3,007,051	127,303	320,876	6,793,338	53,148,860	185,032	238,143	5,730,707	69,551,310
2003	3,060,361	131,065	340,420	7,052,920	55,849,082	199,619	237,212	6,035,641	72,906,320
2004	3,259,208	168,028	344,112	8,078,326	56,805,667	353,220	253,828	5,826,973	75,089,362
2005	3,770,246	183,774	334,653	8,141,736	65,888,219	559,322	263,748	6,421,909	85,563,607
2006	3,813,852	178,642	339,989	8,654,411	67,043,964	566,059	292,085	6,293,633	87,182,635
2007	3,704,981	173,761	350,373	8,379,205	65,795,383	553,779	283,748	6,163,034	85,404,264
2008	3,643,734	170,637	360,711	8,272,345	65,020,960	545,808	282,066	6,055,224	84,351,485
2009	3,631,976	169,960	360,661	8,257,376	65,010,334	543,897	279,090	6,036,475	84,289,769
2010	3,742,624	175,930	360,646	8,681,046	66,857,419	561,482	289,314	6,219,382	86,887,843
2011	3,662,589	171,415	361,627	8,484,170	65,380,257	548,498	282,592	6,089,693	84,980,841
2012	3,708,150	173,793	361,684	8,605,370	66,455,163	555,640	284,139	6,166,199	86,310,138
2013	3,802,912	178,516	361,828	8,804,516	67,759,535	570,233	293,739	6,328,772	88,100,051
2014	3,680,787	171,956	359,163	8,526,225	65,786,302	550,860	281,881	6,126,389	85,483,563
2015	3,767,043	176,225	356,049	8,638,874	67,029,472	564,107	289,985	6,274,865	87,096,620
2016	3,881,314	182,156	349,725	8,835,770	68,875,552	581,998	300,203	6,467,491	89,474,209
2017	3,770,126	176,417	335,632	8,451,870	67,070,191	564,633	290,475	6,279,625	86,938,969
2018	3,712,762	173,990	313,108	8,228,557	66,537,252	547,787	284,442	6,174,347	85,972,245
2019	3,863,171	181,521	304,316	8,502,506	68,844,505	570,506	297,712	6,432,136	88,996,373
2020	3,715,697	174,181	302,738	8,138,140	66,485,941	547,540	285,720	6,178,772	85,828,729
2021	3,713,593	173,996	301,761	8,111,149	66,445,566	546,979	285,273	6,176,356	85,754,673
2022	3,636,526	170,117	301,059	7,927,301	65,199,993	534,993	278,899	6,044,633	84,093,521
2023	3,685,056	172,675	300,414	8,032,437	65,968,453	542,613	283,538	6,125,918	85,111,104
2024	3,739,973	175,713	299,980	8,160,042	66,968,365	551,401	288,318	6,215,459	86,399,251
2025	3,568,417	167,131	299,683	7,782,991	64,440,214	524,903	272,346	5,921,369	82,977,054
2026	3,678,971	173,288	298,943	8,032,266	66,237,237	542,667	283,933	6,101,274	85,348,579
2027	3,637,943	170,782	299,119	7,932,042	65,497,124	535,742	279,361	6,037,714	84,389,827
2028	3,572,685	168,056	295,837	7,795,369	64,672,860	526,302	271,379	5,917,819	83,220,307
2029	3,537,509	166,210	295,870	7,713,487	64,112,231	520,707	271,119	5,858,768	82,475,901
2030	3,228,677	153,001	295,345	7,075,170	60,234,334	475,613	246,412	5,294,865	77,003,417
2031	3,166,448	149,737	294,558	6,918,863	59,277,928	465,418	240,361	5,190,208	75,703,521
2032	3,216,067	152,342	293,494	7,030,783	60,041,266	473,263	245,132	5,273,736	76,726,083
2033	3,292,523	156,338	293,688	7,213,117	61,515,109	485,114	250,161	5,401,941	78,607,991
2034	3,219,101	152,497	293,102	7,030,254	60,162,207	473,444	244,845	5,278,702	76,854,152
2035	3,286,380	156,020	291,848	7,188,805	61,404,731	483,790	249,770	5,391,720	78,453,064
<b>Total</b>	<b>172,529,962</b>	<b>8,284,007</b>	<b>17,446,131</b>	<b>388,489,732</b>	<b>3,256,227,209</b>	<b>20,537,992</b>	<b>13,438,513</b>	<b>307,118,644</b>	<b>4,184,072,190</b>

Table B-23

## Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Sheet 3 of 4

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	16,292	4,370	37,158	1,143	28,437	8,205	82,811	34,987
1965	118,604	53,007	28,469	7,194	40,770	2,082	50,317	15,222	135,068	35,344
1966	215,783	101,265	51,201	12,478	73,153	3,753	90,398	27,679	232,502	61,465
1967	417,481	210,814	98,936	23,472	141,411	7,284	175,176	54,023	433,350	115,574
1968	744,423	491,208	176,741	41,509	251,199	12,870	311,115	95,466	782,164	208,926
1969	1,072,961	742,110	264,980	61,226	370,960	18,694	458,956	138,064	1,205,834	321,755
1970	1,396,258	942,088	371,841	89,700	519,318	25,231	633,037	184,837	1,778,188	467,573
1971	1,728,266	1,136,477	503,572	128,360	712,746	31,837	857,210	231,280	2,539,164	659,414
1972	2,208,323	1,381,424	682,266	185,868	989,938	43,770	1,179,261	287,620	3,775,599	950,298
1973	2,360,891	1,429,806	829,273	190,992	1,217,110	46,059	1,269,981	313,446	4,043,940	961,024
1974	2,481,649	1,525,257	853,909	204,074	1,256,989	48,932	1,328,789	331,702	4,481,149	1,104,491
1975	2,699,360	1,616,171	900,628	219,289	1,332,263	53,242	1,414,726	355,269	4,656,316	1,208,047
1976	3,163,813	1,652,812	958,366	232,130	1,424,966	57,732	1,490,987	381,276	4,855,853	1,278,740
1977	3,145,585	1,740,616	859,475	245,112	1,267,276	54,210	1,578,300	406,620	5,111,731	1,336,313
1978	3,593,578	1,873,601	1,059,027	255,468	1,568,200	56,805	1,625,460	420,026	5,109,424	1,374,032
1979	4,267,174	1,953,328	1,144,917	267,791	1,690,237	60,284	1,800,710	449,757	5,154,328	1,342,135
1980	4,951,479	2,091,629	1,254,740	295,350	1,890,623	67,605	1,972,638	499,051	5,665,094	1,485,141
1981	5,779,242	2,560,898	1,414,049	328,818	2,140,610	100,752	2,290,633	603,265	6,479,330	1,688,324
1982	5,538,076	2,723,863	1,500,173	346,721	2,284,334	82,296	2,265,277	641,991	6,770,288	1,929,664
1983	6,288,481	2,794,364	2,021,543	380,840	3,118,816	88,384	2,460,744	658,613	6,982,194	1,808,748
1984	7,663,880	3,873,034	3,123,821	497,585	4,875,176	96,492	2,726,085	727,821	8,070,699	2,598,233
1985	9,494,881	4,339,023	3,958,101	601,928	6,210,153	103,706	2,915,956	959,658	8,910,831	2,686,799
1986	9,463,069	4,974,371	4,418,753	647,634	6,954,450	130,221	3,099,398	1,223,847	9,160,311	3,398,539
1987	9,497,193	4,831,773	4,286,730	678,086	6,830,465	240,872	3,153,751	1,255,052	10,561,826	3,398,921
1988	9,095,537	5,018,444	4,343,811	704,411	6,997,013	158,845	3,327,821	1,044,206	11,112,682	3,271,137
1989	10,985,943	5,027,716	4,051,202	691,191	6,579,619	210,634	3,408,550	1,746,763	10,829,479	3,453,680
1990	12,377,417	5,495,687	4,745,249	729,229	7,663,736	331,172	3,639,353	1,953,904	11,740,436	4,221,266
1991	9,237,042	4,609,450	3,299,238	688,866	5,277,388	221,166	4,498,792	1,640,084	11,122,363	3,642,611
1992	11,793,160	5,798,138	3,452,662	612,895	5,529,463	174,998	5,476,892	1,532,325	11,161,591	3,694,099
1993	12,206,276	5,444,802	3,656,251	617,198	5,864,156	211,904	5,367,737	1,753,971	12,124,665	4,042,324
1994	14,275,077	6,012,042	3,681,915	694,570	5,904,938	278,011	6,318,510	2,090,719	12,751,813	4,777,246
1995	14,141,382	6,386,909	4,503,566	661,812	7,259,469	212,244	5,511,029	1,952,494	12,221,934	4,480,934
1996	14,567,796	6,618,051	7,456,037	710,651	12,127,947	208,357	5,608,653	2,300,206	12,748,415	4,599,073
1997	15,137,351	6,511,706	7,071,581	750,419	8,455,795	207,887	6,030,632	2,342,198	14,416,506	4,897,486
1998	13,676,909	6,145,311	6,170,444	717,267	6,979,801	209,243	7,635,328	1,950,390	14,322,632	4,180,208
1999	15,391,634	6,643,543	5,182,223	823,220	7,121,312	213,801	8,242,128	2,350,572	15,738,912	5,114,528
2000	14,776,241	10,252,592	3,631,846	793,669	5,547,968	187,050	8,196,162	2,079,088	15,521,723	4,254,062
2001	24,847,198	15,865,941	4,683,833	995,919	7,551,629	198,995	8,872,670	3,991,433	21,436,948	4,395,183
2002	16,247,557	13,065,873	3,923,005	957,152	6,296,734	181,868	8,031,674	3,368,881	22,239,054	5,764,687
2003	17,617,883	14,002,360	4,116,664	932,227	6,615,053	187,602	9,916,996	2,914,923	20,123,334	5,940,339
2004	18,679,496	15,386,716	4,688,360	1,032,471	6,574,520	200,779	9,919,002	3,179,445	24,332,590	5,411,323
2005	22,696,686	17,912,259	29,895,883	1,382,129	11,791,726	312,051	11,115,411	3,643,221	30,327,873	5,931,862
2006	35,588,952	23,645,069	37,306,554	1,845,900	14,093,091	553,047	17,688,995	5,578,109	34,492,511	8,516,958
2007	33,974,058	22,824,186	37,795,290	1,847,645	12,336,420	551,896	17,676,606	5,531,608	36,346,777	8,596,863
2008	31,913,410	21,779,980	34,485,758	1,708,171	13,125,451	519,352	16,497,102	4,714,376	34,868,183	10,218,711
2009	33,041,145	22,503,547	35,551,990	1,769,331	13,565,583	537,362	17,182,278	4,780,740	29,457,431	8,277,800
2010	33,485,734	21,805,257	34,234,177	1,785,809	12,213,725	554,968	21,839,201	5,045,010	32,616,886	8,520,116
2011	32,021,314	21,691,940	35,227,252	1,723,281	13,439,929	531,296	20,927,180	4,823,476	33,302,924	29,381,217
2012	34,034,325	23,617,707	37,259,604	1,817,771	14,260,091	564,045	22,240,283	5,126,704	34,910,671	6,772,974
2013	33,769,040	23,467,104	37,044,039	1,794,415	14,144,023	560,379	22,064,232	5,091,072	34,500,707	8,631,272
2014	33,064,429	22,893,427	36,186,206	1,778,862	13,848,440	548,346	21,617,138	4,980,026	34,245,460	8,486,279
2015	33,213,185	23,064,337	36,339,170	1,766,401	13,875,624	550,825	21,731,766	5,002,455	34,002,098	8,440,782
2016	34,245,763	23,739,695	37,241,328	1,838,516	14,291,583	567,533	22,407,162	5,158,850	35,221,193	8,746,979
2017	32,904,331	22,845,545	36,067,763	1,757,696	13,743,310	545,444	21,577,679	4,959,003	33,804,206	8,374,532
2018	33,501,288	23,019,261	36,389,138	1,785,974	13,928,181	554,733	22,010,309	5,053,083	34,182,400	8,478,677
2019	34,282,181	23,387,435	37,145,796	1,825,944	14,220,062	567,609	22,421,457	5,169,742	34,852,236	8,653,541
2020	32,436,407	22,037,128	34,780,838	1,711,943	13,318,042	535,640	21,285,250	4,887,443	32,680,631	8,082,784
2021	32,243,008	21,827,070	34,313,224	1,668,232	13,112,362	531,342	21,104,343	4,853,977	31,857,447	7,892,301
2022	31,346,217	21,039,258	32,958,376	1,626,055	12,655,272	516,438	20,485,197	4,718,761	31,006,782	7,654,385
2023	31,594,250	21,248,572	32,237,607	1,647,480	12,613,230	520,283	20,632,160	4,755,657	31,286,303	7,715,869
2024	32,242,979	21,631,835	32,830,710	1,657,894	12,840,067	530,769	20,985,341	4,853,918	31,463,801	7,792,281
2025	31,577,144	21,060,745	31,940,023	1,626,102	12,542,903	519,765	20,572,222	4,754,849	30,896,386	7,631,256
2026	31,874,817	21,270,784	32,403,825	1,647,817	12,656,268	524,430	20,705,819	4,800,836	31,164,961	7,690,531
2027	31,720,166	21,022,316	31,775,251	1,623,797	12,519,855	522,034	20,621,907	4,776,451	30,782,235	7,608,241
2028	31,342,096	20,898,926	31,564,612	1,592,694	12,356,591	515,611	20,348,482	4,721,744	30,168,691	7,454,708
2029	31,136,529	20,496,939	31,363,733	1,606,205	12,303,072	512,249	20,215,704	4,690,885	30,426,781	7,490,502
2030	29,922,835	19,095,821	29,965,621	1,531,987	11,721,630	491,432	19,292,143	4,517,813	28,949,744	7,095,522
2031	29,623,785	18,690,722	29,835,875	1,483,737	11,583,747	486,533	19,141,140	4,473,290	28,117,802	6,913,260
2032	29,771,806	18,975,906	29,574,645	1,519,144	11,617,509	488,912	19,180,688	4,495,924	28,758,977	7,045,997
2033	31,589,835	20,079,086	31,574,247	1,592,287	12,361,754	518,449	20,391,267	4,771,250	29,978,704	7,413,417
2034	29,958,647	18,998,447	29,920,402	1,508,782	11,697,752	491,908	19,346,843	4,527,727	28,583,146	7,026,326
2035	31,883,071	19,646,402	31,806,348	1,628,911	12,437,705	523,101	20,463,387	4,819,583	30,573,109	7,528,840
<b>Total</b>	<b>1,325,439,968</b>	<b>849,568,171</b>	<b>1,156,450,975</b>	<b>71,160,074</b>	<b>568,659,680</b>	<b>21,276,054</b>	<b>768,947,964</b>	<b>198,638,978</b>	<b>1,354,801,869</b>	<b>374,659,464</b>

Table B-23

**Total Transportation and Delta Water Charge for Each Contractor**

(Dollars)

Sheet 4 of 4

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Geronio 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	775,863	0	0	0	0	12,626	1,626,210
1964	21,736	1,260,513	9,378	1,595,346	0	0	0	0	13,938	2,802,465
1965	21,866	2,180,589	17,767	2,706,298	0	0	405	405	28,937	4,801,253
1966	37,964	3,900,172	33,426	4,841,237	0	0	564	564	31,321	7,382,570
1967	71,283	7,693,703	68,155	9,510,662	0	0	562	562	47,718	13,033,921
1968	128,915	15,317,881	142,803	18,705,221	0	1,050	1,439	2,489	46,945	25,516,426
1969	198,763	23,153,063	215,209	28,222,575	0	1,225	4,120	5,345	52,963	36,858,117
1970	289,633	30,617,164	273,605	37,588,473	0	3,848	17,116	20,964	69,744	48,326,999
1971	409,327	39,958,997	342,425	49,239,076	0	4,546	19,187	23,733	55,532	61,495,689
1972	537,186	54,991,810	422,305	67,635,668	0	4,929	21,150	26,079	80,412	83,735,805
1973	587,964	59,591,118	435,655	73,277,259	0	7,059	21,778	28,837	54,219	88,662,740
1974	611,428	66,008,399	455,565	80,692,333	0	8,336	22,408	30,744	76,783	97,606,015
1975	644,621	71,830,070	478,404	87,408,406	0	9,416	23,522	32,938	84,547	106,506,622
1976	668,314	74,907,214	475,587	91,547,790	0	7,004	23,257	30,261	106,717	112,432,002
1977	696,515	73,338,457	507,064	90,287,274	0	16,917	24,059	40,976	98,618	111,036,317
1978	709,040	81,951,168	523,177	100,118,825	0	12,635	24,225	36,860	100,786	124,074,182
1979	712,866	83,601,786	526,405	102,971,718	0	16,575	28,352	44,927	119,352	130,087,400
1980	862,276	93,029,351	583,628	114,648,605	0	19,834	26,562	46,396	178,812	144,500,471
1981	946,961	112,171,492	672,540	137,176,913	0	21,682	34,563	56,245	185,347	175,048,290
1982	1,021,329	117,143,301	727,623	142,974,937	0	16,117	43,117	59,234	173,894	184,113,967
1983	1,076,279	118,991,007	854,263	147,524,277	0	15,202	29,410	44,612	220,926	185,763,266
1984	1,211,620	156,273,535	933,311	192,671,291	20,590	15,442	31,795	67,827	225,959	245,196,072
1985	1,287,789	195,493,271	993,651	237,955,748	24,050	16,976	32,405	73,431	340,322	301,615,554
1986	1,344,770	218,331,296	1,058,276	264,204,935	31,753	18,145	33,596	83,494	279,227	334,028,084
1987	1,379,614	204,859,093	1,056,318	252,029,695	37,071	17,794	33,384	88,249	345,116	324,104,181
1988	1,465,828	221,666,727	1,124,101	269,330,563	48,058	19,117	33,605	100,780	365,207	345,890,087
1989	1,505,481	230,327,889	1,232,379	280,050,526	61,184	20,809	37,188	119,181	422,329	360,782,985
1990	1,624,763	277,194,378	1,855,990	333,572,579	66,041	20,855	36,812	123,708	474,284	415,126,976
1991	1,720,878	221,886,673	1,549,955	269,394,506	180,212	22,526	42,200	244,938	214,683	339,231,702
1992	1,779,902	245,365,229	1,503,480	297,874,834	208,216	26,028	43,517	277,761	443,676	384,270,171
1993	1,943,337	219,237,792	1,551,253	274,021,667	209,613	26,203	47,588	283,404	599,571	370,238,799
1994	1,920,543	257,395,691	1,475,305	317,576,379	201,284	25,161	46,079	272,524	609,932	412,378,262
1995	1,982,808	225,862,983	1,568,401	286,745,965	216,944	27,118	50,021	294,083	534,971	394,792,867
1996	1,651,245	235,409,925	1,622,641	305,628,997	217,250	27,156	56,623	301,029	571,857	424,538,619
1997	1,759,748	245,453,178	1,777,266	314,811,752	236,300	29,847	59,915	326,062	428,638	439,669,421
1998	1,952,506	227,252,010	1,797,591	292,989,640	128,021	29,927	54,392	212,340	465,140	417,129,090
1999	2,268,463	254,365,712	1,866,678	325,322,725	254,675	31,834	58,373	344,882	559,344	461,487,485
2000	2,569,826	252,804,692	1,969,507	322,584,426	262,163	79,001	61,581	402,745	0	453,440,895
2001	3,551,735	442,308,452	2,260,443	540,960,379	261,699	93,471	62,747	417,917	0	688,012,539
2002	4,960,001	331,071,519	2,293,918	418,401,923	266,107	95,018	68,296	429,421	0	560,617,418
2003	5,778,402	358,462,615	2,316,719	448,925,118	262,547	93,638	68,954	425,139	0	593,688,115
2004	6,269,122	408,330,729	2,588,813	506,593,367	284,387	102,404	29,283	416,074	0	656,325,496
2005	7,099,143	477,157,039	2,258,273	621,523,557	302,956	48,033	34,558	385,547	0	789,364,363
2006	7,407,502	496,201,288	4,717,387	687,635,364	317,398	50,593	86,089	454,800	0	867,756,177
2007	7,528,028	496,382,582	4,694,636	687,986,596	297,284	70,107	83,277	1,080,668	0	865,274,423
2008	8,840,157	467,497,823	4,461,055	650,629,529	293,763	699,038	84,410	1,077,211	0	823,836,593
2009	9,001,423	483,517,693	4,617,733	663,904,065	294,612	699,296	86,328	1,080,236	0	837,755,029
2010	9,155,163	498,084,538	4,714,981	684,055,565	292,166	698,554	87,434	1,078,154	0	861,561,963
2011	8,956,040	477,196,960	4,501,979	683,724,788	296,476	699,862	90,456	1,086,794	0	858,656,504
2012	9,229,833	506,727,687	4,796,981	703,358,676	296,537	699,880	92,426	1,088,843	0	880,916,578
2013	9,156,618	502,585,234	4,759,315	697,567,451	299,700	700,840	95,409	1,095,949	0	876,752,121
2014	9,089,797	491,531,257	4,633,026	682,902,693	301,986	701,534	98,174	1,101,694	0	858,285,594
2015	9,050,267	492,877,288	4,658,685	684,572,883	305,292	702,537	101,035	1,108,864	0	861,755,948
2016	9,236,488	508,346,591	4,798,715	705,840,396	305,977	702,745	103,486	1,112,208	0	885,838,596
2017	9,013,315	487,832,535	4,604,579	678,029,939	304,888	702,414	103,219	1,110,521	0	854,347,742
2018	9,107,331	492,552,049	4,655,435	685,217,860	297,049	700,036	101,276	1,098,361	0	859,415,956
2019	9,195,130	501,068,569	4,721,164	697,510,327	301,685	701,443	99,793	1,102,921	0	859,928,472
2020	8,865,353	469,618,827	4,439,807	654,680,094	296,570	699,890	86,601	1,083,061	0	827,839,535
2021	8,739,906	462,193,454	4,385,492	644,722,158	297,564	700,192	86,023	1,083,779	0	817,880,702
2022	8,605,034	445,393,492	4,222,159	622,227,426	295,474	699,558	84,117	1,079,149	0	792,652,332
2023	8,645,067	448,282,133	4,265,422	625,444,034	295,265	699,494	84,063	1,078,822	0	797,101,663
2024	8,696,593	455,912,786	4,350,889	635,789,864	293,004	698,808	83,502	1,075,314	0	809,358,119
2025	8,621,438	443,831,872	4,238,606	619,813,311	287,627	697,176	82,172	1,066,975	0	788,477,810
2026	8,677,683	449,522,972	4,295,960	627,236,704	282,611	695,654	80,918	1,059,183	0	798,511,141
2027	8,606,664	441,610,143	4,227,517	617,416,578	287,411	697,110	82,120	1,066,641	0	787,678,859
2028	8,547,239	441,715,618	4,233,400	615,460,413	278,146	694,299	79,808	1,052,253	0	783,398,540
2029	8,573,124	433,705,312	4,140,222	606,661,258	278,184	694,310	79,822	1,052,316	0	773,563,600
2030	8,485,458	410,943,154	3,936,541	575,949,702	238,135	682,156	69,894	990,185	0	732,656,046
2031	8,369,390	400,900,030	3,844,364	563,463,676	238,135	682,156	69,902	990,193	0	718,261,562
2032	8,454,956	409,407,557	3,915,585	573,207,606	238,135	682,156	69,885	990,176	0	729,541,211
2033	8,672,352	430,957,840	4,138,713	604,039,202	238,135	682,156	69,894	990,185	0	763,360,379
2034	8,438,932	408,076,146	3,911,735	572,486,592	238,135	682,156	69,892	990,183	0	728,897,463
2035	8,747,497	430,384,385	4,070,079	604,512,418	238,135	682,156	69,882	990,173	0	762,081,377
<b>Total</b>	<b>328,995,575</b>	<b>20,923,696,308</b>	<b>176,371,415</b>	<b>28,118,666,497</b>	<b>12,306,600</b>	<b>21,281,184</b>	<b>3,950,015</b>	<b>37,537,799</b>	<b>8,723,612</b>	<b>35,936,761,830</b>

Table B-24  
**Equivalent Unit Charge for Water Supply for Each Contractor<sup>a</sup>**  
(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)			
<b>Feather River Area</b>								
City of Yuba City	0.00	0.00	0.00	0.00	0.00	52.48	8.17	60.66
County of Butte	0.00	0.00	0.00	0.00	0.00	31.34	0.87	32.21
Plumas County Flood Control and Water Conservation District	24.11	3.21	0.00	0.00	27.31	29.46	4.68	61.45
Feather River Area	2.61	0.35	0.00	0.00	2.95	36.44	3.12	42.51
<b>North Bay Area</b>								
Napa County Flood Control and Water Conservation District	124.90	41.77	4.06	16.01	186.74	19.19	11.51	217.43
Solano County Water Agency	87.59	35.22	4.31	10.79	137.91	26.88	11.37	176.16
North Bay Area	102.18	37.78	4.21	12.83	157.01	23.87	11.42	192.30
<b>South Bay Area</b>								
Alameda County Flood Control and Water Conservation District, Zone 7	34.73	33.15	7.79	23.86	99.53	24.62	7.47	131.62
Alameda County Water District	24.29	25.92	6.86	15.74	72.81	21.28	4.58	98.67
Santa Clara Valley Water District	21.90	19.71	6.39	13.00	61.00	15.35	3.32	79.67
South Bay Area	24.72	23.28	6.73	15.51	70.25	18.09	4.32	92.66
<b>San Joaquin Valley Area</b>								
County of Kings	4.79	4.94	3.21	8.76	21.70	20.47	3.67	45.84
Dudley Ridge Water District	5.13	4.75	3.07	5.65	18.60	15.98	2.34	36.92
Empire West Side Irrigation District	1.98	3.98	2.35	5.11	13.42	17.31	1.79	32.52
Kern County Water Agency	9.32	9.25	4.75	7.67	31.00	18.83	2.48	52.30
Oak Flat Water District	1.99	2.24	1.91	3.51	9.65	15.69	1.77	27.10
Tulare Lake Basin Water Storage District	5.20	4.66	3.01	5.36	18.23	16.83	2.38	37.43
San Joaquin Valley Area	8.59	8.47	4.45	5.38	26.89	16.90	2.39	46.19
<b>Central Coastal Area</b>								
San Luis Obispo County Flood Control and Water Conservation District	161.51	76.72	12.76	111.87	362.85	54.89	20.82	438.56
Santa Barbara County Flood Control and Water Conservation District	714.98	109.53	15.95	101.52	941.98	45.73	53.33	1,041.04
Central Coastal Area	543.33	99.36	14.96	104.73	762.38	48.57	43.25	854.19
<b>Southern California Area</b>								
Antelope Valley-East Kern Water Agency	43.39	38.60	27.99	78.54	188.52	31.08	7.86	227.47
Castaic Lake Water Agency	48.10	40.12	22.87	54.56	165.65	26.72	12.66	205.03
Coachella Valley Water District	45.28	47.86	34.71	85.31	213.16	8.79	2.75	224.69
Crestline-Lake Arrowhead Water Agency	104.12	83.10	30.71	99.36	317.29	39.75	14.23	371.27
Desert Water Agency	43.87	39.06	46.77	52.23	181.94	17.81	5.63	205.37
Litlerock Creek Irrigation District	58.68	51.65	26.94	86.28	223.55	41.09	10.23	274.87
Mojave Water Agency	95.13	96.89	23.52	141.52	357.07	56.40	20.87	434.34
Palmdale Water District	50.38	46.41	33.89	98.85	229.53	40.29	9.37	279.19
San Bernardino Valley Municipal Water District	167.81	113.42	24.43	89.18	394.85	49.47	18.59	462.90
San Gabriel Valley Municipal Water District	95.52	77.80	56.80	63.71	293.82	35.18	12.72	341.73
San Geronio Pass Water Agency	562.69	191.92	16.90	132.25	903.75	56.18	13.66	973.59
Metropolitan Water District of Southern California	74.83	55.13	34.07	55.15	219.18	31.51	10.60	261.29
Ventura County Flood Control District	130.40	96.00	19.93	107.68	354.01	54.99	19.66	428.67
Southern California Area	69.19	51.78	30.95	55.67	207.59	30.13	9.89	247.61
<b>All Areas</b>	<b>46.29</b>	<b>33.32</b>	<b>18.61</b>	<b>34.01</b>	<b>132.23</b>	<b>24.93</b>	<b>6.87</b>	<b>164.03</b>

<sup>a</sup>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<sup>a</sup>

(Dollars per Acre-Foot)

Aqueduct Reach	Unit Costs of Reach <sup>b</sup>						Cumulative Unit Costs from the Delta					
	Capital Costs (1)	Water System Revenue Bond Surcharge <sup>c</sup> (2)	Minimum OMP&R (3)	Aqueduct Costs (4)	Variable OMP&R (5)	Total (6)	Capital Costs (7)	Water System Revenue Bond Surcharge <sup>c</sup> (8)	Minimum OMP&R (9)	Aqueduct Costs (10)	Variable OMP&R (11)	Total (12)
North Bay Aqueduct												
1	39.84	13.17	11.70	1.30	3.55	69.56	39.84	13.17	11.70	1.30	3.55	69.56
2	42.40	14.02	5.11	0.00	0.00	61.53	82.24	27.19	16.81	1.30	3.55	131.09
3A	7.56	2.50	10.17	2.42	5.74	28.39	89.80	29.69	26.98	3.72	9.29	159.48
3B	48.61	16.07	22.99	3.12	12.75	103.54	130.85	43.26	39.80	4.42	16.30	234.63
South Bay Aqueduct												
1	6.96	2.30	13.72	5.34	13.29	41.61	8.91	2.94	16.42	7.08	19.50	54.85
2	0.66	0.22	1.55	0.00	0.00	2.43	9.57	3.16	17.97	7.08	19.50	57.28
4	2.19	0.72	2.64	0.00	0.00	5.55	11.76	3.88	20.61	7.08	19.50	62.83
5	4.60	1.52	2.07	0.00	0.00	8.19	16.36	5.40	22.68	7.08	19.50	71.02
6	0.27	0.09	0.22	0.00	0.00	0.58	16.63	5.49	22.90	7.08	19.50	71.60
7	2.04	0.67	0.40	0.00	0.00	3.11	18.67	6.16	23.30	7.08	19.50	74.71
8	2.76	0.91	0.67	0.00	0.00	4.34	21.43	7.07	23.97	7.08	19.50	79.05
9	5.71	1.89	2.49	0.00	0.00	10.09	27.14	8.96	26.46	7.08	19.50	89.14
California Aqueduct												
1	1.95	0.64	2.70	1.74	6.21	13.24	1.95	0.64	2.70	1.74	6.21	13.24
2A	1.24	0.41	0.53	0.00	0.00	2.18	3.19	1.05	3.23	1.74	6.21	15.42
2B	0.63	0.21	0.27	0.00	0.00	1.11	3.82	1.26	3.50	1.74	6.21	16.53
3	0.55	0.18	0.20	0.00	0.00	0.93	4.37	1.44	3.70	1.74	6.21	17.46
4	0.88	0.29	1.34	0.81	2.81	6.13	5.25	1.73	5.04	2.55	9.02	23.59
5	0.68	0.22	0.27	0.00	0.00	1.17	5.93	1.95	5.31	2.55	9.02	24.76
6	0.17	0.06	0.13	0.00	0.00	0.36	6.10	2.01	5.44	2.55	9.02	25.12
7	1.01	0.33	0.32	0.00	0.00	1.66	7.11	2.34	5.76	2.55	9.02	26.78
8C	0.02	0.01	0.06	0.00	0.00	0.09	7.13	2.35	5.82	2.55	9.02	26.87
8D	0.39	0.13	0.26	0.00	0.00	0.78	7.52	2.48	6.08	2.55	9.02	27.65
9	0.33	0.11	0.24	0.00	0.00	0.68	7.85	2.59	6.32	2.55	9.02	28.33
10A	0.35	0.12	0.31	0.00	0.00	0.78	8.20	2.71	6.63	2.55	9.02	29.11
11B	0.51	0.17	0.20	0.00	0.00	0.88	8.71	2.88	6.83	2.55	9.02	29.99
12D	0.48	0.16	0.18	0.00	0.00	0.82	9.19	3.04	7.01	2.55	9.02	30.81
12E	0.34	0.11	0.30	0.00	0.00	0.75	9.53	3.15	7.31	2.55	9.02	31.56
13B	0.73	0.24	0.35	0.00	0.00	1.32	10.26	3.39	7.66	2.55	9.02	32.88
14A	2.81	0.93	2.71	1.38	5.29	13.12	13.07	4.32	10.37	3.93	14.31	46.00
14B	0.44	0.15	0.33	0.00	0.00	0.92	13.51	4.47	10.70	3.93	14.31	46.92
14C	0.37	0.12	0.25	0.00	0.00	0.74	13.88	4.59	10.95	3.93	14.31	47.66
15A	2.08	0.69	2.82	1.67	5.74	13.00	15.96	5.28	13.77	5.60	20.05	60.66
16A	3.44	1.14	4.37	3.60	13.40	25.95	19.40	6.42	18.14	9.20	33.45	86.61
17E	11.61	3.84	12.28	12.58	49.47	89.78	31.01	10.26	30.42	21.78	82.92	176.39
17F	3.01	1.00	0.15	0.00	0.00	4.16	34.02	11.26	30.57	21.78	82.92	180.55
18A	2.70	0.89	1.47	0.00	-5.20	(0.14)	36.72	12.15	32.04	21.78	77.72	180.41
19	2.00	0.66	0.89	0.00	0.00	3.55	38.72	12.81	32.93	21.78	77.72	183.96
19C	2.17	0.72	0.00	0.00	0.00	2.89	40.89	13.53	32.93	21.78	77.72	186.85
20A	1.59	0.53	1.47	0.00	0.00	3.59	42.48	14.06	34.40	21.78	77.72	190.44
20B	1.92	0.63	0.97	0.00	0.00	3.52	44.40	14.69	35.37	21.78	77.72	193.96
21	0.97	0.32	0.67	0.00	0.00	1.96	45.37	15.01	36.04	21.78	77.72	195.92
22A	1.01	0.33	0.35	0.00	0.00	1.69	46.38	15.34	36.39	21.78	77.72	197.61
22B	9.95	3.29	9.51	4.06	16.32	43.13	56.33	18.63	45.90	25.84	94.04	240.74
23	2.73	0.90	0.66	0.00	-6.63	(2.34)	59.06	19.53	46.56	25.84	87.41	238.40
24	5.30	1.75	1.84	0.00	0.00	8.89	64.36	21.28	48.40	25.84	87.41	247.29
25	3.87	1.28	0.10	0.00	0.00	5.25	68.23	22.56	48.50	25.84	87.41	252.54
26A	4.23	1.40	6.16	0.00	-45.23	(33.44)	72.46	23.96	54.66	25.84	42.18	219.10
28G	7.87	2.60	2.33	0.00	0.00	12.80	80.33	26.56	56.99	25.84	42.18	231.90
28H	7.58	2.51	2.44	0.00	0.00	12.53	87.91	29.07	59.43	25.84	42.18	244.43
28J	84.99	28.10	33.96	0.00	0.00	147.05	172.90	57.17	93.39	25.84	42.18	391.48
West Branch												
29A	3.94	1.30	7.05	1.55	5.81	19.65	37.96	12.56	37.62	23.33	88.73	200.20
29F	2.88	0.95	0.85	0.00	0.00	4.68	40.84	13.51	38.47	23.33	88.73	204.88
29G	9.55	3.16	4.01	0.00	-20.91	(4.19)	50.39	16.67	42.48	23.33	67.82	200.69
29H	5.95	1.97	3.80	0.00	0.00	11.72	56.34	18.64	46.28	23.33	67.82	212.41
29J	9.97	3.30	1.09	0.00	-39.11	(24.75)	66.31	21.94	47.37	23.33	28.71	187.66
30	16.00	5.29	3.41	0.00	0.00	24.70	82.31	27.23	50.78	23.33	28.71	212.36
Coastal Branch												
31A	7.24	2.39	16.10	1.71	5.00	32.44	14.76	4.87	22.18	4.26	14.02	60.09
33A	270.47	89.42	30.37	14.55	65.33	470.14	285.23	94.29	52.55	18.81	79.35	530.23
34	193.24	63.89	0.85	0.00	0.00	257.98	478.47	158.18	53.40	18.81	79.35	788.21
35	0.00	0.00	0.00	0.00	0.00	0.00	478.47	158.18	53.40	18.81	79.35	788.21

<sup>a</sup>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.

<sup>b</sup>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.

<sup>c</sup>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)

Sheet 1 of 2

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
<b>Total</b>	<b>5,841,000</b>	<b>7,112,000</b>	<b>9,441,000</b>	<b>8,476,000</b>	<b>8,762,000</b>	<b>2,363,000</b>	<b>104,758,000</b>	<b>38,830,000</b>

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)

Sheet 2 of 2

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
<b>Total</b>	<b>53,304,000</b>	<b>0</b>	<b>238,887,000</b>	<b>0</b>	<b>143,418,000</b>	<b>8,607,000</b>	<b>152,025,000</b>	<b>390,912,000</b>

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)

Sheet 1 of 2

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	1,318,074	0
2001	347	146	183	116	108	48	1,045,676	0
2002	1,639	690	861	546	510	226	1,536,257	0
2003	0	0	0	0	0	0	1,821,491	0
2004	2,132	27,868	18,579	18,731	10,355	8,528	1,474,012	0
2005	0	0	0	0	0	0	1,900,082	0
2006	0	0	0	0	0	0	1,938,635	0
2007	0	0	0	0	0	0	2,028,973	0
2008	0	0	0	0	0	0	2,028,973	0
2009	0	0	0	0	0	0	2,028,973	0
2010	0	0	0	0	0	0	2,028,973	0
2011	0	0	0	0	0	0	2,028,973	0
2012	0	0	0	0	0	0	2,028,973	0
2013	0	0	0	0	0	0	2,028,973	0
2014	0	0	0	0	0	0	2,028,973	0
2015	0	0	0	0	0	0	2,028,973	0
2016	0	0	0	0	0	0	2,028,973	0
2017	0	0	0	0	0	0	2,028,973	0
2018	0	0	0	0	0	0	2,028,973	0
2019	0	0	0	0	0	0	2,028,973	0
2020	0	0	0	0	0	0	2,028,973	0
2021	0	0	0	0	0	0	2,028,973	0
2022	0	0	0	0	0	0	2,028,973	0
2023	0	0	0	0	0	0	2,028,973	0
2024	0	0	0	0	0	0	2,028,973	0
2025	0	0	0	0	0	0	2,028,973	0
2026	0	0	0	0	0	0	2,028,973	0
2027	0	0	0	0	0	0	2,028,973	0
2028	0	0	0	0	0	0	2,028,973	0
2029	0	0	0	0	0	0	2,028,973	0
2030	0	0	0	0	0	0	2,028,973	0
2031	0	0	0	0	0	0	2,028,973	0
2032	0	0	0	0	0	0	2,028,973	0
2033	0	0	0	0	0	0	2,028,973	0
2034	0	0	0	0	0	0	2,028,973	0
2035	0	0	0	0	0	0	2,028,973	0
<b>Total</b>	<b>9,799</b>	<b>31,096</b>	<b>22,609</b>	<b>21,286</b>	<b>12,742</b>	<b>9,585</b>	<b>76,039,800</b>	<b>0</b>

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)**

Sheet 2 of 2

Calendar Year	California Aqueduct (continued)							Total (16)
	Mojave Division (continued)			Santa Ana Division				
	Reach 23C (9)	Reach 24 (10)	Subtotal (11)	Reach 25 (12)	Reach 26A <sup>a</sup> (13)	Reach 26B (14)	Subtotal (15)	
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	733,960	0	2,064,185	0	1,408,470	0	1,408,470	3,472,655
2001	811,720	0	1,858,344	0	810,853	0	810,853	2,669,197
2002	725,055	0	2,265,784	0	1,141,565	0	1,141,565	3,407,349
2003	897,323	0	2,718,814	0	1,246,604	0	1,246,604	3,965,418
2004	907,323	0	2,467,528	0	1,811,280	0	1,811,280	4,278,808
2005	853,442	0	2,753,524	0	1,445,516	0	1,445,516	4,199,040
2006	866,158	0	2,804,793	0	1,467,054	0	1,467,054	4,271,847
2007	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2008	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2009	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2010	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2011	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2012	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2013	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2014	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2015	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2016	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2017	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2018	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2019	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2020	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2021	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2022	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2023	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2024	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2025	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2026	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2027	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2028	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2029	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2030	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2031	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2032	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2033	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2034	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
2035	892,103	0	2,921,076	0	1,510,998	0	1,510,998	4,432,074
<b>Total</b>	<b>33,553,010</b>	<b>0</b>	<b>109,699,927</b>	<b>0</b>	<b>61,770,480</b>	<b>0</b>	<b>61,770,480</b>	<b>171,470,407</b>

<sup>a</sup>Units 3 and 4 at Devil Canyon Power Plant were operational in 1993. These minimum OMP&R costs for Reach 26A will be revised to reflect operational date of those units.

Table B-28

## Capital Costs of East Branch Enlargement Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total (8)
	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)	
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	11,731	1,010	10,566	466	0	93,227	117,000
1980	0	28,241	4,708	27,495	797	0	212,759	274,000
1981	0	56,134	16,676	61,271	538	0	385,381	520,000
1982	0	326,180	76,872	337,913	5,988	0	2,342,047	3,089,000
1983	0	554,658	138,964	582,070	9,004	0	3,940,304	5,225,000
1984	0	306,514	68,842	314,468	2,928	0	2,218,248	2,911,000
1985	49,675	447,266	65,773	347,262	4,514	21,614	3,505,896	4,442,000
1986	185,353	1,757,633	236,324	1,363,586	41,900	78,842	13,694,362	17,358,000
1987	49,735	2,455,279	378,535	1,774,447	10,615	151,421	19,107,968	23,928,000
1988	124,534	2,689,959	500,466	1,712,431	13,783	231,982	23,351,845	28,625,000
1989	155,446	7,118,094	2,423,000	1,671,088	17,419	1,673,409	49,111,544	62,170,000
1990	62,786	6,459,229	1,943,918	2,234,452	8,680	1,222,053	45,993,882	57,925,000
1991	28,686	6,265,822	1,875,066	2,168,712	4,024	1,065,433	44,057,257	55,465,000
1992	2,911	4,826,764	1,610,921	1,359,335	471	627,012	32,594,586	41,022,000
1993	1,205	5,094,237	1,828,410	2,722,156	212	199,684	33,380,096	43,226,000
1994	273	1,726,376	631,816	478,543	27	128,988	11,255,977	14,222,000
1995	0	1,130,963	423,243	206,978	0	87,480	7,326,336	9,175,000
1996	0	2,025,987	645,296	606,205	0	375,830	13,725,682	17,379,000
1997	0	451,011	154,366	205,796	0	7,164	2,992,663	3,811,000
1998	0	3,551	1,293	0	0	0	23,156	28,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0
<b>Total</b>	<b>660,604</b>	<b>43,735,629</b>	<b>13,025,499</b>	<b>18,184,774</b>	<b>121,366</b>	<b>5,870,912</b>	<b>309,313,216</b>	<b>390,912,000</b>

Table B-29  
**Capital Cost Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor**  
(Dollars)

Calendar Year	Southern California Area							Total (8)
	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 <sup>a</sup> (6)	Metropolitan Water District of Southern California (7)	
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	8,978,504	11,176,674
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	1,173,823	7,834	0	19,966,107	24,854,325
1999	44,738	2,961,887	882,120	1,231,519	8,219	0	20,947,475	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	22,965,748	28,588,356
2002	47,894	3,170,848	944,353	1,318,402	8,799	0	22,425,318	27,915,614
2003	40,711	2,695,262	802,712	1,120,659	7,479	0	19,061,812	23,728,635
2004	44,352	2,936,320	874,505	1,220,888	8,148	0	20,766,651	25,850,864
2005	47,347	3,183,702	954,668	1,303,349	8,698	0	22,474,289	27,972,053
2006	67,367	4,543,869	1,364,354	1,854,435	12,377	0	32,064,130	39,906,532
2007	67,189	4,550,400	1,368,721	1,849,537	12,344	0	32,094,676	39,942,867
2008	63,515	4,294,303	1,290,750	1,748,405	11,669	0	30,294,475	37,703,117
2009	65,017	4,402,292	1,324,043	1,789,744	11,945	0	31,050,880	38,643,921
2010	64,703	4,369,740	1,312,787	1,781,117	11,888	0	30,830,751	38,370,986
2011	66,325	4,495,466	1,352,651	1,825,783	12,185	0	31,704,283	39,456,693
2012	66,431	4,502,626	1,354,814	1,828,666	12,205	0	31,754,737	39,519,479
2013	65,721	4,447,619	1,337,368	1,809,136	12,074	0	31,372,573	39,044,491
2014	66,084	4,468,757	1,343,278	1,819,140	12,141	0	31,524,573	39,233,973
2015	67,820	4,587,278	1,379,055	1,866,910	12,460	0	32,359,683	40,273,206
2016	68,010	4,599,643	1,382,708	1,872,149	12,495	0	32,447,334	40,382,339
2017	69,594	4,694,119	1,409,469	1,915,758	12,787	0	33,124,396	41,226,123
2018	68,023	4,586,190	1,376,810	1,872,501	12,498	0	32,364,416	40,280,438
2019	69,869	4,717,971	1,417,315	1,923,338	12,836	0	33,288,279	41,429,608
2020	66,937	4,513,682	1,355,127	1,842,631	12,298	0	31,852,182	39,642,857
2021	69,754	4,710,648	1,415,179	1,920,158	12,815	0	33,236,212	41,364,766
2022	68,058	4,608,726	1,386,200	1,873,450	12,504	0	32,506,481	40,455,419
2023	56,458	3,837,037	1,155,877	1,554,150	10,373	0	27,052,041	33,665,936
2024	58,432	3,968,376	1,195,087	1,608,462	10,735	0	27,980,298	34,821,390
2025	66,940	4,527,301	1,360,964	1,842,693	12,298	0	31,936,985	39,747,181
2026	24,570	1,706,723	518,884	676,362	4,514	0	12,002,125	14,933,178
2027	24,949	1,733,376	527,028	686,797	4,584	0	12,189,296	15,166,030
2028	16,953	1,161,335	351,022	466,679	3,115	0	8,180,076	10,179,180
2029	17,026	1,166,423	352,574	468,679	3,128	0	8,215,818	10,223,648
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
<b>Total</b>	<b>2,086,676</b>	<b>140,324,321</b>	<b>42,079,452</b>	<b>57,440,994</b>	<b>383,368</b>	<b>0</b>	<b>990,562,441</b>	<b>1,232,877,252</b>

<sup>a</sup>Under Article 49(d)(4)(A) of its contract, San Bernardino Valley Municipal Water District elected to pay a portion of its allocated costs of East Branch Enlargement in advance rather than to participate in payment of Water System Revenue Bonds. This election made via a letter of agreement signed June 1, 1987. In June 1999, \$6,347,938 has been received from the San Bernardino Valley Municipal Water District.

Table B-30

**Minimum OMP&R Component of East Branch Enlargement Facilities  
Transportation Charge for Each Contractor**

(Dollars)

Calendar Year	Southern California Area							Total (8)
	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)	
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	2,174,776	2,761,885
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	1,599,081	2,010,226
2000	132	403,596	121,378	120,592	40	57,657	2,769,260	3,472,655
2001	10	309,978	90,282	94,893	3	33,193	2,140,838	2,669,197
2002	49	390,196	108,398	139,687	15	46,731	2,722,273	3,407,349
2003	0	453,484	124,451	165,149	0	51,031	3,171,304	3,965,419
2004	1,278	499,108	153,089	141,319	265	74,146	3,409,605	4,278,810
2005	0	480,776	133,833	172,274	0	59,173	3,352,984	4,199,040
2006	0	488,970	135,916	175,770	0	60,055	3,411,136	4,271,847
2007	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2008	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2009	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2010	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2011	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2012	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2013	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2014	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2015	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2016	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2017	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2018	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2019	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2020	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2021	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2022	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2023	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2024	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2025	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2026	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2027	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2028	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2029	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2030	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2031	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2032	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2033	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2034	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2035	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
<b>Total</b>	<b>1506</b>	<b>19,666,491</b>	<b>5,540,584</b>	<b>6,903,815</b>	<b>334</b>	<b>2,528,626</b>	<b>136,829,054</b>	<b>171,470,410</b>

Table B-31  
**Total East Branch Enlargement Facilities Transportation  
Charge for Each Contractor**  
(Dollars)

Calendar Year	Southern California Area							Total (8)
	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)	
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	19,176	1,269,524	378,094	527,854	3,523	0	8,978,504	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	20,765,875	25,904,566
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	946,520	1,249,728	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	22,881,259	28,511,433
1999	44,775	3,197,893	957,160	1,292,426	8,230	39,144	22,546,556	28,086,184
2000	49,163	3,649,705	1,088,146	1,470,286	9,048	57,657	25,726,847	32,050,852
2001	49,058	3,557,241	1,057,393	1,445,068	9,014	33,193	25,106,586	31,257,553
2002	47,943	3,561,045	1,052,751	1,458,089	8,814	46,731	25,147,591	31,322,964
2003	40,711	3,148,746	927,163	1,285,808	7,479	51,031	22,233,116	27,694,054
2004	45,630	3,435,428	1,027,593	1,362,207	8,413	74,146	24,176,257	30,129,674
2005	47,347	3,664,478	1,088,502	1,475,623	8,698	59,173	25,827,273	32,171,094
2006	67,367	5,032,839	1,500,270	2,030,205	12,377	60,055	35,475,266	44,178,379
2007	67,189	5,057,265	1,508,988	2,033,497	12,344	61,854	35,633,804	44,374,941
2008	63,515	4,801,168	1,431,017	1,932,365	11,669	61,854	33,833,603	42,135,191
2009	65,017	4,909,157	1,464,310	1,973,704	11,945	61,854	34,590,008	43,075,995
2010	64,703	4,876,605	1,453,054	1,965,077	11,888	61,854	34,369,879	42,803,060
2011	66,325	5,002,331	1,492,918	2,009,743	12,185	61,854	35,243,411	43,888,767
2012	66,431	5,009,491	1,495,081	2,012,626	12,205	61,854	35,293,865	43,951,553
2013	65,721	4,954,484	1,477,635	1,993,096	12,074	61,854	34,911,701	43,476,565
2014	66,084	4,975,622	1,483,545	2,003,100	12,141	61,854	35,063,701	43,666,047
2015	67,819	5,094,143	1,519,322	2,050,870	12,460	61,854	35,898,812	44,705,280
2016	68,010	5,106,508	1,522,975	2,056,109	12,495	61,854	35,986,462	44,814,413
2017	69,594	5,200,984	1,549,736	2,099,718	12,786	61,854	36,663,524	45,658,196
2018	68,023	5,093,055	1,517,077	2,056,461	12,497	61,854	35,903,545	44,712,512
2019	69,869	5,224,836	1,557,582	2,107,298	12,837	61,854	36,827,407	45,861,683
2020	66,937	5,020,547	1,495,394	2,026,591	12,298	61,854	35,391,310	44,074,931
2021	69,754	5,217,513	1,555,445	2,104,118	12,816	61,854	36,775,340	45,796,840
2022	68,058	5,115,591	1,526,467	2,057,410	12,504	61,854	36,045,609	44,887,493
2023	56,458	4,343,902	1,296,144	1,738,110	10,373	61,854	30,591,168	38,098,009
2024	58,432	4,475,239	1,335,354	1,792,422	10,735	61,854	31,519,425	39,253,461
2025	66,940	5,034,166	1,501,231	2,026,653	12,298	61,854	35,476,113	44,179,255
2026	24,570	2,213,588	659,151	860,322	4,514	61,854	15,541,253	19,365,252
2027	24,949	2,240,241	667,295	870,757	4,584	61,854	15,728,424	19,598,104
2028	16,953	1,668,201	491,289	650,639	3,115	61,854	11,719,204	14,611,255
2029	17,026	1,673,288	492,841	652,639	3,128	61,854	11,754,946	14,655,722
2030	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2031	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2032	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2033	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2034	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
2035	0	506,865	140,267	183,960	0	61,854	3,539,128	4,432,074
<b>Total</b>	<b>2,088,182</b>	<b>159,990,812</b>	<b>47,620,035</b>	<b>64,344,808</b>	<b>383,702</b>	<b>2,528,626</b>	<b>1,127,391,497</b>	<b>1,404,347,662</b>

CONVERSION FACTORS				
Quantity	To convert from customary unit	To metric unit	Multiply customary unit by	To convert to customary unit, multiply metric unit by
Length	inches (in)	millimeters (mm)●	25.4	0.03937
	inches (in)	centimeters (cm)	2.54	0.3937
	feet (ft)	meters (m)	0.3048	3.2808
	miles (mi)	kilometers (km)	1.6093	0.62139
Area	square inches (in <sup>2</sup> )	square millimeters (mm <sup>2</sup> )	645.16	0.00155
	square feet (ft <sup>2</sup> )	square meters (m <sup>2</sup> )	0.092903	10.764
	acres (ac)	hectares (ha)	0.40469	2.4710
	square miles (mi <sup>2</sup> )	square kilometers (km <sup>2</sup> )	2.590	0.3861
Volume	gallons (gal)	liters (L)	3.7854	0.26417
	million gallons (10 <sup>6</sup> gal)	megaliters (ML)	3.7854	0.26417
	cubic feet (ft <sup>3</sup> )	cubic meters (m <sup>3</sup> )	0.028317	35.315
	cubic yards (yd <sup>3</sup> )	cubic meters (m <sup>3</sup> )	0.76455	1.308
	acre-feet (ac-ft)	thousand cubic meters (m <sup>3</sup> x 10 <sup>3</sup> )	1.2335	0.8107
	acre-feet (ac-ft)	hectare-meters (ha - m)■	0.1234	8.107
	thousand acre-feet (taf)	million cubic meters (m <sup>3</sup> x 10 <sup>6</sup> )	1.2335	0.8107
	thousand acre-feet (taf)	hectare-meters (ha - m)■	123.35	0.008107
	million acre-feet (maf)	billion cubic meters (m <sup>3</sup> x 10 <sup>9</sup> )◆	1.2335	0.8107
	million acre-feet (maf)	cubic kilometers (km <sup>3</sup> )	1.2335	0.8107
Flow	cubic feet per second (ft <sup>3</sup> /s)	cubic meters per second (m <sup>3</sup> /s)	0.028317	35.315
	gallons per minute (gal/min)	liters per minute (L/min)	3.7854	0.26417
	gallons per day (gal/day)	liters per day (L/day)	3.7854	0.26417
	million gallons per day (mgd)	megaliters per day (ML/day)	3.7854	0.26417
	acre-feet per day (ac-ft/day)	thousand cubic meters per day (m <sup>3</sup> x 10 <sup>3</sup> /day)	1.2335	0.8107
Mass	pounds (lb)	kilograms (kg)	0.45359	2.2046
	tons (short, 2,000 lb)	megagrams (Mg)	0.90718	1.1023
Velocity	feet per second (ft/s)	meters per second (m/s)	0.3048	3.2808
Power	horsepower (hp)	kilowatts (kW)	0.746	1.3405
Pressure	pounds per square inch (psi)	kilopascals (kPa)	6.8948	0.14505
	head of water in feet	kilopascals (kPa)	2.989	0.33456
Specific capacity	gallons per minute per foot of drawdown	liters per minute per meter of drawdown	12.419	0.08052
Concentration	parts per million (ppm)	milligrams per liter (mg/L)	1.0	1.0
Electrical conductivity	micromhos per centimeter	millisiemens per centimeter (μS/cm)	1.0	1.0
Temperature	degrees Fahrenheit (°F)	degrees Celsius (°C)	(°F - 32)/1.8	(1.8 x °C) + 32
<ul style="list-style-type: none"> <li>● When using "dual units," inches are normally converted to millimeters (rather than centimeters).</li> <li>■ Not used often in metric countries, but is offered as a conceptual equivalent of customary western U.S. practice (a standard depth of water over a given area of land).</li> <li>◆ ASTM Manual E380 discourages the use of billion cubic meters since that magnitude is represented by giga (a thousand million) in other countries. It is shown here for potential use for quantifying large reservoir volumes (similar to million acre-feet).</li> </ul>				
<b>OTHER COMMON CONVERSION FACTORS</b>				
1 cubic foot=7.48 gallons=62.4 pounds of water		1 acre-foot=325,900 gallons=43,560 cubic feet		
1 cubic foot per second (cfs)=450 gallons per minute (gpm)		1 million gallons=3.07 acre-feet		
1 cfs=646,320 gallons a day=1.98 ac-ft a day		1 million gallons a day (mgd)=1,120 ac-ft a year		



STATE OF CALIFORNIA  
THE RESOURCES AGENCY  
DEPARTMENT OF WATER RESOURCES

