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MANAGEMENT OF THE
CALIFORNIA
STATE WATER
PROJECT

ARNOLD SCHWARZENEGGER
Governor, State of California

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*Secretary for Natural Resources
The Natural Resources Agency*

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Bulletin 132-07

Management of the California State Water Project

Covers Activities during Calendar Year 2006



Published December 2008

Arnold Schwarzenegger *Governor
State of California*

Mike Chrisman *Secretary for Natural Resources
Natural Resources Agency*

Lester A. Snow *Director
Department of Water Resources*

Foreword

Bulletin 132-07, Management of the California State Water Project, continues the Bulletin 132 annual series begun in 1963. Bulletin 132-07 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 2008. 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, 2006, through December 31, 2006.

Bulletin 132-07 also discusses water supply and delivery as well as Delta resources and environmental issues, including the CALFED Bay-Delta Authority; Oroville facilities relicensing; and financial analysis of the SWP.

Please note that the water delivery figures listed are accurate at the time of this Bulletin 132 publication, but small volumes of water may be reclassified over time pursuant to long-term water supply contract provisions. If your research requires more current data than was available at the time of publication, please consult the most recent edition of Bulletin 132 and/or contact the DWR staff in the State Water Project Analysis Office.



Lester A. Snow
Director

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Appendix D	Costs of Recreation and Fish and Wildlife Enhancement (discontinued)
Appendix E	Water Operations in the Sacramento-San Joaquin Delta (discontinued)
Appendix F	San Joaquin Valley Post-Project Economic Impact (discontinued)

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California Water Commission

The California Water Commission serves as a policy advisory body to the Director of Water Resources on all California water resources matters. The citizen commission provides a water resources forum for the people of the State, acts as a liaison between the legislative and executive branches of State government, and coordinates federal, State, and local water resources efforts. As of March 2004, all members had either resigned or their terms had expired. New members have not been appointed by the Governor at the time of printing of this bulletin.

Acronyms and Abbreviations

A

AB Assembly Bill
ADA Americans with Disabilities Act
af acre-feet/acre-foot
Ag Council Agricultural Water Management Council
ALP Alternative Licensing Process
ASCE American Society of Civil Engineers

B

Bay-Delta Accord Principles for Agreement on Bay-Delta Standards between the State of California and the Federal Government
Bay-Delta Estuary San Francisco Bay/Sacramento-San Joaquin Delta Estuary
Bay-Delta Plan (2006) Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary
BCDC Bay Conservation and Development Commission
BDCP Bay-Delta Conservation Plan
Bulletin 160 The California Water Plan Update 2005

C

CAISO California Independent System Operator
CALFED CALFED Bay-Delta Program
Caltrans California Department of Transportation
CAMAL Net California Association of Mutual Aid Laboratories Network
C.A.S.T. Catch A Special Thrill
CBDA California Bay-Delta Authority
CCC California Conservation Corps
CDEC California Data Exchange Center
CDFA California Department of Food and Agriculture
CDO cease and desist order
CEEIN California Environmental Education Interagency
CEQA California Environmental Quality Act
CESA California Endangered Species Act
CFR Comprehensive Facility Review
cfs cubic feet per second
CIMIS California Irrigation Management Information System
Corps U.S. Army Corps of Engineers
CPUC California Public Utilities Commission
CREEC California Regional Environmental Education Community

CUSE Catholic University of Santiago del Estero
CVC Cross Valley Canal
CVP Central Valley Project
CVPIA Central Valley Project Improvement Act
CVRWQCB Central Valley Regional Water Quality Control Board
CV-SALTS Central Valley Salinity Alternatives for Long-Term Sustainability
CWC California Water Code
CWIN California Water Impact Network

D

D-1485 State Water Resources Control Board, Water Right Decision 1485
D-1641 State Water Resources Control Board, Water Right Decision 1641
DBP disinfection byproduct
DBW Department of Boating and Waterways
DCC Delta Cross Channel
DDA Davis-Dolwig Act
Delta Fish Agreement Delta Pumping Plant Fish Protection Agreement
Delta Plan (1978) Water Quality Control Plan for the Sacramento-San Joaquin Delta and Suisun Marsh
DFG Department of Fish and Game
DHS Department of Health Services
DO dissolved oxygen
DOE Division of Engineering
DPLA Division of Planning and Local Assistance
DPR Department of Parks and Recreation
DPS distinct population segment
DRMS Delta Risk Management Strategy
DSM2 Delta Simulation Model 2
DSOD Division of Safety of Dams
DSWG Delta Smelt Working Group
DWR Department of Water Resources
DWSC Stockton Deep Water Ship Channel

E

EC electrical conductivity
EIR environmental impact report
EIS environmental impact statement
ELAP DHS Environmental Laboratory Accreditation Program
EPA U.S. Environmental Protection Agency
ESA Endangered Species Act
ET_o reference evapotranspiration
EWA Environmental Water Account

F

FAAST Financial Assistance Application Submittal Tool
Farm Bureau California Farm Bureau Federation
FERC Federal Energy Regulatory Commission

G

GBP Grasslands Bypass Project
GHG greenhouse gas
gpm gallons per minute

H

hp horsepower

I

IEP Interagency Ecological Program
IFDM Integrated On-Farm and Regional Drainage Management Systems
IRRP Interim Reliability Requirement Program
ISDP Interim South Delta Program
ITF Initial Technical Framework

K

KWB Kern Water Bank
kWh kilowatt hour

L

LADWP Los Angeles Department of Water and Power
LEAPS Lake Elsinore Advance Pump Storage
LiDAR light detection and ranging
LOSRA Lake Oroville State Recreation Area
LSJR Lower San Joaquin River
LTMS Long-Term Management Strategy
LTPP Long-Term Procurement Plan

M

maf million acre-feet
mg/L milligrams per liter
MIDS Morrow Island Distribution System
MOU memorandum of understanding

MRTU Market Redesign and Technology Upgrade
mS/cm microSiemens per centimeter
MW megawatt
MWh megawatt hour
MWQI Municipal Water Quality Investigations

N

NDOI Net Delta Outflow Index
NEMDC Natomas East Main Drainage Canal
NEPA National Environmental Policy Act
NOAA Fisheries National Marine Fisheries Service
NODOS North-of-the-Delta Offstream Storage
NPC Nevada Power Company

O

OCAP Operations Criteria and Plan
O&M Division of Operations and Maintenance
OMP&R operations, maintenance, power, and replacement
OM&R operations, maintenance, and replacement
OWUET Office of Water Use Efficiency and Transfers

P

PAO Public Affairs Office
PCL Planning and Conservation League
PFMA Potential Failure Mode Analysis
PFR Periodic Facility Review
PG&E Pacific Gas & Electric Company
PL Public Law
PLC programmable logic controller
POD pelagic organism decline
Proposition 1E Disaster Preparedness and Flood Protection Bond Act of 2006
Proposition 13 Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act of 2000
Proposition 25 Clean Water Bond Law of 1984
Proposition 44 Water Conservation and Water Quality Bond Law of 1986
Proposition 50 Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002
Proposition 82 Water Conservation Bond Law of 1988
Proposition 84 Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006
Proposition 204 Safe, Clean, Reliable Water Supply Act of 1996
PSA public service announcement
PSP project solicitation package

Q

QSA Quantification Settlement Agreement

R

RA resource adequacy

RCRC Regional Council of Rural Counties

Reclamation Bureau of Reclamation

R&FWE SWP Recreation and Fish and Wildlife Enhancement

RGP regional general permit

ROD record of decision

ROV remotely operated vehicle

RTWQMP Real-time Water Quality Monitoring Program

RWQCB Regional Water Quality Control Board

S

SA settlement agreement

Sacramento Valley 40-30-30 Index Sacramento Valley Water Year Hydrologic Classification

SAIC Science Applications International Corporation

San Joaquin Valley 60-20-20 Index San Joaquin Valley Water Year Hydrologic Classification

SARMP Settlement Agreement Recreation Management Plan

SB Senate Bill

SB 34 Delta Flood Protection Act of 1988

SBA South Bay Aqueduct

SCE Southern California Edison

SDG&E San Diego Gas & Electric Company

SDIP South Delta Improvements Program

SJRIODAY San Joaquin River Input-Output Day

SJRMP San Joaquin River Management Program

SJRWQMG San Joaquin River Water Quality Management Group

SJVDIP San Joaquin Valley Drainage Implementation Program

SMP Suisun Management Plan

SMPA Suisun Marsh Preservation Agreement

SMUD Sacramento Municipal Utility District

SR State Route

SRB State Reclamation Board

SRCD Suisun Resource Conservation District

STID Supporting Technical Information Document

SVWMA Sacramento Valley Water Management Agreement

SVWMP Sacramento Valley Water Management Program
SWP State Water Project
SWPAO State Water Project Analysis Office
SWRCB State Water Resources Control Board

T

taf thousand acre-feet
TDF through-Delta facility
TDS total dissolved solids
THM trihalomethane
TOC total organic carbon

U

UC University of California
UCD University of California, Davis
UCLA University of California, Los Angeles
Urban Council California Urban Water Conservation Council
USDA U.S. Department of Agriculture
USFWS U.S. Fish and Wildlife Service
USGS U.S. Geological Survey
USJRBSI Upper San Joaquin River Basin Storage Investigation
UWMP Urban Water Management Plan

V

VAMP Vernalis Adaptive Management Plan
VFD variable frequency drive

W

WECC Western Electricity Coordinating Council
WET Water Education for Teachers
WQCP Water Quality Control Plan

Y

Yuba Accord Lower Yuba River Accord

State Water Project Long-term Water Supply Contractors

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

Non-SWP Water Contractors

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
Belridge Water Storage District	Belridge
Berrenda Mesa Water District	Berrenda Mesa
Buena Vista Water Storage District	Buena Vista
Byron-Bethany Irrigation District	Byron-Bethany
Cawelo Water District	Cawelo
Contra Costa Water District	Contra Costa
County of Tulare	Tulare
East Contra Costa Irrigation District	East Contra Costa
Fresno County Public Works	Fresno
Hills Valley Irrigation District	Hills Valley
Kern Delta Water District	Kern Delta
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
Placer County Water Agency	Placer
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

As its first Director, Harvey O. Banks directed the Department of Water Resources in the planning and initial construction of the State Water Project.



The Bulletin 132 series began in 1963 and reported the first deliveries of water by the new State Water Project (SWP), which was still under construction. Bulletin 132-07, *Management of the California State Water Project*, continues this series as the forty-fifth edition. It reports planning, construction, financing, managing, and operating activities of the SWP in 2006. The SWP is operated and maintained by the California Department of Water Resources (DWR).

Please note that all figures, such as water delivery data, are accurate at the time of this publication; however, occasional changes do occur. For example, small volumes of water may be reclassified over time pursuant to long-term water supply contract provisions. If your research requires more current data than was available at the time of publication, please consult the most recent edition of Bulletin 132 and/or contact the DWR staff in the State Water Project Analysis Office.

2006 SWP Highlights

The SWP is one of the largest water, power, and conveyance systems in the world. In the past decade, it has conveyed an annual average of 2.9 million acre-feet (maf) of water. Its facilities—pumping and power plants; reservoirs, lakes, and storage tanks; and canals, tunnels, and pipelines—capture, store, and convey water to 29 public water agencies.

California experienced higher-than-average rainfall and mountain snowpack during water year 2005–2006. The State, as a whole, received precipitation at 136 percent of average. The Sacramento Valley Water Year Hydrologic Classification (40-30-30 Index) and the San Joaquin Valley Water Year Hydrologic Classification (60-20-20 Index) were both wet, based on observed data for water year 2005–2006. The Northern Sierra Eight Station Index finished with 80.1 inches of precipitation, or 160 percent of average.

Water storage in all SWP reservoirs at the end of water year 2005–2006 was 4.42 maf, or 82 percent of maximum storage. Total water storage in major SWP reservoirs at the end of calendar year 2006 was about

4.49 maf, as compared with 4.66 maf in 2005.

In 2006, the SWP delivered 4,828,580 af of water to 27 of its 29 long-term contractors and 25 other agencies. Nine non-SWP agencies in the Feather River area received 1,094,944 af.

DWR continued to be its own energy scheduling coordinator with the California Independent System Operator (CAISO) and to schedule the purchase and sale of energy to operate the SWP. In 2006, energy used at the 28 SWP pumping and generating plants totaled 9.158 million megawatt hours (MWh). DWR sold 3.71 million MWh of energy to 23 utilities and 22 power marketers, for total revenues of \$220.91 million in 2006.

The project continues to pay bondholders as scheduled and remained financially viable. The long-term water contractors continued to repay project construction bonds and operating expenses. In 2006, the SWP handled approximately \$943 million each in revenues and expenses, with General Fund contributions limited to fish and wildlife enhancements and recreation facilities.

50th Anniversary

On July 5, 2006, DWR marked its 50th year of service to the people of California. When created by legislative mandate in 1956, DWR focused on investigating the State's water resources and planning a project that would store and transport water from the north, where it is plentiful, to the south, where it is scarce.

Today, the SWP is the nation's largest state-owned and operated water delivery system. The project provides water for approximately two-thirds of the State's residents, and irrigation for about 750,000 acres of agricultural land.

Facilities include approximately 760 miles of canals and pipelines, and both the tallest dam and the highest pumping lift in the United States. While its main purpose is to store and transport water, other functions include flood control, power generation, fish and wildlife preservation and enhancement, water quality improvement in the Sacramento-San Joaquin Delta, and recreation.

In 2001, the American Society of Civil Engineers (ASCE) named the SWP a Civil Engineering Monument of the Millennium, one of the greatest engineering achievements during the 20th Century.

To commemorate the 50th anniversary in 2006, the Public Affairs Office (PAO) dedicated an entire *DWR NEWS/People* magazine to DWR history, projections and employee memories. PAO also planned and hosted several anniversary celebrations, including an exhibit at the Capitol.

Weinberger Passes Away

On March 28, 2006, former California Assemblyman and former Secretary of Defense, Caspar W. Weinberger, passed away at age 88.

With a goal to consolidate water development and management responsibility in a single department that could build and operate the SWP, he authored legislation that created DWR in 1956.

He is considered one of the "fathers" of DWR.

California Water Plan Update 2005

In January 2006, DWR released the *California Water Plan Update 2005* (Bulletin 160). One of its two key initiatives is to "improve statewide water management systems," which includes the SWP. It provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. The Plan, which is updated every five years, presents basic data and information on California's water resources, including water supply evaluations and assessments of agricultural, urban, and environmental water uses to quantify the gap between water supplies and uses. The Plan also identifies and evaluates existing and proposed statewide demand management and water supply augmentation programs and projects to address the State's water needs.

In late 2006, DWR began planning the outreach and public process for *California Water Plan Update 2009*.

South Delta Improvements Program EIS/EIR

DWR and the U.S. Bureau of Reclamation (Reclamation) requested initiation of formal federal Endangered Species Act (ESA) and California Endangered Species Act (CESA) consultation on the South Delta Improvements Program (SDIP) on June 6, 2006. The final *SDIP Environmental Impact Statement/Environmental Impact Report* (EIS/EIR) for was certified in December 2006. It evaluated alternatives and proposed proceeding with the SDIP Stage 1 component. Stage 1 actions are the construction of four permanent operable gates and channel dredging in the South Delta.

SDIP is a two-stage project. Stage 1 proposes to reduce the movement of San Joaquin River watershed Central Valley fall-run and late fall-run juvenile Chinook salmon into the South Delta via Old River, and maintain adequate water levels and water quality for agricultural diversions in the South Delta. Stage 2 would increase water deliveries and delivery reliability to SWP and Central Valley Project (CVP) contractors south of the Delta and increase the maximum permitted level of diversion through the existing intake gates at Clifton Court Forebay to 8,500 cubic feet per second (cfs).

DWR is proposing to move forward with Stage 1, to install permanent gates that will replace temporary structures installed and removed each year. Any action regarding Stage 2 will require further study and public input.

Lake Isabella Dam

Both increased water flow levels and rapidly melting above-average snowpack increased safety concerns on the Kern River. In May 2006, the U.S. Army Corps of Engineers' (Corps) Sacramento District Dam Safety Committee decided to lower Lake Isabella behind Isabella Dam, one of the larger federal storage reservoirs in the State. The excess water, approximately 102,000 af, was turned in to the Aqueduct at the Kern River Intertie.

Emergency Levee Repairs

State of Emergency Declared by Governor

In February, in a call for more levee funding, DWR helped organize an aerial tour of Sacramento area and Delta levees for State and federal officials including the Governor, a U.S. Senator, and local congressional representatives. Days later, the Governor declared a state of emergency for the State's levee system. By declaring this state of emergency, the State could provide additional funding and streamline the process to repair critical erosion sites in the levee system.

In March, the Governor signed an Executive Order directing DWR to repair critical levee erosion sites.

By November 1, DWR announced on-time completion of emergency repairs to 29 critical levee sites in the Central Valley flood control system. DWR was responsible for repairs at 19 of the sites and the Corps led the repair work at 10 sites. State and federal agencies pledged to finish construction by November 1. DWR began

development of a strategic initiative intended to reduce floods call FloodSAFE.

Twitchell Island Flood Fight

On Sunday, January 1, water overtopped the Twitchell Island levee system during a period of high water and very strong southwesterly winds in the Sacramento-San Joaquin Delta. The overtopping forced floodfighters to retreat from the area until conditions calmed enough that working conditions were safe. Approximately 100 island residents were evacuated. Despite the severe battering, DWR Emergency Flood Operations personnel (aided by California Conservation Corps crews) were able to shore up problem areas and saved the island from flooding.

Delta Planning

Delta Vision

In September, the Governor signed Executive Order S-17-06 to develop a Delta Vision to provide a sustainable management program for the Sacramento-San Joaquin Bay-Delta, a unique natural resource of local, State and national significance.

Confronted with the question of how to sustain the Delta, local and State officials, Delta residents, environmentalists, water agencies and others are working to craft a vision of the Delta 100 years from today.

To help agency officials and stakeholders from all communities with a stake in the Delta's future learn about issues and processes underway, the Water Education Foundation launched a series of educational workshops. These workshops will continue to be held around the State

and feature panel discussions on topics of interest.

Delta Risk Management Strategy

A major need for the State is to determine how to make the Delta sustainable in the future. The 2000 CALFED Record of Decision (ROD) presented its Preferred Program Alternative that described actions, studies, and conditional decisions to help fix the Delta. Included in the Preferred Program Alternative for Stage 1 implementation was the completion of a Delta Risk Management Strategy (DRMS) that would look at Delta sustainability, and that would assess major risks to the Delta resources from floods, seepage, subsidence, and earthquakes. DRMS would also evaluate the consequences, and develop recommendations to manage the risk.

Assembly Bill (AB) 1200 (CWC Section 139.2 et seq.) requires that DWR evaluate the potential impacts on water supplies derived from the Delta based on 50-, 100-, and 200-year projections for each of the following possible impacts: subsidence, earthquakes, floods, climate change and sea level rise, or a combination of the above. The DRMS work will provide the majority of this required information.

In 2006, DWR, the Corps, the Department of Fish and Game (DFG), and the California Bay-Delta Authority posted various topical Initial Technical Framework (ITF) papers on their websites. The ITF papers serve as a preliminary guide for the work that is to proceed on each topic. In May, DWR awarded a \$6 million contract to URS Corporation to develop a comprehensive DRMS.

Climate Change

California water planners are concerned about climate change and its potential effects on our water resources. More than 20 million Californians rely on two massive water projects: the SWP and federal CVP. These complex water storage and conveyance systems are operated by DWR and Reclamation for water supply, flood management, environmental protection, and recreational uses.

Climate change may seriously affect the State's water resources. Temperature increases could affect water demand and aquatic ecosystems. Projected increases in air temperature may lead to changes in the timing, amount and form of precipitation—rain or snow, changes in runoff timing and volume, sea level rise effects on Delta water quality, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. Sea level rise could adversely affect the Sacramento-San Joaquin River Delta and coastal areas of the State.

The ability of the SWP and the CVP to meet the water demands of its customers and the environment depends heavily on the accumulation of winter mountain snow melting into spring and summer runoff. A warming planet may reduce this natural water storage mechanism.

Legislative mandates in California, including Executive Order S-3-05 and the latest update to the *California Water Plan*, call for more quantitative assessments of climate change effects. To address these concerns, DWR and Reclamation formed a joint Climate Change Work Team to provide qualitative and quantitative information to managers on potential

effects and risks of climate change to California's water resources.

The Climate Change Work Team mission is to coordinate with other State and federal agencies on incorporating climate change science into California's water resources planning and management. The team will provide and regularly update information for decision makers on potential impacts and risks of climate change, flexibility of existing facilities to cope with climate change, and available mitigation measures.

In September 2006, the Governor signed Assembly Bill 32 (Nuñez and Pavley) into law, mandating the reduction of greenhouse gas emissions in California. In July 2006, DWR released *Progress on Incorporating Climate Change into Management of California's Water Resources*, a major technical report on how climate change could affect future water resources. In November 2006, voters passed Propositions 1E and 84 to provide \$4.9 billion in new flood management investments (which will help prepare for more frequent and intense floods and sea level rise), and nearly \$1 billion in integrated regional water management, and climate change evaluation and adaptation.

Oroville Dam Stamp

On May 27, 2006, a stamp depicting DWR's Oroville Dam was unveiled at the dam by the U.S. Postal Service. As part of the Wonders of America: Land of Superlatives series, featuring 40 natural or man-made wonders in the United States, Oroville Dam was chosen because of its height. At 770 feet, it is the tallest dam in the nation.

Yearly Activities Summary

2006 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 and Snowpack in Water Year 2005–2006

California experienced higher-than-average rainfall and mountain snowpack during water year 2005–2006 (covering October 2005 through September 2006). The State, as a whole, received precipitation at 136 percent of average, as compared to 140 percent of average in 2004–2005. During the third week of April, statewide average snow water content peaked at 46 inches, 161 percent of the historical April 1 average. These snow conditions compared closely to those experienced during the 2004–2005 water year, resulting in two consecutive years of bountiful snowpack. The Northern Sierra Eight Station Index finished with 80.1 inches of precipitation, or 160 percent of average.

Runoff

Statewide river runoff totaled 170 percent of average in water year 2005–2006. Runoff in the Sacramento River and San Joaquin River regions was 170 percent and 175 percent of average, respectively.

The Sacramento Valley Water Year Hydrologic Classification (40-30-30 Index)

and the San Joaquin Valley Water Year Hydrologic Classification (60-20-20 Index) were both wet, based on observed data for water year 2005–2006.

Water Year 2005–2006 Storage Totals

At the end of the 2005–2006 water year, water storage in all SWP reservoirs was 4.42 maf or 82 percent of maximum storage, compared to 4.89 maf or 90 percent of minimum storage at the end of water year 2004–2005. The average end-of-month total storage for the 2005–2006 water year in major SWP reservoirs was 4.63 maf. End-of-water-year storage on September 30, 2006 at Lake Oroville was 2.83 maf, which was about 0.43 maf less than the previous water year.

Calendar Year 2006 Storage Totals

The total storage in major SWP reservoirs was about 4.49 maf at the end of calendar year 2006, as compared with 4.66 maf in 2005.

Water Year 2006–2007 October–December Water Conditions

The last three months of calendar year 2006 mark the beginning of a new water year, 2006–2007. By the end of October, the runoff was near 90 percent of average in the northern and central Sierra and closer to normal in the southern Sierra. By the end of December, runoff for water year 2007 was 70, 45, and 60 percent of average for the Sacramento River, San Joaquin River, and Tulare Lake regions, respectively.

2006 Water Supplies, Contracts, and Deliveries

2006 Water Deliveries

DWR approved an initial Table A allocation of 2.27 maf, or roughly 55 percent of

most SWP contractors' requests for Table A water deliveries, on November 22, 2005. DWR increased the 2006 Table A allocation to 2.68 maf, or 65 percent of requests, on December 14, 2005. As water conditions improved, Table A allocation was increased to 2.89 maf (70 percent) on January 17, 2006; 3.30 maf (80 percent) on March 23, 2006; and 4.13 maf (100 percent) on April 18, 2006.

In 2006, 4,828,580 af of water was delivered to 27 long-term contractors and 25 other agencies, including the following:

- 2,791,111 af of Table A water;
- 621,339 af of Article 21 water;
- 182,240 af of 2005 Carryover water;
- 1,926 af of SWP water for recreation and fish and wildlife;
- 1,134,617 af of non-project water delivered to satisfy settlement agreements and agreements with SWP contractors for local water supplies; and
- 97,347 af of water delivered to satisfy agreements between the SWP and CVP.

Table ES-1 on the following page shows SWP water deliveries by category for 1962-2006.

Power Resources

DWR sold 3.71 million MWh of energy to 23 utilities and 22 power marketers, for total revenues of \$220.91 million in 2006. DWR also received \$33.58 million in revenues for capacity, exchanges, and other energy-related services, including \$21.31 million for transactions made through CAISO. See Table 10-4 in Chapter 10, Power Resources, for information about energy and other

services sold and revenue received, including those sold to CAISO.

The sidebar on page xlv shows SWP power generation and consumption in 2006.

Oroville Relicensing Settlement Agreement

The existing 50-year term Federal Energy Regulatory Commission (FERC) hydropower license, Project Number 2100 for operation of the Oroville Facilities, will expire January 31, 2007. On January 26, 2005, DWR submitted its Application for New License for the Oroville Facilities with FERC.

On September 12, 2005, following DWR's successful compliance with FERC's May 2005 Additional Information Request, FERC accepted DWR's Application for a New License for operating the Oroville Facilities. FERC's acceptance of DWR's license application marked the conclusion of the multiyear collaborative Alternative Licensing Process (ALP), involving federal and State agencies, Native American tribes, local agencies, environmental organizations, and other interested parties. They worked to assist DWR in completing a comprehensive license application and accompanying Preliminary Draft Environmental Assessment.

In March 2006, DWR hosted a signing ceremony for the Settlement Agreement for the Relicensing of the Oroville Facilities (SA). This agreement was the culmination of the ALP. The SA was signed by DWR and 52 signatories representing local interest and governments, federal and State resource agencies, water agencies, nongovernmental organizations, and one Native American tribe. The signatories are

Table ES-1. SWP Water Delivered by Category, 1962–2006 (Acre-feet)

Year	Table A Water			Other SWP Water Deliveries					
	Municipal and Industrial (1)	Agricultural (2)	Total (3)	Article 21/Unscheduled		Other Water ^a (6)	Feather River Diversions ^b (7)	Fish & Wildlife/ Recreation Water (8)	Total Deliveries (9)
				Municipal and Industrial (4)	Agricultural (5)				
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
2005	1,959,162	869,244	2,828,406	199,834	531,249	96,932	1,074,706	1,506	4,732,633
2006	1,974,373	998,978	2,973,351	293,358	327,981	119,403	1,112,551	1,936	4,828,580
Total	38,265,987	29,050,678	67,316,665	1,193,295	7,136,283	8,901,370	34,021,364	138,829	118,707,806

^a Includes water conveyed for SWP and non-SWP water contractors.^b Includes amounts of water diverted according to various water rights agreements.

requesting that this comprehensive SA package, which includes proposed benefits outside of FERC's jurisdiction, be used when FERC issues a new license for the Oroville Facilities.

Completion of all federal and State environmental documentation was still ongoing at the end of 2006.

Primary achievements in 2006 included the following:

- completing settlement negotiations with local government agencies, State and federal agencies, and other interested stakeholders including one Native American tribe;
- submitting a Settlement Agreement with 53 signatories to FERC;
- completing the recreation management plan initially submitted with the Application for License to reflect additional enhancements derived from the Settlement Agreement negotiations; and

- commenting on the National Environmental Policy Act (NEPA) Draft EIS containing evaluations on DWR's proposal and alternatives for licensing the Oroville Facilities.

As an interim settlement activity, DWR agreed to provide \$3 million to the Feather River Recreation and Park District to fund recreation improvements at Riverbend Park in Oroville through calendar year 2007.

The following is a partial list of SWP facilities that will be subject to new license terms and conditions:

- Oroville Dam and Reservoir
- Hyatt Pumping-Generating Plant
- Thermalito Pumping-Generating Plant
- Thermalito Diversion Dam Powerplant
- Thermalito Diversion Dam
- Fish Barrier Dam
- Feather River Fish Hatchery
- Thermalito Power Canal

State Water Project Power Generation and Consumption in 2006

Power Generation and Consumption	Millions of Megawatt Hours
Energy generation by SWP facilities	7.056
Energy sources and firm purchases under long-term agreements and exchanges	5.811
Total Energy Available to the SWP	12.867
Energy sales	(3.709)
Net Power Consumption of the SWP	9.158

- Thermalito Forebay
- Thermalito Afterbay

Financial Analysis

In 2006, DWR continues to pay bondholders as scheduled. The SWP was financially viable and was indirectly paid for by the approximately 25 million water users who were served by the project. Direct payment was through the 29 long-term water contractors. In 2006, the SWP handled approximately \$943 million in revenues and \$943 million in expenses. The sidebar on the next page shows the SWP 2006 income statement.

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 SWP financial management, 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. It is anticipated that the draft EIR will be released in October 2007.

Litigation

In 2006, DWR was involved in, or closely monitored, a number of court cases and other actions related to the management of the SWP. See Chapter 6, Legislation and Litigation, for more information.

Watershed Enforcers, a project of California Sportfishing Protection Alliance, a non-profit corporation v. California Department of Water Resources, Lester Snow, Ralph Torres,

David Starks, David Duval and L.D. Elmore— Through the pumping operations of the SWP, unavoidable harm occurs to a small percentage of several fish. Watershed Enforcers asserts that DWR lacks authority for the fish losses, also known as “take,” of the endangered species delta smelt and winter- and spring-run salmon. DWR believes that agreements with DFG provide for SWP compliance with the CESA and the ESA allowing “incidental take” of these fish.

*Natural Resources Defense Council, California Trout, Baykeeper and Its Deltakeeper Chapter, Friends of the River, and The Bay Institute v. Kempthorne in his official capacity as Secretary of the Interior; and Steven A. Williams, in his official capacity as Director, U.S. Fish and Wildlife Service—*The NRDC believes that the U.S. Fish and Wildlife Service’s (USFWS) Biological Opinion concluding the SWP and CVP operations would not jeopardize the continued existence of the delta smelt fails to adequately consider or address the effects on delta smelt of Reclamation’s delivery of water provided in the long-term water service contracts.

Alameda County Flood Control & Water Conservation District, Zone 7 et al. v. State of California Department of Water Resources— Fourteen of the 29 State Water Contractors are suing DWR alleging that the method used by the DWR to allocate costs and revenues of its Hyatt and Thermalito Powerplants at Oroville violates the terms of the long-term water supply contracts.

Hetch Hetchy Study Released

On July 19, DWR and California Department of Parks and Recreation (DPR) issued *Hetch Hetchy Restoration*

2006 Income Statement for the State Water Project

Revenues	Thousands of Dollars
Water Contract Payments	986,139
Revenue Bond Cover Adjustments	(41,599)
Rate Management Adjustments	(24,746)
Other Revenues	24,049
Total Operating Revenues	943,843
Expenses	
Project Operations, Maintenance, Power, and Replacement	657,467
Deposits to Reserves	17,887
Water Bond Principal	119,134
Water Bond Interest	149,355
Total Operating Expense and Debt Service	943,843
Net System Revenues	0

Study, a 62-page summary of existing studies on water, power, recreation and other technical aspects of Hetch Hetchy Valley restoration. The report estimates restoration costs and identifies crucial information that would be necessary if it were decided to move the project forward.

Hetch Hetchy is not a State-owned or operated facility, but changes to the system would impact California's natural resource management activities and responsibilities, including water and energy supplies, ecosystem impacts, water quality, recreational and economic considerations.

Final 2005 SWP Delivery Reliability Report Released

This report provides information on the delivery reliability of the SWP now and 20 years into the future. A draft report was reviewed by the public. The final report has been modified accordingly and includes an appendix containing the public comment letters and the associated responses.

This report first looks at the general subject of water delivery reliability and then discusses how DWR determines delivery reliability for the SWP. A discussion of the analysis tool (the CalSim II computer

simulation model), the analyses, and peer review regarding the accuracy of CalSim II and its suitability for use in this report is included. Finally, estimates of SWP delivery reliability today and in the future are provided along with examples of how to incorporate this information into local water management plans.

Flood Protection

FloodSAFE California

In 2006, DWR launched a multi-faceted initiative to improve public safety through integrated flood management. The FloodSAFE program is a collaborative Statewide effort designed to accomplish five broad goals:

- Increase flood protection;
- Improve preparedness and response;
- Support a vibrant economy;
- Enhance ecosystems; and
- Promote sustainability.

FloodSAFE includes four major categories of program actions. All FloodSAFE program actions are designed to accomplish specific objectives that help satisfy the five goals. Examples include “providing 200-year level of protection to all urban areas in the Sacramento-San Joaquin Valley by December 31, 2025” and “establishing an interagency mitigation banking program that provides lasting environmental benefits by January 1, 2012.”

While DWR is leading FloodSAFE, program success depends on active participation from many key partners. DWR will continue to work closely with key partners and stakeholders to accomplish the FloodSAFE Vision. Most of the State’s funds currently available to

help implement FloodSAFE are provided by Propositions 1E and 84. The Legislature allocated the proposition funds for specific purposes and regions, placing a high priority on improving flood protection and preparedness in the Central Valley and Delta.

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 drinking water source for about two-thirds of California’s population, the Delta also provides irrigation for the Central Valley. The State Water Resources Control Board has adopted water quality control plans and policies to protect the Delta’s water quality and ecosystem while at the same time maintaining SWP water supply reliability.

California Bay-Delta Authority

The California Bay-Delta Act of 2003 established the California Bay-Delta Authority as a new governance structure. The Authority oversees the 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.

Environmental Water Account. EWA is a cooperatively managed program intended to provide (1) beneficial environmental changes to protect the fish of the Bay-Delta Estuary and (2) increased operational flexibility of the SWP and CVP for enhancement of the water supply reliability to its customers. The three management agencies: National Marine Fisheries Service (NOAA Fisheries), USFWS, and DFG, and the two project agencies: Reclamation and DWR, are responsible for implementing the EWA.

In 2006, EWA's sixth operational year, exports were periodically curtailed at the SWP and CVP export facilities between April 28 and June 24. These actions resulted in an EWA debt of 149,151 af to the SWP (April—2,831 af; May—55,563 af; June—90,757 af) and zero af to the CVP.

During water year 2006, DWR purchased 202,857 af in acquisition assets. Since there were no CVP export reductions, Reclamation did not purchase any acquisition assets.

In addition, EWA committed to purchase 62,000 af of water from Yuba County Water Agency through contract agreement and forward its delivery to future date due to wet hydrology conditions. All purchase asset acquisitions in 2006 were covered under the EWA EIS/EIR in compliance with NEPA and CEQA. Source shifting to defer water deliveries was not required because

the San Luis Reservoir did not reach a low-point elevation.

EWA had no carryover debt at the beginning of January 2006. At the end of December 2006, EWA was credited 53,706 af of water.

North Delta Program. The North Delta Program is part of CALFED's Conveyance Program. Three of the four North Delta conveyance actions involve facilities improvements that are being evaluated. One is to improve operational procedures for the Delta Cross Channel (DCC) to address fishery and water quality concerns; the second is a screened Through-Delta Facility on the Sacramento River; the third is the Franks Tract Project, which involves installation of operable barrier(s) in river channel(s) around the Franks Tract region to reduce seawater intrusion and enhance conditions for sensitive fish species; and the fourth is the North Delta Flood Control and Ecosystem Restoration Project, to implement flood control improvements in a manner that benefits aquatic and terrestrial habitats, species, and ecological processes. DWR is leading these studies in cooperation with other agencies.

In 2006, DWR, in coordination with other agencies, completed field work for a pilot fish study in the North Delta to assess the feasibility for the regional salmon outmigration study, planned to be conducted in the winter of 2008–2009. DWR is initiating preparation of an EIR/EIS for the Franks Tract Project, and has completed the Administrative Draft of the EIR for the North Delta Flood Control and Ecosystem Restoration Project. See Chapter 2, Delta Resources, for more information.

Status of Threatened or Endangered Species Listings

North American Green Sturgeon. On April 7, 2006, NOAA Fisheries published a Final Rule in the Federal Register to list the Southern Distinct Population Segment (DPS) of North American green sturgeon (the population occurring south of the Eel River) as threatened under the federal ESA. The biological review team used previous studies of salmon in the Central Valley to examine the likelihood that spawning habitat has been lost within the range of the Southern DPS of green sturgeon. It was determined that dams built on the upper Sacramento and Feather rivers likely block migration of green sturgeon, significantly reducing historical habitat.

The Final Rule listing the Southern DPS of green sturgeon as threatened became effective July 6, 2006. The designation of critical habitat for the species will occur within one year of the listing. The ruling included a solicitation of information to assist NOAA Fisheries in gathering and analyzing data to support a critical habitat designation.

Delta Smelt. In 1993, delta smelt (*Hypomesus transpacificus*) was designated as threatened under the ESA. At the time of the ruling, delta smelt populations had declined nearly 90 percent since the 1970s. Abundance has continued to decrease in recent years. In March 2006, the Center for Biological Diversity, the Bay Institute, and the Natural Resources Defense Council submitted an emergency petition to the USFWS requesting that the status of delta smelt be changed from threatened to endangered under the ESA, because they believed that recent record low population estimates and population viability analyses

indicated that the species was in increased danger of extinction.

Salmon and Steelhead. In January 2006, a Final Rule was published in the Federal Register by NOAA Fisheries updating the threatened and endangered status of 10 DPSs of west coast steelhead (*Oncorhynchus mykiss*) under the ESA, reaffirming the status of several previously listed DPSs in California, including the Southern California steelhead DPS as endangered, and the South-Central California Coast, California Coast, California Central Valley, and Northern California DPSs as threatened.

On September 11, 2006, NOAA Fisheries announced its intent to develop recovery plans for listed Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*) in California. The seven Evolutionarily Significant Units addressed are California Coastal Chinook salmon, Northern California steelhead, Central California Coast steelhead, South-Central Coast steelhead, Southern California steelhead, Central Valley steelhead, and Central Valley spring-run Chinook salmon.

Pelagic Organism Decline in the Upper San Francisco Estuary

Abundance indices calculated by the Interagency Ecological Program (IEP) suggest recent marked declines in numerous pelagic fishes in the upper San Francisco Estuary. The major resident pelagic fishes sampled in the upper estuary include delta smelt, longfin smelt, striped bass, and threadfin shad. Historically, low populations of these fishes have been the result of dry years, such as the drought in 1987–1992. Abundance indices since around 2000 indicate record and near-record lows for

these populations, which are unexpected given the moderate winter-spring flows during recent years. In response to pelagic organism decline (POD), the IEP formed a work team to evaluate the potential causes. An interdisciplinary, multiagency research effort was undertaken in 2005 to identify the most likely causes of the POD. A conceptual model was developed to describe possible mechanisms by which a combination of long-term and recent changes in the ecosystem could produce the observed declines in the abundance indices.

Possible stressors influencing POD were entrainment, toxic effects on fish, toxic effects on fish food, harmful algal blooms, clam (*Corbula*) effects on food availability, disease, and parasites. Narrative explanations in the context of long-term trends have been developed for four major components:

- (1) prior fish abundance—which describes how the continued low abundance of adults leads to reduced juvenile production;
- (2) habitat—which describes how water quality variables, including contaminants and toxic algal blooms, affect estuarine species;
- (3) top-down effects—which posit that predation and water project entrainment affect mortality rates; and
- (4) bottom-up effects—which focus on how food web interactions in Suisun Bay and the West Delta have affected fish abundance.

In 2006, IEP scientists continued to work on a suite of studies and further refine the four components of the POD conceptual model.

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, tours of the SWP facilities have been limited to the Visitor Centers and noncritical facilities such as the Delta Fish Facilities, Oroville Fish Hatchery and Administration Building Overlooks. All of the SWP recreational reservoirs are open to the public; however, boats are not allowed within 500 feet of dams or any associated structures. Signs have been posted at each recreational reservoir warning the public of the zones not accessible to them.

SWP operations are monitored more closely now, and staff exercise vigilance in maintaining a secure environment. Security patrols are more frequent and planning is in place to address potential or actual acts of terrorism. Improvements to existing security systems are ongoing and done in conjunction with Reclamation and other federal and State agencies. DWR continued to implement these actions in 2006.

SWP Milestones through the Decades

Fifty Years Ago – 1956

On July 5, 1956, the State Department of Water Resources comes into existence to oversee development of the State's water resources and the construction of the State Water Project.

The new department is organized with a Division of Resources Planning, Division of Design and Construction, Division of Administration, and a Southern California District. DWR also acquires the duties of the State Water Board, later renamed the California Water Commission.

Governor Knight appoints civil engineer Harvey O. Banks to be DWR's first Director. Banks served as DWR Director from 1956 to 1961. During Banks' years as Director, DWR completed the *California Water Plan* (since updated in the Bulletin 160 Series), and work began on the SWP.

Twenty Years Ago – 1986

DWR and DFG sign an agreement to determine mitigation measures for the Harvey O. Banks Pumping Plant. This is often called the "4-Pumps Agreement," referring to the four additional pumps to be installed at the Pumping Plant.

In February, DWR's Flood Operations Center becomes the headquarters for many Northern California flood fights after torrential rains, starting February 19, lashed much of the North State for more than a week.

The East Branch Enlargement begins to expand the capacity of the aqueduct to move more water south during wet years for storage in groundwater basins.

A ceremony marks the beginning of construction of the Suisun Marsh Salinity Control Gates, which will allow fresh water into the marsh to preserve it as the largest contiguous brackish water marsh remaining in the U.S.

Ten Years Ago – 1996

Heavy rain and snowfall during January and February assure ample water supplies for 1996. On March 8, DWR announces it will deliver 100 percent of the water amounts requested (about 2.7 maf) by its 29 long-term water supply contractors in 1996.

DWR and Reclamation release environmental documents for a South Delta Program to improve flows for fish habitat, agriculture and water exports. It includes installing three permanent flow control structures and a fish barrier, dredging channels, and constructing a new intake to Clifton Court Forebay.



Chapter 1

The State Water Project

Lake Oroville and the Bidwell Bar Bridge.

This chapter primarily provides background on the State Water Project (SWP), including brief descriptions of SWP facilities, planning, construction, power operations, financing, contracting agencies, and the project's many uses and functions. It also provides a glimpse of California history, with a look at the processes and decisions that went into the creation of the largest state-built water project in the country.

Chapters 2 through 15 provide more detail on significant events and specific topics related to management of the SWP in calendar year 2006. At the end of the bulletin, Appendix B presents data and computations used to determine the SWP Contractors' Statements of Charges for 2008.

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

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 inches. 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.

The State Water Project

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, built in 1770 to serve the San Diego mission, was 6 miles long. In the early twentieth century, several cities, including San Francisco and Los Angeles, 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 rainfall and snowmelt 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 securing 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, built, operated, and managed by the Department of Water Resources (DWR), is the largest state-built, multipurpose, user-financed water project in the country. It was designed and built to deliver water, control floods, generate power, provide recreational opportunities, and enhance habitat for fish and wildlife. SWP water irrigates about 750,000 acres of farmland, mainly in the south San Joaquin Valley. About 25 million of California's estimated 37 million residents benefit from SWP water.

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.

The SWP facilities include 30 dams (29 of which impound water), 20 reservoirs, 29 pumping and generating plants, and approximately 700 miles of aqueducts in total. Figure 1-1 shows the names and locations of primary water delivery facilities.

Existing long-term SWP water supply contracts call for the annual delivery of up to 4,126,885 acre-feet (af; one acre-foot is approximately 325,851 gallons) of Table A water during 2006 through SWP facilities, gradually increasing to a maximum of 4,172,786 af 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 2,791,111 af of approved Table A water to long-term SWP water contractors' service areas in 2006. Demands for SWP water are expected to increase as California's population continues to grow.

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 the 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 lakes lies Lake Oroville, the keystone of the SWP. Lake Oroville conserves water from the Feather River watershed. Created by Oroville Dam, the tallest earthfill dam in the Western Hemisphere, Lake Oroville is the project's largest storage facility with a capacity of about 3.5 million af.

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, comprising 738,000 acres of land interlaced with channels that receive runoff from 40 percent of the State's land area. The SWP, federal Central Valley Project (CVP), and local agencies all divert 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, which was 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



Figure 1-1. Names and Locations of Primary Water Delivery Facilities, December 31, 2006

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 to 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 af and is jointly owned by DWR and the Bureau of Reclamation (Reclamation). DWR's share of gross storage in the reservoir is 1,062,183 af. Generally, water is pumped into San Luis Reservoir from late fall through early spring, where it is temporarily stored for release back to the California Aqueduct to meet summertime peaking demands of SWP and CVP water contractors.

SWP water not stored in San Luis Reservoir, as well as water eventually released from San Luis, 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 it to farmlands within the service areas of the SWP and CVP. Along its journey, this 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 southern San Joaquin Valley, near Kettleman City, Phase I of the Coastal Branch Aqueduct serves agricultural areas west of the California Aqueduct. In August 1997, completion of Phase II extended the Coastal Branch Aqueduct to serve municipal and industrial water users in San Luis Obispo and Santa Barbara counties.

The remaining water conveyed by the California Aqueduct is delivered to Southern California, which is home to roughly two-thirds of California's population. Before this water can be delivered, it must first cross the Tehachapi Mountains. Fourteen 80,000-horsepower 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 California Aqueduct divides into two branches: the East Branch and the West Branch.

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

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. The East Branch Extension, Phase I, carries water from Devil Canyon Powerplant Afterbay to Cherry Valley, bringing water

to Yucaipa, Calimesa, Beaumont, Banning, and other communities. Phase II, when completed, will assist with this delivery.

Water in the West Branch flows through Oso Pumping Plant, Quail Lake, and then from the Peace Valley Pipeline through Warne Powerplant into Pyramid Lake in Los Angeles County. From there it flows through the Angeles Tunnel, Castaic Powerplant, Elderberry Forebay, and into Castaic Lake, terminus of the West Branch. Castaic Powerplant 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 generating plants and power purchased from and exchanged with 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 SWP's necessary operating power.

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

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. Increasingly, issues such as escalating costs, environmental concerns, and increased non-SWP demands for limited water supplies became important factors affecting the planning and construction of new facilities.

Table 1-1. Physical Characteristics of Primary Storage Facilities

Facility	Gross Capacity at Absolute Maximum Elevation (Acre-feet)	Surface Area (Acres)	Shore-line (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	15,810	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, 1,062,183 af			
O'Neill Forebay	56,400	2,700	12
SWP storage, 29,500 af			
Los Banos Reservoir	34,600	620	12
Little Panoche Reservoir	5,600	190	6
Quail Lake	7,600	290	3
Pyramid Lake	171,200	1,300	21
Elderberry Forebay	32,500	500	7
Castaic Lake	323,700	2,240	29
Silverwood Lake	75,000	980	13
Lake Perris	131,500	2,320	10

Table 1-2. Physical Characteristics of Primary Dams

Facility	Crest Elevation (Feet)	Structural Height (Feet)	Crest Length (Feet)	Structural Volume (Thousands Cubic Yards)
Antelope	5,025	120	1,320	380
Frenchman	5,607	139	720	537
Grizzly Valley	5,785	132	800	253
Oroville	922	770	6,920	80,000
Thermalito Diversion	233	143	1,300	154
Thermalito Forebay	231	91	15,900	1,840
Thermalito Afterbay	142	39	42,000	5,020
Clifton Court Forebay	14	30	36,500	2,440
Bethany	250	121	3,940	1,400
Del Valle	773	235	880	4,150
Sisk	554	385	18,600	77,645
O'Neill Forebay	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 1-3. Pumping Plant Characteristics

Facility	Number Of Units	Normal Static Head (Feet)	Total Flow at Design Head (cfs)	Total Motor Rating (hp)
Thermalito	3 (p-g) ^a	85-102	9,120	120,000
Hyatt	3 (p-g) ^a	500-625	5,610	519,000
Barker Slough	9	95-120	228	4,800
Cordelia	11	138		
Banks	11	236-252	10,670	333,000
South Bay	9	566	330	27,750
Del Valle	4	0-38	120	1,000
Gianelli	8 (p-g) ^a	99-327	11,000	504,000
Dos Amigos	6	107-125	15,450	240,000
Las Perillas	6	55	461	4,050
Badger Hill	6	151	454	11,750
Devil's Den ^b	6	521	134	10,500
Bluestone ^b	6	484	134	10,500
Polonio Pass ^b	6	533	134	10,500
Buena Vista ^b	10	205	5,405	144,500
Teerink ^b	9	233	5,445	150,000
Chrisman ^b	9	518	4,995	330,000
Edmonston ^b	14	1,926	4,480	1,120,000
Oso	8	231	3,252	93,800
Pearblossom	9	540	2,575	203,200
Greenspot	4	382	50	3,900
Crafton Hills	3	613	40	4,000
Cherry Valley	2	130	75	300

^aThe term p-g indicates pumping-generating units.

^bThese plants have one unit in reserve.

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

Type and Facility	Number of Units	Normal Static Head (Feet)	Total Flow at Design Head (cfs)	Net Dependable Capacity (MW)	Nameplate Capacity (MW)
Hydro					
Thermalito Diversion Dam	1	63-77	615	3	3
Thermalito	4 (3 p-g) ^a	85-102	17,400	114	114
Hyatt	6 (3 p-g) ^a	410-676	16,950	645	645
Gianelli (total)	8 p-g ^a	99-327	16,960	363	424
Alamo	1	115-141	1,740	15	17
Warne	2	719-739	1,600	67	74
Mojave Siphon	3	81-136	2,880	29	30
Devil Canyon	4	1,406	2,940	235	276
Castaic	7 (6 p-g) ^a	900-1,050	20,820	1,128	1,254
Coal					
Reid Gardner, Unit 4 (total) SWP share of generation ^c	1 ^b			234	275

^a The term p-g indicates pumping-generating units.

^b Life of the plants is expected to extend through 2013.

^c SWP ownership share in Reid Gardner, Unit 4, is 67.8%.

Table 1-5. Total Miles of Aqueducts

Facility	Channel and Reservoir	Canal and Siphon	Pipeline and Discharge Line	Tunnel	Total
Grizzly Valley Pipeline	0.0	0.0	6.0	0.0	6.0
Thermalito Power Canal and Tail Channel	1.5	1.9	0.0	0.0	3.4
North Bay Aqueduct	0.0	0.0	27.6	0.0	27.6
South Bay Aqueduct (including del Valle Branch)	0.3	10.7	31.9	1.7	44.6
<i>Subtotal</i>	<i>1.8</i>	<i>12.6</i>	<i>65.5</i>	<i>1.7</i>	<i>81.6</i>
California Aqueduct					
Clifton Court Forebay to O'Neill Forebay	4.5	61.9	0.3	0.0	66.7
O'Neill Forebay to Kettleman City	4.1	101.4	0.2	0.0	105.7
Kettleman City to Edmonston Pumping Plant	0.0	120.1	0.9	0.0	121.0
Edmonston Pumping Plant to Tehachapi Afterbay	0.0	0.2	1.9	7.9	10.0
Tehachapi Afterbay to Lake Perris	4.0	97.8	34.3	3.9	140.0
<i>Subtotal</i>	<i>12.6</i>	<i>381.4</i>	<i>37.6</i>	<i>11.8</i>	<i>443.4</i>
California Aqueduct Branches					
Coastal Branch	0.0	14.1	98.7	2.7	115.5
West Branch	9.7	9.3	5.8	7.1	31.9
East Branch Extension					
Devil Canyon Powerplant to Greenspot Pumping Station	0.0	0.0	15.8	0.0	15.8
Greenspot Pumping Station to Noble Creek Terminus	0.0	0.0	13.3	0.0	13.3
<i>Subtotal</i>	<i>9.7</i>	<i>23.4</i>	<i>133.6</i>	<i>9.8</i>	<i>176.5</i>
Total	24.1	417.4	236.7	23.3	701.5

In response to changes in water management policy, DWR continues to reassess plans for 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 offstream storage complex, Los Banos Grandes, in Merced County. Initial plans for Los Banos Grandes were completed, but additional planning has been suspended until environmental concerns have been addressed.

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 Powerplant and the new Devil Canyon Powerplant Second Afterbay became operational in 1995. Mojave Siphon Powerplant 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 af 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 the delivery of 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 af of water supply. As a result of contract amendments in the 1980s and the Monterey Amendment, the current combined maximum annual Table A amount by 2021 totals 4,172,786 af. 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. Therefore, only 29 agencies and districts now have long-term contracts with DWR as of December 31, 2006. These agencies are shown on Figure 1-2 and listed in Table 1-6.

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

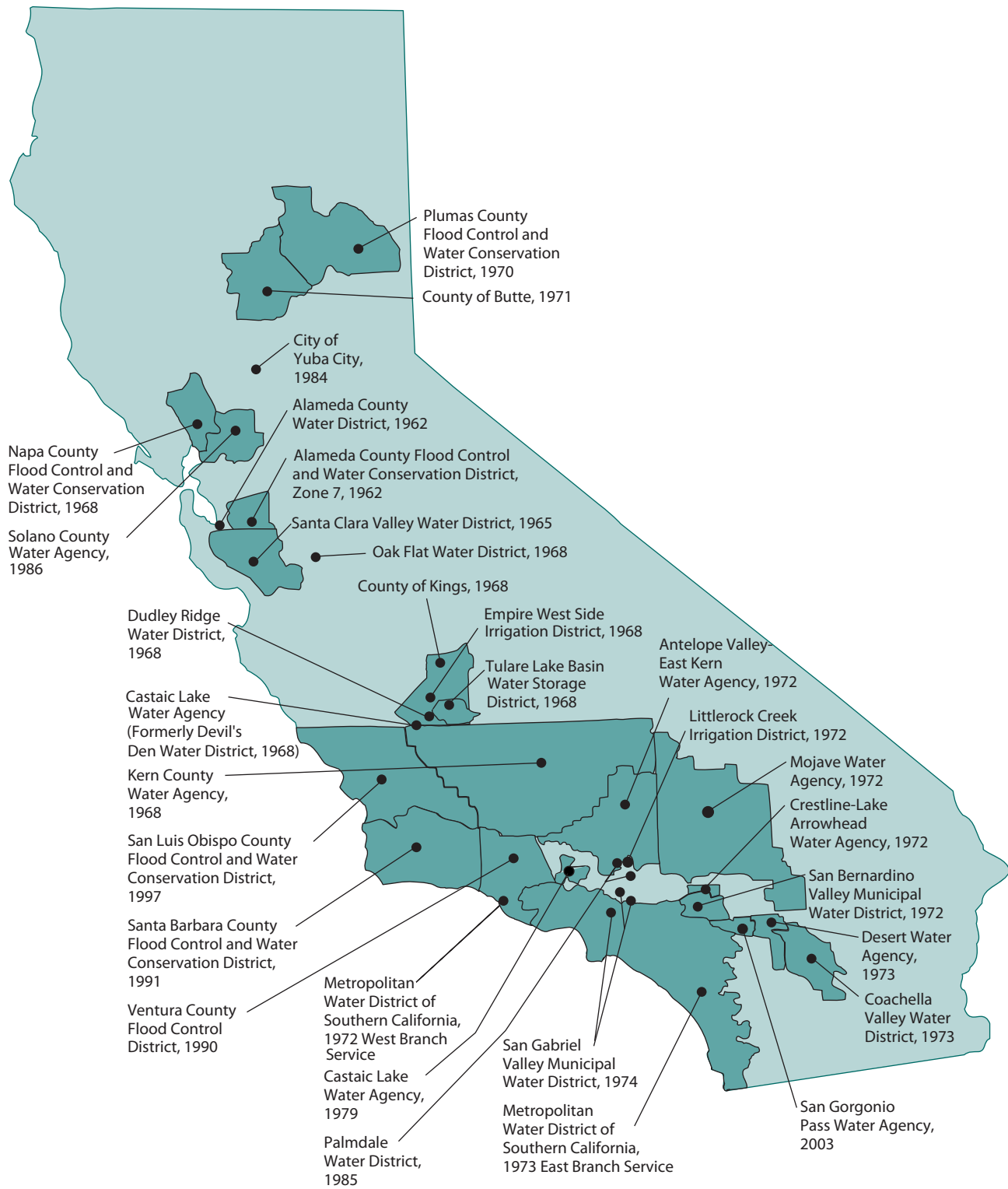


Figure 1-2. Names, Locations, and First Year of Service of Long-Term Contracting Agencies, December 31, 2006

Table 1-6. Long-Term Water Supply Contracting Agencies, by Area, as of December 31, 2006

Contracting Agency	Cumulative Deliveries (af) ^a	Annual Table A (af)	Payments (Dollars)	Gross Area (Acres)	Assessed Valuation (Dollars) ^b	Estimated Population
Upper Feather River Area						
City of Yuba City	22,500	9,600	4,019,270	13,944	4,184,854,084	62,083
County of Butte	13,386	1,200	1,147,441	1,069,000	16,733,963,822	214,119
Plumas County Flood Control and WCD	10,472	324	1,479,849	1,676,056 ^c	2,060,744,342	21,200
<i>Subtotal</i>	<i>46,358</i>	<i>11,124</i>	<i>6,646,560</i>	<i>2,759,000</i>	<i>22,979,562,248</i>	<i>297,402</i>
North Bay Area						
Napa County Flood Control and WCD	223,139	22,550	73,273,727	510,010	23,055,694,643	134,444
Solano County Water Agency	579,662	47,306	100,866,680	537,600	47,700,000,000	424,823
<i>Subtotal</i>	<i>802,801</i>	<i>69,856</i>	<i>174,140,406</i>	<i>1,047,610</i>	<i>70,755,694,643</i>	<i>559,267</i>
South Bay Area						
Alameda County Flood Control and WCD–Zone 7	1,189,554	80,619	132,011,878	275,900	33,600,000,000	196,659
Alameda County WD	1,081,007	42,000	89,555,801	67,057	40,416,633,287	324,800
Santa Clara Valley WD	3,475,478	100,000	281,931,037	849,000	147,074,863,200	1,715,374
<i>Subtotal</i>	<i>5,746,039</i>	<i>222,619</i>	<i>503,498,716</i>	<i>1,191,957</i>	<i>221,091,496,487</i>	<i>2,236,833</i>
San Joaquin Valley Area						
County of Kings	121,932	9,305	5,077,390	893,300	7,300,545,655	147,729
Castaic Lake Water Agency	456,397	12,700	—	8,700	4,532,936	0
Dudley Ridge WD	2,070,260	57,343	67,939,742	37,600	46,300,000	36
Empire West Side Irrigation District	109,771	3,000	3,352,482	7,400	^d	11
Kern County Water Agency	31,724,103	998,730	1,526,898,168	5,161,000	64,149,863,242	739,400
Oak Flat WD	192,374	5,700	5,409,174	4,500	^d	10
Tulare Lake Basin Water Storage District	4,494,952	95,922	136,375,455	189,519	152,288,305	23
<i>Subtotal</i>	<i>39,169,789</i>	<i>1,182,700</i>	<i>1,745,052,409</i>	<i>6,302,019</i>	<i>71,653,530,138</i>	<i>887,209</i>
Central Coastal Area						
San Luis Obispo County Flood Control and WCD	38,112	25,000	58,566,808	2,122,240	37,363,525,861	260,727
Santa Barbara County Flood Control and WCD	220,569	45,486	365,150,098	1,775,296	49,196,921,210	421,625
<i>Subtotal</i>	<i>258,681</i>	<i>70,486</i>	<i>423,716,906</i>	<i>3,897,536</i>	<i>86,560,447,071</i>	<i>682,352</i>
Southern California Area						
Antelope Valley–East Kern Water Agency	1,561,466	141,400	373,274,468	1,525,547	25,685,000,000	365,000
Castaic Lake Water Agency ^e	651,790	82,500	214,382,841	124,800	27,070,976,711	249,600
Coachella Valley WD	847,523	121,100	207,049,279	639,857	57,138,070,411	288,707
Crestline–Lake Arrowhead Water Agency	45,936	5,800	21,098,469	55,100	1,500,527,807	25,000
Desert Water Agency	1,059,525	50,000	203,034,614	209,760	8,935,190,300	70,800
Littlerock Creek Irrigation District	18,995	2,300	5,401,699	10,000	438,155,825	2,900
Metropolitan WD of Southern California	27,511,299	1,911,500	7,710,003,586	3,313,960 ^f	1,822,528,845,729	18,453,602
Mojave Water Agency	248,642	75,800	188,683,962	3,136,000	34,764,740,354	403,150
Palmdale WD	191,730	21,300	55,107,970	119,680	1,470,701,596	109,845
San Bernardino Valley Municipal WD	581,355	102,600	407,017,951	224,000	28,115,559,357	600,000
San Gabriel Valley Municipal WD	325,107	28,800	117,421,305	18,297	11,720,110,333	210,145
San Geronio Pass Water Agency	5,927	7,000	72,637,006	140,800	5,685,364,116	65,500
Ventura County Flood Control District	42,805	20,000	46,271,942	308,252	30,600,000,000	460,000
<i>Subtotal</i>	<i>33,092,100</i>	<i>2,570,100</i>	<i>9,621,385,090</i>	<i>9,826,053</i>	<i>2,055,653,242,539</i>	<i>21,304,249</i>
Total	79,115,768	4,126,885	12,474,440,087	25,024,175^g	2,528,693,973,126	25,967,312

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

^b Statutes of 1978, Chapter 1207, added Section 135 to the Revenue and Taxation Code, requiring assessment at 100% of full value for the 1981–1982 fiscal year and fiscal years thereafter.

^c Total of all Plumas County Flood Control and Water Conservation District, including Last Chance Creek Water District.

^d Assessed valuation not available on an agency area breakdown.

^e District includes land in the San Joaquin Valley Area formerly known as Devil's Den Water District.

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

^g Includes duplicate values. Some areas that are within two or more agencies are included in each agency's total.



Photo: baydeltalive.com

Chapter 2 Delta Resources

Clockwise, from the upper right: Little Franks Tract, Bethel Island, Taylor Slough, Dutch Slough, Jersey Island, Big Break, San Joaquin River, and Sherman Island.

Significant Events in 2006

On November 7, 2006, California voters approved the following bond acts, authorizing funding for new investments in flood protection and stormwater management programs, much of which affect the Sacramento-San Joaquin Delta:

Proposition 1E, the Disaster Preparedness and Flood Protection Bond Act of 2006, provides \$4.09 billion in funding for: levee repairs and improvements, upgrading flood protection for urban areas, improving emergency response capabilities, and providing grants for stormwater and flood management projects. Three billion dollars of this bond money is earmarked for the evaluation, repair, and upkeep of flood control structures statewide. Funds will also be used for local assistance for levee maintenance and improvement in the Delta.

Proposition 84, the California Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 provides \$800 million in funding for flood control projects. Two hundred seventy-five million dollars of the funds is allocated to reducing the risk of levee failures in the Delta. The remaining \$525 million is allocated to statewide flood management facilities, flood control subventions, flood corridors, bypasses, and floodplain mapping. Proposition 84 funding will also be allocated to the Delta Water Quality Program, the Delta Levees System Integrity Program, and the Bay-Delta Conservation Plan.

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

The Sacramento-San Joaquin Delta is a unique environmental resource and a major source of water for millions of Californians. Over the past 40 years, the Department of Water Resources (DWR), and other State and federal agencies, have developed and implemented numerous programs to manage the Delta.

DWR's water management programs focus on solving problems in three distinct areas of the Sacramento-San Joaquin Delta: the North Delta, West Delta, and South Delta (see Figure 2-1).

These programs share the following common goals:

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

Delta Water Management Programs

During the last decade, water management issues in the Delta have been complicated by the listing of native species under the federal Endangered Species Act (ESA); the creation of new Delta standards by the U.S. Environmental Protection Agency (EPA); the issuance of biological opinions under the ESA; and the implementation of 800,000 af of CVP 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 was created 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.

In June 2000, the CALFED Bay-Delta Program issued a final programmatic Environmental Impact Report (EIR)/ Environmental Impact Statement (EIS). The associated decision documents, primarily a Record of Decision (ROD), were published in August 2000. The ROD defined the approach and projects to be undertaken by the CALFED Bay-Delta Program over a 30-year period.

The first stage of the CALFED Bay-Delta Program (2000–2007) focuses on conveying water supply through the Delta. Specific projects and studies will be undertaken during Stage 1 to determine the feasibility of a through-Delta approach. DWR is the lead State agency for the projects and studies contained in the CALFED Conveyance Program and the Levee System Integrity Program. Actions contained in the CALFED Conveyance and Levee programs affect the North, West, and South Delta regions.

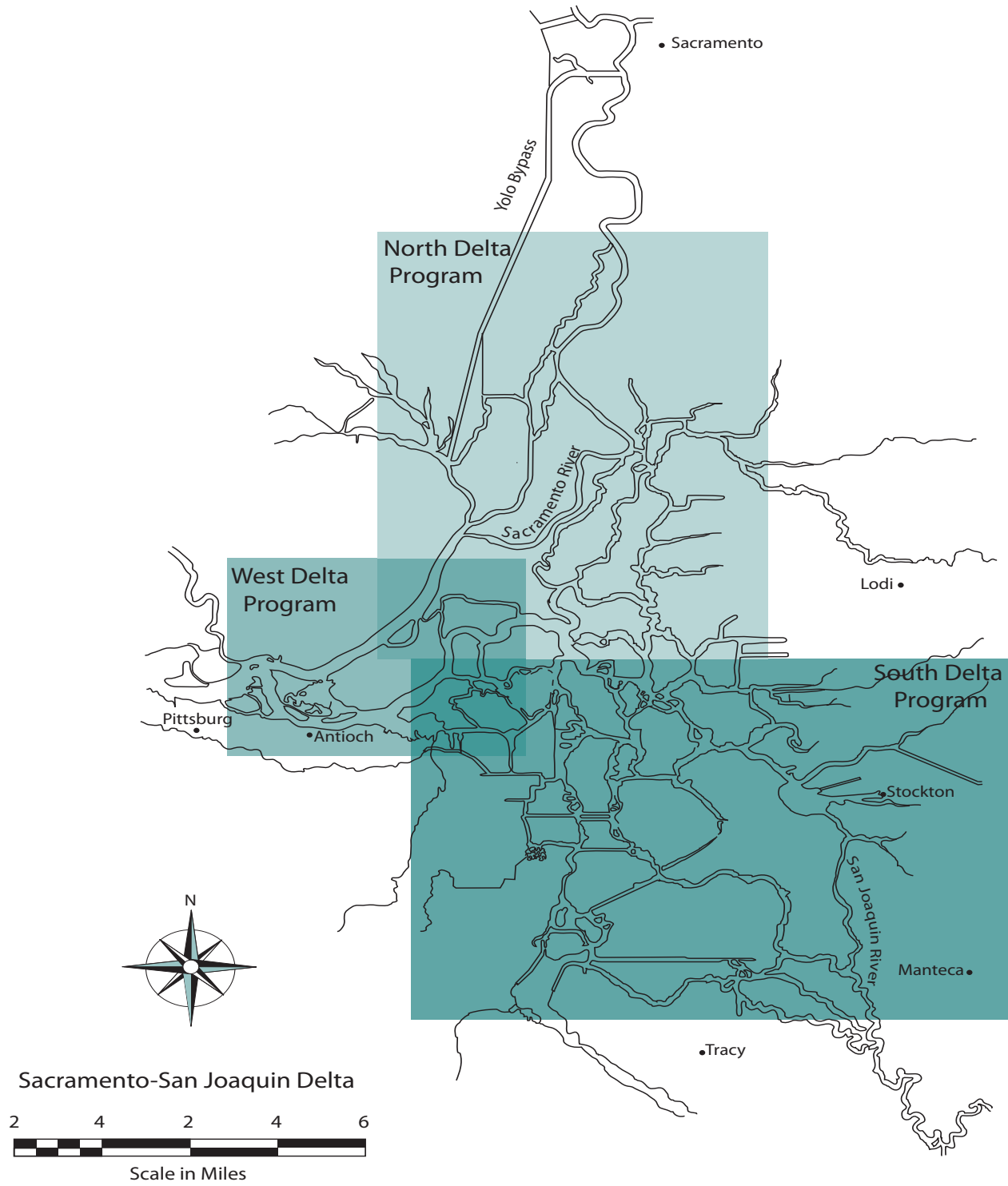


Figure 2-1. The North, West, and South Delta Water Management Programs

North Delta Program

The CALFED ROD calls for various modifications. These modifications include changes in the North Delta's conveyance facilities to improve Delta water quality, fisheries, and water supply reliability, as well as other modifications to improve flood protection and ecosystem health.

CALFED North Delta actions include:

- evaluation and implementation of improved operational procedures for the Delta Cross Channel (DCC) to address fishery and water quality concerns;
- evaluation of a screened through-Delta facility (TDF) on the Sacramento River of up to 4,000 cubic feet per second (cfs);
- evaluation of flow and salinity in Franks Tract to improve fish protection and improve water quality; and
- design and construction of floodway improvements to provide conveyance, flood control, and ecosystem health (North Delta Flood Control and Ecosystem Restoration Project).

Since 2003, DWR has been actively involved in the DCC reoperation and through-Delta facility (DCC/TDF) projects. DWR took the lead in managing the on-going DCC/TDF projects, as well as administering and funding all DCC/TDF contracts. DWR is the State implementing agency for the floodway improvements and ecosystem restoration and Franks Tract projects.

In 2006, modeling studies were completed to evaluate the hydrodynamics and water quality effects of various TDF, DCC reoperation, and Franks Tract alternatives.

Flow and salinity monitoring stations were installed in the Central and North Delta for the Franks Tract Project, and data is being collected.

Information about the DCC reoperation, TDF, and Franks Tract Project is available on the DWR Bay-Delta Office website: <http://baydeltaoffice.water.ca.gov>.

DCC Reoperation Project

The DCC reoperation project involves an evaluation of improved operational procedures for the DCC, which maintains high-quality water in the Central Delta, while reducing juvenile fish entrainment.

Through-Delta Facility

The through-Delta facility (TDF) would be a diversion facility on the Sacramento River with a capacity of up to 4,000 cfs. Consideration of the TDF as an action would occur only after three separate assessments are satisfactorily completed: first, a thorough assessment of DCC operation strategies and the 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.

Franks Tract Project

The Franks Tract Project evaluates feasibility of the restoration of remnant levees and construction of operable gates in river channels in the Franks Tract region to reduce sea water intrusion and enhance conditions for sensitive fish species. DWR initiated the Franks Tract Project in 2003 as part of the North Delta conveyance improvement project and continues to serve as the implementing agency for the project.

The Franks Tract Pre-Feasibility Report (2005) found Delta water quality improves during drier times of the year while enhancing Delta ecosystem values and recreation opportunities. This study recommends that operations of the proposed gates be refined for these alternatives to optimize water quality benefits. The report also recommends conducting a pilot project to evaluate, implement, and demonstrate the effectiveness and impacts of the facility before considering a full-scale project. Subsequently, over the next two years, DWR will continue to refine and evaluate the operation and design of several pilot project alternatives in the Franks Tract area. The scope of the proposed pilot project is currently under development. In 2007, a joint EIR/EIS will be initiated for the pilot project.

North Delta Flood Control and Ecosystem Restoration Project

North Delta Flood Control and Ecosystem Restoration improvements, a Stage 1 action under the CALFED Bay-Delta Program, provides flood control and ecosystem restoration in the North Delta area. These improvements support other CALFED goals, which include water supply reliability, recreation, and agricultural land preservation. DWR is the State implementing agency, and many of the proposed CALFED elements for the project are similar to elements of earlier North Delta planning efforts. These earlier projects were suspended in deference to the CALFED program.

During 2006, DWR continued overseeing the 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 develop and incorporate phases in project alternatives. These plans include implementation flexibility, complete hydraulic modeling analysis of phased alternatives, and significant progress on project impact analysis and cost estimates. DWR staff has also worked with federal regulatory agency scientists and academic experts to complete development of three ecological conceptual model alternatives for the Group 1 actions.

Project Area. The project area is approximately 197 square miles and is the area in which DWR is considering alternatives for flood control and restoration actions. The following criteria were used to develop project area boundaries.

- The project area must include the footprint area of each alternative.
- The project area should be hydrologically contiguous.
- The project area should include portions of all waterways where existing flow patterns could be substantially affected by one or more of the alternatives.
- The project area should be compatible with flood control planning and implementation responsibilities of other flood control agencies.

Project Status. The North Delta Administrative Draft EIR was completed in June 2006. The Public Draft EIR is expected in fall 2007, and the selection of preferred alternatives and completion of the final EIR is scheduled for spring 2009.

Key schedule milestones are as follows:

Milestones	Date	Status
Administrative Draft of the EIR	June 2006	Completed
Public Draft of the EIR	Fall 2007	On-track
Final EIR with Preferred Alternatives	Spring 2009	On-track
Project Design Complete	Fall 2010	On-track
Construction Complete	Spring 2013	On-track

For more information, visit the North Delta Flood Control and Ecosystem Restoration Project website at:

<http://www.water.ca.gov/floodmgmt/dsmo/sab/ndp>.

West Delta Program

The objectives of the West Delta Program include the following goals:

- 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 techniques to control subsidence and soil erosion on Sherman and Twitchell islands;
- implement mitigation requirements associated with the Temporary Barriers Program and proposed South Delta Improvements Program; and
- provide diverse habitat for wildlife, especially waterfowl.

DWR contracted with a consultant in the early 1990s to develop preliminary wildlife management plans for Sherman and Twitchell islands. These plans are designed to benefit wildlife species that occupy wetland, upland, and riparian habitats, as well as provide recreational

opportunities for hunting and viewing wildlife. Property acquired and habitat developed by DWR could mitigate impacts associated with current and future Delta water management programs, including programs proposed by DWR and the CALFED Bay-Delta Program.

DWR is a major landowner on Twitchell and Sherman islands and holds two of the three trustees' positions for Reclamation Districts 1601 (Twitchell Island) and 341 (Sherman Island). Consequently, DWR participates 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. These districts assess the landowners for the operational needs of the public districts.

South Delta Improvements Program

During the late 1990s, DWR pursued the Interim South Delta Program (ISDP), which intended to accelerate construction of South Delta facilities to improve Delta water conditions. During the same period, the CALFED Bay-Delta Program worked on an independent long-term solution. DWR released a draft EIS/EIR for the 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 (SDIP), and additional program objectives and purposes, as described below, were added.

DWR and the U.S. Bureau of Reclamation (Reclamation) requested initiation of formal ESA and California Endangered

Species Act (CESA) consultation on SDIP on June 6, 2006. Formal ESA and CESA consultation was suspended because of Reclamation’s decision to re-consult on the Operations Criteria and Plan (OCAP). Biological Opinions for OCAP and SDIP construction impacts are required before environmental permits necessary to construct the project can be obtained. The final EIS/EIR for SDIP was certified in December 2006.

The SDIP consists of a physical/structural and an operational component. Stage 1 is the physical/structural component that would consist of constructing and utilizing permanent operable gates and conveyance dredging, and Stage 2 is the operational component that would consist of changes in export regulations allowing an increase in water deliveries and delivery reliability for SWP and CVP water contractors.

DWR and Reclamation identified the following project objectives and purposes of SDIP:

- reduce the movement of San Joaquin River watershed Central Valley fall-run and late fall-run juvenile Chinook salmon into the south Delta via Old River (Stage 1);
- maintain adequate water levels and water quality through improved circulation for agricultural diversions in the South Delta, downstream of the Head of Old River (Stage 1);
- increase water deliveries and delivery reliability to SWP and CVP water contractors south of the Delta (Stage 2); and
- provide opportunities to convey water for fish and wildlife purposes by increasing the maximum permitted level of diversion through the existing

intake gates at Clifton Court Forebay to 8,500 cfs (Stage 2).

Because of the decline in abundance indices for pelagic organisms and until more is known about the effects of Stage 2 on delta smelt and other protected fish species, DWR is recommending that only Stage 1 actions be completed now, thus deferring Stage 2.

The Stage 1 physical/structural component consists of the following elements:

- construct and operate a fish control gate at the Head of Old River to reduce the downstream movement of San Joaquin River watershed Central Valley fall-run and late fall-run juvenile Chinook salmon into the South Delta via the Head of Old River;
- construct and operate up to three flow-control structures (gates) to improve existing water level and circulation patterns in South Delta water channels at the following locations: (1) Middle River (near the confluence of Middle River with Victoria Canal); (2) Grant Line Canal (near the confluence of Grant Line Canal and Old River); and (3) Old River (just east of the Delta-Mendota Canal Intake);
- dredge various channels in the South Delta, including Middle and Old rivers, to improve conveyance and dredge areas surrounding agricultural diversions to improve their function; and
- extend up to 24 agricultural diversion intake facilities to improve their function.

SDIP elements originally placed in the ROD included increasing diversions through Clifton Court Forebay (first to

8,500 cfs and then to 10,300 cfs), dredging and installing operable tidal barriers in the South Delta, installing a fish barrier at Head of Old River, and constructing the first phase of a new intake and fish screen into Clifton Court Forebay. DWR deferred the increase in diversions of up to 10,300 cfs and the associated new fish screens as components of the SDIP due to major funding issues, as well as significant technical uncertainties associated with the design and construction of the new fish screens.

On February 15, 2006, the State Water Resources Control Board (SWRCB) issued a Cease and Desist Order (Order WR 2006-0006) requiring DWR and Reclamation to construct permanent gates in the southern Delta or take alternative measures for achieving the water quality objectives by 2009. Additionally, the order requires DWR and Reclamation to report to SWRCB if there is a threat of noncompliance of the water quality requirements, and to report the reasons for the noncompliance and actions taken to avoid noncompliance. SWRCB will then determine if enforcement actions are necessary. DWR must also submit quarterly progress reports on the permitting and construction of permanent gates.

Preferred Plan

The preferred plan for SDIP is to construct the physical/structural component as soon as permits are obtained and defer the operational component until more is known about the project's potential effects on the delta smelt and other protected fish species.

Temporary Barrier Facilities

Temporary rock barriers are installed annually, during low flow conditions, until the four permanent gates are operational.

The barriers are installed at four sites, as follows:

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

The Head of Old River barrier prevents the 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, this barrier has also been installed intermittently in the spring, although high San Joaquin River flows sometimes prevent installation. The Old River barrier near Tracy has been seasonally installed since 1991; the Middle River barrier has been seasonally installed since 1987; and the Grant Line Canal barrier has been seasonally installed since 1996.

Other South Delta Actions

Besides SDIP, actions in the South Delta include implementing flood and

ecosystem improvements in the lower San Joaquin River and pursuing construction of potential interties between the SWP California Aqueduct and CVP Delta-Mendota Canal.

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, 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 approximately 25 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 (Senate Bill (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 is for local assistance under the Delta Levee Maintenance Subventions Program. The remaining \$6 million is for the Delta Levees 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 Delta Levees Program has managed approximately \$221 million in State-appropriation funds. These monies, combined with local funds, have realized approximately \$299 million in levee improvements (through State fiscal year 2005–2006). In 1996, Assembly Bill (AB) 360 was signed into law and expanded the area covered by the Delta Levees 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. Proposition 84, approved by voters in November 2006, allocates \$275 million to the Delta over the next four years. In addition, Proposition 1E, also approved by voters in November 2006, will add funding for Delta levee improvements.

CALFED Levee System Integrity Program

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

Base Level Protection

According to the CALFED ROD, all Delta levees should be built to the U.S. Army Corps of Engineers (Corps) Delta-specific levee standard (Public Law [PL] 84-99). This standard provides protection against

flooding in a 100-year flood event. The minimum freeboard is 1.5 feet for levees protecting agricultural land. 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 3:1 and 5:1.

This program provides funding to help local levee maintaining agencies improve all Delta levees to the PL 84-99 standard. About 500 out of 1,100 miles of Delta levees, including approximately 400 miles of project levees, are at or above the PL 84-99 standard. During Stage 1 of the CALFED Bay-Delta Programs (2000–2007), about 200 additional miles of levees are planned to be brought up to the PL 84-99 level of protection, provided there is sufficient funding.

Levee Upgrades

Upgrading the Delta levees is an integral part of the CALFED Levee System Integrity Program plan being implemented through the DWR Delta Flood Protection Program.

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.

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 program provides 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

DWR began work in December 2006, to improve its ability to respond quickly and effectively to simultaneous, multiple island levee failures within the Sacramento-San Joaquin Delta. This effort will determine available options for response if an emergency in the Delta occurs, ways to enhance DWR's response capabilities, and a framework for the development of a comprehensive Emergency Operations Plan.

Delta Levee Maintenance Subventions Program

The Delta Levee Maintenance Subventions Program provides funds to cover up to 75 percent of the eligible costs of levee maintenance for levee work critical to the long-term survival of Delta islands, State and private infrastructures, and the State water supply. This program assures the continuance of the Delta's ability to provide its many statewide and local benefits. 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 70 participating local agencies prepare work plans and file applications with the State Reclamation Board (SRB) 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 and maximum advanced reimbursement amounts. 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 (CEQA), ESA and CESA, Section 1600 of the Fish and Game Code, and Section 404 of the Clean Water Act, and must have confirmation from the Department of Fish and Game (DFG) that a net long-term habitat improvement of riparian, fisheries, and wildlife habitat will result.

Delta Levees Habitat Improvement

The Delta Suisun Marsh Office, 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 2006, the program had developed 283.7 acres of various types of habitat, 9,410 linear feet of shaded riverine aquatic habitat for mitigation, and 24.4 acres and 14,328 linear feet for enhancement.

Completed mitigation and enhancement projects include the following:

- 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;
- 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.

The Delta in-Channel demonstration project was undertaken with support from CALFED to determine the feasibility of "environmentally friendly" structures for controlling erosion and protecting Delta habitat associated with in-channel islands. The three in-channel island test sites were Webb Tract Sites I and III and Little Tinsley Island. A final report

(Demonstration Project: Protection and Enhancement of Delta In-Channel Islands) published in June 2006 found the project demonstrated the feasibility of protection and restoration of Delta priority landforms and populations of special-status species using environmentally friendly biotechnical treatments. The report is available from the Delta Suisun Marsh Office webpage: <http://www.water.ca.gov/floodmgmt/dsmo/ecb/iamp>.

Projects underway include the following:

- long-term management of Meins Landing for conversion to tidal marsh;
- bird monitoring at the Decker Island restoration site;
- construction of a setback levee on Sherman Island;
- Sherman Island Parcel 11 Revegetation Project;
- Dutch Slough tidal marsh restoration; and
- Bradford Island Tract 19 mitigation area monitoring and maintenance.

Proposed projects include Delta levees habitat mitigation, Flooded Islands, McCormack-Williamson Tract, Elk Slough, and Veale Tract.

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. Continued monitoring

is determining the amount of fishery use of the restoration site, evaluating the hydrogeomorphic performance of the site, and providing 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.

Delta Special Flood Control Projects Program

The Delta Special Flood Control Projects Program under CALFED assists the eight 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 it 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 the following:

- rehabilitation of threatened levees through the use of imported dredged material;
- verification of elevations in the Delta through the use of Global Positioning System (GPS) equipment and light detection and ranging (LiDAR);
- upgrading levees to the standards included in Bulletin 192-82; and
- considering projects to achieve net long-term habitat improvement for fish and wildlife.

While DWR 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 and other special projects in 2006 include the following:

- emergency response and storm repair projects on Bethel, Sherman, and Twitchell islands and Webb Tract in the Delta, plus storm repair projects on Simmons-Wheeler Island, Honker Bay, and Van Sickle Island in Suisun Marsh as a result of flooding in 2006;
- initiation and completion of large levee rehabilitation projects on Bradford and Jersey islands;
- initiation of engineering and design of the Sevenmile Slough levee project on Twitchell Island;
- initiation of an engineering and mitigation study for the New Hope Project;
- initiation and continuation of subsidence reversal studies on Sherman and Twitchell islands, respectively;
- initiation of the habitat enhancement project on the Sherman Island Setback Levee;
- continuation of the Phase I and II levee rehabilitation projects on Bethel Island;
- site preparation and planting of a 50-acre mitigation project on Bradford Island;
- continuation of a large-scale levee rehabilitation project on New Hope Tract;
- continuation of a Delta-wide program to conduct electromagnetic anomaly surveys of district levees; and
- release of a contract for a Delta-wide aerial LiDAR survey to develop a seamless snapshot elevation map supporting one-foot contour intervals.

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 16 years, DWR, in coordination with the Corps, local maintaining agencies, and the Central Valley Regional Water Quality Control Board (CVRWQCB), 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, dredged materials in the Sacramento-San Joaquin Delta. Current efforts for beneficial reuse of dredged material from the Bay Area principally consist of the following:

- development of a charter for the multiagency Delta Long-Term Management Strategy (LTMS) for the beneficial reuse of dredged material;

- 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;
- participation in a large regional meeting with various stakeholders in the Delta to address dredging and dredged material reuse issues;
- levee restoration and habitat projects proposed or under construction;
- obtaining waste discharge requirements for the demonstration project on Sherman Island; and
- obtaining 56,000 cubic yards of dredged material on Bradford Island.

Additionally, Corps, CVRWQCB, CALFED, and Reclamation District 341 will coordinate stockpiling 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 five years. This project will be initiated by a demonstration project with 150,000 cubic yards coupled with an intense monitoring program.

Subsidence Investigations

Historically, draining and cultivating 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 (USGS) are conducting an ongoing subsidence investigation in the Delta. Preliminary data indicate the following:

- 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 flooded shallow wetlands decrease release of gaseous carbon by as much as 80 percent, thereby mitigating subsidence; and
- permanently flooded shallow 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. The contract amendments were completed in 2005, and

work on the study was resumed. The study was completed by the end of 2006.

DWR continued to work with the CALFED Science Program to develop best management practices to control and reverse subsidence and will work with local districts and landowners to implement cost-effective measures.

USGS and area consultants set up a learning laboratory at Oulton Point on Twitchell Island to study ways to reverse subsidence. This project combined 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 were measured.

Delta Agricultural Water Agencies

In 1974, the Delta Water Agency was replaced by six Delta agricultural water agencies: North Delta Water Agency, South Delta Water Agency, Central Delta Water Agency, Contra Costa County Water Agency, East Contra Costa Irrigation District, and Byron-Bethany Irrigation District. In 1981, North Delta Water Agency and East Contra Costa Irrigation District signed water rights management contracts with DWR. DWR negotiated contracts and requested 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 South Delta Water Agency and Reclamation. Under this proposal, the

South Delta contract, the parties agreed to proceed with the design, construction, and operation of certain barrier facilities in the South Delta channels. These facilities resolved those portions of the lawsuit that South Delta Water Agency filed in 1982 regarding the alleged effects of export pumping by SWP and CVP on water levels, quality, and circulation in the South Delta.

DWR has installed and operated temporary barrier facilities in the South Delta to improve area conditions, as well as collect data needed to design and operate permanent barrier facilities. 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

DWR signed contracts with Contra Costa Water District in 1967 and Antioch in 1968. These contracts compensate Contra Costa and Antioch for purchasing water of usable quality, when such water is not available from Mallard Slough and the San Joaquin River.

According to the terms of these contracts, DWR compensates each agency for the additional costs of purchasing a substitute water supply from the Contra Costa Canal. This water is purchased to replace water supplies of usable quality which are lost due to 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.



Chapter 3 Environmental Programs

*S*alt marsh harvest mice are found only in the tidal marshes around the San Francisco, San Pablo, and Suisun bays.

Significant Events in 2006

Winter and spring 2006 were among the wettest on record for Northern California. Above average precipitation and snowpack caused flooding and extended periods of high river flows. As a result, delta smelt salvage at State Water Project and Central Valley Project facilities was low in 2006.

On March 8, 2006, several environmental groups petitioned the U.S. Fish and Wildlife Service requesting the emergency listing of delta smelt, *Hypomesus transpacificus*, as an endangered species under the federal Endangered Species Act.

On April 7, 2006, National Marine Fisheries Service issued a Final Rule listing the Southern Distinct Population Segment of green sturgeon, *Acipenser medirostris*, as a threatened species. The rule became effective July 6, 2006.

On September 13, 2006, a settlement agreement to restore 153 miles of the San Joaquin River below Friant Dam was announced, ending an 18-year legal dispute.

In October 2006, the Bay Delta Conservation Plan Planning Agreement was signed, initiating a multiagency effort to develop a plan for the Sacramento-San Joaquin Delta that will restore and protect water supply, water quality, and ecosystem health within a stable regulatory framework.

The State Water Resources Control Board approved a one-year pilot program for the Lower Yuba River Accord (Yuba Accord) in April 2006, and in late 2006, the Yuba Accord pilot program formally took effect.

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

The Department of Water Resources (DWR) has developed and implemented several programs to avoid, minimize, or offset adverse environmental impacts resulting from construction and operation of State Water Project (SWP) facilities.

Operations for Species of Concern

A primary consideration in the operation of the SWP is avoiding, minimizing, and off-setting adverse impacts to species of concern. A species of concern is listed (or proposed for listing) as threatened or endangered by a State or federal agency. The legal authority for listing is the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA). A key to avoiding and minimizing adverse impacts to these species is maintaining flexibility in SWP operations, which is done mainly through the Environmental Water Account (EWA). EWA provides protection to Delta fisheries through changes in SWP and Central Valley Project (CVP) operations, while maintaining water supply reliability to the projects' water users. Operational responses can include Delta Cross Channel (DCC) gate closure, export curtailments, changes in delivery schedules, increased reservoir releases, preferential use of certain facilities, or a combination of these actions. (Additional information about EWA can be found in Chapters 7 and 9.)

San Joaquin River Activities

DWR and the U.S. Bureau of Reclamation (Reclamation) coordinate to increase flows in the San Joaquin River during the pulse flow period, from April 15 through May 15, 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 and State research component of the San Joaquin River Agreement. VAMP calls for intensive fisheries sampling in the lower San Joaquin River during the pulse flow period. Studies coordinate variable export pumping rates with 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 from 1999 to 2010 to determine if a relationship exists between river flow, Delta exports, and salmon survival throughout the southern 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.

In 2006, San Joaquin River pulse flows were higher than any previous VAMP pulse flow period. The study period was moved to May 1 through May 30 because cooler temperatures delayed the growth of the hatchery fish used in VAMP studies. The 2006 VAMP studies included acoustic telemetry tracking of smolt migration and mark-recapture studies in early- and mid-May at two different export conditions.

Temporary Barriers

VAMP-participating agencies use temporary barriers as a tool to facilitate the following goals:

- 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 2006, a temporary barrier was not installed at the Head of Old River in spring or fall due to high flows on the San Joaquin River. When installed, the spring season barrier helps improve conditions for juvenile Chinook salmon migrating out of the San Joaquin River Basin. The fall barrier helps with low dissolved oxygen (DO) levels in the lower San Joaquin River and prevents migrating adult Chinook salmon from entering the area.

Temporary agricultural barriers are installed to increase water levels in the South Delta for local water users. In 2006, barriers were installed at Middle River from July 7 to November 18; at Old River near Tracy from July 17 to December 8; and at the Grant Line Canal from July 20 to December 6. Agricultural barriers are removed in late fall due to the lack of need for irrigation water and possible conflicts with migrating Chinook salmon.

San Joaquin River Settlement Agreement

On September 13, 2006, a settlement agreement to restore 153 miles of the San Joaquin River below Friant Dam was announced by the Natural Resources Defense Council, Friant Water Users

Authority, and the U.S. Departments of the Interior and Commerce, ending an 18-year legal dispute. The settlement agreement is based on two goals: (1) a restored river with continuous flows to the Delta and naturally reproducing populations of Chinook salmon, and (2) a water management program to minimize water supply impacts to San Joaquin River water users.

Lower Yuba River Accord

In April 2005, the Lower Yuba River Accord (Yuba Accord) was announced. This collaborative proposal settled long-standing litigation over instream flow requirements in the lower Yuba River. The accord is based on three proposed agreements: a water purchase agreement, including water for the EWA; a conjunctive use agreement; and a fisheries agreement. The State Water Resources Control Board (SWRCB) approved a one-year pilot program for the Yuba Accord in April 2006. The 2006 pilot program establishes higher minimum instream flows, which exceed state and federal requirements, for the lower Yuba River Chinook salmon and steelhead. All 17 conservation groups, agricultural interests, and state and federal agencies participating in the Yuba Accord support the 2006 pilot program. In late 2006 the Yuba Accord pilot program formally took effect. The EWA purchased 62,000 af of water from Yuba County Water Agency in 2006, and none of the water could be delivered because of excess conditions in the Delta. The purchase will be delivered when Delta conditions allow.

Lake Oroville Dam Relicensing

DWR, through the Alternative Licensing Process (ALP), is seeking a new 50-year license from the Federal Energy Regulatory

Commission (FERC) to continue generating hydroelectric power while meeting existing commitments and complying with laws and regulations regarding water supply, flood control, the environment, and recreational opportunities. The *Settlement Agreement for Licensing of the Oroville Facilities, FERC Project No. 2100 (Settlement Agreement)*, signed March 21, 2006, seeks to resolve issues associated with relicensing of the Oroville Facilities. Appendix A of the *Settlement Agreement* includes several actions to reduce or mitigate the impact of project operations on environmental resources of the lower Feather River. Implementation of these actions will begin upon issuance of the new license, which is expected to occur in 2008.

A great deal of the substrate, or river bottom, in the lower Feather River has been coarsened over time, largely due to Oroville Dam preventing the recruitment of smaller gravels downstream. One of the actions in the *Settlement Agreement* is gravel supplementation, intended to improve the quality of spawning riffles by injecting smaller gravels which are more suitable for Chinook salmon and steelhead spawning. Other actions include side channel improvements, riparian and floodplain habitat improvements, addition of structure (large woody debris, boulders, etc.) to improve rearing habitat for juvenile fish, and revised flow and temperature requirements.

One of the actions included in the *Settlement Agreement* is to revise the lower Feather River temperature and flow criteria specified in the *1983 Agreement Concerning the Operation of the Oroville Division of the State Water Project for Management of Fish and Wildlife* between DWR and the Department of Fish and Game (DFG). The

criteria in the 1983 agreement included a minimum temperature of 65° F at Robinson Riffle (River Mile 62) and a minimum flow of 600 cfs down the low-flow channel. According to the new standards, water temperature will not exceed 63° F in the summer months and 56° F in the winter months. Flow revisions include maintaining an 800 cfs minimum flow from September 9 through March 31 and a minimum flow of 700 cfs for the remainder of the year. These revisions are primarily intended to improve spawning conditions for anadromous salmonids.

Extensive monitoring and assessment of *Settlement Agreement* project activities will take place throughout the term of the license. One assessment tool will be formation of the environmental committee to review each of the actions taken and provide a basis for adaptive management. The committee will include representatives from State, federal, and regional agencies and organizations. One representative will be selected from each organization. DWR, as the licensee, will be responsible for coordination of meetings.

A variety of time lines regarding the completion of each of the individual projects are outlined in the *Settlement Agreement*, all of which would begin upon issuance of the new license. For more information, visit the Oroville Relicensing website at <http://www.water.ca.gov/orovillereLICensing>.

Northern Pike Containment System, Grizzly Valley Dam

Northern pike is a nonnative invasive fish species illegally introduced into California. Where habitat conditions are favorable, introduced pike have the potential to

cause irreversible environmental impacts and become the dominant fish species, often to the exclusion of native fish species. Portions of the Feather River, Sacramento River, and the Sacramento-San Joaquin Delta, as well as many aquatic environments in other California watersheds, match the preferred habitat of the northern pike in terms of temperature, aquatic vegetation, current speed, and other features.

Lake Davis is located in Plumas County on Big Grizzly Creek, a tributary to the Middle Fork Feather River. The reservoir is approximately 4,000 surface acres in size. Grizzly Valley Dam and Lake Davis are operated by DWR, consistent with its primary purposes of recreation, fish and wildlife enhancement, and water supply.

Northern pike were discovered in Lake Davis in 1994. DFG implemented an eradication project in October 1997 that treated Lake Davis with the fish pesticide rotenone, but pike were rediscovered in the lake in 1999. The pike either survived the 1997 treatment or were illegally reintroduced into the reservoir. Since their rediscovery in 1999, the pike have become well-established and are found throughout the reservoir. After considering various eradication options, DFG has proposed a second pike eradication project for Lake Davis and its tributary waters. The proposed project would use rotenone combined with a significant drawdown of the lake.

If pike were to escape from Lake Davis through the outlet works or through a spill event, they could move downstream through Big Grizzly Creek into the Middle Fork Feather River and spread

up and downstream from there, making eradication almost impossible.

Fish “graters” were installed at the Lake Davis outlet in 1996. The graters kill most fish that leave the reservoir through the outlet works, but may allow juvenile fish and eggs to escape. Lake Davis is currently managed to operate below its capacity, primarily to minimize the chance of spill and the release of northern pike or their eggs into downstream waters. The spill prevention strategy has been employed successfully since pike were rediscovered in 1999, but there is substantial uncertainty about how long such a strategy will remain successful.

Since the population of northern pike continues to grow in Lake Davis, DFG and DWR need greater assurance that northern pike, including adults, larvae, and eggs, do not have the opportunity to move downstream.

In July 2005, DFG requested DWR’s assistance. After evaluating several options, DWR designed and proposed the Northern Pike Containment System at the outlet of Lake Davis on Big Grizzly Creek. Water discharged through the outlet will flow through six to eight mesh-basket “strainers,” preventing any life stage of pike from moving downstream into Big Grizzly Creek and into the Feather and Sacramento river systems. In May 2006, DWR completed the planning, design, and approval of the containment project. It was constructed between June and November 2006 at the cost of approximately \$4.26 million. (See also, Chapter 12.)

The containment system is designed to operate for five years. DWR assumes

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 species.

that DFG will eradicate the northern pike population from Lake Davis within that time period. If DFG does not eradicate pike, or chooses instead to manage the pike population within the lake, the containment system, with additional modification, could operate indefinitely.

Throughout 2006, DFG and the U.S. Forest Service, the respective lead agencies under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), were conducting in the environmental review process for the proposed pike eradication project. The draft Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) for the eradication project was released in August 2006.

Biological Opinions Issued on the CVP/SWP Operating Criteria and Plan

The CVP and SWP Operations Criteria and Plan (OCAP) incorporates adaptive management measures to provide better protection for ESA listed fish species. In July 2006, Reclamation requested initiation of formal Section 7 consultation under the ESA with the National Marine Fisheries Service (NOAA Fisheries) and U.S. Fish and Wildlife Service (USFWS) on the future combined operations of the CVP and SWP. This process is expected to be complete in 2008. Two existing Section 7 biological opinions will remain in place during the interim.

U.S. Fish and Wildlife Service Biological Opinion

On August 6, 2004, USFWS issued a nonjeopardy biological opinion on impacts to threatened delta smelt by CVP and SWP operations. The USFWS concluded that any adverse effects from the OCAP for the two jointly operated projects will be avoided or minimized by conservation measures and the adaptive management measures incorporated into the project plan.

The 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 fish reach the major export pumps where losses often occur.

The biological opinion set incidental take limits for delta smelt based on data from 1993 to 2003. Monthly incidental take limits are based on two categories of water year type: (1) wet or above normal and (2) below normal, dry, or critical. Water year 2006 was wet.

NOAA Fisheries Biological Opinion

In its supplemental biological opinion, issued February 27, 2004, NOAA Fisheries concluded that the continuation of OCAP is not likely to jeopardize the continued existence of spring-run Chinook salmon or steelhead in the Central Valley. In 2006, independent reviews conducted by both CALFED and the Center for Independent Experts found that the conclusions of this biological opinion were not based on the best available science at the time.

The 2004 biological opinion issued an incidental take statement and several

reasonable and prudent measures to minimize take of spring-run Chinook salmon and steelhead in the Central Valley including:

- continuing research on the effects of flow and water temperature;
- operating to meet temperature objectives;
- minimizing adverse effects of DCC operations;
- minimizing Delta exports during fisheries' sensitive times;
- 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

As outlined in the USFWS biological opinion, when Delta conditions suggest that delta smelt may be particularly vulnerable to losses at CVP and SWP facilities, a team of interagency scientists, the Delta Smelt Working Group (DSWG), will meet to review current and projected conditions and recommend any actions that should be taken to reduce salvage. In January 2006, the DSWG provided an initial recommendation to curtail exports to a 15 percent export-to-inflow ratio to avoid entrainment of adult spawners. However, subsequent high flows kept export-to-inflow ratios low for the remainder of the season and no curtailment was required to meet the recommendation.

In 2006, 24 delta smelt were salvaged by SWP and 312 were salvaged by CVP.

This was unexpected because most years the SWP takes more delta smelt than the CVP. Overall, high delta outflows moved delta smelt concentrations downstream of the water projects and kept salvage numbers low compared with 2005, when approximately 3,740 delta smelt were salvaged at both facilities.

The Bay Delta Conservation Plan

The Bay-Delta Conservation Plan (BDCP) is a current effort by DWR, Reclamation, Mirant Energy, and the State and federal water contractors to attain long-term take authorization under the CESA and ESA while providing for the conservation and management of covered species in the Sacramento-San Joaquin Delta. When complete, the BDCP will provide a plan to restore and protect water supply, water quality, and ecosystem health within a stable regulatory framework. The BDCP will be comprised of a Habitat Conservation Plan and, likely, a Natural Community Conservation Plan. The Resources Agency acts as facilitator for the BDCP Steering Committee which consists of the applicants or potentially regulated entities mentioned above, fish and wildlife agencies (DFG, USFWS, NOAA Fisheries), and some nongovernmental organizations.

The BDCP Planning Agreement was signed on October 6, 2006, by all members of the steering committee and a draft work plan was drawn up that outlines the tasks to be completed by the primary consultant, Science Applications International Corporation (SAIC).

During 2007, the BDCP Steering Committee will be working, with input from an independent science panel, to assemble a

conservation strategy for development into a framework document by the end of the year. The goal of the BDCP is to complete the plan and begin implementation by the end of 2009.

More information is available on the Resources Agency website:
<http://www.resources.ca.gov/bdcp>.

Decisions on Endangered Species

North American Green Sturgeon

On April 7, 2006, NOAA Fisheries published a Final Rule in the Federal Register to list the Southern Distinct Population Segment (DPS) of North American green sturgeon, *Acipenser medirostris*, as threatened under the federal ESA. The Southern DPS covers the population occurring south of the Eel River. The biological review team used previous studies of salmon in the Central Valley to examine the likelihood that spawning habitat has been lost within the range of the Southern DPS of green sturgeon. It was determined that dams built on the upper Sacramento and Feather rivers likely block migration of green sturgeon, significantly reducing historical habitat.

The Final Rule listing the Southern DPS of green sturgeon as threatened became effective July 6, 2006. The designation of critical habitat for the species will occur within one year of the listing. The ruling included a solicitation of information to assist NOAA Fisheries in gathering and analyzing data to support a critical habitat designation.

Delta Smelt

In 1993, delta smelt (*Hypomesus transpacificus*) was designated as threatened under the ESA. At the time of the ruling, delta smelt populations had declined nearly 90 percent since the 1970s. Abundance has continued to decrease in recent years. In March 2006, the Center for Biological Diversity, the Bay Institute, and the Natural Resources Defense Council submitted an emergency petition to the USFWS requesting that the status of delta smelt be changed from threatened to endangered under the ESA, because they believed that recent record low population estimates and population viability analyses indicated that the species was in increased danger of extinction.

Salmon and Steelhead

In January 2006, a Final Rule was published in the Federal Register by NOAA Fisheries updating the threatened and endangered status of 10 DPSs of west coast steelhead (*Oncorhynchus mykiss*) under the ESA, reaffirming the status of several previously listed DPSs in California, including: the Southern California steelhead DPS as endangered, and the South-Central California Coast, California Coast, California Central Valley, and Northern California DPSs as threatened.

On September 11, 2006, NOAA Fisheries announced its intent to develop recovery plans for listed Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*) in California. The seven Evolutionarily Significant Units addressed are: California Coastal Chinook salmon, Northern California steelhead, Central California Coast steelhead, South-Central Coast steelhead, Southern California steelhead, Central Valley steelhead, and Central Valley spring-run Chinook salmon.

Trends in Fish Abundance

Figure 3-1 shows the abundance index for delta smelt, from 1967 through 2006, 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 provides one of the best indicators of the status of the adult delta smelt population. The 2006 index is among the lowest on record. Since 2002, abundance indices for this species have been lower than expected, given moderate flow conditions of the past several years. The Delta Smelt Action Plan was implemented in October 2005 to help understand and counteract the causes of the decline of delta smelt.

Figure 3-2 shows estimates of returning adult winter-run Chinook salmon from 1967 through 2006. These estimates are referred to as escapement estimates—the number of adults that escape mortality and return to spawn. The Sacramento River winter-run Chinook salmon escapement estimates are generated using data from the DFG carcass survey. DFG has been using the carcass survey data to generate escapement estimates since 2002. Prior to 2002, Red Bluff Diversion Dam counts were used to generate the escapement estimate. The estimated winter-run Chinook escapement for 2006 was 17,205, which is more than double the estimated 8,218 adults in the parent stock of 2003. Winter-run escapement has continued to increase since 2002. Factors such as improved spawning and rearing habitat, reduced losses in the Delta, reduced commercial fishing losses, and changing ocean conditions are likely to benefit winter-run Chinook salmon.

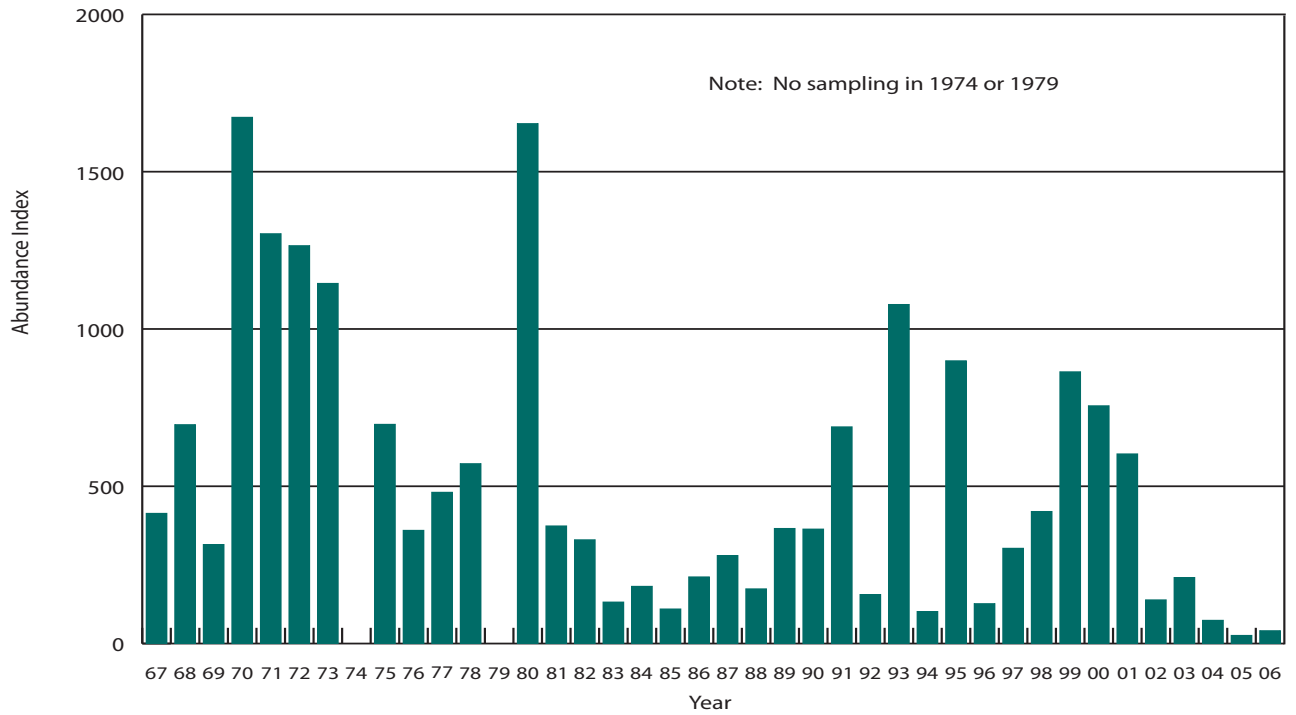


Figure 3-1. Delta Smelt Fall Midwater Trawl Abundance Index, 1967–2006

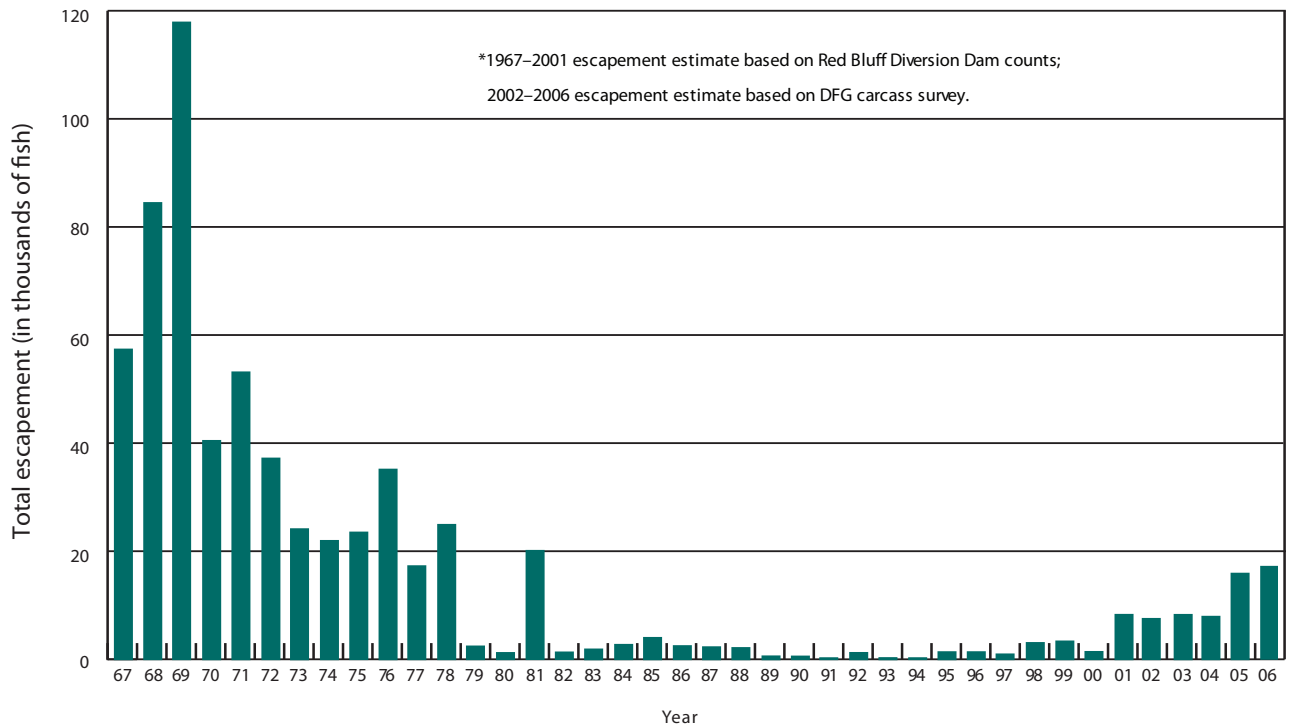


Figure 3-2. Estimated Total Adult Winter-Run Chinook Salmon Escapement, 1990–2006*

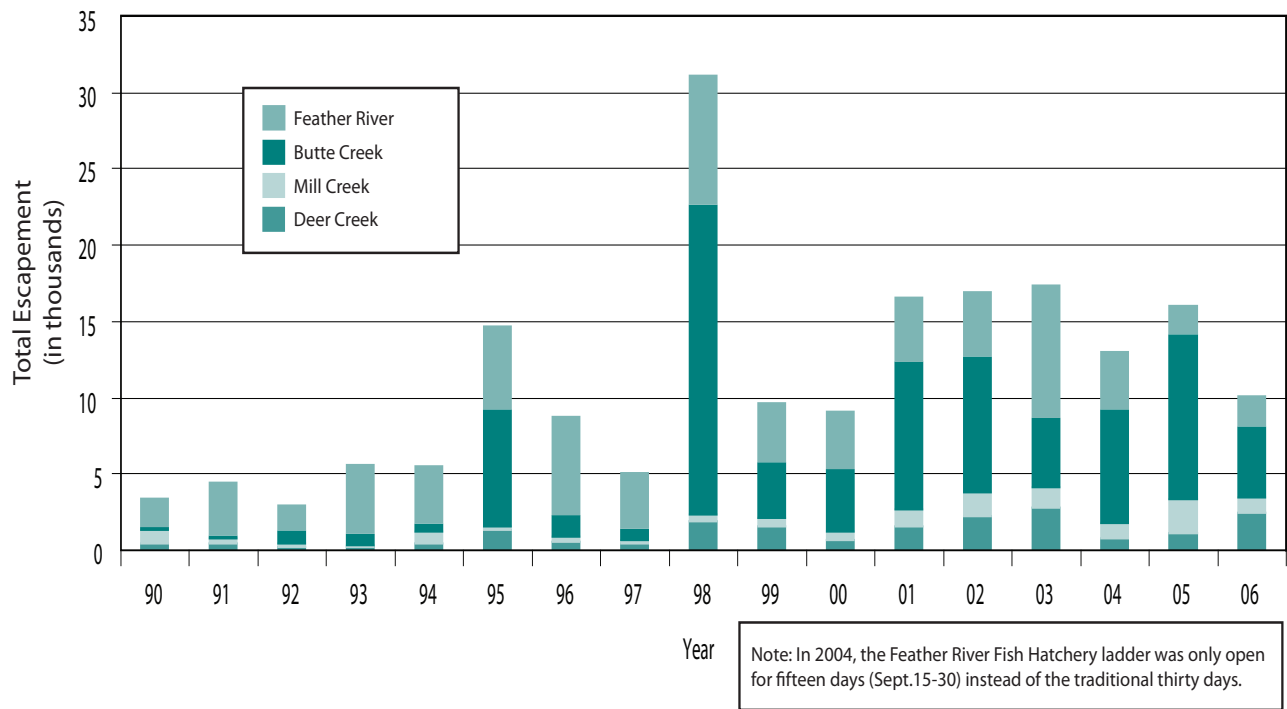


Figure 3-3. Estimated Spring-Run Chinook Salmon Escapement, 1990–2006

Figure 3-3 shows estimates of returning adult spring-run Chinook salmon, from 1990 through 2006. 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 2006 was 1,900 for the Feather River Hatchery and about 8,000 for the other streams combined. The 2006 Feather River Hatchery escapement was only about 22 percent of the 2003 parent stock escapement estimate. The escapement of naturally spawned fish for Mill, Deer, and Butte creeks is only about 7 percent less than the 2003 parent stock.

Counting methods for returning adult spring-run Chinook salmon from the Feather River Hatchery were updated in 2004. The fish ladder now remains open through June 30 allowing adult spring-run Chinook salmon to enter the Feather River Fish Hatchery. Between May 15 and June 30, 2006, 17,438 fish entered the hatchery. In an effort to better estimate spring-run Chinook salmon abundance and to distinguish fall- from spring-run, the fish that entered the hatchery were tagged with an external Floy® tag and released back into the Feather River. When spawning commenced in the fall, a total of 3,944 spring-run fish were recaptured: 1,768 at the hatchery, 1,927 in the river escapement survey, and 249 by anglers.

While these methods do not yet provide a complete population estimate for Feather River spring-run Chinook salmon,

future refinements may make such an estimate possible.

Overall, spring-run Chinook escapement in 2006 is about 38 percent lower than in 2005. Despite the decrease, the return numbers for spring-run Chinook salmon still appear to be higher than the early 1990s statistics. Like winter-run Chinook salmon, factors such as improved spawning and rearing habitat, reduced losses in the Delta, and reduced commercial fishing losses likely benefit spring-run Chinook salmon.

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

Feather River Fish Studies

In the early 1990s, the Feather River fish studies were initiated to document and monitor fish populations in the lower Feather River. Early efforts focused on studies to identify flow requirements for Chinook salmon and steelhead. This program has progressively expanded since the mid-1990s in preparation for the FERC relicensing of the SWP Oroville-Thermalito Complex. Field program elements include the 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 salmonid 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 major habitats used by steelhead and evaluate the impacts of project operations on the natural production of steelhead in the river. Steelhead redd (a nest of fish eggs covered with gravel) surveys are conducted to determine the distribution and physical characteristics of natural steelhead spawning sites in the Feather River. Salmon spawning surveys estimate the number and distribution of adult Chinook salmon that spawn naturally in the river. Radiotelemetry gathers baseline information on the migration and holding patterns of adult Chinook salmon in the river.

Data from the Feather River sampling programs revealed several significant trends. For example, steelhead redd surveys show that in-river spawning continues at low levels. Juvenile steelhead that first appear in March are most abundant in well-vegetated side channels of the low-flow channel. Water temperatures do not appear to limit the abundance of juvenile steelhead within the low-flow channel. 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 demonstrated that two-thirds of all spawning occurs within the low-flow channel. In fall 2006, an estimated 73,585 adults and 1,845 grilse (salmon less than 22 inches [56 cm] long) spawned in the Feather River from the Fish Barrier Dam downstream to Gridley. These estimates include both fall- and spring-run Chinook salmon, since their spawning is currently not fully segregated on the Feather River.

Thirty-four adult salmon were captured and radio tagged in 2006 to assess patterns of holding habitat use for adult Chinook salmon which up-migrate in the spring. A combination of manual tracking and fixed station data logging was used to assess the location of adult Chinook salmon. The Chinook salmon were detected anywhere from 15 to 232 days after being tagged. The total observed distance traveled by tagged Chinook salmon ranged from 0.2 to 62.6 river miles. The largest surveyed net movement was 29 river miles, which was navigated downstream. Of the 34 tags deployed, all were subsequently relocated and 14 tags were recovered. Eight were recovered during the adult escapement survey (at least three males and three females; all females appeared to have spawned); four were recovered at the Feather River Fish Hatchery; and two were reported by anglers. Of the 34 fish successfully tracked, only eight fish were detected at the Thermalito Outlet. These fish spent up to five days at the outlet throughout the entire survey season. Approximately 70 percent of the fish were last detected or recovered in the low-flow channel above the Thermalito Outlet, while the remaining 30 percent were detected downstream of the outlet.

Pelagic Organism Decline in the Upper San Francisco Estuary

Abundance indices calculated by the Interagency Ecological Program (IEP) suggest recent marked declines in numerous pelagic fishes in the upper San Francisco Estuary. The major resident pelagic fishes sampled in the upper estuary include delta smelt, longfin smelt, striped bass, and threadfin shad. Historically, low populations of these fishes have

been the result of dry years, such as the drought in 1987–1992. Abundance indices, since around 2000, indicate record and near-record lows for these populations, which are unexpected given the moderate winter-spring flows during recent years. In response to the pelagic organism decline (POD), the IEP formed a work team to evaluate the potential causes. An interdisciplinary, multiagency research effort was undertaken in 2005 to identify the most likely causes of the POD. A conceptual model was developed to describe possible mechanisms by which a combination of long-term and recent changes in the ecosystem could produce the observed declines in the abundance indices.

Possible stressors influencing the POD were: entrainment, toxic effects on fish, toxic effects on fish food, harmful algal blooms, clam (*Corbula*) effects on food availability, disease, and parasites. Narrative explanations in the context of long-term trends have been developed for four major components:

- (1) prior fish abundance, which describes how the continued low abundance of adults leads to reduced juvenile production;
- (2) habitat, which describes how water quality variables, including contaminants and toxic algal blooms, affect estuarine species;
- (3) top-down effects, which posit that predation and water project entrainment affect mortality rates; and
- (4) bottom-up effects, which focus on how food web interactions in Suisun Bay and the West Delta have affected fish abundance.

In 2006, IEP scientists continued to work on a suite of studies and further refine the four components of the POD conceptual model.

Fish-Related Mitigation Projects

In 1986, DWR and DFG signed the Delta Pumping Plant Fish Protection Agreement (Delta Fish Agreement), commonly referred to as the Four Pumps Agreement, to annually provide funds to offset fish losses at Banks Pumping Plant. This agreement 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, and considers other fish.

Since 1986, DWR has spent \$44 million on mitigation projects, which were developed under the Delta Fish Agreement. These projects include the following:

- improving salmon spawning and rearing habitat and migration pathways in the San Joaquin Basin;
- planting hatchery-reared and net-pen-reared striped bass;
- expanding the Merced River Fish Facility to increase salmon production and cost-sharing in annual operating costs;
- implementing a conjunctive-use project to improve salmon migration flows in Mill and Deer creeks in Tehama County;
- constructing fish ladders and screens on Butte Creek;
- constructing fish screens in Suisun Marsh and in the San Joaquin Basin;
- operating an acclimation pen to improve the survival of hatchery-reared salmon during their release into San Pablo Bay; and

- enhancing the enforcement of fish and game laws in the Delta and upstream to benefit salmon, steelhead, and striped bass, as well as increasing protection for spring-run Chinook salmon.

DWR was not able to spend the full \$15 million lump sum in the 10 years required by the original agreement. In 1996, DWR and DFG amended the agreement (Amendment 1) to include the following:

- allowing another five years to spend the remaining \$9 million of the \$15 million lump sum provided in the original agreement, because of difficulties in developing mitigation projects and
- specifying the likely allocation of the remaining funds.

The remaining \$9 million were tentatively allocated to provide the following:

- \$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.

In 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. Approximately \$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 (Amendment 2, executed January 31, 2002) to provide three more years to spend the \$3.6 million and to specify the likely allocation of those remaining unallocated funds.

The \$3.6 million in available remaining funds was tentatively allocated (in Amendment 2) to provide the following:

- \$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.

In 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 (Amendment 3). Much of this funding is currently encumbered in contracts. 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 Year 2004 and 2005;
- Augmentation of the Four Pumps 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; and
- \$896,000 for post-construction activities related to permit compliance and cost-share requirements for the Robinson salmon habitat project on the Merced River.

Mitigation projects approved in 2005, for implementation from the agreement's annual mitigation funds and the \$15 million lump sum funds, included the following:

- \$228,000 for the operation and maintenance of 14 fish screens in Suisun Marsh, to be completed by the Suisun Resource Conservation District (SRCD) over the next 12 years;
- \$313,000 for the Expansion of the Robinson Reach Conservation Easement, Merced River Salmon Habitat Enhancement Project, to cost share with the Wildlife Conservation Board to complete funding for the \$1.3 million estimated total easement cost; and
- \$160,480 to complete design scenarios for the Upper Western Stones Reach, Merced River Salmon Habitat Enhancement Project.

One of the mitigation projects approved in 2006, for implementation from the agreement's annual mitigation funds and

the \$15 million lump sum funds, included the Deer Creek Flow Enhancement Program (\$2.16 million), a groundwater exchange project designed to fulfill the water needs of local agricultural and domestic water users while achieving the fisheries flow objectives for salmon and steelhead in Deer Creek. DFG, Deer Creek Irrigation District, and DWR will work together on this project to improve spring-run salmon migration in Deer Creek, Tehama County.



Chapter 4 Water Quality Programs

The confluence of the Feather (at right) and Sacramento rivers.

Significant Events in 2006

On January 26, 2006, the Department of Water Resources (DWR) announced the release of the 2006 Water Desalination Proposal Solicitation Package. This grant program implements Chapter 6(a) of Proposition 50, Water Code Section 7954(a), which authorizes DWR to administer a \$50 million desalination program to assist local public agencies with development of new local potable water supplies through construction of feasible brackish water and ocean water desalination projects. It also advances water desalination technology and its use by funding feasibility studies, research and development, and pilot and demonstration projects.

In the spring of 2006, the U.S. Army Corps of Engineers discovered an increased seepage risk on Lake Isabella's auxiliary dam which resulted in a draw down to about 63 percent of the reservoir's capacity to relieve the pressure on the dam. There were no water quality issues with Lake Isabella water conveyed into the State Water Project via the Kern River Intertie.

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



The State Water Project (SWP) is the largest State-built, multipurpose water project in the United States. California's existence and continued prosperity depends on water. More than two-thirds of the people of California rely partly or wholly on the SWP for their daily water needs. The Department of Water Resources (DWR), Division of Operations and Maintenance (O&M), currently maintains 15 automated water quality monitoring stations at key locations along the SWP. This network of automated stations continuously monitors a variety of water quality parameters throughout the system and provides real-time data to SWP water contractors. In addition, field grab samples collected weekly, monthly, quarterly, or annually from more than 30 SWP locations are routinely analyzed for a broad range of constituents at the State's Bryte Chemical Laboratory.

Delta Activities

The State Water Resources Control Board (SWRCB) establishes water quality objectives and monitoring plans to protect a variety of the beneficial uses of water. The water quality objectives are set at points of delivery under Article 19 of the long-term SWP water supply contracts. The California Department of Health Services (DHS) establishes maximum contaminant levels for treated drinking water.

Water quality in the Delta and Suisun Marsh is protected under SWRCB's Water Right Decision 1641 (D-1641), adopted in December 1999 (see the sidebar, State Water Resources Control Board). SWRCB's issuance of D-1641 is part of its implementation of the *1995 Water Quality Control Plan (WQCP) for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (Bay-Delta Plan (1995)) and, accordingly, this decision amends certain water rights of the water rights holders to help achieve the plan's objectives. The SWRCB ensures that these objectives are met in part by the inclusion of water quality monitoring requirements in D-1641 as conditions for operating the SWP and Central Valley Project (CVP).

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 and monitoring stations throughout the Sacramento-San Joaquin Delta required by D-1641.

Water Supply Conditions

Water Year Classifications and Water Supply Indexes

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

Sacramento Valley and San Joaquin Valley water year 2006 were classified as wet under criteria set forth by SWRCB in D-1641. (For a detailed discussion of water year 2006, see Chapter 8, Water Supply.)



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

D-1641 applies the Sacramento Valley Water Year Hydrologic Classification (Sacramento Valley 40-30-30 Index), a water supply forecasting tool, that largely replaced the Sacramento River Index, to derive the water year classification for the Sacramento Valley. SWRCB first introduced the Sacramento Valley 40-30-30 Index in its 1991 Bay-Delta Plan.

The Sacramento Valley unimpaired runoff represents the natural water production of the Sacramento River basin, unaltered by up-stream diversions, storage, or export of water to or import of water from other basins. 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 Sacramento Valley 40-30-30 Index (30 percent, with a cap of 10 maf).

D-1641 also includes another water supply forecasting tool, the San Joaquin Valley Water Year Hydrologic Classification (San Joaquin Valley 60-20-20 Index), which uses methods similar to the Sacramento Valley 40-30-30 Index to determine the water year classification for the San Joaquin Valley.

The Eight River Index is a sum of the runoff from the eight major rivers of the Sacramento and San Joaquin valleys. This index determines the duration of the fish and wildlife salinity and flow standards at Chipps Island or Port Chicago from February through June.

The April-through-July Sacramento Valley unimpaired runoff forecast for May 1, 2006, was 12.7 maf (188 percent of average).

The resulting Sacramento Valley 40-30-30 Index forecast was 13.0 maf, resulting in the forecast classification of wet for water year 2006. The forecast of the San Joaquin Valley 60-20-20 Index on May 1 was 5.6 maf, resulting in the water year being classified as wet in the San Joaquin Basin. The Eight River Index forecast on May 1 was 19.4 maf for April through July 2006.

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

In 2006, DWR and the U.S. Bureau of Reclamation (Reclamation) jointly operated the SWP and CVP in accordance with SWRCB's D-1641 which includes water quality, flow, and operational criteria for the Delta. Operations of the projects were coordinated with various objectives of, the Bay-Delta Plan, Central Valley Project Improvement Act, and biological opinions for fish species listed under the federal Endangered Species Act (ESA) and California Endangered Species Act (CESA).

As mentioned above, the water quality and flow criteria contained within D-1641 are conditioned by water year type. Specifically, the Sacramento Valley 40-30-30 Index water year type forecast on May 1 of each year determines the water year type for the implementation of flow and water quality criteria contained within D-1641. During most years, the water year type forecast and the actual water year type (calculated at the end of the water year) are in agreement. In 2006, the SWP and CVP were operated using water quality and flow criteria based on the May 1 forecast of wet, as required by D-1641. The actual 2006 water year classification was wet. In March 2006, approximately

State Water Resources Control Board

The State Water Resources Control Board (SWRCB), established by the California Legislature in 1967, oversees water rights and water quality for California. Among its many responsibilities, SWRCB issues permits for the diversion and use of all surface water within California; distributes State and federal loans and grants for constructing sewage facilities; and adopts water quality control plans, regulations, and policies. Under their water rights and water quality authority, SWRCB and the Regional Water Quality Control Boards (RWQCBs) have adopted water quality control plans for the 16 planning basins in the State, including the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Estuary) and Suisun Marsh.

SWRCB regulates both the quality of water in the Bay-Delta Estuary and the diversion and use of water released into and diverted from the estuary for water supply. SWRCB coordinates its regulatory authorities under State laws governing water quality and water rights, ensuring that water quality is protected for all beneficial uses. Water quality objectives for flow, salinity, dissolved oxygen (DO) levels, and other parameters necessary for the protection of the various beneficial uses, such as municipal and industrial, agricultural, and fish and wildlife uses, are contained in a water quality control plan, *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* dated December 13, 2006 (2006 Bay-Delta Plan). SWRCB implements these objectives in part through conditions on water right permits and licenses.

In 1978, SWRCB issued Water Right Decision 1485 (D-1485): *Sacramento-San Joaquin Delta and Suisun Marsh to implement the Water Quality Control Plan (WQCP) for the Sacramento-San Joaquin Delta and Suisun Marsh*, adopted August 1978 (Delta Plan, 1978). D-1485 affected the Department of Water Resources (DWR) and U.S. Bureau of Reclamation (Reclamation) water rights permits for the State Water Project (SWP) and Central Valley Project (CVP) operations, requiring SWP and CVP to maintain Delta water quality to meet the objectives of the Delta Plan, (1978). However, after D-1485 was adopted, various water users and the federal government challenged it in court. SWRCB later adopted an updated *WQCP for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (1995 Bay-Delta Plan) on May 22, 1995. Water quality objectives set forth in the 1995 Bay-Delta Plan include water quality flow objectives in the Delta, objectives for the Suisun Marsh, salinity control actions in the San Joaquin Basin, objectives for the South Delta including DO, and combined use of the SWP and CVP points of diversion in the Delta. The accompanying Water Right Order WR 95-06, adopted on June 8, 1995, amended D-1485 to be consistent with the 1995 Bay-Delta Plan. WR 95-06 replaced the standards in DWR and Reclamation's water rights for Suisun Marsh and operational constraints among others to conform with the 1995 Bay-Delta Plan and allowed the SWP and CVP

to pump project water, using either project's Delta pumping plant, to increase fish protection and maintain project delivery capability. Water Right Order WR 98-09, adopted by SWRCB on December 3, 1998, extended the WR 95-06 terms and conditions to allow time for issuance of a comprehensive water right decision.

In July 1998 SWRCB convened the Bay-Delta Water Rights Hearing to consider the assignment of responsibility among water right holders to implement the flow-dependent objectives in the 1995 Bay-Delta Plan. SWRCB would also consider petitions for change that requested authorization of (1) the proposed joint points of diversion under CVP and SWP water rights, (2) changes in water rights in connection with agreements among the parties proposing allocations of responsibility for meeting the flow-dependent objectives, (3) changes in the responsibilities to meet Suisun Marsh objectives, and (4) the proposed changes in place of use and purposes of use of certain CVP water right permits.

SWRCB divided the hearing into eight phases, with each phase focusing on a particular subject or subjects. (See Bulletin 132-00, Chapter 7, for a summary of what each phase addressed.) Phases 1 through 7 were conducted July 1, 1998, through December 21, 1999. During that time, SWRCB certified the EIR for the 1995 Bay-Delta Plan (Resolution 99-117, November 1999). On December 29, 1999, SWRCB issued Water Right Decision 1641 (D-1641) on the subjects considered in the water rights hearing Phases 1 through 7. D-1641 replaced D-1485. It determined some of the responsibilities for meeting the 1995 Bay-Delta Plan objectives and resolved other related issues. (See Bulletin 132-01, Chapter 7, for a summary of the highlights of D-1641.) In March 2000, SWRCB amended D-1641 with Water Rights Order 2000-02 to address issues raised by several parties related to the decision. The Bay-Delta Water Rights Hearing was to resume in August 2000 to conduct Phase 8 to complete the assignment of the remaining responsibilities for meeting the flow-dependent objectives in the 1995 Bay-Delta Plan. (See the discussion of Phase 8 in Bulletin 132-03, Chapter 7.) Phase 8 was later dismissed by SWRCB (Water Right Orders WR 2001-05, adopted April 26, 2001, and WR 2002-12, adopted October 17, 2002) after the remaining responsibilities to meet the flow-dependent objectives were resolved through a negotiated agreement known as the Sacramento Valley Water Management Agreement, signed in March 2003 (see Chapter 7).

In January 2004, SWRCB began its periodic review of the 1995 Bay-Delta Plan and conducted a series of workshops in 2004 and 2005 to obtain information on specific topics addressed in the plan. At the same time, SWRCB was dealing with ongoing issues with South Delta water quality objectives. SWRCB commenced proceedings in September 2006 to amend the 1995 Bay-Delta Plan. The 2006 Bay-Delta Plan was adopted December 13, 2006 (Resolution No. 2006-0098). The next steps are approval of the plan by the State Office of Administrative Law and the U.S. Environmental Protection Agency.

three times the average precipitation fell. The corresponding increase in snowpack and high river levels recorded in many Northern and Central California watersheds during April made 2006 the ninth wettest runoff year on record.

CALFED's Record of Decision (ROD) mandates an Environmental Water Account (EWA) managed by DWR, Reclamation, the Department of Fish and Game (DFG), U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NOAA Fisheries) for the protection of listed fish species. Fish species currently listed under ESA and CESA include the winter and spring runs of Chinook salmon, delta smelt, steelhead, and green sturgeon.

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, Environmental Programs, for a discussion of other environmental issues.)

Delta Cross Channel Gates

The Delta Cross Channel (DCC) gates are operated in accordance with SWRCB D-1641. In 2006, the gates were open for 170 days to allow fresher Sacramento River water to flow into interior Delta channels toward the export facilities of the SWP and CVP. Reclamation's standard operating procedures call for gate closure when flow on the Sacramento River at Freeport reaches between 20,000 cfs and 25,000 cfs, to reduce flooding potential on the Mokelumne River and to prevent scouring on the downstream side of the gate structure. D-1641 contains measures that require gate closure under

certain conditions from November 1 through May 20 for fisheries protection as requested by the USFWS, NOAA Fisheries, and DFG.

During 2006, the gates were open on June 30 and were later closed for 33 minutes for testing and adjustment after the completion of contract work. The gates were reopened and remained open until December 15, 2006, when the flow forecast was above 25,000 cfs.

Water Quality Standards

Water quality standards and objectives are characterized by the beneficial uses they are intended to protect, including municipal, 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 objective (recorded as electrical conductivity [EC]) 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.

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

Municipal and Industrial Objectives

D-1641 includes a year-round 250 milligrams per liter (mg/L) (maximum mean daily) chloride objective that is in effect at 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 2006.

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 forecast.

Agricultural Objectives

D-1641 contains an agricultural salinity objective, which varies by location. The salinity objective, recorded as EC, is based on both water year type and a 14-day running average during the irrigation season, from April to mid-August, at Emmaton, Jersey Point, Terminous, and San Andreas in the western and central Delta. The agricultural salinity objective at these Delta locations becomes less stringent under dryer conditions. Emmaton, Jersey Point, Terminous, and San Andreas met the objective in 2006. An additional salinity objective (0.7 milliSiemens per centimeter [mS/cm]) for the South Delta was met at Brandt Bridge, Vernalis, Old River, and Middle River. The SWP and CVP are jointly required by D-1641 to meet the agricultural salinity objective imposed at these South Delta compliance locations. (See also, Chapter 2, Delta Resources, and Chapter 7, Water Supply Development and Reliability.)

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 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 an 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 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 (NDOI) 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 2005 through May 2006, in maf, was 5.82, 5.21, 3.44, 5.30, 8.52, and 6.80, respectively. Twenty-eight days were required for X2 at Chippis Island during February, and all three criteria were met for 28 days. During March, the required 31 days were also met at Chippis Island, with all three criteria in compliance.

During 2006, the X2 Habitat Protection Objective was met at Port Chicago in February, March, April, May, and June. The number of days of compliance required for maintaining a maximum EC of 2.64 mS/cm at Port Chicago for those months was 22, 31, 30, 31, and 29 days, respectively. Also, the X2 requirement at Port Chicago during the same period (February to June 2006) was met with

a combination of days, with the 3-day running average of NDOI being greater than 29,200 cfs.

Net Delta Outflow Index Standard (NDOI)

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. The NDOI was introduced in the Bay-Delta Plan (1995) and is now part of D-1641. NDOI calculates Delta outflow by including inflows of the Sacramento River; the 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 for greater flexibility in project operations. During 2006, Delta water conditions began and ended in excess, totaling an accumulated 320 days.

D-1641 sets specific minimum monthly NDOI standards, based upon water year type, between 4,500 and 8,000 cfs for the protection of fish and wildlife during January and from July to December. During wet water years, July's NDOI objective of 8,000 cfs is the most stringent of all months. In 2006, the monthly mean NDOI was highest in April, averaging 178,250 cfs. The monthly mean NDOI remained above 4,900 cfs during all months of the year, with the lowest monthly mean NDOI occurring in October with 4,954 cfs. All NDOI standards were met in 2006.

River 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 Sacramento Valley water year classification forecast. Water year 2006 was forecast to be wet, requiring mean monthly flows of 3,000 cfs for September; 4,000 cfs for October; and 4,500 cfs for November and December. During these periods, the 7-day running average could not be more than 1,000 cfs below the monthly standard. The actual mean monthly flows were 15,742 cfs for September; 12,034 cfs for October; 14,384 cfs for November; and 22,040 cfs for December, meeting all Rio Vista flow objectives in 2006.

If the X2 objective is required to be at or west of the Chipps Island location, wet year base flows are set at 3,420 cfs from February to April 14 and from May 16 through June 30. The base flow objective is relaxed to 2,130 cfs when X2 is required to be east of Chipps Island.

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* (VAMP), part of the San Joaquin River Agreement and approved in D-1641, contains SWRCB-approved alternate spring pulse flow and export limits. Typically, Reclamation and DWR use this alternate in lieu of D-1641 limits. The pulse flow objective for the spring 2006 VAMP period

was 8,620 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 limit for the SWP and CVP. It limits Delta exports to a ratio of Delta inflow to combined water project exports and is expressed as a maximum export rate in percentage of Delta inflow. The maximum percentage of Delta inflow diverted varies by month; for example, 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 that combines the 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-to-inflow ratio limit is reported as either a 3-day or 14-day running average. A 14-day running average of inflows is used unless storage withdrawals from upstream reservoirs are being made for export, in which case a 3-day average of inflows is used. In all water year types, the maximum combined export rate from February through June is 35 percent of Delta inflow. This rate may be relaxed in February, during years with less precipitation, to between 35 and 45 percent. From July through January, the export-to-inflow ratio rises to 65 percent.

During January 2006, combined SWP and CVP exports averaged about 12 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.

During the more restrictive period from February through June (35 percent objective), exports averaged about 19 percent. Combined exports were curtailed from February 2 through February 7 for the protection of delta smelt. Following the April 15 to May 15 VAMP period, supplies were projected to meet all demand through the end of May due to recent precipitation and current water conditions.

From July through the following January, the SWP and CVP exported about 50 percent, 15 percent less than the allowed 65 percent. From July through December 2006, the combined inflow diverted averaged 52 percent.

South Delta Temporary Barriers

The South Delta Temporary Barriers Project, initiated as a test project in 1991, was extended for five years in 1996, and extended again for seven years in 2001. The project was created partially in response to a 1982 lawsuit filed by the South Delta Water Agency and consists of four rock barriers across South Delta channels.

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 the Head of Old River.

The installation of the Middle River barrier was completed on July 8, 2006, and the Old River barrier at Tracy installation was completed on July 31. The spring barrier at the Head of Old River, which functions as part of VAMP, was not installed in 2006 due to high flows on the San Joaquin River. The Grant Line Canal barrier was partially installed by July 7, with the installation completed on July 26. The Middle River barrier was notched on October 1, and removal was completed by November 20. The Old River at Tracy barrier and the Grant Line Canal barrier were removed on December 6 and 8, 2006, respectively.

The barrier placed at the Head of Old River in the fall, which helps keep upstream migrating adult salmon from straying out of the San Joaquin River into interior Delta channels, can help improve dissolved oxygen (DO) conditions in the Stockton Deep Water Ship Channel (DWSC). The Head of Old River barrier was not installed due to favorable DO conditions in the San Joaquin River.

Special Study and Biological Surveys

DWR conducts several special studies and biological surveys each year. This includes a special study in the Stockton DWSC during the late summer and early fall to monitor the occurrence of low DO levels. Low DO levels can potentially cause physiological stress to fish and block the migration of salmon into 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 Deep Water Ship Channel

Historically, during the late summer and early fall, DO levels in the eastern and central portions of the Stockton DWSC 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 (RWQCB), 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 2006, flows in the Stockton DWSC were projected to be sufficient to alleviate low DO concerns, so the barrier was not installed.

Methods

Monitoring of DO concentrations in the Stockton DWSC was conducted by boat on nine monitoring runs, from July 24 to November 20, 2006. During each of the runs, 14 sites were sampled at low water slack tide from Prisoners Point in the Central Delta to the Stockton Turning Basin at the terminus of the ship channel. Because monitoring results differ within the channel, sampling stations were

grouped into western, central, and eastern regions. The findings of previous fall studies have shown that fall DO levels are typically robust and high (7.0 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 Prisoners Point and ends at Columbia Cut. The central channel begins one 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 flows.

Results

During the study period (July 24 to November 20), DO levels did not vary much between regions within the channel (not including the turning basin) from a low of 7.0 mg/L to a high of 9.5 mg/L. In the western channel, DO concentrations were relatively high and stable, ranging from 5.3 to 9.4 mg/L. In the central channel, DO concentrations were relatively high and showed a steady increase as the season progressed, ranging from 4.7 to 8.4 mg/L. In the eastern channel, DO levels were also high and stable, ranging from a low of 5.3 mg/L to a high of 9.5 mg/L.

DO concentrations in the Stockton DWSC fell below both the State's 5.0 mg/L and 6.0 mg/L objectives on three monitoring runs at stations located in the central channel: July 24 (stations 6 and 7), August 9 (stations 7 and 8), and September 7 (station 7). All sites were above State DO objectives on subsequent sampling runs.

Higher San Joaquin River inflows, as well as the absence of intermittent reverse flows near Stockton, coincided with improved DO conditions. Further monitoring operations for the fall 2006 special study were suspended after November 20, 2006.

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 the following 10 sampling sites distributed throughout the major habitat types within the estuary:

- 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; and
- San Pablo Bay near the mouth of the Petaluma River.

Four bottom grab samples for benthic analysis and one sample for sediment analysis were collected monthly at each site during 2006. 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 regularly undergoes peer review and update. When a new organism is identified at any of the sampling stations it 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 159 species of benthic macrofauna were collected in 2005 at the 10 sampling sites. Of the 159 species, these 10 species represented 84.4 percent of all organisms collected:

- the amphipods: *Americorophium stimpsoni*, *Americorophium spinicorne*, *Corophium alienense*, and *Gammarus daiberi*;
- the sabellid polychaete: *Laonome sp. A*;
- the turbidicid worms: *Varichaetadrilus augustipenis*, *Limnodrilus hoffmeisteri*, and *Ilyodrilus frantzi*; and
- the Asian clams: *Corbula amurensis* and *Corbicula fluminea*.

Of the 10 dominant species, *Corbula amurensis* represents macrofauna that inhabit a typically high saline environment and were found in San Pablo Bay, Suisun Bay, and Grizzly Bay. *Corophium alienense*, *Americorophium stimpsoni*, *Americorophium spinicorne*, *Limnodrilus hoffmeisteri*, *Ilyodrilus frantzi*, and *Laonome sp. A* tolerate a wider range of salinity. They were collected both in the higher saline western sites and the more brackish to fresh water eastern sites such as the San Joaquin River at Twitchell Island and the Sacramento River above Point Sacramento. The remaining three species, *Gammarus daiberi*, *Varichaetadrilus augustipenis*, and *Corbicula fluminea* are predominantly fresh water species and were collected at sites east of Suisun Bay.

Phytoplankton and Chlorophyll *a* Survey

Phytoplankton are small, free-floating or attached algae that can be tiny, single-celled organisms (less than 5 μm in diameter) or larger colonial organisms. Phytoplankton are 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. Chlorophyll *a* is one of the main groups of pigments contained in the algal species that make up phytoplankton.

Monthly sampling of chlorophyll *a* concentrations and phytoplankton was conducted in 2006 by DWR's Bay-Delta Monitoring Branch at 13 stations throughout the upper San Francisco Estuary:

- Sacramento River at Greene's 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; and
- San Pablo Bay near Pinole Point and near the mouth of the Petaluma River.

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.

Monthly chlorophyll *a* concentrations throughout much of the estuary were relatively low when compared to historical data. Of the 156 samples taken in 2006, 93.5 percent had chlorophyll *a* levels below 10 micrograms per liter ($\mu\text{g/L}$). Chlorophyll levels below $10 \mu\text{g/L}$ are considered limiting for zooplankton growth. The mean chlorophyll *a* concentration for all samples in 2006 was $3.58 \mu\text{g/L}$, and the median value was $2.06 \mu\text{g/L}$. In 2005, mean chlorophyll *a* concentrations were lower, with a mean of $3.48 \mu\text{g/L}$ and a median of $1.88 \mu\text{g/L}$. The maximum chlorophyll *a* concentration in 2006 was $32.9 \mu\text{g/L}$, recorded in July at the San Joaquin River at Vernalis monitoring site. This maximum was higher than the 2005 peak of $21.5 \mu\text{g/L}$. The minimum chlorophyll *a* concentration in 2006 was $0.52 \mu\text{g/L}$, recorded in January at the San Joaquin River at Potato Point monitoring station.

The samples with chlorophyll *a* levels above $10 \mu\text{g/L}$ were all measured in the San Joaquin River at Vernalis, Buckley Cove, Disappointment Slough near Bishop Cut, and San Pablo Bay near Pinole Point and near Mouth of Petaluma River. Three of these monitoring sites (San Joaquin River at Vernalis and Buckley Cove and Disappointment Slough near Bishop Cut) also had the highest chlorophyll *a* concentrations measured in 2005.

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, *Corbula amurensis*. Well-established benthic populations of *C. 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*. The mean pheophytin *a* concentration for all samples in 2006 was $1.71 \mu\text{g/L}$, and the median value was $1.10 \mu\text{g/L}$. The maximum pheophytin *a* concentration was $12.70 \mu\text{g/L}$, recorded at the San Joaquin River near Vernalis monitoring station in July. The minimum pheophytin *a* concentration was $0.18 \mu\text{g/L}$, recorded at Old River opposite Rancho Del Rio in January.

Phytoplankton populations consisted of these categories (in order of abundance): Centric diatoms (class Coscinodiscophyceae), unidentified flagellates, green algae (classes Chlorophyceae and Zygnematophyceae), blue-green algae (class Cyanophyceae), pennate diatoms (classes Bacillariophyceae and Fragilariophyceae), cryptomonads (class Cryptophyceae), euglenoids (class Euglenophyceae), and dinoflagellates (class Dinophyceae). Of the genera identified, the following were the 10 most common, in order of abundance: Unidentified flagellates, *Cyclotella*, *Monoraphidium*, *Aulacoseira*, unidentified centric diatoms, *Skeletonema*, *Merismopedia*, *Planktosphaeria*, *Cryptomonas*, and *Anabaena*.

Activities Outside the Delta

Routine SWP water quality monitoring activities, as well as special studies, are conducted outside the Delta. These special studies are in response to increasingly stringent regulations facing water purveyors who rely on DWR to deliver high quality raw water. Most of these special studies were initiated because of the fish and wildlife and water quality concerns held by agencies that provide domestic water.

Water Quality Monitoring

The SWP water quality monitoring program, run by O&M, began in 1968 when the California Aqueduct was completed. Originally, the purpose was to monitor eutrophication in the project facilities and salinity for agricultural users. Since then, the SWP water quality program has expanded to cover parameters of concern for drinking water, recreation, and fish and wildlife purposes. Today, chemical,

physical, and biological parameters are routinely monitored throughout the SWP (from the Feather River drainage in the north to Lake Perris in the south) including more than 40 sites and over 200 different chemical constituents that are monitored weekly, monthly, or quarterly. Sampling stations are situated south of the Delta at reservoirs, pumping plants, power plants, and check structures at the South Bay Aqueduct, Coastal Branch, and California Aqueduct. Other monitoring stations are located on the North Bay Aqueduct, Feather River, and at reservoirs north of the Delta—Lake Oroville, Antelope Lake, Frenchman Lake, and Lake Davis. In addition, 15 automated stations are maintained for continuous monitoring of critical water quality constituents along the aqueducts and reservoirs.

Collected water samples are shipped to DWR's own Bryte Chemical Laboratory in West Sacramento for processing and analysis (e.g., dissolved solids, nutrients, chloride, sulfate, sodium, trace metals, herbicides, pesticides, organic substances, phytoplankton, and taste and odor compounds).

Bryte Chemical Laboratory's primary function is to analyze drinking water (Safe Drinking Water Act and Title 22 of the California Code of Regulations), surface water, groundwater, and wastewater (Clean Water Act and Title 22). All of the analytical services that are performed follow the Standardized Operating Procedure which complies with the Environmental Laboratory Accreditation Program (ELAP).

In 2006, total dissolved solids (TDS), bromide, turbidity, dissolved organic carbon, taste and odor compounds,

metals, pesticides, and other constituents were all found to be at very low levels and were not a factor in water treatment. TDS and bromide levels at SWP locations were low from January through December. Dissolved organic carbon and turbidity were moderately low, except for a few highs from March to May. Taste and odor compounds were generally low projectwide, with moderate concentrations observed in September at Lake Perris. Table 4-1 displays laboratory results from these analyses, and additional SWP water quality data are available electronically through DWR's website at <http://www.water.ca.gov/swp/waterquality>.

Water Turn-ins

Turn-ins of non-project or local water are authorized by the SWP to facilitate activities such as groundwater banking recovery and providing short-term means to address urgent irrigation needs. Turn-ins of local water tend to be much less frequent or nonexistent in wet years when the SWP Table A allocation is high (For more about Table A, see Chapter 9, Water Contracts and Deliveries).

In 2001, DWR established new interim criteria to review the water quality of the turn-ins using a two-tiered approach. Tier 1 programs have a "no adverse impact" criteria and are tied to historical water quality levels in California. Programs meeting Tier 1 criteria are generally approved by DWR without referral to the State Water Contractor facilitation group. Tier 2 programs involve water quality levels that exceed the historical water quality in the SWP and have the potential to cause adverse impacts to the SWP water contractors. Tier 2 programs are referred to the State Water Contractor facilitation group for review and recommendations

to DWR. DWR considers all factors before making a decision on the proposed water turn-in.

Turn-ins not only add versatility to SWP water operations, but can also improve SWP water quality for some constituents. Turn-ins can reduce total dissolved solids, conductivity, bromide, and organic carbon in the SWP. Slight increases in nitrate, sulfate, and arsenic often result. In 2006, a total of 6,762 af of floodwater was turned-in and then turned-out of Reach 5 of the California Aqueduct in May and June by Westlands Water District during a high flow period. There were no significant associated water quality issues to report.

Non-Project Inflows to the California Aqueduct from the Kern River Intertie

Releases from Lake Isabella down the Kern River (Tulare Basin) were conveyed directly into the SWP during May and June 2006. The releases were mandated by the U.S. Army Corps of Engineers (Corps) due to recently discovered defects in Isabella Dam and the potential for catastrophic breach. Because of higher-than-normal runoff conditions and an abundance of water in the San Joaquin and Tulare basins, the releases were conveyed into the SWP via the Kern River Intertie (Milepost 241). Inflows started on May 4, 2006, and continued daily until June 21 when the maximum pool elevation reached 20 feet or 64 percent capacity, as required by the Corps. Inflows totaled 81,669 af in May and 20,071 af in June.

Kern River water quality was exceptional, with low levels of salt and other dissolved minerals. Conductivity (a measure of salinity) in Kern River inflows was

Table 4-1. 2006 Mean Water Quality at Selected State Water Project Grab Sample Locations

Constituent	Units ^a	Detection Limit	California Aqueduct								
			Thermalito Afterbay at Outlet	North Bay Aqueduct, Barker Slough Pumping Plant	Delta-Mendota Canal Upstream of McCabe Road	Banks Delta Pumping Plant	O'Neill Forebay Outlet (Check 13)	Kettleman City (Check 21)	Near Highway 119 (Check 29)	Tehachapi Afterbay (Check 41)	Devil Canyon Head Works
Alkalinity	mg/L as CaCO ₃	1	34	88	54	49	57	57	55	56	57
Antimony	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	NR	NR
Arsenic	mg/L	0.001	<0.001	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Beryllium	mg/L	0.001	<0.001	<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	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
Bromide	mg/L	0.01	<0.01	<0.04	0.11	0.09	0.13	0.13	0.14	0.11	0.12
Calcium	mg/L	1	8	15	17	13	16	16	15	16	16
Chloride	mg/L	1	<1	18	38	31	44	42	39	39	43
Chromium	mg/L	0.001	<0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Copper	mg/L	0.001	<0.001	0.003	0.001	0.002	0.002	0.002	0.002	0.002	0.003
Fluoride	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hardness	mg/L as CaCO ₃	1	31	84	75	63	76	77	71	76	76
Iron	mg/L	0.005	0.006	0.062	0.011	0.020	0.011	0.010	0.013	0.010	0.012
Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium	mg/L	1	3	12	8	7	9	9	8	9	9
Manganese	mg/L	0.005	<0.005	0.025	<0.005	0.013	0.005	<0.005	<0.005	<0.005	0.048
Nitrite + Nitrate	mg/L as N	0.01	0.01	0.20	NR	0.41	0.56	0.59	0.56	0.57	0.54
Organic Carbon, Dissolved	mg/L as C	0.5	NR	7.0	3.2	3.0	3.1	3.0	3.1	3.1	3.4
Organic Carbon, Total	mg/L as C	0.5	NR	7.3	3.3	3.2	3.2	3.1	3.1	3.4	3.4
Phosphate-Ortho	mg/L as P	0.01	<0.01	0.11	NR	0.06	0.06	0.07	NR	0.06	0.07
Phosphorus-Total	mg/L	0.01	<0.01	0.21	NR	0.09	0.09	0.09	0.09	0.09	0.09
Selenium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sodium	mg/L	1	3	24	31	25	33	33	30	31	33
Specific Conductance	µS/cm	1	74	267	309	247	320	318	298	304	319
Sulfate	mg/L	1	2	19	33	21	28	28	26	27	26
Total Dissolved Solids	mg/L	1	49	161	177	141	181	180	169	173	181
Turbidity	N.T.U.	1	4	41	13	8	7	6	8	9	5
Zinc	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

^a mg/L = milligrams per liter; µS/cm = microSiemens per centimeter; N.T.U. = Nephelometric turbidity unit; NR = No data recorded at this location

NOTE: A grab sample is a single sample chosen to represent the conditions in a given matrix (usually natural water) at a specific location, depth, and time. All reported constituents are the yearly mean of laboratory analytical values sampled monthly from January to December. The yearly mean may be based upon one to twelve samples for the list of constituents.

consistently near or below 100 $\mu\text{S}/\text{cm}$ and as a result reduced conductivity in the SWP by 23 percent to 75 percent during the 2-month period. Total organic carbon (TOC, an indicator of undesirable trihalomethane [THM] formation potential in drinking water) was also reduced in the SWP by up to 37 percent (median=12 percent). Two parameters that did increase in the SWP as a result of the inflows were turbidity and coliforms—common constituents in raw water that are easily removed or neutralized during the water treatment process.

Municipal Water Quality Investigations Program

The Sacramento-San Joaquin Delta provides drinking water for more than 25 million people in California. Because the Delta and its tributaries are located in 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 (MWQI) Program was established to evaluate the suitability of Delta water as a drinking water source, to identify sources of water quality degradation, and to evaluate means of eliminating or preventing degradation.

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

Components of the MWQI Program include the following:

- collection of discrete and real-time water quality data from key locations in the Delta on constituents of concern for water quality;
- 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 basin plans;
- evaluation of water quality effects from the Jones Tract flood;
- integration of real-time water quality data with computer models to develop forecasting tools for changing water quality conditions in the Delta and SWP; and
- continued investigation of new and increasing sources of pollution, including urban sources and agricultural drainage.

Collectively, these and other MWQI Program studies and activities are designed and conducted to address major water quality issues. Each study or activity serves to discover, test, and assess possible solutions to problems in the Delta and other watersheds of the SWP. Overall, the results of these studies and activities are intended to assure that future demands for safe, potable water supplies can be met.

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, and the program continues to evolve.

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

The current MWQI Program has progressed from monitoring, problem identification, and assessment to the development of studies on source water improvement and management.

The MWQI Program also continues to provide CALFED and other water quality related programs with expertise for assessing potential effects from proposed Delta projects.

Reports

The 2006 *State Water Project Watershed Sanitary Survey Report*, the fourth in a series for the SWP, provides information in the latest 5-year update from the original sanitary survey required by DHS in 1990. This update report will be completed in mid-2007 and will be available in hard copy and searchable CD-ROM.

Development of a 2-year MWQI data summary report, entitled *The Municipal Water Quality Investigations Program Summary and Findings from Data Collected from October 2003 through September 2005*, commenced in 2006 with an estimated completion and distribution date of spring 2007. This report summarizes and interprets MWQI grab-sampling data collected from 11 MWQI stations. The report will be available in hard copy and searchable CD-ROM, as well as online on the DWR website at <http://water.ca.gov/waterquality/drinkingwater/index.cfm>.

Real-Time Data and Forecasting Comprehensive Drinking Water Quality Project

The MWQI Program provides early warning of changing water quality conditions for water purveyors via the Real-Time Data and Forecasting Comprehensive Drinking Water Quality Project.

Planning for this comprehensive drinking water program began in June 2006 with a meeting that included representatives from DWR, the municipal SWP water contractors, EPA, and several other interested stakeholder groups. Implementation of this program will begin in 2007 with the expansion of the current MWQI Program's budget and staff. The scope of this comprehensive program will include the Delta, SWP, and areas upstream of the Delta in the watersheds of the Sacramento and San Joaquin rivers.

Water quality reports from this project can be found on the MWQI website: <http://www.water.ca.gov/waterquality/drinkingwater/index.cfm>.

Special Studies

Staten Island Wetlands Investigation

DWR, the U.S. Bureau of Land Management, Ducks Unlimited, DFG, 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, the quantity of carbon exported off the island, and 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.

Starting at the end of October 2004, when the fields were first flooded, samples were collected weekly from two fields. Sampling continued until the fields were drained of water in early 2005. Carbon loading studies began in fall 2005 and will continue through fall 2007. Following the completion of this second portion of monitoring, a report on the results will be prepared for Ducks Unlimited by mid-2007. It is anticipated that the carbon loading studies may be submitted to a journal for publication and wider dissemination in the scientific community.

Real Time Organic Carbon Monitoring

In 2006 the MWQI Program continues to operate three automated carbon analyzers in the Delta at the Banks Pumping Plant, Hood, and McCune monitoring stations.

The analyzers automatically sample the exported water, determine the TOC and dissolved organic carbon levels, and send the data to Sacramento, where it is posted on the California Data Exchange Center (CDEC) website at <http://cdec4gov.water.ca.gov>.

Real-Time, Continuous Monitoring of Bromide and Nutrients

In 2004, two ion chromatography instruments were installed at the Banks and McCune stations. These automated instruments measure bromide, chloride, sulfate, and nitrate. These instruments, which became operational in late 2005, continued operation in 2006. Data is received remotely by MWQI Program staff and is available on CDEC.

Automated analyzers can sample every hour compared to the historical grab-sample program that only sampled weekly or monthly. Real-time measurements of these constituents provide SWP water contractors and water utilities with the information they need to better manage water quality.

Urban Sources and Loads Investigation

The MWQI Program, in partnership with the Dry Creek Conservancy, also received Proposition 13 and 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 expanded 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 Geographic Information System of land use and impervious cover in the NEMDC watershed to serve as a basis for change detection analysis in subsequent years. Data from the real-time stage recorder and autosampler station were collected until March 2006. Work on draft and final CALFED grant reports commenced in April 2006, with estimated completion dates of June 2007 (draft) and December 2007 (final).

Organic Carbon Quality Investigation

From 2003 to 2004, MWQI staff conducted a collaborative special study on THM reactivity of organic carbon for the carbon-rich soils of the Delta. Organic carbon of soil origin in 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 byproducts (DBPs), such as THMs.

To date, the nature and properties of reactive organic carbon have been poorly characterized. MWQI staff collected representative soils from various Delta islands from the soil surface down to 10 feet. Organic carbon from the soils was extracted with different extractants and fractionated into relatively homogeneous isolates of distinct properties for determination of THM reactivity. MWQI Program staff has summarized findings of this study into three peer-reviewed manuscripts, one of which appeared in *Water Research* in May 2005. The other two manuscripts are being revised for

publication in *The Journal of Environmental Quality*. This study is made up of several phases. The last phase, which entails characterizing the molecular structure of THMs, began in 2006 and will conclude in summer 2008. The final product will be a fourth peer-reviewed manuscript.

Bryte Chemical Laboratory

Bryte Chemical Laboratory was established in 1951 and certified in 1990 by the DHS ELAP to perform drinking water and wastewater analyses. Since 1990, Bryte Chemical Laboratory has maintained its ELAP Certification and on July 1, 2006, after successfully passing an extensive ELAP laboratory on-site audit, was granted another two year certification until July 31, 2008. The laboratory, in 2006, has continued to perform the vast majority of chemical and other related analyses required to support DWR's water quality programs.

In 2006, Bryte Chemical Laboratory upgraded the lab's capability to detect and analyze total and dissolved organic carbon in water and wastewater with the purchase of a new dual action TOC analyzer. The new dual instrument system will provide TOC analyses by either combustion or wet oxidation methodologies. The purchase of the new instrument will enable Bryte Chemical Laboratory to increase its capacity to handle the growing demand for organic carbon analyses for DWR water quality programs.

Bryte Chemical Laboratory continues 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 1994–1995. The laboratory

works in conjunction with the Quality Assurance and Quality Control Section to replace these contracts as they expire each fiscal year. In 2006, no analytical contracts were scheduled to expire or needed to be replaced, although the lab did start the process to replace two existing 3-year contracts that are due to end in early 2007. One of the 3-year contracts provides fish tissue analysis primarily for DWR Northern District through DFG. The other 3-year contract with Metropolitan Water District of Southern California provides taste and odor analysis of raw source water supplied by the SWP to its drinking water facilities.

Security and protection of the SWP has continued to be a primary goal for DWR since September 11, 2001. To help protect the SWP from biochemical and chemical agents, Bryte Chemical Laboratory has continued in 2006 to be an active member of a group of laboratories called the California Association of Mutual Aid Laboratories Network (CAMAL Net) headed by DHS. The laboratory network'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 is only required should the analytical capacity of DHS be exceeded or to confirm the presence or absence of chemical agents in water quality samples provided by DHS. Should DHS activate CAMAL Net, members will be notified, and water quality samples that are determined to be safe to handle by DHS will be shipped to the participating CAMAL Net laboratories. In 2006, Bryte Chemical Laboratory continued to perform as a Level II laboratory in the CAMAL Net organization.

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 (SRCD), 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 (SMPA). 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. After several years of negotiations, the Revised Suisun Marsh Preservation Agreement (SMPA) and Revised Mitigation and Monitoring Agreements were signed in 2005. For more information, see the sidebar about the Habitat Management, Enhancement, and Restoration Plan for the Suisun Marsh.

Blacklock Restoration Project

DWR, in cooperation with DFG, Reclamation, USFWS, and SRCD, implemented the Blacklock Restoration Project. On October 3 and 4, 2006, a 61-foot long breach was constructed in the preferred breach location along Little Honker Bay. In mid-July 2006, this project restored 70 acres of diked, managed marsh to tidal wetlands, using a minimally engineered approach. DWR received CALFED Ecosystem Restoration Program grant funds in 2001 and acquired this property, located in the northeastern Suisun Marsh, in December 2003.

The project goals and objectives are to: (1) restore the area to a fully functioning, self-sustaining marsh ecosystem created through restoration of natural hydrologic, sedimentation, and biological processes; (2) increase the area and contiguity of emergent wetlands providing habitat for tidal marsh species; and (3) assist in the recovery of at-risk species.

A Draft Restoration Plan was distributed for review in April 2006. Environmental compliance and permit documentation was initiated during summer 2006 and completed in early October 2006. DWR has implemented a 10-year monitoring program at the site.

Revised Suisun Marsh Preservation Agreement

The Revised SMPA includes the following actions: operation of the initial facilities and Suisun Marsh Salinity Control Gates, channel water salinity standards consistent with D-1641, water manager program, portable pumps program, Individual Ownership Adaptive Management Habitat Plan updates, drought response fund, and

replacing turnouts on the Roaring River Distribution System. During 2006, SRCD continued to implement these programs.

Suisun Marsh Charter

During 2006, the Suisun Marsh Charter Principals and Writing Group met monthly to review potential actions and develop alternatives to be included in the Habitat Management, Enhancement, and Restoration Plan for the Suisun Marsh, known as the Suisun Management Plan (SMP). Jones & Stokes Associates, Inc. was retained to conduct the impacts analysis and prepare the Programmatic Environmental Impact Report (EIR)/ Environmental Impact Statement (EIS). In addition to monthly meetings, a full Charter Group workshop was held in Suisun to enable the other charter agencies including the Corps, San Francisco Regional Water Quality Control Board, San Francisco Bay Conservation and Development Commission (BCDC), and other local agencies and interested parties to engage in the process. For more information, see the sidebar about the SMP.

Operation and Maintenance

Initial Facilities Maintenance

Several facilities constructed by DWR operate in the Suisun Marsh. They are identified in the *Plan of Protection for the Suisun Marsh* (1984) 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 (MIDS), and Goodyear Slough Outfall, were constructed in 1979 and 1980. The Suisun Marsh Salinity Control Gates were installed and became operational in 1988.

Morrow Island Distribution System (MIDS) Fish Screen and Alternatives

In 1997, the USFWS issued a biological opinion requiring Reclamation and DWR to install a fish screen at the intake of MIDS on Goodyear Slough.

Because the cost of adding a fish screen to the MIDS intake structure is likely to be high, and the effectiveness of such screening to conserve Suisun Marsh fish populations is unknown, DWR and Reclamation proposed to investigate fish entrainment at the MIDS intake with regard to fishery populations in Goodyear Slough and to evaluate whether screening the diversion would provide substantial benefits to local populations of listed fish species. The objectives of this sampling project are: (1) to 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 began in September 2004 and continued periodically through June 2006. The sampling periods covered two operating seasons for MIDS and the periods when sensitive fish species would most likely be present in the western Suisun Marsh. Samples were collected at the intake and in the adjacent Goodyear Slough near the diversion.

More than 2.3 million cubic meters of diverted water was sampled during the monitoring. Despite this, entrainment of special-status fishes was exceptionally low (two Chinook salmon and one delta smelt). Rather, two species that associate with instream structures, threespine stickleback and prickly sculpin, comprised most of the entrained fish. The sampling in Goodyear

Slough suggested that the most commonly entrained fish were also common in the slough. Delta smelt and Chinook salmon were rarely collected in Goodyear Slough, suggesting that these species do not use this region of Suisun Marsh extensively. This is consistent with more than 20 years of sampling conducted in the slough by University of California, Davis (UCD).

Based on the results of this study, DWR and Reclamation are requesting USFWS reinitiate consultation on the MIDS maintenance project.

Suisun Marsh Salinity Control Gates

The Suisun Marsh Salinity Control Gates are operated from October 1 through May 31, 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 2005–2006. During the 2005–2006 control season (October 2005 through May 2006), the flashboards were installed on November 9, 2005, but gate operations were not initiated until November 14, 2005, due to salinity concerns. The gates continued operation through November 30, 2005. Gate operations ceased on December 1, 2005, due to reduced salinity levels in the marsh. On January 6, 2006, the flashboards were removed to allow barge access for levee repair in Montezuma Slough. The levee failed due to a large storm event on December 31, 2005, and several more storm events thereafter. As a result of the large amount of rainfall and high runoff,

Habitat Management, Enhancement, and Restoration Plan for the Suisun Marsh (Suisun Management Plan)

In 1986, federal legislation (Public Law 99-546) authorized funds to the U.S. Bureau of Reclamation (Reclamation) to protect Suisun Marsh. On March 2, 1987, the Department of Water Resources (DWR), Reclamation, the Department of Fish and Game (DFG), and Suisun Resource Conservation District (SRCD) signed the Suisun Marsh Preservation Agreement (SMPA). The objective of SMPA is to assure that Reclamation and DWR mitigate for any adverse effects of the Central Valley Project (CVP) and State Water Project (SWP) 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 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 water contractors actively participated in the negotiations. Updating SMPA will reflect future hydrologic and salinity conditions in the Suisun Marsh as prescribed by the State Water Resources Control Board (SWRCB) 1995 Water Quality Control Plan and will place more emphasis on improving water and land management practices and facilities on managed wetlands.

In 2001, agency managers with primary responsibility in managing actions in the Suisun Marsh formed the Suisun Marsh Charter Group (Charter Group) to develop an implementation plan for the Suisun Marsh that would protect and enhance the Pacific Flyway and existing wildlife values, endangered species, and water project supply quality.

Because the marsh includes private lands, the SRCD also serves on the Charter Group to represent the interests of private landowners. Other Charter Group members are the U.S. Fish and Wildlife Service (USFWS); National Marine Fisheries Service (NOAA Fisheries); U.S. Department of the Interior; Reclamation; DFG; DWR; and the California Bay-Delta Authority (CBDA). The Charter Group has also consulted with other participating agencies, such as the San Francisco Bay Conservation and Development Commission (BCDC) and the U.S. Army Corps of Engineers (Corps).

The Charter Group was charged with developing the *Habitat Management, Enhancement, and Restoration Plan*, known as the Suisun Management Plan (SMP). The SMP is a programmatic approach to restoring portions of the marsh, but also includes a project-level description of the ongoing and potential future maintenance activities that are necessary to maintain the marsh and operate State and federal water supply facilities. These activities will be analyzed in this document and will be used to obtain a new Regional General Permit from the Corps. The SMP Environmental Impact Report (EIR)/Environment Impact Statement (EIS) is being developed in coordination with the recommendations of the Delta Vision Process and with information and evaluation provided by the Delta Risk Management Study (DRMS) and other regional programmatic processes. Additionally, the EIR/EIS describes the effects of adopting a future amendment to the revised SMPA, which will allow funds to be provided for the implementation of RGP activities by landowners in the marsh. Reclamation and USFWS have agreed to serve as joint National Environmental Policy Act (NEPA) lead agencies, and DFG has agreed to serve as the California Environmental Quality Act (CEQA) lead agency. Staff from the Charter agencies reviewed a myriad of existing planning documents in developing potential actions to be included in the plan.

salinity levels in the marsh were extremely low and gate operations ceased entirely (i.e., three gates held open, flashboards removed) for the remainder of the control season.

Unlike past years, the boat lock gates were held open during the 2005–2006 gate operations period in support of fish passage and closed only to allow safe boat passage. Past years' salmon passage studies indicate that boat lock gates being open during gate operations provide optimal fish passage. Starting with the 2005–2006 control season and thereafter, the boat lock gates will remain open during gate operations in support of fish passage and will only close for a short period to allow boat passage as agreed by Reclamation, DWR, DFG, and SRCD and as set forth in the 2005 Revised SMPA.

Monitoring

Water Quality and Compliance

Suisun Marsh channel water salinity standards were specified in SWRCB Water Right Order (WR) 98-09 for seven compliance stations. Four of these—National Steel (S-64), Beldon's 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). Two remaining sites located in the western marsh, Morrow Island (S-35) and Ibis (S-97), are specified as baseline monitoring stations because of the SWP's minimal control on salinity levels at these locations. In 2000, SWRCB amended D-1641 to remove the compliance monitoring requirement for these stations. However, both remain active as water salinity monitoring

stations. To be consistent with D-1641, the June 2005 Revised SMPA Monitoring Agreement had the same specification for S-97 and S-35 to become monitoring stations, instead of compliance stations. Details of the agreement can be viewed online at:

http://iep/suisun/smpa/RevisedSMPAMonitoringAgreement_20JUN2005.pdf.

Salinity levels remained well within compliance from October 1, 2005, through May 31, 2006.

Suisun Marsh Expenditure History

Suisun Marsh expenditures and reimbursements administered by DWR for calendar years 1968 through 2006 are summarized in Table 4-2 (located at the end of the chapter). From 1968 through December 31, 2006, DWR disbursed more than \$119.7 million of 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 SMPA and for meeting standards set by SWRCB. Reclamation has reimbursed DWR about \$45.6 million (38 percent), and the State's General Fund has reimbursed about \$9.4 million (8 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.



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

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

Year [1]	Reach 305 Costs [2]	General Fund Payment [3]	Adjustment for General Fund Payment ^a [4]	Reclamation Invoice Payment [5]	Interest Payment Credited Back to Contractors [6]	Net SWP Costs [2] through [6] [7]	Recreation Costs ^c [8]	SWP Water Contractors' Costs [7] minus [8] [9]
1968	10,571					10,571	359	10,212
1969	34,181					34,181	1,162	33,019
1970	23,343					23,343	794	22,549
1971	1,042					1,042	35	1,007
1972	47					47	2	45
1973	0					0	0	0
1974	0					0	0	0
1975	2,709					2,709	92	2,617
1976	32,960					32,960	1,121	31,839
1977	37,475					37,475	1,274	36,201
1978	350,831					350,831	11,928	338,903
1979	3,660,099					3,660,099	124,441	3,535,658
1980	5,005,759					5,005,759	170,283	4,835,476
1981	2,964,974					2,964,974	101,311	2,863,663
1982	2,955,705			(2,500,000)		455,705	101,111	354,594
1983	2,754,094					2,754,094	93,643	2,660,451
1984	2,418,344					2,418,344	82,388	2,335,956
1985	2,332,773					2,332,773	79,432	2,253,341
1986	6,495,322					6,495,322	220,843	6,274,479
1987	13,600,701					13,600,701	462,424	13,138,277
1988	7,456,364			(17,368,725) ^b	(2,039,752)	(11,952,113)	253,516	(12,205,629)
1989	2,341,960	(9,478,000)	6,634,600	(1,219,691) ^b	(283,857)	(2,004,988)	79,643	(2,084,631)
1990	3,030,010			(695,450)		2,334,560	101,460	2,223,100
1991	6,223,042			(2,925,429)		3,297,613	210,454	3,087,159
1992	2,737,259			(1,174,655)		1,562,604	91,951	1,470,653
1993	2,979,255			(238,130)		2,741,125	99,897	2,641,228
1994	3,192,213			(1,962,549)		1,229,664	107,281	1,122,383
1995	2,721,978			(647,138)		2,074,840	91,218	1,983,622
1996	3,391,678			(1,482,396)		1,909,282	113,244	1,796,038
1997	3,634,267			(1,520,219)		2,114,048	121,132	1,992,916
1998	5,342,834			(1,107,501)		4,235,333	177,132	4,058,201
1999	8,867,742			(2,696,200)		6,171,542	301,424	5,870,118
2000	2,857,534			(3,300,053)		(442,519)	98,145	(540,665)
2001	2,623,227			(444,009)		2,179,218	89,494	2,089,724
2002	3,752,265			(791,319)		2,960,946	124,379	2,836,566
2003	3,258,583			(2,389,979)		868,604	107,556	761,038
2004	2,874,629			(952,940)		1,921,689	94,885	1,826,804
2005	3,940,876			(1,409,296)		2,531,580	130,049	2,401,531
2006	5,807,806			(868,449)		4,939,357	193,867	4,745,491
Total	119,714,451	(9,478,000)	6,634,600	(45,694,128)	(2,323,609)	68,853,314	4,039,382	64,813,932

^a Under State Assembly Bill 1442, the General Fund paid 20% of the Suisun Marsh costs through June 1988 which amounts to \$9,478,000. This payment includes \$2,843,400, which represents 6% of the costs through June 1988 paid by the General Fund. This amount has reduced the costs billed to the SWP water contractors. The remaining \$6,634,600 received from the General Fund represents the recreation project purpose share of 14%.

^b Excludes interest payments made by Reclamation.

^c Allocation factors for capital recreation costs have changed from 14% to 3.4% and Operations & Maintenance recreation costs from 14% to 3.3%.



Chapter 5 Local Assistance

S*prinklers provide the irrigation required for growing crops.*

Significant Events in 2006

To assist local agencies, the Central Valley Regional Water Quality Control Board (CVRWQCB) issued a report titled *Salinity in the Central Valley*, which provides general background information on salinity issues in the Central Valley. The report describes some of the efforts that the Department of Water Resources (DWR) is making in salinity management with local, State, and federal partners.

DWR received 200 urban water management plans.

The Agricultural Water Management Council endorsed an additional three agricultural water management plans.

The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84), approved by the voters in the November 7, 2006, General Election, authorized \$1 billion to continue the Integrated Regional Water Management Program.

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

The Department of Water Resources (DWR) 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 (SWP) 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 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 (OWUE) was created in 2001. The name was changed to Office of Water Use Efficiency and Transfers (OWUET) in 2005. OWUET activities include providing technical assistance to local agencies; managing water use efficiency financial assistance programs; managing the California Irrigation Management Information System (CIMIS); 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 130 stations in 2006. 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 more than 7,000 in 2006.

Approximately 225,000 reports were generated from the database with more than 20,000,000 visits to the website (<http://www.cimis.water.ca.gov>) for information in 2006. Users can register online, access archived data, download data files, and peruse content about the CIMIS program and other helpful

metadata and information. A separate but concurrently operating database and Web application is operating for redundancy to protect the data.

Other ongoing enhancements for CIMIS include the non-ideal site weather station network study and the incorporation of the GOES model producing statewide daily reference evapotranspiration (ET_0) maps. In addition, the staff is updating CIMIS brochures, evapotranspiration 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 OWUET was established in 2001. The branch's goal is to improve water use efficiency by promoting increased use of nonconventional water sources—namely recycled water and desalinated brackish and ocean waters—through planning, technical, and financial assistance. As part of a balanced water portfolio, nonconventional water sources will help meet existing and future water supply and environmental needs. The branch's mission consists of increasing the safe and beneficial use of recycled water, advancing energy-efficient treatment and desalination technologies, and encourage economically and environmentally acceptable use of desalinated brackish and ocean waters.

In 2006, the Water Recycling and Desalination Branch activities included the following:

- provided timely water recycling and desalination information reports;
- continued to develop new knowledge

- on water recycling and desalination activities and projects in California;
- initiated essential water recycling projects and activities in collaboration with the WateReuse Foundation, University of California (UC) Santa Cruz, UC Santa Barbara, and the Bureau of Reclamation (Reclamation);
- participated and assisted the WateReuse Foundation in developing a national database on water recycling facilities and recycled water production and uses;
- developed Proposition 50 desalination grants 2006 Project Solicitation Package;
- formed and participated in the Technical Review Panel and the State Agency Funding Team responsible for evaluating 49 project proposals seeking funding from Proposition 50 desalination grants;
- prepared the desalination funding recommendation package for management approval (in 2006–2007, DWR anticipated entering into agreements to fund 24 projects for a State share of \$21.5 million);
- awarded Proposition 50 funds of \$21.5 million for the second desalination grant cycle to fund 24 different projects (with a total cost of \$111.9 million), including four construction, nine pilot and demonstration, seven research and development projects, and four feasibility studies;
- continued to develop and manage grant agreements for the 24 different projects, which were awarded through the second 2006 cycle of the desalination grant program;
- continued to manage grant agreements for the 24 desalination projects awarded in the first cycle, 2004–2005;

- continued to provide technical knowledge on water recycling and water desalination issues, including response to questions from policy makers, regulators, state and local agencies and the public on permitting issues; public health regulations; types, locations, and amounts of water reuse occurring, and desalinated water production and use;
- represented DWR in 10 meetings, workshops, and conferences and published six technical papers on water recycling and desalination (e.g., Multi-State Desalination Summit in New Mexico; California Coastal Protection Council Conference in Long Beach; American Water Works conference in San Francisco; UC Santa Cruz water desalination policy meeting);
- made five presentations about California's water recycling and desalination activities to DWR's visitors;
- served on several technical State and national advisory panels on water recycling and desalination (e.g., the U.S. Desalination Roadmap and the Assembly Bill [AB] 2717 Landscape Task Force);
- assisted with the implementation of several Recycled Water Task Force recommendations;
- developed a draft water recycling and desalination strategic plan;
- developed and organized jointly with UC Santa Cruz a workshop: A Comprehensive Economic and Environmental Framework Tool to Assess the Benefits and Costs of Desalination;
- participated on the Project Advisory Committee to design and publish an activity booklet for upper elementary students, entitled *Give Water A Second Chance...Recycle It*, which provides information on the process and the need for recycled water and its similarity to the water cycle;
- published six articles in the DWR's *Water Conservation News* publication on various water recycling and water desalination issues;
- worked with Reclamation on revising Title 16 funding guidelines for water recycling and purification projects by expanding the guidelines to consider California-developed guidelines for water recycling projects, thus accommodating water agencies' needs; and
- served on the Sacramento Regional County Sanitation District's Water Recycling Advisory Committee to help develop a regional water recycling master plan.

Proposition 50 Water Use Efficiency Grant Program

Proposition 50 provided approximately \$105 million for the Water Use Efficiency grant program for three years. The Water Use Efficiency grant program provided funds for implementation of all urban best management practices and agricultural efficient water management practices that would result in local, regional, and statewide benefits. The State benefits are water conservation, flow and timing, water quality, energy, and other benefits. The first Proposition 50 Water Use Efficiency grant cycle was in 2005 and resulted in 72 cooperative agreements with funding for urban and agricultural projects. The second Proposition 50 Water Use Efficiency Grant Cycle started in 2006 and resulted in initiation of development of 52 cooperative agreements.

For both grant cycles, a competitive project solicitation package (PSP) was developed along with a comprehensive review and evaluation of the project proposals. A PSP defines project benefits, eligible projects, eligible applicants, funding caps, reporting, and other contract requirements. Both grant cycles were two-step processes. Applicants were required to submit a Concept Proposal in Step 1, and successful Concept Proposals were invited to submit a Full Proposal in Step 2. All submittals were made on-line through Financial Assistance Application Submittal Tool (FAAST).

Agricultural Water Management Plans

By the end of 2006, 75 water districts, three environmental interest groups, and more than 55 other interested groups had signed the Agricultural Water Management Memorandum of Understanding (MOU) as members of the Agricultural Water Management Council (Ag Council). The agricultural signatories represent more than 4.8 million acres of irrigated agricultural land statewide.

In 2006, the Ag Council endorsed an additional three agricultural water management plans that had been submitted by agricultural water suppliers. 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 biennial progress report to the Ag Council from the date their plan was endorsed. The DWR staff provides technical review and evaluation of these plans. DWR also reviewed four biennial progress reports for the Ag Council.

DWR staff provided technical assistance to water districts to prepare water management plans and to implement efficient water management practices, as well as administrative and programmatic assistance to both the council and water districts.

Three-Way Cooperative Agreement—Ag Council

In 2001, DWR set up a three-way cooperative agreement among 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 three years to help implement the MOU. The management and implementation of tasks in the agreement are closely coordinated with Reclamation's Mid-Pacific Region. This activity, with a \$1.2 million budget, is shared equally between DWR and Reclamation. By the end of 2005, all DWR funds were spent for relevant tasks identified in the three-way cooperative agreement. The work continued with federal share of funds and tasks.

The Ag Council is making progress on its assigned tasks.

Urban Water Management Plans

DWR received 148 urban water management plans in 2006. The 2005 Urban Water Management Plan (UWMP) Guidebook and DWR 2005 UWMP Review Sheets were posted on the OWUET website and provided to urban water suppliers throughout the State. In addition, technical assistance was available on how to prepare a UWMP.

Three-Way Cooperative Agreement— Urban Council

DWR set up a three-way cooperative agreement among 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 (Urban Council) for a period of three years to provide technical assistance to urban water suppliers to implement the first four years of the CALFED incentive-driven Water Use Efficiency Program. The management and implementation of tasks in the agreement are closely coordinated with Reclamation's Mid-Pacific Region. This is a \$1.5 million, three-year activity, of which \$600,000 is funded by Reclamation.

The Urban Council has completed tasks identified in this cooperative agreement, including timely achievement of tasks outlined in the CALFED Water Use Efficiency Program Budget Change Proposal. The DWR and CALFED portions of the agreement were completed in 2005. In 2006, the remaining Reclamation portion was completed.

Agricultural Drainage Program

The Agricultural Drainage Program mission is to seek in-valley solutions to the surface and subsurface agricultural drainage water problems in the State and, in particular, the San Joaquin Valley, and to improve water quality in the San Joaquin River by promoting measures to reduce salinity and discharge of harmful elements.

Even though the San Joaquin Valley Drainage Implementation Program (SJV DIP) has been idle since 2003, DWR continues to implement many of its

recommendations through its Agricultural Drainage Program. DWR works in partnership with California universities, CALFED, Reclamation, resource conservation districts, watershed groups, water and drainage districts, and many other local, State, and federal entities. These activities include the following:

- developing, educating, and promoting the use of Integrated On-Farm and Regional Drainage Management Systems (IFDM) in the San Joaquin Valley;
- providing technical assistance and collaborating with water and drainage districts and local entities to reduce and control surface and subsurface agricultural drainage water;
- maintaining research and demonstration projects to develop drainage reuse systems, including the development of cost-effective, salt-tolerant crops (including energy crops), drainage treatment, disposal technologies, and salt separation and utilization;
- monitoring the quality and distribution of shallow groundwater levels in drainage-impaired areas of the San Joaquin Valley;
- promoting agricultural water and energy use efficiency programs in drainage-impaired lands to reduce the volume of surface and subsurface drainage water and expand regional water supplies;
- maintaining programs to help improve water quality on the San Joaquin River; and
- providing grants for control of agricultural drainage water and the reduction of its toxic elements, using Propositions 13, 50, 204, and DWR project fund monies.

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

Proposition 204 (Drainage Management Subaccount)

In 1996, Proposition 204, The Safe, Clean, Reliable Water Supply Act, authorized the transfer of approximately \$6.1 million from the State Water Resources Control Board (SWRCB) to the California Department of Food and Agriculture (CDFA). In 1997, CDFA, SWRCB, and DWR signed an MOU that established a process for utilizing the funds designated for agricultural drainage water management activities. In 1999, CDFA 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 the MOU. The goal of the program is to develop methods of using and concentrating salts and reducing trace element 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. DWR then submits the proposal packages to an oversight committee composed of representatives from DWR, CDFA, and SWRCB for final approval. Ultimately, DWR is responsible for preparing and managing contracts for the approved proposals. In 2006, no new projects were funded.

San Joaquin Valley Agricultural Drainage Program

This program consists of several activities, including drainage monitoring and evaluation, drainage treatment, integrated on-farm drainage management, drainage reduction and reuse, environmental services activities, and the San Joaquin River Water Quality Improvement Program.

Drainage Monitoring and Evaluation

Drainage monitoring and evaluation involves collecting and evaluating information on the quality, quantity, and movement of drainage water. In 2006, the following activities were conducted:

- Monitoring shallow groundwater levels and flows, and collecting water quality data for drainage water from Westside San Joaquin Valley tile drain sumps. In Kern County, groundwater levels are measured quarterly for approximately 200 wells.
- Preparing shallow groundwater and irrigation methods maps of drainage-impaired areas using drainage monitoring data in conjunction with land use and irrigation methods data;
- Providing assistance for the collection of groundwater, soil, and operational data for the integrated on-farm drainage management project at Red Rock Ranch in western Fresno County.
- Maintaining a website that includes information on drainage programs and activities, salinity and shallow groundwater maps, Proposition 204 grants, and links related to other agricultural drainage programs (<http://www.sjd.water.ca.gov/drainage/index.cfm>).

Drainage Treatment

Development of Membrane Treatment of Agricultural Drainage Water.

DWR continues to fund research under a contract with the University of California, Los Angeles (UCLA) (Department of Chemical Engineering) to explore the use of membrane treatment for desalting agricultural drainage water. Under this multiyear contract, UCLA is performing fundamental work evaluating the relationships between anti-scalant dose and membrane mineral salt scale prevention, evaluating the potential for enhanced crystallization of membrane concentrate by crystal seeding and pH control, and reducing membrane fouling due to scale formation. In 2006, UCLA released the report titled *Diagnostic characterization of gypsum scale formation and control in RO membrane desalination of brackish water*.

Grasslands Area Farmers: In-Valley Drainage Reuse Plan.

DWR continues to participate in a multiagency cooperative effort with Grasslands Area Farmers to comply with the objectives of the Central Valley Regional Water Quality Control Board's (CVRWQCB) *Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River*.

Agricultural Subsurface

Drainage: Salt Recovery, Purification, and Utilization.

DWR continues to support investigations of processes for concentrating and purifying drainage salts for marketing purposes. These activities are performed on two fronts. The first, with the University of California, Davis (UCD), involves recovering sodium sulfate from farm drainage water and using it in the reactive dye processing 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 developed a pilot salt separation unit for field testing. The second area of investigation involves pilot scale research at Red Rock Ranch using a solar still to demonstrate various ways of using solar energy to recover potable water from drainage water. In 2006, UCD released the report titled *Simulation of Agricultural Drainage Water Evaporation for the Concentration and Recovery of Salts*, one of the task orders under the UCD-DWR Interagency Agreement No. B81907.

Selenium Removal from Agricultural Subsurface Water.

DWR continues to participate in cooperative research with the University of California Salinity/Drainage Program (<http://www.waterresources.ucr.edu>). Activities include a multiyear study for mitigating selenium ecotoxic risk in agricultural drainage systems.

Integrated On-Farm Drainage Management.

DWR's San Joaquin District Integrated Drainage Management Section, created in 2001, provides technical assistance on IFDM systems through advisory, technical, and oversight committees. IFDM is a drainage management system based on sequential reuse of saline drainage water to irrigate crops of progressively increasing salt tolerance. Each sequential reuse reduces the volume of drainage water and increases the salt concentration. Drainage water too saline for irrigation can be applied to a variety of discharge points. The IFDM program funds, administers, and monitors contracts with State, federal, university, and local entities to learn more about IFDM systems. Findings indicate

that IFDM systems have less significant environmental impacts than other options and reduce the volume of drainage water. The program is investigating the use of accelerated evaporation systems (solar evaporators) for zero discharge systems and evaluating the feasibility of using salt-gradient solar pond systems as a way of removing salt and generating heat or electricity for agricultural use.

The IFDM program staff also:

- coordinate IFDM research activities and data collection with other agencies;
- assist growers and local agencies in planning and developing IFDM systems;
- work with the Westside Resources Conservation District and SWRCB to improve the design, management, and operation of IFDM systems;
- investigate new techniques for zero discharge, including enhanced evaporation techniques and extraction of salts from reused drainage water at a solar still facility at Red Rock Ranch;
- participate in joint investigations with Reclamation to determine the feasibility of nanofiltration as a pretreatment for desalination of subsurface drainage water using reverse osmosis technology and the feasibility of using a patented biotreatment process to remove selenium from agricultural subsurface drainage water;
- provide assistance to research projects for the development of crops, including research being performed at Red Rock Ranch by California State University, Fresno, to assess the suitability of various salt-tolerant forages and halophytes for the sequential reuse of drainage water, forage quality, productivity, and water use; and
- cooperate with the U.S. Department of Agriculture (USDA) 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.

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 Red Rock Ranch. The project will use a three-dimensional numerical model for fully integrated subsurface and surface flow and solute transport. DWR continues to monitor a series of observation wells at Red Rock Ranch and surrounding areas, collect water quality samples, and measure groundwater levels to provide data for the model. Other activities include the following:

- assisting growers, water and drainage districts, and regional entities, by providing information on salt-tolerant grasses and IFDM design specifications;
- assisting SWRCB to develop policies for the management of drainage water, salt, and selenium; and
- improving enhanced evaporation features of the pilot solar evaporator.

DWR continues to collect data on evaporation rates of subsurface drainage water using dyes, nozzles, screens, and other devices and materials. The purpose is to develop design specifications for evaporating and recovering salts from drainage water in the solar evaporator, to determine optimum weather parameters to operate it, and to study methods to minimize and control potential salt drift. A white paper that summarized

research results was well received during technical presentations for management of concentrate at the 2006 American Membrane Technology Association and at the Water Reuse Association annual conferences.

DWR continues to assist Reclamation with performing project tasks for the HydroGeoSphere project at Red Rock Ranch. To facilitate development of the conceptual model, DWR staff collected topographic survey data of Red Rock Ranch and the surrounding area to determine elevation points and to locate fixed works such as sumps, pumps, and wells. The model results from this case study will be useful for the formulation of optimal design and management guidelines for IFDM systems.

DWR is continuing research on *Prosopis alba* in cooperation with the Forestry Research Station at Catholic University of Santiago del Estero (CUSE) in Argentina. *Prosopis alba*, which originated from the plantations of CUSE, is a highly salt tolerant tree species that holds promise for ameliorating subsurface drainage problems in the soils of the western San Joaquin Valley. There is good potential for investment of the agriforestry component in an IFDM system. The lumber is coveted by the furniture industry and has a value of \$1,000 per ton of sawn lumber. Research and development is needed to perfect the process for the reliability of massive production of elite *Prosopis alba* for large-scale reforestation. The CUSE provided approximately 2,000 scarified *Prosopis alba* seeds to initiate plantation trials in the San Joaquin Valley. After inspection and quarantine in a USDA facility, the seeds were taken to a plant nursery to produce plants needed for trials at five locations within drainage-impaired lands.

DWR continues to collect operational data from IFDM projects at Red Rock Ranch and AndrewsAg for analysis of performance. DWR staff provided technical information and assistance on an agriforestry planting program in Kern County on farms with salinity and shallow groundwater problems.

Lysimeter Studies

Drainage funding continues to support in part the on-going lysimeter studies of shallow-rooted truck crops at the West Side Research and Extension Center, Five Points. The study uses two recently installed lysimeters, one used to monitor the evapotranspiration of a large field of grass, an irrigation scheduling reference crop, and another lysimeter located in a field that is rotated into various common locally grown shallow rooted crops. The most recent crop studied was garlic.

Detailed evapotranspiration studies of shallow-rooted crops will allow for the determination of seasonal crop water use, water supply thresholds, and ultimately the development of crop coefficients that will be transferable for use throughout West Side irrigated agriculture. Irrigating using these crop coefficients will allow growers to more efficiently apply irrigation water, reduce drainage, and enhance yields. Crops studied using the lysimeter in previous years included head lettuce, broccoli, and peppers. This funding is also allowing further study and refinement of a reference grass crop located in the San Joaquin Valley and its correlation to CIMIS-based grass reference estimates. The results will allow for better calibration of local CIMIS-disseminated ET_0 used by local agriculture to schedule crop irrigation.

The funding contributes to fulfilling the necessary work of annual identification of land use, irrigation methods used, GIS processing, and reports and visuals of West Side agriculture in drainage impaired areas.

Central Valley Salinity Management Program

In 2006, the Central Valley Water Board (CVRWQCB) and State Water Resources Control Board (SWRCB) initiated a comprehensive effort to address salinity problems in California's Central Valley and adopt long-term solutions that will lead to enhanced water quality and economic sustainability. The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is an effort to develop and implement a comprehensive salinity management program. The goal of CV-SALTS is to maintain a healthy environment and a good quality of life for all Californians by protecting our most essential and vulnerable resource: water.

DWR is involved in the process by providing expertise in salinity management through participation in the committees and activities of the Central Valley Salinity Policy Group. They provide guidance and technical support on specific issues (Technical Advisory Committee, Social and Economic Impact Study Committee, and Public Education and Outreach Committee) and overall direction and management (Steering Committee) for the development of a comprehensive Central Valley Salinity Management Plan. In 2006, the CVRWQCB issued a report titled *Salinity in the Central Valley*, which provides general background information on salinity issues in the Central Valley. The report describes some of the efforts that DWR is making in

salinity management with local, State, and federal partners.

Drainage Reduction and Reuse Program

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

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

Environmental Services

DWR's San Joaquin Division 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 management of drainage water. During 2006, the section continued to assist CVRWQCB in assessing the biological implications of proposed and implemented modifications to evaporation basins. Environmental investigations include the following:

- Red Rock Ranch research projects that involve required biological monitoring activities in accordance with waste discharge requirements;
- assisting landowners in locating information for preparing California Environmental Quality Act (CEQA) documentation necessary for

obtaining permits and authorization for implementing, monitoring, and operating drainage reduction, treatment, and disposal projects;

- mapping agriforestry and herbaceous plots in drainage-impacted areas, using Global Positioning System technology. This information is then imported into a Geographic Information System format linked to a database created to track key information associated with development of the vegetation plots;
- responding to information requests from landowners wanting a better understanding of the CEQA and the National Environmental Policy Act (NEPA) public review process, so they can more meaningfully comment on upcoming State and federal drainage related projects; and
- reviewing quarterly and annual environmental monitoring reports related to evaporation pond operation and investigation.

San Joaquin River Water Quality Improvement Program

In 2006, DWR's Agricultural Drainage Program, in collaboration with other agencies, continued to make significant efforts to improve water quality in the San Joaquin River to benefit the State and DWR water contractors. These efforts are aimed at controlling salinity and selenium discharges upstream of Vernalis. They include promoting on-farm and regional water management activities to reduce subsurface drainage, real-time water quality management to maximize the assimilative capacity of the San Joaquin River, and efforts to time wetlands discharges when there is assimilative capacity in the San Joaquin River.

On-Farm and Regional Drainage Management Activities

Drainage management activities involving source control and drainage reuse have proven to be effective in reducing salt loads in the San Joaquin River.

This is demonstrated by the efforts of the Grasslands Area Farmers on the Grasslands Bypass Project (GBP). Since the implementation of the GBP, drainage discharges have decreased from 58,000 af to about 30,000 af, and salt loads have been reduced from 210,000 tons to 117,000 tons. The reductions are possible because DWR funded, through Proposition 13, an important component of the GBP, the San Joaquin River Improvement Project. It consists of about 4,000 acres of lands dedicated for reuse of subsurface drainage water generated by Grasslands Area Farmers to grow salt-tolerant crops. DWR continues providing technical assistance on improving and developing this important part of the GBP project.

DWR collaborates with many entities in efforts proposed to control, reduce, or eliminate drainage water discharges into the San Joaquin River. Such efforts include the West Side Regional Plan, Reclamation's San Luis Drainage Feature Reevaluation to provide drainage service to the San Luis Unit of the Central Valley Project (CVP), and the Integrated On-Farm Drainage Management Program maintained by DWR and collaborating agencies.

DWR collaborated with the San Joaquin River Water Quality Management Group (SJRWQMG) to develop a paper with ideas, information, and concepts to assist policy makers with deciding what actions will be

implemented, and developing strategies to meet water quality objectives in the San Joaquin River (specifically, salinity at Vernalis and dissolved oxygen [DO] in the Stockton Deep Water Ship Channel [DWSC]). The following is a summary of the recommendations:

Salinity

- Fully implement the West Side Regional Drainage Plan.
- Further evaluate and pursue wetland drainage management actions to mitigate impacts of February through April drainage releases.
- Develop a real-time water quality management coordination group involving Lower San Joaquin River (LSJR) tributaries, drainers, and DWR to coordinate reservoir release and SWP/CVP operations (Head of Old River barrier and New Melones operations) to realize opportunities to improve water quality and increase the utility of stored water releases.

Dissolved Oxygen

- Pursue additional use of the Head of Old River barrier to augment flows in the LSJR and the DWSC, consistent with the need to maintain adequate in-Delta water quality, water level, and fishery protection.
- Support continued implementation of the City of Stockton's ammonia removal project at the Stockton Wastewater Treatment Plant.
- Install the demonstration aeration project in the DWSC and continue the newly implemented additional upstream monitoring efforts to understand DO load-producing discharges.
- Evaluate potential additional actions necessary for DO compliance at the

DWSC, following implementation and analysis of the actions listed here.

- Establish a forum to evaluate ongoing changes in the water quality baseline and suggest further management actions to continue progress on water quality improvement.

In 2006, the SJRWQMG merged with the San Joaquin River Management Program (SJRMPP) under the Water Quality Subcommittee. The mission of the SJRMPP is to coordinate individual actions of participating agencies that will collectively improve water quality on the lower San Joaquin River. These actions include but are not limited to those identified by the SJRWQMG. The agencies also work to identify and assist in implementing actions that will achieve long-term water quality improvement as well as monitor baseline changes affecting water quality improvement. Quarterly meetings were held in 2006.

Real-Time Water Quality Monitoring Program

The Real-time Water Quality Monitoring Program (RTWQMP) provides information on existing water quality conditions and forecasts flow and water quality conditions to San Joaquin River water managers and stakeholders. The information provided is important for improving the management and coordination of reservoir releases, agricultural and wetland drainage flows, and eastside tributary releases to achieve water quality objectives at the San Joaquin River compliance points. In the early stages, the RTWQMP was funded by Reclamation and then by CALFED. Currently, DWR has assumed responsibility for funding most of the RTWQMP for the San Joaquin River.

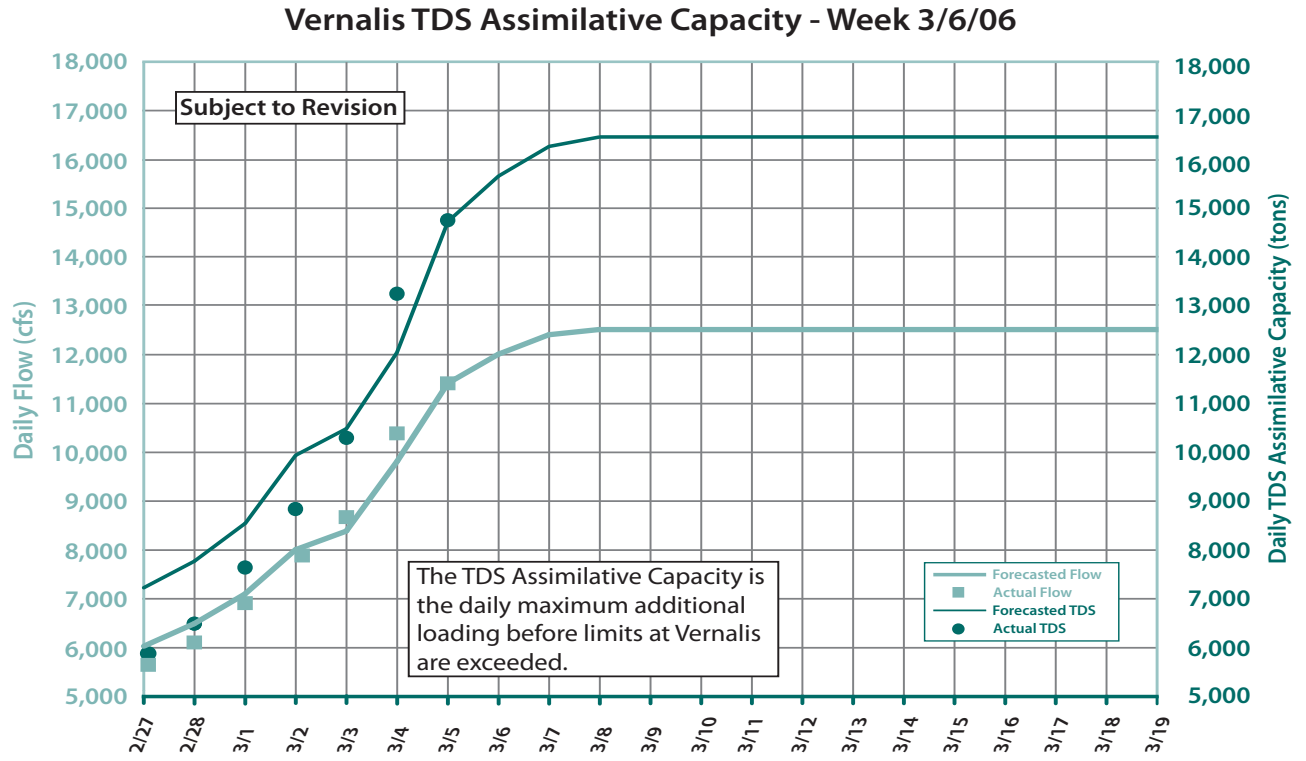


Figure 5-1. San Joaquin River Input-Output Day Modeling Forecasts Example

Ongoing program development is in progress through coordination with other State and federal agencies and local entities.

One important activity of this program is forecasting flow and salinity conditions on the San Joaquin River, so decision makers can take advantage of assimilative capacity of the river when available. For this purpose, DWR collects data from the network of stations and inputs it into the San Joaquin River Input-Output Day (SJRIODAY) model. The model forecasts salinity and flow conditions on the river near Vernalis and other upstream stations biweekly. DWR publishes the information weekly on its website. Figure 5-1 shows an example of the information displayed.

Wetlands Study

As per CVRWQCB data, wetlands discharges contributed about 9 percent of the total salt load in the San Joaquin River at Vernalis. The contribution is likely to be higher today, as additional water supply and land are acquired for wetlands wildlife refuges through Central Valley Project Improvement Act, Environmental Water Account, and other programs. The timing of wetland releases with assimilative capacity of the San Joaquin River could result in significant water quality improvements. However, little has been done in this regard, due to concerns over disrupting existing, proven wetland management practices.

Research is ongoing to determine whether improved wetlands management practices can be achieved for the benefit of both wildlife and San Joaquin River water quality. Current research has focused on real-time water quality monitoring and adaptive management. The research goal is to coordinate the timing of wetland discharges when assimilative capacity is available. In addition to the CALFED-funded study, *Effect of Delayed Wetland Drawdown on Moist Soil Plants*, DWR is collaborating with the Department of Fish and Game (DFG) and private wetland managers in a study to assess other aspects of delayed wetland drawdown. The studies on delayed wetland drawdown will be complemented by a study funded by DWR under Proposition 204, the Drainage Management Subaccount.

DWR's San Joaquin District Environmental Services Section, as a collaborative effort with the DFG and other entities, is collecting biological data in seasonal San Joaquin Basin wetlands within the Grasslands Ecological Area. Information collected will be used in determining management actions that will create the opportunity for blending saline, west-side and agricultural return flows with high quality east-side reservoir releases into the San Joaquin River. The objective is to improve compliance with State water quality objectives while protecting the integrity of the wetland ecosystem.

Wetland managers typically begin draining managed wetlands (a primary source of saline discharge) in mid- to late-March at the same time farmers need relatively high quality water for irrigation of salt-sensitive crops. However, modifying water release to a later drawdown date (mid- to late-April during the San Joaquin River's

assimilative capacity) could be detrimental to the health of the wetland ecosystem. Timing and duration of drawdown is planned for optimum germination and seed production of swamp timothy (*Crypsis schoenoides*), a plant that is widely managed for and preferentially selected by some waterfowl and shorebirds.

Swamp timothy seed production is being estimated through soil core sampling. Six paired wetland sites are being studied to compare the potential changes in wetland vegetation potentially associated with a late drawdown date. Samples will be taken from fall 2006 through spring 2009.

During 2006, a core sampler was designed and tested. Preliminary core sampling was conducted in the spring to assess the sampler design and time required to efficiently sample the ponds. Meetings were conducted with staff from the Grassland Water District and DFG. Scientific sampling began in fall 2006.

Environmental Impact Documents Review

DWR's Division of Planning and Local Assistance (DPLA) Environmental Review Section screens State Clearinghouse documents and circulates SWP-related materials for review by DWR's four districts, DPLA, Division of Operations and Maintenance (O&M), 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 2006, 4,599 documents were screened by the Environmental Review Section; 1,296 were referred for detailed review. Of these referrals, 886 were made when the projects were at the Notice of Preparation or Early Consultation stage and 410 assignments were for negative declarations, environmental impact reports, and NEPA environmental assessments. O&M received 169 formal referrals and five for information. The State Water Project Analysis Office (SWPAO) received 11 formal referrals and 14 for information. In addition to the information referrals made to O&M and SWPAO, 851 other information referrals were made to other DWR staff.

DWR comments submitted to the CEQA or NEPA lead agencies addressed a number of issues, including runoff from proposed developments; safety and water supply; encroachment on physical facilities; impacts to cross drainage facilities; and proposed plans to acquire, convey, sell, and transfer SWP water. During 2006, 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 were not tracked by the Environmental Review Section. During 2006, seven 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 2006, they have a potential for causing future concerns.

During 2006, the Environmental Review Section tracked documents related to development along the California Aqueduct, levee encroachment, water transfers and other water supply issues, wastewater treatment, quarry development, and electrical transmission lines near SWP facilities.

Several factors contributed to an overall 23 percent increase in referrals, while the actual number of documents processed was reduced by about 2.5 percent. One of the factors was a request from the Reclamation Board to supply their staff with documents of concern that were not received from the State Clearinghouse. This request resulted in an additional 80 documents assigned as formal or information referrals over 2005 levels.

Another factor was increased referrals (about 18 percent) to O&M and SWPAO over 2005 levels. This can be attributed to a continued increase in development near SWP facilities, including the East Branch, East Branch Extension, and the West and Coastal Branches of the California Aqueduct.

Water Conservation Bond Laws

To assist local agencies in obtaining financing for their water management programs, California voters approved seven bond laws between 1984 and 2006 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.
- The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84), approved by the voters in the November 7, 2006, General Election, authorized \$1 billion to continue the Integrated Regional Water Management Program.

Under these programs, grants and construction loans 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.

All loan and grant funds for the Groundwater Recharge, Infrastructure Rehabilitation, Urban Water Conservation, Groundwater Storage and Interim Reliable Water Supply programs have been obligated.

Proposition 50

In 2005, DWR, in collaboration with SWRCB, completed the first funding cycle for the Integrated Regional Water Management program. In 2006, DWR awarded approximately \$12.6 million in planning grants to 28 agencies.

Proposition 84

Staff has begun preliminary implementation activities to launch this program.

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:

Local Water Supply

- new conveyance and/or storage facilities;
- groundwater extraction facilities, well-field development; and
- 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.

Water Conservation Bond Laws– Projects and Funding

Table 5-1 totals the number of projects and funds committed for each of the water bond laws through December 2006.

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

Bond Law	Type of Project	Number of Projects ^a	Funding ^a (millions of dollars)	
Clean Water Bond Law of 1984	Water Conservation	7	9.74	
Water Conservation and Water Quality Bond Law of 1986	Water Conservation	24	41.60	
	Groundwater Recharge	10	28.04	
	<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	23	23.48	
	<i>Subtotal</i>	30	52.58	
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	28.30	
	Infrastructure Rehabilitation	42	56.40	
	Groundwater Storage	41	180.00	
	Interim Reliable Water Supply	13	169.31	
	<i>Subtotal</i>	187	463.19	
Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002	Local Groundwater Assistance	84	18.40	
	Integrated Regional Water Management	29	19.49	
	<i>Subtotal</i>	113	37.89	
		All Water Conservation	107	104.96
		All Groundwater Recharge	47	102.74
		All Local Water Supply	27	32.48
		All Infrastructure Rehabilitation	42	56.40
		All Groundwater Storage	41	180.00
		All Interim Reliable Water Supply	13	169.31
		All Local Groundwater Assistance	84	18.40
		All Integrated Regional Water Management	29	19.49
		Total of All Projects	390	683.78

^a Construction and feasibility study loan and grant commitments as of December 31, 2006.



Chapter 6 Legislation and Litigation

Detail on the California State Capitol Building, Sacramento, California.

Significant Events in 2006

Assembly Bill 140 placed Proposition 1E on the ballot, authorizing the sale of \$4.09 billion in general obligation bonds for financing urgent repairs and improvements to the State's flood control system. This bond measure, which voters approved, establishes a comprehensive financing plan to maintain and improve the State's levee and flood control system and provide for safe, reliable water supplies.

Through the pumping operations of the State Water Project (SWP), unavoidable harm occurs to a small percentage of several fish species. In a case filed in October (*Watershed Enforcers, a project of California Sportfishing Protection Alliance, a non-profit corporation v. California Department of Water Resources, Lester Snow, Ralph Torres, David Starks, David Duval and L.D. Elmore*), Watershed Enforcers asserts that the Department of Water Resources (DWR) lacks authority for the losses of the endangered delta smelt and winter- and spring-run salmon. DWR believes that agreements with the Department of Fish and Game (DFG) provide for SWP compliance with the California Endangered Species Act (CESA) and the federal Endangered Species Act (ESA) allowing "incidental take" of these fish. For the past 12 years, DWR has been operating the SWP pursuant to these agreements and actively addressing and mitigating environmental impacts, including incidental take.

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

The Department of Water Resources (DWR) monitors State and federal legislation that affects the management of the State Water Project (SWP). Legislative bill tracking involves reviewing legislation at its introduction, evaluating amendments in State Assembly and Senate committee hearings, and monitoring its enactment into law. The DWR Assistant Director for Legislation monitors proposed legislation. The Office of the Chief Counsel tracks State and federal litigation that impacts management of the SWP. The DWR Chief Counsel also manages legal cases that involve SWP operations.

Legislation

State Legislation

AB 32 (Nuñez) California Global Warming Solutions Act of 2006 (Chapter 488, Statutes of 2006)

This bill enacts the California Global Warming Solutions Act of 2006, which creates a statewide greenhouse gas (GHG) emission limit that would reduce emissions 25 percent by 2020. The bill requires all State agencies to consider and implement GHG emission reduction strategies and establishes a mandatory reporting system to track and monitor GHG emission levels.

AB 140 (Nuñez) Disaster Preparedness and Flood Prevention Bond Act of 2006 (Chapter 33, Statutes of 2006)

This bill establishes a comprehensive financing plan to maintain and improve the State's levee and flood control system and provide for safe, reliable water supplies. The bill placed a measure on the November 2006 ballot (Proposition 1E), which voters subsequently approved, to authorize the sale of \$4.09 billion in general obligation bonds for financing urgent repairs and improvements to the State's flood control system including:

- levee evaluation, repair, and Delta levee maintenance (\$3 billion);

- flood control subventions (\$500 million);
- flood protection corridor, bypasses, and mapping (\$290 million); and
- stormwater flood management (\$300 million).

AB 142 (Nuñez) Flood Control: Levee Repair and Flood Control Systems (Chapter 34, Statutes of 2006)

This bill appropriates \$500 million from the General Fund to DWR for levee evaluation and repair and flood control system improvements. The bill also requires that this appropriation be used to fund levee repairs for critical erosion sites identified in Governor Schwarzenegger's emergency declaration (Executive Order S-01-06).

AB 798 (Wolk) Delta Levee Maintenance (Chapter 548, Statutes of 2006)

This bill extends the Delta Levee Maintenance Subvention Program to July 1, 2010, and requires DWR to identify levees that are at risk of failure based on a specified evaluation of Delta levees, and to make, by January 1, 2008, funding priority recommendations to the Legislature and Governor for levee maintenance or improvement projects.

AB 1039 (Nuñez) Government, Environment, Bonds, Transportation (Chapter 31, Statutes of 2006)

This bill exempts specified levee, highway, and bridge seismic retrofit projects from the California Environmental Quality Act (CEQA). In addition, this bill requires the Secretary for Resources to convene agencies with environmental and water quality permit authority over flood protection projects to coordinate the issue of unified, consolidated permits for specified “urgent levee repairs” funded by Proposition 1E. The exemption remains in effect until July 1, 2016.

SB 1574 (Kuehl) Sacramento-San Joaquin Delta (Chapter 535, Statutes of 2006)

This bill provides a statutory framework for implementing the Delta Vision Process by requiring the Secretary for Resources to convene a committee to develop and submit to the Governor and the Legislature, on or before December 31, 2008, a “Blueprint for a Sustainable Sacramento-San Joaquin Delta” with specified components, including ecosystem functions, land use and land use patterns, transportation issues, utility uses, water supply uses, recreation uses, and flood management strategies.

Federal Legislation

There was no significant federal legislation affecting management of the SWP in 2006.

Litigation

As of December 31, 2006, DWR was involved in, or closely monitored, a number of court cases and other actions related to the management of the SWP.

Sacramento-San Joaquin Delta

Delta Smelt

Previously, a coalition of environmental groups challenged the biological opinion issued by the U.S. Fish and Wildlife Service (USFWS). The USFWS biological opinion found that SWP and Central Valley Project (CVP) operations did not jeopardize the continued existence of the delta smelt. (*Natural Resources Defense Council, et al. v. Gale A. Norton, et al.* (U.S. District Court for the Eastern District of California, 2005, Case No. 05 CV 01207 OWW (LJO)).) In the new action of *Natural Resources Defense Council, et al. v. Kempthorne, et al.*, the plaintiffs claim the USFWS opinion fails to adequately consider or address the effects on delta smelt provided in soon-to-be-renewed long-term water service contracts. The plaintiffs also claim the opinion improperly relies on uncertain future mitigation measures and the adaptive management process without adequate evidence that the measures will be undertaken and be effective. The case seeks to have the U.S. Department of the Interior and USFWS withdraw the opinion and not take any action in reliance upon it.

DWR filed a motion to intervene to protect its interests in the biological opinion relevant to the operations of the SWP. The court granted this motion on January 5, 2006. The case is being heard in Judge Wanger’s Court in the Eastern District Federal Court. In July 2006, the plaintiffs made a proposal for settlement. The matter is still under consideration.

In another case, filed October 4, 2006, Watershed Enforcers asserted that DWR lacks authority for the fish losses of a small percentage of several fish listed as endangered species which occurs through the operation of the SWP.

(Watershed Enforcers, a project of California Sportfishing Protection Alliance, a non-profit corporation v. California Department of Water Resources, Lester Snow, Ralph Torres, David Starks, David Duval and L.D. Elmore (Alameda County Superior Court, Case No. RG06292124).) Through the pumping operations of the SWP, unavoidable harm occurs to a small percentage of several fish species. Watershed Enforcers asserts that DWR lacks authority for the losses, also known as “take,” of the endangered delta smelt and winter- and spring-run salmon. DWR believes that a number of agreements/plans starting as early as 1986 with the Department of Fish and Game (DFG) provide for SWP compliance with the California Endangered Species Act (CESA) and the federal Endangered Species Act (ESA) allowing “incidental take” of these fish. For the past 12 years, DWR has been operating the SWP while actively addressing and mitigating environmental impacts, including incidental take.

State Water Resources Control Board Hearing

In February 2005, DWR and the Bureau of Reclamation (Reclamation) petitioned the State Water Resources Control Board (SWRCB). This petition requested a temporary change and delay of the effective date to implement the southern Delta agricultural water quality objective contained in SWRCB’s Decision 1641 (D-1641). This objective was scheduled to begin on April 1, 2005. A second petition was submitted to request a change of the implementation date to April 1, 2008.

(This date matches the date the southern Delta permanent gates are scheduled for operation.) SWRCB denied the first petition. No action was taken on the second petition.

On May 3, 2005, SWRCB notified DWR and Reclamation of its intention to issue a cease and desist order. This requested order sought to stop a potential violation of the southern Delta agricultural water quality condition objective of 0.7 electrical conductivity (EC) by DWR and Reclamation. This water quality objective was scheduled to be in effect annually, from April 1 through August 31, beginning in 2005. SWRCB D-1641 conditioned the operation of the SWP and CVP with implementation of this agricultural objective. DWR and Reclamation requested a hearing on the cease and desist order. In October and November 2005, DWR and Reclamation presented evidence and argued that the cease and desist order should not be issued.

On February 15, 2006, the SWRCB issued a cease and desist order requiring DWR and Reclamation to take corrective actions to obviate the threat of noncompliance with conditions in D-1641 that implement the 0.7 EC water quality requirement by constructing the permanent gates or equivalent measures by July 1, 2009. The order also requires DWR and Reclamation to report to SWRCB if they exceed or threaten to exceed the water quality requirements and to report the reasons for the exceedance. SWRCB will then determine if enforcement actions are necessary. The cease and desist order also allows Joint Point of Diversion operation if DWR and Reclamation comply with the conditions of their water rights and the SWRCB’s order.

SWRCB was asked to reconsider its cease and desist order. However, the board did not take any action on this request, and the cease and desist order became a final order on May 16, 2006. On June 15, 2006, Reclamation and the State and federal water contractors filed a complaint in Federal District Court against the SWRCB challenging the cease and desist order. DWR and SWRCB agreed to toll the date for DWR to file to allow time for the parties to negotiate a settlement of the issues. Reclamation and the water contractors have also entered into tolling agreements pending negotiations. Negotiations between the parties resulted in a letter from the SWRCB Executive Director that clarifies the cease and desist order and extends DWR's time to file an action against the order to May 1, 2007.

Decision 1641

The SWRCB adopted D-1641 in 2000. D-1641 implements certain water quality objectives for the Sacramento-San Joaquin Bay-Delta Estuary on a long-term basis. These objectives were published in the May 1995 *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan)*. Eleven different lawsuits were filed and coordinated in this action, which challenged D-1641 on three grounds: (1) whether D-1641 complied with CEQA; (2) whether the changes in D-1641 injured certain Delta water users; and (3) whether D-1641 was consistent with area of origin laws. (*Coordinated Special Proceedings, State Water Resources Control Board Cases, Court of Appeals, Third District, Case No. C044714 (Sacramento County Superior Court; Case No. JC 4118)*.) The Sacramento County Superior Court upheld D-1641 in most respects except for finding that D-1641 improperly limited the place of use for Westlands Water District, and it

improperly implemented the San Joaquin River flow objectives under the San Joaquin River Agreement.

The Court of Appeal found that the SWRCB had complied with CEQA, such that D-1641 did not injure Delta water users and that it was consistent with area of origin law. This decision affirmed the trial court's ruling that the SWRCB improperly implemented the flow objectives on the San Joaquin River. The California Supreme Court denied all Petitions for Review.

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. The ROD established a number of program measures to help resolve conflicts over the use of water in the Delta. Initially, three complaints were filed in State courts: *Laub v. Davis, et al.* (California Farm Bureau Federation (Farm Bureau) and three individuals); *Regional Council of Rural Counties v. State, et al.* (Regional Council of Rural Counties (RCRC) and South and Central Delta); and *Municipal Water District of Orange County v. Resources Agency*. In 2004, the parties to the third suit settled, based on an agreement that emphasizes the importance of the CALFED Science Program and provides notice to the Water District of Orange County about CALFED stakeholder participation opportunities. The other two cases were coordinated in the Sacramento County Superior Court.

The remaining parties claimed the CALFED programmatic Environmental Impact Statement/Environmental Impact Report (EIS/EIR) violated CEQA, the National Environmental Policy Act (NEPA), and the federal Administrative Procedure Act.

The Superior Court found in favor of the plaintiffs. The State agencies appealed, and oral argument was held on August 30, 2005. The two cases were consolidated on appeal, and the Appellate Court reversed the lower court (*In Re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, Court of Appeals, Third District, Consolidated Case Nos. C044267 and C044577).

The California Supreme Court agreed to hear the case. DWR argued that CEQA does not require a lead agency to analyze a suggested alternative to its proposed project if the proposal would fail to achieve the project's fundamental purpose. Also, the level of detail required for analysis of sources of water for a proposed project is tied to the nature of the project being approved.

The issue of whether the federal agencies violated NEPA is pending in federal district court.

Term 91

Two lawsuits were filed in 2004 that challenged SWRCB Order WR 2001-22. This decision approved an application by El Dorado Irrigation District to divert water for urban purposes (*El Dorado Irrigation District v. State Water Resources Control Board*; California Court of Appeal, Third District, Case No. C046211). (See also *El Dorado Irrigation District v. State Water Resources Control Board*; Sacramento County Superior Court, Case No. 01CS01319 and consolidated cases, filed June 18, 2002.) 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. Another lawsuit was filed by an environmental group,

the League to Save Sierra Lakes, which alleged CEQA violations. The trial court issued its final decision in December 2003 finding that Term 91 was improperly applied to the El Dorado Irrigation District. SWRCB appealed the decision. In 2006, the Third District Court of Appeal upheld the decision of the trial court finding that although Term 91 is a proper term to apply to protect SWP stored water, in this case the board abused its discretion in imposing Term 91 on El Dorado's permit. By imposing Term 91 on El Dorado, SWRCB allowed those with rights junior to El Dorado to divert water when El Dorado could not.

Hydropower

Hyatt-Thermalito

On April 29, 2005, 14 of the 29 State Water Contractors brought suit against DWR. These contractors claimed the method used by DWR to allocate costs and revenue of its Hyatt and Thermalito Power Plants (Hyatt-Thermalito) at Lake Oroville violated the terms of long-term water supply contracts. (*Alameda County Flood Control & Water Conservation District, Zone 7 et al. v. State of California Department of Water Resources* (Sacramento County Superior Court, Case No. 05ASO1775).) In December 2005, entities representing 13 other contractors intervened in the lawsuit in opposition to the claims of the plaintiffs and in support of DWR's method of allocating costs and revenue. If the water contractors who filed the lawsuit are ultimately successful, this could result in contractors requiring the most pumping for delivery of their State Water Project water to pay more to DWR, while those contractors requiring less pumping would pay less.

The plaintiffs' motion to file an amended complaint adding causes of action for: (1) making the plaintiffs whole; (2) alleging defendants could not profit at the plaintiffs' expense; (3) breaching the agreement of good faith and fair dealing implicit with every contract; and (4) contending defendants received money which should have been paid to the plaintiffs, was granted on September 14, 2006. The plaintiffs have also expanded the list of desired remedies to include a court ordered trust, injunction, equitable lien, and attorney fees. In addition, the amended complaint joined two other State water contractors.

After a hearing on October 13, 2006, the court granted DWR's motion to bifurcate the case into two separate phases, i.e., liability and damages. The court has agreed to entertain motions for protective orders seeking to stay discovery on damages until the conclusion of the liability phase.

Other Cases

Several cases pending resolution may affect SWP operations and costs. The first case involves a Federal Energy Regulatory Commission (FERC) ruling that the cost of certain Pacific Gas & Electric Company (PG&E) transmission facilities should be integrated into gridwide charges to California Independent System Operator (CAISO) customers, including DWR. DWR has appealed these charges on the basis that the facilities primarily benefit PG&E—not the grid as a whole—and the cost allocation mechanism should reflect this fact.

The California Department of Water Resources v. Federal Energy Regulatory Commission (U.S. Court of Appeals for the

Ninth Circuit (No. 04-73577)) case involved a challenge to the manner in which the costs for the transfer of transmission facilities are allocated. FERC approved the transfer of the transmission facilities of Anaheim and Riverside to CAISO. As part of this transfer, costs for the facilities are spread to the users of the grid, including DWR. DWR is contesting the cost allocation mechanism in a current FERC proceeding. This appeal preserved the ability of DWR to contest costs in the administrative cost allocation proceeding. The appeal is stayed until the PG&E transmission case (No. 04-76131) is decided.

The California Department of Water Resources v. Federal Energy Regulatory Commission (U.S. Court of Appeals for the Ninth Circuit (No. 05-74488)) case involved a challenge to the FERC decision concerning transmission access charge methodology. This charge is imposed on users of the CAISO grid to recover the embedded costs of the grid. DWR has appealed these charges, primarily on the basis that FERC failed to use a time-of-use methodology.

Colorado River

Two lawsuits related to the Colorado River have potential implications for California water supply.

The first lawsuit is *Imperial Irrigation District v. All Interested Persons* and eight related cases (Judicial Council Coordination Proceeding No. 4353, Sacramento County Superior Court). This lawsuit is a series of nine claims, which have been coordinated into a single proceeding, before the Sacramento County Superior Court. These lawsuits

challenge the Quantification Settlement Agreement (QSA) and associated actions taken to implement the QSA. The QSA is a collection of 38 agreements that resolve disputes among water users in Southern California regarding their rights to California's shrinking share of Colorado River water. The QSA facilitates California's plan to reduce its use by settling disputes regarding priority and use. For example: (1) transfer of conserved agricultural water from the Imperial Irrigation District to San Diego County Water Agency for urban uses; (2) establishing water budgets for the parties; and (3) providing for the mitigation of environmental impacts and the restoration of the Salton Sea. Proceedings in the Superior Court have been stayed, pending oral argument before the Third District Court of Appeal, on Imperial County's petition for writ of mandate.

Consejo de Desarrollo Economico de Mexicali, A.C. et al. v. Norton, et al. (U.S. District Court, District of Nevada, Las Vegas (No. CV-S-05-0870-KJD-PAL)) is a challenge to Reclamation lining the All American Canal. The All American Canal lining is a water conservation project that is an integral part of the QSA. The State, through DWR, is contributing \$220 million to the canal lining project. Mexican business leaders and California environmental groups filed a lawsuit that challenges the actions of the Secretary of the Interior and the Commissioner of the Bureau of Reclamation to authorize the All American Canal improvement project. This complaint seeks declaratory and injunctive relief. Claiming the conservation project will mean the loss of 100,000 af of recharge water per year, the plaintiffs assert a deprivation of water rights, including claims based on constitutional violations, Mexican federal law, and

others. The plaintiffs also challenge the action based on violations of NEPA, the Administrative Procedure Act, the ESA, the Migratory Bird Treaty Act, and environmental mitigation obligations under the authorizing legislation (San Luis Rey Act (P.L. 100-675)) for the conservation project.

On February 9, 2006, the court dismissed all but one of the plaintiffs' causes of action, leaving only the claim challenging federal NEPA compliance. On February 23, 2006, plaintiffs filed a First Amended Complaint. The court's ruling on the defendants' subsequent Summary Judgment motion held that NEPA does not require a supplemental EIS on the canal lining project because the impacts in Mexico are beyond agency control, and the impacts in the United States are too speculative. The case was appealed to the Ninth Circuit, which on August 25, 2006, issued an injunction halting the project pending a court hearing scheduled for December 6, 2006.

While the matter was under advisement before the Ninth Circuit, new federal legislation was passed requiring the canal lining to proceed without further delay. The federal defendants filed a motion to dissolve the injunction and dismiss the appeal as moot as to half of the remaining claims.

Castaic Lake Water Agency

California Water Impact Network (CWIN) and the Friends of the Santa Clara River, both nonprofit environmental organizations, filed a Petition for Writ of Mandate against Castaic Lake Water Agency (Castaic Lake). This Petition for Writ of Mandate challenged Castaic

Lake's approval of a project to store up to 24,000 af of allocated 2002 Table A water, in the Semitropic Groundwater Storage Program, before the end of 2004. The plaintiffs alleged the approval of the project violated CEQA, the Urban Water Management Planning Act, and the Public Trust Doctrine. The plaintiffs allege that DWR should have been the lead agency. The CEQA process followed by DWR was upheld by the lower court. This matter is on appeal. The Friends of the Santa Clara River also filed a Reverse Validation Action in Sacramento County, which seeks to set aside the agreement. This case is stayed pending the resolution of the CEQA case.

CWIN and the Planning and Conservation League (PCL) challenged the new EIR. This EIR was certified by Castaic Lake for the permanent transfer of 41,000 af of SWP Table A water to Castaic Lake from Kern County Water Agency (Kern) member unit, Wheeler Ridge-Maricopa Water District. These lawsuits were filed on January 24 and January 26, 2005. The original EIR, which was certified by Castaic Lake for this transaction, was successfully challenged in *Friends of the Santa Clara River v. Castaic Lake* on the grounds that it tiered off the decertified Monterey Agreement EIR. In response to the Los Angeles Superior Court's Order on remand in that case, Castaic Lake decertified its original EIR on December 27, 2002, and issued a Notice of Preparation for a new EIR on January 22, 2003. The new EIR, which does not tier off any EIR for the Monterey Agreement, was certified on December 23, 2004. DWR entered into contract amendments with both Castaic Lake and Kern, which implemented this transfer in 1999. DWR has been basing its SWP allocations to Castaic Lake on the increased Table A amount.

DWR is primarily concerned with the CWIN and PCL arguments: (1) DWR, and not Castaic Lake, should be the lead agency under CEQA for this transaction and (2) the EIR should tier off of the not-yet-complete Monterey Plus EIR. Other issues raised by CWIN and PCL are that the EIR is inadequate under CEQA for a number of reasons, including violation of the Urban Water Management Planning Act and the Public Trust Doctrine, and it represents a prejudicial abuse of discretion.

Since these two cases were consolidated in May 2005, no further action has occurred.

Water Code Sections 1810–1811

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 that 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 charges 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" mean the reasonable portion of costs associated with material acquisition for the correction of irreparable wear or other deterioration of conveyance facility parts that have an anticipated life that 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 that 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.

Water Code Sections 1812–1814

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 (NEPA) (Title 42 United States Code Sections 4321–4347 [1970]) and the California Environmental Quality Act (CEQA) (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 (EIS), including a discussion of mitigation measures and alternatives, for actions significantly affecting environmental quality.

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

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 of Water Resources 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 EIS, 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;

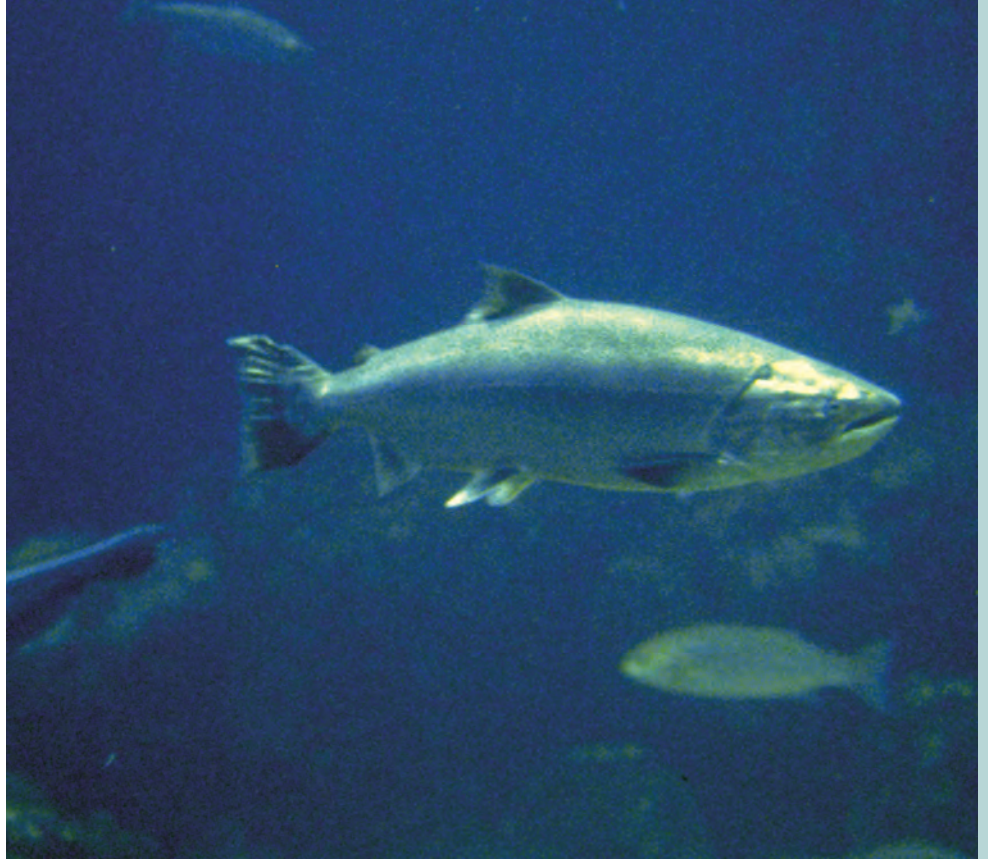
Environmental Review Acts (*continued*)

- 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

The Environmental Water Account helps to achieve fish protection.

Significant Events in 2006

The *State Water Project Delivery Reliability Report–2005* was finalized in June 2006, and the next report in this biennial series is expected in 2008.

The Department of Water Resources (DWR) completed the *2006 Supplemental Report to 2004 Draft State Feasibility Study In-Delta Storage Project*.

DWR and the Bureau of Reclamation (Reclamation) continued with the feasibility study and National Environmental Policy Act/California Environmental Quality Act (NEPA/CEQA) process for four surface storage investigations.

DWR certified the final Environmental Impact Report (EIR) for the South Delta Improvements Program (SDIP) in December 2006.

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.

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

Developing new water supplies and storage projects that are economically, environmentally, and technically sound, while satisfying institutional requirements and political concerns, presents significant challenges. Many concerns center on possible adverse effects that additional storage and delivery facilities may have locally and on the Sacramento-San Joaquin Delta. In the SWP conveyance system, the Delta is the critical link between water supplies in the Sacramento Valley and deliveries to the rest of the Central Valley and Southern California.

DWR is working with the federal government, local agencies, and public interest stakeholder groups to ensure water supply reliability now and into the future. To meet SWP water contractors' needs for reliable, sufficient water supplies, DWR is engaged in planning, developing, and providing local assistance with the objective of augmenting future SWP water supplies.

Supply Development and Reliability

Some of the activities DWR is engaged in to augment future SWP supplies include the following:

- implementing programs to transfer water, such as the Dry Year Water Purchase Program and the Environmental Water Account (EWA),

and facilitating transfers between SWP long-term contractors and other agencies, including Central Valley Project (CVP) contractors;

- assisting in the development and implementation of local and regional conjunctive use programs in the Sacramento Valley;
- constructing a groundwater monitoring network and a subsidence monitoring network to detect potential impacts caused by pumping associated with groundwater substitution transfers;
- managing the Feather River watershed above Lake Oroville to reduce sedimentation in the lake to preserve storage capacity; and
- investigating and evaluating storage projects (see CALFED Bay-Delta Program section below).

Water Conveyance Through the SWP

DWR encourages and facilitates temporary transfers of water using SWP conveyance facilities for long-term SWP water contractors and various other agencies to help meet local, State, and environmental water supply needs. As a practical matter, SWP facilities are often needed to convey transfer water from the existing place of use to the place of use of the transferee. State law requires DWR to make unused SWP capacity available for transfers upon payment of fair compensation, provided that: (1) no legal user of water would be injured; (2) there would be no unreasonable

effect on fish, wildlife, or other instream beneficial uses; and (3) there would be no unreasonable effect on the overall economy or the environment of the county from which the water is being transferred (California Water Code (CWC) Section 1810). Water transfers can involve water transfers and exchanges among SWP long-term contractors, between contractors and non-SWP entities, or between two or more non-SWP entities.

The transferability of water depends on many different factors including the source of the water being transferred, what is being done to make water available, when the water can be made available, and the type of water right the existing user holds, among others. Several provisions in the CWC authorize temporary transfers and put conditions on those transfers to protect others not involved in the transfer. Short-term transfers, less than one year, are authorized under Sections 1725–1732. Long-term transfers, for periods greater than one year, are authorized by Sections 1735–1737. Many other sections of the CWC pertain to water transfers and specify conditions under which water can be transferred and legal protections for those transferring water. For information regarding specific transfers or exchanges, please see Chapter 9, Water Contracts and Deliveries.

Transfer and Exchange Evaluations

An important element of any water transfer is determining what quantity of water, if any, is transferable. Some provisions of the CWC (e.g., Sections 1702, 1706, 1725, and 1736 among others), are intended to protect other legal users of water, and fish and wildlife, from possible adverse effects of a water transfer. These provisions reflect the concept that changes can be made to water as long as there

is no injury to others as a result of the change (the “no injury rule”). The no injury rule in state water law is intended to protect other water right holders from a water user’s expansion of water use beyond what has been used historically under the water user’s existing water rights. Hence, under the no injury rule, only “new water” is transferable; (i.e., water that adds to the downstream water supply as a result of the transfer).

To protect other users, a transfer would not be authorized to the extent that it would reduce the amount or timing of water that would have been available to downstream users, regardless of the water priority of those users.

CWC Section 1810(d) requires DWR to consider potential impacts of the transfer (i.e., to legal users, to instream uses, and to the economy of the area from which the water would be transferred). DWR must determine whether to allow use of its surplus water conveyance capacity for a water transfer. DWR staff review each request to transfer water through SWP facilities to try to assure that only new water will be transferred.

Transfer water is typically developed through four methods: (1) surplus water released from storage facilities; (2) substitution of groundwater for transferred surface water; (3) idling agricultural land; and (4) undertaking certain conservation activities that develop new water. Transfers may result in direct impacts and third party impacts (impacts to other parties not involved in the transfer). Provisions of the CWC were enacted to limit potential impacts. For example, the additional groundwater pumping from a groundwater substitution program can

potentially affect other groundwater users in the area. CWC Section 1745.10 generally requires that transfers of surface water where groundwater will be pumped to make up for the transferred surface water: (1) be consistent with a groundwater management plan adopted pursuant to State law for the affected area or (2) do not create or contribute to conditions of long-term overdraft in the affected groundwater basin.

Injury can also occur due to stream depletion induced by pumping wells near the stream. The amount of water depleted from the stream as a result of the increased pumping must be deducted from the amount of water transferred or the groundwater pumping is not truly an addition to the surface water supply, and the net surface water flows will not increase as assumed. Consequently, in order to evaluate possible impacts from groundwater substitution transfers, DWR requires that users proposing to transfer water through groundwater substitution provide information necessary to estimate the effects to the surface water system. Each type of transfer has its own set of potential impacts that must be evaluated to protect other parties not involved in the transfer.

With the exception of short term transfers done under CWC Section 1725, which go through the State Water Resources Control Board (SWRCB), water transfers are subject to compliance with the California Environmental Quality Act (CEQA), and, possibly, the National Environmental Policy Act (NEPA). The CEQA/NEPA process and the SWRCB process provide an opportunity for public review of and comment on water transfer proposals.

Staff in the State Water Project Analysis Office, Division of Operations and Maintenance, Division of Local Planning and Local Assistance District offices, and the Office of the Chief Counsel perform evaluations of the proposed water transfers to determine whether the transfer will cause impacts to the SWP, other water users, the environment, or the area from which the water will be transferred.

SWP Delivery Reliability Report

To assist local agencies assessing their overall water supplies, DWR provided current data on the SWP's ability to deliver water under 2005 conditions and for projected conditions through a report entitled *The State Water Project Delivery Reliability Report–2005*. The 2005 report was finalized in June 2006, and the next report in this biennial series is expected in 2008.

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 *The State Water Project Delivery Reliability Report–2005* 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 analysis of the ability to convey water from the source to the point of delivery assumes only SWP facilities and permits existing in 2005 would be used. In order to provide a conservative estimate of water delivery reliability, no planned facility improvements to the SWP are assumed. Lastly, the level of demand for SWP water, the amount, and the pattern of demand, were derived from historical

data and information received from SWP water contractors.

The probability that a given level of SWP annual Table A amount will be delivered from the Delta for conditions projected to exist in year 2025 is shown on Figure 7-1. The following can be deduced:

- In 75 percent of the years, annual SWP water delivery is estimated to be at or above 2.7 maf per year (65 percent of 4.13 maf).
- In 50 percent of the years, it is estimated to be at or above 3.5 maf per year (85 percent of 4.13 maf).
- In 25 percent of the years, it is at 4.13 maf per year.

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://www.water.ca.gov/pubs/swp/swp_delivery_reliability_report_2005/swp_drr05.pdf.

Conjunctive Use and Groundwater Substitution Transfers

Conjunctive use refers to the planned and coordinated management of surface water and groundwater to improve water supply reliability. A typical conjunctive use project allows surface water to recharge a groundwater basin in wet years when it is plentiful. Then, groundwater is pumped in dry years when less surface water is available. By operating a groundwater basin as a reservoir in this manner, surface water that would otherwise be lost will be available when it's needed most.

Groundwater substitution, a form of conjunctive use, refers to the water management practice of increasing groundwater pumping to replace an available surface water supply. The surface water that would have been used if the groundwater had not been pumped becomes available to be used elsewhere. Water made available by groundwater substitution may be transferred to downstream users by willing water right holders.

In the 1990s, groundwater substitution water transfers became increasingly controversial in some regions of the State. Some counties, particularly in the Sacramento Valley, adopted ordinances designed to restrict out-of-county water transfers that involve groundwater substitution.

With sufficient monitoring and knowledge of hydrogeologic conditions, conjunctive use projects can be operated with negligible impacts to the environment and third parties. DWR is working with willing partners to develop this knowledge and develop adequate monitoring programs in the Sacramento Valley. An ideal groundwater substitution transfer will not cause long-term declines in a basin's groundwater levels. As a result, streamflow losses over time will equal the amount of water that was made available for transfer. Streamflow losses due to transfers that occur during high flows (excess Delta conditions) increase the long-term water supply. If losses to streamflow occur as wells involved in a transfer are pumping, or if transfer wells are located so that streamflow losses are delayed until the following irrigation season, the SWP and CVP may suffer water supply losses. DWR is working to develop water transfer

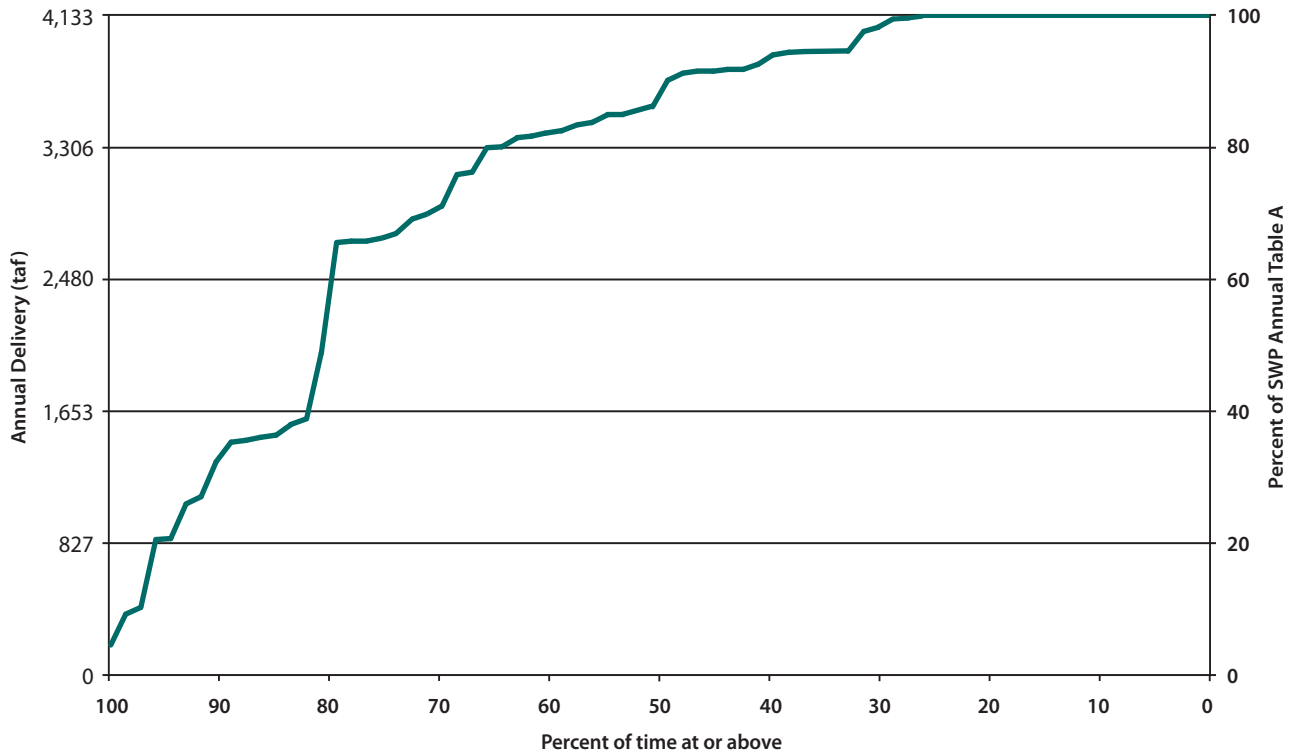


Figure 7-1. Projected SWP System Delivery Capability (Scenario 2025, Annual Table A)

principles that result in long-term water supply gains.

SWP Future Water Supply Program

The SWP Future Water Supply Program originally identified and investigated individual potential conjunctive use projects to augment SWP supplies. Now this program focuses on implementing the Sacramento Valley Water Management Agreement (SVWMA) and evaluating proposed water transfers.

During 2006, DWR, Bureau of Reclamation (Reclamation), Sacramento Valley upstream water users, and certain downstream water users renewed their commitment to implement the SVWMA

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.

DWR and Reclamation continued to meet the flow-related water quality objectives of State Water Resources Control Board Water Right Decision (D-1641) as defined in the SVWMA. Sacramento Valley water users in conjunction with the Northern California Water Association continued to participate with DWR and Reclamation in the development of environmental documents and baseline monitoring activities. Their participation will allow the Sacramento Valley Water Management Program (SVWMP) to develop up to 185,000 af of water supplies for use by the sponsoring local agencies as well as water

supply to help the SWP and CVP meet Delta water quality objectives.

To implement the SVWMA, 23 local agencies proposed conjunctive use projects which now form the proposed SVWMP. The SVWMP is sometimes referred to as “Phase 8” because the negotiated SVWMA supplanted that phase of the SWRCB water rights hearings to determine who is responsible for meeting the requirements of the *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan)*. For background about the SVWMA, see Bulletin 132-04, Chapter 7.

The Future Water Supply Program works to ensure the success of and coordinate DWR’s efforts on the technical components of the SVWMP, the Lower Yuba River Accord (Yuba Accord), and the EWA by monitoring their effects and coordinating with local agencies. Local agencies are increasingly active in developing groundwater management programs and asserting control over water supply development and management activities. DWR provides technical assistance through the Future Water Supply Program and technical and financial assistance through the Conjunctive Water Management Program to work with local agencies to develop water management alternatives that benefit all water rights holders in the Sacramento Valley. DWR intends for these efforts to build consensus for local and regional conjunctive use.

In 2006, SVWMP activities included the following:

Yuba County

DWR, in cooperation with the Yuba County Water Agency (Yuba), continued to operate

an adaptive long-term groundwater monitoring and measurement program to support Yuba’s participation in the SVWMP, the Yuba Accord, and the EWA. Specific activities focused on evaluating the interaction between the Bear River and the groundwater basin, and impacts to other groundwater users. Monitoring activities are focused on incorporating conjunctive use into Yuba operations so that they can meet the agency’s SVWMP and Yuba Accord objectives.

Butte County

DWR assisted Butte County in collecting and evaluating groundwater monitoring data.

Glenn County

DWR provided technical assistance to Glenn County and its local irrigation districts, including Glenn-Colusa Irrigation District, a major participant in the SVWMP. This included assisting in developing groundwater level, groundwater quality, and subsidence monitoring networks in the county to facilitate future water transfers and conjunctive use projects that will allow parties to the SVWMA to meet their commitments.

Watershed Management

This continuing effort evaluates the state of the Feather River watershed above Lake Oroville, and it 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 streamflows, 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 Water Rights Activities

Water Rights Permits

Operations of the SWP are governed by the terms and conditions contained in DWR's water right permits and licenses along with other State and federal regulatory restrictions including biological opinions for the protection of endangered species. DWR currently holds 15 water right permits for the operation of the SWP and upper Feather River facilities, five of which specifically authorize SWP operations at the Oroville/Thermalito and Delta facilities, including the North Bay Aqueduct, for water supply purposes. Each permit specifies the authorized quantities of direct diversion and diversion to storage, place of use, and time within which the permitted quantities must be put to beneficial use. A change in any of the terms and conditions contained in the water right permits and licenses requires SWRCB approval.

Diversion and use of SWP water throughout the SWP service area has steadily increased since initial operations in the 1960s. However, due to a number of factors including operational and regulatory constraints, the beneficial use of water has not yet reached the maximum quantities anticipated for full development of the SWP. When the full permitted quantity of water authorized under the water right permits has not been utilized by the date specified in the permit, a petition for time extension must be submitted to SWRCB.

SWP Bay-Delta Proceedings—2006 Activities

For almost half a century, DWR has worked cooperatively with SWRCB to support its efforts to develop the appropriate water quality standards for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary and identify which water sources are required to meet those standards. SWRCB has received and reviewed volumes of testimony and evidence to establish water quality objectives for the Bay-Delta Estuary to protect urban, agricultural, and fish and wildlife uses. The current objectives are contained in the May 1995 *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (1995 Bay-Delta Plan)*. The SWRCB adopted D-1641 on December 29, 1999 (later modified by Order WR 2000-02) to implement the objectives in the *1995 Bay-Delta Plan*.

The water rights proceeding regarding DWR and Reclamation compliance with salinity standards in the southern Delta began in 2005 and continued in 2006.

On February 15, 2006, the SWRCB adopted Cease and Desist Order (CDO) Nos. 262.31-16 and 262.31-17 (Order WR 2006-0006) which among other things required DWR and Reclamation to implement measures to meet the salinity objectives in the southern Delta. It also required DWR and Reclamation to submit a schedule for constructing permanent operable gates or other measures to meet the objectives and status reports to the SWRCB. On March 17, DWR and Reclamation filed petitions for reconsideration of the adoption of the CDO. Pursuant to the Order WR 2006-0006, DWR submitted its quarterly status reports on May 31 and August 31, 2006.

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

The Delta and Suisun Marsh are located where California's two major river systems, the Sacramento and San Joaquin rivers, converge to flow westward to meet incoming seawater tides flowing through the San Francisco Bay. The watershed of the Bay-Delta Estuary is a critical source of water supply for much of California. The watershed is a source of drinking water for two-thirds of the State's population; it supplies some of the State's most productive agricultural areas; and it provides water for fish, wildlife, and other public trust uses of water within and upstream of the estuary.

Water originating in the Bay-Delta watershed is delivered to areas within the watershed and to areas south and west of the estuary. The primary water distribution systems that release stored water into the Delta and directly divert water from the Delta are the SWP, operated by DWR, and the federal CVP, operated by Reclamation. Numerous other water storage and diversion projects influence inflows into and outflows from the Bay-Delta Estuary.

SWRCB regulates both the quality of water in the Bay-Delta Estuary and the diversion and use of water released into and diverted from the Bay-Delta Estuary for water supply. SWRCB coordinates its regulatory authorities under state laws governing water quality and state laws governing water rights, ensuring that water quality is protected for all beneficial uses when water supplies are diverted from the Bay-Delta Estuary. The established water quality objectives contained in the *Bay-*

Delta Plan for flow, salinity, dissolved oxygen (DO) levels, and other parameters necessary for the protection of the various beneficial uses such as municipal and industrial, agricultural, and fish and wildlife. SWRCB implements these objectives in part or in whole, depending on the circumstances, through conditions on water right permits and licenses. SWRCB adopted the current *Bay-Delta Plan* in May 1995. SWRCB conducted a review of the 1995 *Bay-Delta Plan* that concluded on September 30, 2004, and subsequently conducted additional workshops to receive information concerning issues identified as potentially meriting plan amendments.

DWR presented its comments to SWRCB regarding the scope of issues, supporting SWRCB'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.

At the November 13, 2006, hearing, SWRCB received comments and recommendations regarding the draft 2006 *Bay-Delta Plan*, specifically the timeline to address emerging issues and the changes. SWRCB revised the draft plan and distributed it for public review on November 29. On December 13, 2006, the Final 2006 *Bay-Delta Plan* was adopted (Resolution No. 2006-0098).

The regulatory portions of the 2006 *Bay-Delta Plan* will be submitted to the Office of Administrative Law for approval, and to the U.S. Environmental Protection Agency (EPA) for approval of the portions that are subject to federal approval. SWRCB may initiate a water right proceeding to allocate responsibility to meet the objectives and

protect the beneficial uses among water right holders who divert water from the watersheds of the Bay-Delta Estuary and to establish terms and conditions on the use of affected water rights. SWRCB will prepare appropriate documentation under CEQA, in addition to the documentation included with the 2006 *Bay-Delta Plan*.

CALFED Bay-Delta Program

The California Bay-Delta Authority (CBDA) 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 CBDA 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 to develop and manage 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 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 how storage, both groundwater conjunctive use and surface storage, can meet the urban, agricultural, and environmental supply reliability and water quality needs of California.

Surface Storage Investigations

The Surface Storage Investigations are developing environmental documentation and feasibility studies for four of the five surface storage projects identified for further study in the CALFED Record of Decision (ROD).

In-Delta Storage Program. In 2001, DWR, in coordination with the 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 the Delta Wetlands Project were generally well planned. However, design modifications and further evaluations were needed

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 plant and wildlife species. It is also the hub of California's two largest water distribution systems—the Central Valley Project, operated by the U.S. 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 is 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, Principles for Agreement on Bay-Delta Standards between the State of California and the Federal Government (Bay-Delta Accord) signed in December 1994 by the State and federal governments, detailed interim measures for both environmental protection and regulatory stability.

The Bay-Delta Accord laid the foundation for the CALFED Bay-Delta Program, which began in May 1995. The CALFED Bay-Delta Program, Final Programmatic Environmental Impact Statement/Environmental Impact Report was released in July 2000, followed by the Programmatic Record of Decision in August 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 CALFED Bay-Delta Program is designed to address the complex issues that surround the Bay-Delta and is a cooperative interagency effort involving 25 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.

before considering public ownership of the project.

The In-Delta Storage Project would provide capacity to store approximately 217,000 af 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).

DWR, in coordination with CBDA and with technical assistance from Reclamation, completed the *Draft In-Delta Storage Program State Feasibility Study* in 2004. The state draft feasibility report addresses the technical feasibility of the proposed In-Delta Storage Project. In May 2006, DWR completed the *2006 Supplemental Report to 2004 Draft State Feasibility Study In-Delta Storage Project*, and recommended that further detailed study of the In-Delta Storage Project be suspended until a proposal is submitted by potential participants detailing their specific interests, needs, and objectives that support reinitiation.

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

The Los Vaqueros Reservoir Expansion Project objectives are to (1) improve Bay Area water supply reliability; (2) provide an environmental water supply to the long-term EWA or similar program; and

(3) improve water quality for Bay Area water users.

Contra Costa ratepayers voted to support further studies of the Los Vaqueros Reservoir Expansion Project in a March 2004 advisory vote. In 2006, Reclamation, in coordination with DWR and Contra Costa, completed an *Initial Economic Evaluation for Plan Formulation Report*. Also in 2006, Contra Costa filed a Notice of Preparation under CEQA for preparation of an environmental impact report (EIR). Contra Costa is the lead agency under CEQA and, in coordination with Reclamation and DWR, will continue with the feasibility study and environmental documentation.

Shasta Lake Enlargement Investigation.

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 DWR 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.”

The State’s budget does not include funding for DWR to continue to participate in this study. However, Reclamation continues to work on this project. In 2006, Reclamation continued work on the Shasta Lake Water Resources Investigation’s engineering, economic, and environmental feasibility studies.

North-of-the-Delta Offstream Storage Investigation. 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 (NODOS) 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 could provide opportunities to increase water storage in an environmentally sensitive manner. The stored water could then be made available for 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 flexibility to augment environmental water supplies and adapt to climate change.

In 2006, DWR and Reclamation continued with the feasibility study and NEPA/CEQA process for the NODOS Investigation. DWR and Reclamation completed the *Initial Alternatives Information Report* in May 2006.

Upper San Joaquin River Basin Storage Investigation. DWR and Reclamation, in coordination with other State and federal agencies, are evaluating opportunities for 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 Storage Investigation (USJRBSI) are to (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 2006, the parties to the San Joaquin River litigation reached agreement, significantly affecting the baseline assumptions of the USJRBSI. Following the settlement agreement, DWR and Reclamation developed an interim plan to revise study assumptions and scope. The revised objectives are to increase water supply reliability for agricultural and urban users, and enhance San Joaquin River water temperature and flow. DWR and Reclamation continued with the feasibility study and the NEPA/CEQA process for the reformulated USJRBSI.

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. The principles

that guide the implementation of this component:

- local planning processes;
- local control of proposed projects;
- voluntary implementation of projects;
- priority for in-basin water needs;
- compensation for out-of-basin transfers; and
- basin-wide planning and monitoring of the Water Transfer Program.

In 2002, DWR drafted transfer white papers based on SWRCB's *Guide to Water Transfers* and discussions with Sacramento Valley water agencies. Due to the Legislature's removal of funding and staff for the Water Transfer Program element in Fiscal Year 2005-2006, no additional revision or update work could be done on the program.

Conveyance Program

The Conveyance Program consists of projects proposed in the North and South Delta. The North Delta Program is composed of studies related to the Delta Cross Channel (DCC), a salinity barrier in the Franks Tract region, and a project to improve flood management and the ecosystem along the Mokelumne River.

North Delta

Three of the four North Delta conveyance actions include facilities improvements that 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 (TDF) on the Sacramento River, and the third is the Franks Tract Project, which involves installation of operable barrier(s) in river channel(s) around the Franks Tract region

to reduce sea water intrusion and enhance conditions for sensitive fish species. DWR is leading all these studies in cooperation with other agencies. DWR, in coordination with other agencies, completed the field work of the salmon outmigration study, planned to be conducted in the winter of 2008–2009. DWR and Reclamation are preparing a joint EIS/EIR (Environmental Impact Statement/Environmental Impact Report) for the Franks Tract Project.

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. In June 2006, DWR completed the Administrative Draft of the EIR for this project. For more information on this project, see Chapter 2, Delta Resources.

South Delta

Actions in the South Delta include the South Delta Improvements Program (SDIP), implementing flood control/ecosystem improvements in the lower San Joaquin River, and potential interties between the SWP California Aqueduct and the CVP Delta-Mendota Canal.

The SDIP is an important component of the CALFED Bay-Delta Program, as recommended in the ROD. (August 2000).

The SDIP is a two stage project. Stage 1 proposes to reduce the movement of San Joaquin River watershed Central Valley fall-run and late fall-run juvenile Chinook salmon into the south Delta via Old River, and maintain adequate water levels and water quality for agricultural diversions in the South Delta. Stage 2 would increase water deliveries and delivery reliability

to SWP and CVP contractors south of the Delta and increase the maximum permitted level of diversion through the existing intake gates at Clifton Court Forebay to 8,500 cubic feet per second (cfs).

In 2006, the SDIP Final EIR/EIS was issued. It evaluated alternatives and proposed proceeding with the Stage 1 component of SDIP. Stage 1 actions are the construction of four permanent operable gates and channel dredging in the South Delta. In order to improve water levels and circulation in South Delta waterways, agricultural flow control gates would be installed on Middle River, Grant Line Canal, and Old River near the Delta-Mendota Canal intake. A fourth gate would be constructed at the Head of Old River as a fish control gate to protect San Joaquin River anadromous fish by keeping them in the main stem of the San Joaquin River and improving dissolved oxygen (DO) in the Stockton Deep Water Ship Channel (DWSC). To improve conveyance and the operation of agricultural siphons and pumps, portions of West Canal, Middle River, and Old River would be dredged.

DWR is proposing to move forward with Stage 1, to install permanent gates that will replace temporary structures installed and removed each year. Any action regarding Stage 2 will require further study and public input. Stage 2 planning activities are currently suspended.

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 National Marine Fisheries Service, U.S. Fish and Wildlife Service, and Department of Fish and Game (the management agencies), as well as Reclamation and DWR (the project agencies).

The management agencies are responsible for managing EWA assets and recommending SWP/CVP operational changes beneficial to the Bay-Delta ecosystem and the long-term survival of fish species. The project agencies are responsible for acquiring EWA assets cooperating with the management agencies in administering EWA and implementing 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 water purchases from willing water sellers; source shifting, which involves deferral of scheduled delivery of water by willing participants; and other nonwater assets, such as 500 cfs dedicated pumping

capacity at Banks Pumping Plant. EWA is considered operational for any year when these assets are in place and Endangered Species Act (ESA) 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. Because of changes in the environmental setting and the need to provide an evaluation of the effects associated with EWA operations between 2008 and 2011, DWR and Reclamation are developing a Supplemental EIS/EIR to the Final EWA EIS/EIR.

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



Chapter 8 Water Supply

Oroville Dam and Lake Oroville.

Significant Events in 2006

Water year 2005–2006 proved to be very wet, with higher than average precipitation and mountain snowpack. The State received precipitation at 136 percent of average in 2005–2006, as compared to 140 percent of average in 2004–2005.

Statewide river runoff totaled 170 percent of average in the 2005–2006 water year. Runoff in the Sacramento River and San Joaquin River regions was 170 percent and 175 percent of average, respectively. Feather River unimpaired inflow to Lake Oroville was 8.2 maf (175 percent of average) for the water year, compared to 4.3 maf (90 percent of average) the previous year.

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.

The Department of Water Resources (DWR) monitors precipitation, calculates runoff, and operates storage facilities during each water year. The official California water year runs from October 1 through September 30. DWR works during the water year to fulfill its key contractual obligations to the State Water Project (SWP) long-term water supply contractors.

Water Year 2005–2006

Precipitation and Snowpack

California experienced higher than average rainfall and mountain snowpack during water year 2005–2006. The State, as a whole, received precipitation at 136 percent of average in 2005–2006, compared to 140 percent of average in 2004–2005. Figure 8-1 presents water year precipitation for the entire State. The Northern Sierra 8 Station Index finished the water year with 80.1 inches of precipitation, which was 160 percent of average. During the third week of April, statewide average snow water content peaked at 46 inches, 161 percent of the historical April 1 average. These snow conditions compared closely to those experienced during the 2004–2005 water year, resulting in two consecutive years of bountiful mountain snowpack.

Two significant weather systems passed through the State during the 2005–2006 water year. From December 24 to January 3, heavy precipitation fell over Northern California, resulting in widespread flooding. The most intense storm system moved into Northern California on December 30 and left the following day. Late December storms resulted in the Northern Sierra 8 Station Index recording 25.8 inches of precipitation, which resulted in the fourth wettest December on the Index's

historical record, which begins in 1920. Ten-day storm totals, from December 24 to January 3, were staggering throughout Northern California. For the coastal and upper Sacramento River basins, 10-day precipitation totals ranged from 10 to 20 inches. For the Feather River and American River basins, the 10-day totals fell between 12 and 24 inches at high elevations and between 6 and 12 inches in the foothills. Even the eastern slopes of the Northern Sierra were not excluded from the heavy rainfall, as 10-day totals between 6 and 12 inches were recorded near the California-Nevada border.

Following the storms of late December and early January, Northern California settled into an uneventful period of weather until late February, when conditions became cooler and wetter. These conditions persisted into mid-April, with Northern and Central California being subjected to repeated storm systems. In Sacramento, for example, March precipitation totaled 6.02 inches, which is 191 percent of the March average of 3.15 inches. The record number for consecutive days with measurable precipitation was also broken in Sacramento during March, as measurable precipitation (at least 0.01 inches) was recorded on 20 consecutive days.

Following the very wet month of March, the water year's second large,

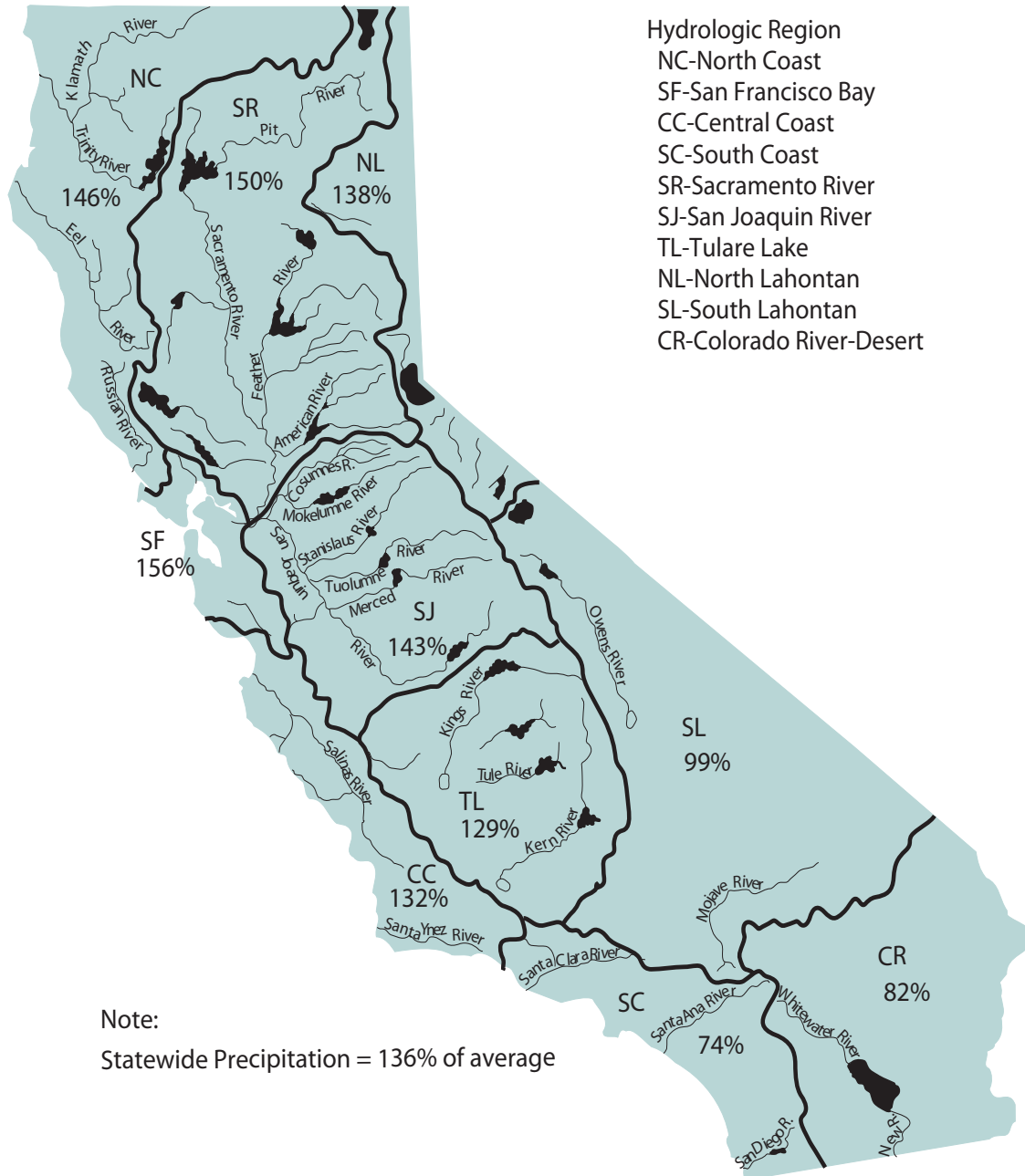


Figure 8-1. Statewide Precipitation by Hydrologic Region, 2005–2006 Water Year, Percent of Average

concentrated storm system swept through California on April 2 and persisted through April 6. The heaviest rainfall totals were focused in the Southern Sierra Nevada and the San Joaquin Valley. During the 4-day period, Stockton received 1.69 inches of precipitation, which is 164 percent of its entire historical April average. In the Sierra Nevada, Huntington Lake received 7 inches of rain, which is 191 percent of the entire historical April average at that location. The compounding effects of a prolonged wet period and the early April storm resulted in high river flows in the San Joaquin River and its tributaries, putting strain on its levee system.

gages located throughout the State. The locations presented in Table 8-1 are listed approximately north to south. For much of the State, the wettest months of the water year were December, March, and April; it was not uncommon for precipitation totals to exceed 300 percent of average during these three months.

Mount Shasta City, in far Northern California, received precipitation totals above average from November through June. Precipitation was heaviest during the months of December, March, and April, with precipitation totaling 287, 270, and 243 percent of average, respectively.

Table 8-1 presents monthly precipitation totals for water year 2005–2006 at various

Table 8-1. Monthly Precipitation Totals at Various Locations in California during Water Year 2005–2006

Station	Monthly Precipitation (in inches)											
	2005			2006								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mount Shasta City	1.28	6.01	16.92	7.94	6.86	11.89	6.83	3.22	1.33	0.01	0.00	0.00
% of avg	55	131	287	124	123	270	243	189	125	4	0	0
Eureka Woodley Island	2.40	8.52	12.72	12.09	6.34	11.11	4.08	1.03	0.35	0.04	0.00	0.00
% of avg	80	154	198	186	123	213	142	57	57	36	0	0
Blue Canyon (DWR-2)	2.41	7.22	36.54	12.56	10.14	20.01	16.40	2.02	0.00	0.03	0.00	0.00
% of avg	64	92	349	101	104	235	327	74	0	14	0	0
Sacramento WB City	0.16	0.90	9.47	3.07	2.07	6.02	3.42	0.42	0.00	0.00	0.00	0.00
% of avg	17	44	297	82	63	252	231	91	0	0	0	0
San Francisco WB AP	0.51	2.21	11.19	3.52	2.81	8.74	5.02	0.41	0.00	0.00	0.00	0.00
% of avg	48	93	301	80	85	317	354	93	0	0	0	0
Yosemite Headquarters	0.57	3.11	9.10	9.85	4.48	8.30	8.92	1.12	0.00	0.47	0.00	0.00
% of avg	33	74	138	147	71	168	275	79	0	168	0	0
Fresno WB AP	0.05	0.17	2.00	3.40	0.54	4.73	3.27	0.36	0.00	0.00	0.00	0.00
% of avg	10	15	114	169	26	256	303	129	0	0	0	0
Grant Grove	0.48	0.83	9.49	14.39	5.98	13.44	14.38	1.14	0.00	0.00	0.00	0.00
% of avg	24	16	122	192	83	178	333	97	0	0	0	0
Los Angeles-WSO Airport	1.02	0.47	0.95	1.42	2.03	2.52	1.63	0.60	0.01	0.10	0.01	0.00
% of avg	268	33	45	53	70	134	177	429	20	1000	14	0
San Diego NWS-Lindbergh	0.46	0.12	0.25	0.36	1.11	1.36	0.88	0.77	0.00	0.04	0.00	0.00
% of avg	110	11	13	18	58	84	116	367	0	200	0	0

Blue Canyon experienced impressive precipitation totals throughout much of the 2005–2006 water year. During December, over 36 inches of precipitation fell at Blue Canyon, which was nearly 350 percent of average. Heavy precipitation also fell during March and April, with totals equaling 235 and 327 percent of average, respectively.

The monthly totals for the Northern Sierra 8 Station Index for water year 2005–2006 are presented in Table 8-2. Precipitation for the water year totaled 80.1 inches, which is 160 percent of average. December, March, and April were the wettest months, with monthly precipitation totaling 307, 210, and 311 percent of average, respectively. Taking the entire water year into consideration, more than 65 percent of the Northern Sierra 8 Station Index’s total precipitation fell during these three months.

Table 8-2. Northern Sierra 8 Station Precipitation for Water Year 2005–2006

	Month	Precipitation (in inches)	Percent of Monthly Average Precipitation
2005	October	1.5	49
	November	6.5	104
	December	25.8	307
2006	January	9.8	109
	February	8.0	100
	March	14.5	210
	April	12.1	311
	May	1.5	71
	June	0.4	40
	July	0.0	0
	August	0.0	0
	September	0.0	0
Total		80.1	160

In the San Joaquin and Tulare Lake watersheds, precipitation was above average for December and January, but was not as severe as that experienced in Northern California during those months. In March and April, however, the Central and Southern Sierra Nevada received precipitation comparable in relative magnitude to what fell in the north. Yosemite Headquarters received 8.9 inches of precipitation in April, which is 275 percent of average. Grant Grove, located south of Yosemite in the Kern River watershed, received 14.4 inches in April, which is more than 330 percent of average.

Heavy precipitation was not limited to mountainous regions, however. The Central Valley received significant precipitation as well. During December, March, and April, Sacramento received precipitation between 200 and 300 percent of average. Fresno received above average precipitation, not only for December, March, and April, but January as well. In contrast to Sacramento, which received precipitation of only 82 percent of average for January, Fresno received 3.4 inches, equaling 169 percent of average.

Bountiful precipitation for much of California during water year 2005–2006 resulted in heavy snowpack throughout the State’s mountainous regions. Monthly statewide snowpack for the 2005–2006 water year is shown in Table 8-3. Snow water equivalents shown in the table were obtained from daily snow sensor reports corresponding to the first day of each month.

The statewide average snow water equivalent reported for April 1 was 39 inches, 136 percent of average. Snowpack did not peak until April 18 at 46 inches of snow water content.

Table 8-3. Statewide Snowpack for Water Year 2005–2006

Date	Snow Water Equivalent (in inches)	Percent of Average	Percent of April 1 Average ^a
2005	October 1	0	0
	November 1	0	0
	December 1	2	42
2006	January 1	12	117
	February 1	22	122
	March 1	25	100
	April 1	39	136
	May 1	40	181
	June 1	14	---

^a April 1 is the average date of peak statewide snowpack.

Not only was the peak obtained approximately two weeks later than normal, it was 161 percent of the historic April 1 average. April snow accumulation was so significant that 40 inches of snow water remained statewide on May 1, which is 181 percent of what typically remains on that date.

Runoff and Storage

Statewide river runoff totaled 170 percent of average in the 2005–2006 water year. See Table 8-4, which presents unimpaired runoff for the water year.

The Sacramento Valley Water Year Hydrologic Classification and the San Joaquin Valley Water Year Hydrologic Classification were both wet, based on observed data for water year 2005–2006.

Table 8-4. Unimpaired Runoff for Water Year 2005–2006 (million acre-feet)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	WY
SRR runoff	0.42	0.61	5.17	4.47	2.96	4.40	6.59	4.06	1.60	0.69	0.48	0.43	31.89
% average	80	70	295	170	110	155	275	180	125	115	115	105	170
SJR runoff	0.05	0.06	0.65	0.74	0.48	0.90	1.93	2.74	2.00	0.70	0.14	0.06	10.45
% average	85	45	245	165	105	145	230	195	180	155	110	100	175
TLR runoff	0.05	0.04	0.13	0.26	0.15	0.32	0.75	1.40	1.15	0.44	0.12	0.05	4.88
% average	105	65	105	145	80	115	190	195	185	150	115	90	160
Feather													
River runoff	0.08	0.14	1.35	1.02	0.72	1.13	1.71	1.21	0.41	0.18	0.13	0.09	8.20
% average	75	70	335	175	120	155	260	190	125	120	125	105	175
Statewide % average	80	65	290	175	110	145	245	185	155	135	115	105	170

SRR: Sacramento River Region
 Sacramento River at Bend Bridge, Feather River at Oroville, Yuba River at Smartville, American River at Folsom

SJR: San Joaquin River Region
 Stanislaus River below Goodwin, Tuolumne River at La Grange, Merced River below Merced Falls, San Joaquin River at Friant

TLR: Tulare Lake Region
 Kings River at Pine Flat, Kaweah River at Terminus, Tule River at Success, Kern River at Isabella

WY: Water Year (Oct–Sep)

From a water supply perspective, the most closely monitored period is April through July. The month of April concluded with more than 250 percent of normal runoff over the northern and southern Sierra. May ended with statewide runoff volumes at 185 percent of average for the month. During May, the statewide reservoir storage rose from about 115 percent of average to 120 percent of average. Table 8-5 presents reservoir storage for water year 2005–2006.

By the end of July, the April–July runoff volumes were 200 percent, 195 percent, and 185 percent of average for the Sacramento, San Joaquin, and Tulare Lake regions, respectively.

Water Year 2006–2007 October–December Water Conditions

The last three months of calendar year 2006 mark the beginning of a new water

Table 8-5. Reservoir Storage for Water Year 2005–2006 (thousand acre-feet)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Shasta storage	2,855	2,896	3,755	3,586	3,834	3,854	4,057	4,467	4,249	3,784	3,378	3,205
% of avg	104	104	130	114	114	103	102	113	114	114	114	114
Oroville storage	2,740	2,616	2,925	2,790	3,008	2,899	3,137	3,480	3,476	3,259	3,014	2,833
% of avg	127	119	131	117	119	105	107	114	118	124	127	126
Folsom storage	567	517	649	425	445	710	767	928	919	820	734	639
% of avg	114	111	135	82	80	113	105	111	111	116	118	114
San Luis storage	1,463	1,627	1,893	2,030	2,020	2,032	2,024	1,897	1,696	1,398	1,235	1,313
% of avg	132	131	135	125	115	108	109	114	126	135	139	132
Pardee storage	168	169	201	181	177	194	198	196	198	195	192	191
% of avg	97	96	114	101	98	106	109	104	102	103	105	106
New Melones storage	1,941	1,958	2,027	1,972	2,016	2,075	2,208	2,287	2,349	2,266	2,145	2,056
% of avg	149	149	151	142	140	140	149	152	155	156	156	154
Don Pedro storage	1,637	1,622	1,708	1,666	1,649	1,698	1,832	1,884	2,003	1,935	17,70	1,668
% of avg	126	124	129	120	115	115	125	123	125	126	124	122
Millerton storage	233	257	326	396	402	496	328	473	523	474	321	240
% of avg	124	118	117	117	116	138	90	116	126	145	140	118
Pine Flat storage	451	460	521	654	719	843	889	919	987	833	589	465
% of avg	129	122	125	137	135	151	146	127	142	161	152	134
Kaweah storage	14	17	20	20	25	60	133	180	178	106	31	11
% of avg	133	135	130	96	105	155	184	155	174	211	160	88
Success storage	5	6	11	11	16	30	59	50	33	20	12	6
% of avg	55	60	85	61	64	87	131	89	64	55	60	43
Isabella storage	261	245	247	245	248	288	383	413	380	321	266	236
% of avg	165	163	160	145	138	148	171	141	124	119	126	128
Statewide % avg	120	120	135	120	120	115	115	120	120	125	120	120

year, 2006–2007. By the end of October, the runoff was near 90 percent of average in the northern and central Sierra and closer to normal in the southern Sierra. By the end of December, runoff for water year 2007 was 70, 45, and 60 percent of average for the Sacramento River, San Joaquin River, and Tulare Lake regions, respectively.

SWP Storage

The SWP operates a complex system of 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 tributaries of the Feather River.

San Luis Reservoir is the second primary SWP conservation facility. This Central California facility derives its inflow from pumping at the Gianelli Pumping-Generating Plant. San Luis is an off-stream storage reservoir. Most of the water is pumped into the reservoir from late fall to early spring. This water is temporarily stored, then released into the California Aqueduct to meet water contractor peaking demands in the summer months. The remaining SWP dams and reservoirs regulate the stored water supply in delivery patterns that are designed to fit local water demands.

Water Year 2005–2006 Storage Totals

At the end of the 2005–2006 water year, water storage in all SWP reservoirs was 4.42 maf or 82 percent of maximum storage, compared to 4.89 maf or 90 percent of minimum storage at the end of water year 2004–2005. The average end-of-month total storage for the 2005–2006 water year in major SWP reservoirs

was 4.63 maf. End-of-water-year storage on September 30, 2006, at Lake Oroville was 2.83 maf, which was about 0.43 maf less than the previous water year. The State's share of San Luis Reservoir storage at the end of the 2005–2006 water year was 911,032 af, as compared to 925,701 af in the previous water year. The combined storage in southern reservoirs was 572,800 af on September 30, 2006, as compared to 619,800 af at the end of the 2004–2005 water year.

Calendar Year 2006 Storage Totals

The total storage in major SWP reservoirs was about 4.49 maf at the end of calendar year 2006, as compared with 4.66 maf in 2005. The State's share of San Luis Reservoir storage was 1,242,330 af on December 31, 2006, as compared to 1,167,613 af at the same time in 2005. The combined storage in the southern reservoirs was 458,487 af on December 31, 2006, as compared to 566,273 af at the same time in 2005.

Lake Oroville

Lake Oroville is the keystone of the SWP. It has a maximum water storage capacity of 3,537,580 af. Runoff from Feather River drainage is collected and stored in this reservoir. This water is released to the Sacramento-San Joaquin Delta through Oroville Dam, Thermalito Diversion Dam, and Thermalito Afterbay.

Water Year 2005–2006 Inflow

Lake Oroville inflow for the 2005–2006 water year totaled about 7.815 maf, which was 184 percent of the 30-year average (4.24 maf). Most of the water year's inflow (nearly 2.2 maf) occurred in the months of December and January when a two-and-a-half-week long

series of Pacific storms dumped about half a year’s worth of precipitation on the Northern Sierra. Maximum daily inflow occurred on December 31, 2005, at 253,615 af. Minimum daily inflow occurred on September 29, 2006, at 926 af. Peak monthly total inflow (as shown on Figure 8-2) occurred in April at 1.59 maf, 20 percent of the water year total. The maximum total in 30 years was in water year 1982–1983 at 8,853,572 af. The minimum total in 30 years was in water year 1991–1992 at 1,555,774 af. (See Figures 8-2 and 8-3 for monthly and cumulative inflows, respectively, into Lake Oroville.)

Calendar Year 2006 Inflow and Storage

Total inflow into Lake Oroville during the calendar year was 7,065,359 af. Minimum storage occurred on December 8, 2006, at 2,664,525 af, 75 percent of its capacity. Maximum storage occurred on June 6, 2006, at 3,533,311 af, 100 percent of its capacity. End-of-year Lake Oroville storage was 2,792,685 af. Figure 8-4 compares end-of-month storage in Lake Oroville for the 2005 and 2006 calendar years.

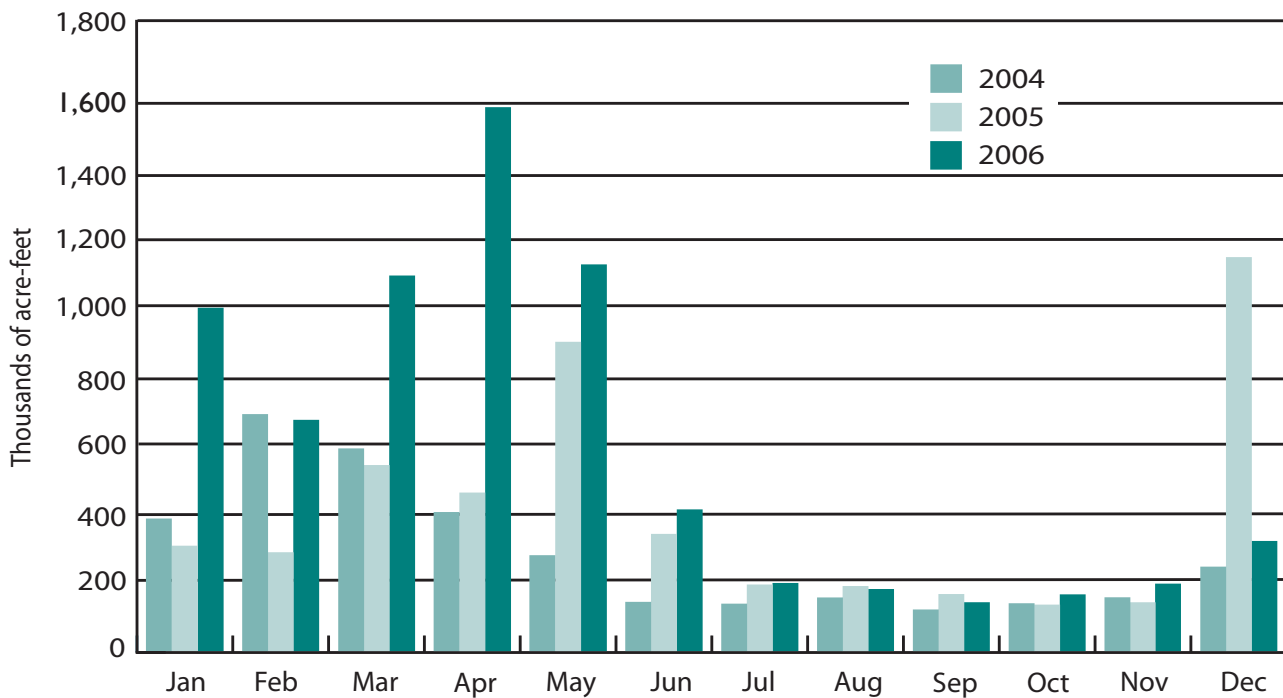


Figure 8-2. Monthly Lake Oroville Inflow, 2004–2006

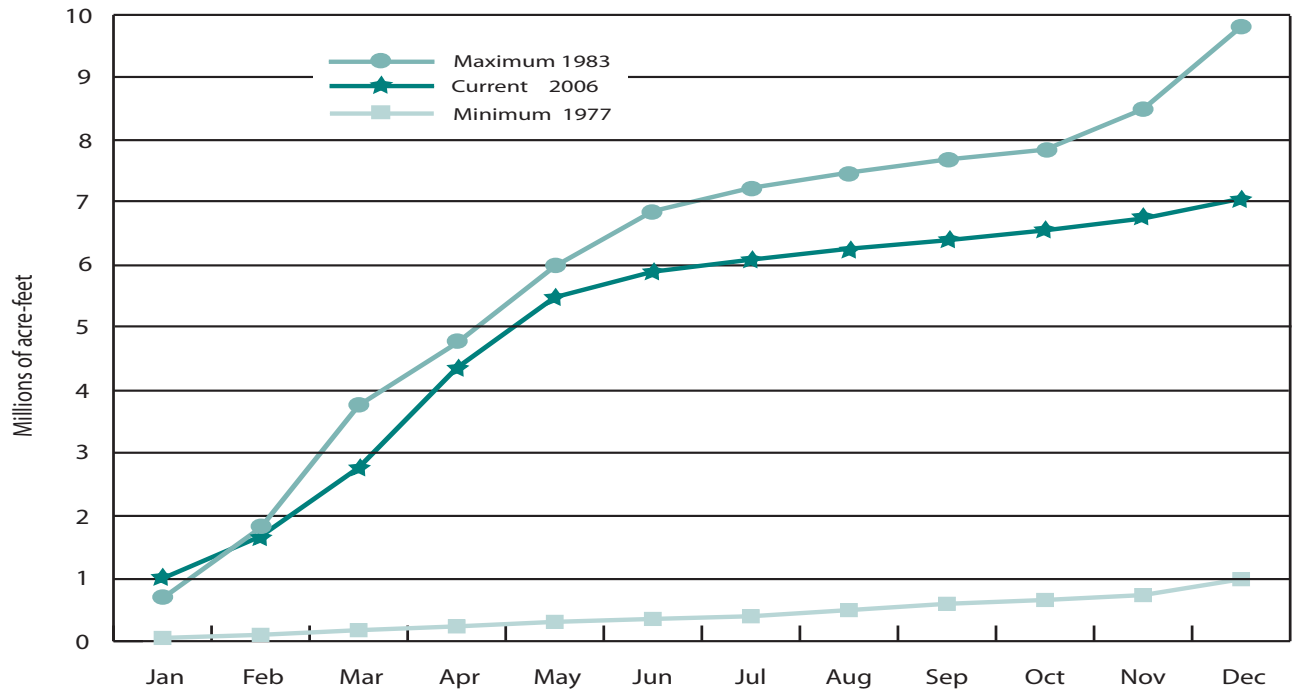


Figure 8-3. Cumulative Maximum, Minimum, and Current Lake Oroville Inflow

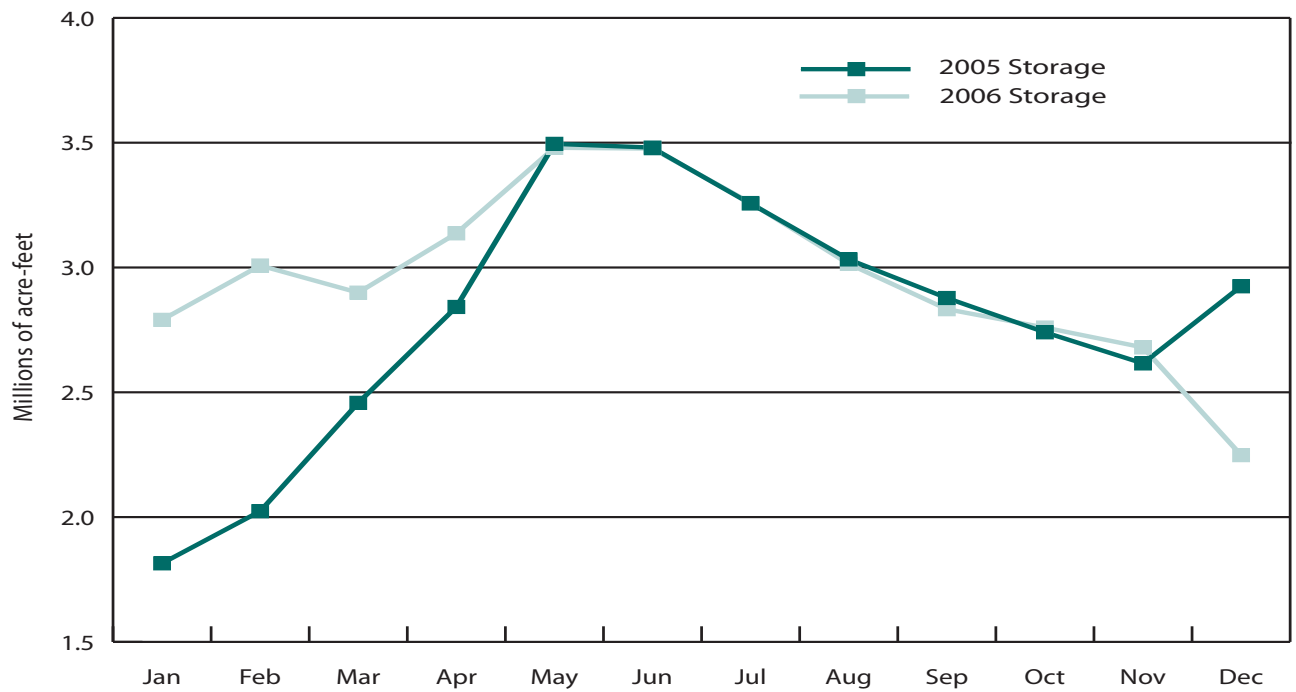


Figure 8-4. End-of-Month Storage in Lake Oroville, 2005 and 2006 Calendar Years

2005–2006 Water Year San Luis Reservoir Operations

San Luis Reservoir is operated jointly by DWR and the U.S. Bureau of Reclamation (Reclamation) per operating procedures that were adopted in June 1981. San Luis Reservoir has a normal operating capacity of 2,027,840 af. The SWP share of this capacity is 1,062,183 af.

San Luis Reservoir reached its maximum water year total storage on March 22, 2006, at 2,031,649 af, 100 percent of its normal maximum operating capacity. At the beginning of the water year, San Luis Reservoir contained 1,334,445 af, 66 percent of its capacity. SWP storage share in the beginning of the water year was 990,221 af. On December 31, 2005, the highest

end-of-month SWP share of water storage was 1,167,613 af for the 2005–2006 water year (as illustrated on Figure 8-5).

2005–2006 Water Year Lake del Valle Operations

Lake del Valle, which is situated off the South Bay Aqueduct, functions primarily as a storage facility for later water delivery into Santa Clara and Alameda counties. At the beginning of the water year, Lake del Valle held 33,716 af, which was about 44 percent of its maximum capacity of 77,106 af. Its highest storage during the 2005–2006 water year occurred on April 4, 2006, at 42,535 af. Its lowest storage occurred on December 16, 2005, at 25,185 af.

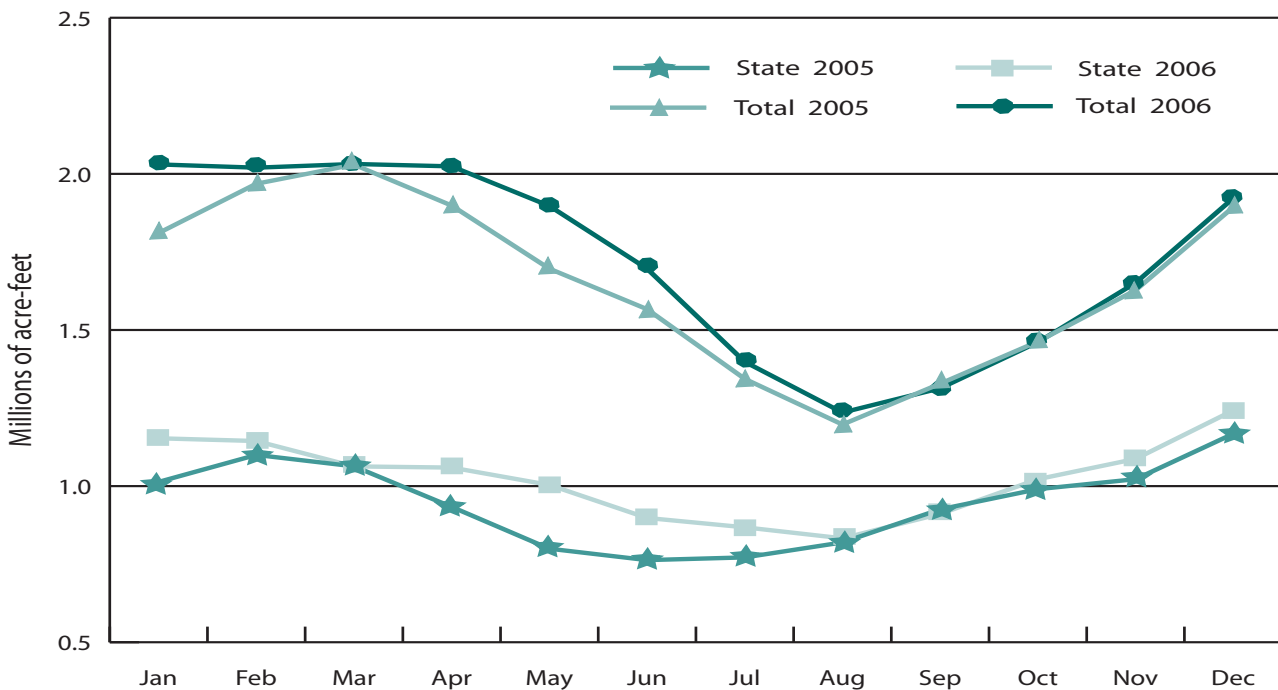


Figure 8-5. End-of-Month Storage in San Luis Reservoir, 2005 and 2006 Calendar Years

By the end of the water year, on September 30, 2006, storage in Lake del Valle was 25,775 af, 46 percent of maximum capacity. Water year releases to Arroyo Valle and the South Bay Aqueduct from Lake del Valle totaled 52,929 af.

2005–2006 Water Year Southern Reservoir 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 619,800 af, with 90 percent of their combined normal maximum operating capacity of 689,021 af. At the

end of the water year, the reservoirs held 572,800 af, 83 percent of combined normal maximum operating capacity.

Diversions from the Delta

SWP diverts water from the Sacramento-San Joaquin Delta, through Banks and Barker Slough pumping plants, for delivery to SWP water contractors' storage facilities. In 2006, the SWP diverted 3,504,959 af at Banks Pumping Plant. There was no Cross Valley Canal (CVC) or Central Valley Project (CVP) water wheeled at Banks Pumping Plant by DWR during 2006. The CVP diverted 2,598,435 af at Tracy Pumping Plant and 119,255 af at Contra Costa Pumping Plant. The combined Delta exports include all of these plants. Figure 8-6 shows the amounts of water pumped each month in 2006 at

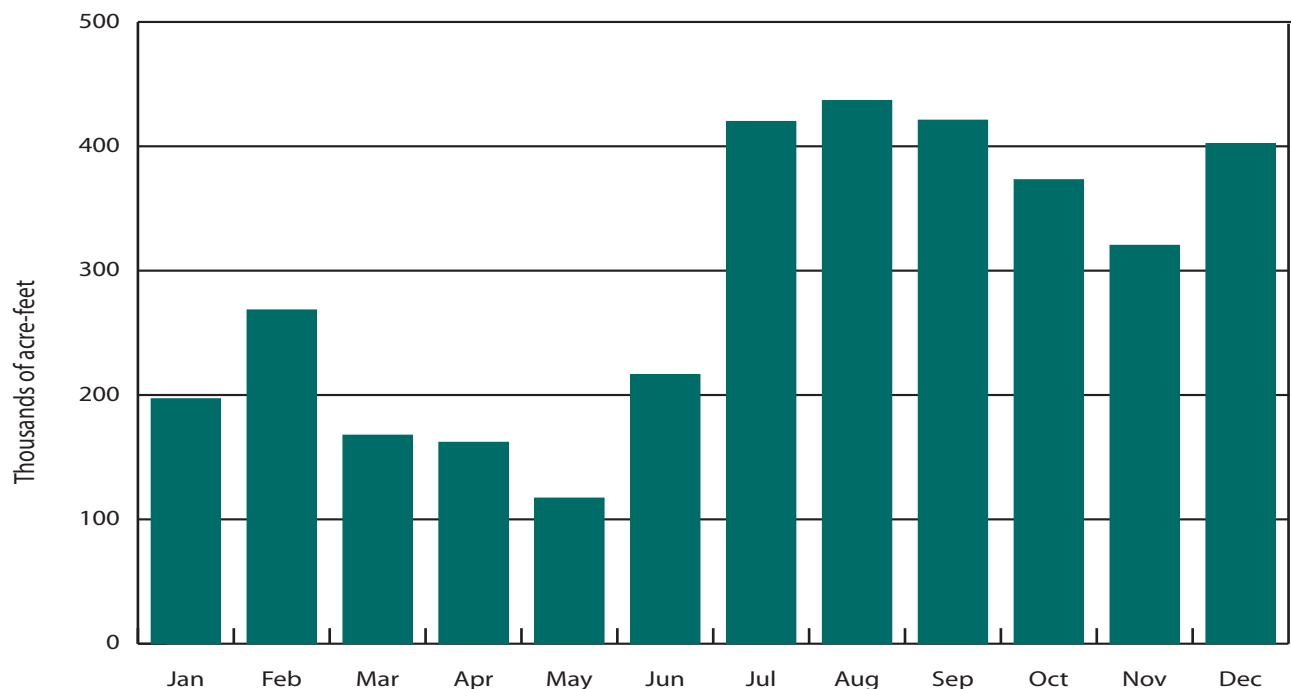


Figure 8-6. Water Pumped at Banks Pumping Plant, 2006, by Month

Banks Pumping Plant. Figure 8-7 shows the monthly amounts of water diverted from the Delta in 2006 by the SWP and CVP. CVP diverts water to similar areas from the Delta through Tracy Pumping Plant and Contra Costa Pumping Plant.

Water is delivered from Banks Pumping Plant to the South Bay Area through the South Bay Aqueduct and to the San Joaquin Valley, Central Coastal, and Southern California areas through the California Aqueduct. The SWP diverts water from Barker Slough Pumping Plant to the North Bay Aqueduct. In 2006, the North Bay Aqueduct received 44,311 af of project water from the Barker Slough Pumping Plant.

Dos Amigos Pumping Plant diverts water from O’Neill Forebay to the California Aqueduct. Figure 8-8 shows monthly total amounts pumped at Dos Amigos Pumping Plant for the calendar year 2006. Pumping peaked in July 2006 at 700,194 af.

Maximum daily Delta exports occurred on July 1, 2006, at 25,974 af. Combined SWP and CVP monthly Delta exports in 2006 varied from a low of 211,163 af in April, to a high of 722,772 af in August. In 2006, Delta exports totaled approximately 6.22 million af.

In 2006, water pumped through the Edmonston Pumping Plant for delivery to Southern California totaled 1,829,838 af. Figure 8-9 shows the amount of water pumped each month in 2006.

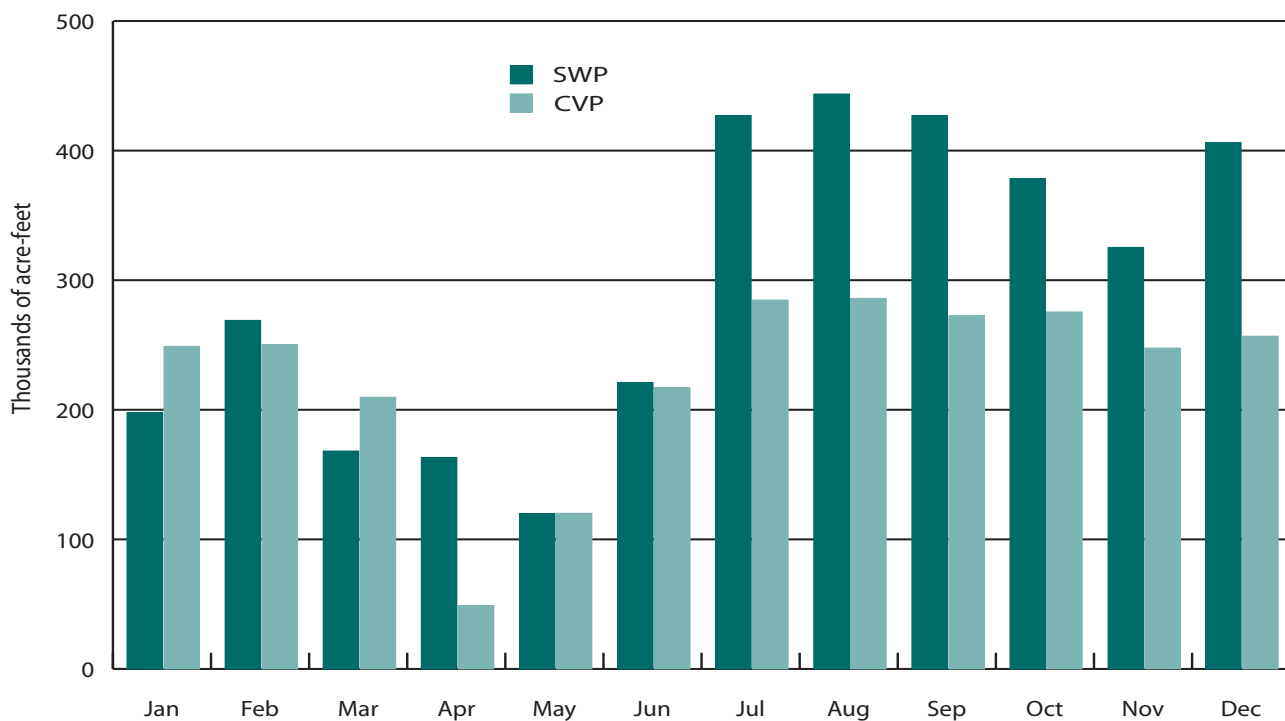


Figure 8-7. Sacramento-San Joaquin Delta Exports by State Water Project and Central Valley Project, 2006

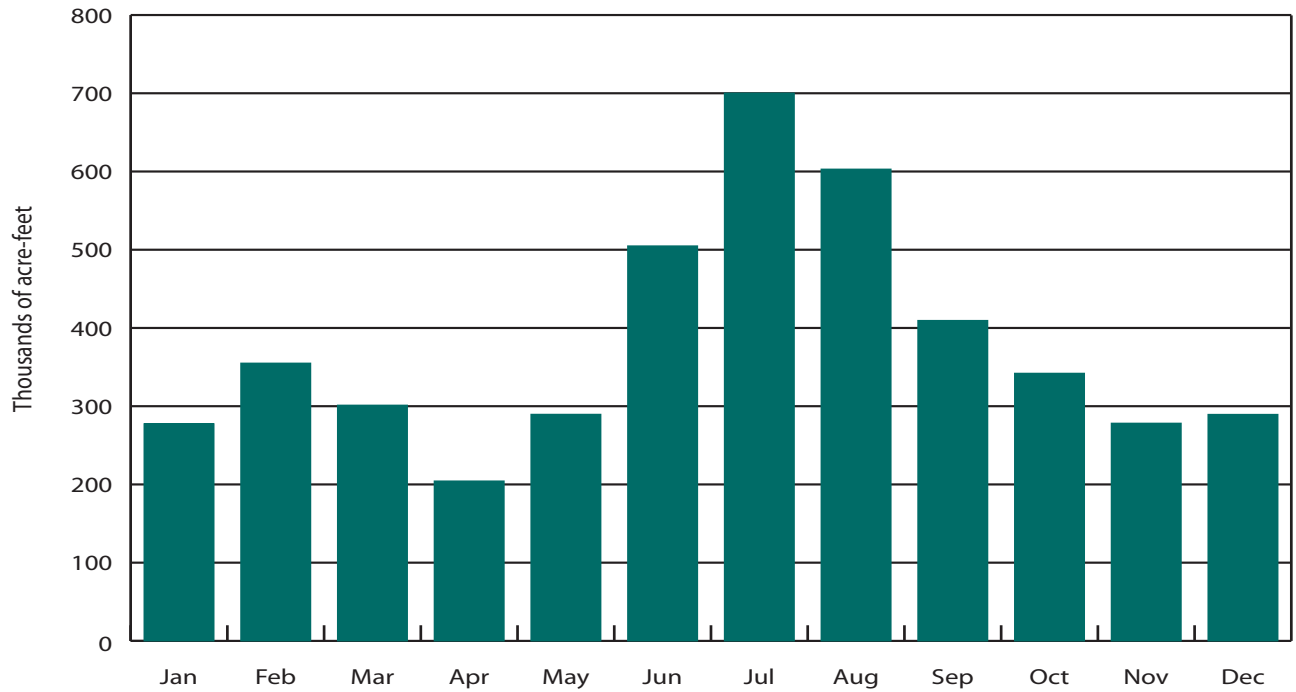


Figure 8-8. Water Pumped at Dos Amigos Pumping Plant, 2006, by Month

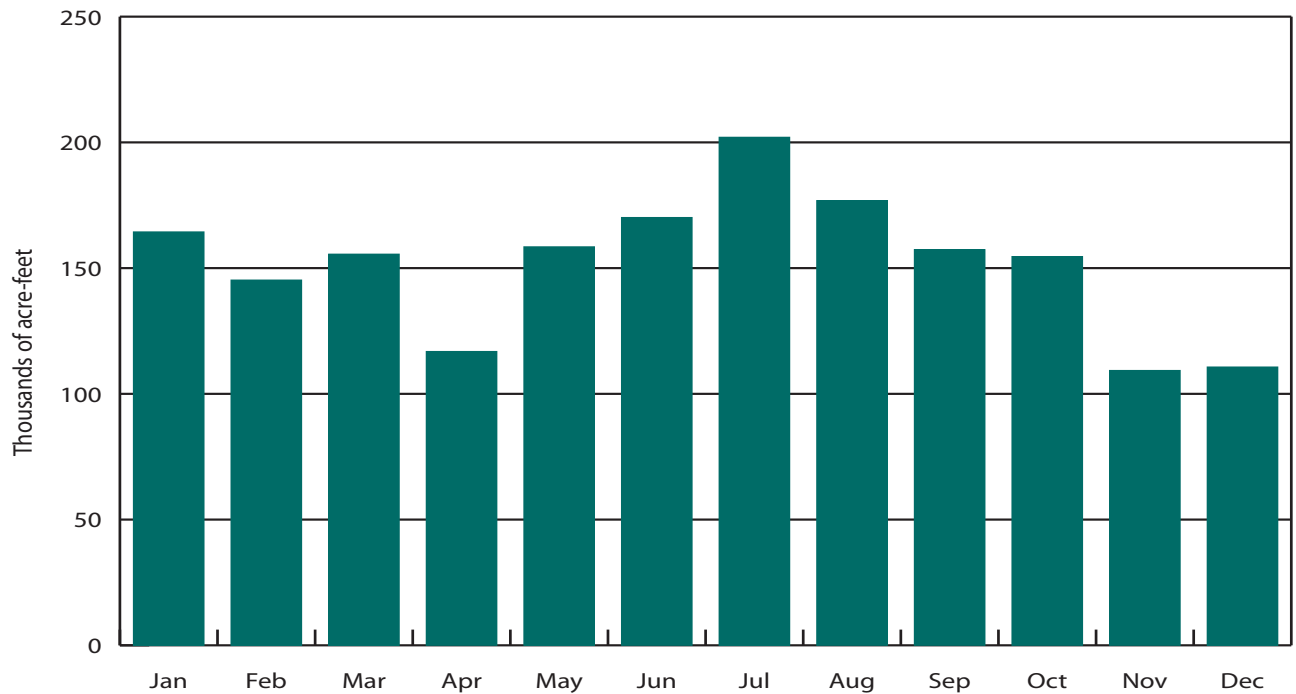


Figure 8-9. Water Pumped at Edmonston Pumping Plant, 2006, by Month



Chapter 9

Water Contracts and Deliveries

The California Aqueduct at dusk.

Significant Events in 2006

From May through June 2006, the Department of Water Resources (DWR) accepted 101,740 acre-feet (af) of floodwater flows into the California Aqueduct from the Kern River Intertie facility. The intertie was authorized by the U.S. Army Corps of Engineers (Corps) as a Federal Flood Control Project. Much of the May/June waters were caused by the lowering of Lake Isabella due to a potential seismic issue at an auxiliary dam, and from above-average rainfall and snowpack in the mountains as well as abundant runoff due to warmer-than-average temperatures in May.

Taking into consideration ample precipitation, resulting in a water year hydrologic classification of “wet,” existing storage in State Water Project (SWP) conservation reservoirs, and operational factors, DWR was able to approve 100 percent of all SWP water contractors’ requested Table A, amounting to 4,126,885 af. The total Table A water (significantly less than the allocated amount) delivered to all SWP water contractors in calendar year 2006 was 2,791,111 af, due in part to ample local water supplies in many SWP water contractors’ service areas.

Because of abundant water supplies both locally and from the SWP, DWR delivered 143,399 af of allocated SWP water supplies for six SWP water contractors to groundwater storage programs located in Kern County.

In December 2006, the Tracy Pumping Plant was renamed the C.W. “Bill” Jones Pumping Plant.

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

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

DWR delivers water to SWP water contractors in accordance with their long-term water supply contracts. These contracts set forth Table A amounts, which determine the maximum water a contractor may request each year from DWR. Table A amounts may also be used as a factor to allocate other available water supplies to each contractor. Contracts can be found at <http://www.water.ca.gov/swpao/wsc.cfm>.

"Table A" or "Table A water" represents a portion or all of the annual Table A requested by the SWP water contractors and approved for delivery by DWR, based on hydrologic conditions, current reservoir storage, and combined requests from the SWP water contractors. DWR is not always able to deliver the quantity of water requested by contractors. In these cases, and under certain conditions, a lesser amount is allocated and delivered according to the long-term water supply contracts by prorating the amount in proportion to each SWP water contractor's maximum Table A amount.

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. One amendment was executed and two others became effective during 2006. These amendments are further described in this chapter.

DWR also enters into agreements with SWP water 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. These agreements are listed in this chapter.

The State Water Project Analysis Office (SWPAO) developed a numbering system for contracts, amendments, and agreements executed by DWR. These numbers, called SWPAO numbers and designated in text as "SWPAO #XXXXX," are located in parentheses after each contract, amendment, or agreement. These numbers can be used as an identifier for anyone who contacts DWR staff for more detailed information on a particular document.

Amendments to Long-Term SWP Water Supply Contracts

All the original contracts signed by DWR and public 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

Long-Term SWP Water Supply Contracts

The first water supply contract was signed with the Metropolitan Water District of Southern California (Metropolitan) 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 the Governor 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 agreed upon 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 af, 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 af, 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.

- 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 Table A water from one year for delivery in the next year; and
- (5) implementation of Monterey Agreement principles.

2006 Amendments to Long-Term Water Supply Contracts

The following water supply contracts were amended or became effective during 2006.

Plumas County Flood Control and Water Conservation District

DWR executed Amendment No. 18 to the water supply contract between Plumas County Flood Control and Water Conservation District (Plumas) and DWR on July 21, 2006. The amendment provides for a reduction of Plumas' Table A amounts to 324 af for 2006 and to 720 af for 2007. (SWPAO #06005)

County of Kings

DWR executed Amendment No. 17 to the water supply contract between County of Kings (Kings) and DWR on September 23, 2005. The amendment provided for the permanent transfer of 305 af of SWP Table A water from Tulare Lake Basin Water Storage District (Tulare) to Kings, and set forth the conditions of the transfer. The transfer became effective January 1, 2006. (SWPAO #05014)

Tulare Lake Basin Water Storage District

DWR executed Amendment No. 32 to the water supply contract between Tulare and DWR on September 23, 2005. The amendment provided for the permanent transfer of 305 af of Table A water from Tulare to Kings and set forth the conditions of the transfer. The transfer became effective January 1, 2006. (SWPAO #05013)

Monterey Amendments

The Monterey Amendments increase the reliability of existing water supplies, and increase water management flexibility, providing more tools for local

water agencies to maximize use of existing facilities.

The Monterey Amendments include changes in allocation of 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, available online at <http://www.water.ca.gov/swpao/bulletin.cfm>.

Plumas and Empire-West Side Irrigation District (Empire) remain the only long-term SWP water contractors who have not signed the Monterey Amendments.

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 Environmental Impact Report (EIR) is being prepared. The draft EIR will be released in October 2007. The settlement agreement is discussed in detail in Chapter 9, Water Contracts and Deliveries, of Bulletin 132-04 (available online at <http://www.water.ca.gov/swpao/bulletin.cfm>).

Miscellaneous Agreements with Long-Term SWP Water Contractors

2006 Water Conveyance and Exchange Agreements

Water conveyance and exchange agreements that were executed or pending execution with long-term SWP water contractors during 2006 are described below.

County of Kings

A change in point of delivery agreement, executed October 24, 2006, among DWR, Kings, and Westlands Water District (Westlands, a Central Valley Project [CVP] water contractor) provides for the delivery of a portion of Kings' approved 2005 and 2006 SWP water supplies through Westlands' turnouts at Reaches 6 and 7 of the California Aqueduct. Kings requested the water for use on Westlands' agricultural lands within Kings County. During 2006, DWR delivered a total of 2,500 af of Kings' 2006 Table A water and 366 af of Article 21 water to Reaches 6 and 7. (SWPAO #05026)

Dudley Ridge Water District

A letter agreement, executed October 2, 2006, among DWR, Dudley Ridge Water District (Dudley Ridge), and San Gabriel Valley Municipal Water District (San Gabriel), provides for the delivery of a portion of Dudley Ridge's 2005 and 2006 approved SWP water supplies to San Gabriel's service area for groundwater recharge. This transaction helps both agencies in the management of their water supplies, especially Dudley Ridge whose main water source is SWP water. In future drier years, and by December 31, 2016, San Gabriel will return a like amount of its Table A water to Dudley Ridge. During 2006, a total of 2,760 af of Dudley Ridge's 2006 Table A water was delivered to San Gabriel at Reach 1 of the East Branch Extension. (SWPAO #05017)

Dudley Ridge Water District

An agreement pending execution among DWR, Dudley Ridge, and Kern County Water Agency (Kern) will provide for the transfer of a portion of Dudley Ridge's 2006 Table A water to Kern. The transfer will be made on behalf of a landowner

who farms in both the Dudley Ridge and Kern service areas. During 2006, a total of 5,000 af of Dudley Ridge's 2006 Table A water was delivered to Kern at Reach 10A. (SWPAO #06015)

Empire-West Side Irrigation District

An agreement pending execution between DWR and Empire will provide for the delivery of unscheduled water to Empire in 2006 at times when SWP water is not needed for fulfilling Table A deliveries or for meeting project operational commitments. During 2006, a total of 1,124 af of unscheduled water was delivered to Empire at Reach 8C. (SWPAO #06007)

Kern County Water Agency

A letter agreement pending execution among DWR, Westlands, and Semitropic Water Storage District (Semitropic), a member unit of Kern, will provide for the transfer of up to 50,000 af of Westlands' 2006–2007 CVP contract water to Semitropic, in accordance with Article 55 of Kern's long-term water supply contract. In 2005, Westlands became a groundwater banking partner in the Semitropic Groundwater Banking Program in Kern County, with the intent to deliver a portion of its unused CVP water for future recovery during drier years. The Bureau of Reclamation (Reclamation) will convey Westlands' water in the Delta Mendota Canal to O'Neill Forebay, then DWR will convey the water from O'Neill Forebay to Reach 10A. The agreement provides for two transactions for the return water: (1) by pumping recovered groundwater into the California Aqueduct in Reach 10A or (2) by delivery of Kern's Table A water in exchange for a like amount of stored CVP water. In 2006, no water was delivered pursuant to this agreement; however, Westlands plans on moving unused

2006–2007 CVP contract water in January or February 2007. (SWPAO #06013)

Kern County Water Agency

A letter agreement dated September 25, 2006, and executed October 10, 2006, between DWR and Kern, approved the delivery of CVP water purchased by Reclamation from Panoche Water District (a CVP water contractor) for use in the Kern National Wildlife Refuge. Kern facilitated the delivery and re-regulation of up to 20,827 af of Panoche's CVP water to Rosedale-Rio Bravo Water Storage District (Rosedale-Rio), a member unit of Kern, in accordance with Article 55 of Kern's long-term water supply contract. Rosedale-Rio will use Panoche's water in exchange for the delivery of up to 20,000 af of its portion of Kern's Table A water at O'Neill Forebay, for subsequent delivery by Reclamation to the Kern National Wildlife Refuge. During spring 2006, a total of 20,239 af of water was delivered to Rosedale-Rio. In the fall, 19,575 af of Rosedale-Rio's portion of Kern's Table A water was returned to Reclamation (the 20,239 af minus losses) for delivery to the refuge. (SWPAO #06003)

Santa Clara Valley Water District

A letter agreement pending execution among DWR, Santa Clara Valley Water District (Santa Clara), and Kern will provide for the conveyance of up to 53,573 af of Santa Clara's 2006 CVP water to Semitropic, in exchange for Semitropic's portion of Kern's Table A water in the future. Santa Clara is a groundwater banking partner in the Semitropic Groundwater Banking Program in Kern County and began delivering a portion of its unused CVP water to the program in 2005 for future recovery during drier years. DWR delivered the water pursuant to Article 55 of Santa Clara's long-term water supply contract. During 2006, a total of

53,573 af of Santa Clara's CVP water was delivered to Semitropic. (SWPAO #06012)

Tulare Lake Basin Water Storage District

A letter agreement dated June 13, 2006, and executed July 5, 2006, between DWR and Tulare, approved the transfer of up to 6,000 af of Tulare's 2006 Table A water to Westlands at Reaches 5, 6, and 7 of the California Aqueduct. The transfer was made on behalf of two landowners, Hansen Ranches (called Vista Verde Farms in Westlands) for up to 4,000 af, and Newton Farms for up to 2,000 af, both of which farm in Tulare's and Westlands' service areas. DWR petitioned SWRCB for a temporary change in place of use and received approval by SWRCB's Order WR 20060-012-DWR on July 3, 2006. During 2006, a total of 3,000 af of Tulare's Table A water was delivered to Westlands at Reach 5. (SWPAO #06001)

Tulare Lake Basin Water Storage District

A letter agreement dated July 19, 2006, and executed August 2, 2006, between DWR and Tulare, approved the transfer of up to 6,000 af of Tulare's 2006 Table A water to Westlands at Reach 7 of the California Aqueduct on behalf of Westlake Farms Inc., which farms in both Tulare's and Westlands' service areas. The water was to be delivered to Westlands for use on lands within the SWP place of use (Kings County portion of Westlands' service area). During 2006, a total of 6,000 af of Tulare's Table A water was delivered to Westlands at Reach 7. (SWPAO #06002)

Tulare Lake Basin Water Storage District

A letter pending finalization from DWR will approve a temporary change in the delivery of Tulare's December 2006 Table A water through Dudley Ridge's turnout, for subsequent delivery back into Tulare's

service area. This approval facilitates the use of two adjacent turnouts when there are capacity restrictions in Tulare's turnout. During 2006, DWR delivered a total of 400 af of Tulare's allocated Table A water through Dudley Ridge's Turnout 2, located at Milepost 182.99. (SWPAO #07006)

Water Conveyance and Exchange Agreements Prior to 2006

Water delivered during 2006, pursuant to agreements with SWP water contractors that were executed prior to 2006, is described below.

Castaic Lake Water Agency

A long-term change in point of delivery agreement, executed on August 9, 1994, among DWR, Castaic Lake Water Agency (Castaic Lake), and Metropolitan Water District of Southern California (Metropolitan), provides for the conveyance of Castaic Lake's SWP water supplies through Metropolitan's Foothill Feeder pipeline. Metropolitan wheels Castaic Lake's water to the Rio Vista Water Treatment Plant in Santa Clarita. During 2006, DWR delivered 19,137 af of Castaic Lake's approved SWP water supplies through Metropolitan's facilities. (SWPAO #94001)

County of Kings

A long-term change in point of delivery agreement, executed March 10, 2006, among DWR, Kings, and Tulare will provide for the delivery of up to 200 af of Kings' annual Table A water and other SWP water supplies to Westlands' turnouts at Reaches 6 and 7 of the California Aqueduct. The water is conveyed to GWF Energy, LLC for use within the SWP place of use (Kings County service area). During 2006, a total of 2 af was delivered to Westlands at Reach 6. (SWPAO #02031)

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 af of Kings' Table A water through Westlands' turnouts 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 2006, DWR delivered a total of 2,291 af of Kings' Table A water through Westlands. (SWPAO #04005)

Kern County Water Agency

An agreement executed on June 8, 2000, between DWR, Kern, and Western Hills Water District (Western Hills), approved the delivery of 8,000 af of pre-1914 water right Lower Kern River water banked in Kern's share of the Pioneer Groundwater Banking Project. A portion of Kern's annual Table A water will be delivered 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 2006, a total of 1,103 af of Kern's Table A water was delivered to Reach 2A. (SWPAO #01001)

Mojave Water Agency

An agreement executed November 13, 1997, among Antelope Valley-East Kern Water Agency (AVEK), Mojave Water Agency (Mojave), and DWR, approved a change in point of delivery through 2019 of up to 2,250 af annually of Mojave's Table A amount to AVEK's Fairmont Turnout at 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 2006, DWR delivered a total of 841 af of Mojave's SWP water supplies through AVEK's turnout at Reach 19, of which 814 af was 2006 Table A and 27 af was 2005 Article 56. (SWPAO #97003)

Napa County Flood Control and Water Conservation District

A change in point of delivery agreement executed December 26, 2001, among DWR, Napa, and Solano County Water Agency (Solano), approved the delivery of up to 628 af of Napa's annual Table A water to the City of Vallejo Water Treatment Plant at Reach 3A of the North Bay Aqueduct, in Solano's service area. This water is further conveyed to the City of American Canyon, a member agency of Napa. During 2006, a total of 208 af of Napa's water was delivered to Solano from Reach 3A, 182 af of which was Table A and 26 af of which was 2005 Article 56. (SWPAO #00029)

San Bernardino Valley Municipal Water District

San Bernardino Valley Municipal Water District (San Bernardino) and Metropolitan Water District of Southern California (Metropolitan) entered into Attachment 2 Coordinated Use Agreement for Conveyance Facilities and State Water Project 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. This action is permitted under Article 10 of the long-term water supply contract. During 2006, a total of 20,000 af of San Bernardino's Table A amounts was delivered to Metropolitan at Reach 26A. (SWPAO #02035)

Solano County Water Agency

A settlement agreement was executed May 19, 2003, among DWR, Solano, and the cities of Fairfield, Vacaville, and Benicia. Concurrently, a conveyance agreement was executed between DWR and Solano. Together, these agreements approved the delivery of up to 31,620 af annually of settlement water to Solano for delivery to the three cities to help meet their current and future municipal and industrial water needs through the North Bay Aqueduct. During 2006, a total of 3,917 af of settlement water was delivered to the three cities through Reaches 1 and 3A of the North Bay Aqueduct. (SWPAO #03017)

Introduction of Floodwaters into the California Aqueduct

Westlands Water District

During May and June 2006, Westlands pumped into the joint-use portion of the California Aqueduct (San Luis Canal) a total of 6,762 af of flood flows from its service area and took concurrent delivery of such water through downstream turnouts. Water introduced by Westlands into the California Aqueduct must meet current water quality criteria in effect at the time of delivery.

Kern River Intertie

DWR accepted floodwaters into the California Aqueduct during May and June 2006 under the *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.

The Intertie was authorized by the U.S. Army Corps of Engineers (Corps) as a Small Flood Control Project under the Flood Control Act of 1948, and construction was completed by the Corps in 1977.

Floodwaters from the Kern River, and other water that flows into the Kern River downstream from Lake Isabella, which are determined to be in excess of the needs of the Kern River Interests (Buena Vista Water Storage District (Buena Vista), North Kern Water Storage District, Tulare, and Hacienda Water District), are diverted into the California Aqueduct under this agreement to alleviate flooding in Kern and Tulare counties.

As a result of the need to lower the water level in Lake Isabella due to a potential seismic issue at an auxiliary dam, and above-average rainfall and snowpack in the southern Sierra Nevada mountains, combined with warmer-than-average temperatures in the area during May, a total of 101,740 af of floodwater was diverted through the Intertie into the California Aqueduct in 2006.

Turnout Agreements

Antelope Valley–East Kern Water Agency

On May 24, 2006, DWR executed an agreement with Metropolitan, AVEK, and the Los Angeles Department of Water and Power (LADWP) for the construction, operation, and maintenance of a new turnout facility at Milepost 311.84 of the

California Aqueduct. This facility will allow for the delivery of raw water from the California Aqueduct to the First Los Angeles Aqueduct.

Agreements and Activities Related to the Monterey Amendments

Turn-Back Water Pool Program

Pursuant to Article 56(d) of the Monterey Amendments, the eleventh year of the Turn-Back Water Pool Program was initiated through Notice to State Water Project Contractors No. 06-02, dated February 10, 2006. All SWP water contractors who signed the Monterey Amendments were permitted to participate in the program. The program allowed SWP water contractors to offer a portion of their approved 2006 Table A water for sale in a turn-back pool for use by interested SWP water contractors. Based on Table A supply and demand, the Turn-Back Water Pool water was allocated among the purchasing contractors. In 2006, 34,260 af of water was purchased under the Turn-Back Water Pool Program.

Initial transactions for Pool A and Pool B of the Turn-Back Water Pool Program occurred in February and March 2006, respectively. The program was then extended to June 1 to allow for changes in the percentage of Table A allocations between April 1 and June 1. Only SWP water contractors who were already committed to purchase water through Pool B were allowed to continue with the program until June. Turn-back water sold for \$12.40 per af (50 percent of the Delta Water Rate) through Pool A, and for \$6.20 per af (25 percent of the Delta Water Rate) through Pool B. All money collected through the Turn-Back Water Pool

Program was paid to the selling SWP water contractors. The 2006 Turn-Back Water Pool Program closed on June 1, 2006. Notices to State Water Project Contractors describing the Turn-Back Water Pool Program are available online at <http://www.water.ca.gov/swpao/notices.cfm>.

Table 9-1 lists SWP water contractors who participated in Pool A and Pool B of the Turn-Back Water Pool Program.

Table 9-1. 2006 Turn-Back Water Pool Program (af)

Contractor	Sold	Purchased
Pool A		
San Gabriel	5,000	
Ventura	10,500	
Yuba City	4,120	
Alameda County		256
Alameda-Zone 7		491
Dudley Ridge		349
Kern		6,081
Kings		56
Metropolitan		11,638
Oak Flat		35
Palmdale		130
Tulare		584
Total	19,620	19,620
Pool B		
Littlerock	1,500	
San Gabriel	8,640	
Ventura	4,500	
Dudley Ridge		719
Kern		12,259
Kings		117
Oak Flat		72
Tulare		1,203
Total	14,640	14,640

Storage of Water Outside Service Area

Pursuant to Article 56 of the Monterey Amendments, SWP water contractors have agreements with DWR to deliver or store SWP water outside their service areas for later use within their service areas. 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 long-term change in point of delivery agreement among DWR, Alameda County Flood Control and Water Conservation District, Zone 7 (Alameda-Zone 7), and Kern, provides for the delivery of a portion of Alameda-Zone 7's approved 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, in accordance with the *Alameda-Zone 7 and Semitropic Water Banking and Exchange Program Agreement*. All return water is to be delivered to Alameda-Zone 7 by December 31, 2035. During 2006, a total of 5,740 af of Alameda-Zone 7's water supply was delivered to Semitropic at Reach 10A, of which 197 af was 2005 Article 56 and 5,543 af was Table A. (SWPAO #04017)

Alameda County Flood Control and Water Conservation District, Zone 7

A long-term change in point of delivery agreement among DWR, Alameda-Zone 7, and Kern provides for the delivery of a portion of Alameda-Zone 7's approved SWP water supplies for storage in Cawelo Water District (Calwelo), a member unit of Kern, in a water banking and exchange program. Alameda-Zone 7 can recover one-half of its stored water (due to Cawelo's loss rate) in future drier

years by the return of Cawelo's portion of Kern's Table A water or by direct pumping from the groundwater bank into the California Aqueduct. All return water is to be delivered to Alameda-Zone 7 by December 31, 2035. During 2006, a total of 10,000 af of Alameda-Zone 7's allocated Table A water was delivered to Cawelo through the Cross Valley Canal (CVC) at Reach 12E. (SWPAO #06010)

Alameda County Water District

A change in point of delivery agreement, pending execution among DWR, Alameda County Water District (Alameda County), and Kern, will provide for the delivery of a portion of Alameda County's 2006 approved SWP water supplies for storage in and later recovery from Semitropic, in accordance with the *Alameda County and Semitropic Water Banking and Exchange Program Agreement*. During 2006, DWR delivered 27,447 af of Alameda County's 2006 SWP water supplies. Of this total, 25,021 af was allocated Table A water, 1,922 af was allocated Article 21 water, and 504 af was Article 56 from 2005. (SWPAO #07005)

Castaic Lake Water Agency

A long-term change in point of delivery agreement, executed September 25, 2006, among DWR, Castaic Lake, and Kern, provides for the delivery of a portion of Castaic Lake's approved 2005 and future SWP water supplies for storage in and later recovery from the groundwater basin underlying Rosedale-Rio, a member unit of Kern. This is in accordance with the *Agreement Between Rosedale-Rio-Bravo Water Storage District and Castaic Lake Water Agency for a Water Banking and Exchange Program*. During 2006, DWR delivered 18,550 af of Castaic Lake's approved 2006 Table A water and 1,450 af of 2005 Article 56 to Reach 12E

for subsequent delivery to Rosedale-Rio. (SWPAO #05016)

Dudley Ridge Water District

A change in point of delivery agreement, pending execution, among DWR, Dudley Ridge, and Kern, will provide for the delivery of a portion of Dudley Ridge's approved SWP water supplies for storage in and later recovery from the Kern Water Bank (KWB). During 2006, DWR delivered a total of 5,670 af of Dudley Ridge's approved SWP water supplies for storage in KWB, of which 1,593 af was Table A water and 4,077 af was Article 21 water. (SWPAO #07001)

Metropolitan Water District of Southern California

A long-term agreement, executed March 18, 2004, among DWR, Metropolitan, and Kern, provides for 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 Table A water or other water delivered from the California Aqueduct. During 2006, a total of 5,440 af of Metropolitan's Table A water was delivered to Kern for storage in the groundwater program. (SWPAO #01013)

Metropolitan Water District of Southern California

A long-term change in point of delivery agreement executed August 30, 2004, among DWR, Metropolitan, and Kern, provides for 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 (Kern Delta), a member unit of Kern, in accordance with the *Metropolitan and Kern Delta Water Management Program Agreement*. During 2006, a total of 5,065 af of Metropolitan's Table A water was delivered to Kern Delta at Reach 12E. (SWPAO #03019)

Santa Clara Valley Water District

A change in point of delivery agreement, pending execution among DWR, Santa Clara and Kern, will provide for the delivery of a portion of Santa Clara's approved 2006 SWP water supplies for storage in and later recovery from Semitropic, in accordance with the *Santa Clara and Semitropic Water Banking and Exchange Program Agreement*. During 2006, DWR delivered a total of 10,463 af of Article 21 water allocated to Santa Clara to Semitropic at Reach 10A. (SWPAO #06011)

Article 21 Water Program

Pursuant to the Monterey Amendments, Article 21 water replaces unscheduled, surplus, wet weather, and Article 12(d) water. The Article 21 Water Program allows an SWP water 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 SWP water deliveries, water quality, and Delta requirements are met.

The conditions for the Article 21 Water Program for 2006 were described in the December 27, 2005, Notice to State Water Project Contractors No. 05-14, available

online at <http://www.water.ca.gov/swpao/notices.cfm>. Fourteen participants signed the notice, which indicated their acceptance of the criteria, procedures, and charges for the program. They collectively received a total of 620,215 af of Article 21 water (Table 9-2).

During the Article 21 Water Program period, unscheduled water was also made available to Empire pursuant to its long-term water supply contract. Empire received 1,124 af of unscheduled water in 2006 for agricultural purposes.

Table 9-2. Article 21 Water Deliveries (af)

Contractor	Amount
Alameda County	1,922
Castaic Lake	2,089
Kings	366
Yuba City	1,194
Dudley Ridge	18,429
Kern	247,914
Napa	300
Palmdale	1,653
Santa Barbara	4,020
San Luis Obispo	827
Santa Clara	26,769
Solano	18,195
Metropolitan	238,478
Tulare	58,059
<i>Subtotal</i>	<i>620,215</i>
Empire ^a	1,124
Total	621,339

^a Unscheduled agricultural water.

Flexible Storage Program

Pursuant to Article 54 of the Monterey Amendments, the flexible storage program provides SWP water contractors

participating in the repayment of the capital costs of Castaic Lake and Lake Perris the option to withdraw water in excess of approved deliveries. The program objective 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 af at Castaic Lake and 65,000 af at Lake Perris. Participating SWP water contractors of the Castaic Lake flexible storage program include Metropolitan, Ventura County Watershed Protection District (Ventura), and Castaic Lake. Respectively, each can withdraw a maximum amount of 153,940 af, 1,377 af, and 4,683 af. At Lake Perris, since 2004, Metropolitan, Coachella Valley Water District (Coachella), and Desert Water Agency (Desert) participate in the repayment of the capital costs, but through agreement, Metropolitan is the only SWP water contractor that can withdraw water, and it may withdraw up to 65,000 af. Any participating SWP water contractor is given five years to replace the water with Table A amounts, purchased water, exchange water, or local water.

One SWP water contractor participated in the flexible storage program in 2006. Castaic Lake had a negative balance of 395 af in Castaic Lake at the end of 2002 and replaced 395 af in 2006, resulting in a zero water balance at the end of 2006.

Extended Carryover Program

Pursuant to Article 56 of the Monterey Amendments, SWP water contractors can elect to store project water outside of their service areas and carry it over to the following year for 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 SWP water contractors requesting storage in proportion to their annual Table A water for that year. Fifteen SWP water contractors took delivery of 159,474 af of approved 2005 Table A water carried over into 2006, as extended carryover.

Dry Year Water Purchase Program

Due to the wet hydrology of 2006, there was no need for a dry year water purchase program this year.

Environmental Water Account

The Environmental Water Account (EWA) is a cooperatively managed program intended to provide (1) beneficial environmental changes to protect the fish of the Bay-Delta Estuary and (2) increased operational flexibility of the SWP and CVP for enhancement of water supply reliability to its customers. Three management agencies: the National Marine Fisheries Service (NOAA Fisheries), U.S. Fish and Wildlife Service (USFWS), and the Department of Fish and Game (DFG); and two project agencies: Reclamation and DWR, are responsible for implementing the EWA.

EWA provides fish protection by curtailing project water delivery from the Sacramento-San Joaquin Delta to project water users south and west of the Delta and replacing it at a later date within the same calendar year when water flows are lower. EWA operates on a water year basis, which begins October 1 and ends September 30 of the following year. However, EWA has the entire water year, plus the three remaining months of the calendar year, to replace curtailed water. This necessitates the acquisition of alternative sources of water, 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 as defined in the August 28, 2000, CALFED Record of Decision (ROD); “purchase assets,” which are acquired water purchases from willing water sellers; “source shifting,” which involves deferral of scheduled delivery of water by willing participants; and other nonwater assets including dedicated pumping capacity at Banks Pumping Plant during the summer. EWA is considered operational for any year when these assets are in place and when the Endangered Species Act (ESA) commitments are provided by the management agencies.

In 2006, EWA’s sixth operational year, exports were periodically curtailed at the SWP and CVP export facilities between April 28 and June 24, 2006. These actions resulted in an EWA debt of about 149,151 af to the SWP (April—2,831 af; May—55,563 af; June—90,757 af) and zero af to the CVP.

During water year 2006, DWR purchased 202,857 af in acquisition assets. Since there were no CVP export reductions, Reclamation did not purchase any

acquisition assets. In addition, EWA committed to purchase 62,000 af of water from Yuba County Water Agency (Yuba) through contract agreement and forward its delivery to a future date due to wet hydrology conditions. All purchase asset acquisitions in 2006 were covered under the EWA Environmental Impact Statement (EIS)/EIR in compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Source shifting to defer water deliveries was not required because the San Luis Reservoir did not reach a low-point elevation.

EWA had no carryover debt at the beginning of January 2006. At the end of December 2006, EWA was credited 53,706 af of water.

Purchased Assets

The following SWP water contractors and non-SWP water contractors participated in the EWA program in 2006. The purchased asset water amounts described herein 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

DWR and Kern continued the multiyear agreement in 2006 (SWPAO #05705) for support of the EWA through exchange of water previously stored in the Kern Water Bank (KWB) for a like quantity of Kern’s Table A water. In 2006, there were no water purchases from Kern due to wet year hydrology conditions.

Santa Clara Valley Water District

DWR and Santa Clara planned a multiyear agreement (SWPAO #06705) in 2006 for

support of the EWA by transferring and banking up to 50,000 af of water per year that was previously stored in the KWB for a like quantity of Kern's Table A water. During 2006, the contract was negotiated but not executed resulting in no water purchase by DWR from Santa Clara due to the wet year hydrology conditions.

Metropolitan Water District of Southern California

DWR had three agreements with Metropolitan in 2006. The first agreement was the wet-dry year exchange. DWR and Metropolitan continued the previous year's wet-dry year exchange agreement (SWPAO #05701 delivered 50,000 af of water in 2005 for the wet-dry exchange). In 2006, EWA did not return any water to Metropolitan due to the wet year hydrology conditions. The second agreement between DWR and Metropolitan was executed on July 25, 2006, for a multiyear source shift contract (SWPAO #06703) for up to 100,000 af per year that would provide additional water to EWA when the low-point in San Luis Reservoir was reached. In 2006, there was no need for a source shift action with Metropolitan due to the wet year hydrology conditions. The third agreement (SWPAO #06704) was being planned as a 2006 wet-dry year exchange contract with Metropolitan to support EWA. In 2006, there were no wet-dry year exchanges with Metropolitan due to the wet year hydrology conditions, so the agreement was not finalized within DWR.

Yuba County Water Agency

DWR and Yuba executed Amendment No.1 (SWPAO #06701) on March 3, 2006, to the agreement between DWR and Yuba approving the transfer of up to 125,000 af from storage in New Bullards Bar Reservoir and groundwater substitution for support

of EWA (SWPAO #04716). Amendment No. 1 allowed DWR to purchase 62,000 af of Yuba's water in 2006. However, the delivery of the purchased water was postponed due to the wet year hydrology conditions.

Operational Assets

Project pumping of excess flows in the Delta was done to reduce EWA debt. In 2006, DWR pumped 201,207 af to reduce the EWA debt (July—15,219 af; August—28,269 af; September—26,753 af; November—3,024 af; and December—127,941 af). Reclamation did not pump any water to reduce the 2006 EWA debt. The combined project pumping total for reducing the EWA debt was 201,207 af. In October 2006, the EWA share of the SWP water gain from the Central Valley Project Improvement Act (CVPIA) Section 3406 (b)(2) fish actions release was 1,650 af.

Miscellaneous Agreements with Other Agencies

In addition to negotiating agreements with SWP water contractors to provide for specified water deliveries, DWR also entered into several agreements with other agencies for water conveyance, or exchange, between January 1, 2006, and December 31, 2006.

Water Conveyance Agreements—CVP Water

DWR regularly enters into agreements to convey CVP water for contractors receiving water from Reclamation through the CVC, a water conveyance facility that connects with the California Aqueduct, Milepost 238.04, 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. (In December 2006, the Tracy Pumping Plant was renamed the C.W. "Bill" Jones Pumping Plant.)

Cross Valley Canal

Eight CVP water contractors use the CVC to obtain water from the California Aqueduct either by exchange with other agencies or by direct delivery: 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 three-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; (7) March 1, 2003, through February 29, 2004; (8) March 1, 2005, through February 28, 2005; (9) March 1, 2005, through February 28, 2006; and (10) March 1, 2006, through February 28, 2007.

Between January 1, 2006, and December 31, 2006, DWR did not deliver CVP water to the CVC contractors.

Musco Family Olive Company

A pending agreement among Musco Family Olive Company, Plain View Water District (Plain View), DWR, and Reclamation provides for the conveyance of up to 800 af of Plain View's CVP water to Reach 2A of the California Aqueduct for use by Musco Family Olive Company. A total of 535 af was delivered in 2006 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 af 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 75 af was delivered to the National Cemetery in Reach 2B of the California Aqueduct in 2006 under this pending agreement. (SWPAO #03312)

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 af of CVP water would be delivered from Check 2, the end of Reach 7, to the Buena Vista Turnout BV-1B, Reach 10A of the California Aqueduct, from May 1, 2002, to May 31, 2009. DWR conveyed 21,282 af of CVP water to Kern National Wildlife Refuge in 2006. (SWPAO #03317)

Water Deliveries

Table A Deliveries

Each year, by October 1, the SWP water contractors submit initial requests for Table A deliveries allocated to them for use in the subsequent calendar year. Initial Table A allocation amounts for the coming year are made by DWR in December. They are based on operations studies that assume 90 percent exceedence of historical water supply (where exceedence refers to the possibility that water supply in the coming year will be exceeded by the historical water supply), current reservoir storage, and total requests by the SWP water contractors. Forecasts for the year are updated as hydrologic conditions change. Table A amounts are increased or decreased depending on both actual and projected hydrologic conditions, though decreases are rare as the 90 percent exceedence criteria is fairly conservative.

On October 1, 2005, SWP water contractors submitted initial requests for 2006 totalling 4.17 maf.

DWR approved deliveries of 2.27 maf on November 22, 2005, resulting in initial Table A amounts of 55 percent of most SWP water contractor requests. DWR

increased the 2006 Table A amounts to 2.68 maf, or 65 percent, on December 14, 2005. As water conditions improved, Table A amounts were increased to 2.89 maf (70 percent) on January 17, 2006; 3.30 maf (80 percent) on March 23, 2006; and 4.13 maf (100 percent) on April 18, 2006.

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

2006 SWP Deliveries

The SWP delivers water for a variety of beneficial uses. In addition to delivering Table A water to SWP water contractors, the SWP:

- conveys water to other public and local 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 2006, 4,828,580 af of water was delivered to 27 SWP water contractors and 25 other agencies, categorized as follows:

- 2,791,111 af of Table A water;
- 621,339 af of Article 21 water;
- 182,240 af of 2005 carryover water;
- 1,926 af of SWP water for recreation and fish and wildlife;
- 1,134,617 af of nonproject water delivered to satisfy settlement agreements and agreements with SWP water contractors for local water supplies; and
- 97,347 af of water delivered to satisfy agreements between the SWP and CVP.



Figure 9-1. Water Delivered in 2006 and Delivery Locations of Long-Term Water Supply Contractors and Feather River Area Districts with Water Rights Agreements with DWR

Figure 9-1 shows amounts of water delivered to various locations during 2006.

Specific information about water deliveries made to SWP water contractors and other agencies during 2006, and historical deliveries from 1962 through 2006, 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 2006, by Service Area (Table 9-3);
- Water Delivered in 2006, by Month (Table 9-4); and
- Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962–2006 (Table 9-5).

Please note that the water delivery figures listed are accurate at the time of this Bulletin 132 publication, but small volumes of water may be reclassified over time pursuant to long-term water supply contract provisions. If your research requires more current data than was available at the time of publication, please consult the most recent edition of Bulletin 132 and/or contact the DWR staff in the State Water Project Analysis Office.

2006 Water Deliveries to Long-Term SWP Water Contractors

Table 9-3 shows amounts of water delivered in 2006. The following information is arranged by column number.

Table A Water Delivered

Columns 1 through 6 show a detailed breakdown of Table A water delivered for SWP water contractors in 2006.

Turn-Back Pool Water

Column 4 shows 34,260 af of Turn-Back Pool water was delivered to SWP water contractors in 2006.

2005 Carryover Table A Water Delivered During 2006

Column 6 shows a total of 182,240 af of water was carried over from 2005 for delivery in 2006.

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 water contractors' long-term contracts and amendments state the criteria for carrying over Table A water from one year to the next, under Articles 12e, 14b, and 56c.

Total Table A Water Delivered

Column 7 shows all Table A water delivered in 2006—a total of 2,973,351 af.

Article 21 and Unscheduled Water

Column 8 shows 621,339 af of 2006 Article 21 water was delivered to SWP water contractors (which includes 620,215 af of Article 21 and 1,124 af of unscheduled water to Empire). SWP water contractors who have not signed the Monterey Amendments receive unscheduled water.

Total SWP Water Delivered

Column 9 shows 3,594,690 af of total SWP water was delivered in 2006. This includes total Table A water, 2005 Table A carryover water, and Article 21 water.

Non-SWP Water Deliveries

Column 10 includes deliveries of non-SWP water to long-term water contractors.

Non-SWP water is generally local, settlement, and permit water that an SWP water contractor has a water right to, or water purchased from, exchanged with, or transferred from non-SWP agencies. In 2006, non-SWP water deliveries totaled 96,878 af.

Total Deliveries

Column 11 shows total amounts of water delivered to SWP water contractors. In 2006, the SWP delivered 3,691,568 af of water to 27 long-term contractors.

Water Delivered in 2006 by Month

During 2006, the SWP provided water service to 54 agencies, including 27 SWP 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 non-SWP water.

SWP Water

SWP water as defined in the long-term water supply contracts, includes Article 21 water, carryover Table A water, current year Table A amounts, transfer and exchange of Table A water, and Turn-Back Pools A and B. Detailed information concerning those conveyances is found under the “Miscellaneous Agreements with Long-Term SWP Water Contractors” section in this chapter.

2006 Non-SWP Water

In 2006, 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 wetter-than-normal years, DWR will accept floodwater from the Kern River into the California Aqueduct through the Kern River-California Aqueduct Intertie under an *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 2006, DWR accepted 101,740 af of floodwater into the California Aqueduct.

Water Rights Water

Water in this category is transported through SWP facilities to long-term SWP water contractors and other agencies according to terms of various settlement agreements. Some water simply passes through SWP transportation facilities; some portion is stored in SWP reservoirs for release later. In 2006, 1,134,617 af of water in this category was delivered to the Feather River, South Bay, North Bay, and Southern California areas, and is summarized below.

Feather River Area. Nine non-SWP agencies in the Feather River area received 1,094,944 af:

- Last Chance Creek Water District, 8,903 af;
- Thermalito Irrigation District, 1,934 af;
- South Feather Water and Power Agency, formerly Oroville-Wyandotte Irrigation District, 5,629 af;
- Western Canal Water District, 299,626 af;
- Joint Water Districts Board, 757,845 af;

- Oswald Water District, 598 af;
- Tudor Mutual Water Company, 3,300 af;
- Garden Highway Mutual Water Company, 13,200 af; and
- Plumas Mutual Water Company, 3,909 af.

North Bay Area. In the North Bay Area, 944 af of Vallejo permit water and 3,917 af of water pursuant to the May 19, 2003, *Settlement Agreement among DWR, Solano County Water Agency, and the Cities of Fairfield, Vacaville, and Benicia*, was delivered.

South Bay Area. In the South Bay Area, a total of 16,699 af of local water was delivered to Alameda-Zone 7 and Alameda County. These two South Bay Aqueduct (SBA) SWP water contractors hold water rights to runoff from the Lake del Valle watershed.

Southern California. In Southern California, 506 af of local runoff from the Houston Creek watershed was stored and delivered to Crestline-Lake Arrowhead Water Agency (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 44 years is contained in Table 9-5. The following discussion of conveyed Table A water is arranged according to column numbers.

Annual Table A Water

Columns 1 through 7 of Table 9-5 show the amount of SWP water contractors' annual Table A water by area for years

1962 through 2006, 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 SWP water 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.

Table A Water

Column 8 shows amounts of Table A water delivered each year from 1962 through 2006. In 2006, a total of 2,973,351 af of Table A water was delivered.

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 2006. Article 21 and unscheduled water is water in excess of that required to meet all demands for the year's Table A water and water to be stored in SWP reservoirs. In 2006, a total of 621,339 af of Article 21 and unscheduled water was delivered.

Other Water

Column 10 includes amounts of water classified as other water delivered in 2006, including non-SWP water conveyed through SWP facilities and regulated delivery of local supply. In 2006, a total of 119,403 af 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. Column 11 also includes Delta diversions. In 2006, a total of 1,094,944 af in this category was delivered to agencies in the Feather River area, and 17,607 af was delivered to Byron-Bethany Irrigation District (Byron-Bethany) in the Delta.

Recreation Water

Column 12 shows water conveyed for recreational use or to provide water to improve water quality for fish and wildlife. In 2006, a total of 1,936 af 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 SBA, and was completed in 1979, when Lake Perris reached its maximum operating capacity of 127,000 af. 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 in 2006 (Acre-Feet)

SWP Contractor	Table A Water Deliveries							2006 Article 21 (8)	Total SWP Water (9)	Non-SWP Water (10)	Total (11)
	2006 Table A not Transferred, Exchanged, or Stored (1)	2006 Table A Transferred or Exchanged (2)	2006 Table A Stored (3)	2006 Turn-Back Pool (4)	Total 2006 Table A (5)	2005 Carryover (6)	Total Table A (7)				
Feather River											
County of Butte	468				468		468		468		468
Plumas County FC&WCD											
City of Yuba City	4,148				4,148		4,148	1,194	5,342		5,342
North Bay											
Napa County FC&WCD	7,317				7,317	172	7,489	300	7,789		7,789
Solano County WA	12,070				12,070	390	12,460	18,195	30,655	4,861	35,516
South Bay											
Alameda County FC&WCD, Zone 7	35,241		15,544	491	51,276	2,252	53,528		53,528	10,381	63,909
Alameda County WD	14,549		25,021	256	39,826	1,331	41,157	1,922	43,079	7,318	50,397
Santa Clara Valley WD	47,344				47,344	524	47,868	26,769	74,637	53,573	128,210
San Joaquin Valley											
Castaic Lake WA	646		18,550		19,196	1,450	20,646	2,089	22,735		22,735
County of Kings	8,991			173	9,164		9,164	366	9,530		9,530
Dudley Ridge WD	45,990	7,760	1,593	1,068	56,411		56,411	18,429	74,840		74,840
Empire West Side ID	1,500				1,500	658	2,158	1,124	3,282		3,282
Kern County WA	951,113			18,610	969,723	5,418	975,141	247,914	1,223,055	20,239	1,243,294
Oak Flat WD	4,118			107	4,225	17	4,242		4,242		4,242
Tulare Lake Basin WSD	39,361	9,000		1,787	50,148		50,148	58,059	108,207		108,207
Central Coastal											
San Luis Obispo County FC&WCD	3,382				3,382		3,382	827	4,209		4,209
Santa Barbara County FC&WCD	19,255				19,255		19,255	4,020	23,275		23,275
Southern California											
Antelope Valley-East Kern WA	76,623				76,623	3,761	80,384		80,384		80,384
Castaic Lake WA	37,562				37,562	2,455	40,017		40,017		40,017
Coachella Valley WD	121,100				121,100		121,100		121,100		121,100
Crestline-Lake Arrowhead WA	641				641		641		641	506	1,147
Desert WA	50,000				50,000		50,000		50,000		50,000
Littlerock Creek ID											
Metropolitan WDSC	1,093,033		10,505	11,638	1,115,176	158,532	1,273,708	238,478	1,512,186		1,512,186
Mojave WA	32,496				32,496	1,518	34,014		34,014		34,014
Palmdale WD	10,374			130	10,504	335	10,839	1,653	12,492		12,492
San Bernardino Valley MWD	11,904	20,000			31,904	3,427	35,331		35,331		35,331
San Gabriel Valley MWD	13,524				13,524		13,524		13,524		13,524
San Geronio Pass WA	4,278				4,278		4,278		4,278		4,278
Ventura County FCD	1,850				1,850		1,850		1,850		1,850
Totals	2,648,878	36,760	71,213	34,260	2,791,111	182,240	2,973,351	621,339	3,594,690	96,878	3,691,568

Table 9-4. Total Amounts of Water Delivered in 2006, by Month (Acre-Feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2006 Total Deliveries
FEATHER RIVER AREA													
<i>SWP Agencies</i>													
City of Yuba City													
Table A	0	0	0	0	0	0	499	399	830	866	807	747	4,148
Pool A sale*	4,120	0	0	0	0	0	0	0	0	0	0	0	4,120
Article 21	0	0	0	0	56	0	562	576	0	0	0	0	1,194
Agency Total (* excluded from total)	0	0	0	0	56	0	1,061	975	830	866	807	747	5,342
County of Butte													
Table A	169	35	132	2	37	15	12	19	4	5	2	36	468
Plumas County Flood Control and Water Conservation District													
Table A	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Recreation/Fish and Wildlife (SWP)</i>													
Recreation/Fish and Wildlife	0	0	0	0	1	1	1	1	0	1	0	0	5
<i>Non-SWP Agencies</i>													
Garden Highway Water Company													
Regulated delivery of local supply	0	0	0	57	1,408	1,251	6,701	1,466	746	1,571	0	0	13,200
Joint Water Districts Board													
Regulated delivery of local supply	27,760	0	0	0	99,310	115,320	129,291	120,523	62,771	49,330	79,650	73,890	757,845
Last Chance Creek Water District													
Regulated delivery of local supply	0	0	0	0	0	1,765	76	4,191	1,736	490	119	526	8,903
Oswald Water District													
Regulated delivery of local supply	0	0	0	0	99	114	126	91	26	71	71	0	598
Plumas Mutual Water Company													
Regulated delivery of local supply	0	0	0	0	221	2,044	354	356	589	345	0	0	3,909
South Feather Water & Power Agency													
Regulated delivery of local supply	0	0	0	0	623	881	1,030	1,040	994	641	293	127	5,629
Thermalito Irrigation District													
Regulated delivery of local supply	0	0	24	73	233	263	339	319	323	226	25	109	1,934
Tudor Mutual Water Company													
Regulated delivery of local supply	0	0	0	0	406	851	992	451	383	217	0	0	3,300
Western Canal Water District													
Regulated delivery of local supply	2,165	0	0	0	41,368	51,191	60,811	52,003	15,416	24,500	36,367	15,805	299,626
SWP	169	35	132	2	94	16	1,074	995	834	872	809	783	5,815
Non-SWP	29,925	0	24	130	143,668	173,680	199,720	180,440	82,984	77,391	116,525	90,457	1,094,944
Feather River Area Total	30,094	35	156	132	143,762	173,696	200,794	181,435	83,818	78,263	117,334	91,240	1,100,759

Table 9-4. Total Amounts of Water Delivered in 2006, by Month (Acre-Feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2006 Total Deliveries
NORTH BAY AREA													
<i>SWP Agencies</i>													
Napa County Flood Control and Water Conservation District (NCFCWCD)													
Table A	0	4	0	788	1,050	649	893	1,058	932	383	451	927	7,135
Table A through Solano*	0	0	4	4	12	19	37	40	39	10	12	5	182
Article 56(c) extended carryover	146	0	0	0	0	0	0	0	0	0	0	0	146
Article 56(c) extended carryover through Solano*	26	0	0	0	0	0	0	0	0	0	0	0	26
Article 21	0	178	122	0	0	0	0	0	0	0	0	0	300
Vallejo Permit from Solano	0	0	0	0	0	200	200	100	0	0	0	0	500
Agency Total (* excluded from total)	146	182	122	788	1,050	849	1,093	1,158	932	383	451	927	8,081
Solano County Water Agency													
Table A	0	63	61	296	288	3,531	4,405	665	665	635	1,072	389	12,070
Napa Table A through Solano	0	0	4	4	12	19	37	40	39	10	12	5	182
Article 56(c) extended carryover	390	0	0	0	0	0	0	0	0	0	0	0	390
Napa Article 56(c) extended carryover through Solano	26	0	0	0	0	0	0	0	0	0	0	0	26
Article 21	79	312	232	146	1,109	0	1,389	4,888	4,316	3,082	630	2,012	18,195
Settlement	0	0	0	0	0	0	0	0	0	872	2,505	540	3,917
Vallejo Permit	0	0	0	0	0	100	100	0	0	156	88	0	444
Vallejo Permit to Napa*	0	0	0	0	0	200	200	100	0	0	0	0	500
Agency Total (* excluded from total)	495	375	297	446	1,409	3,650	5,931	5,593	5,020	4,755	4,307	2,946	35,224
SWP	641	557	419	1,234	2,459	4,199	6,724	6,651	5,952	4,982	4,670	3,873	42,361
Non-SWP	0	0	0	0	0	300	300	100	0	156	88	0	944
North Bay Area Total	641	557	419	1,234	2,459	4,499	7,024	6,751	5,952	5,138	4,758	3,873	43,305
SOUTH BAY AREA													
<i>SWP Agencies</i>													
Alameda County Flood Control and Water Conservation District, Zone 7													
Table A	0	1,828	905	559	1,640	5,676	2,638	6,732	5,327	5,199	3,130	1,607	35,241
Table A to Semitropic*	0	0	0	0	5,543	0	4,421	5,580	0	0	0	0	15,544
Pool A	0	0	0	0	0	0	491	0	0	0	0	0	491
Article 56(c) extended carryover	2,055	0	0	0	0	0	0	0	0	0	0	0	2,055
Article 56(c) extended carryover to Semitropic*	197	0	0	0	0	0	0	0	0	0	0	0	197
Local	62	197	268	1,176	2,788	487	3,552	0	159	314	129	249	9,381

Table 9-4. Total Amounts of Water Delivered in 2006, by Month (Acre-Feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2006 Total Deliveries
Transfer from Byron-Bethany Irrigation District	0	0	0	0	0	0	0	0	1,000	0	0	0	1,000
Agency Total (* excluded from total)	2,117	2,025	1,173	1,735	4,428	6,163	6,681	6,732	6,486	5,513	3,259	1,856	48,168
Alameda County Water District													
Table A	544	584	0	0	1,746	2,283	3,085	631	720	1,908	1,483	1,565	14,549
Table A to Semitropic*	0	0	1,118	996	6,000	6,000	10,907	0	0	0	0	0	25,021
Pool A	0	0	0	0	0	0	256	0	0	0	0	0	256
Article 56(c) extended carryover	827	0	0	0	0	0	0	0	0	0	0	0	827
Article 56(c) extended carryover to Semitropic*	504	0	0	0	0	0	0	0	0	0	0	0	504
Article 21 to Semitropic*	0	1,761	161	0	0	0	0	0	0	0	0	0	1,922
Local	0	0	1,314	1,539	0	0	0	2,234	2,231	0	0	0	7,318
Agency Total (* excluded from total)	1,371	584	1,314	1,539	1,746	2,283	3,341	2,865	2,951	1,908	1,483	1,565	22,950
Santa Clara Valley Water District													
Table A	27	0	0	0	2,477	7,585	8,111	8,074	7,141	6,955	3,480	3,494	47,344
Article 21	2,066	3,319	4,172	3,423	3,326	0	0	0	0	0	0	0	16,306
Article 21 to Semitropic*	0	4,565	3,317	2,581	0	0	0	0	0	0	0	0	10,463
Article 56(c) extended carryover	524	0	0	0	0	0	0	0	0	0	0	0	524
CVP to Semitropic*	0	0	0	0	0	0	8,073	45,500	0	0	0	0	53,573
Agency Total (* excluded from total)	2,617	3,319	4,172	3,423	5,803	7,585	8,111	8,074	7,141	6,955	3,480	3,494	64,174
Non-SWP Agencies													
Byron-Bethany Irrigation District													
Regulated delivery of local supply Recreation/Fish And Wildlife (SWP)	17	102	0	0	3,225	4,277	3,711	2,955	2,221	1,054	45	0	17,607
Lake del Valle	6	8	6	4	12	26	27	28	28	12	7	5	169
SWP	6,049	5,739	5,083	3,986	9,201	15,570	14,608	15,465	13,216	14,074	8,100	6,671	117,762
Non-SWP	79	299	1,582	2,715	6,013	4,764	7,263	5,189	5,611	1,368	174	249	35,306
South Bay Area Total	6,128	6,038	6,665	6,701	15,214	20,334	21,871	20,654	18,827	15,442	8,274	6,920	153,068
SAN JOAQUIN VALLEY AREA													
SWP Agencies													
Castaic Lake Water Agency													
Table A	0	0	0	0	0	0	0	0	0	0	0	646	646
Table A to Rosedale-Rio Bravo*	0	0	0	0	0	0	3,386	5,342	1,473	4,846	3,503	0	18,550
Article 56(c) extended carryover to Rosedale Rio-Bravo*	1,450	0	0	0	0	0	0	0	0	0	0	0	1,450

Table 9-4. Total Amounts of Water Delivered in 2006, by Month (Acre-Feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2006 Total Deliveries
Article 21	1,355	734	0	0	0	0	0	0	0	0	0	0	2,089
Agency Total (* excluded from total)	1,355	734	0	0	0	0	0	0	0	0	0	646	2,735
County of Kings													
Table A	0	0	0	0	0	0	0	0	61	2,667	1,241	229	4,198
Table A through WWD*	0	26	33	17	273	732	2,493	505	293	126	183	112	4,793
Article 21 through WWD*	86	90	90	90	0	0	0	0	0	0	10	0	366
Pool A	0	0	0	0	0	0	0	0	0	52	4	0	56
Pool B	0	0	0	0	0	0	0	0	0	108	9	0	117
Agency Total (* excluded from total)	0	0	0	0	0	0	0	0	61	2,827	1,254	229	4,371
Dudley Ridge Water District													
Table A	0	0	0	551	3,182	8,381	11,805	11,273	5,574	2,981	2,206	37	45,990
Tulare Table A through Dudley	0	0	0	0	0	0	0	0	0	0	0	400	400
Table A to Kern Water Bank*	0	0	0	0	0	150	0	0	0	0	502	941	1,593
Transfer Table A to KCWA*	0	0	0	0	0	0	0	0	0	5,000	0	0	5,000
Exchange Table A to San Gabriel WA*	0	0	0	0	0	0	0	0	0	1,630	1,130	0	2,760
Pool A	0	0	0	0	0	0	0	0	349	0	0	0	349
Pool B	0	0	0	0	0	0	0	0	719	0	0	0	719
Article 21	1,597	3,159	3,400	241	0	0	0	0	0	0	1,493	4,462	14,352
Article 21 to Kern Water Bank*	718	1,574	1,530	122	0	0	0	0	0	0	0	133	4,077
Agency Total (* excluded from total)	1,597	3,159	3,400	792	3,182	8,381	11,805	11,273	6,642	2,981	3,699	4,899	61,810
Empire West Side Irrigation District													
Table A	0	0	0	0	0	0	0	0	0	0	173	1,327	1,500
Article 12E carryover	658	0	0	0	0	0	0	0	0	0	0	0	658
Article 21 Unscheduled	0	506	72	0	0	0	0	0	0	0	0	546	1,124
Agency Total	658	506	72	0	0	0	0	0	0	0	173	1,873	3,282
Kern County Water Agency													
Table A	585	6,585	14,850	19,986	58,696	115,242	182,599	161,279	142,520	93,415	88,301	65,952	950,010
Table A to Western Hills	10	32	30	46	121	181	196	161	136	95	54	41	1,103
Table A from Dudley	0	0	0	0	0	0	0	0	0	5,000	0	0	5,000
Table A Exchange Panoche/KCWA to Kern National Wildlife Refuge	0	0	0	255	493	0	40	1,561	4,656	4,698	5,135	2,737	19,575
Pool A	0	0	0	0	0	0	4,746	0	1,335	0	0	0	6,081
Pool B	0	0	0	0	0	0	8,428	2,919	1,182	0	0	0	12,529
Article 56(c) extended carryover	5,418	0	0	0	0	0	0	0	0	0	0	0	5,418
Article 21	46,878	90,156	63,994	14,181	18,831	0	0	0	0	0	3,037	10,837	247,914

Table 9-4. Total Amounts of Water Delivered in 2006, by Month (Acre-Feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2006 Total Deliveries
Panoche Water District/KCWA Exchange	0	10,663	8,481	1,095	0	0	0	0	0	0	0	0	20,239
Deliveries to Water Banks													
ACFC&WCD, Zone 7 Table A to Semitropic	0	0	0	0	5,543	0	4,421	5,580	0	0	0	0	15,544
ACWD Table A to Semitropic	0	0	1,118	996	6,000	6,000	10,907	0	0	0	0	0	25,021
CLWA Table A to Rosedale-Rio Bravo	0	0	0	0	0	0	3,386	5,342	1,473	4,846	3,503	0	18,550
DRWD Table A to Kern Water Bank	0	0	0	0	0	150	0	0	0	0	502	941	1,593
MWDSC Table A to Arvin Edison	0	0	0	0	0	0	0	1,259	1,940	946	883	412	5,440
MWDSC Table A to Kern Delta	0	0	0	0	0	0	0	2,580	766	1,719	0	0	5,065
ACFC&WCD, Zone 7 Article 56(c) extended carryover to Semitropic	197	0	0	0	0	0	0	0	0	0	0	0	197
ACWD Article 56(c) extended carryover to Semitropic	504	0	0	0	0	0	0	0	0	0	0	0	504
CLWA Article 56(c) extended carryover to Rosedale-Rio Bravo	1,450	0	0	0	0	0	0	0	0	0	0	0	1,450
ACWD Article 21 to Semitropic	0	1,761	161	0	0	0	0	0	0	0	0	0	1,922
SCVWD Article 21 to Semitropic	0	4,565	3,317	2,581	0	0	0	0	0	0	0	0	10,463
SCVWD CVP to Semitropic	0	0	0	0	0	0	8,073	45,500	0	0	0	0	53,573
DRWD Article 21 to Kern Water Bank	718	1,574	1,530	122	0	0	0	0	0	0	0	133	4,077
DRWD Article 56(c) extended carryover to Kern Water Bank													
MWDSC Table A to Semitropic													
Water Bank Delivery Subtotal	2,869	7,900	6,126	3,699	11,543	6,150	26,787	60,261	4,179	7,511	4,888	1,486	143,399
Agency Total (* excluded from total)	55,750	115,304	93,451	38,961	89,070	121,392	222,560	224,459	149,216	105,926	96,226	78,275	1,390,590
Oak Flat Water District													
Table A	0	113	18	44	593	904	757	808	461	373	45	2	4,118
Pool A	0	0	0	0	0	0	35	0	0	0	0	0	35
Pool B	0	0	0	0	0	0	72	0	0	0	0	0	72
Article 56(c) extended carryover	17	0	0	0	0	0	0	0	0	0	0	0	17
Agency Total	17	113	18	44	593	904	864	808	461	373	45	2	4,242
Tulare Lake Basin Water Storage District													
Table A	0	0	0	0	0	0	1,416	5,643	2,672	10,447	13,370	5,413	38,961
Table A through Dudley Service Area*	0	0	0	0	0	0	0	0	0	0	0	400	400
Transfer Table A to Westlands Water District *	0	0	0	0	0	1,000	3,500	1,650	0	2,850	0	0	9,000
Pool A	0	0	0	0	0	0	0	0	0	549	23	12	584
Pool B	0	0	0	0	0	0	0	0	0	1,156	47	0	1,203

Table 9-4. Total Amounts of Water Delivered in 2006, by Month (Acre-Feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2006 Total Deliveries
Article 21	3,338	9,566	7,342	1,151	2,178	308	0	0	0	0	3,673	30,503	58,059
Agency Total (* excluded from total)	3,338	9,566	7,342	1,151	2,178	308	1,416	5,643	2,672	12,152	17,113	35,928	98,807
Recreation/Fish and Wildlife (SWP)													
Department of Fish & Game, O'Neill	33	81	44	27	5	16	79	88	35	118	31	12	569
Parks and Recreation, O'Neill	2	0	1	2	9	10	12	2	1	1	1	1	42
Agency Total	35	81	45	29	14	26	91	90	36	119	32	13	611
<i>Non-SWP Agencies</i>													
Western Hills Water District													
Table A from KCWA	10	32	30	46	121	181	196	161	136	95	54	41	1,103
EWA Program													
SWP Gain*	0	0	0	0	0	0	0	0	0	1,650	0	0	1,650
CVP Water Annual Contractors													
Plain View WD/Musco Family Olive Company	34	28	32	10	41	57	67	70	62	59	41	34	535
U.S. Dept. of Veterans Affairs, S.J.V. National Cemetery	1	1	1	1	13	18	15	14	5	3	2	1	75
Agency Total	35	29	33	11	54	75	82	84	67	62	43	35	610
Cross Valley Canal Contractors													
Agency Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Bureau of Reclamation													
Panoche WD exchange to KCWA*	0	10,663	8,481	1,095	0	0	0	0	0	0	0	0	20,239
Westlands Water District													
County of Kings Table A	0	26	33	17	273	732	2,493	505	293	126	183	112	4,793
Transfer KCWA Table A	0	0	0	0	0	1,000	3,500	1,650	0	2,850	0	0	9,000
County of Kings Article 21	86	90	90	90	0	0	0	0	0	0	10	0	366
Kern National Wildlife Refuge	472	524	0	0	0	0	0	0	0	0	0	711	1,707
Panoche/KCWA Table A Exchange to Kern National Wildlife	0	0	0	255	493	0	40	1,561	4,656	4,698	5,135	2,737	19,575
Recreation	0	2	0	3	6	9	10	0	1	3	0	1	35
Fish and wildlife	89	66	37	22	4	13	64	73	29	95	25	81	598
Agency Total (* excluded from total)	647	708	160	387	776	1,754	6,107	3,789	4,979	7,772	5,353	3,642	36,074
SWP	62,846	118,948	96,000	40,035	95,431	132,924	234,852	199,089	159,517	127,449	118,789	122,018	1,507,898
Non-SWP	596	11,284	8,551	1,386	557	97	8,269	47,218	4,753	4,858	5,203	3,565	96,337
San Joaquin Valley Area Total	63,442	130,232	104,551	41,421	95,988	133,021	243,121	246,307	164,270	132,307	123,992	125,583	1,604,235

Table 9-4. Total Amounts of Water Delivered in 2006, by Month (Acre-Feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2006 Total Deliveries
CENTRAL COASTAL AREA													
<i>SWP Agencies</i>													
San Luis Obispo County Flood Control and Water Conservation District													
Table A	181	166	202	207	366	357	332	311	370	403	259	228	3,382
Article 21	184	224	120	84	0	0	0	0	0	0	0	215	827
Agency Total	365	390	322	291	366	357	332	311	370	403	259	443	4,209
Santa Barbara County Flood Control and Water Conservation District													
Table A	0	0	0	1,156	1,747	2,686	3,147	3,085	2,745	2,312	1,046	1,331	19,255
Article 21	1,298	1,495	1,227	0	0	0	0	0	0	0	0	0	4,020
Agency Total	1,298	1,495	1,227	1,156	1,747	2,686	3,147	3,085	2,745	2,312	1,046	1,331	23,275
SWP	1,663	1,885	1,549	1,447	2,113	3,043	3,479	3,396	3,115	2,715	1,305	1,774	27,484
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0
Central Coastal Area Total	1,663	1,885	1,549	1,447	2,113	3,043	3,479	3,396	3,115	2,715	1,305	1,774	27,484
SOUTHERN CALIFORNIA AREA													
<i>SWP Agencies</i>													
Antelope Valley-East Kern Water Agency													
Table A	0	3,967	3,855	5,372	8,599	10,088	10,790	10,034	8,362	5,708	5,530	4,318	76,623
MWA's Table A through AVEK	0	35	0	67	0	135	134	176	126	68	50	23	814
Article 56(c) extended carryover	3,761	0	0	0	0	0	0	0	0	0	0	0	3,761
MWA's Article 56(c) carryover through AVEK	27	0	0	0	0	0	0	0	0	0	0	0	27
Agency Total	3,788	4,002	3,855	5,439	8,599	10,223	10,924	10,210	8,488	5,776	5,580	4,341	81,225
Castaic Lake Water Agency													
Table A	0	2,026	1,296	1,368	3,657	4,493	6,047	4,686	4,611	3,581	3,301	2,496	37,562
Article 56(c) extended carryover	2,060	0	0	0	0	0	0	0	0	0	0	0	2,060
Article 56(c) extended carryover flexible storage payback	395	0	0	0	0	0	0	0	0	0	0	0	395
Agency Total	2,455	2,026	1,296	1,368	3,657	4,493	6,047	4,686	4,611	3,581	3,301	2,496	40,017
Coachella Valley Water District													
Table A	0	0	0	0	0	0	0	28,713	52,424	13,321	13,321	13,321	121,100
Crestline-Lake Arrowhead Water Agency													
Table A	0	0	0	0	0	0	98	141	145	104	74	79	641
Local	64	74	64	32	82	111	79	0	0	0	0	0	506
Agency Total	64	74	64	32	82	111	177	141	145	104	74	79	1,147

Table 9-4. Total Amounts of Water Delivered in 2006, by Month (Acre-Feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2006 Total Deliveries
Desert Water Agency													
Table A	0	0	0	0	0	0	0	12,307	4,250	22,443	5,500	5,500	50,000
Littlerock Creek Irrigation District													
Table A	0	0	0	0	0	0	0	0	0	0	0	0	0
Pool B sale*	0	1,500	0	0	0	0	0	0	0	0	0	0	1,500
Agency Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Metropolitan Water District of Southern California													
Table A	0	0	0	72,947	129,965	146,156	167,723	100,358	103,960	127,406	128,348	116,170	1,093,033
Table A to Arvin-Edison*	0	0	0	0	0	0	0	1,259	1,940	946	883	412	5,440
Table A to Kern Delta*	0	0	0	0	0	0	0	2,580	766	1,719	0	0	5,065
Table A from SBVMWD	0	0	0	0	0	0	0	20,000	0	0	0	0	20,000
Pool A	0	0	0	11,638	0	0	0	0	0	0	0	0	11,638
Article 14B	0	0	0	22,108	0	0	0	0	0	0	0	0	22,108
Article 56(c) extended carryover	136,424	0	0	0	0	0	0	0	0	0	0	0	136,424
Article 21	0	141,788	96,690	0	0	0	0	0	0	0	0	0	238,478
Agency Total (* excluded from total)	136,424	141,788	96,690	106,693	129,965	146,156	167,723	120,358	103,960	127,406	128,348	116,170	1,521,681
Mojave Water Agency													
Table A	0	1,793	2,570	2,862	4,219	5,948	2,177	998	1,541	4,473	4,113	988	31,682
MWA's Table A through AVEK*	0	35	0	67	0	135	134	176	126	68	50	23	814
Article 56(c) extended carryover	1,491	0	0	0	0	0	0	0	0	0	0	0	1,491
MWA's Article 56(c) carryover through AVEK*	27	0	0	0	0	0	0	0	0	0	0	0	27
Agency Total (* excluded from total)	1,491	1,793	2,570	2,862	4,219	5,948	2,177	998	1,541	4,473	4,113	988	33,173
Palmdale Water District													
Table A	0	440	110	65	1,071	1,301	1,545	1,495	1,767	1,475	998	107	10,374
Pool A	0	0	0	0	0	0	130	0	0	0	0	0	130
Article 56(c) extended carryover	335	0	0	0	0	0	0	0	0	0	0	0	335
Article 21	0	413	684	556	0	0	0	0	0	0	0	0	1,653
Agency Total	335	853	794	621	1,071	1,301	1,675	1,495	1,767	1,475	998	107	12,492
San Bernardino Valley Municipal Water District													
Table A	0	1,978	2,630	808	600	425	1,121	1,086	1,754	398	751	353	11,904
Transfer Table A to MWDC *	0	0	0	0	0	0	0	20,000	0	0	0	0	20,000
Article 56(c) extended carryover	3,427	0	0	0	0	0	0	0	0	0	0	0	3,427
Agency Total (* excluded from total)	3,427	1,978	2,630	808	600	425	1,121	1,086	1,754	398	751	353	15,331

Table 9-4. Total Amounts of Water Delivered in 2006, by Month (Acre-Feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2006 Total Deliveries
San Gabriel Valley Municipal Water District													
Table A	0	0	0	5	76	2,561	3,253	2,884	3,268	1,477	0	0	13,524
Table A from DRWD	0	0	0	0	0	0	0	0	0	1,630	1,130	0	2,760
Pool A sale*	5,000	0	0	0	0	0	0	0	0	0	0	0	5,000
Pool B sale*	0	8,640	0	0	0	0	0	0	0	0	0	0	8,640
Agency Total (* excluded from total)	0	0	0	5	76	2,561	3,253	2,884	3,268	3,107	1,130	0	16,284
San Geronio Pass Water Agency													
Table A	105	103	121	86	99	59	0	155	734	929	931	956	4,278
Ventura County Flood Control District													
Table A	0	0	0	0	231	231	231	231	231	231	231	233	1,850
Pool A sale*	10,500	0	0	0	0	0	0	0	0	0	0	0	10,500
Pool B sale*	0	4,500	0	0	0	0	0	0	0	0	0	0	4,500
Agency Total (* excluded from total)	0	0	0	0	231	231	231	231	231	231	231	233	1,850
Recreation/Fish and Wildlife (SWP)													
Castaic Lagoon	0	0	0	0	0	0	0	226	209	212	0	0	647
Castaic Lake	14	23	21	20	25	45	38	77	75	42	12	4	396
Pyramid Lake	0	0	0	0	1	2	1	1	1	3	1	0	10
Silverwood Lake	5	3	3	4	8	14	13	16	13	9	6	4	98
Agency Total	19	26	24	24	34	61	52	320	298	266	19	8	1,151
SWP	148,044	152,569	107,980	117,906	148,551	171,458	193,301	183,584	183,471	183,510	164,297	144,552	1,899,223
Non-SWP	64	74	64	32	82	111	79	0	0	0	0	0	506
Southern California Area Total	148,108	152,643	108,044	117,938	148,633	171,569	193,380	183,584	183,471	183,510	164,297	144,552	1,899,729
SWP WATER													
SWP Long Term Water Supply Contracts													
Table A	1,621	19,778	27,935	108,232	232,288	325,788	434,258	378,708	357,842	317,905	285,351	230,385	2,720,091
Transfer Table A	0	0	0	0	0	1,000	3,500	21,650	0	7,850	0	0	34,000
Exchange Table A	0	0	0	0	0	0	0	0	0	1,630	1,130	0	2,760
Pool A	0	0	0	11,638	0	0	5,658	0	1,684	601	27	12	19,620
Pool B	0	0	0	0	0	0	8,500	2,919	1,901	1,264	56	0	14,640
Article 14B carryover	0	0	0	22,108	0	0	0	0	0	0	0	0	22,108
Article 56(c) extended carryover	159,474	0	0	0	0	0	0	0	0	0	0	0	159,474
Article 12E carryover	658	0	0	0	0	0	0	0	0	0	0	0	658
Article 21	57,599	259,840	183,153	22,575	25,500	308	1,951	5,464	4,316	3,082	8,843	48,708	621,339
Agency Total	219,352	279,618	211,088	164,553	257,788	327,096	453,867	408,741	365,743	332,332	295,407	279,105	3,594,690

Table 9-4. Total Amounts of Water Delivered in 2006, by Month (Acre-Feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2006 Total Deliveries
Other Water Supply Contracts													
Solano Settlement	0	0	0	0	0	0	0	0	0	872	2,505	540	3,917
Recreation/Fish and Wildlife	60	115	75	57	60	112	170	438	361	395	57	26	1,926
SWP Total	219,412	279,733	211,163	164,610	257,849	327,210	454,038	409,180	366,105	333,602	297,970	279,671	3,600,543
NON-SWP WATER													
Non-SWP Water Supply Contracts													
Local	30,068	373	1,670	2,877	149,763	178,555	207,062	185,629	87,595	78,759	116,699	90,706	1,129,756
Vallejo Permit	0	0	0	0	0	300	300	100	0	156	88	0	944
Subtotal	30,068	373	1,670	2,877	149,763	178,855	207,362	185,729	87,595	78,915	116,787	90,706	1,130,700
CVP/Reclamation													
Water transfer to SWP contractor	0	0	0	0	0	0	0	0	1,000	0	0	0	1,000
Water exchange to SWP contractor	0	10,663	8,481	1,095	0	0	0	0	0	0	0	0	20,239
Annual Contract	35	29	33	11	54	75	82	84	67	62	43	35	610
Conveyance	0	0	0	0	0	0	8,073	45,500	0	0	0	0	53,573
Kern National Wildlife Refuge	472	524	0	255	493	0	40	1,561	4,656	4,698	5,135	3,448	21,282
Recreation/Fish and Wildlife	89	68	37	25	11	24	75	74	31	101	26	82	643
Subtotal	596	11,284	8,551	1,386	558	99	8,270	47,219	5,754	4,861	5,204	3,565	97,347
Non-SWP Total	30,664	11,657	10,221	4,263	150,320	178,952	215,631	232,947	93,348	83,773	121,990	94,271	1,228,037
Grand Total	250,076	291,390	221,384	168,873	408,169	506,162	669,669	642,127	459,453	417,375	419,960	373,942	4,828,580

Table 9-5. Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962–2006 (Acre-Feet)

Year	Annual Table A Amounts According to Long-Term Water Supply Contracts							Water Conveyed								Total (16)
								Deliveries					Initial Fill Water (14)	Losses and Storage Changes (15)		
	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)	Table A Water (8)	Article 21, Surplus, and Unscheduled Water (a) (9)	Other Water (b) (10)	Feather River Diversions (c) (11)	Wildlife/ Recreation Water (12)			Subtotal (13)	
1962	0	0	0	0	0	0	0	0	0	18,289	0	0	18,289	9	272	18,570
1963	0	0	0	0	0	0	0	0	0	22,456	0	0	22,456	71	185	22,712
1964	0	0	0	0	0	0	0	0	0	32,507	0	0	32,507	171	152	32,830
1965	0	0	0	0	0	0	0	0	0	44,105	0	0	44,105	93	729	44,927
1966	0	0	0	0	0	0	0	0	0	67,928	0	0	67,928	0	1,746	69,674
1967	0	0	11,538	0	0	0	11,538	11,538	0	53,605	0	0	65,143	8,328	4,212	77,683
1968	550	0	109,900	77,350	0	3,700	191,500	171,709	121,534	14,777	866,926	0	1,174,946	498,926	117,906	1,791,778
1969	620	0	98,700	163,075	0	5,000	267,395	193,020	72,397	18,829	794,374	0	1,078,620	510,614	72,196	1,661,430
1970	700	0	114,200	202,000	0	5,700	322,600	233,993	133,024	38,080	759,759	0	1,164,856	23,947	2,435	1,191,238
1971	890	0	116,200	251,800	0	6,700	375,590	357,340	296,019	44,119	778,362	8	1,475,848	7,853	5,812	1,489,513
1972	970	0	118,300	413,066	0	209,423	741,759	611,801	423,964	66,638	817,398	6,489	1,926,290	100,274	53,062	2,079,626
1973	1,100	0	120,400	383,652	0	481,100	986,252	694,388	296,416	42,511	800,743	1,155	1,835,213	204,638	53,798	2,093,649
1974	1,230	0	122,400	460,650	0	597,920	1,182,200	874,077	417,676	46,224	911,613	2,118	2,251,708	237,554	10,657	2,499,919
1975	1,610	0	124,500	545,809	0	714,950	1,386,869	1,223,990	622,902	63,793	862,218	3,377	2,776,280	103,352	(94,606)	2,785,026
1976	1,990	0	126,500	543,417	0	836,480	1,508,387	1,373,002	580,110	115,217	946,440	1,745	3,016,514	61,122	(681,025)	2,396,611
1977	2,420	0	128,600	581,400	0	954,901	1,667,321	574,155	0	389,065	581,994	1,111	1,546,325	0	(131,151)	1,415,174
1978	1,850	0	130,700	635,900	0	1,049,584	1,818,034	1,452,699	16,914	121,225	786,517	1,691	2,379,046	64,443	717,370	3,160,859
1979	2,130	0	132,700	702,685	0	1,190,573	2,028,088	1,659,896	648,389	187,630	882,549	1,766	3,380,230	12,302	(83,430)	3,309,102
1980	1,810	500	134,800	758,100	1,946	1,317,614	2,214,770	1,529,749	404,557	46,459	875,045	2,131	2,857,941	0	(26,606)	2,831,335
1981	1,940	650	137,000	818,000	2,813	1,432,065	2,392,468	1,909,562	908,428	279,161	838,557	4,688	3,940,396	0	(802,263)	3,138,133
1982	1,970	800	139,200	876,500	5,626	1,550,449	2,574,545	1,750,024	215,873	154,882	776,330	4,646	2,901,755	0	480,752	3,382,507
1983	2,000	950	141,400	867,118	8,439	1,681,257	2,701,164	1,184,869	13,019	181,453	602,905	7,849	1,990,095	0	(90,997)	1,899,098
1984	3,630	1,100	143,600	979,211	12,698	1,744,098	2,884,337	1,588,619	262,917	381,024	832,332	7,040	3,071,932	0	(140,182)	2,931,750
1985	3,760	1,250	145,800	1,019,049	21,138	1,864,849	3,055,846	1,995,453	307,672	404,842	870,008	4,033	3,582,008	0	92,885	3,674,893
1986	4,190	1,400	148,100	1,091,946	28,210	1,983,890	3,257,736	1,995,636	36,620	193,606	791,737	3,865	3,021,464	0	284,380	3,305,844
1987	4,620	1,550	150,300	1,188,500	35,204	2,103,941	3,484,115	2,130,086	114,907	377,592	831,947	7,672	3,462,204	0	(390,413)	3,071,791
1988	5,060	15,471	152,500	1,246,100	43,722	2,225,482	3,688,335	2,385,122	0	507,076	794,834	4,889	3,691,921	0	(92,850)	3,599,071
1989	5,500	24,615	156,700	1,290,400	56,342	2,424,633	3,958,190	2,853,747	0	474,559	830,500	8,135	4,166,941	0	447,917	4,614,858
1990	6,040	28,190	160,900	1,313,450	70,486	2,500,600	4,079,666	2,582,151	90	424,697	875,099	9,262	3,891,299	0	(528,869)	3,362,430
1991	11,880	29,590	166,400	1,338,011	70,486	2,510,200	4,126,567	549,113	3,521	551,051	565,395	4,879	1,673,959	0	167,435	1,841,394

Table 9-5. Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962–2006 (Acre-Feet)

(continued)

Year	Annual Table A Amounts According to Long-Term Water Supply Contracts							Water Conveyed								Total (16)
								Deliveries						Initial Fill Water (14)	Losses and Storage Changes (15)	
	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)	Table A Water (8)	Article 21, Surplus, and Unscheduled Water (a) (9)	Other Water (b) (10)	Feather River Diversions (c) (11)	Wildlife/ Recreation Water (12)	Subtotal (13)			
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	1,471,454	1,156	144,789	613,978	2,605	2,233,982	0	(63,541)	2,170,441
1993	11,960	34,620	177,400	1,342,300	70,486	2,510,200	4,146,966	2,315,235	0	254,854	822,589	2,609	3,395,287	0	726,123	4,121,410
1994	12,000	37,215	182,000	1,342,300	70,486	2,510,200	4,154,201	1,749,351	112,625	236,739	874,018	8,200	2,980,933	0	(295,405)	2,685,528
1995	12,050	44,030	184,000	1,342,300	70,486	2,510,200	4,163,066	1,967,093	64,330	78,425	860,077	2,575	2,972,500	0	69,536	3,042,036
1996	12,100	48,225	186,000	1,301,630	70,486	2,492,900	4,111,341	2,514,825	28,647	251,391	934,997	3,907	3,733,767	86	491,550	4,225,403
1997	12,150	49,315	188,000	1,297,300	45,201	2,492,900	4,084,866	2,325,775	21,432	322,000	993,211	4,146	3,666,564	527	(11,806)	3,655,285
1998	12,200	50,420	188,000	1,272,300	45,201	2,517,900	4,086,021	1,725,519	20,288	134,682	872,738	2,108	2,755,335	0	(132,491)	2,622,844
1999	12,250	51,500	188,000	1,272,300	70,486	2,519,900	4,114,436	2,738,891	158,070	85,312	1,108,672	4,324	4,095,269	0	(189,525)	3,905,744
2000	14,000	55,945	210,000	1,205,300	70,486	2,565,900	4,121,631	3,200,677	308,785	332,654	1,085,886	4,030	4,932,032	0	(20,103)	4,911,929
2001	14,670	66,561	220,000	1,185,519	70,486	2,566,900	4,124,136	1,690,926	43,435	477,835	1,078,656	2,929	3,293,781	0	159,983	3,453,764
2002	14,730	67,396	220,000	1,195,219	70,486	2,557,200	4,125,031	2,573,030	37,165	307,162	1,132,938	3,694	4,053,989	0	80,709	4,134,698
2003	14,790	68,231	220,400	1,194,819	70,486	2,558,200	4,126,926	2,901,041	59,828	251,447	1,008,093	2,846	4,223,255	0	459,377	4,682,632
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
2005	10,800	69,481	222,619	1,170,000	70,486	2,582,300	4,125,686	2,828,406	731,083	96,932	1,074,706	1,506	4,732,633	0	529,347	5,261,980
2006	11,124	69,856	222,619	1,170,000	70,486	2,582,800	4,126,885	2,973,351	621,339	119,403	1,112,551	1,936	4,828,580	0	(119,981)	4,708,599
Total	258,304	919,927	6,234,895	36,563,476	1,363,830	67,441,909	112,782,341	67,460,849	8,323,628	8,842,113	34,021,364	138,829	118,786,783	1,834,310	1,244,122	121,865,215

^a Values include amounts of deliveries to short-term contractors (Mustang Water District, 1970-1972; 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 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.



Chapter 10

Power Resources

The Department of Water Resources administers a comprehensive power resources program.

Significant Events in 2006

During 2006, the California Independent System Operator (CAISO) continued work on proposals for a major redesign of its markets. After an extensive stakeholder process, CAISO filed the Market Redesign and Technology Upgrade (MRTU) tariff with the Federal Energy Regulatory Commission (FERC). FERC approved the tariff and provided directives to further refine it.

In January 2005, the Department of Water Resources (DWR) submitted its Application for New License for the Oroville Facilities to FERC. In March 2006, DWR concluded settlement negotiations with more than 50 signatories representing a wide array of interests. Completion of all federal and State environmental documentation was still ongoing at the end of 2006 in pursuit of the new FERC license.

Information for this chapter was provided by the State Water Project Analysis Office, the SWP Power and Risk Office, and the Executive Division.

Long-term State Water Project (SWP) water contractors depend on the SWP to provide economical sources of power to deliver affordable water. Consequently, 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 surplus power, 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 resources and transmission services sufficient to operate the SWP;
- develop and manage power resources to minimize the cost of water deliveries to SWP water contractors;
- meet responsibilities and criteria of the Western Electricity Coordinating Council (WECC); and
- conform to regulations of the Federal Energy Regulatory Commission (FERC).

To achieve these goals, DWR constructed its own generating, pumping, and pumped-storage facilities and enters into long-term and short-term contracts with other electric utilities for transmission access and power purchases, sales, and exchanges.

In addition, DWR participates in the California Independent System Operator (CAISO) supplemental energy market to help CAISO maintain its control area demand and supply balance. DWR generators and pumps also participate

in CAISO ancillary services markets by providing spinning and nonspinning reserves to the CAISO-controlled grid. In the case of system emergencies or contingencies, DWR can and does drop its pump loads to help CAISO maintain reliable electric power for Californians.

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 2006, CAISO continued work on proposals for a major redesign of its markets. After an extensive stakeholder process, CAISO filed the Market Redesign and Technology Upgrade (MRTU) tariff with FERC. FERC approved the tariff and provided directives to CAISO to further refine the tariff.

On February 16, 2006, the California Public Utilities Commission (CPUC)

adopted a new Long-Term Procurement Rulemaking (R.06-02-013) that would develop a process to integrate short-term Resource Adequacy (RA) and the Long-Term Procurement Plan (LTPP). On June 29, 2006, CPUC issued a decision (D.06-06-064) that would refine the CPUC RA and establish local RA starting in 2007.

California Assembly Bill (AB) 380, which was passed by the Legislature and signed by the Governor, contained two sections that addressed RA requirements for entities subject to CPUC jurisdiction and publicly owned utilities. Although the SWP was specifically exempted from AB 380 requirements, it was explicitly included by CAISO in the Interim Reliability Requirement Program (IRRP) that was approved by FERC order on May 12, 2006, and became effective in June 2006.

DWR Participation in Electric Utility Industry Activities

DWR continued to participate in CAISO's MRTU stakeholder processes; tariff design processes under FERC Dockets ER02-1656 and ER06-615; and Business Practice Manual development to help ensure that MRTU tariff design and the Business Practice Manual work for SWP water operation, as well as for other wholesale customers' businesses. DWR's participation in MRTU focused on the following primary elements:

- modeling, scheduling, and settling DWR's hydroelectric power generation and participating load;
- Congestion Revenue Rights allocations, and consideration of hydro operations in the allocation of such;
- inclusion of unaccounted-for energy as part of metered demand when costs are

allocated to market participants based upon metered demand;

- following cost causation principles in allocating costs such as bid cost recovery in the real-time market;
- honoring DWR's existing transmission contracts; and
- respecting SWP's environmental requirements in CAISO scheduling and administration of outages.

DWR also participated in a number of non-MRTU CAISO and non-CAISO electric utility stakeholder processes and FERC proceedings to help ensure that various market requirements or cost allocation mechanisms were appropriately structured. Major processes and litigations included the following (with FERC docket number given in parenthesis):

- considering time-sensitive rates to encourage demand response (AD05-17);
- charging an export fee to Participating Intermittent Resource Program resources exporting from CAISO control area (ER07-142);
- developing RA requirements for SWP under IRRP, including development of a DWR Local Regulatory Authority declaration (ER06-723-000);
- CAISO pre-MRTU Tariff Resource Adequacy section 40: IRRP (ER06-723);
- FERC Order 2003: CAISO large generator interconnection agreements and procedures (ER04-445);
- CAISO Tariff Amendment 60: minimum load reliability cost allocation (ER02-1656-024, ER04-835, EL04-103);
- CAISO and Independent Energy Producer's Association joint motion on capacity generation charged for

must-offer obligations energy (EL05-146);

- CAISO's proposal for a third category for new transmission to promote the construction of transmission lines to connect remotely located renewable resources (EL05-80);
- Trans Bay Cable's proposal to turn over operating control of its transmission facilities to CAISO, resulting in its transmission revenue requirement being included in CAISO's transmission access costs (ER05-985);
- Nevada Hydro Company's proposal to recover the Lake Elsinore Advance Pump Storage (LEAPS) project costs, both wire and nonwire costs, through CAISO's transmission access charges (ER06-278);
- City of Pasadena transmission control agreement (ER05-381, EL05-18);
- CPUC transmission infrastructure to access renewable energy resources (I.05-09-005);
- Pacific Gas & Electric Company (PG&E) 8th transmission owner tariff (ER05-1284);
- PG&E transmission revenue balancing account adjustment, reliability services rates and transmission access charge balancing account adjustment (ER07-16);
- Southern California Edison (SCE) reliability service tariff (ER06-259);
- SCE 3rd transmission owner tariff (ER06-186); and
- San Diego Gas & Electric Company (SDG&E) transmission revenue balancing account adjustment (ER06-818).

DWR participated in litigation before the Ninth Circuit Court or D.C. Circuit Court on various electric utility matters when

a successful resolution was not reached before FERC. The litigation included:

- (FERC Opinion No. 483) Cities of Anaheim and Riverside Generation-Tie Case (Case 06-1179). DWR argued that the transmission lines at issue are limited to use by the Cities of Anaheim and Riverside; therefore, the cost of these lines should not be socialized and rolled into the CAISO's transmission access rates, which are paid by all CAISO grid users.
- (FERC Order 478) Time Differentiated Transmission Rate Case (Case 06-74506). DWR argued that transmission rates should be differentiated by time of use (with higher rates for the on-peak periods than off-peak periods), thereby promoting efficient grid use.

Oroville Facilities Relicensing

The existing 50-year term hydropower license (FERC Project Number 2100) that regulates operations of the Oroville Facilities will expire January 31, 2007. On January 26, 2005, DWR submitted its Application for New License for the Oroville Facilities to FERC.

On September 12, 2005, following DWR's successful compliance with FERC's May 2005 Additional Information Request, FERC accepted DWR's application for a new license for operating the Oroville Facilities. FERC's acceptance of DWR's license application marked the conclusion of the multiyear collaborative alternative licensing process involving federal and State agencies, Native American tribes, local agencies, environmental organizations, and other interested parties that worked to assist DWR in completing

a comprehensive license application and accompanying preliminary draft environmental assessment.

In March 2006, DWR concluded settlement negotiations with a wide array of interests. Completion of all federal and State environmental documentation was still ongoing at the end of 2006 in pursuit of a new FERC license for the Oroville Facilities. Also ongoing were negotiations between DWR, PG&E, and various stakeholders on the *Habitat Expansion Agreement for Central Valley Spring-Run Chinook Salmon and California Central Valley Steelhead: FERC Project Nos. 1962, 2100, 2105, and 2107*; negotiations with Native American tribes; negotiations between DWR and Butte County to try to address socioeconomic issues; negotiations between DWR and Feather River Service Area water users to address water temperature contractual issues; and discussions with appropriate parties regarding the development of a historic properties management plan and an associated programmatic agreement.

During 2006, primary achievements included:

- completing settlement negotiations with local government agencies, State and federal agencies, and other interested stakeholders, including one Native American tribe;
- submitting the Settlement Agreement with 53 signatories to FERC;
- completing the recreation management plan initially submitted with the application for license to reflect additional enhancements derived from the settlement agreement negotiations;
- submitting the draft historic properties management plan along with DWR's record of consultation in compliance with Section 106 of the National Historic Preservation Act;
- submitting to FERC DWR's response to stakeholder-provided recommendations, terms and conditions, prescriptions, and settlement comments;
- submitting to FERC and the National Marine Fisheries Service (NOAA Fisheries) a draft biological assessment for federally listed species (anadromous fish);
- commenting on the National Environmental Policy Act (NEPA) draft environmental impact statement (EIS) by FERC containing evaluations on DWR's proposal and alternatives for licensing the Oroville Facilities;
- withdrawing and resubmitting the application for Section 401 water quality certification with the State Water Resources Control Board (SWRCB), thereby reinitiating the one-year clock for SWRCB to take action;
- initiation by FERC of the formal Endangered Species Act (ESA) Section 7 consultation with NOAA Fisheries and the U.S. Fish and Wildlife Service (USFWS); and
- attending FERC's public meeting to discuss the draft EIS.

Execution of the Settlement Agreement triggered the creation and partial funding of a Supplemental Benefits Fund to be administered by local stakeholders, funding for a Feather River whitewater boating feasibility study, initiation of the permitting process for a gravel supplementation program, action by the Department of Fish and Game (DFG) to revise the speed limit regulations for the Thermalito Afterbay, a reconnaissance study for potential facilities modification(s) for fish habitat temperature needs, and an

Interagency Agreement between DWR and DFG for the management of the Oroville Wildlife Area.

As an interim settlement activity, DWR agreed to provide \$3 million to the Feather River Recreation and Park District to fund recreation improvements at Riverbend Park in Oroville through calendar year 2007. An additional \$2.2 million was added via a contract amendment with approval of the original signatories to the interim settlement agreement for Riverbend Park improvements. These funds count towards the total committed as part of the Supplemental Benefits Fund created by the Oroville facilities relicensing settlement agreement.

The following is a partial list of SWP facilities that will be subject to the new license terms and conditions:

- Oroville Dam and Reservoir;
- Hyatt Pumping-Generating Plant;
- Thermalito Pumping-Generating Plant;
- Thermalito Diversion Dam Powerplant;
- Thermalito Diversion Dam;
- Fish Barrier Dam;
- Feather River Fish Hatchery;
- Thermalito Power Canal;
- Thermalito Forebay; and
- Thermalito Afterbay.

Existing SWP Power Facilities

Figure 10-1, on the following page, shows the names, locations, and nameplate capacities 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 Diversion Dam Powerplant adds another 24 million kWh of energy a year.

Generation at California 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 Powerplant, a coal-fired facility near Las Vegas, Nevada. Reid Gardner Powerplant consists of four 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 receives up to 235 MW from Unit 4, subject to NPC's limited right to interrupt DWR's energy deliveries. Whenever NPC interrupts DWR's scheduled energy, DWR receives 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, beginning in August 2004, new environmental restrictions in Nevada were imposed that reduced Reid Gardner Unit 4 production back to its original capacity of 260 MW.



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

Consequently, DWR is currently not receiving the energy associated with this upgraded capacity. The Reid Gardner agreement expires in 2013 and will not be renewed.

Future SWP Power Facilities

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

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

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

Contractual Resource Arrangements

Through joint developments, 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 exchange 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 joint development of the West Branch of the California Aqueduct. LADWP constructed and operates Castaic Powerplant, 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 U.S. Bureau of Reclamation (Reclamation) (202 MW) facility.

Purchases

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

Long-Term Purchase Agreements.

DWR purchases hydroelectric energy generated by other utilities under long-term agreements. The output of the 165 MW Pine Flat Powerplant, 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 Water District of Southern California (Metropolitan). The total capacity of these plants is 30 MW.

Short-Term Purchase Agreements. Through the Western Systems Power Pool Agreement, DWR transacts with member

utilities and energy marketers on a short-term basis. 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 Agreements

Although able to acquire transmission independently, DWR depends on other sources for transmission services. PG&E, CAISO, 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 1,300 MW of firm transmission service over the PG&E transmission system to serve SWP pump loads and power resources in Northern and Central California.

DWR receives transmission service for SWP loads and resources in Southern California through CAISO. Additionally, DWR has interconnection and wholesale distribution service agreements with SCE for service over its distribution facilities from the CAISO interchange points to SWP loads and resources.

Under the Participation Agreement with NPC, DWR receives 235 MW of firm transmission service over NPC's transmission system between Reid Gardner Unit 4 and the El Dorado Substation. Under the Firm Transmission Service Agreement between SCE and DWR, DWR receives 235 MW of firm transmission service over SCE's transmission system between the El Dorado Substation and the Vincent Substation.

Load Management

The SWP controls the timing of its pumping load through an extensive computerized network. This 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 selling power to other utilities and energy marketers during on-peak periods when power costs are higher. 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 2006

Tables 10-1 through 10-4, at the end of this chapter, present historical information about SWP power operation for calendar year 2006, including energy consumed, generated, exchanged, purchased, and sold.

Energy Consumed

In 2006, energy used at the 28 SWP pumping and generating plants totaled 9.16 million MWh. According to the terms and conditions of various water conveyance contracts and exchange agreements, some water belonging to the Central Valley Project (CVP) 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 2006, excluding transmission losses.

Energy Generated

Table 10-2 shows the amounts of energy generated at SWP facilities in 2006, as well as energy purchased for SWP operations.

Hydroelectric and Coal

The Hyatt-Thermalito power complex in Oroville generated 3.51 million MWh of energy in 2006.

Energy generated at SWP aqueduct recovery plants—Gianelli, Alamo, Devil Canyon, Mojave Siphon, and Warne—totaled 2.01 million MWh.

The SWP share of energy generated at the coal-fired Reid Gardner Unit 4 in Nevada totaled 1.54 million MWh of energy.

Contractual Resource Arrangements

SWP power operations rely on contractual arrangements as well as SWP facilities. These contractual arrangements include

joint development projects, energy exchanges, and energy purchases.

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 2006, LADWP provided 458,226 MWh of energy for DWR's share of energy generated at Castaic Powerplant.

DWR's share of Gianelli Pumping-Generating Plant used 311,344 MWh and generated 150,124 MWh of energy.

Energy Exchanges

DWR has an energy exchange agreement with Sacramento Municipal Utility District (SMUD). Under this agreement, DWR provides SMUD with energy during peak periods from May through September. In return, SMUD provides DWR with energy during off-peak periods from January through March and from September through December.

Purchases and Costs

Table 10-3 shows amounts of power, transmission, and other services purchased in 2006 and the 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 CAISO and through new charges (grid management and ancillary services charges).

DWR purchased 5.21 million MWh of energy at a cost of \$260.68 million. Other SWP power costs, including transmission, operation, maintenance, and CAISO ancillary services totaled \$138.49 million. This amount includes \$4.95 million

for debt service and \$4.51 million for operations and maintenance costs at Pine Flat Powerplant. It also includes \$3.25 million for transmission at Reid Gardner Unit 4 and \$64.69 million for costs associated with operations and maintenance, fuel, insurance, and property taxes at Reid Gardner Unit 4.

Long-Term Purchase Agreements.

According to the terms of the Kings River Conservation District contract, DWR receives the total output of the 165 MW Pine Flat Powerplant. In 2006, the power plant provided 722,857 MWh of energy to the SWP at a total cost of \$5.70 million.

Under the Metropolitan Small Hydro Contract, DWR purchased 153,772 MWh of energy in 2006 from five small hydroelectric power plants on the Metropolitan system at a cost of \$8.72 million.

Short-Term Purchase Agreements. 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 make up the difference. In 2006, the SWP purchased short-term energy from 24 marketers (City of Anaheim, City of Azusa, and Modesto Irrigation District are included). The short-term energy purchases totaled 3.61 million MWh at a cost of \$211.87 million. Also, DWR purchased additional amounts of short-term energy from electric utilities.

Sales of Excess Power

DWR sold 3.71 million MWh of energy to 23 utilities and 22 power marketers for total revenues of \$220.91 million in 2006. DWR also received \$33.62 million in revenues for capacity, exchanges, and other energy-related services, including \$21.31 million for transactions made through CAISO. See Table 10-4 for information about energy and other services sold and revenue received, including those sold to CAISO.

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 in the amount of water available for delivery. If full deliveries could not 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 forecast if actual water deliveries are greater than the amounts estimated. For example, if additional pumping is needed to refill reservoirs south of the Delta after an unexpectedly dry year, then 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. The forecast includes losses in reservoirs and aqueducts, recreation water, and water to replace storage in reservoirs south of the Delta.

Short-term power requirements, based on actual water supply and reservoir storage levels, are determined for the current and two ensuing years of operation. Long-term operational studies for the remaining years are based on median-year water supply conditions and optimal reservoir storage levels.

Table 10-1. Energy Used at Pumping Plants and Power Plants in 2006, by Month (Millions of Kilowatt-Hours)

Pumping Plants and Power Plants	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
Hyatt-Thermalito Pumping-Generating Plant (pumpback and station service)	0.022	0.097	0.000	0.000	0.027	0.128	0.192	0.780	0.123	0.073	0.054	0.684	2.179
North Bay Interim 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
Cordelia Pumping Plant	0.264	0.249	0.197	0.582	0.956	1.129	1.289	1.325	1.169	0.825	0.873	1.083	9.941
Barker Slough Pumping Plant	0.113	0.099	0.083	0.219	0.438	0.917	1.705	1.548	1.287	1.034	0.933	0.738	9.114
South Bay Pumping Plant	4.853	4.463	3.191	1.927	8.775	12.693	15.074	14.637	12.049	7.347	3.516	4.851	93.375
Del Valle Pumping Plant	0.019	0.018	0.020	0.017	0.013	0.009	0.008	0.007	0.005	0.012	0.016	0.021	0.165
Banks Pumping Plant	55.284	75.032	46.904	45.111	32.945	61.175	118.654	124.019	120.288	105.915	91.106	113.417	989.852
Gianelli Pumping-Generating Plant (SWP share)	17.899	0.676	0.624	2.242	21.426	21.619	33.641	40.916	39.828	38.019	27.326	67.126	311.344
Dos Amigos Pumping Plant (SWP share)	28.769	35.667	33.513	23.780	21.585	39.906	57.754	59.969	44.056	38.925	32.590	28.927	445.440
Buena Vista Pumping Plant	39.948	36.743	39.316	30.622	42.741	46.489	55.734	50.092	43.793	39.374	27.646	27.778	480.277
Teerink Pumping Plant	45.104	40.237	43.143	33.061	44.766	47.983	57.624	51.584	45.807	43.022	30.253	30.624	513.208
Chrisman Pumping Plant	100.358	88.940	94.965	71.792	96.813	103.019	123.778	112.292	99.990	94.774	66.740	67.462	1,120.924
Edmonston Pumping Plant	372.646	328.483	351.317	263.699	353.735	374.646	451.567	407.344	363.399	346.155	246.250	249.199	4,108.440
Alamo Powerplant (station service)	0.000	0.000	0.000	0.002	0.000	0.007	0.000	0.000	0.067	0.068	0.061	0.077	0.283
Pearblossom Pumping Plant	60.848	61.360	49.731	46.923	64.955	69.936	75.526	78.462	72.775	75.562	62.738	69.264	788.081
Pine Flat Powerplant (station service)	0.232	0.094	0.013	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.228	0.245	0.836
Mojave Siphon Powerplant (station service)	0.000	0.000	0.001	0.002	0.000	0.002	0.000	0.000	0.000	0.000	0.004	0.001	0.010
Devil Canyon Powerplant (station service)	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.009	0.033	0.036	0.081
Oso Pumping Plant	18.609	12.581	20.353	9.986	12.551	12.669	16.897	10.231	10.251	8.023	2.122	0.290	134.564
Warne Powerplant (station service)	0.060	0.020	0.076	0.217	0.250	0.278	0.000	0.007	0.070	0.333	0.248	0.175	1.734
Las Perillas Pumping Plant	0.225	0.391	0.227	0.397	0.952	1.272	1.723	1.589	1.196	0.512	0.236	0.352	9.072
Badger Hill Pumping Plant	0.577	1.031	0.585	1.039	2.489	3.276	4.474	4.043	3.054	1.334	0.594	0.916	23.412
Devil's Den Pumping Plant	1.161	1.326	1.089	1.011	1.461	2.162	2.482	2.354	2.186	1.861	0.931	1.233	19.257
Bluestone Pumping Plant	1.095	1.259	1.026	0.946	1.380	2.084	2.375	2.239	2.075	1.769	0.884	1.166	18.298
Polonio Pass Pumping Plant	1.190	1.352	1.115	1.031	1.477	2.167	2.493	2.359	2.199	1.880	0.950	1.268	19.481
Greenspot Pumping Plant	0.156	0.197	0.226	0.320	0.408	0.306	0.361	0.472	1.081	1.084	1.054	1.008	6.673
Crafton Hills Pumping Plant	0.182	0.253	0.282	0.227	0.417	0.324	0.261	0.541	1.107	1.301	1.225	1.195	7.314
Cherry Valley Pumping Plant	0.022	0.023	0.027	0.019	0.021	0.013	0.000	0.033	0.129	0.206	0.207	0.213	0.912
<i>Subtotal</i>	<i>749.636</i>	<i>690.593</i>	<i>688.024</i>	<i>535.198</i>	<i>710.580</i>	<i>804.210</i>	<i>1,023.615</i>	<i>966.847</i>	<i>867.983</i>	<i>809.416</i>	<i>598.817</i>	<i>669.348</i>	<i>9,114.267</i>
High Voltage Transmission Line Losses and Deviation	1.129	(6.937)	(9.446)	(4.756)	16.228	23.935	13.141	17.188	0.980	(3.857)	1.197	(4.754)	44.048
Total Energy Required for SWP	750.764	683.656	678.578	530.441	726.809	828.145	1,036.755	984.035	868.964	805.559	600.013	664.594	9,158.315

Table 10-2. Energy Generated and Purchased in 2006, by Month (Millions of Kilowatt-Hours)

Sources of Energy	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
SWP Energy Sources													
Hyatt-Thermalito Powerplant	401.362	263.321	480.714	518.530	435.883	265.870	259.886	266.940	193.039	139.519	163.050	122.691	3,510.806
Gianelli Pumping-Generating Plant (SWP share)	0.000	0.309	0.000	1.781	29.554	42.409	31.260	35.327	9.393	0.000	0.090	0.000	150.124
Alamo Powerplant	10.952	10.778	9.148	8.515	11.681	11.057	12.281	12.780	0.057	(0.065)	(0.061)	(0.077)	87.046
Mojave Siphon Powerplant	6.854	6.995	5.365	5.240	7.144	7.783	8.479	8.860	8.092	8.198	6.920	7.618	87.551
Devil Canyon Powerplant	111.887	109.605	96.704	87.700	112.255	119.555	134.251	134.254	127.987	130.469	113.852	117.377	1,395.895
Reid Gardner Unit 4	164.394	150.308	154.385	62.538	69.915	146.259	124.268	137.288	110.921	133.811	153.787	128.744	1,536.618
Warne Powerplant	38.993	26.994	41.417	20.649	26.971	25.884	39.335	27.458	21.202	15.795	3.796	(0.173)	288.321
<i>Subtotal</i>	<i>734.443</i>	<i>568.310</i>	<i>787.733</i>	<i>704.953</i>	<i>693.403</i>	<i>618.818</i>	<i>609.761</i>	<i>622.907</i>	<i>470.691</i>	<i>427.727</i>	<i>441.434</i>	<i>376.180</i>	<i>7,056.361</i>
Energy Sources from Long-Term Agreements													
Castaic Powerplant	64.582	46.113	60.018	14.826	44.211	43.142	65.386	45.756	33.277	26.889	14.024	0.000	458.226
Metropolitan Small Hydro Generation	14.814	12.639	11.980	11.309	14.329	14.067	15.910	15.706	11.878	10.798	9.564	10.778	153.774
Pine Flat Powerplant, Kings River Cons. Dist.	0.000	4.454	14.097	113.370	149.291	143.831	144.228	97.451	41.890	13.892	0.353	0.000	722.857
Power Exchange Delivered to Other Entities ^a	0.000	0.000	0.000	0.000	(31.000)	(30.000)	(40.500)	(40.704)	(39.360)	(7.568)	0.000	0.000	(189.132)
Power Exchange Received from Other Entities ^a	43.400	39.200	43.400	0.000	0.000	0.000	11.800	11.256	35.200	51.800	42.625	52.000	330.681
Energy to Metropolitan for CRA Pumping	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(12.800)	(16.234)	(29.034)
Energy from Metropolitan for CRA	0.000	0.000	0.000	0.000	0.000	0.116	28.918	0.000	0.000	0.000	0.000	0.000	29.034
Purchases													
Purchases (Firm and Power Contractors)	245.787	239.350	233.907	276.489	308.563	342.455	433.588	427.993	436.355	467.179	414.442	508.541	4,334.649
<i>Subtotal</i>	<i>368.583</i>	<i>341.756</i>	<i>363.402</i>	<i>415.994</i>	<i>485.394</i>	<i>513.611</i>	<i>659.331</i>	<i>557.458</i>	<i>519.240</i>	<i>562.990</i>	<i>468.208</i>	<i>555.085</i>	<i>5,811.055</i>
Total Resources	1,103.026	910.066	1,151.136	1,120.947	1,178.798	1,132.429	1,269.091	1,180.365	989.932	990.717	909.642	931.265	12,867.416
Less Energy Sales	(352.262)	(226.410)	(472.558)	(590.506)	(451.989)	(304.284)	(232.336)	(196.330)	(120.968)	(185.158)	(309.629)	(266.671)	(3,709.101)
Total Energy Provided to the SWP	750.764	683.656	678.578	530.441	726.809	828.145	1,036.755	984.035	868.964	805.559	600.013	664.594	9,158.315

^a Amounts show actual energy available for SWP use and include transmission losses.

Table 10-3. Power, Transmission, and Related Purchases in 2006, by Service Area

Purchase Category	Power (MWh)	Power Cost (Dollars)	Total Cost (Dollars)
Power Purchases			
<i>Northern California Area</i>	805,120	8,349,371.47	8,349,371.47
<i>Southern California Area</i>	791,744	40,460,132.06	40,460,132.06
<i>Energy Marketers</i>	3,614,414	211,873,992.44	211,873,992.44
<i>Subtotal</i>	5,211,278	260,683,495.97	260,683,495.97
Transmission and Other Purchases			138,483,892.65
Miscellaneous Fees			2,757.11
<i>Subtotal</i>			138,486,649.76
Total	5,211,278	260,683,495.97	399,170,145.73

Table 10-4. Energy Sold in 2006 and Revenue from Sales, by Service Area

Region	Energy Sold (MWh)	Revenue from Energy Sales (Dollars)	Revenue from Exchanges, Capacity, and Other Energy-Related Services (Dollars)	Total Power Sales (Dollars)
Pacific Northwest Area	1,175	33,725.00		33,725.00
Northern California Area	213,798	13,088,396.35	29,992,620.31	43,081,016.66
Southern California Area	814,683	41,245,387.66	2,387,500.00	43,632,887.66
Southwest Area	234,814	17,567,553.47	1,202,223.37	18,769,776.84
Energy Marketers	2,444,631	148,971,621.50		148,971,621.50
Miscellaneous			32,672.00	32,672.00
Total	3,709,101	220,906,683.98	33,615,015.68	254,521,699.66



Chapter 11 Facilities Maintenance

*C*astaic Lake and Lagoon.

Significant Events in 2006

Inspections were performed on Peace Valley Pipeline and the Angeles Tunnel. During the outage to support these inspections, Castaic Lake was drawn down to elevation 1,427 feet, allowing for inspection of the upstream dam face and outlet tower and shoreline landslides in the Sharon's Rest and Necktie Canyon areas.

Lower Quail Canal seepage control blanket was extended and canal panels grouted to repair seepage discovered early in February.

Castaic Dam Spillway repair was completed after collapse of three panel sections of the right side wall in 2005.

Lake Davis/Grizzly Valley Dam northern pike containment project was completed and began operation.

Dyer Reservoir design was reviewed by an independent review board and approved for construction.

Information for this chapter was provided by the Division of Operations and Maintenance, the Division of Safety of Dams, and the State Water Project Analysis Office.

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, by 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 the 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 five 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 2006, 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 Powerplant Second Afterbay, Perris, and Crafton Hills dams in the Southern Field Division.

Joint-Use Facility Inspection

Every six years, Reclamation conducts a Comprehensive Facility Review (CFR) of the four joint-use facility dams in the San Luis Field Division. The last CFR was conducted from April 28 through May 2, 2003. Periodic Facility Reviews (PFRs) are also conducted by Reclamation every six years using an alternate schedule spaced in between the CFR schedule. PFRs were conducted for the joint use facilities in May and June of 2006.

Underwater Inspection

Divers and a remotely operated vehicle (ROV) were utilized to inspect the Grizzly Valley Dam outlet works exterior surfaces. The interior surfaces were also inspected by DWR O&M personnel. Divers were also utilized to inspect and repair a section of panels in Lower Quail Canal.

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 five 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 dam performance. Their independent assessments include the 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 dams as 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 the substitution of FERC Part 12 independent review board reports in lieu of independent review board reports required by the California Water Code and California Code of Regulations for the following dams: Oroville, Feather River Fish Barrier, 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.

A construction application for Dyer Dam was filed with DSOD in September 2005, and approved June 26, 2006.

Review boards for Delta Field Division dams will be held in early 2007, and Upper Feather River Facilities will undergo independent review in the latter part of 2007.

FERC Reviews

These reviews and the FERC Part 12D safety inspections, which may be conducted by one or more consultants, are scheduled every five 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 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.

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, while DWR operates and maintains it, with all costs 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 a vast amount of time, 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, designed to accommodate Arroyo Pasajero floodwater, include the West Side Detention Basin (designed to store floodwater and sediment west of the California Aqueduct), an evacuation culvert to release floodwater east of

the California Aqueduct, and drain inlets to release floodwater into the California Aqueduct.

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 mitigate 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 California Aqueduct, led DWR to adjust operating procedures to minimize runoff entering the California 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.

DWR and DWR/Reclamation Alternative Long-term Solution

Since the demise of the two candidate plans that were presented in the March 1999 draft feasibility report, the investigation focused on increasing storage in the existing West Side Detention Basin and construction of a flood control reservoir in the western Tulare Lake bed. 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 protection to the California Aqueduct. DWR and Reclamation's investigation concentrated on providing sufficient and acceptable levels of flood protection to the California Aqueduct at considerably lower cost. A 50-year level of protection has been

deemed a sufficient and acceptable level of protection. Therefore, the proposed flood control reservoir was dropped from the investigation and only the improvements on the existing West Side Detention Basin were pursued. The West Side Detention Basin restoration project was designed to provide the needed protection to the aqueduct by increasing flood storage in the existing and extended basins, and modify existing structures to provide enhanced flood protection operations. To be consistent with other SWP flood protection facilities, the project would provide a level of protection based on a single 4-day flood. The 50-year level of flood protection would be achieved, at an estimated cost of \$13 million.

Construction to restore the storage capacity of the West Side Detention Basin started in August 2004, and many of the designed improvements were completed by the summer of 2005. These improvements will restore the storage capacity to the detention basin and add control over releases of floodwater into the aqueduct and onto private farmland. DWR also acquired the necessary easements and fee property interests for the project. The intended 50-year level of protection is achieved by raising levees, adding a control structure equipped with a rubber dam, armoring the railroad embankment, installing flood gates, and acquiring flood easements. One component of the project, yet to be implemented, is to armor the railroad embankment to reduce damages when it's overtopped by floodwater. This component has not been implemented due to difficulties in negotiating the improvements with the owners of the railroad. As of 2006, this was still an ongoing issue.

Related Activities

DWR, with the support of the State Water Contractors, continued during 2006 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 decrease erosion, and therefore, complement flood control improvements and reduce the threat Arroyo Pasajero poses to the California Aqueduct and surrounding communities.

Planning activities for a restoration project similar to the West Side Detention Basin restoration project were initiated for the Cantua Creek Stream Group detention basins. A draft reconnaissance study for the Cantua Creek Stream Group Improvement Project was completed. The goal of the project is to improve flood protection and water quality of the aqueduct. The study identified actions such as raising embankments, making modifications to structures, and acquiring flood easements to provide a 50-year level of protection for the California Aqueduct at the Cantua Creek Stream Group. Improving water quality in the aqueduct was a significant goal of the study, since currently, several of the existing drain inlets are not gated, and sediment-laden floodwaters flow directly into the aqueduct with little detention. It has been widely understood that increasing flood storage and detention of these floodwaters prior to releasing them into the aqueduct would

provide a significant benefit to water quality in the aqueduct. As of 2006, DWR plans to continue work on the study to prepare feasibility-level designs and costs.

Repairs and Modifications

DWR continually monitors all SWP facilities and performs repairs and modifications as necessary to ensure safe, reliable water delivery.

Table 11-1 presents information, arranged chronologically, about significant scheduled and unscheduled outages at SWP pumping and power plants in 2006. The table includes information about incidents resulting in outages exceeding 14 days.

Table 11-1. Outages for Maintenance and Repair of Facilities in 2006, by Month

1 of 3

Month	Facility	Units Taken Out of Service
January	Chrisman Pumping Plant	Unit 3 from January 4 to February 9 to replace pump head cover piping and repair pump case and suction elbow
	Devil Canyon Powerplant	Unit 1 from January 9 to February 6 for annual maintenance and to replace motor cooling water piping
	Pine Flat Powerplant	Unit 2 from January 16 to February 7 for annual maintenance
February	South Bay Pumping Plant	Unit 7 from February 28 to March 21 to repack packing box and adjust balance
	Gianelli Pumping-Generating Plant	Units 3 and 4 from February 27 to May 29 for biennial maintenance, to repair head gate, and to recoat penstock, scroll case, and draft tube
	Dos Amigos Pumping Plant	Unit 5 from February 21 to April 12 for biennial maintenance, to recoat scroll case and stay vanes, and to work on transformer K4A
	Warne Powerplant	Unit 1 from February 8 to March 1 for annual maintenance and to work on transformer KY1
March	Thermalito Pumping-Generating Plant	Unit 1 from March 13 to expected completion date in 2007 for annual maintenance, to overhaul turbine, and to work on governor oil system
	Banks Pumping Plant	Unit 1 from March 31 to May 1 to replace unit breaker, modify CO ₂ system, remove hot water bypass line, and work on Unit 2 Unit 3 from March 31 to May 12 to replace unit breaker, modify CO ₂ system, replace four rotor field poles, repair damage to stator and rotor, and work on Unit 2
	Teerink Pumping Plant	Unit 7 from March 5 to July 19 to rewind stator and refurbish rotor
	Pearblossom Pumping Plant	Unit 3 from March 2 to March 17 to clean motor after oil leak
	Devil Canyon Powerplant	Unit 3 from March 27 to April 13 for annual maintenance
	Pine Flat Powerplant	Unit 2 from March 7 to March 21 to change oil and check for oil leaks
	April	Dos Amigos Pumping Plant
Buena Vista Pumping Plant		Unit 9 from April 20 to September 12 to rewind stator, refurbish rotor, and repair motor cooling water system and packing box
Pearblossom Pumping Plant		Unit 6 from April 10 to May 3 to repair amortisseur bar cracks
Reid Gardner Powerplant		Unit 4 from April 14 to May 8 for annual maintenance

Table 11-1. Outages for Maintenance and Repair of Facilities in 2006, by Month

2 of 3

Month	Facility	Units Taken Out of Service
May	Chrisman Pumping Plant	Unit 7 from May 23 to June 24 to repair and recoat discharge valve, replace discharge valve seat seals, and repair discharge line
	Edmonston Pumping Plant	Unit 6 from May 10 to expected completion date in 2007 for annual maintenance, to replace pump, to rewedge stator, to replace slip rings and standby cooling water system, and to install new hot water bypass piping
June	South Bay Pumping Plant	Unit 7 from June 11 to July 9 to replace failed motor with spare
July	South Bay Pumping Plant	Unit 7 from July 26 to August 12 to replace failed motor with spare
	Polonio Pass Pumping Plant	Unit 1 from July 11 to August 2 to test and modify startup sequence with vendor
	Teerink Pumping Plant	Unit 6 from July 24 to October 25 to rewind stator, refurbish rotor, and replace motor air cooler piping
	Chrisman Pumping Plant	Unit 2 from July 19 to August 7 to clean and test stator and rotor
August	Hyatt Powerplant	Unit 6 from August 21 to September 8 to replace disintegrated shaft packing, replace damaged turbine head cover and coupling fastener cover, and clean up following flooding
	Thermalito Diversion Dam Powerplant	Unit 1 from August 21 to September 8 for annual maintenance
	Chrisman Pumping Plant	Unit 9 from August 12 to December 14 to repair pump, pump case, suction elbow, pump extension line, and stay vanes and replace wear rings and bearings after pump failure
September	Banks Pumping Plant	Unit 9 from September 12 to September 28 for annual maintenance
	Gianelli Pumping-Generating Plant	Units 1 and 2 from September 26 to expected completion date in 2007 for biennial maintenance and to recoat scroll case, draft tube, turbine casing, and stay vanes
	Dos Amigos Pumping Plant	Unit 4 from September 13 to October 17 for biennial maintenance and to recoat scroll case and stay vanes
	Alamo Powerplant	Unit 1 from September 1 to expected completion date in 2007 to rewind stator, refurbish rotor and turbine, replace valves, exciter system, governor system, mechanical seal, and turbine guide bearing, recoat penstock, draft tube, discharge ring, and turbine blades, and work on transformer KY1

Table 11-1. Outages for Maintenance and Repair of Facilities in 2006, by Month

3 of 3

Month	Facility	Units Taken Out of Service
October	Hyatt Powerplant	Unit 6 from October 1 to expected completion date in 2007 for annual maintenance, to replace turbine runner and rotor field poles, and to recoat scroll case and draft tube
	Las Perillas Pumping Plant	Unit 1 from October 22 to expected completion date in 2007 to refurbish motor
	Badger Hill Pumping Plant	Unit 1 from October 24 to expected completion date in 2007 to refurbish motor
	Devil's Den Pumping Plant	Units 1 through 3 from October 19 to November 17 to work on transformer KYA bus
	Chrisman Pumping Plant	Unit 8 from October 16 to November 4 to work on transformer KYD
	Warne Powerplant	Unit 2 from October 30 to November 15 for annual maintenance and to work on transformer KY2
	Pearblossom Pumping Plant	Unit 7 from October 16 to October 30 to repair mechanical seal
	Devil Canyon Powerplant	Unit 1 from October 31 to expected completion date in 2007 for annual maintenance, to repair penstock leak, repair rotor field pole, rewind stator, replace coolers for motor cooling water system, recoat spiral case, turbine pit, and spider, and work on transformers KY1A and KY1B Unit 2 from October 9 to October 27 for annual maintenance and to work on transformers KY2A and KY2B
	Pine Flat Powerplant	Unit 3 from October 4 to December 20 for annual maintenance and to repair and recoat penstock
November	Dos Amigos Pumping Plant	Unit 6 from November 13 to December 20 for biennial maintenance and to recoat scroll case and stay vanes
December	South Bay Pumping Plant	Unit 7 from December 23 to expected completion date in 2007 to replace failed motor with spare
	Chrisman Pumping Plant	Unit 6 from December 4 to December 27 to work on transformer KYC bus Unit 7 from December 4 to December 29 to work on transformer KYC bus and repair unit brakes
	Pearblossom Pumping Plant	Units 4 through 6 from December 11 to expected completion date in 2007 to replace discharge valve o-rings and repair discharge line



Chapter 12 Engineering and Real Estate

Lever repairs on the Sacramento River alongside Sacramento's Pocket Area.

Significant Events in 2006

In 2006, work to enhance, expand, and repair water delivery in the State Water Project continued. Increased water deliveries were more efficient within the confines of legal constraints, environmental restraints, and power availability. Significant projects included South Bay Aqueduct Enlargement, expansion of South Bay Pumping Plant, Tehachapi East Afterbay construction, and East Branch Enlargement.

The Department of Water Resources has spent a net total of approximately \$253 million to acquire rights-of-way, recreation, and mitigation land for the State Water Project, from its inception to December 31, 2006.

A fish containment system was constructed at the outlet structure of Grizzly Valley Dam (Lake Davis) to prevent all life stages of northern pike from escaping from Lake Davis

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

Initial 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 the SWP Oroville facilities. Oroville Dam was constructed between 1961 and 1967. 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 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 at 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) was made in 1968 to Kings and Kern counties.

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

From the 1980s through 2005, 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 the San Geronio Pass service area in San Bernardino and Riverside counties. The East Branch Extension Phase I became operational in local/manual mode in 2003, while the remote control system is still being completed.

Design Activities

In 2006, work to enhance, expand, and repair water delivery in the SWP continued. Increased water deliveries were more efficient within the confines of legal constraints, environmental restraints, and power availability. Significant projects included South Bay Aqueduct enlargement, South Bay Pumping Plant expansion, Tehachapi East Afterbay construction, and East Branch enlargement. Table 12-1 provides a list of completed and ongoing design work that was undertaken in 2006. Table 12-2 provides a list of projects that were constructed to replace turbines and pumps, repair pipelines, upgrade

trashracks at fish hatcheries, and improve recreational and maintenance facilities at dam and reservoir sites.

The Department of Water Resources (DWR) designed projects for development into construction contracts. Division of Engineering (DOE) staff worked with the Division of Operations and Maintenance (O&M), Division of Flood Management, Division of Environmental Services, Department of Fish and Game (DFG), Department of Boating and Waterways, California Department of Transportation (Caltrans), SWP water contractors, California water districts, Sacramento River, San Joaquin River, and Delta levee maintenance districts, CALFED, U.S. Army Corps of Engineers (Corps), U.S. Bureau of Reclamation (Reclamation), Federal Energy Regulatory Commission (FERC), U.S. 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 designs and estimates, as well as conducted special studies of dams, canal embankments, and other SWP facilities. The studies, reports, and activities continued from previous reporting periods, or initiated in 2006, include the following:

- Thermalito Afterbay Temperature Control and Palermo Canal Diversion to Feather River Fish Hatchery as part of the Oroville Facilities Relicensing Program;
- stability analysis for Oroville, Parish Camp Saddle, Bidwell Canyon Saddle, and Thermalito dams;
- North Bay Aqueduct capacity enlargement from Cordelia Pumping Plant to Napa Terminal Tank;
- North Bay Aqueduct reliability study;
- geologic faulting and seismicity studies;
- re-evaluation of the Clifton Court intake structure;
- Banks Pumping Plant cut slope evaluation;
- South Bay Aqueduct reliability study;
- South Bay Aqueduct enlargement and rehabilitation activities;
- South Bay Aqueduct, Santa Clara Pipeline repairs at Milepost 39;
- Gianelli Pumping-Generating Plant power transformer second containment basin;
- Gianelli pump/turbine runner replacement feasibility study;
- Devil's Den Pumping Plant trashrack/traveling screen modification;
- evaluation of the capacity of the cross-drainage structure between Buena Vista and Teerink pumping plants;
- evaluation of the hydrology and capacity of the cross-drainage facilities, Buena Vista and Teerink pumping plants;
- Warne Powerplant penstock cooling water transient study;
- California Aqueduct Spill Basin Check 66 study;
- Castaic, Pyramid, and Perris dams—emergency release facilities;
- Castaic Dam and Perris Dam breach inundation study;
- Pearblossom Disposal Area assessment study, Phase II;
- Hesperia Master Drainage Plan for Antelope Wash and adjacent area;
- East Branch Enlargement, Phase II study activities;
- East Branch Extension, Phase II—Citrus Reservoir prefeasibility study;
- North Bay Aqueduct capacity study and pipeline inspection for possible enlargement; and
- Perris Outlet Tower study.

DOE staff completed the following studies and activities:

- Byron Road Bridge deck deterioration study and analysis;
- Sites Reservoir inundation study;
- Castaic Dam high intake tower and access bridge analysis;
- Thermalito Forebay Dam, Piezometer P-66 artesian pressure study;
- Crafton Hills preliminary spillway design;
- South Feather Water and Power Agency's Miners Ranch Canal—erosion sites repair study; and
- Miner's Ranch erosion repair study.

Environmental Activities

Environmental issues have concerned DWR since the inception of the SWP. These issues have increased in magnitude with the enactment of numerous federal and State laws. DWR has complied with these laws by incorporating environmental requirements and conditions into the design and construction phases of projects. A specific section dealing with environmental requirements and the protection of listed species has become an integral part of contract specifications for construction contracts. Contracts are reviewed to ensure compliance with requirements outlined in environmental permits for each contract. In 2006, two contracts required continuing environmental review and are described below.

Sediment Removal, Yolo Bypass, Sacramento River Flood Control Project, Flood Management, Yolo County, California

DWR is obligated to operate and maintain the Fremont Weir at the northern end of the Yolo Bypass in accordance with California Water Code Section 836.1.

Sediment deposits in the bypass reduce the flow capacity of the weir and the efficiency of the flood control system by blocking water from entering the bypass and forcing flows to remain in the Sacramento River. This results in higher flood stages in the Sacramento River downstream of the Fremont Weir.

DOE coordinated permitting efforts with federal and State regulatory agencies to secure the required environmental permits to allow the project to proceed without impacts on federally and State listed species or cultural resources.

Using dozers, loader scrapers, and other large pieces of heavy equipment, more than 1,000,000 cubic yards of material were removed. The work took place from late summer to early fall 2006.

Several actions were taken during the project to mitigate potential environmental impacts.

- All conditions listed in the various environmental permits issued by federal and State regulators were followed by the contractor and enforced by DWR.
- The contractor was required to submit an Air Quality Plan, Water Quality Control Plan, Fire Prevention and

Control Plan, and a Storm Water Pollution Prevention Plan for approval by DWR prior to the Notice to Begin Work.

- The project work site was environmentally cleared of any sensitive species by qualified DWR biologists prior to start of the project.
- Upon completion of the project the area where sediment was removed, and spoiled, was seeded with native grasses to minimize erosion and to provide a surface to minimize roughness for flood flows. In addition, these seeded areas mitigated for the cover used by wildlife that was lost prior to excavation.

Lake Davis Fish Containment, Grizzly Valley Dam and Reservoir, State Water Facilities, Upper Feather River Division, Plumas County, California

The northern pike was first discovered in Lake Davis in 1994. Northern pike is a non-native fish that aggressively feeds on other fish. If these fish escaped Lake Davis and spread throughout the Feather River system, and ultimately into the Sacramento-San Joaquin Delta, there would be multiple negative consequences, including:

- state salmonid fisheries would be further threatened;
- threatened and endangered species listings could increase; and
- the possibility of listed species extinctions could increase.

Therefore, the construction of a fish containment system at the outlet structure of Grizzly Valley Dam at Lake Davis took place June through November 2006. The containment system prevents fish, of

any life stage, from moving downstream through the Grizzly Valley Dam outlet into Big Grizzly Creek and into the Feather and Sacramento river systems. (See also, Chapter 3.)

DOE coordinated closely with DFG in incorporating mitigation measures into the project to further minimize the following:

- mortality to the fishery in a 1,509 yard section of Big Grizzly Creek downstream of Lake Davis due to increased water temperatures or decreased dissolved oxygen;
- reduced flows in Big Grizzly Creek for use by downstream diverters; and
- reduced flows in Big Grizzly Creek potentially disrupting recreational activities downstream of Lake Davis.

Construction Activities

DOE worked on 58 construction contracts in 2006. Table 12-2 shows contract title, specification number, date the contractor received the Notice to Begin Work, the expected or actual acceptance date (physical 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.

Upper Feather River Division

Grizzly Valley Dam

A contract to construct a containment structure to prevent northern pike from entering Big Grizzly Creek through the Lake Davis outlet facility (Specification No. 06-11) began in June 2006. Completion is expected in March 2008.

Oroville Division

Hyatt Powerplant

Refurbishment of turbine Units 1, 3, and 5, which started in February 1999 (Specification No. 98-22), continued throughout the year, with 100 percent of the work completed by the end of 2006. Due to warranty issues, contract closure of this project is projected for September 2008.

Refurbishment of pump-turbine Units 2, 4, and 6, which started in November 2001 (Specification No. 01-11), continued with approximately 40 percent of the work completed by the end of 2006. The estimated completion date is September 2007, however discussions on disputed work may delay contract closure until September 2008.

Oroville Field Division

Work on a contract to replace the roofs at the Oroville Operations and Maintenance Center planner scheduler and mobile equipment buildings, the Feather River Fish Hatchery, and the Beckwourth Subcenter (Specification No. 05-09) began in August 2005, was completed in November 2005, and was accepted in June 2006. Work included removal of existing roofing, installation of new roofing, removal and replacement or reinstallation of existing equipment, and painting.

Delta Facilities

Middle River, Old River, and Grant Line Canal

Work on a multiyear (2004 through 2006) contract (Specification No. 03-07) to install and remove seasonal temporary rock barriers in designated South

Delta waterways (Middle River, Old River, and Grant Line Canal) continued throughout the year. Work was completed in December 2006 and acceptance is expected in June 2007. The 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.

Other Delta Work

Additional Delta facilities work via contract change orders included:

- emergency response to relocate flood supplies;
- two urgent repairs to a divider wall at the Skinner Fish Facility;
- temporary agricultural pumping;
- removal and replacement of the Roaring River Slough flapgate and flashboard riser;
- removal and replacement of flashboards at Montezuma Slough;
- repairs to Sherman Island fish screens;
- construction of the Vernalis Water Quality Station;
- providing pumps and equipment for the Travis Surge Tank sediment removal;
- providing pumps at C-Line Ditch;
- testing of air pockets, nozzles, and valves at Brushy Creek;
- geologic trenching at Patterson;
- pondweed abatement at Clifton Court Forebay;
- vegetation removal at California Aqueduct Milepost 10.75;
- purchase and installation of piles for the South Delta (Franks Tract, Delta-Mendota Canal, Grantline Canal);
- hyacinth removal in Tom Paine Slough;
- dredging of Bethany Reservoir;

- demolition of a building and a cap well at Grizzly Slough;
- new pumps at Skinner Fish Facility;
- providing an Environmental Impact Report and an action plan for the South Delta Improvement Program;
- removal of frames at Morrow Island and Horseshoe Bend;
- performance of a high density, electrical resistivity survey;
- aquatic herbicide application at Clifton Court Forebay;
- trash rake gripper for Skinner Fish Facility;
- barge crane for Montezuma Slough; and
- dredging of Middle River.

Suisun Marsh Facilities

Roaring River Slough

An emergency contract (Specification No. 06-02) began in January to restore approximately 1,700 feet of levee along the north side of Roaring River Slough (Station 370+20 to 417+0) on Grizzly Island to ensure water quality and protect Grizzly Island from future flooding. Ninety-seven percent of the work was completed by December 2006.

South Bay Aqueduct

South Bay Aqueduct Enlargement and South Bay Pumping Plant Expansion

The South Bay Aqueduct Enlargement and South Bay Pumping Plant projects continued in 2006. Improvements to the first 16.38 miles of the South Bay Aqueduct will restore the 300 cfs design flow and increase the design capacity by up to 130 cfs. Work will enlarge the South Bay Pumping Plant to accommodate four additional 45 cfs units, construct a third

discharge line, construct Dyer Reservoir (425 af of active storage), enlarge the canal, and modify associated structures.

Dyer Reservoir

The contract to construct a drainage diversion at Dyer Reservoir (Specification No. 06-24) began September 2006 and was approximately 95 percent complete by December 2006. Completion is not expected until December 2008 due to environmental permitting issues.

Furnish Contracts, South Bay Pumping Plant

A contract (Specification No. 04-05) to furnish 45 cfs pump and motor units for Units No. 10 through 13 and one spare pump and motor for the South Bay Pumping Plant began in November 2004 and is scheduled for completion in April 2009.

A contract to furnish power transformers (Specification No. 04-19) began in April 2005, but was terminated for DWR's convenience in October 2006.

A contract to furnish valves, actuators, and hydraulic power units (Specification No. 04-20) began in May 2005 and is expected to be completed in April 2009.

A contract to furnish switchyard equipment (Specification No. 05-10) began in September 2005 and is expected to be completed in April 2009.

A contract to furnish 5 kV switchgear (Specification No. 05-05) began in October 2005 and is expected to be completed in April 2009.

South Bay Pumping Plant

The contract to construct the initial pumping plant facilities (Specification No. 06-04) began in August 2006 and is approximately 87 percent complete. Concrete finish repairs are currently in progress and completion is expected in September 2008. A contract to construct the completion pumping plant facilities is scheduled to be awarded in December 2007.

South Bay Pumping Plant Discharge Line and Brushy Creek Pipeline No. 3

A contract to construct a South Bay Pumping Plant discharge line and the Brushy Creek Pipeline No. 3 (Specification No. 06-09) began in December 2006. Due to jurisdictional restrictions, installation of the pipelines will not occur until spring of 2008, with completion expected in August 2008.

San Luis Division

Gianelli Pumping-Generating Plant and Dos Amigos Pumping Plant

A contract (Specification No. 04-08) to refurbish the existing carbon dioxide (CO₂) fire suppression system for Motor-Generator Units No. 1 through 8 and the Oil Purifier Room at Gianelli, and Motor Units No. 1 through 6 and the Oil Purifier Room at Dos Amigos began in July 2004 and was approximately 96 percent completed by December 2006. The work includes removing the existing devices and CO₂ cylinders, inspecting piping and nozzles, providing welding and coating where required, and furnishing and installing the following:

- a fire alarm system, new motor air housing, smoke, and temperature detectors;
- audible and visual alarms;
- new fully charged CO₂ cylinders;
- LCD annunciators and new manual pull stations; and
- new discharge heads, manual release station, valves, vents, and hoses.

Added work via contract change order included the following:

- replacing and refurbishing fire extinguishers at the San Luis Field Division;
- installing an escape platform at Dos Amigos; and
- installing safety platforms at Gianelli.

The expected completion date is in April 2008 due to a one-year CO₂ service maintenance contract.

Gianelli Pumping-Generating Plant, Dos Amigos Pumping Plant, Coalinga Operations and Maintenance Subcenter, Check Sites and Flowmeter Sites

A contract (Specification No. 06-10) to replace standby engine generators began in August 2006. Approximately 85 percent of the work was completed by December 2006; however, added work to install generators at several additional locations will extend completion to June 2008.

San Luis Canal

Work on a contract to restore the West Side Detention Basin (Specification No. 04-03) began in August 2004. The

contract work was essentially completed by December 2006.

Restoration work included:

- earthwork;
- concrete and steel reinforcement;
- gravel road surfacing and chip sealing;
- 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.

Contract change order work included:

- repairing Milepost 166R and Milepost 122R canal embankments;
- sealing and paving roads at California Aqueduct Reaches 6 and 7;
- cleaning the toe drain at O'Neill Dam; and
- installing gates at various locations in San Joaquin Field Division.

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 2006, 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, storing, and installing four pumps to

replace existing pumps;

- furnishing spare parts, auxiliary equipment, tools, and templates;
- modifying existing pump foundations if required for the new pumps;
- applying coatings; and
- providing liaison services.

A contract to furnish spare impellers and diffusers (Specification No. 04-09) began in July 2004 and was approximately 65 percent complete by December 2006. Completion is scheduled for March 2007, but acceptance may be delayed due to submittal issues. 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.

Mojave Division

Tehachapi East Afterbay

The Tehachapi East Afterbay project is located near the bifurcation of the East and West Branches of the California Aqueduct in southern Kern County to provide additional storage to the existing Tehachapi Afterbay (which is located in the Tehachapi Division). The principal features of the Tehachapi East Afterbay project include: an inlet channel, isolation weir, reservoir, flow barrier, spoil embankment, outlet channel, bypass, drainage culvert, control building, improvements to the existing canal, and site work.

The contract to furnish roller gates (Specification No. 04-18) began in February 2005, was completed in January 2006, with acceptance expected in October 2007. Work included furnishing two roller gates with hydraulic actuators and one hydraulic power unit, metalwork, coatings, and electrical work.

The initial afterbay contract (Specification No. 04-17) began in February 2005, was completed in April 2006, and was accepted in June 2006. Features included:

- drainage culverts;
- inlet channel facilities;
- concrete canal lining and a new inlet tie-in to the existing aqueduct;
- a reservoir and outlet channel with cofferdam;
- bypass turnout construction area and access road;
- furnishing and installing boxes and electrical raceway;
- removing and disposing of existing equipment; and
- seeding.

The afterbay completion contract (Specification No. 05-03) began in May 2005. The work included:

- bypass facilities and a control building;
- furnishing a propane tank;
- a flow barrier in the reservoir;
- fabric-formed concrete canal lining;
- an outlet channel; and
- removal of the cofferdam at the outlet channel.

This completion contract was terminated for default in November 2005, and the remaining work was divided into three

contracts—Specifications No. 05-17, 05-16, and 06-14.

Work began on the completion of contract Phase IA (Specification No. 05-17) in December 2005, was completed in January 2006, and was accepted in March 2006. Work included constructing the Cottonwood Canal tie-in and installing Cofferdam No. 2.

Work on the completion contract Phase II (Specification No. 05-16) began in January 2006, and included the bypass facilities, control building, flow barrier, removal of Cofferdam No. 2, and miscellaneous roadwork. Work was completed in December 2006 with acceptance expected in April 2007.

The scope of work for the completion contract Phase III (Specification No. 06-14), which began in August 2006, includes the outlet channel completion, aqueduct plug, Cofferdam No. 1 removal, and site work. Work was 96 percent complete in December 2006 with acceptance expected in August 2007.

Santa Ana Division

East Branch Extension Phase I

Construction of the East Branch Extension Phase I 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 af 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 began in November 1999 on the contract to design, manufacture, shop test, and deliver three 4,500 gallons per minute (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 Crafton Hills Pump Station; and two 3,600 gpm vertical turbine pumps for Cherry Valley Pump Station (Specification No. 99-17). The contract calls for electric motors, variable frequency drives, appurtenant equipment, and associated training programs. Completion of this contract was scheduled for December 2003, but was extended to September 2008 due to a change order for additional pump units and related components for Greenspot and Crafton Hills pump stations. As of December 2006, the added units were complete except for erecting engineer services which are expected to occur in 2008 during completion of Specification 06-21.

The contract to furnish and install the control and communications systems for Greenspot, Crafton Hills, and Cherry Valley pump stations (Specification No. 01-05) began in October 2001 and was completed by December 2006. Extensive punch list items, training, and disputed work issues will delay contract closure to spring or summer 2008.

Work on a contract (Specification No. 06-21) to install spare units at Greenspot, Crafton Hills, and Cherry Valley

pump stations, and to replace the existing control valves and unit discharge isolation valves for Greenspot Pump Station Units No. 1 through 4 began in October 2006. Work was approximately 2 percent complete in December 2006, and included:

- furnishing and installing a pump, motor, variable frequency drive (VFD), programmable logic controller (PLC) cubicle, and motor control center unit breaker assembly at Cherry Valley Pump Station;
- furnishing and installing switchgear at Greenspot and Crafton Hills pump stations;
- installing PLCs, valves, piping, tubing, fittings, hangers, supports, and appurtenances at all three pump stations;
- installing DWR-furnished pumps and motors at Greenspot and Crafton Hills pump stations;
- installing a DWR-furnished VFD at Greenspot Pump Station;
- removing existing valves, piping, and appurtenances; and
- manufacturing and delivering tools and spare parts to all three pump stations.

Valves Facilities Carter Street and Morton Canyon.

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). Work on the three contracts was 99 percent completed by December 2006. Completion and acceptance will be delayed due to corrective work, which is expected to be completed in mid-2008.

Lake Perris State Recreation Area

A contract (Specification No. 06-05) to repair the marina at Lake Perris State Recreation Area began in May 2006 with completion expected in February 2007.

Work on a contract to furnish, deliver, and spread sand (Specification No. 06-06) began in May 2006, was completed in June 2006, and was accepted in August 2006.

Santa Ana Pipeline

A contract to excavate, inspect, and repair four pipe sections of the Santa Ana Pipeline (Specification No. 05-14) began in October 2005 and was completed and accepted in January 2006.

The contract to widen the concrete encasement under State Route 60 (Specification No. 05-15) began in November 2005. It was completed in March 2006 and accepted in March 2006. Work included excavation, concrete encasement, dewatering, and cathodic protection and earthwork, backfill, seeding, and environmental protection.

West Branch

Castaic Dam

A contract to repair the spillway wall (Specification No. 05-12) began in August 2005, was completed in January 2006, and was accepted in February 2006. Work consisted of:

- site preparation and earthwork;
- removing and replacing five concrete panels;
- removing and reconstructing damaged V-ditches; and
- drainage, fencing, crack repair, and seeding.

Lower Quail Canal

A contract to control seepage on the Lower Quail Canal is scheduled to begin in January 2007 (Specification No. 06-23) and will be completed in July 2007. Work consists of:

- placing a seepage control blanket;
- installing drainage piping within the seepage control blanket; and
- placing compacted embankment.

Construction Activities in Multiple Divisions

Digital Voltage Regulators

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 95 percent of the work completed by the end of December 2006.

Replace and Recoat Roofs

A contract to replace and recoat roofs at Banks Pumping Plant, Dos Amigos Pumping Plant, and Coalinga Operations and Maintenance Subcenter (Specification No. 06-03) began in March 2006 and will be completed in January 2008.

Cathodic Protection

Work on a contract (Specification No. 06-12) began in August 2006 to design, manufacture, test, deliver, and install cathodic protection at Banks Pumping Plant, Skinner Fish Facility, and the Roaring River intake structure. Work was approximately 94 percent complete by the end of December 2006.

Communications Equipment

In July 2005, work began on a contract to monitor, test, and repair copper communications cable and voice and data equipment along 440 miles of the California Aqueduct (Specification No. 05-07). This contract is being terminated for convenience. The Division of Technology Services will issue a service contract to provide the required monitoring and testing. Work on this 3-year contract consists of the following:

- troubleshooting, repairing, and testing pressurized underground copper cable;
- interfacing copper cable technology to other technologies or radio, microwave, and multiplexers;
- furnishing and installing, or refurbishing and repairing, compressor equipment used to pressurize the communications cable; and
- performing biannual electronic work to voice and data equipment.

Revegetation

Work on a contract that fulfilled FERC permit requirements for revegetation of disturbed areas at Mojave Siphon Powerplant and Devil Canyon Second Afterbay (Specification No. 99-21) began in November 1999, was completed in December 2005, and was accepted in February 2006.

Seal and Pave Roads

In September 2005, work began on a contract to seal and pave roads in the Oroville and Southern Field Divisions (Specification No. 05-11). Scheduled for completion in February 2008, approximately 66 percent of the contract work was completed by December 2006. Work added by change order includes:

- repairing storm damage on North Adit Road;
- furnishing and installing a modular office;
- removing the Devil Canyon Creek culvert bridge; and
- furnishing, installing, and repairing an irrigation system at Lake Perris.

In August 2004, work began on a contract to seal and pave roads in the San Luis and Southern Field Divisions (Specification No. 04-10). The contract was completed in August 2005; however, acceptance is not expected until January 2008, pending the final change order.

A contract (Specification No. 06-15) to seal and pave roads in the San Luis and Southern Field Divisions began in July 2006 and was completed in November 2006; however, acceptance is not expected until January 2008, pending the final change order.

Repair Discharge Line and Modify Weir

A contract to repair pipe joints on Pearblossom Pumping Plant Discharge Line No. 1, repair damaged coating downstream of the discharge valve flange, and modify the Devil Canyon Powerplant Afterbay weir (Specification No. 05-13) began in September 2005, was completed in January 2006, and was accepted in February 2006. The work included:

- repairing 315 interior pipe joints in 108-inch inside diameter prestressed concrete cylinder pipe;
- repairing damaged coating of a 6-foot long steel pipe section;
- removing and disposing of old joint material;

- fabricating a reinforced concrete cap for the existing weir; and
- setting weir segments in place, installing dowels, and placing shotcrete.

Furnish Coils

A contract to furnish spare coils for Warne Powerplant and Devil Canyon Powerplant (Specification No. 01-13) began in October 2001. By the end of 2006, approximately 99 percent of the original contract work was completed. Added work to furnish a set of stator bars for Warne Powerplant (Unit 2) may delay final completion and acceptance until February 2008.

Miscellaneous Construction Activities

The following non-SWP construction activities are categorized as miscellaneous:

Demonstration Aeration Facility

A contract to install a demonstration aeration facility on Dock 20 at Rough and Ready Island in the Port of Stockton (Specification No. 05-06) began in December 2005 and was approximately 96 percent complete in December 2006. Work included installing:

- two 30-inch diameter steel U-tube casings and two 20-inch diameter U-tubes;
- 24-inch steel piping and 30-inch HDPE diffuser piping;
- two vertical turbine pump-motor units;
- four fish screens with two air burst systems; and
- electrical items including a programmable logic controller, water flow meter, instrumentation, and distribution panel and meter.

Levee Setback

A contract (Specification No. 06-13) to construct a levee setback at Cache Creek North Levee Miles 0.8, 1.1, and 2.4 began in June 2006 and was completed in September 2006. Acceptance is expected in mid-2007. Work included:

- removing trees, clearing, and grubbing;
- constructing the levee setback;
- paving roads;
- excavating a notch in the existing levee; and
- constructing a new road and new levee ramps.

Restore Habitat and Public Access

A contract to restore riparian habitat and public access at Jensen River Ranch (Specification No. 06-22) which began in November 2006 was 69 percent complete by the end of December 2006. The work includes:

- removal of selected irrigation lines, structures, and trees;
- site work and earthwork; and
- installing a storm drain bypass and an irrigation system.

Emergency Levee Erosion Repairs

The contracts listed below provided emergency levee erosion repairs and included most or all of the following work:

- fencing;
- removal of trees, brush, and debris;
- levee repairs;
- placement of in-stream woody material; and
- planting, seeding, and irrigation.

Cache Slough Miles 16.5L and 21.8R, Steamboat Slough Mile 16.2R, and Sacramento River Miles 20.8L, 26.5L, and 32.5R (Specification No. 06-17) began in July 2006 and was approximately 91 percent complete by the end of December 2006. The project is expected to be completed by February 2008.

Sacramento River Mile 85.6R and Bear River Miles 2.4L and 10.1R (Specification No. 06-16) began in June 2006 and was approximately 84 percent complete by the end of December 2006. The project is expected to be completed by February 2008.

Sacramento River Miles 56.8R and 69.9R (Specification No. 06-18) began in July 2006 and was approximately 87 percent complete by the end of December 2006. The project is expected to be completed by February 2008.

Sacramento River Miles 130.8R, 141.4R, 145.9L, 154.5R, and 164.0R (Specification No. 06-19) began in July 2006 and was approximately 86 percent complete by the end of December 2006. Work at site 145.9L included the construction of a new levee, excavation of a notch in the existing levee, and placement of aggregate base.

Emergency Flood Response

The following two emergency contracts were awarded to respond to flooding at the listed locations.

- Sacramento-San Joaquin Delta and Suisun Marsh (Specification No. 06-01) began in January 2006 and was approximately 95 percent complete in December 2006. Work included placing

rip-rap, rock, sand, and fill; relocating flood response supplies; and restoring levees.

- San Joaquin River (Specification No. 06-20), which included construction of filter berms and levee repairs, began in April 2006 with completion expected in December 2006.

Sediment Removal

Work began in July 2006 on a contract (Specification No. 06-08) to excavate and dispose of sediment material from the Yolo Bypass. Completion is expected by June 2007.

Real Estate Branch Activities

DWR has spent a net total of \$251 million to acquire rights-of-way, recreation, and mitigation land for the SWP from its inception to December 31, 2006. DWR conducted the following real estate activities from January 1 through December 31, 2006:

- acquired five parcels (3.57 acres in permanent easement and 8.62 acres in temporary easement) for a cost of \$17,328 for the South Bay Aqueduct, Brushy Creek Pipeline Project;
- acquired two encroachment permits from Caltrans and Kern County for the Lost Hills O&M Center Water, Sewer and Annexation Project;
- executed a utility relocation agreement with Southern California Edison to relocate several utility poles for the Mojave Siphon Project;
- renewed seven leases on SWP properties;
- managed leasing activities of SWP non-operating properties which produced an income of \$663,545;

- processed 24 encroachment permit applications and issued 17;
- collected fees of \$63,987 for review and inspection costs related to encroachment permit applications;
- received three encroachment reviews where applicant had prior property rights and completed three;
- received four encroachment permit amendments and completed four;
- coordinated review of ten tentative tract map developments within one mile of the California Aqueduct; and
- completed 14 appraisals covering 26 parcels and one appraisal review.

In addition, DWR obtained 26 temporary permits, including:

- three for additional South Delta gages;
- six for East Branch Extension Phase II, Mentone Feeder East;
- four for Habitat Restoration and Public Access Plan, Jensen River Ranch;
- two for South Bay Aqueduct canal enlargement; and
- one for each of the following: Feather River flood forecasting and West Delta wildlife/Sherman Island.

Table 12-1. Design Activities, January 1, 2006, through December 31, 2006, by Division

Construction Division and Facility	Design Activity	Date Design Began	Design Actual/ Estimated Completion Date
Delta Field Division			
South Bay Aqueduct Enlargement (subcomponents below)			
South Bay Pumping Plant	Initial plant structure	April 2003	August 2006
	Furnish power transformers (rebid)	December 2003	December 2006
	Furnish and install SCADA equipment	February 2004	June 2007
	Plant completion	January 2005	December 2007
	Septic system	September 2006	December 2006
Discharge Line and Pipelines	Plant discharge line and Brushy Creek Pipeline No. 3	May 2003	October 2006
Surge Tank No. 3	New surge tank	July 2004	July 2007
Canal	Canal modification	July 2003	July 2007
Dyer Reservoir	New 425 af reservoir	September 2003	June 2007
Patterson Reservoir	Raise embankment and refurbish liner	January 2006	June 2007
San Joaquin Field Division			
Lost Hills Domestic and Fire Water Supply	Domestic and fire water supply	September 2004	September 2007
San Luis Field Division			
Gianelli Pumping-Generating Plant and Dos Amigos Pumping Plant	Replace standby engine generator	July 2004	August 2006
Santa Ana Division			
Lake Perris—Perris Dam	Relocation of the ADA accessible fishing dock	April 2006	December 2006
Lake Perris—Irrigation System	Installation of irrigation system at the north end of the lake	January 2006	February 2006
Lake Perris—Marina Repair	Extend and repair existing marina	March 2006	May 2006
Tehachapi Division			
Tehachapi East Afterbay	Completion Phase III contract	March 2006	August 2006
West Branch			
Lower Quail Canal	Seepage control blanket	May 2006	January 2007
Multiple Divisions			
Oso Pumping Plant and Cedar Springs Dam Maintenance Station	Civil maintenance and mobile equipment buildings	May 2005	March 2007
Delta and San Luis Field Divisions	Roof replacement and recoating at Banks Pumping Plant, Dos Amigos Pumping Plant, and Coalinga O&M Subcenter structures	April 2005	January 2006

Table 12-1. (continued)

Construction Division and Facility	Design Activity	Date Design Began	Design Actual/ Estimated Completion Date
Miscellaneous			
Jensen River Ranch Phase I	Assisted in the design and development of plans and specs for the San Joaquin River Restoration Program	April 2006	November 2006
Cache Creek LM 0.8, 1.1, and 2.4	Emergency levee erosion repair—developed the plans and specifications for this project as part of the Emergency Levee Erosion Repairs program	October 2005	June 2006
Cache Slough Miles 16.5L and 21.8R, Steamboat Slough Mile 16.2R, Sacramento River Miles 20.8L, 26.5L, and 32.5R	Emergency levee erosion repair	October 2005	June 2006
Sacramento River Mile 85.6R and Bear River Miles 2.4L and 10.1R	Emergency levee erosion repair	June 2006	February 2008
Sacramento River Miles 56.8R and 69.9R	Emergency levee erosion repair	July 2006	February 2008
Sacramento River Miles 130.8R, 141.4R, 145.9L, 154.5R, and 164.0R	Emergency levee erosion repair	July 2006	February 2008

Table 12-2. Construction Activities, January 1, 2006, through December 31, 2006, by Division

Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW ^a)	Acceptance Date (Expected or Actual)	Contract Costs (In Thousands of Dollars)
Upper Feather River Division				
Grizzly Valley Dam	Construct fish containment facilities (06-11)	June 2006	March 2008	1,590
Oroville Division				
Hyatt Powerplant	Refurbish turbine Units 1, 3, and 5 (98-22)	February 1999	September 2008	10,089
	Refurbish pump-turbine Units 2, 4, and 6 (01-11)	November 2001	September 2008	15,966
Oroville Field Division	Replace roofs (05-09)	August 2005	June 2006	602
Delta Facilities				
Middle River, Old River, and Grant Line Canal	Construct temporary rock barriers (03-07)	November 2003	June 2007	17,656
Mojave Division				
Tehachapi East Afterbay	Furnish roller gates (04-18)	February 2005	October 2007	640,000
	Construct Afterbay, initial (04-17)	February 2005	June 2006	24,556
	Complete Afterbay (05-03)	May 2005	Terminated for default (November 2005)	4,639
	Complete Afterbay Phase IA (05-17)	December 2005	March 2006	2,179
	Complete Afterbay Phase II (05-16)	January 2006	April 2007	15,814
	Complete Afterbay Phase III (06-14)	August 2006	August 2007	10,870
San Joaquin Field Division				
Edmonston Pumping Plant	Replace pumps, Units W2, W4, W6, and W8 (02-11)	June 2003	March 2011	32,900
	Impeller replacement (04-09)	July 2004	March 2007	4,300
Santa Ana Division				
East Branch Extension Phase I				
<i>Pump Stations</i>				
Greenspot, Crafton Hills, and Cherry Valley	Furnish pumps, motors, and variable frequency drives (99-17)	November 1999	September 2008	4,748
	Furnish and install supervisory control and communications systems (01-05)	October 2001	June 2008	5,500
	Add units (06-21)	October 2006	September 2008	4,272
<i>Valve Facilities</i>				
Carter Street and Morton Canyon	Furnish ANSI ball valves (99-20)	October 1999	June 2008	1,093
	Furnish AWWA butterfly valves (99-22)	October 1999	June 2008	762
	Furnish ANSI butterfly valves (99-23)	November 1999	June 2008	1,281
Lake Perris State Recreation Area	Repair marina (06-05)	May 2006	February 2007	331
	Furnish, deliver, and spread sand (06-06)	May 2006	August 2006	473
Santa Ana Pipeline	Excavate, inspect, and repair pipeline, Phase III (05-14)	October 2005	January 2006	3,264
	Encase concrete for State Route 60 widening (05-15)	November 2005	March 2006	1,183

^a Notice to Begin Work.

Table 12-2. (continued)

Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW^a)	Acceptance Date (Expected or Actual)	Contract Costs (In Thousands of Dollars)
South Bay Aqueduct				
South Bay Aqueduct Enlargement and South Bay Pumping Plant Expansion	Furnish 45 cfs pump and motor units (04-05)	November 2004	April 2009	7,150
	Furnish valve and actuator (04-20)	May 2005	April 2009	2,331
	Furnish switchyard equipment (05-10)	September 2005	April 2009	1,278
	Furnish 5 kV switchyard (05-05)	October 2005	April 2009	3,262
	Construct initial pumping plant facilities (06-04)	August 2006	Sep 2008	11,033
	Dishcharge line and Brushy Creek Pipeline (06-09)	December 2006	August 2008	18,344
Dyer Reservoir	Construct a drainage diversion (06-24)	September 2006	December 2008	2,406
West Branch				
Castaic Dam	Repair spillway wall (05-12)	August 2005	February 2006	432
Lower Quail Canal	Control seepage (06-23)	January 2007	July 2007	657
Multiple Divisions				
Banks Pumping Plant and Gianelli Pumping-Generating Plant	Design, manufacture, deliver, and install digital voltage regulators (02-12)	May 2003	January 2008	2,080
	Fire suppression system (04-08)	July 2004	April 2008	7,392
Banks Pumping Plant, Dos Amigos Pumping Plant, and Coalinga O&M Subcenter	Replace and recoat roofs (06-03)	March 2006	January 2008	1,732
	Engine generator (06-10)	August 2006	August 2008	1,128
Banks Pumping Plant, Skinner Fish Facility, Roaring River Intake Structure	Rehabilitate cathodic protection anodes (06-12)	August 2006	February 2008	313,949
California Aqueduct	Monitor, test, and repair copper communications equipment (05-07)	July 2005	April 2007	1,249
Mojave Siphon Powerplant and Devil Canyon Second Afterbay	Revegetation (99-21)	November 1999	February 2006	761
Oroville and Southern Field Divisions	Seal and pave roads (05-11)	September 2005	February 2008	6,556
Pearblossom Pumping Plant and Devil Canyon Powerplant Afterbay	Repair discharge line and modify weir (05-13)	September 2005	February 2006	1,443
San Luis and Southern Field Divisions	Seal and pave roads (04-10)	August 2004	January 2008	6,473
	Seal and pave roads (06-15)	July 2006	January 2008	3,927
Warne and Devil Canyon Power Plants	Furnish spare coils and materials (01-13)	October 2001	February 2008	1,787

^a Notice to Begin Work

Table 12-2. (continued)

Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW ^a)	Acceptance Date (Expected or Actual)	Contract Costs (In Thousands of Dollars)
Miscellaneous Activities				
Port of Stockton Rough and Ready Island Dock 20	Install demonstration aeration facility (05-06)	December 2004	March 2008	4,066
Cache Creek Levee Mile 0.8, 1.1, and 2.4	Construct levee setback, north levee (06-13)	June 2006	July 2007	673
Cache Slough Miles 16.5L and 21.8R, Steamboat Slough Mile 16.2R, Sacramento River Miles 20.8L, 26.5L, and 32.5R	Repair levee erosion, emergency (06-17)	July 2006	February 2008	45,168
Jensen River Ranch	Restore riparian habitat and public access (06-22)	November 2006	February 2008	1,412
Sacramento River Mile 85.6R and Bear River Miles 2.4L and 10.1R	Repair levee erosion, emergency (06-16)	June 2006	February 2008	19,217
Sacramento River Miles 56.8R and 69.9R	Repair levee erosion, emergency (06-18)	July 2006	February 2008	8,875
Sacramento River Miles 130.8R, 141.4R, 145.9L, 154.5R, and 164.0R	Repair levee erosion, emergency (06-19)	July 2006	February 2008	42,269
Sacramento San Joaquin Delta and Suisun Marsh	Respond to flooding, emergency (06-01)	January 2006	August 2007	2,685
San Joaquin River	Respond to flooding - emergency (06-20)	April 2006	October 2006	3,681
Yolo Bypass	Remove sediment (06-08)	July 2006	June 2007	5,949
San Luis Canal	West side detention (04-03)	August 2004	December 2007	10,200
Roaring River Slough, Station 370+20 and 417+20	Emergency levee restoration (06-02)	January 2006	July 2006	2,500
Santa Ana Pipeline	Excavation, inspection, and repair - Phase III	October 2005	January 2006	3,260

^a Notice to Begin Work



Chapter 13 Recreation

*R*ecreation facilities at Antelope Lake include a three-lane boat launching ramp, three day-use fishing access sites, a day-use picnic area, and a disabled fishing access area.

Significant Events in 2006

The Department of Fish and Game (DFG) continued its fish-planting activities at 10 of the 12 SWP facilities. The total number of trout planted was 584,500, compared to 522,300 planted in 2005. In addition, 251,100 coho salmon were planted at Lake Oroville.

SWP facilities estimated 4.7 million recreation days of use, nearly the same as the estimated 4.8 million recreation days reported in 2005.

This was the second year that DWR and other State agencies scheduled the Catch A Special Thrill (C.A.S.T.) events at SWP recreation lakes and the sixth time DWR partnered with the Bureau of Reclamation (Reclamation) and other agencies at the Millerton Lake event. More than 100 disabled and disadvantaged children participated in these events.

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

The State Water Project (SWP) is a multipurpose project that provides recreational benefits to millions of Californians. In addition to providing water supply, flood control, and habitat for fish and wildlife, the SWP offers extensive and varied recreational opportunities—tours, sightseeing, fishing, hunting, picnicking, camping, boating, water skiing, bicycling, hiking, and swimming. Under the Davis-Dolwig Act (DDA), these recreational opportunities, as well as fish and wildlife enhancements, are not allocable as water and power costs to the SWP water contractors. They are financed by Department of Water Resources' (DWR) existing authorities under the Burns-Porter Act as well as appropriations from the Legislature specifically for these purposes.

Recreation Areas

The SWP has 37 developed recreation areas, or sites, throughout California, including 18 developed fishing access sites. Figure 13-1 shows the name and location of each area.

Recreation Days

In 2006, SWP facilities supported an estimated 4.7 million recreation days of use (Table 13-1), nearly the same as the estimated 4.8 million recreation days reported in 2005. A recreation day is defined as one individual user visiting a recreation site along the SWP within all or part of a 1-day period. Recreational use at the fishing access sites and along the California Aqueduct Bikeway nearly equaled that of 2005.

Most SWP recreation use is concentrated at the major reservoirs with 41 percent occurring at the lakes in the Oroville Field Division and an equal 41 percent of the total SWP recreational use in 2006 occurring 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 185 million recreation days have been recorded at SWP recreational facilities. In addition to

recreation use, visitation at DWR's three SWP educational visitors centers totaled:

- Lake Oroville Visitors Center, 81,300 recreation days;
- Romero Overlook, San Luis Reservoir, 112,500 recreation days; and
- Vista del Lago, Pyramid Lake, 13,000 recreation days. (Usage recorded from November 1 through December 31. Facility closed February 23, 2005, through October 31, 2006, due to rain-caused landslides.)

Facilities

Planning

During 2006, the Department of Boating and Waterways (DBW) began plans for the following projects:

- Upper Feather River Lakes: Boarding float replacements at Frenchman Lake and Lake Davis.
- Lake Oroville: Bidwell Stage 1 ramp widening.
- Bethany Reservoir: Shade structures, walkways, entry gate, and project sign.
- San Luis Reservoir: Americans with Disabilities Act (ADA) improvements at Los Banos Creek Area.
- Castaic Lake: East Ramp wave attenuator.



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| <ul style="list-style-type: none"> 1. Antelope Lake Recreation Area 2. Frenchman Lake Recreation Area 3. Lake Davis Recreation Area 4. Lake Oroville State Recreation Area 5. White Slough Wildlife Area 6. Bethany Reservoir 7. Lake del Valle State Recreation Area 8. Bikeway from Bethany Reservoir to O'Neill Forebay (70 miles) 9. Grant Line Road Fishing Access Site 10. Niels Hansen Fishing Access Site 11. Orestimba Fishing Access Site 12. Access Walk-in Fishing (63 miles) 13. Cottonwood Road Fishing Access Site 14. San Luis Reservoir State Recreation Area 15. Los Banos Reservoir 16. Canyon Road Fishing Access Site 17. Mervel Avenue Fishing Access Site 18. Fairfax Fishing Access Site 19. Access to Walk-in Fishing (208 miles accessible along the Aqueduct) | <ul style="list-style-type: none"> 20. Three Rocks Fishing Access Site 21. Huron Fishing Access Site 22. Avenal Cutoff Fishing Access Site 23. Kettleman City Fishing Access Site 24. Lost Hills Fishing Access Site 25. Buttonwillow Fishing Access Site 26. Pyramid Lake State Recreation Area 27. Castaic Lake State Recreation Area 28. Munz Ranch Road Fishing Access Site 29. Bikeway from Quail Lake to Silverwood Lake (107 miles, not all accessible) 30. 70th Street West Fishing Access Site 31. Access Walk-in Fishing (83 miles) 32. Avenue S Fishing Access Site 33. 77th Street East Fishing Access Site 34. Longview Road Fishing Access Site 35. Silverwood Lake State Recreation Area 36. Lake Perris State Recreation Area 37. San Jacinto Wildlife Area |
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Figure 13-1. Names and Locations of SWP Recreation Areas

Table 13-1. Recreation Days Estimated^a in 2006, by Field Division and Facility

Field Division and Facility	Number of Recreation Days
Oroville Field Division	
Frenchman Lake	73,000
Antelope Lake	21,300
Lake Davis	27,500
Lake Oroville and Thermalito Forebays	1,020,000
Thermalito Afterbay and Oroville Wildlife Area	368,000
Feather River Fish Hatchery	64,100
Lake Oroville Visitors Center	81,300
<i>Subtotal</i>	<i>1,533,400</i>
Delta Field Division	
Lake del Valle	293,000
Bethany Reservoir	28,000
Fishing Access Sites:	
Niels Hansen	100
California Aqueduct:	
Walk-in fishing	600
Bikeway	100
White Slough Wildlife Area	12,000
<i>Subtotal</i>	<i>333,800</i>
San Luis Field Division	
San Luis Reservoir SRA, includes San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir	473,700
California Aqueduct:	
Walk-in fishing	12,000
Wildlife Areas	11,000
<i>Subtotal</i>	<i>496,700</i>
San Joaquin Field Division	
Fishing Access Sites:	
Kettleman City	1,000
Lost Hills	1,000
Buttonwillow	1,000
California Aqueduct:	
Walk-in fishing	9,500
<i>Subtotal</i>	<i>12,500</i>
Southern Field Division	
Silverwood Lake	306,400
Lake Perris	916,600
Pyramid Lake	160,000
Castaic Lake	601,400
Fishing Access Sites:	
Quail Lake	1,300
77th Street East	400
Longview Road	100
California Aqueduct:	
Walk-in fishing	2,500
Bikeway	400
<i>Subtotal</i>	<i>1,989,100</i>
Total	4,365,500

^a These values are provided by numerous sources and vary in their degree of accuracy.

- Silverwood Lake: Boarding floats improvements at Sawpit Area.
- Silverwood Lake: Boat-in site improvements at Live Oak and Chamise areas.
- Lake Perris: Marina ADA access improvements. Power Cover area ramp extension. Ramp 6 improvement.

New Facilities

During 2006, new facilities were completed at the following:

Frenchman Lake

CXT vault toilet was installed at Lunker Point.

Lake Oroville

Fish cleaning stations were installed at the Spillway and Lime Saddle areas. Floating campsite retrofit and improvements.

Castaic Lake

Paradise Cove (Lagoon): Boating Instruction Safety Center was completed in November 2006.

Lake Perris

Dock retrofit at Ramp 6.

Improvements to Facilities

During 2006, improvements were made at the following facilities:

Lake Oroville

Three new project signs were added at the Spillway, Lime Saddle, and Bidwell areas.

Pyramid Lake

Yellow Bar Boat-in Area improvements.

Lake Perris

Patrol dock repairs. Fender and utility replacements for docks. Boarding float conversions for Ramps 6 and 7.

Oroville Recreation Plan

The Oroville Facilities, including Lake Oroville State Recreation Area, Oroville Wildlife Area, and adjacent DWR facilities are operated in conformance with the 1993 Amended Recreation Plan that was approved by the Federal Energy Regulatory Commission (FERC) in their 1994 Order 2100-054. In 2006, DWR and its Settlement Agreement (SA) signatories submitted a new Recreation Management Plan for FERC approval, which is expected sometime in 2009.

During the multi-year relicensing process, DWR implemented a number of “interim projects” to continue to enhance recreation in the area. For the most part, these items were not envisioned in the 1993 plan, but constitute improvements to existing facilities that were deemed feasible and desirable by stakeholders during the Oroville Facilities Relicensing Alternative Licensing Process (ALP). These improvements are included in the Settlement Agreement Recreation Management Plan (SARMP, March 2006) along with the many new facilities proposed by the SA signatories for the pending new FERC license. Interim projects completed include the following:

- Expanded structures and facility improvements to the CSU Chico-operated Aquatic Center at the North Thermalito Forebay.
- Restroom upgrades—vault type, handicap accessible restrooms were installed at Wilbur Road Boat Ramp, Model Aircraft Flying Facility at Thermalito Afterbay, Enterprise Boat Ramp, South Thermalito Forebay, and Saddle Dam.
- Loafer Creek Equestrian Campground improvements—A paved access road,

new feeder boxes, pipe corrals, and a 50-foot round pen were added near Loafer Creek Campground to enhance equestrian recreational opportunities.

- Group Staging Area—DWR secured the Thompson Flat property, graded parking, installed signage, graveled the drive from Cherokee Road, and developed a spur trail from the staging area to an existing bicycle trail.
- Bidwell Exhibit—DWR coordinated with the Department of Parks and Recreation (DPR) to develop an exhibit of the history of Bidwell Bar Bridge.
- Saddle Dam improvements—The existing Saddle Dam equestrian parking area was improved by regrading and adding gravel to the parking area, and by adding picnic tables, a water trough, hitching posts for horses, and native shade trees.
- Lake Oroville overlook improvements—The Lake Oroville overlook located off the Oro-Quincy Highway, State Route (SR)162, was improved by removing the previous cyclone fencing, installing a new California Department of Transportation (Caltrans) specification fence and automobile safety barrier, and adding interpretive signs.
- Reseed the face of Oroville Dam—DWR reseeded the face of Oroville Dam with a wildflower mixture dominated by California poppies.
- Model Aircraft Flying Facility improvements—DWR paved the crossing runways, graded and graveled the parking lot, installed aircraft staging tables, constructed picnic facilities with shade ramadas, and added fencing.
- Promote existing recreation facilities—DWR provided funding to the Oroville Chamber of Commerce for billboards along SR 99 and Pentz Road to direct people to Lake Oroville State Recreation Area (LOSRA) facilities.

- Boating safety training—DWR continues to work cooperatively with DPR, the Butte Sailing Club, and the Feather River Recreation and Parks District to fund improved boat storage facilities, boating safety equipment, and instructional programs. The latter includes a recurring “Aquatic Adventure Camp” that targets local disadvantaged youth.
- Sewim Bo River Path—A walking trail was developed along the southeastern bank of the Feather River starting at the Old Bath House (now the Nature Center and Native Plant Garden) and extending north to the Thermalito Diversion Dam. Improvements along the river trail include picnic tables, shade ramadas, restrooms, interpretive signs, and parking, including ADA-compliant access.
- Feather River Fish Hatchery landscaping improvement—DWR planted new shade trees and assorted native plants and grasses and installed picnic tables on the Feather River Fish Hatchery grounds.

Additional recreation improvements will be constructed when FERC issues new license terms and conditions expected to be consistent with the proposed SARMP. In the meantime, DWR and its Davis-Dolwig Act (DDA) collaborating partners, DPR, DBW, and the Department of Fish and Game (DFG), will continue to operate Oroville Facilities recreational installations consistent with the existing FERC license.

Fish Planting

In 2006, DFG continued its fish-planting activities at 10 of the 12 SWP facilities. The total number of trout planted was 584,500, compared to 522,300 planted in 2005 (see Table 13-2). In addition, 251,100 coho salmon were planted at Lake Oroville.

SWP Deliveries for Recreation

DWR has an agreement with DPR to provide onshore recreation water at several SWP facilities in an amount prorated to the yearly SWP Table A allocation. Per the 2006 100 percent SWP Table A allocation, maximum diversion amounts under the onshore recreation agreement were allocated at 100 percent or a total of 6,780 af as follows: 2,750 af at San Luis Reservoir; 400 af at Del Valle Reservoir; 2,330 af at Castaic Lake/Lagoon; 1,250 af at Lake Perris; and 50 af at Bethany Reservoir. Actual deliveries under the agreement totaled 607 af as follows: 42 af at San Luis Reservoir, 169 af at Del Valle Reservoir, 396 af at Castaic Lake, 0 af at Lake Perris, and 0 af at Bethany Reservoir. In addition, 98 af was delivered to DPR at Silverwood Lake. Further detail on these deliveries is provided in Table 9-4 of Chapter 9.

Recreation Financing

Prior to 2001, 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 2000-2001, are reported in this bulletin.

The approach to financing recreation and fish and wildlife enhancement (R&FWE) in connection with the SWP is provided in the DDA (California Water Code Sections 11900-11925, 1961); the Burns-Porter Act (CWC Section 12937, 1959); and CWC Sections as early as 1953 (12581, 12582, 233, 345, 346), which declare recreation at the SWP to be a benefit to all the people of California and a cost that is to be borne by them. While this intent is cited in the DDA,

Table 13-2. Fish Planted by Department of Fish and Game in 2006 (Thousands)

Location and Size	Eagle Lake Trout	Brook Trout	Rainbow Trout	Brown Trout	Coho Salmon	Total
Antelope Lake Adv. Fingerlings	26.4	Yearling 5.7	Yearling 8.6			40.7
Lake Davis Catchables	42.7					42.7
Frenchman Reservoir Fingerlings	170.0					221.0
Catchables	51.0					
Lake Oroville Fingerlings					251.1	251.1
Thermalito Forebay Catchables			16.6			16.6
Lake del Valle Catchables	---	---	No Fish Planted		---	---
Los Banos Reservoir Catchables			10.4			10.4
Pyramid Lake Catchables			20.6			20.6
Castaic Lake Catchables			86.9			86.9
Castaic Lagoon Catchables			43.4			43.4
Silverwood Lake Catchables			38.2			38.2
Lake Perris Catchables	2.2		61.8			64.0
California Aqueduct	---	---	No Fish Planted		---	---
TOTAL	292.3	5.7	286.5		251.1	835.6

no specific appropriation or funding source was defined. Consequently, Assembly Bill (AB) 12 in 1966, Senate Bill (SB) 1268 in 1970, and the Environmental Water Act, AB 1441 and AB 1442 in 1989, were all enacted to provide the statutorily required State funding for this SWP purpose.

As noted above, the Legislature has appropriated monies to meet State obligations to fund fish and wildlife enhancements and recreation at the SWP intermittently in the past. AB 12 appropriated \$5 million per year to DWR from Tidelands oil and gas revenues, which totaled \$90 million through the early 1980s. When these revenues were exhausted, SB 1268 appropriated \$55 million to DPR and \$5 million to DFG specifically for their responsibilities under the DDA at SWP facilities. Finally, AB 1442 appropriated a total of \$172 million as an offset to DWR's outstanding California Water Fund repayment and an additional \$30 million for SWP R&FWE through 1994.

While no other appropriations to DWR for SWP R&FWE have been made by the Legislature, DWR has used its authority under the Burns-Porter Act to carry out and fund all SWP project purposes, including R&FWE, with State Water Resources Development System revenues.

Capital Cost Allocations

Table 13-3 shows capital costs allocated to R&FWE and overall costs of lands acquired for recreation development through 2006. Reported costs have increased by \$31,076,586 since Bulletin 132-06, which includes \$3,510,246 for 2006 and \$27,566,340 for historical adjustments prior to 2006. Historical adjustments reflect revisions to reported Capital Joint and Specific costs resulting from the

reconciliation of historical expenditures. 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.

Accrued Interest Charges

Table 13-4 details accrued interest charges included in the costs shown in Table 13-3, and reimbursements through December 2006. These interest accruals are calculated through December 31, 2006, 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 and are used by DWR to pay for operations, maintenance, power, and replacement costs associated with operating the SWP for R&FWE.

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 (to Bulletins 132-98, 132-99, 132-00, and 132-01). This report can be found online at <http://www.swpao.water.ca.gov/publications/index.cfm>.

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

Facility	Joint Costs Allocated to Recreation and Enhancement						Increase/ Decrease
	1952-2005 Updated	2006	Subtotal	Interest	Total	B132-06 Costs	
Frenchman Dam and Lake (78.5%)							
California Water Resources Development Bond Fund	102,997	0	102,997	2,097	105,094	105,094	0
All Other Funds	2,717,689	41	2,717,730	0	2,717,730	2,736,262	(18,532)
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	4,625,718	0	4,625,718	0	4,625,718	4,413,790	211,928
Grizzly Valley Dam and Lake Davis (99.0%)							
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	2,601,723	1,788,633	4,390,356	0	4,390,356	2,602,436	1,787,920
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	3,503,516	873	3,504,390	0	3,504,390	3,501,256	3,134
California Aqueduct Delta to Dos Amigos P.P. (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	4,634,811	27,949	4,662,760	0	4,662,760	4,546,926	115,834
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	4,948,938	72,459	5,021,397	0	5,021,397	4,822,640	198,757
Del Valle Dam and Lake del Valle (48.0%)							
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	4,193,430	1,449	4,194,879	0	4,194,879	4,184,520	10,359
California Aqueduct Dos Amigos P.P. 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	85,527,824	950,690	86,478,513	0	86,478,513	58,994,736	27,483,777
<i>Subtotal</i>	<i>188,003,715</i>	<i>2,842,094</i>	<i>190,845,808</i>	<i>85,626,954</i>	<i>276,472,762</i>	<i>246,679,587</i>	<i>29,793,175</i>
Specific Costs of Acquiring Land for Recreation Development							
Frenchman Dam and Lake							
California Water Resources Development Bond Fund	3,379	0	3,379	160	3,539	3,539	0
All Other Funds	49,950	0	49,950	0	49,950	49,947	3
Grizzly Valley Dam and Lake Davis							
California Water Resources Development Bond Fund	204,475	0	204,475	17,573	222,048	222,048	0
All Other Funds	554,246	0	554,246	0	554,246	554,260	(14)
Abbey Bridge Dam and Reservoir							
California Water Resources Development Bond Fund	9	0	9	0	9	9	0
All Other Funds	9,921	0	9,921	0	9,921	9,921	0
San Luis Dam and Reservoir, O'Neill Forebay and Los Banos Reservoir							
California Water Resources Development Bond Fund	395,284	0	395,284	33,467	428,751	428,751	0
All Other Funds	867,243	0	867,243	0	867,243	415,610	451,633
California Aqueduct Delta to Dos Amigos P.P.							
California Water Resources Development Bond Fund	461,086	0	461,086	158,456	619,542	619,542	0
All Other Funds	(137,600)	0	(137,600)	0	(137,600)	(137,494)	(106)
Oroville Division							
California Water Resources Development Bond Fund	7,809,509	0	7,809,509	3,673,041	11,482,550	11,482,550	0
All Other Funds	3,253,094	668,152	3,921,246	0	3,921,246	3,100,347	820,899
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	(32,202)	0	(32,202)	0	(32,202)	(32,200)	(2)
California Aqueduct Dos Amigos P.P. 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	410,296	0	410,296	0	410,296	398,349	11,947
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	951,352	0	951,352	0	951,352	952,325	(973)
Cedar Springs 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	370,164	0	370,164	0	370,164	370,137	27
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	4,939,976	0	4,939,976	0	4,939,976	4,939,979	(3)
<i>Subtotal</i>	<i>24,510,154</i>	<i>668,152</i>	<i>25,178,306</i>	<i>11,953,381</i>	<i>37,131,687</i>	<i>35,848,276</i>	<i>1,283,411</i>
Total Recreation and Enhancement Costs							
California Water Resources Development Bond Fund	88,523,781	0	88,523,781	97,580,335	186,104,116	186,104,116	0
All Other Funds	123,990,088	3,510,246	127,500,333	0	127,500,333	96,423,747	31,076,586
Total	212,513,869	3,510,246	216,024,114	97,580,335	313,604,449	282,527,863	31,076,586

Table 13-4. Calculation of Interest Accruals on California Water Resources Development Bond Fund Disbursements (in dollars at 4.608% per annum)

Facility	1952–2005					2006					2007 Beginning of Year Balance to be Reimbursed				
	Disbursements		Reimbursements		Interest Accrual	Disbursements		Reimbursements		Interest Accrual	Disbursements		Reimbursements		Interest Accrual
	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	
Joint Costs Allocated to Recreation and Enhancement															
Frenchman Dam and Lake	102,997	2,717,689	104,900	2,719,468	2,097	0	41	0	0	0	102,997	2,717,730	104,900	2,719,468	2,097
Antelope Dam and Lake	1,033,261	4,625,718	1,140,322	4,478,932	113,788	0	0	0	0	0	1,033,261	4,625,718	1,140,322	4,478,932	113,788
Grizzly Valley Dam and Lake Davis	4,003,092	2,601,723	4,444,594	2,568,667	486,754	0	1,788,633	0	0	0	4,003,092	4,390,356	4,444,594	2,568,667	486,754
Sisk Dam, San Luis Res., O'Neill Forebay & Los Banos Reservoir	988,910	3,503,516	1,938,244	2,725,578	169,085	0	873	0	0	0	988,910	3,504,390	1,938,244	2,725,578	169,085
California Aqueduct Delta to Dos Amigos P.P.	4,467,667	4,634,811	5,267,351	4,092,435	897,406	0	27,949	0	0	0	4,467,667	4,662,760	5,267,351	4,092,435	897,406
Oroville Division	5,725,216	4,948,938	7,324,529	4,570,269	1,790,491	0	72,459	0	0	0	5,725,216	5,021,397	7,324,529	4,570,269	1,790,491
Del Valle Dam and Lake del Valle	10,546,762	4,193,430	16,463,934	3,130,016	6,813,560	0	1,449	0	0	0	10,546,762	4,194,879	16,463,934	3,130,016	6,813,560
California Aqueduct Dos Amigos P.P. to Termini	48,382,162	85,527,824	113,035,518	49,410,851	75,353,773	0	950,690	0	0	0	48,382,162	86,478,513	113,035,518	49,410,851	75,353,773
<i>Subtotal</i>	<i>75,250,067</i>	<i>112,753,648</i>	<i>149,719,392</i>	<i>73,696,216</i>	<i>85,626,954</i>	<i>0</i>	<i>2,842,094</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>75,250,067</i>	<i>115,595,741</i>	<i>149,719,392</i>	<i>73,696,216</i>	<i>85,626,954</i>
Specific Costs of Acquiring Land for Recreation Development															
Frenchman Dam and Lake	3,379	49,950	3,520	49,947	160	0	0	0	0	0	3,379	49,950	3,520	49,947	160
Grizzly Valley Dam and Lake Davis	204,475	554,246	220,423	554,244	17,573	0	0	0	0	0	204,475	554,246	220,423	554,244	17,573
Abbey Bridge Dam and Reservoir	9	9,921	9	9,921	0	0	0	0	0	0	9	9,921	9	9,921	0
Sisk Dam, San Luis Res., O'Neill Forebay, & Los Banos Reservoir	395,284	867,243	425,700	415,610	33,467	0	0	0	0	0	395,284	867,243	425,700	415,610	33,467
California Aqueduct Delta to Dos Amigos P.P.	461,086	(137,600)	603,887	(137,494)	158,456	0	0	0	0	0	461,086	(137,600)	603,887	(137,494)	158,456
Oroville Division	7,809,509	3,253,094	11,028,039	649,733	3,673,041	0	668,152	0	0	0	7,809,509	3,921,246	11,028,039	649,733	3,673,041
Del Valle Dam and Lake del Valle	519,425	(32,202)	917,078	(32,200)	448,292	0	0	0	0	0	519,425	(32,202)	917,078	(32,200)	448,292
California Aqueduct Dos Amigos P.P. to Termini	478,971	410,296	1,271,912	398,349	915,217	0	0	0	0	0	478,971	410,296	1,271,912	398,349	915,217
Castaic Dam and Lake	1,954,297	951,352	5,291,258	951,070	3,856,203	0	0	0	0	0	1,954,297	951,352	5,291,258	951,070	3,856,203
Cedar Springs Dam and Silverwood Lake	424,966	370,164	1,132,207	370,137	817,173	0	0	0	0	0	424,966	370,164	1,132,207	370,137	817,173
Perris Dam and Lake Perris	1,022,313	4,939,976	2,780,487	4,867,247	2,033,799	0	0	0	0	0	1,022,313	4,939,976	2,780,487	4,867,247	2,033,799
<i>Subtotal</i>	<i>13,273,714</i>	<i>11,236,440</i>	<i>23,674,520</i>	<i>8,096,564</i>	<i>11,953,381</i>	<i>0</i>	<i>668,152</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>13,273,714</i>	<i>11,904,592</i>	<i>23,674,520</i>	<i>8,096,564</i>	<i>11,953,381</i>
Total	88,523,781	123,990,088	173,393,912	81,792,780	97,580,335	0	3,510,246	0	0	0	88,523,781	127,500,333	173,393,912	81,792,780	97,580,335



Chapter 14 Financial Analysis

*S*unset at the Rio Vista Bridge in the Sacramento-San Joaquin Delta.



Information for this chapter was provided by the State Water Project Analysis Office in conjunction with the Division of Fiscal Services.

This 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 2007 through 2020.

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, 2006, are presented in Tables 14-1 and 14-2 located at the end of this chapter.

Future contingencies may change the financial analysis, some of which include:

- 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 2020 plus reimbursement of \$65 million interim financing for prior expenditures will total \$1.20 billion. Special capital requirements for revenue bond financing of these construction costs are projected at \$134 million for a total capital requirement of \$1.40 billion. This projection includes construction and financing costs for the following significant SWP facilities planned for completion by 2020:

- South Delta facilities;
- Phase II of the East Branch of the California Aqueduct;
- Phase II enlargement of the East Branch;
- enlargement of the South Bay Aqueduct; and
- a new intake at Clifton Court Forebay.

Most of these capital requirements will be financed from the projected sale of \$1.42 billion of revenue bonds. The remaining \$63 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 af contractual commitment to long-term SWP water contractors. Table 14-1 also does not include the 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 2020. Estimates of future capital expenditures include allowances for construction cost escalation of 5 percent per year from 2007 through 2020. Right-of-way costs are escalated at 4 percent per year from 2007 through 2020. 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 the estimated costs for improvements and the historical costs for Phase II. Phase II, which became operational in May 1988, 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 included 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. The improvements consist of replacing the existing tank with two 5-million gallon tanks. Construction will begin in 2007 and is anticipated to be completed in May 2009.

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-cubic feet per second (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

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

Facilities and Construction Divisions	Expenditures Incurred Through 2006	Future Expenditures	Total	Preliminary Allocation Among Project Purposes			
				Water Supply and Power Generation	Flood Control ^b	Recreation and Fish and Wildlife Enhancement	Other ^b
Project Construction Expenditures							
Upper Feather Division	20,081	66	20,147	1,500	0	18,647	0
Oroville Division	596,505	20,347	616,852	522,925	71,950	21,977	0
Delta Facilities Division	410,130	71,118	481,248	463,890	0	17,358	0
North Bay Aqueduct	95,491	10,447	105,938	105,938	0	0	0
South Bay Aqueduct	136,169	144,702	280,871	257,452	8,191	15,228	0
<i>California Aqueduct</i>							
North San Joaquin Division	218,711	16,740	235,451	227,152	0	8,299	0
San Luis Division	269,308	1,592	270,900	258,534	0	12,366	0
South San Joaquin Division	289,048	3,298	292,346	274,766	0	17,580	0
Tehachapi Division	331,035	13,166	344,201	324,620	0	19,581	0
Mojave Division	291,244	14,340	305,584	267,075	0	38,509	0
Santa Ana Division	262,724	392,989	655,713	606,829	0	48,884	0
West Branch	474,021	5,887	479,908	447,909	0	31,999	0
Coastal Branch	491,024	2,046	493,070	493,070	0	0	0
<i>Subtotal, California Aqueduct</i>	<i>2,627,115</i>	<i>450,058</i>	<i>3,077,173</i>	<i>2,899,954</i>	<i>0</i>	<i>177,219</i>	<i>0</i>
<i>Other Project Facilities</i>							
Small Hydroelectric Power							
Generating Facilities	97,583	0	97,583	97,583	0	0	0
Off-Aqueduct Power							
Generating Facilities	463,209	57,000	520,209	520,209	0	0	0
East Branch Enlargement	453,459	225,700	679,159	679,159	0	0	0
East Branch Extension	131,602	175,189	306,791	306,791	0	0	0
Coastal Power Allocation	30,708	0	30,708	30,708	0	0	0
Agricultural Drainage Facilities	69,295	42,882	112,177	0	0	0	112,177
Planning and Preoperations	148,227	49,196	197,423	197,423	0	0	0
Unassigned/Miscellaneous	115,181	3,634	118,815	0	0	0	118,815
<i>Subtotal, Project Construction Expenditures</i>							
	<i>5,394,755</i>	<i>1,250,339</i>	<i>6,645,094</i>	<i>6,083,532</i>	<i>80,141</i>	<i>250,429</i>	<i>230,992</i>
Other Capital Requirements							
Davis-Grunsky Act Program	130,000	0	130,000	0	0	0	130,000
Total Capital Expenditures	5,524,755	1,250,339	6,775,094	6,083,532	80,141	250,429	360,992

^aReflects DWR's allocation to this purpose, irrespective of federal payments.

^bIncludes 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.

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 Powerplant. Those costs are included in Line 11.

Line 7, East Branch Enlargement, includes expenditures for Phases I and II of the East Branch Enlargement. Phase I included 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 for Phase I, by facility, are presented in Table 14-4. Costs for Alamo Powerplant consist of expenditures for Unit 1 facilities allocated to enlargement. Construction of Unit 2 was deferred.

Work on the Environmental Impact Report (EIR), mapping, and preliminary design for Phase II of the enlargement began in March 2007. Construction is currently projected to be completed in 2017. Project costs include raising the canal embankment and concrete lining, constructing additional siphon barrels, adding bays to check structures, constructing Unit 2 at Alamo Powerplant, and adding two pump/motor units and a discharge line at Pearblossom Pumping Plant.

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.

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 extends the California Aqueduct east from the Devil Canyon Powerplant to a terminus at Noble Creek near Beaumont in Riverside County. The extension provides 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 begin in 2009. All costs in Line 9 will be allocated to and repaid by the two participating contractors.

Line 10, South Bay Aqueduct Improvements and Enlargement, shows expenditures for 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, and increasing the existing capacity of the South Bay Aqueduct to its original design capacity. Construction includes creating a third discharge line, creating a 500 af Dyer Reservoir, modifying the canal, and enlarging the South Bay Pumping Plant. Work began on the contract to furnish the pump/motor in May 2005, and construction on the enlargement is scheduled to be completed in spring 2010.

Line 11, Power Generation and Transmission Facilities, does not include the East Branch Enlargement share of costs for

Alamo, Mojave Siphon, and Devil Canyon powerplants 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 2007 through 2020 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, as well as 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 California 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, 2006, 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.

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.

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

Facility	Amount (Millions of Dollars)
Aqueduct and Siphons	128.1
Pearblossom Pumping Plant	70.1
Alamo Powerplant	5.0
Mojave Siphon Powerplant	47.3
Devil Canyon Powerplant and Second Afterbay	202.9
Total	453.4

Table 14-5. Estimated Capital Costs for Power Generation and Transmission Facilities

Facility	Amount (Millions of Dollars)
Power Plants	
Reid Gardner, Unit 4	342.8
Bottle Rock	120.9
South Geysers	49.6
Devil Canyon	36.8
Warne	84.5
Alamo	44.9
Mojave Siphon	38.5
Thermalito Diversion Dam	14.1
<i>Subtotal</i>	<i>732.1</i>
Transmission Lines	
Midway–Wheeler Ridge	10.7
Geysers–Lakeville	6.9
Total	749.7

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

Activity	Amount (Millions of Dollars)
SWP Future Water Supply	39.0
Other Planning Costs	10.2
Total	49.2

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 issuance 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 was 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 2006 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 8 percent, of the construction expenditures through 2006.

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, 2006, DWR had sold \$7.0 billion of revenue bonds. That amount includes \$3.6 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

Table 14-7. Application of Revenue Bond Proceeds (Millions of Dollars)

Bond Series ^a	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 ^b			
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	0.0	218.7	220.0	261.0	
Water System Facilities Series X	0.0	0.0	0.0	0.0	160.2	160.2	160.2	
Water System Facilities Series Y	0.0	0.0	0.0	0.0	329.9	329.9	329.9	
Water System Facilities Series Z	0.0	0.0	0.0	0.0	170.7	170.7	170.7	
Water System Facilities Series AA	0.0	0.0	0.0	0.0	108.7	108.7	108.7	
Water System Facilities Series AB	92.2	0.0	3.9	0.0	93.6	97.5	189.7	
Water System Facilities Series AC	13.7	0.0	0.6	0.0	257.7	258.3	272.0	
Water System Facilities Series AD	12.4	0.0	0.9	0.0	99.1	100.0	112.4	
<i>Subtotal</i>	<i>2,680.4</i>	<i>2.6</i>	<i>255.0</i>	<i>14.8</i>	<i>4,043.6</i>	<i>4,316.0</i>	<i>6,996.4^c</i>	
Future East Branch Extension Bonds	180.3	0.0	4.0	0.0	5.1	9.1	189.4	
Future So. Bay Aq. Enlargement Bonds	160.8	0.0	0.4	0.0	0.6	1.0	161.8	
Future Water System Facilities Bonds	990.6	0.0	57.4	0.0	73.1	130.5	1,121.1	
Total	4,012.1	2.6	316.8	14.8	4,122.3	4,456.6	8,468.7	

^a Actual bond issue for all except future East Branch Extension, future South Bay Aqueduct Improvements and Enlargement, and future Water System Facilities bonds.

^b Bond financing and refunding costs include funds applied to debt service reserve requirements.

^c Includes \$3,581.9 million of refunded principal, leaving a net principal obligation of \$3,414.5 million.

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.

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, Warner, 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, 2006. Of this total amount, \$417 million was 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 \$140 million of Water System Revenue Bond proceeds had been spent through December 31, 2006.

Line 24, East Branch Extension, Future Bonds, shows DWR's estimate of \$189 million of additional bonds required to complete construction of the East Branch Extension and to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Line 25, South Bay Aqueduct Enlargement, Current Bonds, shows that \$17 million of Water System Revenue Bond proceeds had been spent through December 31, 2006.

Line 26, South Bay Aqueduct Enlargement, Future Bonds, shows DWR's estimate of \$162 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, 2006, \$1.5 billion of proceeds from Water System Revenue Bonds, Series A through Series AD, were applied to SWP projects other than the East Branch Enlargement, the East Branch Extension, and the South Bay Aqueduct Enlargement. Of this total, \$1.3 billion was used to pay for construction expenditures, and \$0.2 billion was used to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Line 28, Water System Facilities, Future Bonds, shows that \$1.1 billion of future water revenue bonds is needed to provide \$1.0 billion for construction of SWP water

system facilities and \$0.1 billion 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 was 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, 2006, 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. This 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 to 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 of Table 14-2). Projected amounts for 2007 through 2020 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 2007 through 2020. Data on annual revenues and expenditures are presented in Table 14-2. A detailed discussion of each line item follows.

Project Revenues

Project 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 the following:

- 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 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 and 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 2007–2020. 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 (OMP&R) 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(w) 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.

According to the original contract provisions, the basis for determining the Project Interest Rate was the weighted average of rates paid on general obligation bond sales only. In 1969, after Oroville Revenue Bonds were issued, the contract was amended to expand the basis to include rates on all other securities sold and loans obtained thereafter for financing SWP facilities, including revenue bonds (see Bulletin 132-70, page 28).

However, not all proceeds from the sale of revenue bonds are melded into the calculation of the Project Interest Rate. Only those proceeds applied to construction costs (the only application of general obligation bonds permitted by law) and those consumed by the bond discount (a component of the total interest cost of a revenue bond issue) are included in the calculation (see Table 14-8).

Calculations for determining the Project Interest Rate do not include proceeds from the sale of revenue bonds for Off-Aqueduct Power facilities, the East Branch Enlargement facilities, South Bay Aqueduct, 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 2008 water charges to be billed on July 1, 2007.

Table 14-8. Revenue Bond Proceeds Affecting Project Interest Rate (Millions of Dollars)

Project	Proceeds Included in Project Interest Rate				Total Principal Amount of Bonds	Percentage of Total Amount Included in Calculating Project Interest Rate [4] / [5]
	Applied to Construction Costs	Less Portion of Proceeds Derived from Interest Earnings Prior to Delivery of Bonds	Plus Bond Financing and Refunding Costs	Subtotal, Proceeds Included in Calculating Project Interest Rate [1] - [2] + [3]		
	[1]	[2]	[3]	[4]	[5]	[6]
Devil Canyon-Castaic Project Revenue Bonds	125.3	1.5	1.4	125.2	139.2	90%
Pyramid Project Revenue Bonds (Series A)	71.2	0.5	1.1	71.8	95.8	75%
Alamo Project Bond Anticipation Note	16.8	0.1	0.3	17.0	24.4	70%
Small Hydro Project I Revenue Bonds (Series D)	25.4	0.2	1.5	26.7	37.5	71%
Alamo Project Revenue Bonds (Series F)	38.9	0.3	0.7	39.3	50.0	79%
Power Facilities Revenue Bonds (Series H)						
Pyramid Project	5.0	0.0	0.1	5.1	5.1	100%
Alamo Project	1.7	0.0	0.0	1.7	1.7	100%
Small Hydro Project I	25.2 ^a	0.2	0.4	25.4	35.6	71%
Water System Revenue Bonds (Series J)						
Pyramid Project	0.0	0.0	75.9 ^b	75.9	99.2 ^b	77%
Alamo Project	0.0	0.0	45.6 ^b	45.6	57.1 ^b	80%
Small Hydro Project I	0.0	0.0	27.8 ^b	27.8	38.8 ^b	72%
Water System Revenue Bonds (Series L)						
Small Hydro Project I	0.0	0.0	1.5 ^b	1.5	2.1 ^b	71%
Water System Revenue Bonds (Series Q)						
Pyramid Project	0.0	0.0	3.0 ^b	3.0	3.9 ^b	77%
Alamo Project	0.0	0.0	4.8 ^b	4.8	6.0 ^b	80%
Water System Revenue Bonds (Series S)						
Pyramid Project	0.0	0.0	8.0 ^b	8.0	10.4 ^b	77%
Alamo Project	0.0	0.0	7.6 ^b	7.6	9.5 ^b	80%
Water System Revenue Bonds (Series U)						
Pyramid Project	0.0	0.0	2.4 ^b	2.4	3.2 ^b	75%
Alamo Project	0.0	0.0	3.2 ^b	3.2	4.0 ^b	80%
Water System Revenue Bonds (Series W)						
Pyramid Project	0.0	0.0	27.7 ^b	27.7	36.0 ^b	77%
Alamo Project	0.0	0.0	11.8 ^b	11.8	14.7 ^b	80%
Small Hydro Project (construction)	3.4	0.0	0.0	3.4	3.7	92%
Small Hydro Project (refunding)	0.0	0.0	16.3 ^b	16.3	22.7 ^b	72%
Water System Revenue Bonds (Series X)						
Pyramid Project	0.0	0.0	8.5 ^b	8.5	11.0 ^b	77%
Alamo Project (Series H refunding)	0.0	0.0	0.3 ^b	0.3	0.3 ^b	100%
Alamo Project (Series F refunding)	0.0	0.0	3.9 ^b	3.9	4.9 ^b	79%
Small Hydro Project	0.0	0.0	4.6 ^b	4.6	6.4 ^b	72%
Water System Revenue Bonds (Series AC)						
Pyramid Project	0.0	0.0	3.8 ^b	3.8	5.0 ^b	76%
Alamo Project	0.0	0.0	2.8 ^b	2.8	3.6 ^b	80%
Small Hydro Project	0.0	0.0	1.2 ^b	1.2	1.6 ^b	72%
Water System Revenue Bonds (Series AD)						
Pyramid Project	0.0	0.0	3.2 ^b	3.2	4.2 ^b	76%
Alamo Project	0.0	0.0	2.6 ^b	2.6	3.3 ^b	80%
Small Hydro Project	0.0	0.0	0.7 ^b	0.7	1.0 ^b	72%

^aAmount consists of 71 percent of proceeds deposited in escrow to refund portion of Series D bonds (\$35.1 million plus deposits to construction account [\$0.3 million]).

^bRepresents amount of principal used to refund portions of prior bond issues.

Table 14-9. Actual Bond Sales and Project Interest Rates, by Date of Sale

Bond Sales	Date of Sale	Dollar-Years ^a (Thousands)	Interest Cost (Thousands)	Issue Interest Rate ^b (Percent)	Project Interest Rate ^c (Percent)
\$ 50,000,000 Bond Anticipation Notes	11/21/63	26,944	531	1.971	1.971
\$100,000,000 Series A Water Bonds	2/18/64	3,402,000	119,750	3.520	3.508
\$ 50,000,000 Series B Water Bonds	5/05/64	1,726,000	60,986	3.533	3.516
\$100,000,000 Series C Water Bonds	10/07/64	3,452,000	123,764	3.585	3.544
\$100,000,000 Series D Water Bonds	2/16/65	3,497,900	122,403	3.499	3.531
\$100,000,000 Series E Water Bonds	11/23/65	3,497,900	130,029	3.717	3.573
\$100,000,000 Series F Water Bonds	6/08/66	3,497,900	137,359	3.927	3.638
\$100,000,000 Series G Water Bonds	11/22/66	3,497,900	143,788	4.111	3.711
\$100,000,000 Series H Water Bonds	3/21/67	3,497,900	129,261	3.695	3.709
\$100,000,000 Series J Water Bonds	7/18/67	3,497,900	143,199	4.094	3.754
\$100,000,000 Series K Water Bonds	11/14/67	3,497,900	163,887	4.685	3.853
\$150,000,000 Revenue Bonds, Oroville Division, Series A	4/03/68	5,228,700	270,289	5.169	
\$100,000,000 Series L Water Bonds	7/11/68	3,497,900	166,918	4.772	3.941
\$100,000,000 Series M Water Bonds	10/22/68	3,497,900	169,989	4.860	4.021
\$ 94,995,000 Revenue Bonds, Oroville Division, Series B	4/01/69	3,423,460	195,902	5.722	
\$ 46,761,000 Cumulative 1970 General Fund Borrowing, repaid 7/10/70	—	4,938	346	7.007	
\$200,000,000 Series N and P Bond Anticipation Notes	6/16/70	200,000	11,660	5.830	4.030
\$100,000,000 Series N Water Bonds	2/02/71	3,447,900	190,292	5.519	4.148
\$100,000,000 Series Q Bond Anticipation Notes	3/10/71	100,000	2,349	2.349	4.143
\$100,000,000 Series P Water Bonds	4/21/71	3,397,900	193,377	5.691	4.255
\$150,000,000 Series Q and R Water Bonds	11/09/71	5,171,850	265,734	5.138	4.342
\$ 40,000,000 Series S Water Bonds	3/28/72	1,399,160	76,509	5.468	4.371
\$139,165,000 Devil Canyon-Castaic Revenue Bonds	8/08/72	4,776,204	258,839	5.419	4.457
\$ 10,000,000 Series T Water Bonds	3/20/73	185,265	9,491	5.123	4.459
\$ 10,000,000 Series U Water Bonds	1/13/76	158,750	8,731	5.500	4.462
\$ 10,000,000 Series V Water Bonds	11/15/77	158,750	7,573	4.770	4.462
\$ 95,800,000 Pyramid Hydroelectric Revenue Bonds	10/23/79	2,260,072	172,495	7.632	4.584
\$150,000,000 Reid Gardner Project, Series A Bond Anticipation Notes	7/1/81	347,906	29,572	8.500	
\$ 75,600,000 Bottle Rock Project, Bond Anticipation Notes	12/1/81	264,600	25,137	9.500	
\$ 24,400,000 Alamo Project, Bond Anticipation Notes	12/1/81	24,266	2,305	9.499	4.589
\$200,000,000 Reid Gardner Project, Series B Revenue Bonds	7/07/82	4,623,137	553,793	11.979	
\$125,000,000 Reid Gardner Project, Series C Revenue Bonds	11/16/82	2,720,045	255,744	9.402	
\$ 37,500,000 Small Hydro Project I, Series D Revenue Bonds	11/16/82	837,769	84,587	10.097	4.666
\$ 37,500,000 South Geysers Project, Series D Revenue Bonds	11/16/82	930,325	90,021	9.676	
\$125,000,000 Bottle Rock Project, Series E Revenue Bonds	4/27/83	2,624,805	225,102	8.576	
\$ 50,000,000 Alamo Project, Series F Revenue Bonds	4/27/83	1,190,763	100,836	8.468	4.727
\$ 25,000,000 South Geysers Project, Series F Revenue Bonds	4/27/83	608,550	52,578	8.640	

^aA unit equivalent to one dollar of principal amount outstanding for one year.

^bThe total interest cost (without regard to discounts paid or to premiums received) divided by the total dollar-years, expressed as a percent.

^cDetermined by dividing cumulative interest costs by cumulative dollar-years, expressed as a percent. Excluding Oroville Division bonds and revenue bonds for Off-Aqueduct Power Facilities, the East Branch Enlargement Facilities, East Branch Extension Facilities, Water System Facilities as defined in the Water Revenue Bond Amendment, Coastal Extension Facilities, or South Bay Enlargement Facilities.

Table 14-9. Actual Bond Sales and Project Interest Rates, by Date of Sale

Bond Sales	Date of Sale	Dollar-Years ^a (Thousands)	Interest Cost (Thousands)	Issue Interest Rate ^b (Percent)	Project Interest Rate ^c (Percent)
\$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	4.621
\$ 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	4.620
\$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	7/05/02	4,422,973	222,654	5.034	
\$170,655,000 Series Z Water System Revenue Bonds	10/02/02	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	
\$272,070,000 Series AC Water System Revenue Bonds	12/15/04	4,479,436	209,150	4.669	
\$272,070,000 Series AD Water System Revenue Bonds	6/14/05	1,827,449	90,461	4.950	4.608
Total		199,322,344	11,499,096		
Portion allocated to Project Interest Rate		63,912,154	2,945,036	4.608	4.608

^aA unit equivalent to one dollar of principal amount outstanding for one year.

^bThe total interest cost (without regard to discounts paid or to premiums received) divided by the total dollar-years, expressed as a percent.

^cDetermined by dividing cumulative interest costs by cumulative dollar-years, expressed as a percent. (Oroville Division bonds and revenue bonds for Off-Aqueduct Power Facilities, the East Branch Enlargement Facilities, East Branch Extension Facilities, Water System Facilities as defined in the Water Revenue Bond Amendment, Coastal Extension Facilities, and South Bay Enlargement Facilities are excluded from this calculation.)

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 2008 charges included in Appendix B are as follows.

- Future capital costs in Appendix B are based on the prevailing prices as of December 31, 2006. Those costs presented in the financial analysis include allowances for price escalation.
- Pre-2007 charges in Appendix B represent charges as they should have been, according to currently known conditions. Pre-2007 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 2007 and thereafter have been adjusted for any apparent overpayments or underpayments of pre-2007 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 AD bonds. Charges in Table 14-2 apply to Series A through Series AD 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 AD bonds. Surcharge values included in Table 14-2 apply to Series B through Series AD 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 one 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;
- capital cost component of the Transportation Charge for East Branch Extension Facilities;
- capital cost component of the Transportation Charge for Tehachapi Afterbay; and
- capital cost component of the Transportation Charge for South Bay Aqueduct Enlargement.

Line 15, Rate Management Adjustments, shows the projected amount of revenue reductions allocated to 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.

Line 16, Federal Payments for Project Operating Costs, shows federal payments made in accordance with 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 operations, maintenance, and replacement (OM&R) costs for those activities. (The percentage does not apply to power costs; Reclamation and DWR each 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 16 are based on the assumption that the federal share will continue at this level for calendar years 2007 through 2020.

Line 17, Appropriations for Operating Costs Allocated to Recreation, shows appropriations made under the Davis-Dolwig Act (DDA). In passing the DDA, 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 1982–1983, these appropriations totaled \$16.657 million. There have been no additional appropriations since the 1982–1983 fiscal year and none are indicated for 2007 through 2020.

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 39).

Line 18, Davis-Grunsky Loan Repayments, shows the repayments by local agencies of \$54.2 million of loans disbursed as of December 31, 2006. 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 (PG&E), Southern California Edison (SCE), and San Diego Gas and Electric Company (SDG&E) for power generation at the Oroville facilities. Those utilities purchased all power generation from Hyatt and Thermalito powerplants before April 1, 1983, in accordance with a power sale contract dated November 29, 1967. The 1952–2006 entry includes the 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 the following:

- operations, maintenance, and power costs;
- deposits to replacement reserves;
- deposits to special reserves;
- capital resources expenditures; and
- 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

in accordance with 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 in accordance with the following four priorities of use, as specified in the Burns-Porter Act:

- SWP operations, maintenance, power, and replacement costs;
- general obligation bond debt service;
- repayment of expenditures from the California Water Fund; and
- 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, Power, and Replacement Costs, shows the OMP&R portion of the historical and projected costs presented in Table 14-10 at the end of the chapter.

Table 14-10 and Line 26 of Table 14-2 also include the amounts of the operations and maintenance costs for the federal share of joint facilities and those OMP&R 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 OMP&R costs through 2009. Allowances for additional long-term price

escalations in the future are not included in these estimates, because changes in OMP&R costs do not substantially affect the overall results of the financial analysis. (For the most part, changes in OMP&R 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, 2006, \$82.9 million had been spent for replacement costs; the balance of the replacement reserve as of that date was \$39.7 million.

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 1952–2006 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 contractors;
- debt service reserve interest payments returned to contractors;
- surplus account funds returned to 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 28 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, 2006, show the total principal and interest payments on bonds sold to date. Table 14-11, at the end of this chapter, 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 AD).

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 5.5 percent; and that 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, \$212 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 services are available for financing SWP capital expenditures.

Future Costs of Water Service

Estimates of future water costs are useful to 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 2008 and 2013. 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 2008 and 2013, 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 2006 dollars and as escalated rates reflecting assumed future inflation.

DWR's estimates of future capital expenditures include allowances for escalation of construction costs at 5 percent per year for 2007 through 2020. The escalation rates for future power sources vary, depending on the source of energy.

Table 14-12. Estimated Unit Water Charges for 2008 and 2013, by Service Area (Dollars per Acre-Foot)

Service Area and Charge	2008		2013	
	<i>Unescalated</i>	<i>Escalated</i>	<i>Unescalated</i>	<i>Escalated</i>
Feather River Area				
Capital; Operations, Maintenance, and Replacement (OM&R)	153	153	31	31
North Bay Area				
Capital; OM&R	202	202	161	161
Power	31	31	25	26
Total	233	233	186	187
South Bay Area				
Capital; OM&R	146	146	116	116
Power	60	60	54	57
Total	206	206	170	173
Coastal Area				
Capital; OM&R	716	716	500	500
Power	167	167	148	156
Total	883	883	648	656
San Joaquin Area				
Capital; OM&R	61	61	56	56
Power	30	30	26	28
Total	91	91	82	84
Southern California Area				
Capital; OM&R	168	168	142	142
Power	188	188	164	173
Total	356	356	306	315

Table 14-1. Capital Requirements and Financing, December 31, 2006 (Thousands of Dollars)

Line Number/Item	Calendar Year																
	1952-2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2007-2020	1952-2020
Capital Requirements																	
1. Initial Project Facilities	2,202,316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,202,316
2. North Bay Aqueduct	91,276	6,787	3,660	0	0	0	0	0	0	0	0	0	0	0	0	10,447	101,723
3. Delta & Suisun Marsh Facilities	255,616	18,209	20,696	20,696	4,696	4,696	2,125	0	0	0	0	0	0	0	0	71,118	326,734
4. Final 4 Units at Banks Delta Pumping Plant	43,673	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43,673
5. Coastal Branch Aqueduct	507,874	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	507,874
6. West Branch Aqueduct	196,982	57	603	332	4,195	480	220	0	0	0	0	0	0	0	0	5,887	202,869
7. East Branch Enlargement	453,459	2,000	11,700	15,000	48,000	63,000	86,000	0	0	0	0	0	0	0	0	225,700	679,159
8. East Branch Improvements	305,572	10,060	1,055	0	0	0	0	0	0	0	0	0	0	0	0	11,115	316,687
9. East Branch Extension	131,602	4,791	44,718	77,270	36,740	11,670	0	0	0	0	0	0	0	0	0	175,189	306,791
10. South Bay Aqueduct Improvements & Enlargement	31,767	48,639	67,561	28,502	0	0	0	0	0	0	0	0	0	0	0	144,702	176,469
11. Power Generation and Transmission Facilities	692,654	10,000	12,000	7,000	7,000	7,000	7,000	7,000	0	0	0	0	0	0	0	57,000	749,654
12. Additional Conservation Facilities	148,277	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	49,196	197,473
13. Agricultural Drainage Facilities	69,295	3,063	3,063	3,063	3,063	3,063	3,063	3,063	3,063	3,063	3,063	3,063	3,063	3,063	3,063	42,882	112,177
14. Other Costs	264,391	13,124	52,501	199,762	189,752	982	982	0	0	0	0	0	0	0	0	457,103	721,494
15. <i>Subtotal, Project Construction Expenditures</i>	5,394,755	120,244	221,071	355,139	296,960	94,405	102,904	13,577	6,577	6,577	6,577	6,577	6,577	6,577	6,577	1,250,339	6,645,094
16. Davis-Grunsky Act Program Costs	130,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130,000
17. Special Capital Requirements Under Revenue Bond Financing	597,040	0	35,132	24,231	39,070	7,373	24,290	10,442	0	0	0	0	0	0	0	140,538	737,578
18. Total Capital Requirements	6,121,795	120,244	256,203	379,370	336,030	101,778	127,194	24,019	6,577	6,577	6,577	6,577	6,577	6,577	6,577	1,390,877	7,512,672
19. Power Facilities Capital Requirements	692,654	10,000	12,000	7,000	7,000	7,000	7,000	7,000	0	0	0	0	0	0	0	57,000	749,654
20. Water Facilities Capital Requirements	5,429,141	110,244	244,203	372,370	329,030	94,778	120,194	17,019	6,577	6,577	6,577	6,577	6,577	6,577	6,577	1,333,877	6,763,018
Financing of Capital Requirements																	
Power Revenue Bond Proceeds																	
21. Power Revenue Bonds through Series H	1,162,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,162,458
Water Revenue Bond Proceeds																	
22. East Branch Enlargement, Current Bonds	473,606	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	473,606
23. East Branch Extension, Current Bonds	139,520	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	139,520
24. East Branch Extension, Future Bonds		0	49,700	85,900	40,800	13,000	0	0	0	0	0	0	0	0	0	189,400	189,400
25. So. Bay Aqueduct Enlargement, Current Bonds	16,938	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,938
26. So. Bay Aqueduct Enlargement, Future Bonds		0	120,100	41,700	0	0	0	0	0	0	0	0	0	0	0	161,800	161,800
27. Water System Facilities, Current Bonds	1,455,083	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,455,083
28. Water System Facilities, Future Bonds	0	0	120,300	289,000	350,100	121,200	190,900	49,600	0	0	0	0	0	0	0	1,121,100	1,121,100
29. <i>Subtotal, Water Revenue Bonds</i>	2,085,147	0	290,100	416,600	390,900	134,200	190,900	49,600	0	0	0	0	0	0	0	1,472,300	3,557,447
Other Capital Financing																	
30. Initial Project Facilities Bond Proceeds	1,452,452	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,452,452
31. Davis-Grunsky Act Program Bond Proceeds	130,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130,000
32. Application of California Water Fund Monies (Tideland Oil Revenues)	508,056	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	508,056
33. Interim Financing	144,423	115,744	(38,397)	(41,730)	(59,370)	(36,922)	(68,206)	(30,081)	2,077	2,077	2,077	2,077	2,077	2,077	2,077	(144,423)	0
34. Application of Capital Resources Revenues to Construction	566,269	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	566,269
35. Revenue Transfers Applied	72,990	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	63,000	135,990
36. <i>Subtotal, Other Capital Financing</i>	2,874,190	120,244	(33,897)	(37,151)	(54,870)	(32,422)	(63,706)	(25,581)	6,577	6,577	6,577	6,577	6,577	6,577	6,577	(81,423)	2,792,767
37. Total Financing of Capital Requirements	6,121,795	120,244	256,203	379,449	336,030	101,778	127,194	24,019	6,577	6,577	6,577	6,577	6,577	6,577	6,577	1,390,877	7,512,672

Table 14-2. State Water Project Revenues and Expenditures, December 31, 2006 (Thousands of Dollars)

Line Number/Item	Calendar Year																
	1952-2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2007-2020	1952-2020
PROJECT REVENUES																	
1. Capital resources revenues	814,701	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	814,701
Water Contractor Payments																	
2. Transportation capital	3,637,757	145,036	142,450	151,546	165,077	172,463	172,568	171,210	170,120	168,344	165,833	160,676	152,019	142,405	133,215	2,212,962	5,850,719
3. Transportation minimum	2,859,114	137,765	197,439	167,975	143,614	144,361	144,056	143,956	145,123	143,553	145,672	144,921	144,802	146,682	144,525	2,094,444	4,953,558
4. Transportation variable	3,740,049	282,554	301,426	229,959	323,671	318,028	343,769	391,900	422,870	434,896	463,871	436,148	468,695	488,098	454,267	5,360,152	9,100,201
5. Off-Aqueduct power facilities	2,304,391	121,118	138,602	144,917	145,739	142,579	142,788	83,530	20,052	11,872	10,167	9,765	4,051	4,031	4,336	983,547	3,287,938
6. Delta water charge	2,117,411	115,173	115,921	115,930	116,148	116,566	116,417	116,534	116,459	116,450	116,438	116,423	116,406	116,387	116,367	1,627,619	3,745,030
7. East Branch Enlargement	635,569	45,280	42,744	43,653	43,382	44,468	44,530	44,055	44,245	45,284	45,392	46,386	45,413	46,571	44,815	626,218	1,261,787
8. East Branch Extension	49,384	10,387	7,534	13,317	20,862	24,396	25,577	27,116	26,378	26,544	27,067	27,841	27,340	27,396	27,548	319,303	368,687
9. Coastal Extension	24,883	4,051	2,935	2,931	6,174	4,090	4,093	4,383	4,966	5,026	4,961	4,700	3,686	2,903	3,902	58,801	83,684
10. South Bay Aqueduct Improvements & Enlargement	1,016	1,187	1,212	11,458	15,084	15,083	15,083	15,089	15,086	15,084	15,089	15,086	15,085	15,084	15,087	179,797	180,813
11. Tehachapi East Afterbay	444	260	260	260	260	260	260	260	260	260	260	260	260	260	260	3,640	4,084
12. Water revenue bond surcharge	429,345	49,281	56,975	57,709	59,588	104,376	101,981	126,111	130,034	143,367	144,184	145,654	137,379	142,287	137,033	1,965,304	2,394,649
13. Subtotal, water contractor payments	15,799,363	912,092	1,007,498	939,655	1,039,599	1,086,670	1,111,122	1,124,144	1,095,593	1,110,680	1,138,934	1,107,860	1,115,136	1,132,104	1,081,355	15,431,787	31,231,150
14. Revenue bond cover adjustments	(550,811)	(41,992)	(42,258)	(46,049)	(47,960)	(49,830)	(50,154)	(45,341)	(45,117)	(45,069)	(44,992)	(44,845)	(40,317)	(42,411)	(40,119)	(626,454)	(1,177,265)
15. Rate management adjustments	(284,259)	(3,000)	(22,000)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(510,640)	(794,899)
Other Revenues																	
16. Federal payments for project operating costs	255,196	11,827	11,827	11,827	11,827	11,839	11,839	11,839	11,839	11,839	11,839	11,839	11,839	11,839	11,839	165,698	420,894
17. Appropriations for operating costs allocated to recreation	16,657	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,657
18. Davis-Grunsky loan repayments	55,721	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	19,600	75,321
19. Revenue bond proceeds	652,977	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	652,977
20. Interest earnings on operating revenues	576,493	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	56,000	632,493
21. Oroville-Thermalito payments	249,279	0	0	0	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	0	0	0	184,264
23. Subtotal, other revenues	1,990,587	17,227	17,227	17,227	17,227	17,239	17,239	17,239	17,239	17,239	17,239	17,239	17,239	17,239	17,239	241,298	465,369
24. Total operating revenues	16,954,880	884,327	960,467	870,363	968,396	1,013,609	1,037,737	1,055,572	1,027,245	1,042,380	1,070,711	1,039,784	1,051,588	1,066,462	1,018,005	14,106,646	31,061,526
25. Total operating revenues and capital resources revenues	17,769,581	884,327	960,467	870,363	968,396	1,013,609	1,037,737	1,055,572	1,027,245	1,042,380	1,070,711	1,039,784	1,051,588	1,066,462	1,018,005	14,106,646	31,876,227
PROJECT EXPENSES																	
26. Project operations, maintenance, power, and replacement costs	8,621,992	599,924	678,759	584,388	625,190	618,202	642,113	664,856	637,663	646,354	681,314	651,774	684,838	705,244	666,450	9,087,069	17,709,061
27. Deposits to replacement reserves	122,668	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	122,668
28. Deposits to special reserves	733,881	11,004	8,347	(10,801)	18,520	41,630	39,071	40,036	42,247	45,413	48,420	54,465	67,463	64,292	64,362	534,469	1,268,350
29. Capital resources expenditures	686,932	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	686,932
Payments of Debt Service																	
30. Principal repayments on bonds sold through																	
December 31, 2006 (current bonds)	2,049,567	125,298	131,475	141,339	147,005	155,434	162,364	153,940	156,265	157,070	154,917	152,547	125,862	129,773	126,600	2,019,889	4,069,456
31. Interest on bonds sold through																	
December 31, 2006 (current bonds)	5,185,264	143,601	137,386	131,125	124,388	117,315	109,495	101,242	94,048	86,662	79,081	71,500	63,886	57,569	50,965	1,368,263	6,553,527
32. Future water bond principal repayments	0	0	0	5,307	13,723	22,599	26,745	32,690	35,612	37,393	39,262	41,225	43,286	45,451	47,723	391,016	391,016
33. Future water bond interest payments	0	0	0	14,505	35,070	53,929	53,449	58,308	56,910	64,988	63,217	63,773	61,753	59,633	57,405	642,940	642,940
34. Total principal	2,049,567	125,298	131,475	146,646	160,728	178,033	189,109	186,630	191,877	194,463	194,179	193,772	169,148	175,224	174,323	2,410,905	4,460,472
35. Total interest	5,185,264	143,601	137,386	145,630	159,458	171,244	162,944	159,550	150,958	151,650	142,298	135,273	125,639	117,202	108,370	2,011,203	7,196,467
36. Subtotal, debt service	7,234,831	268,899	268,861	292,276	320,186	349,277	352,053	346,180	342,835	346,113	336,477	329,045	294,787	292,426	282,693	4,422,108	11,656,939
NET REVENUES																	
37. Total Operating Expenses and Debt Service	17,400,304	879,827	955,967	865,863	963,896	1,009,109	1,033,237	1,051,072	1,022,745	1,037,880	1,066,211	1,035,284	1,047,088	1,061,962	1,013,505	14,043,646	31,443,950
38. Net system revenues	369,277	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	63,000	432,277
Application of Net System Revenues																	
39. California Water Fund repayment	296,287	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	296,287
40. Revenues used for capital expenditures	72,990	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	63,000	135,990

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

Feature	Calendar Year																TOTAL
	1962–2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021–2035	
Project Facility																	
Feather River facilities	800,469	26,535	32,945	26,383	26,966	27,145	27,182	27,072	26,974	26,798	30,352	29,011	30,512	31,439	29,678	439,602	1,639,063
North Bay Aqueduct	46,367	3,683	4,428	3,598	3,749	3,776	3,840	3,974	4,089	4,120	4,428	4,233	4,452	4,587	4,330	64,137	167,791
Delta facilities	576	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	576
Suisun Marsh	28,051	2,777	3,447	2,760	2,822	2,285	2,288	2,277	2,267	2,253	2,552	2,439	2,565	2,643	2,495	36,958	100,879
South Bay Aqueduct	151,538	14,228	16,885	13,732	14,328	14,385	14,631	15,227	15,706	15,730	16,185	15,469	16,270	16,764	15,825	234,405	601,308
California Aqueduct																	
Delta to Edmonston	3,145,693	206,818	244,444	197,148	218,080	214,229	219,086	245,441	252,273	258,885	279,129	266,796	280,601	289,120	272,923	4,042,718	10,633,384
Edmonston to Perris	2,797,227	240,122	270,115	229,194	246,870	246,559	263,088	288,316	311,452	313,361	329,885	315,309	331,624	341,693	322,550	4,777,815	11,625,180
West Branch	(80,272)	(11,613)	(13,937)	(11,698)	(11,715)	(11,222)	(9,353)	(10,613)	(10,790)	(10,528)	(16,225)	(15,508)	(16,311)	(16,806)	(15,864)	(234,992)	(497,447)
Coastal Branch	208,073	14,726	17,301	14,119	14,797	14,849	15,154	15,921	16,541	16,589	17,152	16,394	17,242	17,766	16,770	248,413	681,807
East Branch Enlargement	44,609	4,670	5,052	4,993	5,134	5,106	5,107	5,088	5,081	5,076	5,090	4,865	5,117	5,272	4,977	73,719	188,956
Off-Aqueduct power-generating facilities	1,159,266	80,983	81,084	87,164	87,164	87,124	87,124	58,187	104	104	104	104	104	104	104	416	1,729,240
Recreation, planning, and CVP negotiations	3,981	683	683	683	683	683	683	683	683	683	683	683	683	683	683	10,245	23,788
Water quality monitoring	365,157	15,712	15,712	15,712	15,712	12,683	12,683	12,683	12,683	12,683	11,379	11,379	11,379	11,379	11,379	170,677	718,992
Davis-Grunsky Act Program	11,105	600	600	600	600	600	600	600	600	600	600	600	600	600	600	9,000	28,505
<i>Subtotal</i>	<i>8,681,840</i>	<i>599,924</i>	<i>678,759</i>	<i>584,388</i>	<i>625,190</i>	<i>618,202</i>	<i>642,113</i>	<i>664,856</i>	<i>637,663</i>	<i>646,354</i>	<i>681,314</i>	<i>651,774</i>	<i>684,838</i>	<i>705,244</i>	<i>666,450</i>	<i>9,873,113</i>	<i>27,642,022</i>
Payments to/credits from PG&E under Comprehensive Agreement	(59,848)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(59,848)
Total OMP&R Costs	8,621,992	599,924	678,759	584,388	625,190	618,202	642,113	664,856	637,663	646,354	681,314	651,774	684,838	705,244	666,450	9,873,113	27,582,174
Composition																	
Salaries and expenses of headquarters personnel	2,477,022	99,897	116,116	106,831	82,024	78,227	84,708	81,122	79,232	76,213	69,889	63,698	72,890	64,028	66,032	933,257	4,551,186
Salaries and expenses of field personnel	3,573,185	119,544	141,077	136,212	105,034	100,202	108,517	103,693	103,152	99,126	122,081	111,075	127,414	111,661	115,224	1,626,618	6,803,815
Pumping power																	
Used by pumping plants	1,995,217	356,624	397,396	311,340	420,856	424,510	432,597	494,642	529,500	545,701	565,309	553,412	559,572	609,994	563,806	8,505,326	17,265,802
Produced by generation plants	(413,673)	(57,401)	(57,191)	(57,436)	(70,165)	(72,138)	(71,110)	(73,065)	(74,602)	(75,067)	(76,346)	(76,792)	(75,419)	(80,820)	(78,993)	(1,196,659)	(2,606,877)
Payments to/credits from PG&E under Comprehensive Agreement	(59,848)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(59,848)
Off-Aqueduct power generating facilities requirement	1,159,266	80,983	81,084	87,164	87,164	87,124	87,124	58,187	104	104	104	104	104	104	104	416	1,729,240
Oroville-Thermalito insurance premiums	11,874	277	277	277	277	277	277	277	277	277	277	277	277	277	277	4,155	19,907
Less portion of costs incurred during construction	(121,051)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(121,051)
Total OMP&R Costs	8,621,992	599,924	678,759	584,388	625,190	618,202	642,113	664,856	637,663	646,354	681,314	651,774	684,838	705,244	666,450	9,873,113	27,582,174
Project Purpose																	
Water supply and power generation	8,282,903	575,201	654,035	559,664	600,467	593,478	617,388	640,130	612,934	621,625	656,585	627,045	660,109	680,515	641,721	9,502,178	26,525,978
Payments to/credits from PG&E under Comprehensive Agreement	(59,848)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(59,848)
Recreation and fish and wildlife enhancement	156,506	11,800	11,800	11,800	11,800	11,800	11,800	11,800	11,800	11,800	11,800	11,800	11,800	11,800	11,800	177,000	498,706
Flood control	5,037	323	324	324	323	324	325	326	329	329	329	329	329	329	329	4,935	14,544
Miscellaneous purposes																	
Federal share, San Luis and Delta facilities	226,289	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	180,000	574,289
Other (Davis-Grunsky, drainage, City of Los Angeles)	11,105	600	600	600	600	600	600	600	600	600	600	600	600	600	600	9,000	28,505
Total OMP&R Costs	8,621,992	599,924	678,759	584,388	625,190	618,202	642,113	664,856	637,663	646,354	681,314	651,774	684,838	705,244	666,450	9,873,113	27,582,174

Table 14-11. Annual Debt Service on Bonds Sold through December 31, 2006 (Thousands of Dollars)

Calendar Year	Series A through Y Water Bonds		Oroville Revenue Bonds*		Pyramid Project Revenue Bonds*		Alamo Project Revenue Bonds*		Small Hydro Project Revenue Bonds*		Water System Facilities Water System Revenue Bonds*		Subtotal		Devil Canyon-Castaic Project Revenue Bonds		Reid Gardner Project Revenue Bonds**		South Geysers Project Revenue Bonds*		Bottle Rock Project Revenue Bonds*		East Branch Enlargement Project Water System Revenue Bonds*		Coastal Extension Facilities Water System Revenue Bonds		East Branch Extension Facilities Water System Revenue Bonds*		South Bay Enlargement Facilities Water System Revenue Bonds*		Tehachapi East Afterbay Facilities Water System Revenue Bonds*		Grand Total	
	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest
1964	0	3,333	0	0	0	0	0	0	0	0	0	0	0	3,333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,333
1965	0	11,114	0	0	0	0	0	0	0	0	0	0	0	11,114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,114
1966	0	18,764	0	0	0	0	0	0	0	0	0	0	0	18,764	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,764
1967	0	26,911	0	0	0	0	0	0	0	0	0	0	0	26,911	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26,911
1968	0	37,761	0	3,876	0	0	0	0	0	0	0	0	0	41,637	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41,637
1969	0	47,460	0	10,448	0	0	0	0	0	0	0	0	0	57,908	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57,908
1970	0	53,290	0	13,145	0	0	0	0	0	0	0	0	0	66,435	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66,435
1971	0	63,035	0	13,145	0	0	0	0	0	0	0	0	0	76,180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76,180
1972	0	69,149	1,260	13,112	0	0	0	0	0	0	0	1,260	82,261	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,260	82,261	0	82,261
1973	1,200	69,347	1,330	13,042	0	0	0	0	0	0	0	2,530	82,389	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,530	90,097	
1974	3,000	69,533	1,400	12,969	0	0	0	0	0	0	0	4,400	82,502	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,400	90,210		
1975	5,000	69,366	1,475	12,893	0	0	0	0	0	0	0	6,475	82,259	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,475	89,967		
1976	7,000	69,657	1,555	12,811	0	0	0	0	0	0	0	8,555	82,468	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,555	90,176		
1977	10,200	69,298	1,635	12,727	0	0	0	0	0	0	0	11,835	82,025	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,835	89,733		
1978	12,700	69,286	5,775	12,537	0	0	0	0	0	0	0	18,475	81,823	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,475	89,531		
1979	13,650	68,660	11,585	12,275	0	0	0	0	0	0	0	25,235	80,935	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25,235	88,643		
1980	16,050	67,941	3,265	11,739	0	7,900	0	0	0	0	0	19,315	87,580	0	7,708	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	22,935	85,814	0	7,708	0	5,312	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	37,170	84,390	0	7,708	0	14,347	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	41,630	88,726	900	7,708	0	35,719	0	4,777	0	6,017	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	32,430	88,266	955	7,647	0	35,719	0	5,647	0	10,315	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	35,930	86,683	1,010	7,583	9,425	27,209	0	5,647	0	10,315	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	35,980	84,741	1,070	7,515	3,805	32,882	0	5,516	1,240	10,315	0	4,021	0	0	0	0	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	38,265	87,782	1,135	7,442	4,860	32,605	0	5,386	1,305	10,253	0	9,651	0	0	0	0	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	35,620	91,390	1,205	7,366	5,065	32,295	580	5,521	1,390	10,849	995	9,875	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	64,533	92,680	1,275	7,284	7,820	27,557	709	5,646	1,565	11,592	10,104	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	42,652	95,180	1,355	7,198	6,675	29,781	761	5,596	1,678	11,491	1,134	10,048	0	0	0	0	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	46,294	101,285	1,435	7,107	7,170	29,302	818	5,535	1,791	11,376	1,197	16,856	0	0	0	0	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	55,603	96,536	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	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	54,447	96,500	1,610	6,907	8,820	26,953	901	4,256	3,264	8,385	3,040	21,428	0	0	0	0	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	79,265	101,865	1,705	6,799	77,105	26,273	1,588	4,072	3,374	8,270	4,567	20,752	0	0	0	0	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	47,529	98,930	1,810	6,684	5,420	19,230	1,695	4,004	3,521	8,133	4,979	20,499	0	0	0	0	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	54,489	117,347	1,920	6,561	49,465	18,130	3,043	3,908	3,682	7,974	4,771	23,240	0	0	0	0	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	54,745	124,905	2,035	6,432	7,515	15,255	1,825	3,696	3,861	7,741	6,300	23,702	0	1,981	0	76	0	76,281	183,788			
1998	37,295	44,736	0	0	1,770	5,237	910	3,059	625	2,258	16,754	68,585	57,354	123,875	2,155	6,295	5,045	16,144	1,935	3,637	4,030	7,508	6,760	23,966	0	1,829	0	229	0	77,279	183,483			
1999	38,220	43,132	0	0	1,845	5,141	960	3,005	680	2,229	18,701	68,085	60,406	121,592	2,285	6,160	9,310	11,659	2,081	3,549	4,240	7,318	7,518	25,033	0	1,808	65	2,931	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	66,901	62,591	118,567	2,420	6,040	9,870	11,194	1,950	3,448	4,470	7,096	8,974	24,652	0	1,808	915	2,928	0	91,190	175,733			
2001	40,600	39,751	0	0	2,250	4,949	1,155	2,901	780	2,272	20,944	66,418	65,729	116,291	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	95,799	172,366			
2002	41,740	37,984	0	0	2,460	4,619	1,280	2,758	950	2,192	23,918	63,128	70,348	110,681	2,720	5,773	11,185	10,011	2,225	3,075	5,265	6,323	9,817	23,098	335	2,311	1,245	3,481	0	103,140	164,753			
2003	43,590	36,159	0	0	2,500	4,429	1,315	2,672	940	2,110	23,442	60,439	71,787	105,809	2,885	5,626	2,135	9,314	2,335	2,890	5,445	5,939	9,988	18,444	245	2,310	1,105	4,277	0	95,925	154,609			
2004	45,730	34,244	0	0	2,500	4,291	1,330	2,598	970	2,059	26,396	60,952	76,926	104,144	3,055	5,470	2,210	9,228	2,425	2,758	5,610	5,634	9,883	20,820	220	2,298	2,045	5,538	0	232	139	102,374	156,261	
2005	46,985	32,242	0	0	2,727	3,992	1,461	2,406	1,327	1,963	23,064	57,886	75,564	98,489	3,240	5,305	8,825	9,127	2,759	2,563	5,959	5,237	3,669	20,105	305	2,155	2,124	5,968	0	559	197	102,445	149,705	
2006	48,275	30,186																																



Chapter 15

SWP Education and Information

Romero Visitors Center, located 15 miles west of Los Banos, overlooks San Luis Reservoir.

Significant Events in 2006

The Department of Water Resources (DWR) welcomed 48 foreign tours with 510 visitors to the SWP facilities. There were also a number of domestic and school tours to the SWP Delta and Oroville Facilities. Tour groups came from all over the United States and 11 foreign countries: Afghanistan, Australia, Canada, China, France, Germany, Iraq, Ireland, Japan, South Korea, and Spain. The Delta Tour program for DWR employees, as part of the DWR training program, continued with five Delta Tours completed in 2006.

The Public Affairs Office (PAO) produced a special edition of its magazine, *DWR NEWS/People*, commemorating DWR's 50th Anniversary. PAO also planned and hosted several anniversary celebrations including an exhibit at the Capitol and an employee reception at the Stanford Mansion.

During May, DWR observed Water Awareness Month for the 19th consecutive year. The 2006 themes were "Happy 50th Birthday, DWR" and "Use Water Wisely." PAO news releases highlighted activities at DWR facilities, and public information officers answered media inquiries regarding water awareness.

Information for this chapter was provided by the Public Affairs Office.

The Public Affairs Office (PAO) serves as liaison between the Department of Water Resources (DWR), the news media, and the public. One role of the PAO is to provide education to those from the outside about DWR's mission and programs. Sophisticated graphics, video, and photography units play important roles in the outreach process, as do publications, websites, visitors centers, tours, exhibits, and special events.

Media Outreach

Relicensing Oroville Facilities

PAO continued coverage of the historic process to renew DWR's federal license to operate the Oroville Facilities, the heart of the State Water Project (SWP).

Levees

PAO helped organize a major press event to call for more levee funding. The Governor, a U.S. Senator, and local congressional representatives took an aerial tour of the Sacramento-San Joaquin levee system, then held a media briefing atop a south Sacramento levee.

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. This included providing public address system support for public hearings, meetings, and conferences.

News Events

In January, heavy rains and high winds caused overtopping of the Twitchell Island

levee system in the Sacramento-San Joaquin Delta. Approximately 100 residents of the island were evacuated, but DWR flood operations personnel and California Conservation Corps (CCC) crews were able to shore up problem areas and save the island from flooding. The Napa region also experienced evacuations and extensive flooding.

In February, the Governor declared a state of emergency for the State's levee system. Initially, 24 critically eroded levee sites were slated for repair by November 2006. DWR and the U.S. Army Corps of Engineers (Corps) worked together to complete repairs.

In March, DWR hosted a signing ceremony for the Oroville Relicensing Settlement Agreement. The event marked the culmination of a 6-year collaborative process between DWR and more than 40 stakeholder groups representing hundreds of interests, to benefit environmental, recreational, cultural, land use, and operational resources.

Also in March, Caspar W. Weinberger, one of the "fathers" of DWR, died on the 28th of the month at age 88. As a California Assemblyman from San Francisco, Weinberger authored the 1956 legislation that created DWR and facilitated construction of the SWP. From 1968 to 1970, Weinberger was the Governor's State

Finance Director and later served as U.S. Secretary of Defense.

In April, heavy rain storms brought more local flooding to Central California. DWR's flood emergency operations center was activated, and advance sandbagging occurred along the San Joaquin River.

Also in April, DWR increased its allocation of 2006 SWP water for long-term contractors to 100 percent of requests. This was the first time DWR was able to deliver 100 percent of requested maximum Table A amounts.

In May, DWR and the U.S. Postal Service unveiled a postage stamp depicting Oroville Dam. It belonged to the commemorative series Wonders of America: Land of Superlatives, which contained 40 of the most remarkable places, structures, plants, and animals in America. At 770 feet high, Oroville Dam is the tallest in the nation.

In June, DWR began the refurbishment of the Perris Dam beach recreation area. Five hundred truck loads of sand, approximately 14,000 tons, were needed to reconstruct the beach after the water level was lowered to facilitate seismic retrofitting.

July 5, 2006, was the official 50th Anniversary of DWR. Employees celebrated the milestone in May with a public exhibit at the Capitol, a private reception at the Stanford Mansion, and a luncheon for retired employees.

In August, DWR opened its largest exhibit ever at the California State Fair. It celebrated DWR's 50th Anniversary and

the important role of water in California's development. It featured history, science, water heroes, live animals, puppet shows, and sandbagging demonstrations by the CCC.

In September, the Governor signed an executive order to develop a Delta vision to provide a sustainable management program for the Sacramento-San Joaquin Bay Delta, identified as a unique natural resource of local, state, and national significance.

In October, DWR and the California Resources Agency released the draft *Salton Sea Restoration Report and Draft Environmental Impact Report*. This report launched a 90-day public comment period on the long-term future of California's largest lake. The restoration report contained eight alternatives and a no-action alternative to restore the Salton Sea as long-term wildlife habitat.

In November, DWR announced it had completed emergency levee repairs of 24 sites identified in February, and five additional sites identified in the following months. Repairs were completed by the November 1 deadline.

In December, DWR introduced FloodSAFE California, a strategic initiative intended to reduce flood risks. Preliminary concepts were shared with stakeholders, and DWR solicited the public for comments and recommendations on the plan.

Community Relations

Oroville

The PAO staff continued to provide media outreach for Oroville community meetings

related to DWR's application for a new federal license to operate the Oroville Facilities. PAO maintained the Lake Oroville recreation website, <http://www.lakeoroville.water.ca.gov/>, which provides information about the lake's recreational opportunities and other area facilities and attractions. In addition, PAO provided photography for the City of Oroville and the Oroville Area Chamber of Commerce for various community events.

The PAO design group produced promotional materials for Oroville area activities including the Fourth of July community celebration, Feather River Fiesta Days, and in September, the Oroville Salmon Festival. 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*. Audio-visual staff assisted the public in using a fishing simulator (an interactive device complete with fishing pole and video screen that provided participants with a virtual reality fishing experience). The video group created public service announcements (PSAs) about events and distributed them to radio and television stations in the Oroville and Chico areas.

California Lakes and Reservoirs Appreciation Week, July 1–7

In 2006, partnering with the Department of Boating and Waterways (DBW), DWR held its second annual California Lakes and Reservoirs Appreciation Week. The week was celebrated by participating State, federal, and local agencies with giveaways and promotional materials. Billboards around Lake Oroville and San Luis Reservoir announced the week during

June, and PSAs were played by Southern California radio stations during the week.

SWP Publications

In 2006, two Lake Oroville recreation brochures and a Water Facts and Fun wallet card were updated.

E-News

PAO continued to distribute "clips" of newspaper articles on California water issues, via email. These clips were emailed to DWR employees under the heading of California Water News. DWR answered a wide range of questions from both public and government agencies through its web-based "comment or suggestions" line. PAO administered Recent News at <http://www.water.ca.gov>, posting news releases, news advisories, and new websites.

DWR NEWS/People

DWR's quarterly magazine, *DWR NEWS/People*, spotlighted DWR programs, projects, individual and team accomplishments, skills, awards, promotions, retirements, and other news items. In 2006, DWR celebrated its 50th Anniversary. In recognition of this anniversary, *DWR NEWS/People* dedicated an entire magazine to the history of DWR. The magazine can be viewed at <http://www.publicaffairs.water.ca.gov/dwrnewsletter/>.

The Fall 2006 magazine featured articles about DWR's San Carlos research vessel, the Oroville and San Luis visitors centers, the storms of 2006, Oroville Relicensing, Oroville Dam's special honor, Riverbend Park's dedication, and crane operators.

DWR NEWS/People is circulated to all elements of the California water

community, including SWP water contractors and current and retired employees of DWR.

Video

DWR's video unit produced the following videos: *California Water Awareness News Magazine*; *Golden Past, Golden Future*—DWR's 50th anniversary video; *On the Fast Track*, a video about DWR's emergency levee repair effort; *Oroville Visitor's Center Cab Theatre*, featuring original footage of locomotives helping to build Oroville Dam; *FERC Relicensing*; *ACWA Fall Conference Year in Review*; *Aquatic Adventure Camp*, a recruitment, participation, and fundraising video; and *The Oroville Fish Hatchery*, a video used at Oroville's Visitor's Center.

Another production included a PSA to promote the Oroville Salmon Festival. In addition, the video unit supplied extensive stock footage for the following: Huell Howser's *California's Water* series; Water Education Foundation videos; the Discovery Channel's *Modern Marvels* series; *California Connected*; and numerous television stations statewide.

Members of the video unit also helped DWR meet webcasting requirements. This included engineering, video encoding, and recording more than eight on-location webcast events through an independent hosting service. DWR is now successfully developing contracts for webcasting and hosting services.

Also, the video unit began shooting and editing in high definition in 2006, which is temporarily being down-converted to standard definition DVDs. However, the unit now has the ability to author and burn HD-DVD masters and duplicates.

Photography

Photographs were taken throughout the state to supplement articles for *DWR NEWS/People*. Photos were taken to document the New Year and April flood events and the Governor's press events.

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 employees continued to promote and volunteer at events throughout the State.

SWP Tours

During 2006, DWR welcomed 48 foreign tours with 510 visitors to the SWP facilities. Tour groups came from all over the United States and 11 foreign countries: Afghanistan, Australia, Canada, China, France, Germany, Iraq, Ireland, Japan, South Korea, and Spain. The Delta Tour program for DWR employees, as part of the DWR training program, continued with five Delta Tours completed in 2006. There were also a number of domestic and school tours of the SWP. The Delta Field Division had 18 bus tours and Oroville had 222 group tours totaling 6,328 participants (most were for the Feather River Fish Hatchery). Figure 15-1 shows the SWP visitors center locations.



Figure 15-1. Visitors Centers on the SWP

Displays and Exhibits

Oroville Field Division

In 2006, a new interpretive panel was installed in a kiosk at the Bidwell Toll House and Suspension Bridge. The work was done for the Department of Parks and Recreation (DPR) under the FERC relicensing agreement. A DWR 50th Anniversary display with historic documents, hard hats, and tools relating to Oroville was installed.

Delta Field Division

In 2006, Phase 2 of a new visitors center display was completed and included a new map of the Delta. A DWR 50th Anniversary display also was installed.

San Luis Field Division

In 2006, Phase 2 of a new visitors center display was completed. It consisted of replicated Native American artifacts and a diorama for wildlife display. A DWR 50th Anniversary display with historic documents, hard hats, drawings, and tools relating to San Luis was also installed.

Southern Field Division

The visitors center was closed through December 2006. A DWR 50th Anniversary display relating to the Southern District was installed.

DWR Oral History Program

In mid-2006, the written synopses of interviews, and duplication of DVDs and VHS tapes, of approximately 150 DWR retiree interviews were completed. They were distributed to the participants and three major state repository libraries: the

California State Archives, the State Library, and the University of California, Berkeley, Water Resources Center Archives.

Those interviewed discussed topics including the early planning and design of the SWP and the construction and operation of its facilities. They were interviewed by DWR retired annuitants Ernest James and Art Winslow, who have nearly 80 years of combined experience with DWR.

A second phase of the program will begin in 2007, with the addition of DWR retired annuitant Stephen Kashiwada.

School Education Program

The School Education Program's goal is to provide students and educators with a statewide perspective on water issues such as conservation, conveyance systems, and the water cycle. The PAO staff develops and promotes high-quality materials and provides them free of charge to schools, educators, and water districts. Program achievements for 2006 follow.

Public Events and Outreach

Providing a display of DWR's Interactive Children's Exhibits at:

- the Urban Creeks Council's Creek Week event held at the Sacramento Discovery Center (April);
- the Bureau of Reclamation's 50th Anniversary of Folsom Dam event (May);
- the State Scientist Day in Sacramento (May);
- DWR's 50th Anniversary event at the State Capitol (May 31); and

- DWR's Oroville Fourth of July booth and State Fair booth (August/September); and Salmon Festival (September).

Outreach to Teachers and Educators

In 2006, the PAO staff was actively involved in presenting DWR's School Education Program and materials to teachers at the following events:

- the California Science Teachers Association Conference in San Francisco (October);
- the California Association for Bilingual Education Conference in San Jose (March); and
- the California Regional Environmental Education Community (CREEC) Conference in San Diego (January).

Publications and Materials

Additional program achievements for 2006 include 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. In order to provide materials, the following items were purchased or reprinted:

- 12,000 *Captain Hydro* water conservation student books;
- 7,000 *Storm Water* student books;
- 10,000 *Further Adventures of Captain Hydro* student books;
- 2,000 *Further Adventures* teachers' guides;
- 16,000 *California Water Works and Why It Does...* books for students;
- 80,000 Delta bookmarks; and
- 1,000 *Project WET* (Water Education for

Teachers) books, which were provided to teachers who participated in Project WET training workshops.

Collaboration/Partnerships

Wherever possible, DWR's School Education Program seeks to partner with other entities with similar interests and goals to pool resources in educating California's youth on the importance of our water resources. The following are the collaborative efforts for 2006:

- Participated on the Water Awareness Education Subcommittee and purchased 7,500 copies of Unit #4 on Water Use Efficiency for elementary students, and 500 copies each of Units #1–3.
- Hosted the Water Education Committee meeting in October with a tour of DWR's Oroville Facilities, and assisted in the spring (April) committee meeting in Hemet hosted by Eastern Municipal Water District, Elsinore Valley Water District, and Metropolitan Water District of Southern California.
- Participated on the Project WET Advisory Committee and the California Environmental Education Interagency (CEEIN) Committee.
- Participated in judging Arbor Day posters for the Department of Forestry.
- Participated on the Creek Week Planning Committee, providing artwork for a poster, brochures, and a bookmark for the Creek Week Celebration event.

Provided support for the following:

- the Environmentality Challenge for fifth-grade students, in conjunction with the State of California and the Walt

Disney Corporation;

- the California Department of Education's California 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 2006, DWR observed Water Awareness Month for the 19th consecutive year. The 2006 themes were "Happy 50th Birthday, DWR" and "Use Water Wisely." PAO news releases highlighted activities at DWR facilities, and public information officers answered media inquiries regarding water awareness.

Appendix B
Data and Computations
Used to
Determine 2008 Water Charges

**Appendix B
Data and Computations
Used to
Determine 2008 Water Charges**

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Appendix B

Data and Computations

Used to

Determine 2008 Water Charges

The Department of Water Resources (DWR) annually furnishes Statements of Charges to the 29 long-term State Water Project (SWP) 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), DWR 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 2008. The information is based on established data about the SWP, both known and projected, as of June 30, 2007.

The computational procedures and interrelationships between tabulations in this appendix are outlined on Figure B-1 and Figure B-2. All tables referenced on 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; and
- Sisk Dam, San Luis Reservoir, and Gianelli Pumping-Generating Plant.

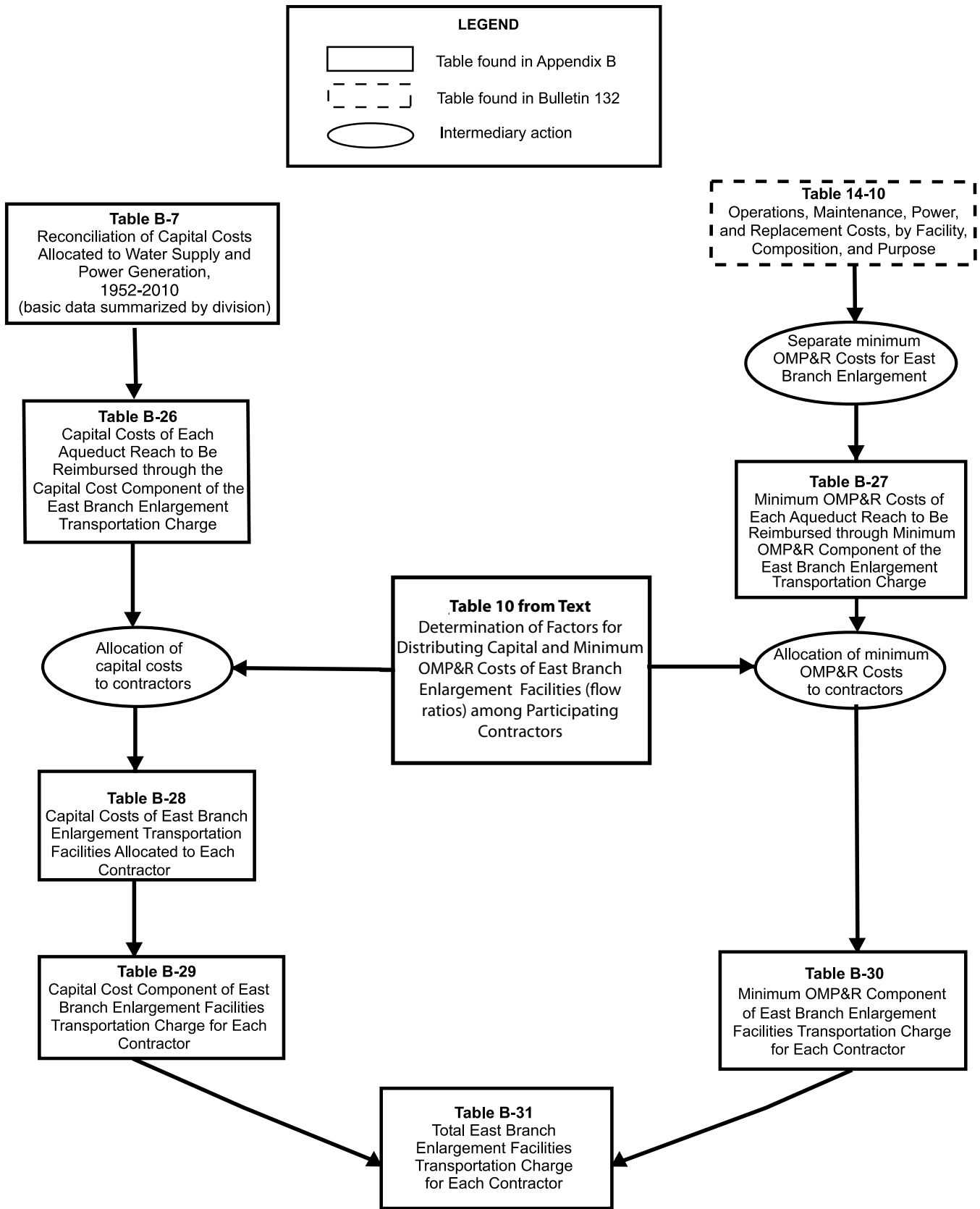


Figure B-2. Relationships of Data Used to Substantiate East Branch Enlargement Charges

Project Transportation Facilities

- Grizzly Valley Pipeline;
- North Bay Aqueduct;
- South Bay Aqueduct, including Del Valle Dam and Lake Del Valle;
- the remainder of the California Aqueduct from the Delta to Dos Amigos Pumping Plant and all facilities south, including dams and lakes in Southern California; and
- Off-Aqueduct Power Facilities (Reid Gardner Unit No. 4, Bottlerock Power Plant, and South Geysers Power Plant).

The standard provisions provide for a Delta Water Charge and a Transportation Charge for project water.

The Delta Water Charge is a unit charge applied to each acre-foot of SWP water the contractors 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 (OMP&R) 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 are repaid by those contractors using electrical power for delivery of their Table A water.

Composition and Timing of Water Charges

As shown on 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;

Delta Water Charge*Capital Cost Component*

1. Planning, design, right-of-way, and construction costs of Conservation Facilities
2. Operations and maintenance costs for newly constructed Conservation Facilities prior to initial operations
3. Activation costs for newly constructed Conservation Facilities
4. Power costs allocated to initial filling of San Luis Reservoir
5. Capitalized O&M costs (major repair work and so forth) for Conservation Facilities
6. Program costs (portion) to mitigate impacts on current Delta fishery population due to SWP pumping prior to 1986
(Department of Water Resources-Department of Fish and Game agreement)

Minimum OMP&R Component

1. Direct O&M costs of Conservation Facilities
 - a. Headquarters and field divisions (portion)
 - b. Insurance and FERC costs (portion)
2. General O&M costs allocated to Conservation Facilities
 - a. Contractor Accounting Office (portion)
 - b. Financial and contract administration (portion)
 - c. Water rights
 - d. Power planning for SWP facilities (portion)
3. Replacement deposits for SWP control centers (portion)
4. Credits for a portion of Hyatt-Thermalito power generation
5. Power costs and credits related to pumping water to San Luis Reservoir for project operations (storage changes)
6. Value of power used and generated by Gianelli Pumping-Generating Plant
7. Program costs (portion) to offset annual fish losses resulting from pumping at Banks Pumping Plant
(Department of Water Resources-Department of Fish and Game agreement)

Transportation Charge*Capital Cost Component*

1. Planning, design, right-of-way, and construction costs of Transportation Facilities
2. O&M costs for newly constructed Transportation Facilities prior to initial operation
3. Activation costs for newly constructed Transportation Facilities
4. Power costs allocated to initial filling of Southern California reservoirs
5. Capitalized O&M costs (major repair work and so forth) for Transportation Facilities
6. Program costs (portion) to mitigate impacts on current Delta fishery population due to SWP pumping prior to 1986
(Department of Water Resources-Department of Fish and Game agreement)

Minimum OMP&R Component

1. Direct O&M costs of Transportation Facilities
 - a. Headquarters and field divisions (portion)
 - b. Insurance and FERC costs (portion)
2. General O&M costs related to Transportation Facilities
 - a. Contractor Accounting Office (portion)
 - b. Financial and contract administration (portion)
 - c. Power planning for SWP facilities (portion)
3. Power costs and credits related to pumping water to Southern California reservoirs for project operations (storage changes)
4. Power costs for pumping water to replenish losses from Transportation Facilities
5. Other power costs
 - a. Station service at Transportation Facility power and pumping plants
 - b. Transmission service costs related to "backbone" Transportation Facilities
6. Replacement deposits for SWP control centers (portion)
7. Off-Aqueduct Power Facility costs—bond service, bond cover costs (25 percent of bond service), bond reserves, transmission costs to provide service to backbone," fuel costs taxes, and O&M-less power sales allocated to Off-Aqueduct Power Facilities
8. Program costs (portion) to offset annual fish losses resulting from pumping at Banks Pumping Plant
(Department of Water Resources-Department of Fish and Game agreement)

Variable OMP&R Component

1. Power purchase costs
 - a. Capacity
 - b. Energy
 - c. Pine Flat bond service, O&M, and transmission costs allocated to aqueduct pumping plants
2. Alamo, Devil Canyon, Warne, and Castaic power generation credited at the powerplant reach and charged to aqueduct pumping plants
3. Hyatt-Thermalito Diversion Dam powerplant 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 powerplants
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

- 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 re-determination of the rate. Since the re-determined 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 2008.

Article 28 of the standard provisions stipulates that Transportation Charges be re-determined each year. The tables in Appendix B include the numerical data used in this re-determination. Transportation Charges for prior years through 2006 included in those tables are the redetermined amounts and do not equal the amounts actually paid by contractors.

As provided under the Water System Revenue Bond Amendment to the water supply contracts, differences between actual payments under the Transportation capital cost component and amounts computed in this redetermination

are accumulated with interest and amortized during the remaining years of the contract repayment period. All computations for adjustments are included in the attachments accompanying each contractor's Statement of Charges and are reflected in revised copies of Table C through Table G of the contract, which are also furnished to each long-term water supply contractor in the annual Statements of Charges.

These re-determinations exclude four charges associated with water service other than the Delta Water Charge and the Transportation Charge. The excluded charges (and the manner in they are treated in this appendix) are outlined below.

- 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 re-determined 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 water delivery.

Bases for Allocating Reimbursable Costs Among Contractors

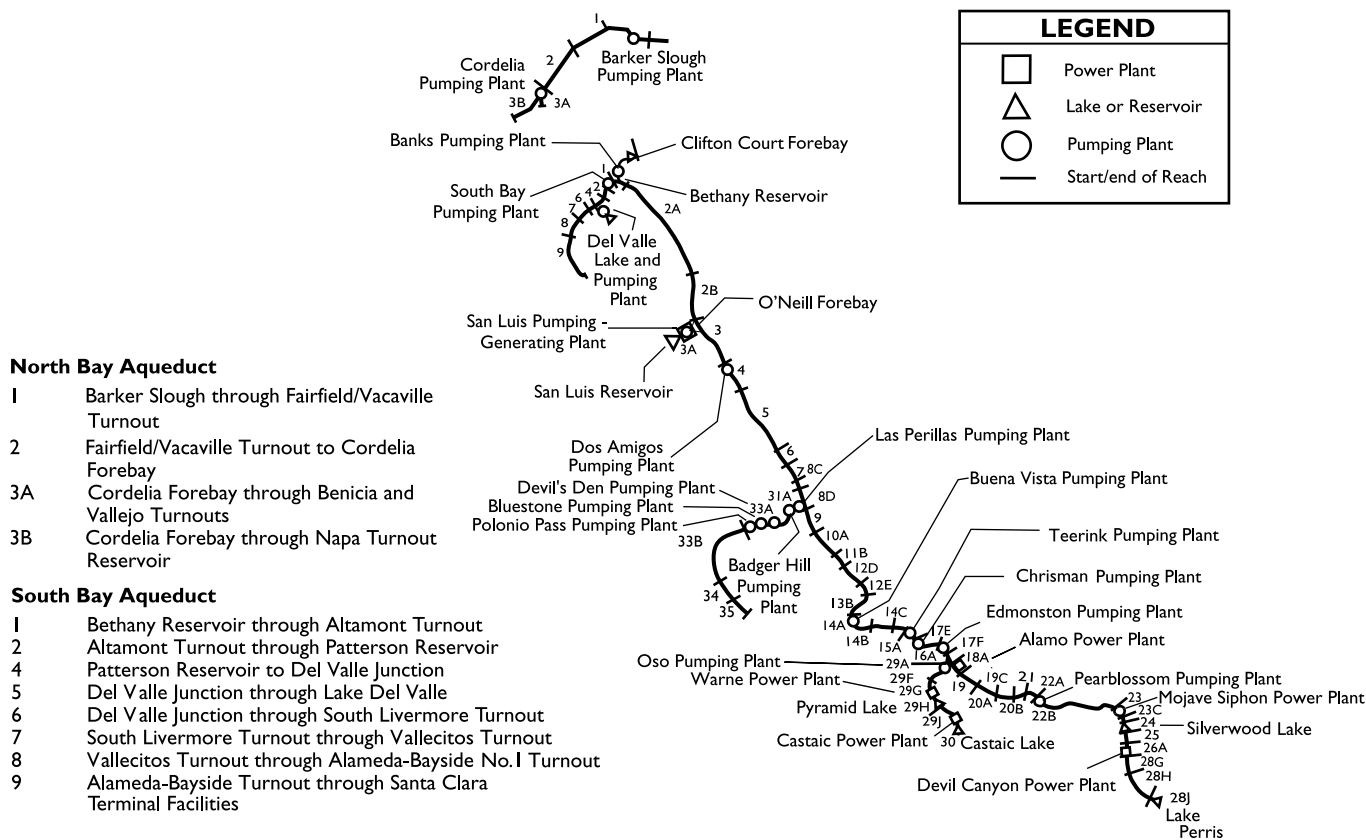
This section describes the procedures for allocating reimbursable costs of Project Transportation Facilities among contractors (see upper right portion of Figure B-1). Those costs do not include annual costs of Off-Aqueduct Power Facilities, which are explained in the section "Project Water Charges."

Capital and Minimum OMP&R Costs

Figure B-4 includes information about the repayment reaches that form the basis for allocating reimbursable costs of the Project Transportation Facilities among contractors.

Allocations of reimbursable capital costs and minimum OMP&R costs of each reach are based on the proportionate maximum use of that reach by respective contractors under planned conditions of full development.

The derivation of ratios that represent the proportionate maximum use of each aqueduct reach by the respective contractors was first reported in Bulletin 132-70. The ratios in Bulletin 132-70 were subsequently revised for the North Bay Aqueduct, the South Bay Aqueduct, the California Aqueduct from the Delta to Castaic Lake, and the Coastal Branch.



North Bay Aqueduct

- 1 Barker Slough through Fairfield/Vacaville Turnout
- 2 Fairfield/Vacaville Turnout to Cordelia Forebay
- 3A Cordelia Forebay through Benicia and Vallejo Turnouts
- 3B Cordelia Forebay through Napa Turnout Reservoir

South Bay Aqueduct

- 1 Bethany Reservoir through Altamont Turnout
- 2 Altamont Turnout through Patterson Reservoir
- 4 Patterson Reservoir to Del Valle Junction
- 5 Del Valle Junction through Lake Del Valle
- 6 Del Valle Junction through South Livermore Turnout
- 7 South Livermore Turnout through Vallecitos Turnout
- 8 Vallecitos Turnout through Alameda-Bayside No.1 Turnout
- 9 Alameda-Bayside Turnout through Santa Clara Terminal Facilities

California Aqueduct

North San Joaquin Division

- 1 Delta through Bethany Reservoir
- 2A Bethany Reservoir to Orestimba Creek
- 2B Orestimba Creek to O'Neill Forebay

San Luis Division

- 3A Sisk Dam, San Luis Reservoir, Gianelli Pumping-Generating Plant
- 3 O'Neill Forebay to Dos Amigos Pumping Plant
- 4 Dos Amigos Pumping Plant to Panoche Creek
- 5 Panoche Creek to Five Points
- 6 Five Points to Arroyo Pasajero
- 7 Arroyo Pasajero to Kettleman City

South San Joaquin Division

- 8C Kettleman City through Milham Avenue
- 8D Milham Avenue through Avenal Gap
- 9 Avenal Gap through Twisselman Road
- 10A Twisselman Road through Lost Hills
- 11B Lost Hills to 7th Standard Road
- 12D 7th Standard Road through Elk Hills Road
- 12E Elk Hills Road through Tupman Road
- 13B Tupman Road to Buena Vista Pumping Plant
- 14A Buena Vista Pumping Plant through Santiago Creek
- 14B Santiago Creek through Old River Road
- 14C Old River Road to Teerink Pumping Plant
- 15A Teerink Pumping Plant to Chrisman Pumping Plant
- 16A Chrisman Pumping Plant to Edmonston Pumping Plant

Tehachapi Division

- 17E Edmonston Pumping Plant to Porter Tunnel
- 17F Porter Tunnel to Junction, West Branch

Mojave Division

- 18A Junction, West Branch through Alamo Power Plant
- 19 Alamo Power Plant to Fairmont
- 19C Buttes Junction through Buttes Reservoir
- 20A Fairmont through 70th Street West
- 20B 70th Street West to Palmdale
- 21 Palmdale to Littlerock Creek
- 22A Littlerock Creek to Pearblossom Pumping Plant
- 22B Pearblossom Pumping Plant to West Fork Mojave River
- 23 West Fork Mojave River to Silverwood Lake
- 23C Mojave Siphon Power Plant
- 24 Cedar Springs Dam and Silverwood Lake

Santa Ana Division

- 25 Silverwood Lake to South Portal, San Bernardino Tunnel
- 26A South Portal, San Bernardino Tunnel through Devil Canyon Power Plant
- 28G Devil Canyon Power Plant to Barton Road
- 28H Barton Road to Lake Perris
- 28J Perris Dam and Lake Perris

West Branch, California Aqueduct

- 29A Junction, California Aqueduct through Oso Pumping Plant
- 29F Oso Pumping Plant through Quail Embankment
- 29G Quail Embankment through Warne Power Plant
- 29H Pyramid Dam and Lake
- 29J Pyramid Lake through Castaic Power Plant
- 30 Castaic Dam and Lake

Coastal Branch, California Aqueduct

- 31A Avenal Gap to Devil's Den Pumping Plant
- 33A Devil's Den Pumping Plant through Tank I
- 33B Tank I through Chorro Valley Turnout
- 34 Chorro Valley Turnout through Lopez Turnout
- 35 Lopez Turnout through Guadalupe Turnout

Figure B-4. Repayment Reaches and Descriptions

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 2008 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. These variable costs are described below:

- 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, DWR 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.)
- Beginning in 2005, a portion of transmission expenditures will depend and vary with water and power usage; these costs will be included as part of the variable component.

Table B-3 excludes plant capacity and energy costs associated with surplus and unscheduled water service after May 1, 1973. Prior to that date, surplus water service was charged the same unit variable OMP&R component as allocated water service. An amendment to the long-term water supply contracts in 1973 significantly changed the rate structure for surplus

Table 1. Summary of Permanent Aqueduct Capacity Transfers

Contractor		Capacity Transfer		
Seller	Buyer	Amount (af)	Effective Year	Transfer Description
Transfers under Monterey Amendment				
Kern	Mojave	25,000	1998	Purchased capacity upstream from Reach 31A
Kern	Castaic Lake	41,000	2000	Purchased capacity upstream from Reach 16A
Kern	Palmdale	4,000	2000	Purchased capacity upstream from Reach 11B
Kern	Alameda-Zone 7	7,000	2000	Purchased capacity upstream from Reach 10A
Kern	Alameda-Zone 7	15,000	2000	Purchased capacity upstream from Reach 10A
Kern	Alameda-Zone 7	10,000	2001	Purchased capacity upstream from Reach 11B
Kern	Solano	5,756	2001	Purchased capacity upstream from Reach 11 B and Reach 31A
Kern	Napa	4,025	2001	Purchased capacity upstream from Reach 11B and Reach 31A
Kern	Alameda-Zone 7	2,219	2004	Purchased capacity upstream from Reach 11B
<i>Subtotal under Article 53</i>		114,000		
Transfers outside of Monterey Amendment				
Tulare	Dudley Ridge	3,973	2002	Purchased capacity upstream from Reach 8D
Tulare	AVEK	3,000	2002	Purchased capacity upstream from Reach 8D
Tulare	Alameda-Zone 7	400	2003	Purchased capacity upstream from Reach 8D
Tulare	Kings	5,000	2004	Purchased capacity upstream from Reach 8D
Tulare	Coachella	9,900	2004	Purchased capacity upstream from Reach 8D
MWDSC	Coachella	88,100	2005	Purchased capacity upstream from Reach 28J
MWDSC	Desert	11,900	2005	Purchased capacity upstream from Reach 28J
Tulare	Kings	305	2006	Purchased capacity upstream from Reach 31A
<i>Subtotal outside of Article 53</i>		122,578		

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

Tables B-4, B-5A, B-5B, and B-6 present water conveyance quantities that form the basis for allocating costs.

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 2007 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 for 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.

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.
- 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 previously 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, the power and replacement costs of Banks Pumping Plant (a joint Transportation-Conservation Facility) that are allocated to the conveyance of annual conservation water quantities are transferred to the capital costs of San Luis Reservoir (during initial fill) or to the minimum OMP&R costs of San Luis Reservoir (subsequent to initial fill).

Table 2. Project Purpose Cost Allocation Factors (Percentages)

Project Facilities	Water Supply and Power Generation		All Other Purposes (Nonreimbursable)	
	Capital Costs	Minimum OMP&R Costs	Capital Costs	Minimum OMP&R Costs
Project Conservation Facilities	21.5	0.0	78.5	100.0
Frenchman Dam and Lake	0.0	0.0	100.0	100.0
Antelope Dam and Lake	1.0	1.8	99.0	98.2
Grizzly Valley Dam and Lake Davis	97.1	99.5	2.9	0.5
Oroville Division ^a	96.6	96.7	3.4	3.3
California Aqueduct, Delta to Dos Amigos Pumping Plant	86.0	86.0	14.0	14.0
Delta Facilities	100.0	100.0	0.0	0.0
Transportation Facilities	100.0	100.0	0.0	0.0
Peripheral Canal Related	86.0	86.0	14.0	14.0
Remaining of Delta Facilities	96.6	96.7	3.4	3.3
Grizzly Valley Pipeline	25.2	22.0	74.8	78.0
North Bay Aqueduct	100.0	100.0	0.0	0.0
South Bay Aqueduct				
Del Valle Dam and Lake Del Valle	25.2	22.0	74.8 ^b	78.0 ^c
Remainder of South Bay Aqueduct	100.0	100.0	0.0	0.0
California Aqueduct				
Delta to Dos Amigos Pumping Plant	96.6	96.7	3.4	3.3
Dos Amigos Pumping Plant to termini (excluding Coastal Branch)	94.3	96.9	5.7	3.1
Coastal Branch	100.0	100.0	0.0	0.0

^aPercentages 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 Thermal power plants and switchyards.

^bPercentage indicated consists of 48.0 percent of costs allocated to recreation and 26.8 percent to flood control.

^cPercentage indicated consists of 44.9 percent of costs allocated to recreation and 33.1 percent to flood control.

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 re-determinations in this appendix involve only the SWP costs that are allocated to water supply and power generation.

Capital Costs

Capital costs used in the re-determinations in this appendix reflect prices prevailing on December 31, 2006; future cost escalation will be reflected in subsequent bulletins.

Table B-7 presents a reconciliation of estimated total capital costs of each Project

Conservation Facility and each Project Transportation Facility. This table shows the relationship of Project Conservation and Transportation costs allocated to contractors (Tables B-8, B-9, B-10, and B-13) to the total SWP capital costs projected by DWR.

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. These include:

- 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 cubic feet per second 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 the Delta Water Charge and the Transportation Charge 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 five percent per year for 2007, 2008, and 2009.

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 four 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 re-determination 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 Geronio 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 4.608 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 Off-Aqueduct Power Facility charges, 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

Table 3. Criteria for Amortizing Capital Costs of Transportation Facilities

Contractor	Year of Initial Payment ^a
Alameda County Flood Control and Water Conservation District – Zone 7	1963 ^b
Alameda County Water District	1963
Antelope Valley—East Kern Water Agency	1963
Castaic Lake Water Agency	1964
City Yuba City	c
Coachella Valley Water District	1964
County of Butte	c
County of Kings	1968
Crestline-Lake Arrowhead Water Agency	1964
Desert Water Agency	1963 ^d
Dudley Ridge Water District	1968 ^e
Kern County Water Agency	
Agricultural Use	1968 ^e
Municipal and Industrial Use	1968 ^e
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
Palmdale Water District	1964
Plumas County Flood Control and Water Conservation District	1970
San Bernadino Valley Municipal Water District	1963
San Gabriel Valley Municipal Water District	1963 ^d
San Geronio Pass Water Agency	1963 ^d
San Luis Obispo County Flood Control and Water Conservation District	1964 ^f
Santa Barbara County Flood Control and Water Conservation District	1964
Santa Clara Valley Water District	1963
Solano County Water Agency	1973
Tulare Lake Basin Water Storage District	1968 ^e
Ventura County Flood Control District	1964

^a Allocated capital costs of transportation facilities amortized in equal annual installments unless otherwise noted.

^b Principal payments on each annual capital cost prior to 1971 delayed until calendar year 1972, except payments for 1963.

^c For Yuba City and Butte County payments for Delta Water Charge only.

^d Payment deferred for 1963 and added to 1964 payment with accrued interest.

^e For Dudley Ridge, Empire, Kern (agricultural use), Oak Flat, and Tulare, according to Article 45 of the contracts for supply of agricultural water, capital costs of transportation facilities allocated to agricultural water supply are amortized by using an equivalent unit rate per acre-foot applied to the annual allocations (Table B-4) through the project repayment period.

^f For San Luis Obispo and Santa Barbara County, all principal and interest payments for costs of the Coastal Stub wer deferred until 1976.

Table 4. Minimum OMP&R Costs of Reach 31A Assigned Directly to Kern County Water Agency

Year	Direct Charges
1969	46,511
1970	46,302
1971	140,074
1972	95,017
1973	72,454
1974	100,692
1975	127,456
1976	138,504
1977	120,753
1978	157,652
1979	121,231
1980	150,728
1981	75,866
1982	82,805
1983	90,007
1984	107,468
1985	159,406
1986	137,241
1987	127,073
1988	130,924
1989	128,468
1990	138,234
1991	139,527
1992	185,370
1993	219,334
1994	364,196
1995	272,341
1996	322,123
Total	3,997,767

down-aqueduct from Devil Canyon Power Plant and Castaic Power Plant.

As part of operating agreements with DWR, 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. DWR 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, the costs related to this settlement are to be allocated among all SWP contractors in proportion to their maximum Table A amounts. 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 Monterey Amendment litigation costs will be slightly less than \$16 million.

Table B16-B summarizes annual Off-Aqueduct Power Facility charges allocated to each water contractor, adjusted for prior overpayments or underpayments. 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 2006.

Table 5. Summary of Off-Aqueduct Power Facility Charges and Credits

Charges by Item	(Dollars)
Reid Gardner Power Plant	93,554,595
Bottle Rock Power Plant	14,199,599
South Geysers Power Plant	6,716,864
<i>Subtotal</i>	<i>114,471,058</i>
Credits by Item	
Power Sales	(21,167,891)
Miscellaneous Water (Wheeling)	0
<i>Subtotal</i>	<i>(21,167,891)</i>
Net Total Charge	93,303,167

Table 6 shows projected Off-Aqueduct Power Facility charges and an amount equal to 25 percent of annual bond service for 2006 through 2029.

Annual Off-Aqueduct Power Facility charges 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 Power Facilities

Year	Total Annual Cost (Dollars)	25% Bond Cover (Dollars)
2007	124,239,049	8,651,210
2008	138,602,028	11,503,680
2009	144,916,694	11,550,613
2010	145,738,919	11,715,058
2011	142,579,022	11,091,079
2012	142,788,191	11,132,912
2013	83,529,512	5,068,510
2014	20,051,988	3,989,672
2015	11,872,440	2,353,762
2016	10,167,047	2,012,684
2017	9,765,372	1,932,349
2018	4,050,548	789,384
2019	4,030,858	785,446
2020	4,335,503	846,375
2021	6,694,671	1,318,208
2022	6,352,851	1,249,844
2023	4,518,332	882,941
2024	3,291,222	637,519
2025	332,939	66,588
2026	478,861	95,772
2027	811,376	162,275
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 7. Kilowatt-Hour per Acre-Foot Factors for Allocating Off-Aqueduct Power Facility Costs

Pumping Plant	kWh per acre-foot ^a	
	At Plant	Cumulative from Delta
Barker Slough	223	223
Cordelia-Benicia	434	657
Cordelia-Vallejo	178	401
Cordelia-Napa	563	786
Banks	296	296
South Bay (including Del Valle)	869	1,165
Dos Amigos	138	434
Buena Vista	242	676
Teerink	295	971
Chrisman	639	1,610
Edmonston	2,236	3,846
Pearblossom	703	4,549
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

^aIncludes 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 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.

According to provisions of the Devil Canyon-Castaic contract, *Table B-19* and *Table G* include amounts of debt service and operating cost payments due from the six contractors located down-aqueduct from Devil Canyon and Castaic Power Plants.

Delta Water Charges

Table B-20A presents the calculation of the Delta Water Rate for the initial Conservation Facilities applicable in 2007 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 4.608 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 2007 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 (WSRB) to the Delta Water Charge and the transportation capital cost component for each contractor. The surcharge shown in Table B-22 includes the financing costs of the WSRB surcharge, series B through AD. This surcharge is levied according to an amendment to the water supply contracts, which was signed by all long-term water supply contractors.

Total Water Charges

Table B-23 summarizes the total annual charges to each contractor (the sum of the Transportation Charge in Table B-19, the Delta Water Charge in Table B-21, and the

Water System Revenue Bond Surcharge in Table B-22). The charges do not reflect past payments by contractors and are unadjusted for prior overpayments or underpayments.

Equivalent Total Water Charges

Table B-24 presents the Transportation Charge and Delta Water Charge in terms of the equivalent unit charge for each acre-foot of allocated water now projected for delivery to the respective contractors.

These equivalent charges would provide the same principal sum at the end of the project repayment period as annual payments to be made as part of the Delta Water Charge and Transportation Charge, plus interest at the Project Interest Rate, if applied to each acre-foot of allocated water delivered to date; all surplus water delivered prior to May 1, 1973; all interruptible water deliveries in 1994 and after; and all allocated water now projected to be delivered during the remainder of the project repayment period (Table B-5B).

The equivalent unit Delta Water Charges included in Table B-24 are greater than those in Table B-20A because current projections of allocated water service are less for most contractors than the amounts shown in Table A.

Equivalent Water Costs by Reach

Table B-25 presents a summary of the equivalent unit transportation cost of conveying allocated water through respective aqueduct reaches of the Project Transportation Facilities.

Table 8. Extra Peaking Charges for Additional Power, by Pumping Plant (Dollars)

Year	Cordelia Napa	Cordelia Solano	Barker Slough	South Bay	Banks	Dos Amigos	Las Perillas and Badger Hill	Buena Vista	Teerink	Chrisman	Edmonston	Pearblossom	Oso	Total
1972	0	0	0	0	0	10,579	24,700	0	0	0	0	0	0	35,279
1973	0	0	0	0	0	0	6,016	0	0	0	0	0	0	6,016
1974	0	0	0	0	0	0	7,140	0	0	0	0	0	0	7,140
1975	0	0	0	0	0	494	6,397	0	0	0	0	0	0	6,891
1976	0	0	0	0	0	0	1,981	0	0	0	0	0	0	1,981
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	45,145	3,680	0	0	0	0	0	0	48,825
1979	0	0	0	0	0	0	3,306	0	0	0	0	0	0	3,306
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	12,126	0	0	0	0	0	0	0	12,126
1982	0	0	0	0	0	89,339	0	0	0	0	0	0	0	89,339
1983	0	0	0	35	7,594	3,534	152	0	0	0	0	0	0	11,315
1984	0	0	0	2,096	84,396	38,607	7,203	11,173	3,823	3,593	0	0	0	150,891
1985	0	0	0	1,480	19,612	8,841	763	4,488	4,412	8,929	28,353	0	0	76,878
1986	0	0	0	0	1,864	863	0	291	354	766	2,683	0	0	6,821
1987	0	0	0	604	17,129	7,838	835	2,295	1,806	3,460	11,058	0	0	45,025
1988	639	39	287	894	43,475	20,082	2,213	5,792	4,367	8,272	25,886	0	0	111,946
1989	2,491	566	1,483	70	40,251	18,642	1,935	3,401	1,531	2,058	3,793	0	0	76,221
1990	45	0	18	343	19,524	9,044	0	150	145	314	643	0	0	30,226
1991	903	0	281	0	21	8	0	15	17	39	139	41	0	1,464
1992	208	117	203	0	7,070	2,502	0	182	190	435	0	0	0	10,907
1993	0	681	889	4,483	123,080	54,741	0	8,898	5,458	10,900	35,068	11,139	0	255,337
1994	0	366	393	679	6,566	2,795	454	1,083	155	357	1,121	0	132	14,101
1995	0	0	0	1,717	24,464	9,422	27	1,865	3,475	782	1,104	400	0	43,256
1996	4	0	1	1,983	10,031	4,976	0	391	432	1,015	3,404	1,160	0	23,397
1997	0	1,780	2,152	3,107	337,357	165,774	1,753	34,604	12,296	15,910	21,028	0	0	595,761
1998	0	0	0	20,966	235,693	106,251	2,354	697	848	1,836	6,426	0	0	375,071
1999	0	0	0	0	63,196	26,235	0	3,394	4,136	8,959	31,350	7,740	0	145,010
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	4,290	3,549	5,707	38,457	1,041,323	637,838	70,909	78,719	43,445	67,625	172,056	20,480	132	2,184,530

Table 9. Extra Peaking Charges for Additional Power, by Contractor (Dollars)

Year	Napa	Solano	Alameda Zone 7	Alameda County	Santa Clara	Dudley Ridge	Empire	Kern	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
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5,893	7,653	34,577	13,644	3,521	55,250	5,974	1,620,176	3,692	2,017	102,158	123,049	9,858	24,983	41,156	2,439	74,749	53,741	2,184,530

Those unit costs provide the basis of charges assessed for extra service (such as for delivery of allocations down-aqueduct from a contractor's turnout) and for wheeling service to entities other than the long-term water supply contractors.

The cumulative unit conveyance costs indicated for reaches in Table B-25 do not necessarily equal the equivalent unit Transportation Charges to contractors served from such reaches. The unit charges in Table B-24 account for the rate of water demand buildup and cost allocation factors of the individual contractors; however, the unit costs included in Table B-25 reflect the effect of melding the respective buildups and allocation criteria of all contractors whose allocations are conveyed through a given reach. Table B-25 also includes surplus water delivered prior to May 1, 1973, and interruptible water deliveries in 1994 and after.

East Branch Enlargement Facility Charges

Table B-26 reflects DWR's projection of annual capital costs of the East Branch Enlargement Facilities for each aqueduct reach. These projections will be re-determined 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;
- a 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 DWR 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

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	0.00398358	0.00000000	0.77871512	1.00000000
20B	0.02271252	0.09798832	0.00843608	0.08825438	0.00398358	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

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

DWR and the long-term water supply contractors execute short-term agreements that affect the contractors' charges. DWR executed a five-year agreement in 1997 with 16 municipal and industrial contractors who agreed to pay for allocated shares of Municipal Water Quality Investigations costs. In 2002 and 2006, additional amendments were executed to extend the program. 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.

Contractors have agreed to participate in several Delta Improvement programs which will take effect starting in 2007 and possibly extend out into the future.

The first contract pertains to the Bay Delta Conservation Plan (BDCP) agreed to in the Memorandum of Agreement for Supplemental Funding for Certain Ecosystem Actions and Support for Implementation of Near-Term Water

Supply, Water Quality, Ecosystem, and Levee Actions (MOA). The BDCP is comprised of two elements, fishery costs and consultation costs. These cost will be added to the contractors' transportation minimum component for the next two bill years, 2007 and 2008.

The second contract pertains to the non-BDCP costs of the MOA, which elements are Delta Vision and Pelagic Organism Decline research costs. These costs will be added to the contractors' conservation minimum component for the next two bill years, 2007 and 2008.

Tables B-1 through B-6 Follow

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 WA	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor South Bay	
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	0.33716573	0.38875906	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					Desert Water Agency
		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 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 Pasaiero	0.00557257	0.01028074	0.03072799	0.01345042	0.00552517	0.00139733	0.00911216	
7	Arroyo Pasaiero 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 Tunne			0.05329388	0.02109050	0.00967107	0.00244575	0.01594937	
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05340725	0.02113537	0.00969176	0.00245098	0.01598349	
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043	
19	Alamo Powerplant to Fairmont			0.13237766		0.02399451	0.00606811	0.03957141	
19C	Buttes Junction thru Buttes Reservoir			1.00000000					
20A	Fairmont thru 70th Street West			0.06847931		0.02576425	0.00651573	0.04249001	
20B	70th Street West to Palmdale			0.02276024		0.02702917	0.00683555	0.04457607	
21	Palmdale to Littlerock Creek			0.02318952		0.02754716	0.00696651	0.04543034	
22A	Littlerock Creek to Pearlblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608043	
22B	Pearlblossom 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 Powerplant to Barton Road								
28H	Barton Road to Lake Perris								
28J	Perris Dam and Lake Perris								
29A	Junction, West Branch, Calif. Aqueduct thru Oso P. P.					0.03544337			
29F	Oso Pumping Plant thru Quail Embankment					0.03544339			
29G	Quail Embankment thru Warne Powerplant					0.03544339			
29H	Pyramid Dam and Lake					0.02817144			
29J	Pyramid Lake thru Castaic Powerplant					0.03544338			
30	Castaic Dam and Lake					0.02927284			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560301	0.19482503		0.07364766				
33A	Devil's Den Pumping Plant through Tank 1	0.10101221	0.89898779						
33B	Tank 1 through Chorro Valley Turnout	0.09912818	0.90087182						
34	Chorro Valley Turnout through Lopez Turnout	0.05479573	0.94520427						
35	Lopez Turnout through Guadalupe Turnout		1.00000000						

Note: Proportionate use factors do not reflect permanent water transfer as a result of the Monterey Amendment.

TABLE B-1. Factors for Distributing Reach Capital Costs among Contractors

Reach No.	SAN JOAQUIN VALLEY AREA							
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
				Municipal and Industrial	Agricultural			
CA-AQ								
1	0.01707770	0.00088678	0.00254693	0.02741768	0.30629913	0.00090695	0.00167121	0.03504975
2A	0.01781031	0.00092482	0.00266258	0.02864263	0.31945188	0.00094747	0.00174288	0.03655331
2B	0.01785838	0.00092731	0.00266550	0.02868743	0.32030556	0.00094896		0.03665201
3	0.01786337	0.00092757	0.00266499	0.02868589	0.32039254	0.00094892		0.03666225
4	0.01786863	0.00092785	0.00266446	0.02868428	0.32048398	0.00094886		0.03667303
5	0.01787517	0.00092819	0.00266380	0.02868227	0.32059816	0.00094879		0.03668649
6	0.01788508	0.00092870	0.00266279	0.02867923	0.32077093	0.00094868		0.03670685
7	0.01788826	0.00092887	0.00266246	0.02867825	0.32082633	0.00094864		0.03671338
8C	0.01789228	0.00092909	0.00266205	0.02867702	0.32089625	0.00094859		0.03672162
8D	0.01828779		0.00271703	0.02928147	0.32798200			0.01820857
9				0.03204523	0.32739538			
10A				0.03257442	0.31658608			
11B				0.03597398	0.24684668			
12D				0.03787171	0.20804762			
12E				0.03793198	0.20695175			
13B				0.01458796	0.16600071			
14A				0.00620338	0.13319181			
14B				0.00632023	0.11741558			
14C				0.00651962	0.09039633			
15A				0.00663252	0.07516317			
16A				0.00688973	0.04028829			
17E				0.00212516				
31A			0.05046240		0.57546190			

Reach No.	SOUTHERN CALIFORNIA AREA (continued)									Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Municipal Water District	San Gabriel Valley Municipal Water District	San Geronio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District		
CA-AQ										
1	0.00049180	0.01101147	0.00369131	0.02362857	0.00650354	0.00398392	0.43929350	0.00429212		1.00000000
2A	0.00051413	0.01151136	0.00385891	0.02469101	0.00679699	0.00416304	0.45921072	0.00448701		1.00000000
2B	0.00051469	0.01152409	0.00386317	0.02472511	0.00680570	0.00416880	0.45973548	0.00449194		1.00000000
3	0.00051461	0.01152193	0.00386244	0.02472246	0.00680478	0.00416835	0.45965407	0.00449108		1.00000000
4	0.00051451	0.01151965	0.00386167	0.02471968	0.00680380	0.00416787	0.45956848	0.00449019		1.00000000
5	0.00051440	0.01151681	0.00386070	0.02471620	0.00680259	0.00416730	0.45946161	0.00448907		1.00000000
6	0.00051419	0.01151251	0.00385926	0.02471095	0.00680076	0.00416640	0.45929991	0.00448738		1.00000000
7	0.00051413	0.01151113	0.00385879	0.02470927	0.00680016	0.00416612	0.45924807	0.00448685		1.00000000
8C	0.00051405	0.01150938	0.00385821	0.02470716	0.00679941	0.00416576	0.45918261	0.00448616		1.00000000
8D	0.00052466	0.01174718	0.00393793	0.02522383	0.00694100	0.00425288	0.46868533	0.00457883		1.00000000
9	0.00057339	0.01283841	0.00430367	0.02758959	0.00758975	0.00465175	0.51227887	0.00500407		1.00000000
10A	0.00058254	0.01304366	0.00437246	0.02803943	0.00771262	0.00472760	0.52049091	0.00508405		1.00000000
11B	0.00064171	0.01436906	0.00481665	0.03093503	0.00850448	0.00521581	0.57349473	0.00560046		1.00000000
12D	0.00067463	0.01510596	0.00506361	0.03254889	0.00894541	0.00548790	0.60297374	0.00588755		1.00000000
12E	0.00067553	0.01512626	0.00507040	0.03259749	0.00895830	0.00549608	0.60379667	0.00589546		1.00000000
13B	0.00073290	0.01641098	0.00550099	0.03540212	0.00972547	0.00596896	0.65516902	0.00639604		1.00000000
14A	0.00076961	0.01723325	0.00577656	0.03720681	0.01021819	0.00627322	0.68807273	0.00671639		1.00000000
14B	0.00078354	0.01754538	0.00588113	0.03789703	0.01040613	0.00638960	0.70057530	0.00683798		1.00000000
14C	0.00080743	0.01808019	0.00606036	0.03907670	0.01072763	0.00658850	0.72199174	0.00704634		1.00000000
15A	0.00082089	0.01838154	0.00616135	0.03974336	0.01090913	0.00670088	0.73406357	0.00716371		1.00000000
16A	0.00085171	0.01907194	0.00639271	0.04126559	0.01132404	0.00695754	0.76170731	0.00743264		1.00000000
17E	0.00089182	0.01997003	0.00669365	0.04325018	0.01186455	0.00729213	0.79767940	0.00778251		1.00000000
17F	0.00089372	0.02001251	0.00670788	0.04334270	0.01188988	0.00730773	0.79937767	0.00779906		1.00000000
18A	0.00221525	0.04960424	0.01662680	0.10730448	0.02944860	0.01809192	0.57469530			1.00000000
19	0.00221522	0.04960300	0.01662640	0.10730707	0.02944876	0.01809230	0.57469556			1.00000000
19C										1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161798	0.01942666	0.61700971			1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316986	0.02038045	0.64729087			1.00000000
21	0.00254199	0.05692053		0.12319480	0.03380324	0.02077093	0.65963498			1.00000000
22A		0.05773082		0.12495766	0.03428605	0.02106816	0.66905054			1.00000000
22B		0.05842136		0.12645207	0.03469614	0.02132008	0.67705256			1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614			1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404			1.00000000
25				0.14947726	0.03997502	0.02520426	0.78534346			1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346			1.00000000
28G				0.05126137			0.94873863			1.00000000
28H							1.00000000			1.00000000
28J							1.00000000			1.00000000
29A							0.95147783	0.01307880		1.00000000
29F							0.95147785	0.01307876		1.00000000
29G							0.95147785	0.01307876		1.00000000
29H							0.96278381	0.00904475		1.00000000
29J							0.95147787	0.01307875		1.00000000
30							0.96212388	0.00860328		1.00000000
31A										1.00000000
33A										1.00000000
34										1.00000000
35										1.00000000

TABLE B-2. Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	Reach Description	NORTH BAY AREA		SOUTH BAY AREA				Total
		Napa County FC&WCD	Solano County WA	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor South Bay	
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	0.00000000	1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.33978741	0.19516252	0.46505007	0.00000000	1.00000000
4	Patterson Reservoir to Del Valle Junction			0.31610985	0.20216089	0.48172926	0.00000000	1.00000000
5	Del Valle Junction thru Lake Del Valle			0.53312173	0.12972254	0.33715573	0.00000000	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.32478705	0.19906896	0.47614399	0.00000000	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout			0.14604872	0.25176680	0.60218448	0.00000000	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	0.02074717		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	0.00531803	0.00981112	0.03024584	0.02544226	0.02816849	0.00133276	0.01137611
2A	Bethany Reservoir to Orestimba Creek	0.00557057	0.01027704	0.03167950	0.02660598	0.02949522	0.00139543	0.01191224
2B	Orestimba Creek to O'Neill Forebay	0.00557667	0.01028833	0.03171597	0.02666336	0.02953453	0.00139736	0.01192791
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557562	0.01028637	0.03171043	0.02666656	0.02953095	0.00139720	0.01192641
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557450	0.01028431	0.03170463	0.02666994	0.02952719	0.00139705	0.01192482
5	Panoche Creek to Five Points	0.00557309	0.01028175	0.03169736	0.02667416	0.02952249	0.00139687	0.01192284
6	Five Points to Arroyo Pasajero	0.00557099	0.01027787	0.03168637	0.02668054	0.02951539	0.00139656	0.01191985
7	Arroyo Pasajero to Kettleman City	0.00557031	0.01027662	0.03168285	0.02668259	0.02951311	0.00139646	0.01191888
8C	Kettleman City thru Milham Avenue	0.00551445	0.01017357	0.03136136	0.02635185	0.02920164	0.00138158	0.01179354
8D	Milham Avenue thru Avenal Gap	0.00562665	0.01038055	0.03200083	0.02691146	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 Powerplant 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 Powerplant 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 P. P.			0.00296720		0.05726734		
29F	Oso Pumping Plant thru Quail Embankment			0.00296796		0.05726649		
29G	Quail Embankment thru Warne Powerplant					0.05742327		
29H	Pyramid Dam and Lake					0.03349572		
29J	Pyramid Lake thru Castaic Powerplant					0.05740996		
30	Castaic Dam and Lake					0.03248607		
31A	Avenal Gap to Devil's Den Pumping Plant	0.10542164	0.19449108					
33A	Devil's Den Pumping Plant thru Tank 1	0.10101221	0.89898779			0.07351496		
33B	Tank 1 thru Chorro Valley Turnout	0.10101221	0.89898779					
34	Chorro Valley Turnout through Lopez Turnout	0.05271277	0.94728723					
35	Lopez Turnout thru Guadalupe Turnout		1.00000000					

Note: Proportionate use factors reflect permanent capacity water transfer that have been signed as of February 1, 2007.

TABLE B-2. Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	SAN JOAQUIN VALLEY AREA										
	Napa County FC&WCD	Solano County WA	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			
CA-AQ											
1	0.00101503	0.00145926	0.02320270	0.01822142	0.00088480	0.00254117	0.02735295	0.27469072	0.00247193	0.00166749	0.02830375
2A	0.00106167	0.00152624	0.00868437	0.01903859	0.00092448	0.00286184	0.02863089	0.28700500	0.00258450	0.00174223	0.02957310
2B	0.00106383	0.00152939	0.00870009	0.01908995	0.00092696	0.00266476	0.02867562	0.28778222	0.00259040		0.02965288
3	0.00106393	0.00152954	0.00870024	0.01909529	0.00092722	0.00266425	0.02867409	0.28786344	0.00259080		0.02966116
4	0.00106401	0.00152968	0.00870041	0.01910089	0.00092749	0.00266370	0.02867248	0.28794882	0.00259124		0.02966986
5	0.00106413	0.00152986	0.00870062	0.01910789	0.00092783	0.00266303	0.02867046	0.28805544	0.00259177		0.02968073
6	0.00106431	0.00153014	0.00870096	0.01911848	0.00092835	0.00266203	0.02866740	0.28821677	0.00259258		0.02969716
7	0.00106438	0.00153022	0.00870107	0.01912188	0.00092852	0.00266169	0.02866642	0.28826851	0.00259284		0.02970244
8C	0.00105148	0.00151159	0.00859994	0.01886176	0.00091590	0.00263501	0.02834912	0.28434072	0.00255999		0.02929844
8D	0.00107370	0.00154358	0.00878005	0.01927090		0.00268862	0.02893698	0.29051094	0.00165734		0.01089124
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	0.00628695	0.00977801	0.02617705			0.05037550		0.43917148	0.00176551		

Reach No.	SOUTHERN CALIFORNIA AREA (continued)									Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Municipal Water District	San Gabriel Valley Municipal Water District	San Geronio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District		
CA-AQ										
1	0.00049056	0.01818303	0.00458550	0.02356891	0.00648711	0.00397380	0.41547239	0.00427921		1.00000000
2A	0.00051386	0.01902951	0.00480271	0.02467716	0.00679322	0.00416065	0.43517158	0.00448242		1.00000000
2B	0.00051442	0.01906116	0.00480833	0.02471121	0.00680191	0.00416639	0.43566900	0.00448735		1.00000000
3	0.00051433	0.01906070	0.00480752	0.02470855	0.00680098	0.00416594	0.43559198	0.00448650		1.00000000
4	0.00051424	0.01906023	0.00480668	0.02470576	0.00680000	0.00416546	0.43551100	0.00448561		1.00000000
5	0.00051412	0.01905962	0.00480562	0.02470229	0.00679878	0.00416487	0.43540988	0.00448450		1.00000000
6	0.00051392	0.01905870	0.00480402	0.02469702	0.00679694	0.00416399	0.43525686	0.00448280		1.00000000
7	0.00051385	0.01905842	0.00480349	0.02469533	0.00679634	0.00416372	0.43520780	0.00448226		1.00000000
8C	0.00050870	0.01884315	0.00475451	0.02443210	0.00672541	0.00411933	0.44227753	0.00443733		1.00000000
8D	0.00051904	0.01923550	0.00485156	0.02493497	0.00686329	0.00420412	0.45134389	0.00452761		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	0.02330931	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	0.00715714	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	0.00237900	0.05324853	0.01784830	0.11522152	0.03161788	0.01942666	0.50762172			1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316874	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							0.60057777			1.00000000
28H				0.05126136			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		0.09301782								1.00000000
33A										1.00000000
33B										1.00000000
34										1.00000000
35										1.00000000

TABLE B-3. Power Costs and Credits, Transmission costs and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant (a)

(in dollars)

Sheet 1 of 2

Calendar Year	NORTH BAY AQUEDUCT			SOUTH BAY AQUEDUCT	CALIFORNIA AQUEDUCT					
	Reach 1	Reach 3A	Reach 3B	Reach 1 (c)	Reach 1	Reach 4	Reach 14A	Reach 15A	Reach 16A	Reach 17E
	Barker Cordelia Slough Pumping P.	Cordelia Pumping P. Solano	Cordelia Pumping P. Napa (b)	South Bay & Del Valle Pumping P.	Banks Pumping P.	Dos Amigos Pumping P.	Buena Vista Pumping P.	Teerink Pumping P.	Chrisman Pumping P.	Edmonston Pumping P.
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	37,731	0	0	0	0	0	0
1963	0	0	0	56,414	0	0	0	0	0	0
1964	0	0	0	71,745	0	0	0	0	0	0
1965	0	0	0	138,653	0	0	0	0	0	0
1966	0	0	0	189,402	0	0	0	0	0	0
1967	0	0	0	220,327	28,554	0	0	0	0	0
1968	0	0	7,128	339,261	1,286,777	227,505	0	0	0	0
1969	0	0	8,557	274,851	817,304	119,303	0	0	0	0
1970	0	0	13,666	439,983	330,508	193,720	2,940	0	0	0
1971	0	10,626	413,657	559,946	559,946	205,206	134,340	7,921	0	0
1972	0	14,430	615,164	1,072,833	541,628	305,868	469,104	159,125	348,235	1,179,787
1973	0	14,453	477,134	880,234	469,676	469,676	469,104	472,187	829,325	2,961,697
1974	0	17,508	502,473	959,269	536,361	514,168	553,285	993,796	3,522,973	3,522,973
1975	0	14,801	373,706	1,315,916	536,495	607,981	664,738	1,340,518	4,675,938	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	805,538	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	77,394	1,264,426	1,264,426	140,742	276,289	264,076	545,987	1,827,188
1984	0	0	289,827	1,390,432	1,390,432	555,409	551,468	508,111	1,044,264	3,507,653
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	2,142,321	4,724,696	16,562,202
1989	30,783	45,783	26,501	1,211,118	10,887,880	3,334,006	3,427,675	3,553,496	7,936,397	27,756,045
1990	53,484	67,109	40,793	1,881,178	9,523,541	4,754,649	5,990,489	6,327,687	14,254,357	50,152,078
1991	11,254	10,442	5,983	365,808	3,463,154	723,518	1,263,736	1,445,729	3,363,863	12,019,190
1992	14,484	13,070	9,398	327,309	2,700,240	808,067	1,071,702	1,121,273	2,503,167	8,677,102
1993	(12,340)	(8,753)	(5,393)	(159,836)	(333,548)	(609,139)	(461,719)	(459,965)	(1,018,142)	(3,558,718)
1994	54,407	39,608	29,189	328,517	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	(382,362)	(316,705)	(304,065)	(673,122)	(2,350,976)
1999	30,114	25,288	10,024	516,703	4,988,797	2,287,161	1,553,244	1,241,104	3,232,010	12,564,772
2000	58,651	42,587	15,094	861,671	8,025,528	3,046,708	2,966,168	3,038,567	6,993,104	25,232,758
2001	360,761	250,331	214,209	4,068,696	24,175,475	9,882,002	14,868,284	15,252,650	34,362,260	126,969,965
2002	191,948	105,385	61,953	2,258,767	17,221,057	6,949,418	8,803,124	8,803,124	19,894,736	73,074,996
2003	181,608	118,767	98,077	2,567,656	21,542,492	9,051,535	10,696,186	11,139,389	25,395,240	93,471,977
2004	246,316	136,402	105,066	2,452,187	21,375,211	9,167,278	12,084,098	12,682,850	28,967,905	106,508,267
2005	279,237	144,265	146,323	2,745,626	29,060,263	12,814,765	12,402,303	12,757,307	28,986,891	102,884,711
2006	245,509	171,670	198,361	2,653,454	25,213,754	10,420,393	11,348,284	12,269,861	26,736,475	98,356,120
2007	407,474	554,122	500,036	4,193,593	35,634,797	17,428,843	19,147,579	22,322,504	47,354,375	167,878,322
2008	309,488	365,723	382,958	4,979,631	43,263,155	19,377,776	21,330,796	24,631,158	51,969,349	183,483,795
2009	245,202	287,542	305,821	4,010,391	35,059,155	15,045,357	16,601,777	19,186,256	40,473,192	143,093,553
2010	493,421	391,422	416,605	6,650,471	46,873,631	18,790,901	22,865,042	22,693,320	53,122,285	199,115,814
2011	496,491	391,567	424,332	6,652,823	43,287,706	19,052,728	23,317,369	23,158,954	54,239,007	203,345,555
2012	514,195	404,948	448,548	6,869,338	40,874,428	19,615,395	23,942,931	23,762,637	55,653,070	208,626,569
2013	560,407	444,221	504,428	7,504,849	53,285,819	21,971,197	27,002,796	26,794,891	62,827,735	235,583,646
2014	600,883	476,875	556,466	8,033,282	48,006,529	23,899,101	29,494,794	29,262,346	68,663,917	257,507,932
2015	616,026	484,404	586,096	8,149,207	53,829,633	24,362,286	30,108,161	29,872,480	70,109,581	262,944,031
2016	628,039	488,983	611,913	8,229,208	61,030,991	24,867,340	30,858,377	30,630,396	71,914,894	269,754,725
2017	626,188	481,926	621,252	8,114,990	55,012,291	24,555,395	30,503,508	30,286,455	71,107,577	266,736,485
2018	648,839	495,855	661,961	8,340,400	53,261,487	25,033,184	30,965,041	30,719,149	72,110,589	270,457,478
2019	669,869	508,101	701,793	8,538,566	63,216,351	26,673,162	33,496,642	33,290,481	78,247,055	293,634,371
2020	642,697	480,276	679,785	8,088,278	55,552,002	24,870,075	31,095,807	30,901,927	72,588,036	272,353,992
2021	642,959	479,487	681,858	8,075,528	54,611,697	24,931,695	31,222,790	31,035,297	72,909,894	273,577,740
2022	624,138	463,956	657,583	7,824,210	50,456,450	24,097,177	30,183,194	30,011,662	70,493,638	264,512,334
2023	627,484	466,716	661,896	7,868,867	54,262,566	24,264,404	30,400,110	30,226,692	71,002,595	266,424,794
2024	649,302	484,720	690,036	8,160,210	59,907,056	25,270,792	31,673,659	31,483,793	73,972,371	277,572,986
2025	646,528	482,429	686,457	8,123,162	50,025,808	25,035,573	31,325,609	31,132,100	73,134,690	274,412,906
2026	650,736	485,903	691,887	8,179,360	62,589,049	25,404,461	31,874,475	31,686,968	74,456,792	279,401,955
2027	641,415	478,212	679,865	8,054,893	55,603,610	24,907,148	31,213,382	31,030,218	72,900,791	273,550,492
2028	645,640	481,697	685,313	8,111,316	55,081,163	27,017,012	31,407,606	31,218,882	73,344,757	275,212,510
2029	637,836	475,259	675,250	8,007,124	54,176,019	24,732,992	30,989,057	30,807,296	72,373,724	271,570,563
2030	642,716	479,286	681,543	8,072,261	56,833,870	24,952,106	31,264,952	31,079,264	73,015,818	273,980,140
2031	634,372	472,401	670,781	7,960,854	50,070,394	24,041,101	29,859,163	29,651,745	69,609,093	261,113,474
2032	646,360	482,292	686,244	8,120,937	56,884,724	25,379,100	31,928,310	31,753,716	74,626,500	280,062,751
2033	677,228	507,762	726,051	8,533,081	57,859,184	26,115,385	32,533,252	32,298,632	75,868,894	284,627,172
2034	653,549	488,224	695,514	8,216,921	56,349,428	25,704,409	32,338,344	32,158,092	75,580,908	283,646,528
2035	640,870	477,760	679,160	8,047,612	55,222,480	24,950,395	31,300,312	31,120,579	73,118,589	274,378,059
TOTAL	19,023,703	14,754,941	18,982,079	255,594,276	1,767,186,883	781,311,519	950,400,107	957,597,491	2,220,466,351	8,265,381,349

a) Starting with 2005 transmission costs that vary and depend on Power usage are included, therefore recovered through the variable component.

b) Power costs for the period 1968 through 1987 are for an interim facility.

c) The costs of Del Valle Pumping Plant are combined with those of South Bay Pumping Plant to simplify the cost allocations.

TABLE B-3. Power Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant

(in dollars)

Sheet 2 of 2

Calendar Year	CALIFORNIA AQUEDUCT (continued)										GRAND TOTAL
	Reach 18A	Reach 22B	Reach 23	Reach 26A	Reach 29A	Reach 29G	Reach 29J	Reach 31A	Reach 33A		
	Alamo Powerplant	Pearblossom Pumping Plant	Mojave Siphon Powerplant	Devil Canyon Powerplant	Oso Pumping Plant	Warne Powerplant	Castaic Powerplant	Las Perillas and Bluestone Badger Hill Pumping Plants	Devil's Den, and Polonio Pass Pumping Plants		
[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]		
1961	0	0	0	0	0	0	0	0	0	0	
1962	0	0	0	0	0	0	0	0	0	37,731	
1963	0	0	0	0	0	0	0	0	0	56,414	
1964	0	0	0	0	0	0	0	0	0	71,745	
1965	0	0	0	0	0	0	0	0	0	138,653	
1966	0	0	0	0	0	0	0	0	0	189,402	
1967	0	0	0	0	0	0	0	0	0	248,881	
1968	0	0	0	0	0	0	0	118,578	0	1,979,249	
1969	0	0	0	0	0	0	0	76,920	0	1,296,935	
1970	0	0	0	0	0	0	0	134,749	0	1,115,566	
1971	0	0	0	0	0	0	0	168,689	0	1,500,385	
1972	0	81,484	0	(3,112)	157,005	0	(385,696)	213,251	0	4,300,002	
1973	0	586,209	0	(956,197)	238,650	0	(1,193,216)	120,014	0	5,369,270	
1974	0	566,546	0	(963,572)	286,640	0	(1,823,397)	119,505	0	5,785,555	
1975	0	587,227	0	(1,125,945)	421,687	0	(2,835,302)	92,012	0	6,669,772	
1976	0	871,540	0	(1,567,312)	278,869	0	(2,512,021)	146,530	0	6,674,450	
1977	0	275,980	0	(1,262,960)	17,319	0	(1,701,284)	84,225	0	327,513	
1978	0	1,758,473	0	(3,345,147)	215,573	0	(2,361,377)	190,745	0	11,252,189	
1979	0	1,779,844	0	(3,381,969)	122,134	0	(2,752,003)	203,143	0	9,732,263	
1980	0	1,769,468	0	(3,508,195)	86,893	0	(2,728,494)	182,996	0	8,927,739	
1981	0	2,049,947	0	(3,743,153)	382,330	0	(2,854,192)	189,573	0	14,811,519	
1982	0	1,614,895	0	(3,149,352)	444,009	(973,898)	(3,476,126)	182,427	0	13,978,041	
1983	0	301,180	0	(5,905,161)	59,561	(1,314,237)	(3,904,690)	18,936	0	(6,346,070)	
1984	0	633,223	0	(7,865,341)	135,638	(2,285,362)	(844,120)	117,585	0	(568,150)	
1985	0	1,140,057	0	(10,664,136)	739,708	(8,476,552)	(19,162,735)	155,931	0	(15,517,771)	
1986	(1,080,970)	2,482,042	0	(12,235,312)	1,037,512	(6,269,528)	(11,462,662)	317,622	0	10,434,322	
1987	(1,062,392)	1,822,523	0	(10,871,342)	914,642	(6,757,040)	(11,630,562)	266,825	0	1,749,955	
1988	(810,907)	2,373,442	0	(14,772,519)	951,580	(7,448,747)	(12,677,211)	237,272	0	1,826,082	
1989	(822,973)	4,130,250	0	(19,088,882)	1,543,985	(8,790,866)	(14,657,167)	309,851	0	20,823,882	
1990	(845,641)	6,810,694	0	(21,336,948)	3,032,334	(11,692,826)	(19,863,014)	466,262	0	49,616,226	
1991	(351,262)	1,306,263	0	(5,781,948)	778,874	(5,250,121)	(8,731,129)	17,608	0	4,660,962	
1992	(997,736)	1,116,809	0	(9,903,370)	541,093	(5,955,563)	(9,599,392)	111,742	0	(7,440,605)	
1993	(84,856)	(370,935)	0	(7,956,659)	(244,261)	(4,607,075)	(9,740,511)	(122,190)	0	(29,754,040)	
1994	(93,031)	2,529,462	0	(12,122,861)	1,039,473	(6,226,273)	(10,867,596)	226,378	(1,127)	10,567,408	
1995	(1,297,179)	951,513	0	(10,256,635)	342,312	(3,827,718)	(7,403,219)	261,423	0	(5,229,549)	
1996	(2,959,744)	2,725,712	(941,959)	(13,155,960)	908,180	(5,026,221)	(8,969,945)	321,137	0	14,933,619	
1997	(2,876,697)	3,431,693	(1,932,337)	(13,519,660)	990,932	(5,184,768)	(9,927,058)	322,753	208,816	18,123,700	
1998	(2,244,105)	(439,496)	(1,385,473)	(10,955,475)	(66,088)	(1,888,975)	(4,963,075)	(56,675)	0	(25,947,381)	
1999	(2,811,928)	1,779,376	(2,482,354)	(14,772,635)	666,901	(5,526,541)	(9,954,674)	156,194	234,077	(6,262,367)	
2000	(5,129,549)	3,969,325	(4,429,149)	(25,856,637)	1,216,343	(9,464,490)	(17,958,033)	231,346	380,555	(6,759,453)	
2001	(3,298,048)	19,044,251	(3,649,034)	(18,498,071)	6,445,378	(7,987,833)	(13,981,232)	1,086,309	2,152,324	210,718,677	
2002	(4,926,146)	10,767,871	(5,255,302)	(24,635,887)	3,834,216	(10,286,902)	(18,455,024)	545,459	1,320,943	89,054,176	
2003	(3,431,664)	14,896,580	(6,760,773)	(28,000,328)	4,519,298	(10,281,922)	(17,307,974)	641,112	1,482,405	130,019,661	
2004	(6,227,543)	16,646,955	(7,691,607)	(31,217,777)	5,385,468	(12,033,953)	(20,022,179)	661,852	1,718,113	140,944,909	
2005	(6,140,331)	18,267,341	(6,778,759)	(30,592,888)	4,130,683	(8,251,156)	(13,698,272)	829,541	1,669,939	161,657,789	
2006	(4,091,143)	18,491,176	(6,391,206)	(34,897,387)	3,489,643	(7,208,025)	(12,038,160)	850,765	1,672,305	147,491,849	
2007	(4,614,761)	27,466,843	(7,331,594)	(28,185,300)	8,956,452	(11,210,940)	(20,708,840)	1,404,238	3,374,766	284,572,509	
2008	(5,146,500)	31,695,477	(7,679,600)	(29,375,000)	9,040,020	(10,572,500)	(19,067,500)	1,831,789	4,735,086	325,555,101	
2009	(5,160,600)	24,797,508	(7,759,900)	(29,467,000)	7,023,799	(10,600,000)	(19,097,500)	1,452,579	3,757,758	239,254,390	
2010	(5,630,503)	30,037,151	(6,596,625)	(31,860,925)	11,368,480	(15,179,275)	(25,547,250)	2,147,558	5,889,638	336,041,161	
2011	(5,676,281)	30,367,489	(6,650,250)	(32,188,175)	11,735,942	(15,783,600)	(26,489,900)	2,148,291	5,891,827	337,721,875	
2012	(5,769,388)	31,832,503	(6,829,725)	(32,405,200)	11,743,121	(15,166,000)	(25,589,750)	2,215,693	6,093,187	346,836,500	
2013	(5,758,155)	35,872,660	(6,846,000)	(32,831,750)	13,191,807	(15,745,900)	(26,533,450)	2,413,537	6,684,231	406,926,699	
2014	(5,782,172)	38,710,496	(6,862,800)	(32,782,050)	14,533,787	(16,350,900)	(27,474,150)	2,578,042	7,175,687	440,248,065	
2015	(5,871,801)	40,142,387	(7,063,725)	(33,390,200)	14,599,172	(16,195,075)	(27,196,050)	2,614,131	7,283,496	455,983,876	
2016	(5,934,499)	41,397,662	(7,156,875)	(34,005,575)	14,899,964	(16,378,000)	(27,521,050)	2,639,035	7,357,905	474,313,433	
2017	(5,889,990)	40,650,842	(7,174,350)	(33,978,600)	14,859,536	(16,553,625)	(27,844,950)	2,603,479	7,251,675	461,970,084	
2018	(5,952,829)	42,026,567	(7,497,975)	(34,012,075)	14,716,265	(15,866,450)	(26,739,700)	2,673,652	7,461,317	469,502,755	
2019	(5,999,923)	44,031,274	(7,434,300)	(34,727,425)	16,605,791	(17,564,050)	(29,744,150)	2,735,345	7,645,616	514,524,569	
2020	(5,968,950)	41,544,900	(7,439,925)	(34,666,150)	15,186,007	(16,962,875)	(28,605,000)	2,595,164	7,226,835	470,162,881	
2021	(5,995,458)	41,657,103	(7,505,625)	(34,811,350)	15,289,894	(17,103,250)	(28,864,150)	2,591,196	7,214,975	470,642,280	
2022	(6,023,188)	40,097,764	(7,496,625)	(34,809,700)	14,887,951	(17,179,400)	(28,996,400)	2,512,957	6,987,122	449,298,943	
2023	(6,036,651)	40,457,982	(7,534,575)	(34,804,325)	14,963,422	(17,170,050)	(28,980,700)	2,526,859	7,022,777	456,648,863	
2024	(6,012,989)	42,254,501	(7,548,000)	(34,803,550)	15,607,613	(17,174,325)	(28,988,450)	2,617,557	7,293,730	483,011,022	
2025	(5,984,836)	41,481,835	(7,450,050)	(34,514,225)	15,438,958	(17,174,375)	(28,988,500)	2,606,023	7,259,276	467,679,368	
2026	(6,048,709)	42,714,696	(7,632,075)	(35,124,800)	15,543,198	(17,174,325)	(28,988,450)	2,623,519	7,311,547	488,646,187	
2027	(6,006,644)	41,537,726	(7,471,275)	(34,768,475)	15,336,903	(17,206,350)	(29,039,650)	2,584,773	7,195,788	471,223,422	
2028	(5,985,400)	41,864,710	(7,494,675)	(34,815,075)	15,392,376	(17,146,300)	(28,938,450)	2,602,335	7,248,262	475,933,679	
2029	(5,995,317)	41,260,171	(7,507,125)	(34,810,950)	15,223,639	(17,174,300)	(28,988,500)	2,569,899	7,151,359	466,173,996	
2030	(5,985,494)	41,638,163	(7,494,825)	(34,815,050)	15,344,555	(17,174,350)	(28,988,550)	2,590,178	7,211,943	473,328,526	
2031	(5,989,113)	40,640,717	(7,813,125)	(34,452,000)	14,252,885	(16,066,325)	(27,113,650)	2,555,496	7,108,328	447,206,591	
2032	(6,059,237)	41,989,327	(7,908,300)	(34,774,175)	15,906,565	(17,670,050)	(29,942,350)	2,605,331	7,257,209	481,974,804	
2033	(6,024,927)	44,226,118	(7,942,800)	(34,611,900)	15,488,615	(16,256,200)	(27,577,100)	2,733,636	7,640,513	497,422,596	
2034	(6,054,396)	42,483,681	(7,981,350)	(34,688,400)	16,111,895	(17,689,125)	(29,983,550)	2,635,212	7,346,477	488,012,361	
2035	(6,056,370)	41,725,361	(7,716,375)	(35,001,675)	15,365,079	(17,192,050)	(29,116,400)	2,582,504	7,189,011	471,714,961	
TOTAL	(221,000,926)	1,273,343,534	(262,518,397)	(1,394,362,308)	453,558,226	(629,698,577)	(1,101,508,592)	81,188,403	207,012,795	13,656,712,857	

TABLE B-4. Annual Table A Amounts to Project Water

(in acre-feet)

Sheet 1 of 4

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA (a)				CENTRAL COASTAL AREA		
	Napa (b County FC&WCD	Solano County WA	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	507	5,248	5,783	11,538	0	0	0
1968	0	0	0	6,900	15,000	88,000	109,900	0	0	0
1969	0	0	0	8,200	15,500	75,000	98,700	0	0	0
1970	0	0	0	10,000	16,200	88,000	114,200	0	0	0
1971	0	0	0	11,200	17,000	88,000	116,200	0	0	0
1972	0	0	0	12,400	17,900	88,000	118,300	0	0	0
1973	0	0	0	13,600	18,800	88,000	120,400	0	0	0
1974	0	0	0	14,800	19,600	88,000	122,400	0	0	0
1975	0	0	0	16,000	20,500	88,000	124,500	0	0	0
1976	0	0	0	17,200	21,300	88,000	126,500	0	0	0
1977	0	0	0	18,400	22,200	88,000	128,600	0	0	0
1978	0	0	0	19,600	23,100	88,000	130,700	0	0	0
1979	0	0	0	20,800	23,900	88,000	132,700	0	0	0
1980	0	500	500	22,000	24,800	88,000	134,800	1,000	946	1,946
1981	0	650	650	23,000	26,000	88,000	137,000	1,000	1,813	2,813
1982	0	800	800	24,000	27,200	88,000	139,200	2,000	3,626	5,626
1983	0	950	950	25,000	28,400	88,000	141,400	3,000	5,439	8,439
1984	0	1,100	1,100	26,000	29,600	88,000	143,600	4,500	8,198	12,698
1985	0	1,250	1,250	27,000	30,800	88,000	145,800	7,500	13,638	21,138
1986	0	1,400	1,400	28,000	32,100	88,000	148,100	10,000	18,210	28,210
1987	0	1,550	1,550	29,000	33,300	88,000	150,300	12,500	22,704	35,204
1988	5,745	9,726	15,471	30,000	34,500	88,000	152,500	15,500	28,222	43,722
1989	6,195	18,420	24,615	31,000	35,700	90,000	156,700	20,000	36,342	56,342
1990	6,940	21,250	28,190	32,000	36,900	92,000	160,900	25,000	45,486	70,486
1991	7,290	22,300	29,590	34,000	38,400	94,000	166,400	25,000	45,486	70,486
1992	7,840	24,170	32,010	36,000	39,900	96,000	171,900	25,000	45,486	70,486
1993	8,490	26,130	34,620	38,000	41,400	98,000	177,400	25,000	45,486	70,486
1994	9,135	28,080	37,215	40,000	42,000	100,000	182,000	25,000	45,486	70,486
1995	9,780	34,250	44,030	42,000	42,000	100,000	184,000	25,000	45,486	70,486
1996	10,425	37,800	48,225	44,000	42,000	100,000	186,000	25,000	45,486	70,486
1997	11,065	38,250	49,315	46,000	42,000	100,000	188,000	6,215	38,986	45,201
1998	11,710	38,710	50,420	46,000	42,000	100,000	188,000	6,215	38,986	45,201
1999	15,850	39,170	55,020	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2000	16,325	39,620	55,945	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2001	20,725	45,836	66,561	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2002	21,100	46,296	67,396	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2003	21,475	46,756	68,231	78,400	42,000	100,000	220,400	25,000	45,486	70,486
2004	21,850	47,206	69,056	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2005	22,225	47,256	69,481	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2006	22,550	47,306	69,856	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2007	22,875	47,356	70,231	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2008	23,200	47,406	70,606	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2009	23,525	47,456	70,981	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2010	23,850	47,506	71,356	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2011	24,175	47,556	71,731	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2012	24,500	47,606	72,106	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2013	24,775	47,656	72,431	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2014	25,150	47,706	72,856	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2015	25,825	47,756	73,581	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2016	26,450	47,756	74,206	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2017	27,075	47,756	74,831	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2018	27,700	47,756	75,456	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2019	28,325	47,756	76,081	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2020	28,925	47,756	76,681	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2021	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2022	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2023	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2024	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2025	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2026	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2027	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2028	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2029	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2030	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2031	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2032	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2033	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2034	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2035	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
TOTAL	1,048,440	2,049,856	3,098,296	3,720,815	2,459,248	6,510,783	12,690,846	1,189,430	2,218,494	3,407,924

a) Table A quantities for the South Bay area were supplied by non-Project water for the period June 1962 through November 1967. Actual delivery quantities of Project water are shown for 1967.

b) District's Table A quantities exclude amounts during the period 1968 through 1987 that were supplied by non-Project water.

TABLE B-4. Annual Table A Amounts to Project Water

(in acre-feet)

Sheet 2 of 4

Calendar Year	SAN JOAQUIN VALLEY AREA								
	Dudley Ridge Water District	Empire West Side Irrigation District	Kern County Water Agency			County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
			Municipal and Industrial	Agricultural	Total				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	14,300	1,000	0	46,600	46,600	900	2,300	12,250	77,350
1969	14,325	3,000	0	95,700	95,700	1,200	2,500	46,350	163,075
1970	15,700	3,000	28,700	116,400	145,100	1,300	2,600	34,300	202,000
1971	17,900	3,000	35,700	154,600	190,300	1,300	2,800	36,500	251,800
1972	20,000	3,000	39,200	231,500	270,700	1,400	5,366	112,600	413,066
1973	22,000	3,000	43,500	267,000	310,500	1,500	3,100	43,552	383,652
1974	33,390	3,000	48,000	299,000	347,000	1,500	3,471	72,299	460,650
1975	40,555	3,000	52,700	358,120	410,820	1,600	3,576	86,258	545,809
1976	30,921	3,000	56,100	386,050	442,150	1,600	4,039	61,707	543,417
1977	30,400	3,000	60,600	423,000	483,600	1,700	3,700	59,000	581,400
1978	32,500	0	64,100	470,200	534,300	1,900	3,900	63,300	635,900
1979	38,544	3,000	67,600	516,300	583,900	2,000	4,000	71,241	702,685
1980	41,000	3,000	71,100	563,400	634,500	2,200	5,700	71,700	758,100
1981	41,000	3,000	74,800	616,600	691,400	2,300	4,300	76,000	818,000
1982	41,000	3,000	79,600	665,700	745,300	2,500	4,500	80,200	876,500
1983	42,900	3,000	83,500	721,600	805,100	2,800	3,770	9,548	867,118
1984	45,100	3,000	103,600	757,000	860,600	3,100	4,800	62,611	979,211
1985	47,200	3,000	108,900	806,100	915,000	3,400	4,900	45,549	1,019,049
1986	49,300	3,000	113,400	820,246	933,646	3,700	5,100	97,200	1,091,946
1987	51,400	3,000	119,100	904,400	1,023,500	4,000	5,200	101,400	1,188,500
1988	53,500	3,000	123,900	950,700	1,074,600	4,000	5,400	105,600	1,246,100
1989	55,600	3,000	128,200	984,100	1,112,300	4,000	5,600	109,900	1,290,400
1990	28,850	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,313,450
1991	53,411	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,338,011
1992	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1993	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1994	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1995	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1996	53,370	3,000	134,600	982,460	1,117,060	4,000	5,700	118,500	1,301,630
1997	53,370	3,000	134,600	978,130	1,112,730	4,000	5,700	118,500	1,297,300
1998	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
1999	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2000	53,370	3,000	134,600	886,130	1,020,730	4,000	5,700	118,500	1,205,300
2001	53,370	3,000	134,600	866,349	1,000,949	4,000	5,700	118,500	1,185,519
2002	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2003	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2004	57,343	3,000	134,600	864,130	998,730	9,000	5,700	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	9,305	5,700	95,922	1,170,000
2007	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2008	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2009	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2010	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2011	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2012	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2013	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2014	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2015	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2016	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2017	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2018	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2019	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2020	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2021	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2022	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2023	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2024	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2025	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2026	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2027	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2028	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2029	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2030	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2031	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2032	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2033	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2034	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2035	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
TOTAL	3,361,478	199,000	7,693,900	52,271,303	59,965,203	403,050	352,822	6,173,823	70,455,376

TABLE B-4. Annual Table A Amounts to Project Water

(in acre-feet)

Sheet 3 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[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	24,900	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
TOTAL	7,432,000	4,545,098	4,334,011	321,556	2,476,500	127,210	3,760,043	1,127,720	5,909,177	1,641,322

TABLE B-4. Annual Table A Amounts to Project Water

(in acre-feet)

Sheet 4 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA				FEATHER RIVER AREA				South Bay Area Future Contractor	GRAND TOTAL
	San Geronio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total		
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	11,538
1968	0	0	0	3,700	0	300	250	550	0	191,500
1969	0	0	0	5,000	0	350	270	620	0	267,395
1970	0	0	0	5,700	0	400	300	700	0	322,600
1971	0	0	0	6,700	0	450	440	890	0	375,590
1972	0	154,772	0	209,423	0	500	470	970	0	741,759
1973	0	354,600	0	481,100	0	600	500	1,100	0	986,252
1974	0	454,900	0	597,920	0	700	530	1,230	0	1,182,200
1975	0	555,200	0	714,950	0	1,050	560	1,610	0	1,386,869
1976	0	655,600	0	836,480	0	1,400	590	1,990	0	1,508,387
1977	0	755,900	0	954,901	0	1,800	620	2,420	0	1,667,321
1978	0	856,300	0	1,049,584	0	1,200	650	1,850	0	1,818,034
1979	0	956,600	0	1,190,573	0	1,450	690	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	324	11,124	0	4,126,885
2007	8,650	1,911,500	20,000	2,584,450	9,600	1,200	720	11,520	0	4,129,306
2008	12,000	1,911,500	20,000	2,587,800	9,600	27,500	2,020	39,120	0	4,160,631
2009	14,000	1,911,500	20,000	2,589,800	9,600	27,500	2,090	39,190	0	4,163,076
2010	16,000	1,911,500	20,000	2,591,800	9,600	27,500	2,160	39,260	0	4,165,521
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
TOTAL	738,450	109,260,272	988,000	142,661,359	449,900	826,280	106,474	1,382,654	0	233,696,455

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 1 of 16

Calendar Year	Grizzly Valley Pipeline PC FC&WCD	NORTH BAY AQUEDUCT				SOUTH BAY AQUEDUCT					
		Reach 1	Reach 3A	Reach 3B	Total	Reach 1		Reach 2	Reach 4	Reach 5	
						ACWD	AC			AC	AC
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
1962	0	0	0	0	0	8,412	141	353	0	0	0
1963	0	0	0	0	0	10,914	814	917	0	0	0
1964	0	0	0	0	0	19,238	248	1,425	0	0	0
1965	0	0	0	0	0	15,280	637	1,830	138	0	0
1966	0	0	0	0	0	0	2,475	2,537	499	0	0
1967	0	0	0	0	0	0	1,527	2,391	862	0	0
1968	0	0	0	1,214	1,214	0	1,608	3,799	721	0	5
1969	0	0	0	2,687	2,687	0	1,165	3,459	1,851	0	160
1970	70	0	0	3,618	3,618	0	1,345	4,558	3,182	0	164
1971	64	0	0	2,521	2,521	0	546	1,908	2,403	0	160
1972	505	0	0	3,647	3,647	0	1,066	4,605	2,041	1,489	2,777
1973	679	0	0	3,792	3,792	0	430	1,123	1,193	0	229
1974	648	0	0	4,870	4,870	0	177	0	0	0	162
1975	405	0	0	6,840	6,840	0	137	1,783	1,864	0	120
1976	382	0	0	7,122	7,122	0	265	7,204	3,384	0	817
1977	303	0	0	8,226	8,226	0	210	4,491	2,213	0	524
1978	278	0	0	6,034	6,034	0	422	2,426	3,754	0	2,034
1979	329	0	0	6,561	6,561	0	197	4,283	5,567	0	3,937
1980	295	0	0	6,707	6,707	0	77	3,883	6,686	1,508	0
1981	355	0	0	9,001	9,001	0	1,250	4,648	5,273	5,752	1,157
1982	305	0	0	1,213	1,213	0	473	3,043	4,406	0	630
1983	282	0	0	2,287	2,287	0	179	2,712	1,714	0	50
1984	272	0	0	2,923	2,923	0	165	4,219	2,219	0	55
1985	254	0	0	4,039	4,039	0	213	5,199	2,060	0	63
1986	317	1,400	0	3,519	4,919	0	200	6,052	2,062	0	212
1987	452	1,550	0	7,693	9,243	0	218	7,538	2,372	0	285
1988	523	1	9,725	5,392	15,118	0	222	8,302	4,681	0	189
1989	486	10	17,246	6,195	23,451	0	222	8,051	6,562	0	418
1990	548	3,275	15,856	6,940	26,071	0	256	8,160	8,347	0	593
1991	420	3,117	3,855	1,380	8,352	0	162	3,676	3,269	0	359
1992	485	5,553	9,220	4,001	18,774	0	217	5,177	2,188	0	154
1993	444	14,709	14,471	5,286	34,466	0	190	5,843	8,430	1,650	5,964
1994	492	10,343	14,913	6,792	32,048	0	132	4,482	5,427	0	822
1995	308	5,452	15,893	5,182	26,527	0	278	6,236	7,195	0	955
1996	360	12,930	17,069	4,893	34,892	0	277	6,151	5,119	0	388
1997	231	16,029	17,501	4,341	37,871	0	138	6,647	6,501	1,323	1,582
1998	0	11,562	18,204	5,359	35,125	0	106	3,748	2,493	0	1,277
1999	0	15,191	19,562	5,304	40,057	0	148	5,048	8,227	0	1,444
2000	0	15,490	21,525	4,958	41,973	0	110	7,464	9,761	0	946
2001	0	14,849	19,737	9,345	43,931	0	105	7,822	4,879	0	3,010
2002	0	18,841	19,719	6,875	45,435	0	93	7,758	11,619	0	2,446
2003	0	17,260	16,691	7,646	41,597	0	108	7,916	11,348	0	2,887
2004	0	20,951	22,051	8,134	51,136	0	72	11,754	9,737	0	3,763
2005	0	18,290	19,529	7,669	45,488	0	1,430	11,520	10,100	0	1,826
2006	0	16,573	18,943	7,789	43,305	0	830	11,546	4,097	0	2,123
2007	720	18,907	22,787	18,007	59,701	0	918	9,564	6,679	0	2,351
2008	2,020	19,870	20,975	19,100	59,945	0	918	11,720	6,492	0	2,350
2009	2,090	19,870	20,975	19,400	60,245	0	10,818	9,550	12,620	0	2,340
2010	2,160	27,031	20,475	23,850	71,356	0	32,170	6,460	12,713	0	2,340
2011	2,240	27,081	20,475	24,175	71,731	0	30,556	6,740	12,747	0	2,350
2012	2,320	27,131	20,475	24,500	72,106	0	14,687	9,993	25,255	0	4,327
2013	2,410	27,181	20,475	24,775	72,431	0	14,687	9,993	25,255	0	4,327
2014	2,500	27,231	20,475	25,150	72,856	0	14,687	9,993	25,255	0	4,327
2015	2,600	27,281	20,475	25,825	73,581	0	14,687	9,993	25,255	0	4,327
2016	2,700	27,281	20,475	26,450	74,206	0	14,687	9,993	25,255	0	4,327
2017	2,700	27,281	20,475	27,075	74,831	0	14,687	9,993	25,255	0	4,327
2018	2,700	27,281	20,475	27,700	75,456	0	14,687	9,993	25,255	0	4,327
2019	2,700	27,281	20,475	28,325	76,081	0	14,687	9,993	25,255	0	4,327
2020	2,700	27,281	20,475	28,925	76,681	0	14,687	9,993	25,255	0	4,327
2021	2,700	28,181	19,575	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2022	2,700	35,031	12,725	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2023	2,700	27,281	20,475	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2024	2,700	27,281	20,475	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2025	2,700	27,281	20,475	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2026	2,700	27,281	20,475	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2027	2,700	27,281	20,475	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2028	2,700	28,181	19,575	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2029	2,700	29,081	18,675	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2030	2,700	29,981	17,775	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2031	2,700	30,981	16,775	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2032	2,700	27,281	20,475	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2033	2,700	27,281	20,475	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2034	2,700	27,281	20,475	29,025	76,781	0	14,687	9,993	25,255	0	4,327
2035	2,700	28,181	19,575	29,025	76,781	0	14,687	9,993	25,255	0	4,327
TOTAL	83,532	1,009,229	890,147	986,627	2,886,003	53,844	449,149	507,553	844,790	11,722	160,266

a) For the period 1968 through 1987, deliveries are non-Project water pumped through an interim facility.

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 2 of 16

Calendar Year	SOUTH BAY AQUEDUCT (b)						CALIFORNIA AQUEDUCT				
	(Continued)						NORTH SAN JOAQUIN DIVISION				
	Reach 6 AC	Reach 7		Reach 8 ACWD	Reach 9 SCVWD	Total	Reach 1 AC	Reach 2A			
		FC&WCD	ACWD					FC&WCD	AC	OFWD (c)	KCWA
[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]		[22]
1962	0	0	0	0	0	8,906	0	0	0	0	0
1963	0	0	0	0	0	12,645	0	0	0	0	0
1964	0	0	0	0	0	20,911	0	0	0	0	0
1965	0	1,127	0	0	15,014	34,026	0	0	0	0	0
1966	0	14,864	0	0	34,538	54,913	0	0	0	0	0
1967	0	12,882	0	0	39,101	56,763	0	0	0	0	0
1968	0	24,817	0	0	70,105	101,055	0	3,084	0	0	0
1969	0	813	0	0	62,264	69,712	0	3,016	0	0	0
1970	0	0	0	0	80,311	89,560	0	5,911	0	0	0
1971	0	5,961	0	0	87,606	98,584	0	7,212	0	0	0
1972	0	26,182	0	0	100,266	138,426	0	8,166	0	0	0
1973	0	2,521	0	0	88,582	94,078	0	3,214	0	0	0
1974	0	0	0	4	88,000	89,318	0	3,471	0	0	0
1975	714	393	0	593	88,000	93,604	0	3,576	0	0	0
1976	5,461	13,774	0	7,526	88,000	126,431	0	4,112	0	0	0
1977	5,206	11,284	0	7,556	76,220	107,704	0	1,472	0	0	0
1978	2,348	854	0	5,009	95,727	112,574	0	3,906	0	0	0
1979	5,341	3,430	0	7,444	91,991	122,190	0	6,149	0	0	0
1980	6,144	2,824	0	6,702	88,000	115,824	0	5,700	0	0	0
1981	7,262	7,595	0	8,570	88,000	129,507	0	4,300	0	0	0
1982	4,571	1,776	0	4,540	88,000	107,439	0	3,838	0	0	0
1983	111	0	0	3,157	86,733	94,656	0	3,822	0	0	0
1984	126	0	0	3,338	88,000	98,122	0	5,700	0	0	0
1985	7,537	11,203	0	7,813	88,000	122,088	0	5,433	0	0	0
1986	2,083	5,311	0	7,068	88,000	110,988	0	5,107	0	0	0
1987	12,993	15,488	0	9,902	88,000	136,796	0	5,625	0	0	0
1988	12,436	24,259	0	9,205	87,961	147,255	0	4,412	0	0	0
1989	10,974	17,340	0	8,702	90,000	142,269	0	6,091	0	0	0
1990	15,678	22,149	0	9,554	91,800	156,537	0	2,922	0	0	0
1991	1,945	9,155	0	3,493	28,200	50,259	0	141	0	0	0
1992	6,933	12,621	0	6,532	42,839	76,661	0	2,239	0	0	0
1993	13,208	1,792	0	6,829	62,065	105,971	0	2,858	0	0	0
1994	9,679	3,379	0	19,532	57,115	100,568	0	3,071	0	0	0
1995	15,427	21	0	17,772	28,756	76,640	0	5,169	0	0	0
1996	6,968	1,871	0	11,591	44,850	77,215	0	4,904	0	0	0
1997	12,654	1,876	0	10,864	60,601	102,186	0	5,238	0	0	0
1998	8,347	3,817	0	11,478	39,610	70,876	0	4,401	0	0	0
1999	13,133	5,326	0	16,226	52,945	102,497	0	4,871	0	0	0
2000	16,396	4,498	0	18,100	78,258	135,533	0	4,508	0	0	0
2001	13,593	0	0	18,004	47,922	95,335	0	3,592	638	0	0
2002	17,058	5,112	0	20,616	58,875	123,577	0	4,885	773	0	0
2003	16,684	5,037	0	12,753	75,981	132,714	0	4,266	917	0	7
2004	21,260	4,968	0	14,916	59,458	125,928	0	4,629	786	0	38
2005	16,597	4,139	0	10,160	52,364	108,136	0	4,194	1,046	0	299
2006	19,870	2,708	0	12,924	64,174	118,272	0	4,242	1,103	0	321
2007	20,665	7,049	0	14,967	57,974	120,167	0	5,313	0	2,960	54
2008	22,156	6,949	0	17,629	57,440	125,654	0	5,700	0	2,960	50
2009	10,966	6,943	0	17,629	57,440	128,306	0	5,700	0	2,960	50
2010	7,146	22,371	0	19,629	68,000	170,829	0	5,700	0	2,960	50
2011	8,436	22,371	0	19,629	68,000	170,829	0	5,700	0	2,960	50
2012	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2013	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2014	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2015	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2016	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2017	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2018	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2019	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2020	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2021	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2022	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2023	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2024	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2025	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2026	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2027	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2028	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2029	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2030	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2031	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2032	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2033	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2034	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
2035	10,834	6,982	0	35,018	90,000	197,096	0	5,700	0	2,960	53
TOTAL	638,122	526,418	0	1,248,388	5,401,086	9,841,338	0	334,360	5,263	85,840	2,191

b) For the period June 1962 through November 1967, deliveries were supplied by non-Project water.

c) Includes 425 AF of 1988 advance allocation and 141 AF of 1992 advance allocation.

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 3 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	NORTH SAN JOAQUIN			SAN LUIS						
	Reach 2A		Reach 3							
	TLBWSD	SCVWD	MWDSC	DRWD	SCVWD	TLBWSD	AC FC&WCD	ACWD	KCWA	
[23]	[24]	[25]	[26]	[27]	[28]	[29]	[30]	[31]	[32]	
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	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	0	0	0	0	0	0	0	0	0	0
1989	300	0	0	602	0	0	0	0	0	0
1990	0	200	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0
1997	0	0	11,100	0	0	0	0	0	0	0
1998	0	0	(11,100)	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	3,320	57,825	0
2001	0	0	0	0	30,000	0	0	8,790	131,452	0
2002	0	0	0	0	0	0	0	21,050	50,346	0
2003	0	0	29,596	0	0	0	0	0	151,044	0
2004	0	0	0	0	0	0	0	0	44,877	0
2005	0	0	50,000	0	8,804	0	0	0	109,712	0
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
TOTAL	300	200	79,596	602	38,804	0	0	0	33,160	545,256

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 4 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SAN LUIS DIVISION (continued)										
	Reach 4				Reach 5						
	KCWA		DRWD	TLBWSD	DRWD	KCWA		MWDSC	CLWA	TLBWSD	OFWD
(M&I)	(AG)	(M&I)				(AG)					
[33]	[34]	[35]	[36]	[37]	[38]	[39]	[40]	[41]	[42]	[43]	
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	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0
1989	0	12,647	1,898	0	0	0	18,831	0	0	1,550	0
1990	0	0	0	1,500	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	10,823	0	0	0	0	0	0
1993	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
1995	0	3,500	14,446	0	0	0	21,776	0	0	0	0
1996	1,125	4,162	0	0	0	1,125	81,507	0	0	4,000	0
1997	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
1999	0	0	0	1,300	0	0	0	21,500	0	8,000	0
2000	1,517	(11,928)	0	0	0	8,130	57,647	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	2,457	0
2002	0	0	0	0	0	0	0	0	0	3,000	0
2003	0	1,351	0	0	0	0	0	0	0	3,900	0
2004	0	0	0	0	0	0	0	0	0	3,850	0
2005	0	7,000	0	0	0	0	0	0	0	1,000	0
2006	0	0	0	0	0	0	0	0	0	3,000	0
2007	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2,642	16,732	16,344	2,800	38,023	18,335	362,901	21,500	5,095	35,881	2,000

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 5 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SAN LUIS DIVISION (continued)										
	Reach 6					Reach 7					
	CK	KCWA		MWDSC	TLBWSD	KCWA		CLWA	DRWD	TLBWSD	MWDSC
(M&I)		(AG)	(M&I)			(AG)					
[44]	[45]	[46]	[47]	[48]	[49]	[50]	[51]	[52]	[53]	[54]	
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	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	8,260	0	0	0	5,262	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	31,200	0	0	18,157	10,043	0	0	0	0
1994	0	0	0	0	0	0	0	2,100	0	0	0
1995	0	0	3,932	0	0	10,875	20,595	0	0	0	0
1996	0	0	0	0	0	3,424	69,704	0	0	0	0
1997	0	0	0	0	0	27,079	32,463	0	0	0	0
1998	0	20,400	33,340	0	3,000	3,998	62,081	0	200	4,470	500
1999	0	0	33,776	11,000	23,000	7,923	19,500	0	0	4,470	500
2000	0	1,457	35,847	0	3,000	0	20,970	1,200	0	17,519	20,000
2001	0	0	0	0	600	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	12,067	0
2003	0	0	0	0	0	0	0	0	0	15,103	0
2004	0	0	0	0	0	0	0	0	0	0	0
2005	6,954	0	0	0	0	0	0	0	0	4,000	0
2006	2,659	0	0	0	0	0	0	0	0	6,000	0
2007	5,414	0	0	0	0	0	0	0	0	0	0
2008	5,200	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0	0
TOTAL	20,227	21,857	146,355	11,000	29,600	71,456	240,618	3,300	200	59,159	20,500

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 6 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SOUTH SAN JOAQUIN DIVISION										
	Reach 7	Reach 8C					Reach 8D				
	CK	KCWA		DRWD	TLBWSD	EWSID	CK	KCWA		DRWD	CK
(M&I)		(AG)	(M&I)					(AG)			
	[55]	[56]	[57]	[58]	[59]	[60]	[61]	[62]	[63]	[64]	[65]
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	25,100	1,978	900	0	0	26,360	0
1969	0	0	0	0	7,081	56	100	0	0	31,375	0
1970	0	0	0	0	0	3,942	0	0	0	40,407	0
1971	0	0	0	0	80,906	5,990	3,700	0	0	41,053	0
1972	0	0	0	0	144,843	5,795	1,400	0	0	42,443	0
1973	0	0	0	0	26,317	3,000	1,500	0	1,500	22,057	0
1974	0	0	0	0	32,603	3,000	1,500	0	0	33,390	0
1975	0	0	0	0	41,536	3,000	1,600	0	0	40,555	0
1976	0	0	0	0	26,595	3,000	1,600	0	0	41,421	0
1977	0	0	0	0	12,984	738	1,530	0	0	11,153	0
1978	0	0	0	0	3,934	454	2,070	0	0	51,747	0
1979	0	0	0	0	74,758	1,739	2,000	0	0	38,544	0
1980	0	0	0	0	35,140	894	2,200	0	0	41,000	0
1981	0	0	0	0	50,888	5,859	2,300	0	0	41,000	0
1982	0	0	0	0	4,405	361	1,536	0	0	41,000	214
1983	0	0	0	0	1,001	0	3,550	0	0	42,900	0
1984	0	0	0	0	3,677	0	3,100	0	0	45,100	0
1985	0	0	0	0	68,638	5,197	3,400	0	0	46,251	0
1986	0	0	0	0	40,017	1,170	3,700	0	0	50,249	0
1987	0	0	0	0	30,359	2,525	4,000	0	0	46,288	0
1988	0	0	0	0	46,281	3,475	4,000	0	0	47,994	0
1989	0	0	0	2,391	63,703	3,000	4,000	0	0	52,158	0
1990	0	0	0	0	23,504	1,279	2,000	0	161	36,296	0
1991	0	0	0	0	1,697	221	0	0	0	927	0
1992	0	0	0	280	15,982	1,354	1,806	0	0	12,667	0
1993	0	0	0	0	57,112	2,741	4,000	0	0	23,221	0
1994	0	0	0	0	21,510	1,666	2,116	0	1,726	28,793	0
1995	0	989	10,527	0	40,934	1,631	4,000	2,959	27,270	45,240	0
1996	0	0	1,500	95	84,130	1,868	4,000	0	1,455	52,722	0
1997	0	0	1,500	0	9,467	0	0	0	0	57,496	0
1998	0	0	1,000	90	8,956	542	15	0	20,000	49,435	0
1999	0	0	400	86	90,334	3,176	4,000	0	9,000	58,290	0
2000	0	0	400	166	63,842	1,799	3,600	0	0	57,920	0
2001	0	0	0	14	23,300	1,360	1,560	0	6,089	39,801	0
2002	0	0	0	0	34,009	1,405	2,854	0	7,522	47,434	0
2003	0	0	0	0	25,317	1,436	3,692	0	8,350	45,732	0
2004	0	0	0	0	30,546	3,562	5,803	0	4,979	45,823	3,250
2005	6,904	0	0	0	42,450	3,834	4,057	0	0	58,627	1,891
2006	2,500	0	0	0	34,367	3,282	1,105	0	0	61,410	3,266
2007	0	0	0	0	46,496	4,200	4,417	0	0	59,063	0
2008	0	0	0	0	38,369	3,000	3,800	0	0	57,343	0
2009	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2010	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2011	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2012	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2013	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2014	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2015	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2016	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2017	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2018	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2019	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2020	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2021	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2022	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2023	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2024	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2025	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2026	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2027	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2028	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2029	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2030	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2031	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2032	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2033	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2034	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
2035	0	0	0	0	38,369	3,000	9,000	0	0	57,343	0
TOTAL	9,404	989	15,327	3,122	2,549,051	174,529	345,511	2,959	88,052	3,260,946	8,621

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 7 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	SOUTH SAN JOAQUIN DIVISION (continued)									
	Reach 8D				Reach 9			Reach 10A		
	SBC	SGVMWD	SLOC	TLBWSD	DRWD	KCWA		TLBWSD	KCWA	
FC&WCD	FC&WCD	FC&WCD	FC&WCD	FC&WCD	(M&I)	(AG)	(M&I)	(AG)	(AG)	
[66]	[67]	[68]	[69]	[70]	[71]	[72]	[73]	[74]	[75]	
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	30,951	0	0	0
1969	0	0	0	0	0	0	24,489	0	0	0
1970	0	0	0	3,408	0	0	46,114	1,855	0	158
1971	0	0	0	41,579	0	0	58,356	0	0	9,973
1972	0	0	0	113,550	0	0	75,464	0	0	5,876
1973	0	0	0	24,147	0	0	54,583	0	0	22,948
1974	0	0	0	39,686	0	0	63,814	0	10,019	22,719
1975	0	0	0	44,722	0	0	50,021	0	2,791	72,121
1976	0	0	0	32,216	0	0	53,465	0	74	50,444
1977	0	0	0	5,097	0	0	24,668	0	201	34,451
1978	0	0	0	8,119	0	0	72,231	0	0	161,889
1979	0	0	0	80,363	0	0	74,524	0	285	153,245
1980	0	0	0	40,304	0	0	79,946	0	3,780	131,836
1981	0	0	0	32,550	0	0	76,508	0	341	133,500
1982	0	0	0	14,146	0	0	76,877	0	4,700	164,832
1983	0	0	0	5	0	2,217	84,573	0	0	146,493
1984	0	0	0	2,066	0	4,100	85,732	0	6,910	150,302
1985	0	0	0	41,153	0	0	67,696	0	6,495	153,473
1986	0	0	0	39,338	0	0	79,943	0	5,065	198,099
1987	0	0	0	62,725	0	0	97,732	0	900	226,521
1988	0	0	0	48,035	0	1,100	83,858	0	9,529	212,495
1989	0	0	0	63,947	0	0	91,134	0	21,038	251,979
1990	0	0	0	32,066	0	0	83,108	0	25,189	47,472
1991	0	0	0	483	0	13,683	601	0	1,142	6,820
1992	0	0	0	30,746	0	28	40,183	0	3,685	89,390
1993	0	0	0	65,732	197	5,945	53,597	0	775	233,862
1994	0	0	0	40,852	0	0	44,994	0	5,227	126,792
1995	0	0	0	57,435	0	0	64,076	0	366	229,448
1996	0	0	100	148,745	0	2,236	89,291	0	6,666	199,854
1997	0	0	100	9,402	4,900	0	72,013	0	3,577	157,385
1998	0	0	0	8,721	0	0	57,530	0	2,603	163,587
1999	0	0	0	162,631	0	0	72,734	0	1,657	190,787
2000	0	0	0	113,952	0	2,000	71,562	0	16,880	274,000
2001	0	0	0	58,369	0	0	54,198	0	160	98,175
2002	745	0	0	47,426	0	0	60,957	0	7,645	163,998
2003	0	0	0	61,521	0	0	54,724	0	2,648	172,243
2004	0	0	0	55,625	0	0	54,330	0	65,743	122,099
2005	0	0	0	92,552	0	0	53,206	0	22,087	210,578
2006	0	0	0	64,840	0	0	56,909	0	0	237,623
2007	0	0	0	77,271	0	0	69,767	0	0	218,050
2008	0	0	0	57,553	0	0	75,270	0	0	201,660
2009	0	0	0	57,553	0	0	75,270	0	0	201,660
2010	0	0	0	57,553	0	0	83,270	0	0	203,660
2011	0	0	0	57,553	0	0	83,270	0	0	203,660
2012	0	0	0	57,553	0	0	75,270	0	0	201,660
2013	0	0	0	57,553	0	0	75,270	0	0	201,660
2014	0	0	0	57,553	0	0	75,270	0	0	201,660
2015	0	0	0	57,553	0	0	75,270	0	0	201,660
2016	0	0	0	57,553	0	0	75,270	0	0	201,660
2017	0	0	0	57,553	0	0	75,270	0	0	201,660
2018	0	0	0	57,553	0	0	75,270	0	0	201,660
2019	0	0	0	57,553	0	0	75,270	0	0	201,660
2020	0	0	0	57,553	0	0	75,270	0	0	201,660
2021	0	0	0	57,553	0	0	75,270	0	0	201,660
2022	0	0	0	57,553	0	0	75,270	0	0	201,660
2023	0	0	0	57,553	0	0	75,270	0	0	201,660
2024	0	0	0	57,553	0	0	75,270	0	0	201,660
2025	0	0	0	57,553	0	0	75,270	0	0	201,660
2026	0	0	0	57,553	0	0	75,270	0	0	201,660
2027	0	0	0	57,553	0	0	75,270	0	0	201,660
2028	0	0	0	57,553	0	0	75,270	0	0	201,660
2029	0	0	0	57,553	0	0	75,270	0	0	201,660
2030	0	0	0	57,553	0	0	75,270	0	0	201,660
2031	0	0	0	57,553	0	0	75,270	0	0	201,660
2032	0	0	0	57,553	0	0	75,270	0	0	201,660
2033	0	0	0	57,553	0	0	75,270	0	0	201,660
2034	0	0	0	57,553	0	0	75,270	0	0	201,660
2035	0	0	0	57,553	0	0	75,270	0	0	201,660
TOTAL	745	0	200	3,477,009	5,097	31,309	4,630,019	1,855	238,178	10,895,997

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 8 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SOUTH SAN JOAQUIN DIVISION (continued)										
	Reach 10A							Reach 11B			
	DRWD	AC FC&WCD	CLWA	SCVWD	ACWD	MWDSC	AVEKWA	TLBWSD	KCWA		DRWD
(M&I)									(AG)		
	[76]	[77]	[78]	[79]	[80]	[81]	[82]	[83]	[84]	[85]	[86]
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	24,776	0
1969	0	0	0	0	0	0	0	2,842	0	64,682	0
1970	0	0	0	0	0	0	0	4,315	0	72,279	0
1971	0	0	0	0	0	0	0	0	0	63,773	0
1972	0	0	0	0	0	0	0	0	0	72,358	0
1973	0	0	0	0	0	0	0	0	0	67,544	0
1974	0	0	0	0	0	0	0	0	0	87,476	0
1975	0	0	0	0	0	0	0	0	0	85,675	0
1976	0	0	0	0	0	0	0	0	0	85,067	0
1977	0	0	0	0	0	0	0	0	3,981	29,603	0
1978	0	0	0	0	0	0	0	0	0	88,753	0
1979	0	0	0	0	0	0	0	0	484	108,379	0
1980	0	0	0	0	0	0	0	0	3,112	103,207	0
1981	0	0	0	0	0	0	0	0	494	104,395	0
1982	0	0	0	0	0	0	0	0	798	99,081	0
1983	0	0	0	0	0	0	0	0	2,089	94,117	0
1984	0	0	0	0	0	0	0	0	2,349	124,819	0
1985	0	0	0	0	0	0	0	0	10,666	118,646	0
1986	0	0	0	0	0	0	0	0	8,673	124,836	0
1987	0	0	0	0	0	0	0	0	13,074	111,877	0
1988	0	0	0	0	0	0	0	0	13,509	114,031	0
1989	0	0	0	0	0	0	0	0	9,986	127,058	0
1990	0	0	0	0	0	0	0	0	9,319	104,107	0
1991	0	0	0	0	0	0	0	0	6,099	118	0
1992	0	0	0	0	0	0	0	0	7,419	35,093	0
1993	0	0	0	0	0	44,496	0	0	2,696	72,645	0
1994	0	0	0	0	0	0	0	0	3,506	71,202	0
1995	0	0	0	0	0	50,000	0	0	1,154	97,072	0
1996	0	0	0	45,000	6,200	95,000	0	0	1,185	96,250	0
1997	900	0	0	35,000	10,000	125,000	0	0	1,111	104,823	0
1998	0	1,970	0	23,800	3,780	39,500	0	0	1,311	72,646	0
1999	0	22,910	0	30,000	16,100	75,850	0	0	2,127	92,262	0
2000	0	23,940	0	23,730	13,380	9,208	0	0	3,793	89,623	1,500
2001	0	5,000	0	0	0	0	0	0	636	73,105	0
2002	0	14,287	24,000	3,311	2,083	0	0	0	1,457	91,123	0
2003	0	6,500	0	33,000	18,800	70,940	0	0	1,379	87,174	0
2004	0	5,740	32,522	0	8,000	0	0	0	1,299	97,722	0
2005	0	0	0	55,448	28,422	31,210	0	0	824	93,554	0
2006	5,000	5,740	0	64,036	27,447	0	0	0	0	98,417	0
2007	0	5,540	0	75,323	17,984	249,563	0	0	0	92,742	0
2008	0	5,540	0	32,000	0	247,682	0	0	0	89,708	0
2009	0	5,540	0	32,000	0	247,682	0	0	0	89,708	0
2010	0	5,740	0	32,000	0	247,682	0	0	0	89,708	0
2011	0	5,740	0	32,000	0	247,682	0	0	0	89,708	0
2012	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2013	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2014	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2015	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2016	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2017	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2018	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2019	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2020	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2021	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2022	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2023	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2024	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2025	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2026	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2027	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2028	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2029	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2030	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2031	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2032	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2033	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2034	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
2035	0	5,470	0	10,000	0	247,682	0	0	0	89,708	0
TOTAL	5,900	245,467	56,522	756,648	152,196	7,725,863	-	7,157	114,510	5,953,934	1,500

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 9 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SOUTH SAN JOAQUIN DIVISION (continued)										
	Reach 12D		Reach 12E								
	KCWA		KCWA		ACWD	AC FC&WCD	CLWA	SCVWD	DRWD	MWDSC	
(M&I)	(AG)	(M&I)	(AG)								
	[87]	[88]	[89]	[90]	[91]	[92]	[93]	[94]	[95]	[96]	
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	9,279	0	0	0	0	0	0	
1971	0	0	0	28,056	0	0	0	0	0	0	
1972	0	0	0	62,342	0	0	0	0	0	0	
1973	0	0	0	13,082	0	0	0	0	0	0	
1974	0	0	2,651	10,950	0	0	0	0	0	0	
1975	0	0	0	10,787	0	0	0	0	0	0	
1976	0	0	37,519	20,555	0	0	0	0	0	0	
1977	0	0	20,280	1,737	0	0	0	0	0	0	
1978	0	0	47,133	15,011	0	0	0	0	0	0	
1979	0	0	50,740	61,567	0	0	0	0	0	0	
1980	0	0	32,039	22,252	0	0	0	0	0	0	
1981	0	0	59,917	58,470	0	0	0	0	0	0	
1982	0	0	36,139	75,587	0	0	0	0	0	0	
1983	0	0	0	10,950	0	0	0	0	0	0	
1984	0	0	63,941	39,929	0	0	0	0	0	0	
1985	0	0	69,839	84,117	0	0	0	0	0	0	
1986	0	0	62,109	51,540	0	0	0	0	0	0	
1987	0	0	95,297	86,223	0	0	0	0	0	0	
1988	0	0	86,390	123,249	0	0	0	0	0	0	
1989	0	0	83,965	146,544	0	0	0	0	0	0	
1990	0	0	82,164	38,973	0	0	0	0	0	0	
1991	0	0	8,842	303	0	0	0	0	0	0	
1992	0	0	47,181	57,048	0	0	0	0	0	0	
1993	0	0	84,822	285,554	0	0	0	0	0	5,504	
1994	0	0	66,188	77,839	0	0	0	0	0	0	
1995	0	0	107,130	181,097	0	0	0	0	1,000	0	
1996	0	0	89,257	134,138	0	0	0	0	4,131	0	
1997	0	0	32,061	128,329	0	0	0	0	8,012	1,486	
1998	0	0	28,258	88,998	0	0	0	0	5,925	24,234	
1999	0	0	110,161	255,343	0	0	0	0	1,321	62,162	
2000	21	0	78,285	89,702	0	0	0	0	953	159,731	
2001	41	0	5,256	46,205	0	0	0	0	0	0	
2002	760	6	39,104	96,231	0	0	0	0	0	0	
2003	2,431	152	64,196	87,339	0	0	0	0	0	45,989	
2004	3,419	768	52,303	95,893	0	0	0	0	1,600	0	
2005	2,841	644	43,835	340,281	1,878	3,419	20,000	2,619	1,154	15,384	
2006	2,513	1,556	82,207	296,316	0	9,914	20,000	0	0	5,065	
2007	6,500	0	89,200	168,872	0	14,000	0	0	0	0	
2008	6,500	0	89,200	127,902	0	14,000	0	0	0	0	
2009	6,500	0	89,200	127,902	0	14,000	0	0	0	0	
2010	6,500	0	85,260	147,925	0	14,000	11,000	0	0	0	
2011	6,500	0	85,260	147,925	0	14,000	11,000	0	0	0	
2012	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2013	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2014	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2015	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2016	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2017	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2018	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2019	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2020	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2021	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2022	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2023	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2024	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2025	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2026	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2027	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2028	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2029	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2030	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2031	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2032	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2033	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2034	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
2035	6,500	0	85,260	161,525	0	10,000	11,000	0	0	0	
TOTAL	200,526	3,126	4,253,569	7,822,240	1,878	323,333	326,000	2,619	24,096	319,555	

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 10 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SOUTH SAN JOAQUIN DIVISION (continued)										
	Reach 13B						Reach 14A		Reach 14B		
	KCWA		AC FC&WCD	SCVWD	MWDSC	DRWD	TLBWS	KCWA		KCWA	
(M&I)	(AG)	(M&I)						(AG)	(M&I)	(AG)	
	[97]	[98]	[99]	[100]	[101]	[102]	[103]	[104]	[105]	[106]	[107]
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	4,891	0	0	0	0	0	0	0	0	3
1971	0	0	0	0	0	0	0	0	23,844	0	49,929
1972	0	17,388	0	0	0	0	0	0	26,621	0	77,034
1973	0	9,297	0	0	0	0	0	0	15,328	0	47,040
1974	8,038	4,246	0	0	0	0	0	0	7,794	0	32,356
1975	8,538	7,059	0	0	0	0	0	0	10,306	0	27,736
1976	5,626	8,855	0	0	0	0	0	0	268	0	35,296
1977	0	5,024	0	0	0	0	0	0	8,299	0	13,539
1978	21,773	7,601	0	0	0	0	0	0	34,029	0	72,351
1979	5,663	17,766	0	0	0	0	0	3,012	27,356	0	59,413
1980	0	22,515	0	0	0	0	0	4,312	16,876	0	40,513
1981	7,844	14,037	0	0	0	0	0	4,511	13,007	8	42,753
1982	0	25,553	0	0	0	0	0	3,735	24,240	184	57,739
1983	0	3,491	0	0	0	0	0	1,168	20,302	0	57,922
1984	12,117	26,178	0	0	0	0	0	137	35,369	10	79,179
1985	0	67,711	0	0	0	0	0	206	33,103	0	72,855
1986	0	66,551	0	0	0	0	0	180	26,384	0	70,864
1987	5,609	40,374	0	0	0	0	0	610	30,098	9	67,710
1988	9,298	47,167	0	0	0	0	0	622	32,778	19	75,968
1989	5,504	57,114	0	0	0	0	0	721	29,292	7	82,201
1990	7,645	20,423	0	0	0	0	0	673	26,800	13	81,076
1991	0	0	0	0	0	0	0	768	0	0	0
1992	789	17,449	0	0	0	0	0	673	16,238	464	41,143
1993	12,798	88,157	0	0	0	0	0	629	17,832	0	62,493
1994	2,494	33,148	0	0	0	0	0	2,513	16,760	3,000	54,011
1995	8,751	110,685	0	0	0	0	3,500	3	21,234	0	67,391
1996	28,063	64,849	0	0	0	0	0	0	26,978	0	85,936
1997	43,803	49,312	0	0	0	0	0	0	23,035	0	79,790
1998	29,444	40,085	0	0	5,500	0	0	0	15,706	0	58,132
1999	12,969	92,998	0	0	0	0	0	0	21,153	0	67,576
2000	4,066	98,136	0	0	0	0	0	0	19,264	0	70,585
2001	4,044	29,881	0	0	0	1,733	0	1	12,451	0	49,602
2002	15,951	55,493	0	0	0	736	0	0	11,161	0	52,762
2003	35,239	91,739	0	0	1,865	350	0	0	13,685	0	44,576
2004	1,922	73,801	0	0	0	1,657	0	0	13,030	0	52,012
2005	21,781	269,631	2,321	9,014	192	14,540	0	0	15,663	0	56,739
2006	11,787	196,029	87	0	0	5,670	0	0	17,779	0	65,142
2007	19,740	114,200	0	0	0	3,790	0	0	19,212	0	66,463
2008	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2009	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2010	19,740	84,447	0	0	0	0	0	0	20,000	0	64,900
2011	19,740	84,447	0	0	0	0	0	0	20,000	0	64,900
2012	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2013	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2014	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2015	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2016	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2017	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2018	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2019	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2020	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2021	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2022	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2023	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2024	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2025	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2026	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2027	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2028	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2029	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2030	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2031	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2032	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2033	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2034	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
2035	19,740	84,447	0	0	0	0	0	0	19,500	0	63,700
TOTAL	904,016	4,263,350	2,408	9,014	7,557	28,476	3,500	24,474	1,270,275	3,714	3,903,830

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 11 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SOUTH SAN JOAQUIN DIVISION								MOJAVE DIVISION		
	Reach 14C			Reach 15A		Reach 16A			Reach 18A	Reach 19	
	KCWA		MWDSC	KCWA		KCWA		AVEKWA	AVEKWA	MWA	AVEKWA
	(M&I)	(AG)		(M&I)	(AG)	(M&I)	(AG)				
	[108]	[109]	[110]	[111]	[112]	[113]	[114]	[115]	[116]	[117]	[118]
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	24.187	0	0	3.552	0	0	0	0	0	0
1972	0	35.016	0	0	6.064	0	4.768	0	0	0	0
1973	0	19.043	0	0	19.916	0	1.961	0	0	0	0
1974	0	12.601	0	0	18.000	3,000	1,564	0	0	0	1,223
1975	0	12.783	0	0	35.420	3,200	9,867	0	0	0	7,622
1976	0	9.005	0	0	39.551	3,500	11,667	0	3,808	0	23,063
1977	0	3.757	0	0	6.158	3,420	685	0	1,231	0	8,927
1978	0	24.542	0	0	31,148	7,989	1,655	0	1,321	0	36,333
1979	0	22.372	0	0	38,602	2,813	15,808	0	2,098	0	49,910
1980	0	19.953	0	0	37,817	2,700	16,145	0	2,610	0	61,534
1981	7	18,729	0	0	39,033	2,636	18,156	0	2,340	0	65,690
1982	0	26,479	0	0	47,782	1,921	16,577	0	1,669	0	41,127
1983	0	26,613	0	0	37,426	1,400	17,907	0	43	0	26,377
1984	2	34,996	0	0	49,848	1,338	24,246	0	90	0	22,462
1985	0	31,758	0	0	44,078	1,309	16,820	0	8	0	23,440
1986	0	34,566	0	0	42,461	1,213	15,559	0	8	0	16,898
1987	10	31,019	0	0	34,748	1,665	10,170	0	0	0	15,958
1988	1	37,165	0	16	41,978	1,925	8,987	0	0	0	13,471
1989	5	37,800	0	2	43,239	2,668	8,649	0	0	0	18,007
1990	9	34,174	0	6	36,347	2,819	8,608	0	0	0	17,281
1991	0	0	0	0	0	2,588	343	2,000	0	0	728
1992	0	18,084	0	0	24,243	2,087	8,275	0	0	0	7,238
1993	0	28,103	0	0	27,997	2,494	9,167	0	0	0	13,340
1994	1,000	22,624	0	0	29,511	3,011	13,877	0	0	0	19,122
1995	0	31,285	0	0	26,134	3,188	15,042	0	0	0	20,222
1996	0	38,879	0	0	36,186	2,573	18,142	0	0	0	23,919
1997	0	33,512	0	0	36,281	3,997	17,048	0	0	64	28,834
1998	0	23,097	0	0	28,712	3,751	17,032	0	0	1,345	22,466
1999	0	31,489	0	0	36,801	3,316	24,071	0	0	1,439	30,944
2000	0	33,716	0	0	40,063	3,015	20,919	0	0	1,361	34,786
2001	0	23,557	0	0	31,192	1,894	13,476	0	0	1,385	24,370
2002	0	27,138	0	0	41,552	4,227	14,520	0	0	1,370	14,297
2003	0	24,783	12,911	0	36,602	1,168	16,799	0	0	1,285	12,145
2004	0	30,313	0	0	40,184	2,239	19,714	0	0	1,223	11,201
2005	0	21,979	0	0	39,870	167	18,353	0	11	1,051	11,804
2006	1,413	20,193	5,440	0	46,244	279	22,570	0	2,063	1,021	16,375
2007	0	25,830	0	0	47,222	21,200	3,800	0	2,464	1,235	15,260
2008	0	24,500	0	0	49,700	23,100	3,560	0	2,464	1,235	15,719
2009	0	24,500	0	0	49,700	23,100	3,560	0	2,539	1,235	16,190
2010	0	25,700	0	0	50,400	23,100	3,560	0	3,343	150	76,656
2011	0	25,700	0	0	50,400	23,100	3,560	0	3,240	150	74,918
2012	0	24,500	0	0	49,700	23,100	3,560	0	0	150	14,714
2013	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2014	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2015	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2016	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2017	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2018	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2019	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2020	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2021	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2022	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2023	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2024	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2025	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2026	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2027	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2028	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2029	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2030	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2031	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2032	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2033	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2034	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
2035	0	24,500	0	0	49,700	23,100	3,560	0	0	150	12,870
TOTAL	2,447	1,619,540	18,351	24	2,614,962	753,510	562,627	2,000	31,350	19,149	1,250,581

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 12 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	MOJAVE DIVISION (continued)										
	Reach 20A			Reach 20B		Reach 21			Reach 22A		Reach 22B
	PWD	MWA	AVEKWA	PWD	AVEKWA	LCID	PWD	AVEKWA	AVEKWA	LCID	MWDSC(d)
[119]	[120]	[121]	[122]	[123]	[124]	[125]	[126]	[127]	[128]	[129]	
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	338	0	0	0	0	0
1973	0	0	0	0	0	290	0	0	0	0	(14,800)
1974	0	0	0	0	0	400	0	0	0	0	(16,400)
1975	0	0	420	0	0	520	0	0	0	0	(18,000)
1976	0	0	471	0	416	589	0	0	0	0	(19,600)
1977	0	0	773	0	271	111	0	0	0	0	0
1978	0	0	5,549	0	934	208	0	0	0	0	(25,384)
1979	0	0	7,555	0	930	133	0	0	0	0	(25,063)
1980	0	0	7,605	0	655	191	0	0	3	0	(27,884)
1981	0	0	10,333	0	966	1,270	0	0	46	0	(31,105)
1982	0	0	7,313	0	8	0	0	0	174	0	(34,326)
1983	0	0	6,253	0	20	38	0	0	268	0	(37,547)
1984	0	0	9,558	0	2	1	0	0	550	0	(40,768)
1985	1,510	0	11,613	32	217	0	16	0	1,786	0	(43,989)
1986	3,041	0	13,808	45	0	163	10	0	1,735	0	(47,210)
1987	2,389	0	15,493	1,624	151	1,080	1,366	0	2,273	5	(50,931)
1988	366	0	17,117	1,261	281	419	143	0	3,210	0	(54,652)
1989	381	0	23,481	7,848	112	971	780	0	3,591	0	(58,373)
1990	282	0	25,843	8,292	84	1,747	34	0	3,988	0	(61,200)
1991	84	1,391	4,282	3,830	131	522	0	0	2,427	0	(18,360)
1992	185	1,310	18,518	3,850	650	251	0	0	3,859	0	(27,624)
1993	164	1,514	23,662	7,597	996	734	0	0	5,098	0	0
1994	299	1,399	25,250	8,119	124	1,098	0	0	4,657	0	0
1995	328	1,227	22,385	6,633	0	480	0	0	4,679	0	0
1996	354	1,316	26,979	11,080	0	494	0	0	5,458	0	0
1997	313	1,272	27,999	11,548	0	444	0	0	5,549	0	0
1998	195	0	25,985	8,557	0	404	0	0	4,468	0	0
1999	377	0	32,409	12,901	36	342	0	0	5,684	0	0
2000	0	0	37,819	9,060	80	0	0	5,002	5,890	0	0
2001	0	0	33,216	10,427	282	0	0	0	4,989	0	0
2002	0	0	36,311	18,496	1,662	0	0	0	5,404	0	0
2003	0	0	39,532	11,547	2,289	0	0	0	6,063	0	0
2004	0	0	40,408	12,139	1,774	0	23	0	6,095	0	0
2005	0	0	41,496	11,678	1,336	0	34	0	5,184	0	5,942
2006	0	0	53,878	12,487	1,415	0	5	0	6,653	0	0
2007	350	0	39,849	16,454	1,475	2,300	0	0	5,764	0	0
2008	0	0	41,045	21,300	1,519	2,300	0	0	5,937	0	0
2009	0	0	42,276	21,300	1,564	2,300	0	0	6,116	0	0
2010	0	0	52,427	21,300	1,966	2,300	0	0	7,008	0	0
2011	0	0	54,001	21,300	2,023	2,300	0	0	7,218	0	0
2012	0	0	119,222	21,300	2,072	2,300	0	0	5,392	0	0
2013	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2014	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2015	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2016	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2017	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2018	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2019	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2020	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2021	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2022	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2023	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2024	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2025	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2026	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2027	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2028	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2029	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2030	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2031	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2032	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2033	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2034	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
2035	0	0	122,034	21,300	1,588	2,300	0	0	4,908	0	0
TOTAL	10,618	9,429	3,808,916	791,905	62,965	79,938	2,411	5,002	250,100	5	(647,274)

d) In accordance with the Exchange Agreement between the noted agencies, MWDSC assumed responsibility for payment of variable OMP&R costs on the exchange water in reaches beyond Reach 22B, and Desert Water Agency and Coachella Valley Water District for such costs from the Delta through Reach 22B. The adjustment in deliveries in Reach 22B provides for compliance with provisions for the repayment of costs under the agreement. In 1993 and after the exchange takes place in Reach 26A.

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 13 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	MOJAVE DIVISION (continued)									SANTA ANA DIV	
	Reach 22B					Reach 23	Reach 24			Reach 26A	
	SCWA	MWA	CVWD(e)	DWA(e)	AVEKWA(f)	MWA	CLAWA	MWA	MWDSC(e)	MWDSC(e)	SBVMWD(g)
[130]	[131]	[132]	[133]	[134]	[135]	[136]	[137]	[138]	[139]	[140]	
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	55	0	0	0	0	464	0	0	0	1,275
1973	0	0	5,800	9,000	0	0	389	0	0	444	32,426
1974	0	0	6,400	10,000	0	14	627	0	0	84,981	16,605
1975	0	0	7,000	11,000	0	0	825	0	0	169,960	13,865
1976	0	0	7,600	12,000	0	0	1,002	0	0	215,312	12,273
1977	0	22	0	0	0	58	1,109	0	0	64,823	24,833
1978	0	0	10,084	15,300	0	0	1,209	0	0	297,708	4,055
1979	0	4,000	10,063	15,000	0	0	1,260	0	0	260,903	18
1980	0	4,000	10,884	17,000	0	0	1,239	0	0	300,345	0
1981	0	4,000	12,105	19,000	0	0	1,485	0	0	395,678	16,021
1982	0	10,500	13,326	21,000	0	0	1,238	0	0	214,566	8,409
1983	0	0	14,547	23,000	0	0	911	0	0	175,288	5,994
1984	0	0	15,768	25,000	0	0	1,128	0	0	122,311	5,556
1985	0	0	16,989	27,000	0	0	1,422	0	0	147,599	7,390
1986	0	0	18,210	29,000	0	0	1,506	0	0	215,265	6,421
1987	0	17	19,431	31,500	214	0	1,849	0	0	175,012	18,751
1988	0	9	20,652	34,000	0	0	2,006	0	0	247,101	21,386
1989	0	0	21,873	36,500	89	200	2,170	0	0	326,217	20,782
1990	0	0	23,100	38,100	10	0	1,827	0	0	399,387	18,831
1991	0	0	6,930	11,430	0	0	849	2,032	0	107,182	3,661
1992	0	42	10,427	17,197	0	0	519	9,334	0	219,524	3,358
1993	0	0	0	0	0	0	439	10,000	0	98,291	4,361
1994	0	14,634	0	0	0	0	785	819	0	192,979	9,135
1995	0	7,495	0	0	0	0	409	0	0	107,299	696
1996	0	6,111	0	0	0	0	485	0	0	73,438	6,064
1997	0	9,038	0	0	0	0	651	0	0	157,215	9,654
1998	0	2,580	0	0	0	0	187	0	0	36,770	1,878
1999	0	6,705	0	0	0	0	1,132	0	0	139,752	12,874
2000	0	10,019	0	0	0	0	1,194	0	0	326,647	18,399
2001	0	3,048	0	0	0	0	1,057	0	0	284,007	26,488
2002	0	2,976	0	0	497	0	2,189	0	0	303,127	63,468
2003	0	13,150	0	0	0	0	1,563	0	17,249	532,198	27,415
2004	0	11,953	0	0	253	0	2,006	0	0	548,654	56,150
2005	0	12,169	0	0	0	0	205	341	14,058	515,676	33,977
2006	0	32,993	0	0	0	0	402	0	0	552,026	35,331
2007	0	10,275	0	0	0	0	3,160	0	0	524,955	71,880
2008	0	24,875	0	0	0	0	3,340	0	0	446,777	72,600
2009	0	33,875	0	0	0	0	3,460	0	0	446,777	72,600
2010	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2011	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2012	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2013	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2014	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2015	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2016	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2017	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2018	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2019	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2020	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2021	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2022	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2023	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2024	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2025	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2026	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2027	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2028	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2029	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2030	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2031	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2032	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2033	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2034	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
2035	0	75,650	0	0	0	0	5,800	0	0	496,437	102,600
TOTAL	0	2,191,441	251,189	402,027	1,063	272	198,498	22,526	31,307	22,333,556	3,432,480

e) In accordance with the Exchange Agreement between the noted agencies, MWDSC assumed responsibility for payment of variable OMP&R costs on the exchange water in reaches beyond Reach 22B, and Desert Water Agency and Coachella Valley Water District for such costs from the Delta through Reach 22B. The adjustment in deliveries in Reach 22B provides for compliance with provisions for the repayment of costs under the agreement. In 1993 and after the exchange takes place in Reach 26A.

f) 1988 advance allocation.

g) Includes 1,650 AF recaptured from ground water storage in 1982, 10,000 AF in 1987, and 8,749 AF in 1988. This water was stored under DWR's Ground Water Demonstration Program.

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 14 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SANTA ANA DIVISION (continued)										
	Reach 26A				Reach 28G	Reach 28H			Reach 28J		
	SGVMWD	SGPWA	CVWD(e)	DWA(e)	MWDSC	CVWD	DWA	MWDSC	CVWD	DWA	MWDSC
[141]	[142]	[143]	[144]	[145]	[146]	[147]	[148]	[149]	[150]	[151]	
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	0	0	0	0	0	0	0	0	
1973	0	0	0	0	18.942	0	0	0	0	0	
1974	612	0	0	0	0	0	0	0	0	0	
1975	5,450	0	0	0	0	0	0	0	0	251	
1976	6,071	0	0	0	0	0	55	0	0	2,000	
1977	8,996	0	0	0	0	0	43	0	0	2,442	
1978	7,771	0	0	0	0	0	48	0	0	64,054	
1979	290	0	0	0	0	0	1,290	0	0	94,353	
1980	1,085	0	0	0	0	0	3,013	0	0	91,532	
1981	3,619	0	0	0	0	0	4,365	0	0	149,405	
1982	12,599	0	0	0	0	0	3,961	0	0	155,629	
1983	734	0	0	0	0	0	6,645	0	0	41,616	
1984	7,656	0	0	0	0	0	109,743	0	0	5,672	
1985	5,028	0	0	0	0	0	182,781	0	0	6,538	
1986	9,454	0	0	0	0	0	131,439	0	0	30,071	
1987	10,630	0	0	0	0	0	144,743	0	0	26,315	
1988	8,948	0	0	0	0	0	199,641	0	0	22,209	
1989	12,839	0	0	0	0	0	247,430	0	0	51,462	
1990	16,649	0	0	0	0	0	257,796	0	0	36,060	
1991	5,399	0	0	0	0	0	38,832	0	0	5,958	
1992	7,908	0	0	0	0	0	85,341	0	0	12,223	
1993	14,397	0	23,100	38,100	0	0	61,841	0	0	4,588	
1994	15,230	0	14,102	23,257	0	0	134,262	0	0	4,725	
1995	12,922	0	23,100	38,100	0	0	117,762	0	0	21,099	
1996	15,989	0	62,219	102,622	0	0	144,906	0	0	12,418	
1997	18,175	0	58,100	53,100	0	0	107,853	0	0	47,777	
1998	9,310	0	78,100	58,100	0	6,582	7,708	77,473	1,027	4,839	50,411
1999	21,729	0	50,480	58,100	0	0	206,689	0	0	8,163	
2000	15,140	0	42,323	58,234	0	0	379,713	0	0	7,864	
2001	2,360	0	9,100	15,010	0	0	260,984	0	0	33,414	
2002	24,851	0	16,755	27,640	0	0	340,635	0	0	41,552	
2003	21,934	116	14,443	23,819	0	0	246,485	0	0	50,776	
2004	12,541	841	15,465	21,190	0	0	357,995	0	0	20,437	
2005	13,984	692	42,519	49,089	0	0	242,245	0	0	114,499	
2006	16,284	4,278	121,100	50,000	0	0	342,734	0	0	32,242	
2007	28,800	7,500	60,550	27,750	0	0	95,781	0	0	253,518	
2008	26,240	17,300	121,100	50,000	0	0	81,110	0	0	248,457	
2009	26,240	17,300	121,100	50,000	0	0	81,110	0	0	248,457	
2010	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2011	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2012	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2013	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2014	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2015	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2016	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2017	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2018	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2019	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2020	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2021	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2022	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2023	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2024	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2025	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2026	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2027	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2028	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2029	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2030	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2031	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2032	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2033	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2034	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
2035	28,800	17,300	121,100	50,000	0	0	102,710	0	0	299,197	
TOTAL	1,176,664	497,827	4,022,256	2,044,111	18,942	6,582	7,708	7,367,204	1,027	4,839	9,777,309

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 15 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	WEST BRANCH									COASTAL BRANCH	
	Reach 29F	Reach 29H	Reach 30						Reach 31A		
	AVEKWA	VCFCD	CVWD	DWA	MWDSC(h)	VCFCD	SBVMWD(g)	CLWA	SBCFC&WCD	DRWD	CK
[152]	[153]	[154]	[155]	[156]	[157]	[158]	[159]	[160]	[161]	[162]	
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	53	0	0	0	71,938	0	0	0	0	0	0
1973	20	0	0	0	155,297	0	0	0	0	0	0
1974	36	0	0	0	209,136	0	0	0	0	0	0
1975	26	0	0	0	374,280	0	0	0	0	0	0
1976	24	0	0	0	420,684	0	0	0	0	0	0
1977	0	0	0	0	122,447	0	0	0	0	0	0
1978	0	0	0	0	171,139	0	0	0	0	0	0
1979	0	0	0	0	145,591	0	0	7	0	0	0
1980	0	0	0	0	164,721	0	0	1,210	0	0	0
1981	0	0	0	0	277,503	0	0	5,761	0	0	0
1982	0	0	0	0	351,362	0	0	9,516	0	0	0
1983	0	0	0	0	157,519	0	0	9,476	0	0	0
1984	0	0	0	0	260,624	0	0	11,477	0	0	0
1985	0	0	0	0	390,696	0	0	12,401	0	0	0
1986	0	0	0	0	379,275	0	0	13,928	0	0	0
1987	0	0	0	0	417,285	0	0	16,167	0	0	0
1988	0	0	0	0	488,285	0	0	18,904	0	0	0
1989	0	0	0	0	589,962	0	0	21,719	0	0	0
1990	0	4,836	0	0	764,380	0	0	22,139	0	0	0
1991	0	988	0	0	257,835	0	0	3,846	1,240	0	0
1992	0	0	0	0	420,849	0	0	14,812	0	0	0
1993	6	0	0	0	437,470	0	0	13,787	0	0	0
1994	0	0	0	0	475,900	0	0	14,919	0	0	0
1995	0	0	0	0	139,882	0	0	17,747	0	0	0
1996	0	0	0	0	267,618	0	0	18,448	0	0	0
1997	11	0	10,240	16,890	271,379	1,850	0	22,842	0	0	0
1998	7	0	0	0	187,277	1,850	0	19,782	0	0	0
1999	0	0	0	0	327,001	1,850	0	28,813	0	0	0
2000	0	2,200	0	0	632,991	1,850	0	31,085	0	0	0
2001	0	0	0	0	444,764	1,850	0	30,701	0	0	0
2002	0	3,148	0	0	723,605	1,850	8,601	42,080	0	0	0
2003	0	3,150	0	0	678,964	1,850	0	51,735	0	0	0
2004	0	4,047	0	0	797,294	1,203	0	47,463	0	0	0
2005	0	0	0	0	538,839	1,665	0	36,747	0	4,684	0
2006	0	0	0	0	574,679	1,850	0	40,017	0	0	0
2007	0	3,150	0	0	723,778	16,850	0	36,500	0	0	305
2008	0	3,150	0	0	687,474	16,850	0	45,000	0	0	305
2009	0	3,150	0	0	687,474	16,850	0	46,000	0	0	305
2010	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2011	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2012	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2013	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2014	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2015	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2016	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2017	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2018	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2019	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2020	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2021	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2022	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2023	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2024	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2025	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2026	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2027	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2028	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2029	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2030	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2031	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2032	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2033	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2034	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
2035	0	3,150	0	0	765,474	16,850	0	78,200	0	0	305
TOTAL	183	109,719	10,240	16,890	35,089,501	506,318	8,601	2,738,229	1,240	4,684	8,845

h) Deliveries exclude 6,171 AF of 1982 exchange water.

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Sheet 16 of 16

Calendar Year	CALIFORNIA AQUEDUCT (continued)								TOTAL	GRAND TOTAL
	COASTAL BRANCH									
	Reach 31A				Reach 34	Reach 35				
	KCWA (M&I)	KCWA (AG)	CLWA	MWDSC	SLOCFC&WCD	SLOCFC&WCD	SBCFC&WCD			
[163]	[164]	[165]	[166]	[167]	[168]	[169]	[170]	[171]		
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	7,439	0	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	2,897,579	
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	2,033,996	2,173,262	
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	3,054,577	3,231,641	
2005	0	68,190	2,709	0	0	4,251	23,344	3,599,377	3,753,001	
2006	0	85,214	2,735	0	4,209	0	3,506,737	3,506,737	3,668,314	
2007	0	87,352	3,000	0	4,113	0	31,766	3,610,320	3,790,908	
2008	0	87,600	3,000	0	4,824	0	45,486	3,428,691	3,616,310	
2009	0	87,600	3,000	0	0	4,824	45,486	3,440,812	3,631,453	
2010	0	87,600	6,000	0	0	25,000	45,486	3,885,376	4,129,721	
2011	0	87,600	6,000	0	0	25,000	45,486	3,885,376	4,130,176	
2012	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,130,631	
2013	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,131,046	
2014	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,131,561	
2015	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,132,386	
2016	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,133,111	
2017	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,133,736	
2018	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,134,361	
2019	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,134,986	
2020	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,586	
2021	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2022	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2023	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2024	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2025	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2026	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2027	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2028	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2029	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2030	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2031	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2032	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2033	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2034	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
2035	0	87,600	6,000	0	0	25,000	45,486	3,859,109	4,135,686	
TOTAL	200	5,803,800	510,679	5662	22,002	679,871	1,524,183	178,806,501	191,617,374	

TABLE B-5B. Annual Water Quantities Delivered to Each Contractor

(in acre-feet)

Sheet 1 of 4

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA (b)				CENTRAL COASTAL AREA		
	Napa (a County FC&WCD	Solano County WA	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[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	50,910	37,652	82,945	171,507	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	7,669	37,819	45,488	47,512	44,599	128,249	220,360	4,251	23,344	27,595
2006	7,789	35,516	43,305	54,528	43,079	128,210	225,817	4,209	23,275	27,484
2007	18,007	41,694	59,701	59,771	40,000	133,297	233,068	4,113	31,766	35,879
2008	19,100	40,845	59,945	63,226	24,578	89,440	177,244	4,824	45,486	50,310
2009	19,400	40,845	60,245	65,884	24,572	89,440	179,896	4,824	45,486	50,310
2010	23,850	47,506	71,356	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2011	24,175	47,556	71,731	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2012	24,500	47,606	72,106	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2013	24,775	47,656	72,431	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2014	25,150	47,706	72,856	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2015	25,825	47,756	73,581	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2016	26,450	47,756	74,206	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2017	27,075	47,756	74,831	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2018	27,700	47,756	75,456	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2019	28,325	47,756	76,081	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2020	28,925	47,756	76,681	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2021	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2022	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2023	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2024	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2025	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2026	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2027	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2028	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2029	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2030	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2031	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2032	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2033	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2034	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2035	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
TOTAL	986,627	1,899,376	2,886,003	3,173,279	1,994,446	6,208,371	11,376,096	702,073	1,526,168	2,228,241

a) For the period 1968 through 1987, deliveries are non-Project water pumped through an interim facility.
 b) For the period June 1962 through November 1967, deliveries were supplied by non-Project water.

TABLE B-5B. Annual Water Quantities Delivered to Each Contractor

(in acre-feet)

Sheet 2 of 4

Calendar Year	SAN JOAQUIN VALLEY AREA								
	Dudley Ridge Water District	Empire West Side Irrigation District	Kern County Water Agency			County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
			Municipal and Industrial	Agricultural	Total				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	26,360	1,978	0	127,384	127,384	900	3,084	25,100	184,806
1969	31,375	56	0	141,265	141,265	100	3,016	9,923	185,735
1970	40,407	3,942	0	204,634	204,634	0	5,911	9,578	264,472
1971	41,053	5,990	0	360,151	360,151	3,700	7,212	122,485	540,591
1972	42,443	5,795	0	490,781	490,781	1,400	8,166	258,393	806,978
1973	22,057	3,000	0	341,469	341,469	1,500	3,214	50,464	421,704
1974	33,390	3,000	23,708	323,292	347,000	1,500	3,471	72,289	460,650
1975	40,555	3,000	14,529	396,291	410,820	1,600	3,576	86,258	545,809
1976	41,421	3,000	46,719	392,531	439,250	1,600	4,112	58,811	548,194
1977	11,153	738	27,882	163,425	191,307	1,530	1,472	18,081	224,281
1978	51,747	454	76,895	590,452	667,347	2,070	3,906	12,053	737,577
1979	38,544	1,739	62,997	683,049	746,046	2,000	6,149	155,121	949,599
1980	41,000	894	45,943	588,557	634,500	2,200	5,700	75,444	759,738
1981	41,000	5,859	75,758	615,642	691,400	2,300	4,300	83,438	828,297
1982	41,000	361	47,477	697,823	745,300	1,750	3,838	18,551	810,800
1983	42,900	0	6,854	587,653	594,507	3,550	3,822	1,006	645,785
1984	45,100	0	90,904	769,696	860,600	3,100	5,700	5,743	920,243
1985	46,251	5,197	88,515	800,381	888,896	3,400	5,433	109,791	1,058,968
1986	50,249	1,170	77,240	829,101	906,341	3,700	5,107	79,355	1,045,922
1987	46,288	2,525	117,174	852,731	969,905	4,000	5,625	93,084	1,121,427
1988	47,994	3,475	122,409	887,111	1,009,520	4,000	4,412	95,866	1,165,267
1989	57,049	3,000	123,896	1,022,166	1,146,062	4,000	6,091	127,950	1,344,152
1990	36,296	1,279	127,837	584,611	712,448	2,000	2,922	57,070	812,015
1991	927	221	33,122	8,965	42,087	0	141	2,180	45,556
1992	23,770	1,354	62,326	420,894	483,220	1,806	2,239	46,728	559,117
1993	50,618	2,741	128,316	1,039,614	1,167,930	4,000	4,858	124,468	1,354,615
1994	28,793	1,666	87,139	570,020	657,159	2,116	3,071	62,362	755,167
1995	60,686	1,631	135,415	1,016,114	1,151,529	4,000	5,169	101,869	1,324,884
1996	56,948	1,868	135,654	1,049,409	1,185,063	4,000	4,904	236,875	1,489,658
1997	71,368	0	120,708	987,451	1,108,159	0	5,238	22,369	1,207,074
1998	55,660	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	632,831	654,291	1,560	3,592	84,726	787,077
2002	48,170	1,405	90,967	737,864	828,831	2,854	4,885	96,502	922,647
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	127,711	716,220	843,931	9,053	4,629	90,021	1,000,276
2005	79,005	3,834	92,581	1,305,400	1,397,981	19,806	4,194	140,002	1,644,822
2006	72,080	3,282	99,302	1,143,992	1,243,294	9,530	4,242	108,207	1,440,635
2007	62,853	4,200	136,640	916,470	1,053,110	10,136	5,313	123,767	1,259,379
2008	57,343	3,000	138,540	830,507	969,047	9,305	5,700	95,922	1,140,317
2009	57,343	3,000	138,540	830,507	969,047	9,305	5,700	95,922	1,140,317
2010	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2011	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2012	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2013	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2014	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2015	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2016	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2017	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2018	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2019	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2020	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2021	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2022	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2023	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2024	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2025	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2026	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2027	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2028	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2029	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2030	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2031	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2032	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2033	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2034	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
2035	57,343	3,000	134,600	864,130	998,730	9,305	5,700	95,922	1,170,000
TOTAL	3,388,990	174,529	6,683,138	50,844,781	57,527,919	392,608	336,360	6,166,312	67,986,718

TABLE B-5B. Annual Water Quantities Delivered to Each Contractor

(in acre-feet)

Sheet 3 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency(c)	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[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	13,326	13,326	1,238	21,000	0	10,500	0	8,409	12,599
1983	32,961	22,135	14,547	911	23,000	38	0	0	5,994	734
1984	32,662	24,218	15,768	1,128	25,000	1	0	0	5,556	7,656
1985	37,064	24,500	16,989	1,422	27,000	0	0	1,558	7,390	5,028
1986	32,449	27,229	18,210	1,506	29,000	163	0	3,096	6,421	9,454
1987	34,089	27,988	19,431	1,849	31,500	1,085	17	5,379	18,751	10,630
1988	34,079	30,438	20,652	2,006	34,000	419	9	1,770	21,386	8,948
1989	45,280	36,364	21,873	2,170	36,500	971	200	9,009	20,782	12,839
1990	47,206	28,579	23,100	1,827	38,100	1,747	0	8,608	18,831	16,649
1991	9,568	4,562	6,930	849	11,430	522	3,423	3,914	3,661	5,399
1992	30,265	20,699	10,427	519	17,197	251	10,686	4,035	3,358	7,908
1993	43,102	23,039	23,100	439	38,100	734	11,514	7,761	4,361	14,397
1994	49,153	26,441	14,102	785	23,257	1,098	16,852	8,418	9,135	15,230
1995	47,286	27,233	23,100	409	38,100	480	8,722	6,961	696	12,922
1996	56,356	32,500	62,219	485	102,622	494	7,427	11,434	6,064	15,989
1997	62,393	27,712	68,340	651	69,990	444	10,374	11,861	9,654	18,175
1998	52,926	20,093	85,709	187	70,647	404	3,925	8,752	1,878	9,310
1999	69,073	32,899	50,480	1,132	58,100	342	8,144	13,278	12,874	21,729
2000	83,577	40,680	42,323	1,194	58,234	0	11,380	9,060	18,399	15,140
2001	62,857	31,939	9,100	1,057	15,010	0	4,433	10,427	26,488	2,360
2002	58,171	68,817	16,755	2,189	27,640	0	4,346	18,496	72,069	24,851
2003	60,029	55,736	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	59,831	59,456	42,519	205	49,089	0	13,561	11,712	33,977	13,984
2006	80,384	62,752	121,100	402	50,000	0	34,014	12,492	35,331	16,284
2007	64,812	39,500	60,550	3,160	27,750	2,300	11,510	16,804	71,880	28,800
2008	66,684	48,000	121,100	3,340	50,000	2,300	26,110	21,300	72,600	26,240
2009	68,685	49,000	121,100	3,460	50,000	2,300	35,110	21,300	72,600	26,240
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
TOTAL	5,412,160	3,639,825	4,291,294	198,498	2,475,575	79,943	2,242,817	804,934	3,441,081	1,176,664

c) Devil's Den Water District merged with Castaic Lake Water Agency effective January 1, 1992.

TABLE B-5B. Annual Water Quantities Delivered to Each Contractor

(in acre-feet)

Sheet 4 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA (contd.)				FEATHER RIVER AREA				South Bay Area Future Contractor	GRAND TOTAL
	San Geronio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total		
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
1962	0	0	0	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	0	0	0	56,763
1968	0	0	0	7,382	0	0	0	0	0	294,457
1969	0	0	0	9,970	0	0	0	0	0	268,104
1970	0	0	0	11,739	0	0	70	70	0	369,459
1971	0	0	0	12,490	0	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	2,898,961
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	2,174,840
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	0	2,874	0	3,234,515
2005	692	1,528,045	1,665	1,814,736	1,894	527	0	2,421	0	3,755,422
2006	4,278	1,512,186	1,850	1,931,073	5,342	468	0	5,810	0	3,674,124
2007	7,500	1,847,595	20,000	2,202,161	4,800	1,197	720	6,717	0	3,796,905
2008	17,300	1,711,500	20,000	2,186,474	4,800	1,212	2,020	8,032	0	3,622,322
2009	17,300	1,711,500	20,000	2,198,595	4,800	1,236	2,090	8,126	0	3,637,489
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
TOTAL	497,827	82,180,129	616,037	107,056,784	278,237	723,435	83,532	1,085,204	0	192,619,046

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Sheet 1 of 9

Calendar Year	NORTH BAY AQUEDUCT											
	Barker Slough Pumping Plant				Cordelia Pumping Plant Solano County WA				Cordelia Pumping Plant Napa County FC&WCD			
	Initial Fill Water	Operational Losses	Water Supply Delivery	Total	Initial Fill Water	Operational Losses	Water Supply Delivery	Total	Initial Fill Water	Operational Losses	Water Supply Delivery (a)	Total
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[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	2,131	51,136	53,317	0	0	22,051	22,051	0	0	8,134	8,134
2005	0	935	45,488	46,423	0	0	19,529	19,529	0	0	7,669	7,669
2006	0	51	43,305	43,356	0	0	18,651	18,651	0	5	8,081	8,086
2007	0	51	59,701	59,752	0	0	22,412	22,412	0	5	18,382	18,387
2008	0	51	59,945	59,996	0	0	20,475	20,475	0	5	19,600	19,605
2009	0	51	60,245	60,296	0	0	20,475	20,475	0	5	19,900	19,905
2010	0	51	71,356	71,407	0	0	20,475	20,475	0	5	23,850	23,855
2011	0	51	71,731	71,782	0	0	20,475	20,475	0	5	24,175	24,180
2012	0	51	72,106	72,157	0	0	20,475	20,475	0	5	24,500	24,505
2013	0	51	72,431	72,482	0	0	20,475	20,475	0	5	24,775	24,780
2014	0	51	72,856	72,907	0	0	20,475	20,475	0	5	25,150	25,155
2015	0	51	73,581	73,632	0	0	20,475	20,475	0	5	25,825	25,830
2016	0	51	74,206	74,257	0	0	20,475	20,475	0	5	26,450	26,455
2017	0	51	74,831	74,882	0	0	20,475	20,475	0	5	27,075	27,080
2018	0	51	75,456	75,507	0	0	20,475	20,475	0	5	27,700	27,705
2019	0	51	76,081	76,132	0	0	20,475	20,475	0	5	28,325	28,330
2020	0	51	76,681	76,732	0	0	20,475	20,475	0	5	28,925	28,930
2021	0	51	76,781	76,832	0	0	19,575	19,575	0	5	29,025	29,030
2022	0	51	76,781	76,832	0	0	12,725	12,725	0	5	29,025	29,030
2023	0	51	76,781	76,832	0	0	20,475	20,475	0	5	29,025	29,030
2024	0	51	76,781	76,832	0	0	20,475	20,475	0	5	29,025	29,030
2025	0	51	76,781	76,832	0	0	20,475	20,475	0	5	29,025	29,030
2026	0	51	76,781	76,832	0	0	20,475	20,475	0	5	29,025	29,030
2027	0	51	76,781	76,832	0	0	20,475	20,475	0	5	29,025	29,030
2028	0	51	76,781	76,832	0	0	19,575	19,575	0	5	29,025	29,030
2029	0	51	76,781	76,832	0	0	18,675	18,675	0	5	29,025	29,030
2030	0	51	76,781	76,832	0	0	17,775	17,775	0	5	29,025	29,030
2031	0	51	76,781	76,832	0	0	16,775	16,775	0	5	29,025	29,030
2032	0	51	76,781	76,832	0	0	20,475	20,475	0	5	29,025	29,030
2033	0	51	76,781	76,832	0	0	20,475	20,475	0	5	29,025	29,030
2034	0	51	76,781	76,832	0	0	20,475	20,475	0	5	29,025	29,030
2035	0	51	76,781	76,832	0	0	19,575	19,575	0	5	29,025	29,030

a) For the period 1968 through 1987, deliveries are non-SWP water pumped through an interim facility.

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Sheet 2 of 9

Calendar Year	SOUTH BAY AQUEDUCT						CALIFORNIA AQUEDUCT									
	South Bay Pumping Plant						North San Joaquin Division Banks Pumping Plant									
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		Total	Conservation Water	Total		
				Water Supply (b)	Recreation					Water Supply	Recreation					
[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]			
1961	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1962	9	272	0	8,906	0	9,187	0	0	0	0	0	0	0	0		
1963	71	185	0	12,645	0	12,901	0	0	0	0	0	0	0	0		
1964	171	152	0	20,911	0	21,234	0	0	0	0	0	0	0	0		
1965	93	729	0	34,026	0	34,848	0	0	0	0	0	0	0	0		
1966	0	1,746	0	54,913	0	56,659	0	0	0	0	0	0	0	0		
1967	0	1,677	0	56,763	0	58,440	5,746	1,183	0	11,538	0	18,467	2,957	21,424		
1968	0	1,847	0	101,055	0	102,902	11,079	74,464	0	293,243	0	378,786	531,275	910,061		
1969	3,449	2,668	0	69,712	0	75,829	7,336	44,287	0	265,417	0	317,040	531,185	848,225		
1970	16,279	1,086	(5,355)	89,560	0	101,570	23,947	20,767	(5,355)	365,771	0	405,130	(12,995)	392,135		
1971	0	1,815	8,854	98,584	0	109,253	23,207	(10,754)	8,854	651,665	8	672,980	7,708	680,688		
1972	0	3,557	2,273	138,426	0	144,256	145,066	9,057	(4,285)	1,033,432	6,489	1,189,759	48,300	1,238,059		
1973	0	(33)	(1,510)	94,078	0	92,535	214,941	(4,951)	2,902	733,008	1,155	947,055	55,846	1,002,901		
1974	0	1,287	(10,056)	89,318	0	80,549	247,894	(11,526)	(32,510)	873,302	2,118	1,079,278	54,683	1,133,961		
1975	0	320	8,550	93,604	0	102,474	110,149	(8,092)	16,101	1,223,332	3,377	1,344,867	(102,625)	1,242,242		
1976	0	2,431	1,391	126,431	141	130,394	67,834	5,443	(244,124)	1,372,093	1,745	1,202,991	(442,348)	760,643		
1977	0	2,866	2,685	107,704	112	113,367	0	39,897	(157,543)	573,146	1,111	456,611	(13,507)	443,104		
1978	0	2,165	(11,249)	112,574	126	103,616	67,457	(36,898)	35,129	1,451,842	1,177	1,518,707	752,075	2,270,782		
1979	0	2,401	1,069	122,190	89	125,749	17,397	60,558	(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	98,897	1,743,145	4,646	1,915,223	347,983	2,263,206		
1983	0	2,151	(22,886)	94,556	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	755	76,661	147	80,445	0	91,391	(218,170)	1,451,436	2,605	1,327,262	61,343	1,388,605		
1993	0	1,940	(20,051)	105,971	143	88,003	0	149,372	(273,789)	2,279,323	2,609	2,157,515	849,249	3,006,764		
1994	0	1,981	1,714	100,568	168	104,431	0	148,712	(120,985)	1,828,072	3,803	1,859,802	(324,640)	1,534,962		
1995	0	1,188	(12,333)	76,640	146	65,641	0	173,074	(397,605)	2,003,475	2,575	1,781,519	293,159	2,074,678		
1996	0	981	(1,990)	77,215	150	76,356	0	123,502	78,123	2,507,143	3,902	2,712,670	288,576	3,001,246		
1997	0	1,575	5,016	102,186	155	108,932	527	135,106	(98,334)	2,366,152	2,594	2,406,045	(50,000)	2,356,045		
1998	0	1,551	3,595	70,876	114	76,136	0	91,319	(346,039)	1,728,257	2,107	1,475,644	120,886	1,596,530		
1999	0	2,166	12,313	100,497	139	115,115	0	135,809	(17,569)	2,855,522	4,301	2,978,063	(307,839)	2,670,224		
2000	0	2,346	(20,958)	135,533	145	117,066	0	115,895	(13,232)	3,471,397	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)	1,903,742	1,978	2,110,335	86,928	2,197,263		
2002	0	2,534	(13,938)	123,577	146	112,319	0	225,032	36,404	2,805,631	4,672	3,071,739	(151,719)	2,920,020		
2003	0	2,920	(1,399)	132,714	131	134,366	0	226,713	(49,590)	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)	2,279,173	1,337	3,017,142	146,889	3,164,030		
2005	0	2,823	(3,565)	108,136	154	107,548	0	120,419	(163,243)	3,667,721	1,270	3,626,167	571,155	4,197,322		
2006	0	3,301	(2,807)	118,272	169	118,935	0	136,198	(63,771)	3,570,770	1,201	3,644,398	95,679	3,740,077		
2007	0	3,271	(815)	120,167	400	123,023	0	108,468	134,194	3,730,487	8,667	3,981,816	(508,911)	3,472,905		
2008	0	3,270	185	125,654	400	129,509	0	101,686	178	3,554,345	8,660	3,664,869	(88,628)	3,576,241		
2009	0	3,270	185	128,306	400	132,161	0	101,686	182	3,569,118	8,660	3,679,646	69,276	3,748,922		
2010	0	3,351	0	170,829	400	174,580	0	128,523	4,288	4,056,205	8,660	4,197,676	182,970	4,380,646		
2011	0	3,351	0	170,829	400	174,580	0	128,364	64,678	4,056,205	8,660	4,257,907	137,242	4,395,149		
2012	0	3,351	0	197,096	400	200,847	0	128,100	(67,943)	4,056,205	8,660	4,125,022	(260,827)	3,864,195		
2013	0	3,351	0	197,096	400	200,847	0	128,264	9,749	4,056,205	8,660	4,202,878	145,525	4,348,403		
2014	0	3,351	0	197,096	400	200,847	0	130,280	16,625	4,056,205	8,660	4,211,770	(186,678)	4,025,092		
2015	0	3,351	0	197,096	400	200,847	0	130,445	32,003	4,056,205	8,660	4,227,313	(31,516)	4,195,797		
2016	0	3,351	0	197,096	400	200,847	0	128,415	(28,401)	4,056,205	8,660	4,164,879	205,134	4,370,013		
2017	0	3,351	0	197,096	400	200,847	0	128,602	61,309	4,056,205	8,660	4,254,776	119,885	4,374,661		
2018	0	3,351	0	197,096	400	200,847	0	128,369	(80,817)	4,056,205	8,660	4,112,417	(194,534)	3,917,883		
2019	0	3,351	0	197,096	400	200,847	0	128,613	50,179	4,056,205	8,660	4,243,657	77,224	4,320,881		
2020	0	3,351	0	197,096	400	200,847	0	128,690	(366)	4,056,205	8,660	4,193,189	(8,687)	4,184,502		
2021	0	3,351	0	197,096	400	200,847	0	128,769	10,725	4,056,205	8,660	4,204,359	(1,095)	4,203,264		
2022	0	3,351	0	197,096	400	200,847	0	128,846	(3,483)	4,056,205	8,660	4,190,228	(185,907)	4,004,321		
2023	0	3,351	0	197,096	400	200,847	0	128,818	(18,971)	4,056,205	8,660	4,174,712	115,791	4,290,503		
2024	0	3,351	0	197,096	400	200,847	0	128,625	11,289	4,056,205	8,660	4,204,779	79,859	4,284,637		
2025	0	3,351	0	197,096	400	200,847	0	130,380	(12,518)	4,056,205	8,660	4,182,727	(247,205)	3,935,522		
2026	0	3,351	0	197,096	400	200,847	0	128,700	24,308	4,056,205	8,660	4,217,873	246,850	4,464,723		
2027	0	3,351	0	197,096	400	200,847	0	128,692	(17,799)	4,056,205	8,660	4,175,758	(12,304)	4,163,454		
2028	0	3,351	0	197,096	400	200,847	0	128,783	12,291	4,056,205	8,660	4,205,939	15,430	4,221,369		
2029	0	3,351	0	197,096	400	200,847	0	128,671	(9,046)	4,056,205	8,660	4,184,490	(10,778)	4,173,712		
2030	0	3,351	0	197,096	400	200,847	0	128,777	20,756	4,056,205	8,660	4,214,398	124,586	4,338,984		
2031	0	3,351	0	197,096	400	200,847	0	128,134	(97,726)	4,056,205	8,660	4,095,273	(259,831)	3,835,442		
2032	0	3,351	0	197,096	400	200,847	0	128,005	84,999	4,056,205	8,660	4,277,869	138,527	4,416,396		
2033	0	3,351	0	197,096	400	200,847	0	127,876	(94,652)	4,056,205	8,660	4,098,089	(184,372)	3,913,717		
2034	0	3,351	0	197,096	400	200,847	0	127,725	69,593	4,056,205	8,660	4,262,183	120,375	4,382,558		
2035	0	3,351	0	197,096	400	200,847	0	127,379	(242,659)	4,056,205	8,660	3,949,585	(587,5			

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Sheet 3 of 9

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	San Luis Division						South San Joaquin Division				
	Dos Amigos Pumping Plant						Buena Vista Pumping Plant				
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries	
Water Supply				Recreation	Water Supply					Recreation	
[27]	[28]	[29]	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]
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
1972	145,066	(6,635)	(6,558)	886,840	6,481	1,025,194	100,274	20,044	(6,558)	223,262	6,481
1973	214,941	(6,778)	1,329	635,716	1,147	846,355	204,638	35,695	1,329	311,096	1,147
1974	247,894	(16,765)	(15,295)	780,513	2,108	998,545	237,554	19,672	(15,295)	388,949	2,108
1975	110,149	(12,144)	(693)	1,126,152	3,358	1,226,822	103,352	26,342	(693)	672,531	3,358
1976	67,834	(456)	(152,171)	1,241,550	1,581	1,158,338	61,122	29,428	(152,171)	785,055	1,581
1977	0	26,359	(116,219)	463,970	737	374,847	0	25,173	(116,219)	271,944	560
1978	67,457	1,905	79,308	1,335,362	680	1,484,712	65,027	17,751	121,904	762,043	674
1979	17,397	33,884	(51,299)	1,530,926	685	1,531,593	12,302	46,157	(51,299)	737,714	502
1980	3,159	34,391	(272,825)	1,407,663	1,514	1,173,902	0	49,025	(134,009)	778,059	1,262
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
1982	5,979	57,146	116,086	1,631,868	4,205	1,815,294	0	29,059	117,174	990,863	4,045
1983	6,071	63,583	(101,155)	1,085,804	7,475	1,061,778	0	40,205	(101,155)	593,920	7,291
1984	38,649	109,263	(112,744)	1,484,114	5,391	1,524,673	0	38,487	(114,984)	781,955	5,244
1985	0	86,772	138,898	1,858,111	4,936	2,088,717	0	42,838	139,689	992,606	4,804
1986	0	51,963	19,989	1,877,183	3,426	1,952,561	0	36,751	37,546	1,014,294	3,285
1987	0	64,827	(25,707)	1,978,945	7,121	2,025,186	0	30,495	(25,522)	1,027,361	6,937
1988	0	72,679	(34,592)	2,217,126	4,490	2,259,703	0	38,804	(29,747)	1,244,196	4,360
1989	0	90,090	(29,411)	2,679,845	7,652	2,748,176	0	29,594	(60,826)	1,532,625	7,490
1990	0	115,074	(11,323)	2,394,999	8,922	2,507,672	0	46,865	(15,092)	1,769,991	8,879
1991	0	92,227	9,325	489,348	4,605	595,505	0	39,274	96,506	446,916	4,560
1992	0	118,796	(225,603)	1,372,536	2,079	1,267,808	0	28,138	(98,271)	920,978	1,995
1993	0	136,432	(220,537)	2,170,494	1,864	2,088,253	0	14,186	(128,363)	908,200	1,676
1994	0	152,414	(78,957)	1,724,433	3,098	1,800,988	0	35,083	(88,211)	1,107,122	2,918
1995	0	137,937	(12,473)	1,921,666	1,711	2,048,841	0	33,963	(16,431)	706,742	1,669
1996	0	45,591	14,927	2,425,024	2,998	2,488,540	0	31,304	15,438	988,612	2,928
1997	527	107,033	(66,814)	2,247,628	2,090	2,290,464	0	42,670	40,852	1,054,461	2,076
1998	0	95,185	(338,076)	1,664,080	1,589	1,422,778	0	41,910	(106,487)	753,731	1,585
1999	0	95,262	(2,778)	2,750,154	3,285	2,845,923	0	48,502	(2,807)	1,131,826	3,279
2000	0	134,231	7,726	3,270,211	4,222	3,416,390	0	37,514	7,726	1,809,219	4,216
2001	0	150,830	(18,830)	1,615,422	1,218	1,748,640	0	31,361	(18,830)	1,318,987	1,211
2002	0	92,905	50,342	2,625,006	3,968	2,772,221	0	41,565	50,342	1,831,874	3,961
2003	0	85,360	(48,181)	2,879,993	10,656	2,927,828	0	43,352	(48,181)	1,895,852	10,645
2004	0	25,865	3,161	2,807,781	652	2,837,459	0	41,551	3,161	2,102,335	649
2005	0	62,569	(159,678)	3,425,322	581	3,328,794	0	35,019	(159,678)	1,848,012	559
2006	0	73,012	(60,964)	3,501,069	504	3,513,621	0	43,550	(60,964)	2,076,891	504
2007	0	72,905	135,009	3,581,463	7,210	3,796,587	0	43,443	135,009	2,112,795	7,010
2008	0	73,506	(7)	3,419,981	7,210	3,500,690	0	44,044	(7)	2,119,852	7,010
2009	0	73,506	(3)	3,432,102	7,210	3,512,815	0	44,044	(3)	2,131,973	7,010
2010	0	70,198	4,288	3,876,666	7,210	3,958,362	0	40,736	4,288	2,516,078	7,010
2011	0	70,389	64,678	3,876,666	7,210	4,018,943	0	40,927	64,678	2,516,078	7,010
2012	0	70,279	(67,943)	3,850,396	7,210	3,859,942	0	40,817	(67,943)	2,512,478	7,010
2013	0	70,217	9,749	3,850,396	7,210	3,937,572	0	40,755	9,749	2,512,478	7,010
2014	0	70,525	16,625	3,850,396	7,210	3,944,756	0	41,063	16,625	2,512,478	7,010
2015	0	70,654	32,003	3,850,396	7,210	3,960,263	0	41,192	32,003	2,512,478	7,010
2016	0	70,354	(28,401)	3,850,396	7,210	3,899,559	0	40,892	(28,401)	2,512,478	7,010
2017	0	70,586	61,309	3,850,396	7,210	3,989,501	0	41,124	61,309	2,512,478	7,010
2018	0	70,740	(80,817)	3,850,396	7,210	3,847,529	0	41,278	(80,817)	2,512,478	7,010
2019	0	70,564	50,179	3,850,396	7,210	3,978,349	0	41,102	50,179	2,512,478	7,010
2020	0	70,628	(366)	3,850,396	7,210	3,927,868	0	41,166	(366)	2,512,478	7,010
2021	0	70,711	10,725	3,850,396	7,210	3,939,042	0	41,249	10,725	2,512,478	7,010
2022	0	70,705	(3,483)	3,850,396	7,210	3,924,828	0	41,243	(3,483)	2,512,478	7,010
2023	0	70,696	(18,971)	3,850,396	7,210	3,909,331	0	41,234	(18,971)	2,512,478	7,010
2024	0	70,575	11,289	3,850,396	7,210	3,939,470	0	41,113	11,289	2,512,478	7,010
2025	0	70,638	(12,518)	3,850,396	7,210	3,915,726	0	41,176	(12,518)	2,512,478	7,010
2026	0	70,650	24,308	3,850,396	7,210	3,952,564	0	41,188	24,308	2,512,478	7,010
2027	0	70,563	(17,799)	3,850,396	7,210	3,910,370	0	41,101	(17,799)	2,512,478	7,010
2028	0	70,703	12,291	3,850,396	7,210	3,940,600	0	41,241	12,291	2,512,478	7,010
2029	0	70,630	(9,046)	3,850,396	7,210	3,919,190	0	41,168	(9,046)	2,512,478	7,010
2030	0	70,694	20,756	3,850,396	7,210	3,949,056	0	41,232	20,756	2,512,478	7,010
2031	0	70,566	(97,726)	3,850,396	7,210	3,830,446	0	41,104	(97,726)	2,512,478	7,010
2032	0	70,188	84,999	3,850,396	7,210	4,012,773	0	40,706	84,999	2,512,478	7,010
2033	0	70,373	(94,652)	3,850,396	7,210	3,833,327	0	40,911	(94,652)	2,512,478	7,010
2034	0	69,865	69,593	3,850,396	7,210	3,997,064	0	40,403	69,593	2,512,478	7,010
2035	0	69,205	(242,659)	3,850,396	7,210	3,684,152	0	39,743	(242,659)	2,512,478	7,010

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Sheet 4 of 9

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	South San Joaquin Division (continued)											
	Teerink Pumping Plant						Chrisman Pumping Plant					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		Total
Water Supply				Recreation	Water Supply					Recreation		
[39]	[40]	[41]	[42]	[43]	[44]	[45]	[46]	[47]	[48]	[49]	[50]	
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	198	2	0	0	0	200	0	0	0	0	0	0
1971	7,533	(112)	0	3,552	0	10,973	7,366	(159)	0	0	0	7,207
1972	100,274	12,765	(6,558)	84,955	6,481	197,917	100,274	13,160	(6,558)	78,891	6,481	192,248
1973	204,638	21,543	1,329	229,685	1,147	458,342	204,638	32,414	1,329	209,769	1,147	449,297
1974	237,554	11,843	(15,295)	336,198	2,108	572,408	237,554	17,655	(15,295)	318,198	2,108	560,220
1975	103,352	19,763	(693)	621,706	3,358	747,486	103,352	25,326	(693)	586,286	3,358	717,629
1976	61.122	18,552	(152.171)	740,486	1,581	669,570	61.122	21,468	(152.171)	700,935	1,581	632,935
1977	0	16,415	(116,219)	246,349	560	147,105	0	15,698	(116,219)	240,191	560	140,230
1978	65,027	28,820	121,904	631,121	674	847,546	65,027	26,705	121,904	599,973	674	814,283
1979	12,302	50,663	(51,299)	625,561	502	637,729	12,302	50,580	(51,299)	586,959	502	599,044
1980	0	48,825	(134,009)	696,405	1,262	612,483	0	58,085	(134,009)	658,588	1,262	583,926
1981	0	51,600	23,359	998,307	4,112	1,077,378	0	48,844	23,359	959,274	4,112	1,035,589
1982	0	44,353	117,332	878,486	4,045	1,044,216	0	33,541	117,277	830,704	4,045	985,567
1983	0	43,961	(101,155)	467,915	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	99,523	(159,678)	1,753,631	559	1,694,035	0	53,502	(159,678)	1,713,761	559	1,608,144
2006	0	39,920	(60,964)	1,966,924	504	1,946,384	0	39,670	(60,964)	1,920,680	504	1,899,890
2007	0	39,813	135,009	2,001,290	7,010	2,183,122	0	39,563	135,009	1,954,068	7,010	2,135,650
2008	0	40,414	(7)	2,012,152	7,010	2,059,569	0	40,164	(7)	1,962,452	7,010	2,009,619
2009	0	40,414	(3)	2,024,273	7,010	2,071,694	0	40,164	(3)	1,974,573	7,010	2,021,744
2010	0	37,106	4,288	2,405,478	7,010	2,453,882	0	36,856	4,288	2,355,078	7,010	2,403,232
2011	0	37,297	64,678	2,405,478	7,010	2,514,463	0	37,047	64,678	2,355,078	7,010	2,463,813
2012	0	37,187	(67,943)	2,404,778	7,010	2,381,032	0	36,937	(67,943)	2,355,078	7,010	2,331,082
2013	0	37,125	9,749	2,404,778	7,010	2,458,662	0	36,875	9,749	2,355,078	7,010	2,408,712
2014	0	37,433	16,625	2,404,778	7,010	2,465,846	0	37,183	16,625	2,355,078	7,010	2,415,896
2015	0	37,562	32,003	2,404,778	7,010	2,481,353	0	37,312	32,003	2,355,078	7,010	2,431,403
2016	0	37,262	(28,401)	2,404,778	7,010	2,420,649	0	37,012	(28,401)	2,355,078	7,010	2,370,699
2017	0	37,494	61,309	2,404,778	7,010	2,510,591	0	37,244	61,309	2,355,078	7,010	2,460,641
2018	0	37,648	(80,817)	2,404,778	7,010	2,368,619	0	37,398	(80,817)	2,355,078	7,010	2,318,669
2019	0	37,472	50,179	2,404,778	7,010	2,499,439	0	37,222	50,179	2,355,078	7,010	2,449,489
2020	0	37,536	(366)	2,404,778	7,010	2,448,958	0	37,286	(366)	2,355,078	7,010	2,399,008
2021	0	37,619	10,725	2,404,778	7,010	2,460,132	0	37,369	10,725	2,355,078	7,010	2,410,182
2022	0	37,613	(3,483)	2,404,778	7,010	2,445,918	0	37,363	(3,483)	2,355,078	7,010	2,395,968
2023	0	37,604	(18,971)	2,404,778	7,010	2,430,421	0	37,354	(18,971)	2,355,078	7,010	2,380,471
2024	0	37,483	11,289	2,404,778	7,010	2,460,560	0	37,233	11,289	2,355,078	7,010	2,410,610
2025	0	37,546	(12,518)	2,404,778	7,010	2,436,816	0	37,296	(12,518)	2,355,078	7,010	2,386,866
2026	0	37,558	24,308	2,404,778	7,010	2,473,654	0	37,308	24,308	2,355,078	7,010	2,423,704
2027	0	37,471	(17,799)	2,404,778	7,010	2,431,460	0	37,221	(17,799)	2,355,078	7,010	2,381,510
2028	0	37,611	12,291	2,404,778	7,010	2,461,690	0	37,361	12,291	2,355,078	7,010	2,411,740
2029	0	37,538	(9,046)	2,404,778	7,010	2,440,280	0	37,288	(9,046)	2,355,078	7,010	2,390,330
2030	0	37,602	20,756	2,404,778	7,010	2,470,146	0	37,352	20,756	2,355,078	7,010	2,420,196
2031	0	37,474	(97,726)	2,404,778	7,010	2,351,536	0	37,224	(97,726)	2,355,078	7,010	2,301,586
2032	0	37,076	84,999	2,404,778	7,010	2,533,863	0	36,826	84,999	2,355,078	7,010	2,483,913
2033	0	37,281	(94,652)	2,404,778	7,010	2,354,417	0	37,031	(94,652)	2,355,078	7,010	2,304,467
2034	0	36,773	69,593	2,404,778	7,010	2,518,154	0	36,523	69,593	2,355,078	7,010	2,468,204
2035	0	36,113	(242,659)	2,404,778	7,010	2,205,242	0	35,863	(242,659)	2,355,078	7,010	2,155,292

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Sheet 5 of 9

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	Tehachapi Division						Mojave Division					
	Edmonston Pumping Plant						Alamo Powerplant					
	Initial Fill Water	Opera- tional Losses	Reservoir Storage Changes	Deliveries		Total	Initial Fill Water	Opera- tional Losses	Reservoir Storage Changes	Deliveries		Total
Water Supply				Recrea- tion	Water Supply					Recrea- tion		
[51]	[52]	[53]	[54]	[55]	[56]	[57]	[58]	[59]	[60]	[61]	[62]	
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	5,446	8	0	0	0	5,454	0	0	0	0	0	0
1972	100,274	16,067	(6,558)	74,123	6,481	190,387	0	0	0	0	0	0
1973	204,638	34,051	1,329	207,808	1,147	448,973	0	0	0	0	0	0
1974	237,554	18,181	(15,295)	313,634	2,108	556,182	0	0	0	0	0	0
1975	103,352	20,183	(693)	573,219	3,358	699,419	0	0	0	0	0	0
1976	61,122	21,096	(152,171)	685,768	1,581	617,396	0	0	0	0	0	0
1977	0	18,424	(116,219)	236,086	560	138,851	0	0	0	0	0	0
1978	65,027	20,887	121,904	590,329	674	798,821	0	0	0	0	0	0
1979	12,302	46,332	(51,299)	568,338	502	576,175	0	0	0	0	0	0
1980	0	52,967	(134,009)	639,743	1,262	559,963	0	0	0	0	0	0
1981	0	40,602	23,359	938,482	4,112	1,006,555	0	0	0	0	0	0
1982	0	37,244	117,296	812,206	4,045	970,791	0	0	0	0	0	0
1983	0	40,690	(101,155)	431,182	7,291	378,008	0	0	0	0	0	0
1984	0	42,112	(115,214)	556,830	5,244	488,972	0	0	0	0	0	0
1985	0	45,265	139,988	792,477	4,804	982,534	0	0	0	0	0	0
1986	0	36,918	37,546	823,067	3,285	900,816	0	14,735	12,258	429,864	1,508	458,365
1987	0	29,580	(25,522)	851,322	6,937	862,317	0	11,665	(15,270)	417,870	1,239	415,504
1988	0	42,017	(29,747)	1,044,737	4,360	1,061,367	0	21,696	1,101	537,568	971	561,336
1989	0	32,270	(60,826)	1,328,041	7,490	1,306,975	0	4,686	(20,363)	716,360	1,407	702,090
1990	0	42,198	(15,092)	1,579,466	8,879	1,615,451	0	8,898	(5,916)	788,111	1,388	792,481
1991	0	33,999	105,176	441,217	4,560	584,952	0	17,908	34,422	177,308	394	230,032
1992	0	23,121	(92,123)	809,771	1,995	742,764	0	14,873	(17,115)	374,110	423	372,291
1993	0	11,946	(127,738)	759,485	1,676	645,369	0	9,304	(3,455)	308,222	443	314,514
1994	0	40,808	(88,211)	960,815	2,918	916,330	0	21,837	3,395	469,996	430	495,658
1995	0	36,001	(16,431)	542,465	1,669	563,704	0	14,139	(30,761)	384,836	427	368,641
1996	0	37,357	15,438	779,918	2,928	835,641	0	7,247	(11,410)	493,852	565	490,254
1997	0	51,475	40,852	860,798	2,076	955,201	0	20,725	38,960	537,586	507	597,778
1998	0	48,601	(106,487)	607,301	1,585	551,000	0	21,456	16,361	398,385	363	436,565
1999	0	52,726	(2,807)	947,420	3,279	1,000,618	0	26,644	(8,486)	589,756	396	608,310
2000	0	43,072	7,726	1,621,657	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	40,949	(159,678)	1,695,241	559	1,577,071	0	2,561	(50,014)	1,117,990	84	1,070,621
2006	0	38,120	(60,964)	1,897,831	504	1,875,491	0	20,809	2,964	1,281,285	98	1,305,156
2007	0	38,013	135,009	1,929,068	7,010	2,109,100	0	21,252	2,921	1,148,790	1,630	1,174,593
2008	0	38,614	(7)	1,935,792	7,010	1,981,409	0	21,272	(81)	1,183,318	1,630	1,206,139
2009	0	38,614	(3)	1,947,913	7,010	1,993,534	0	21,272	(78)	1,194,439	1,630	1,217,263
2010	0	35,306	4,288	2,328,418	7,010	2,375,022	0	21,001	3,921	1,464,744	1,630	1,491,296
2011	0	35,497	64,678	2,328,418	7,010	2,435,603	0	20,971	26,001	1,464,744	1,630	1,513,346
2012	0	35,387	(67,943)	2,328,418	7,010	2,302,872	0	20,962	(41,797)	1,464,744	1,630	1,445,539
2013	0	35,325	9,749	2,328,418	7,010	2,380,502	0	20,835	4,742	1,464,744	1,630	1,491,951
2014	0	35,633	16,625	2,328,418	7,010	2,387,686	0	21,002	2,759	1,464,744	1,630	1,490,135
2015	0	35,762	32,003	2,328,418	7,010	2,403,193	0	21,066	22,604	1,464,744	1,630	1,510,044
2016	0	35,462	(28,401)	2,328,418	7,010	2,342,489	0	20,829	(21,084)	1,464,744	1,630	1,466,119
2017	0	35,694	61,309	2,328,418	7,010	2,432,431	0	20,895	33,266	1,464,744	1,630	1,520,535
2018	0	35,848	(80,817)	2,328,418	7,010	2,290,459	0	20,998	(50,078)	1,464,744	1,630	1,437,294
2019	0	35,672	50,179	2,328,418	7,010	2,421,279	0	20,924	31,508	1,464,744	1,630	1,518,806
2020	0	35,736	(366)	2,328,418	7,010	2,370,798	0	20,947	(3,398)	1,464,744	1,630	1,483,923
2021	0	35,819	10,725	2,328,418	7,010	2,381,972	0	20,946	(1,117)	1,464,744	1,630	1,486,203
2022	0	35,813	(3,483)	2,328,418	7,010	2,367,758	0	20,940	(3,434)	1,464,744	1,630	1,483,880
2023	0	35,804	(18,971)	2,328,418	7,010	2,352,261	0	20,939	(18,638)	1,464,744	1,630	1,468,675
2024	0	35,683	11,289	2,328,418	7,010	2,382,400	0	20,881	21,309	1,464,744	1,630	1,508,564
2025	0	35,746	(12,518)	2,328,418	7,010	2,358,656	0	20,965	(11,624)	1,464,744	1,630	1,475,715
2026	0	35,758	24,308	2,328,418	7,010	2,395,494	0	20,930	13,030	1,464,744	1,630	1,500,334
2027	0	35,671	(17,799)	2,328,418	7,010	2,353,300	0	20,861	(6,161)	1,464,744	1,630	1,481,074
2028	0	35,811	12,291	2,328,418	7,010	2,383,530	0	20,961	4,006	1,464,744	1,630	1,491,341
2029	0	35,738	(9,046)	2,328,418	7,010	2,362,120	0	20,955	(913)	1,464,744	1,630	1,486,416
2030	0	35,802	20,756	2,328,418	7,010	2,391,986	0	20,930	8,528	1,464,744	1,630	1,495,832
2031	0	35,674	(97,726)	2,328,418	7,010	2,273,376	0	20,956	(31,057)	1,464,744	1,630	1,456,273
2032	0	35,276	84,999	2,328,418	7,010	2,455,703	0	20,865	43,953	1,464,744	1,630	1,531,192
2033	0	35,481	(94,652)	2,328,418	7,010	2,276,257	0	20,854	(37,929)	1,464,744	1,630	1,449,299
2034	0	34,973	69,593	2,328,418	7,010	2,439,994	0	20,769	28,588	1,464,744	1,630	1,515,731
2035	0	34,313	(242,659)	2,328,418	7,010	2,127,082	0	20,892	(49,219)	1,464,744	1,630	1,438,047

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Sheet 6 of 9

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	Mojave Division (continued)											
	Pearblossom Pumping Plant						Mojave Siphon Powerplant					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		Total
Water Supply				Recreation	Water Supply					Recreation		
[63]	[64]	[65]	[66]	[67]	[68]	[69]	[70]	[71]	[72]	[73]	[74]	
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	21	0	0	0	0	21	0	0	0	0	0	0
1972	35,243	5,282	(153)	1,794	0	42,166	0	0	0	0	0	0
1973	80,177	21,522	(2,700)	52,201	72	151,272	0	0	0	0	0	0
1974	76,694	10,847	(11,149)	102,839	44	179,275	0	0	0	0	0	0
1975	10,000	2,364	(8,397)	190,351	70	194,388	0	0	0	0	0	0
1976	4,168	7,040	(16,055)	236,713	152	232,018	0	0	0	0	0	0
1977	0	11,398	(17,534)	102,326	580	96,770	0	0	0	0	0	0
1978	19,922	5,696	69,130	374,845	498	470,091	0	0	0	0	0	0
1979	12,302	6,836	(32,518)	362,114	502	349,236	0	0	0	0	0	0
1980	0	16,200	6,159	401,214	781	424,354	0	0	0	0	0	0
1981	0	4,992	(36,278)	574,573	933	544,220	0	0	0	0	0	0
1982	0	5,251	55,232	401,037	1,919	463,439	0	0	0	0	0	0
1983	0	11,745	(26,847)	231,188	1,180	217,266	0	0	0	0	0	0
1984	0	18,228	23,230	252,066	1,494	295,018	0	0	0	0	0	0
1985	0	25,292	(2,815)	350,758	1,076	374,311	0	0	0	0	0	0
1986	0	30,876	12,258	394,156	1,508	438,798	0	0	0	0	0	0
1987	0	27,552	(15,270)	377,531	1,239	391,052	0	0	0	0	0	0
1988	0	32,209	1,101	501,300	971	535,581	0	1,977	1,101	501,291	971	505,340
1989	0	31,500	(20,363)	661,189	1,407	673,733	0	29,110	(20,363)	661,100	1,407	671,254
1990	0	32,672	(5,916)	730,560	1,388	758,704	0	23,692	(5,916)	730,550	1,388	749,714
1991	0	15,209	34,774	163,913	394	214,290	0	(543)	34,774	163,913	394	198,538
1992	0	13,989	(17,451)	338,249	423	335,210	0	(13,193)	(17,451)	338,207	423	307,986
1993	0	9,779	(3,455)	255,117	443	261,884	0	(11,922)	(3,455)	255,117	443	240,183
1994	0	150	3,395	409,928	430	413,903	0	1,601	3,395	395,294	430	400,720
1995	0	6,820	(29,282)	328,882	427	306,847	0	10,458	(29,282)	321,327	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	(18,967)	(50,014)	1,045,396	84	976,499	0	827	(50,014)	1,027,285	84	978,182
2006	0	15,459	2,964	1,187,388	98	1,205,909	0	11,989	2,964	1,154,395	98	1,169,446
2007	0	15,902	2,921	1,065,239	1,430	1,085,492	0	12,432	2,921	1,054,964	1,430	1,071,747
2008	0	15,922	(81)	1,091,799	1,430	1,109,070	0	12,452	(81)	1,066,924	1,430	1,080,725
2009	0	15,922	(78)	1,100,919	1,430	1,118,193	0	12,452	(78)	1,067,044	1,430	1,080,848
2010	0	15,651	3,921	1,299,594	1,430	1,320,596	0	12,181	3,921	1,223,944	1,430	1,241,476
2011	0	15,621	26,001	1,299,594	1,430	1,342,646	0	12,151	26,001	1,223,944	1,430	1,263,526
2012	0	15,612	(41,797)	1,299,594	1,430	1,274,339	0	12,142	(41,797)	1,223,944	1,430	1,195,719
2013	0	15,485	4,742	1,299,594	1,430	1,321,251	0	12,015	4,742	1,223,944	1,430	1,242,131
2014	0	15,652	2,759	1,299,594	1,430	1,319,435	0	12,182	2,759	1,223,944	1,430	1,240,315
2015	0	15,716	22,604	1,299,594	1,430	1,339,344	0	12,246	22,604	1,223,944	1,430	1,260,224
2016	0	15,479	(21,084)	1,299,594	1,430	1,295,419	0	12,009	(21,084)	1,223,944	1,430	1,216,299
2017	0	15,545	33,266	1,299,594	1,430	1,349,835	0	12,075	33,266	1,223,944	1,430	1,270,715
2018	0	15,648	(50,078)	1,299,594	1,430	1,266,594	0	12,178	(50,078)	1,223,944	1,430	1,187,474
2019	0	15,574	31,508	1,299,594	1,430	1,348,106	0	12,104	31,508	1,223,944	1,430	1,268,986
2020	0	15,597	(3,398)	1,299,594	1,430	1,313,223	0	12,127	(3,398)	1,223,944	1,430	1,234,103
2021	0	15,596	(1,117)	1,299,594	1,430	1,315,503	0	12,126	(1,117)	1,223,944	1,430	1,236,383
2022	0	15,590	(3,434)	1,299,594	1,430	1,313,180	0	12,120	(3,434)	1,223,944	1,430	1,234,060
2023	0	15,589	(18,638)	1,299,594	1,430	1,297,975	0	12,119	(18,638)	1,223,944	1,430	1,218,855
2024	0	15,531	21,309	1,299,594	1,430	1,337,864	0	12,061	21,309	1,223,944	1,430	1,258,744
2025	0	15,615	(11,624)	1,299,594	1,430	1,305,015	0	12,145	(11,624)	1,223,944	1,430	1,225,895
2026	0	15,580	13,030	1,299,594	1,430	1,329,634	0	12,110	13,030	1,223,944	1,430	1,250,514
2027	0	15,511	(6,161)	1,299,594	1,430	1,310,374	0	12,041	(6,161)	1,223,944	1,430	1,231,254
2028	0	15,611	4,006	1,299,594	1,430	1,320,641	0	12,141	4,006	1,223,944	1,430	1,241,521
2029	0	15,605	(913)	1,299,594	1,430	1,315,716	0	12,135	(913)	1,223,944	1,430	1,236,596
2030	0	15,580	8,528	1,299,594	1,430	1,325,132	0	12,110	8,528	1,223,944	1,430	1,246,012
2031	0	15,606	(31,057)	1,299,594	1,430	1,285,573	0	12,136	(31,057)	1,223,944	1,430	1,206,453
2032	0	15,515	43,953	1,299,594	1,430	1,360,492	0	12,045	43,953	1,223,944	1,430	1,281,372
2033	0	15,504	(37,929)	1,299,594	1,430	1,278,599	0	12,034	(37,929)	1,223,944	1,430	1,199,479
2034	0	15,419	28,588	1,299,594	1,430	1,345,031	0	11,949	28,588	1,223,944	1,430	1,265,911
2035	0	15,542	(49,219)	1,299,594	1,430	1,267,347	0	12,072	(49,219)	1,223,944	1,430	1,188,227

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Sheet 7 of 9

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	Santa Ana Division						West Branch, California Aqueduct					
	Devil Canyon Powerplant						Oso Pumping Plant					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		Total
Water Supply				Recreation	Water Supply					Recreation		
[75]	[76]	[77]	[78]	[79]	[80]	[81]	[82]	[83]	[84]	[85]	[86]	
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	2,444	133	0	0	0	2,577
1972	37	0	0	1,275	0	1,312	63,883	6,557	(6,405)	71,991	6,481	142,507
1973	40,848	14,745	0	51,812	0	107,405	124,461	16,995	4,029	155,317	1,075	301,877
1974	74,666	8,367	(4,925)	102,198	0	180,306	160,860	12,702	(4,146)	209,172	2,064	380,652
1975	10,000	1,995	(6,719)	189,526	0	194,802	93,352	23,008	7,704	374,306	3,288	501,658
1976	4,168	5,180	(9,182)	235,711	23	235,900	56,954	15,845	(136,116)	420,708	1,429	358,820
1977	0	8,082	(5,235)	101,137	469	104,453	0	4,407	(98,685)	122,447	(20)	28,149
1978	14,820	3,754	21,686	373,636	481	414,377	45,105	9,061	52,774	171,139	176	278,255
1979	12,302	5,620	(27,107)	356,854	485	348,154	0	25,355	(18,781)	145,598	0	152,172
1980	0	9,468	12,714	395,975	742	418,899	0	24,576	(140,168)	165,931	481	50,820
1981	0	8,401	(23,448)	569,088	807	554,848	0	15,254	59,637	283,264	3,179	361,334
1982	0	6,012	44,469	399,799	1,798	452,078	0	23,824	61,685	360,878	2,126	448,513
1983	0	8,597	5,188	230,277	1,078	245,140	0	23,601	(74,308)	166,995	6,111	122,399
1984	0	12,861	(850)	250,938	1,414	264,363	0	12,461	(138,146)	272,101	3,750	150,166
1985	0	14,325	(8,791)	349,336	956	355,826	0	28,257	142,219	403,097	3,728	577,301
1986	0	9,486	8,339	392,650	1,378	411,853	0	22,387	25,288	393,203	1,777	442,655
1987	0	7,923	(11,335)	375,451	1,118	373,157	0	18,164	(10,252)	433,452	5,698	447,062
1988	0	11,090	2,238	499,285	861	513,474	0	20,461	(30,848)	507,169	3,389	500,171
1989	0	13,116	(5,487)	658,730	1,301	667,660	0	27,914	(40,463)	611,681	6,083	605,215
1990	0	13,439	(4,622)	728,723	1,281	738,821	0	33,666	(9,176)	791,355	7,491	823,336
1991	0	10,836	18,308	161,032	340	190,516	0	16,460	70,754	263,909	4,166	355,289
1992	0	9,157	(9,084)	328,354	371	328,798	0	8,238	(75,008)	435,661	1,572	370,463
1993	0	5,602	5,593	244,678	364	256,237	0	2,674	(124,283)	451,263	1,233	330,887
1994	0	10,915	(11,045)	393,690	357	393,917	0	18,688	(91,606)	490,819	2,488	420,389
1995	0	11,268	2,331	320,978	358	334,935	0	21,775	14,330	157,629	1,242	194,976
1996	0	9,496	13,015	417,656	494	440,661	0	30,121	26,848	286,066	2,363	345,398
1997	0	8,087	(19,685)	451,874	416	440,692	0	30,468	1,892	323,212	1,569	357,141
1998	0	6,700	16,643	332,198	310	355,851	0	26,851	(122,848)	208,916	1,222	114,141
1999	0	9,784	(4,177)	497,877	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	4,500	(63,441)	1,012,681	0	953,740	0	38,154	(109,664)	577,251	475	506,216
2006	0	7,806	3,964	1,153,993	0	1,165,763	0	17,261	(63,928)	616,546	406	570,285
2007	0	8,199	2,921	1,051,804	1,250	1,064,174	0	16,711	132,088	780,278	5,380	934,457
2008	0	8,204	(81)	1,063,584	1,250	1,072,957	0	17,292	74	752,474	5,380	775,220
2009	0	8,204	(78)	1,063,584	1,250	1,072,960	0	17,292	75	753,474	5,380	776,221
2010	0	8,504	10,523	1,218,144	1,250	1,238,421	0	14,255	367	863,674	5,380	883,676
2011	0	8,519	1,352	1,218,144	1,250	1,229,265	0	14,476	38,677	863,674	5,380	922,207
2012	0	8,482	(22,894)	1,218,144	1,250	1,204,982	0	14,375	(26,146)	863,674	5,380	857,283
2013	0	8,499	16,733	1,218,144	1,250	1,244,626	0	14,440	5,007	863,674	5,380	888,501
2014	0	8,522	(4,585)	1,218,144	1,250	1,223,331	0	14,581	13,866	863,674	5,380	897,501
2015	0	8,499	2,964	1,218,144	1,250	1,230,857	0	14,646	9,399	863,674	5,380	893,099
2016	0	8,483	(1,269)	1,218,144	1,250	1,226,608	0	14,583	(7,317)	863,674	5,380	876,320
2017	0	8,502	9,828	1,218,144	1,250	1,237,724	0	14,749	28,043	863,674	5,380	911,846
2018	0	8,484	(19,777)	1,218,144	1,250	1,208,101	0	14,800	(30,739)	863,674	5,380	853,115
2019	0	8,492	17,408	1,218,144	1,250	1,245,294	0	14,698	18,671	863,674	5,380	902,423
2020	0	8,483	(17,305)	1,218,144	1,250	1,210,572	0	14,739	3,032	863,674	5,380	886,825
2021	0	8,486	(398)	1,218,144	1,250	1,227,482	0	14,823	11,842	863,674	5,380	895,719
2022	0	8,486	13,735	1,218,144	1,250	1,241,615	0	14,823	(49)	863,674	5,380	883,828
2023	0	8,482	(8,417)	1,218,144	1,250	1,219,459	0	14,815	(333)	863,674	5,380	883,536
2024	0	8,462	689	1,218,144	1,250	1,228,545	0	14,752	(10,020)	863,674	5,380	873,786
2025	0	8,489	4,591	1,218,144	1,250	1,232,474	0	14,731	(894)	863,674	5,380	882,891
2026	0	8,475	(3,819)	1,218,144	1,250	1,224,050	0	14,778	11,278	863,674	5,380	895,110
2027	0	8,479	745	1,218,144	1,250	1,228,618	0	14,760	(11,638)	863,674	5,380	872,176
2028	0	8,481	(5,355)	1,218,144	1,250	1,222,520	0	14,800	8,285	863,674	5,380	892,139
2029	0	8,481	2,909	1,218,144	1,250	1,230,784	0	14,733	(8,133)	863,674	5,380	875,664
2030	0	8,480	296	1,218,144	1,250	1,228,170	0	14,822	12,228	863,674	5,380	896,104
2031	0	8,475	(1,976)	1,218,144	1,250	1,225,893	0	14,668	(66,669)	863,674	5,380	817,053
2032	0	8,449	18,821	1,218,144	1,250	1,246,664	0	14,361	41,046	863,674	5,380	924,461
2033	0	8,449	(23,419)	1,218,144	1,250	1,204,424	0	14,577	(56,723)	863,674	5,380	826,908
2034	0	8,443	21,651	1,218,144	1,250	1,249,488	0	14,154	41,005	863,674	5,380	924,213
2035	0	8,451	(31,434)	1,218,144	1,250	1,196,411	0	13,371	(193,440)	863,674	5,380	688,985

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Sheet 8 of 9

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	West Branch, California Aqueduct (continued)											
	Warne Powerplant						Castaic Powerplant					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries			Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries		
Water Supply				Recreation	Total	Water Supply				Recreation	Total	
[87]	[88]	[89]	[90]	[91]	[92]	[93]	[94]	[95]	[96]	[97]	[98]	
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	57.364	1,788	(6.162)	71.938	6,481	131,409
1973	0	0	0	0	0	0	37,198	6,430	4,542	155,297	1,075	204,542
1974	0	0	0	0	0	0	82,364	1,772	(950)	209,136	541	292,863
1975	0	0	0	0	0	0	90,460	5,002	(1,534)	374,280	1,563	469,771
1976	0	0	0	0	0	0	55,990	(7,695)	(132,036)	420,684	1,429	338,372
1977	0	0	0	0	0	0	0	(1,485)	(102,532)	122,447	(20)	18,410
1978	0	0	0	0	0	0	45,105	(2,264)	129,523	171,139	176	343,679
1979	0	0	0	0	0	0	0	(2,339)	(20,400)	145,598	0	122,859
1980	0	0	0	0	0	0	0	991	(118,026)	165,931	481	49,377
1981	0	0	0	0	0	0	0	(44,416)	47,244	283,264	2,704	288,796
1982	0	24,468	61,169	360,878	2,126	448,641	0	(60,138)	59,069	360,878	1,187	360,999
1983	0	20,780	(74,308)	166,995	6,111	119,578	0	(33,418)	(46,904)	166,995	2,618	89,291
1984	0	13,572	(139,219)	275,212	2,208	151,773	0	(29,618)	(139,545)	275,212	2,201	108,250
1985	0	29,286	141,492	403,097	874	574,749	0	(4,622)	135,007	403,097	844	534,326
1986	0	21,579	25,288	393,203	1,777	441,847	0	(6,664)	21,520	393,203	623	408,682
1987	0	20,885	(10,252)	433,452	5,698	449,783	0	(519)	(6,241)	433,452	2,734	429,426
1988	0	23,253	(31,453)	507,169	3,389	502,358	0	12,650	(28,498)	507,169	1,359	492,680
1989	0	27,131	(40,463)	611,681	6,083	604,432	0	634	(40,154)	611,681	3,161	575,322
1990	0	34,208	(9,176)	791,355	7,491	823,878	0	(14,012)	(15,101)	786,519	3,419	760,825
1991	0	16,908	70,754	263,909	4,166	355,737	0	(871)	89,637	262,921	2,283	353,970
1992	0	9,638	(75,008)	435,661	1,572	371,863	0	(609)	(71,795)	435,661	1,543	364,800
1993	0	1,922	(124,283)	451,257	1,233	330,129	0	21,959	(77,428)	451,257	1,211	396,999
1994	0	23,151	(91,606)	490,819	2,488	424,852	0	5,205	(95,738)	490,819	2,465	402,751
1995	0	15,860	14,330	157,629	1,242	189,061	0	20,400	75,863	157,629	1,223	255,115
1996	0	21,191	26,848	286,066	2,363	336,468	0	(5,621)	19,088	286,066	2,362	301,895
1997	0	23,437	1,892	323,201	1,569	350,099	0	11,119	(1,802)	323,201	1,566	334,084
1998	0	26,864	(122,848)	208,909	1,222	114,147	0	24,544	(57,726)	208,909	1,222	176,949
1999	0	21,822	8,120	357,664	2,883	390,489	0	(3,670)	6,280	357,664	2,865	363,139
2000	0	27,237	18,198	668,126	3,767	717,328	0	(19,645)	9,320	665,926	1,556	657,157
2001	0	17,404	(22,308)	477,315	759	473,170	0	(5,949)	(16,588)	477,315	746	455,524
2002	0	35,058	41,944	779,284	3,471	859,757	0	10,071	35,623	776,136	305	822,135
2003	0	28,167	(27,394)	735,699	10,290	746,762	0	9,075	(17,034)	732,549	356	724,946
2004	0	31,034	(14,046)	850,007	478	867,473	0	9,120	(11,440)	845,960	456	844,096
2005	0	29,111	(109,664)	577,251	475	497,173	0	21,155	(61,490)	577,251	472	537,388
2006	0	15,351	(63,928)	616,546	406	568,375	0	9,626	(63,928)	616,546	396	562,640
2007	0	14,801	132,088	780,278	5,380	932,547	0	9,081	127,088	777,128	2,330	915,627
2008	0	15,382	74	752,474	5,380	773,310	0	9,657	74	749,324	2,330	761,385
2009	0	15,382	75	753,474	5,380	774,311	0	9,657	75	750,324	2,330	762,386
2010	0	12,345	367	863,674	5,380	881,766	0	6,060	367	860,524	2,330	869,281
2011	0	12,566	38,677	863,674	5,380	920,297	0	6,281	38,677	860,524	2,330	907,812
2012	0	12,465	(26,146)	863,674	5,380	855,373	0	6,180	(26,146)	860,524	2,330	842,888
2013	0	12,530	5,007	863,674	5,380	886,591	0	6,245	5,007	860,524	2,330	874,106
2014	0	12,671	13,866	863,674	5,380	895,591	0	6,386	13,866	860,524	2,330	883,106
2015	0	12,736	9,399	863,674	5,380	891,189	0	6,451	9,399	860,524	2,330	878,704
2016	0	12,673	(7,317)	863,674	5,380	874,410	0	6,388	(7,317)	860,524	2,330	861,925
2017	0	12,839	28,043	863,674	5,380	909,936	0	6,554	28,043	860,524	2,330	897,451
2018	0	12,890	(30,739)	863,674	5,380	851,205	0	6,605	(30,739)	860,524	2,330	838,720
2019	0	12,788	18,671	863,674	5,380	900,513	0	6,503	18,671	860,524	2,330	888,028
2020	0	12,829	3,032	863,674	5,380	884,915	0	6,544	3,032	860,524	2,330	872,430
2021	0	12,913	11,842	863,674	5,380	893,809	0	6,628	11,842	860,524	2,330	881,324
2022	0	12,913	(49)	863,674	5,380	881,918	0	6,628	(49)	860,524	2,330	869,433
2023	0	12,905	(333)	863,674	5,380	881,626	0	6,620	(333)	860,524	2,330	869,141
2024	0	12,842	(10,020)	863,674	5,380	871,876	0	6,557	(10,020)	860,524	2,330	859,391
2025	0	12,821	(894)	863,674	5,380	880,981	0	6,536	(894)	860,524	2,330	868,496
2026	0	12,868	11,278	863,674	5,380	893,200	0	6,583	11,278	860,524	2,330	880,715
2027	0	12,850	(11,638)	863,674	5,380	870,266	0	6,565	(11,638)	860,524	2,330	857,781
2028	0	12,890	8,285	863,674	5,380	890,229	0	6,605	8,285	860,524	2,330	877,744
2029	0	12,823	(8,133)	863,674	5,380	873,744	0	6,538	(8,133)	860,524	2,330	861,259
2030	0	12,912	12,228	863,674	5,380	894,194	0	6,627	12,228	860,524	2,330	881,709
2031	0	12,758	(66,669)	863,674	5,380	815,143	0	6,473	(66,669)	860,524	2,330	802,658
2032	0	12,451	41,046	863,674	5,380	922,551	0	6,166	41,046	860,524	2,330	910,066
2033	0	12,667	(56,723)	863,674	5,380	824,998	0	6,382	(56,723)	860,524	2,330	812,513
2034	0	12,244	41,005	863,674	5,380	922,303	0	5,959	41,005	860,524	2,330	909,818
2035	0	11,461	(193,440)	863,674	5,380	687,075	0	5,176	(193,440)	860,524	2,330	674,590

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Sheet 9 of 9

Calendar Year	CALIFORNIA AQUEDUCT (continued)							
	Coastal Branch, California Aqueduct							
	Las Perillas and Badger Hill Pumping Plants				Devil's Den, Bluestone, and Polonio Pass Pumping Plants			
	Initial Fill Water	Operational Losses	Water Supply Delivery	Total	Initial Fill Water	Operational Losses	Water Supply Delivery	Total
[99]	[100]	[101]	[102]	[103]	[104]	[105]	[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	1,484	103,178	104,662	0	573	27,595	28,168
2006	0	802	115,433	116,235	0	212	27,484	27,696
2007	0	802	126,536	127,338	0	212	35,879	36,091
2008	0	802	141,215	142,017	0	212	50,310	50,522
2009	0	802	141,215	142,017	0	212	50,310	50,522
2010	0	802	164,391	165,193	0	212	70,486	70,698
2011	0	802	164,391	165,193	0	212	70,486	70,698
2012	0	802	164,391	165,193	0	212	70,486	70,698
2013	0	802	164,391	165,193	0	212	70,486	70,698
2014	0	802	164,391	165,193	0	212	70,486	70,698
2015	0	802	164,391	165,193	0	212	70,486	70,698
2016	0	802	164,391	165,193	0	212	70,486	70,698
2017	0	802	164,391	165,193	0	212	70,486	70,698
2018	0	802	164,391	165,193	0	212	70,486	70,698
2019	0	802	164,391	165,193	0	212	70,486	70,698
2020	0	802	164,391	165,193	0	212	70,486	70,698
2021	0	802	164,391	165,193	0	212	70,486	70,698
2022	0	802	164,391	165,193	0	212	70,486	70,698
2023	0	802	164,391	165,193	0	212	70,486	70,698
2024	0	802	164,391	165,193	0	212	70,486	70,698
2025	0	802	164,391	165,193	0	212	70,486	70,698
2026	0	802	164,391	165,193	0	212	70,486	70,698
2027	0	802	164,391	165,193	0	212	70,486	70,698
2028	0	802	164,391	165,193	0	212	70,486	70,698
2029	0	802	164,391	165,193	0	212	70,486	70,698
2030	0	802	164,391	165,193	0	212	70,486	70,698
2031	0	802	164,391	165,193	0	212	70,486	70,698
2032	0	802	164,391	165,193	0	212	70,486	70,698
2033	0	802	164,391	165,193	0	212	70,486	70,698
2034	0	802	164,391	165,193	0	212	70,486	70,698
2035	0	802	164,391	165,193	0	212	70,486	70,698

Tables B-7 through B-31 Follow

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	Total State Water Project Capital Cost
	Misc. Income Credited to Construction (a)	Allowance for Future Price Escalation (b)	Costs of Construction of Delivery Structures (c)	Costs of Requested Excess Capacity and Future Enlargement (d)	Capital Cost Component of Delta Water Charge (e)	Capital Cost Component of Transportation Water Charge (f)	Water Supply and Power Total (g)		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
CONSERVATION FACILITIES									
Upper Feather Division									
Frenchman Dam & Lake	180	0	0	0	599	0	779	3,199	3,978
Grizzly Valley Dam & Lake Davis	65	0	0	0	39	0	104	8,125	8,229
Antelope Dam & Lake	1	0	0	0	0	0	1	6,487	6,488
Abbey Bridge Dam & Reservoir	0	0	0	0	0	0	0	575	575
Dixie Refuge Dam & Reservoir	0	0	0	0	0	0	0	261	261
Total, Upper Feather Division	246	0	0	0	638	0	884	18,647	19,531
Oroville Division									
Multipurpose Facilities	3,152	0	0	0	328,738	0	331,890	94,463	426,353
Specific Power Facilities	89,057	0	0	0	101,978	0	191,035	(536)	190,499
Total I, Oroville Division	92,209	0	0	0	430,716	0	522,925	93,927	616,852
California Aqueduct									
North San Joaquin Division	1,210	0	0	0	80,212	0	81,422	2,573	83,995
San Luis Division	13,152	0	0	0	104,927	0	118,079	4,386	122,465
Total, California Aqueduct	14,362	0	0	0	185,139	0	199,501	6,959	206,460
Delta Facilities	37,311	0	0	0	295,526	0	332,837	17,358	350,195
Planning and Pre-Operation	5,302	0	0	0	57,086	0	62,388	0	62,388
TOTAL, CONSERVATION FACILITIES	149,430	0	0	0	969,105	0	1,118,535	136,891	1,255,427
TRANSPORTATION FACILITIES									
Upper Feather Division									
Grizzly Valley Pipeline	24	0	250	0	0	342	616	0	616
North Bay Aqueduct	(1,533)	0	676	0	0	106,795	105,938	0	105,938
South Bay Aqueduct	117,889	0	1,758	0	0	137,805	257,452	23,419	280,871
California Aqueduct									
North San Joaquin Division	(44,864)	0	126	0	0	190,468	145,730	5,726	151,456
San Luis Division	9,387	0	0	0	0	131,068	140,455	7,980	148,435
South San Joaquin Division	(23,394)	0	3,722	2,093	0	292,345	274,766	17,580	292,346
Tehachapi Division	(24,811)	0	0	5,230	0	344,201	324,620	19,581	344,201
Mojave Division	(39,361)	0	852	0	0	305,584	267,075	38,509	305,584
Santa Ana Division	(21,247)	0	6,010	5,331	0	616,735	606,829	48,884	655,713
West Branch	(66,100)	0	476	37	0	513,496	447,909	31,999	479,908
Coastal Branch	(177)	0	176	0	0	493,071	493,070	0	493,070
Total, California Aqueduct	(210,567)	0	11,362	12,691	0	2,886,968	2,700,454	170,259	2,870,713
TOTAL, TRANSPORTATION FACILITIES	(94,187)	0	14,046	12,691	0	3,131,910	3,064,460	193,678	3,258,138
East Branch Enlargement	0	0	0	0	0	679,159	679,159	0	679,159
East Branch Extension	0	0	0	0	0	306,791	306,791	0	306,791
Coastal Power Allocation	0	0	0	0	0	30,708	30,708	0	30,708
Agricultural Drainage Facilities	0	0	0	0	0	0	0	112,177	112,177
Off-Aqueduct Power Generation Facilities	0	0	0	0	0	520,209	520,209	0	520,209
Small Hydro Power Generation Facilities	0	0	0	0	14,095	83,488	97,583	0	97,583
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	118,815	118,815
Davis-Grunsky	0	0	0	0	0	0	0	130,000	130,000
TOTAL THROUGH 2020	55,243	0	14,046	12,691	1,017,886	4,752,265	5,852,131	691,561	6,543,692

- a) Miscellaneous project receipts that are applied for accounting purposes to reduce the capital costs of the particular facilities.
- b) These allowances are included for planning the future financial program, but not for determining current water charges.
- c) See Table B-8.
- d) See Table B-9.
- e) See Table B-13.
- f) See Table B-10. Mojave Division total reduced by \$83,488,000 for costs included in "Small Hydro Power Generation Facilities" line.

TABLE B-8. SWP Capital Costs of Requested Delivery Structures

Project Service Area and Water Supply Contractor	(in dollars)						Total
	1952-2004	2005	2006	2007	2008	2009	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
FEATHER RIVER AREA							
County of Butte	136,546	0	0	42,150	20,000	0	198,696
Plumas County Flood Control and Water Conservation District	645	0	3,046	2,500	1,000	0	7,191
Thermalito Irrigation District (b)	43,939	0	0	0	0	0	43,939
Subtotal	181,130	0	3,046	44,650	21,000	0	249,826
NORTH BAY AREA							
Napa County Flood Control and Water Conservation District	13,590	0	0	0	0	0	13,590
Solano County Water Agency	662,113	0	0	0	0	0	662,113
Subtotal	675,703	0	0	0	0	0	675,703
SOUTH BAY AREA							
Alameda County Flood Control and Water Conservation District, Zone 7	384,165	11,515	7,446	17,000	10,000	0	430,126
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 (b)	1,066,680	0	0	0	0	0	1,066,680
Subtotal	1,711,924	11,515	7,446	17,000	10,000	0	1,757,885
CENTRAL COASTAL AREA							
San Luis Obispo County Flood Control and Water Conservation District	26,204	0	0	0	0	0	26,204
Santa Barbara County Flood Control and Water Conservation District	67,058	0	0	0	0	0	67,058
Subtotal	93,262	0	0	0	0	0	93,262
SAN JOAQUIN VALLEY AREA							
Castaic Lake Water Agency	82,567	0	0	0	0	0	82,567
Dudley Ridge Water District	304,541	0	0	0	0	0	304,541
Empire West Side Irrigation District	6,358	0	0	0	0	0	6,358
Green Valley Water District (c)	5,292	0	0	12,000	3,000	0	20,292
Kern County Water Agency	3,029,928	30,054	39,766	13,500	20,000	0	3,133,248
Oak Flat Water District	46,882	0	3,390	50,000	15,000	0	115,272
Tracy Golf and Country Club (c)	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 (b)	3,342	0	0	0	0	0	3,342
Subtotal	3,763,325	30,054	43,156	75,500	38,000	0	3,950,035
SOUTHERN CALIFORNIA AREA							
Antelope Valley-East Kern Water Agency	415,911	3,003	15,522	40,000	45,000	0	519,436
Castaic Lake Water Agency	359,575	15,518	500	0	0	0	375,593
Coachella Valley Water District	14,206	0	0	0	0	0	14,206
Crestline-Lake Arrowhead Water Agency	25,298	0	0	0	0	0	25,298
Desert Water Agency	23,438	0	0	0	0	0	23,438
Littlerock Creek Irrigation District	23,732	0	0	0	0	0	23,732
Mojave Water Agency	211,765	0	0	0	0	0	211,765
Palmdale Water District	34,173	0	0	0	0	0	34,173
San Bernardino Valley Municipal Water District	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	8,139	20,000	10,000	0	104,669
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	7,160,142	18,521	24,161	60,000	55,000	0	7,317,824
TOTAL	13,585,486	60,090	77,809	197,150	124,000	0	14,044,535

- a) Approximate only, not to be construed as invoice amounts.
- b) Not a SWP water supply contractor.
- c) Not a SWP water supply contractor, but has contracted for water.

TABLE B-9. Capital Costs of Requested Excess Peaking Capacity

(in dollars unless otherwise indicated)

Sheet 1 of 2

Calendar Year	Total Advance Payments and Credits for Excess Capacity	Total Incremental Costs for Excess Capacity	Over payment (+) or Under payment (-) (a)	Annual Surplus Money Investment Fund Interest Rate (b)		Net Over or Underpayment With Interest (c)
				Jan-Jun	Jul-Dec	
				[4]	[5]	
	[1]	[2]	[3]	[4]	[5]	[6]
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA						
1965	0	158,000	(158,000)	3.968%	4.184%	(163,412)
1966	8,056,000	435,800	7,620,200	4.540%	5.057%	7,701,103
1967	9,094,963	1,878,270	7,216,693	4.815%	4.744%	15,524,533
1968	1,523,252	2,887,351	(1,364,099)	5.330%	5.540%	14,959,187
1969	8,310,651	3,059,310	5,251,341	5.946%	6.389%	21,369,973
1970	3,426,736	2,397,102	1,029,634	7.071%	7.125%	23,986,083
1971	1,086,045	1,146,648	(60,603)	5.154%	5.580%	25,238,017
1972	(4,244,807)	487,394	(4,732,201)	4.477%	4.977%	21,532,965
1973	(15,913,829)	25,041	(15,938,870)	6.023%	8.717%	6,014,116
1974	0	37,775	(37,775)	9.222%	10.351%	6,576,393
1975	0	2,085	(2,085)	7.089%	6.791%	7,038,515
1976	0	0	0	6.048%	6.021%	7,469,662
1977	0	0	0	5.788%	6.182%	7,923,403
1978	0	0	0	7.171%	8.096%	8,539,736
1979	0	0	0	8.979%	9.671%	9,354,605
1980	0	0	0	11.500%	11.500%	10,461,314
Total	11,339,011	12,514,776	(1,175,765)	-	-	10,461,314
SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT						
1967	0	25,730	(25,730)	4.815%	4.744%	(26,611)
1968	184,422	44,053	140,369	5.330%	5.540%	117,587
1969	49,052	38,075	10,977	5.946%	6.389%	136,751
1970	44,911	17,959	26,952	7.071%	7.125%	175,186
1971	61,588	5,900	55,688	5.154%	5.580%	242,927
1972	(20,263)	6,835	(27,098)	4.477%	4.977%	226,230
1973	(180,465)	0	(180,465)	6.023%	8.717%	49,198
1974	0	0	0	9.222%	10.351%	54,130
1975	0	0	0	7.089%	6.791%	57,952
1976	0	0	0	6.048%	6.021%	61,501
1977	0	0	0	5.788%	6.182%	65,237
1978	0	0	0	7.171%	8.096%	70,312
1979	0	0	0	8.979%	9.671%	77,021
1980	0	0	0	11.500%	11.500%	86,133
Total	139,245	138,552	693	-	-	86,133
ANTELOPE VALLEY-EAST KERN WATER AGENCY						
1968	85,495	1,645	83,850	5.330%	5.540%	86,962
1969	52,625	6,326	46,299	5.946%	6.389%	140,964
1970	101,648	15,076	86,572	7.071%	7.125%	243,222
1971	34,062	11,748	22,314	5.154%	5.580%	279,673
1972	(12,794)	2,018	(14,812)	4.477%	4.977%	277,552
1973	(205,354)	308	(205,662)	6.023%	8.717%	77,288
1974	0	96	(96)	9.222%	10.351%	84,933
1975	0	0	0	7.089%	6.791%	90,929
1976	0	190	(190)	6.048%	6.021%	96,300
1977	0	0	0	5.788%	6.182%	102,150
1978	0	0	0	7.171%	8.096%	110,096
1979	0	0	0	8.979%	9.671%	120,601
1980	0	0	0	11.500%	11.500%	134,869
Total	55,682	37,407	18,275	-	-	134,869

- a) Overpayment or underpayment for each calendar year - column (1) minus column (2).
- b) Interest rates shown are annual rates. Interest is credited daily at applicable rates on funds deposited in the State's Surplus Money Investment Fund
- c) Amounts shown are end-of-year balances. Interest on overpayments is credited at applicable Surplus Money Investment Fund Interest Rates Shown in columns (4) and (5). Interest on underpayments is charged at the 1980 Project Interest Rate of 4.584 percent

TABLE B-10. Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

Sheet 1 of 8

Calendar Year	UPPER FEATHER DIVISION	NORTH BAY AQUEDUCT					SOUTH BAY AQUEDUCT			
		Reach 1	Reach 2	Reach 3A	Reach 3B	Total	Reach 1	Reach 2	Reach 4	Reach 5
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
1952	0	0	0	0	0	0	97	34	30	57
1953	0	0	0	0	0	0	477	166	144	297
1954	0	0	0	0	0	0	1,466	508	437	959
1955	0	0	0	0	0	0	1,944	674	560	1,266
1956	0	0	0	0	0	0	18,789	6,515	5,090	12,545
1957	0	13,290	3,391	0	9,953	26,634	45,090	15,639	12,285	33,218
1958	2	19,202	5,011	0	25,798	50,011	195,985	80,961	7,714	21,930
1959	14	7,517	2,118	0	17,653	27,288	496,140	148,516	24,945	17,118
1960	28	8,797	4,292	0	4,838	17,927	1,130,378	67,351	71,779	68,028
1961	10	1,551	10,318	0	2,526	14,395	3,273,247	180,596	307,885	74,398
1962	32	217	(1,751)	0	414	(1,120)	1,548,884	203,535	695,446	35,102
1963	51	2,510	(1,063)	0	983	2,430	480,716	69,182	2,284,291	206,587
1964	7,791	39,879	12,046	0	21,934	73,859	2,549,118	15,903	181,900	264,410
1965	3,139	72,793	17,900	0	170,361	261,054	807,505	153,454	85,425	447,830
1966	(48)	59,615	12,972	0	438,949	511,536	898,074	149,529	142,096	1,690,200
1967	47	47,257	11,597	0	1,551,023	1,609,877	607,614	50,423	293,304	3,496,284
1968	51,573	70,586	19,560	0	831,158	921,304	965,119	19,543	89,300	2,931,101
1969	234,232	63,650	23,628	0	46,428	133,706	455,173	9,618	3,860	896,727
1970	16,227	59,090	42,733	0	9,415	111,238	52,481	3,380	10,517	154,358
1971	27,204	20,819	31,516	0	8,480	60,815	24,505	4,645	5,035	20,395
1972	9	15,538	12,952	0	10,058	38,548	26,918	825	2,945	26,090
1973	25	18,488	29,018	0	39,878	87,384	24,468	4,010	6,016	12,708
1974	45	67,352	29,978	0	134,332	231,662	17,108	1,192	1,765	65,587
1975	21	62,855	73,112	0	45,091	181,058	57,619	561	1,165	7,291
1976	51	52,419	75,611	218	13,168	141,416	104,242	2,846	8,915	12,701
1977	28	53,274	65,662	2,240	23,138	144,314	176,062	3,625	3,225	16,158
1978	38	61,936	57,158	2,955	28,987	151,036	264,581	4,494	3,668	14,028
1979	23	316,620	91,367	3,953	62,240	474,180	111,106	17,151	8,515	31,725
1980	26	422,804	111,600	19,910	96,125	650,439	368,942	17,708	8,249	38,045
1981	34	430,992	147,295	(10,752)	43,157	610,692	(145,428)	3,600	6,533	12,448
1982	11	934,812	357,720	(7,165)	134,408	1,419,775	(44,778)	18,971	7,451	37,824
1983	19	1,091,091	1,076,627	2,628	517,615	2,687,961	429,225	73,925	38,185	72,415
1984	26	1,875,968	2,317,661	3,290	1,068,363	5,265,282	506,951	36,354	9,610	92,846
1985	29	2,248,491	7,849,886	27,815	3,416,370	13,542,562	34,103	2,822	5,034	27,138
1986	31	16,420,238	10,020,277	1,309,599	1,819,349	29,569,463	85,732	14,715	17,144	13,982
1987	32	11,873,826	7,214,307	1,628,932	1,670,596	22,387,661	126,377	15,693	27,881	32,931
1988	55	3,287,756	1,648,431	1,015,971	686,821	6,638,979	290,505	36,744	51,786	25,078
1989	44	1,056,583	950,985	224,567	374,886	2,607,021	130,609	16,848	35,518	12,582
1990	63	493,522	537,881	145,694	71,938	1,249,035	275,732	32,387	99,251	40,263
1991	54	76,599	17,130	24,846	70,542	189,117	1,153,109	26,900	53,613	21,889
1992	42	56,492	6,525	18,333	37,778	119,128	401,906	53,036	61,799	51,386
1993	30	104,317	24,579	40,129	82,032	251,057	313,476	55,679	79,149	39,293
1994	14	68,065	13,463	27,107	45,909	154,544	(211,712)	29,017	362,585	36,350
1995	3	26,002	5,920	7,337	20,617	59,876	265,751	42,516	48,189	21,436
1996	0	14,790	3,334	6,614	14,606	39,344	139,573	13,049	25,751	10,677
1997	3	67,264	35,545	38,585	(13,571)	127,823	203,476	31,135	36,986	16,906
1998	7	15,410	6,392	6,797	10,396	38,995	67,974	6,120	14,731	4,616
1999	2	71,950	35,515	33,879	32,613	173,957	162,161	25,329	35,716	24,347
2000	24	29,992	8,327	11,711	4,156	54,186	100,654	15,688	24,144	19,652
2001	20	10,597	3,904	3,892	1,954	20,347	436,756	4,272	118,836	4,207
2002	14	27,018	18,971	15,254	4,614	65,857	3,068,535	5,648	329,244	64,425
2003	0	14,733	9,242	4,658	46,313	74,946	4,465,566	200,125	199,457	360,387
2004	0	24,222	2,418	2,387	145,422	174,449	6,089,558	861,149	472,174	99,594
2005	0	89,100	4	9	33,810	122,923	6,682,442	859,567	702,448	(157)
2006	5	31,833	343	145	880,368	912,689	13,779,093	630,443	1,085,260	639
2007	0	302,798	25,704	12,972	4,349,374	4,690,848	12,649,169	490,270	1,568,386	71,731
2008	0	478,261	25,304	11,767	5,160,433	5,675,765	7,824,853	453,932	1,495,710	81,465
2009	0	325,610	12,098	0	1,298,264	1,635,972	2,301,695	196,315	664,744	28,741
2010	0	143,980	13,993	0	70,229	228,202	65,198	11,245	43,701	14,937
2011	0	17,743	13,993	0	9,006	40,742	21,131	1,311	3,968	5,003
2012	0	19,460	15,348	0	9,877	44,685	23,176	1,438	4,352	5,488
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
TOTAL	341,130	43,287,574	33,159,848	4,636,277	25,711,175	106,794,874	76,396,416	5,498,827	11,995,842	11,947,662

TABLE B-10. Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

Sheet 2 of 8

Calendar Year	SOUTH BAY AQUEDUCT (continued)					CALIFORNIA AQUEDUCT NORTH SAN JOAQUIN DIVISION			
	Reach 6	Reach 7	Reach 8	Reach 9	Total	Reach 1	Reach 2A	Reach 2B	Subtotal
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
1952	8	66	72	132	496	4,012	3,279	1,499	8,790
1953	38	327	336	640	2,425	10,559	8,589	3,964	23,112
1954	123	1,005	1,003	1,954	7,455	13,796	11,163	5,179	30,138
1955	160	1,293	1,149	2,454	9,500	7,370	5,952	2,760	16,082
1956	1,559	11,959	11,043	28,372	95,872	9,880	5,020	2,398	17,298
1957	3,659	28,675	27,385	563,114	729,065	11,953	5,456	2,612	20,021
1958	2,243	17,872	17,385	560,904	904,994	18,585	17,191	7,994	43,770
1959	357	3,200	3,568	149,874	843,718	123,170	100,306	45,510	268,986
1960	1,102	2,944	4,498	359,749	1,705,829	191,408	102,136	48,968	342,512
1961	4,726	18,325	22,765	(1,367)	3,880,575	153,765	195,947	42,843	392,555
1962	17,295	160,939	178,242	209,042	3,048,485	612,258	491,225	168,218	1,271,701
1963	265,414	1,250,386	939,832	129,902	5,626,310	1,993,284	1,525,734	684,095	4,203,113
1964	100,603	1,716,371	2,327,770	2,947,522	10,103,597	4,674,280	2,369,858	700,074	7,744,212
1965	42,345	368,476	637,266	1,921,844	4,464,145	5,877,189	6,873,699	2,975,719	15,726,607
1966	17,663	34,915	140,350	777,887	3,850,714	8,553,362	14,112,820	5,677,099	28,343,281
1967	(41,567)	137,856	147,183	379,764	5,070,861	9,678,607	10,672,113	6,646,739	26,997,459
1968	84,553	2,130	68,057	253,152	4,412,955	6,392,664	891,681	1,303,186	8,587,531
1969	4,279	11,572	162,300	32,000	1,575,529	3,542,767	792,259	443,924	4,778,950
1970	2,487	6,820	20,086	(15,718)	234,411	2,236,607	149,692	115,578	2,501,877
1971	4,350	6,923	17,750	39,084	122,687	98,138	215,512	69,410	383,060
1972	1,084	203	4,800	32,199	95,064	159,608	43,721	7,744	211,073
1973	288	989	7,449	9,693	65,621	105,581	25,496	22,418	153,495
1974	527	6,020	30,628	11,433	134,260	177,700	16,627	45,707	240,034
1975	126	679	1,086	3,464	71,991	239,144	14,680	169,676	423,500
1976	701	3,529	8,362	26,186	167,482	641,860	45,533	65,943	753,336
1977	270	1,310	8,651	24,938	234,239	274,381	20,283	22,568	317,232
1978	231	1,204	1,631	17,123	306,960	801,265	36,221	9,714	847,200
1979	1,367	1,721	2,134	7,322	181,041	1,051,792	59,695	26,106	1,137,593
1980	1,321	1,718	2,182	7,102	445,267	4,173,603	96,760	38,789	4,309,152
1981	308	1,462	1,398	5,077	(114,602)	(502,921)	1,487,516	38,451	1,023,046
1982	716	1,561	1,746	6,074	29,565	700,738	46,501	22,308	769,547
1983	407	5,721	8,143	23,367	651,388	706,104	84,435	211,619	1,002,158
1984	269	1,853	1,667	13,301	662,851	1,559,539	41,352	48,478	1,649,369
1985	402	1,657	2,129	6,750	80,035	677,955	24,812	19,404	722,171
1986	1,119	2,744	3,313	12,234	150,983	398,788	63,830	35,420	498,038
1987	1,496	3,081	3,560	21,842	232,861	799,672	88,945	41,659	930,276
1988	5,706	6,689	7,603	33,728	457,839	2,898,156	(128,051)	(56,448)	2,713,657
1989	2,641	3,878	4,755	14,489	221,320	6,898,872	346,589	173,993	7,419,454
1990	5,092	19,899	36,584	87,796	597,004	13,483,785	112,002	2,446,232	16,042,019
1991	1,942	5,059	7,357	31,682	1,301,551	13,914,632	133,121	114,981	14,162,734
1992	1,184	2,042	35,464	609,067	6,260,482	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	1,533	3,304	12,727	31,634	296,751	2,208,776	88,951	90,639	2,388,366
2000	2,406	4,944	5,331	10,755	183,574	(706,517)	57,503	40,185	(608,829)
2001	91,721	68,849	404,226	1,190,653	2,319,520	371,407	91,792	8,926	472,125
2002	229,409	453,259	1,107,580	2,977,939	8,236,039	388,781	44,543	22,639	455,963
2003	67,216	509,964	477,926	1,409,227	7,689,868	178,153	22,778	13,565	214,496
2004	3,209	3,141	39,380	3,277,033	10,845,238	893,916	15,663	77,867	987,446
2005	5,334	5,012	4,576	731,389	8,990,611	293,412	39,870	98,327	431,609
2006	1,362	1,415	1,456	15,698	15,515,366	349,878	16,411	182,465	548,754
2007	23,720	25,711	25,939	43,925	14,898,851	1,387,778	173,773	418,430	1,979,981
2008	37,390	39,366	39,695	63,624	10,036,035	1,535,606	246,987	1,734,352	3,516,945
2009	24,766	26,216	26,959	42,118	3,311,554	559,485	150,384	3,164,276	3,874,145
2010	10,340	12,017	12,876	22,423	192,737	177,239	72,896	1,765,875	2,016,010
2011	406	2,083	2,942	8,156	45,000	47,763	18,065	12,121	77,949
2012	445	2,285	3,227	8,945	49,356	52,385	19,813	13,294	85,492
2013	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0
TOTAL	1,060,831	5,034,629	7,069,645	18,800,916	137,804,768	116,181,346	43,388,950	30,897,541	190,467,837

TABLE B-10. Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

Sheet 3 of 8

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SAN LUIS DIVISION						SOUTH SAN JOAQUIN DIVISION		
	Reach 3	Reach 4	Reach 5	Reach 6	Reach 7	Subtotal	Reach 8C	Reach 8D	Reach 9
[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[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	6,676	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	158,902	100,061	41,691	1,901,382	2,220,223	5,706	25,179	23,510
2000	101,618	373,699	78,036	36,186	1,139,073	1,728,612	3,922	23,591	29,281
2001	(10,513)	(47,112)	519,031	(3,546)	61,595	519,455	2,280	17,030	21,196
2002	12,237	24,434	6,079,343	3,454	(2,453,483)	3,665,985	3,627	44,010	20,221
2003	8,863	79,641	(5,372,496)	7,923	2,183,794	(3,092,275)	2,130	18,793	16,715
2004	(15,306)	(13,531)	(50,311)	(2,395)	(458,897)	(540,440)	22,528	6,090	3,964
2005	261	11,162	128,511	3,220	994,702	1,137,856	26,296	11,012	5,983
2006	240	26,332	4,717	1,526	(198,910)	(166,095)	6,322	3,833	2,366
2007	1,605	109,987	87,517	30,693	69,730	299,532	513	52,926	30,470
2008	131,170	158,712	139,378	46,729	104,758	580,747	422	84,885	47,756
2009	130,458	110,959	100,494	32,817	78,447	453,175	328	61,174	34,715
2010	0	54,120	47,341	14,993	44,807	161,261	380	28,490	17,188
2011	0	13,845	9,956	2,531	19,883	46,215	380	5,554	4,726
2012	0	15,184	10,919	2,776	21,808	50,687	417	6,091	5,183
2013	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0
TOTAL	21,083,491	31,868,011	23,955,678	6,077,641	48,083,427	131,068,248	920,666	13,334,518	11,277,214

TABLE B-10. Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

Sheet 4 of 8

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SOUTH SAN JOAQUIN DIVISION (continued)								
	Reach 10A	Reach 11B	Reach 12D	Reach 12E	Reach 13B	Reach 14A	Reach 14B	Reach 14C	Reach 15A
[29]	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	
1952	695	1,279	1,980	995	1,663	794	212	212	1,911
1953	2,569	4,790	7,480	3,745	6,236	2,599	733	741	7,016
1954	2,821	4,855	7,565	3,792	6,319	2,880	810	817	7,073
1955	1,097	1,557	2,404	1,211	2,025	1,183	325	327	2,253
1956	4,428	6,223	9,233	4,737	8,054	7,026	1,638	1,584	9,939
1957	13,269	18,772	29,082	14,615	24,411	15,651	3,834	3,864	26,871
1958	25,086	48,191	78,564	39,087	61,715	33,726	12,330	11,813	49,499
1959	25,787	67,246	107,781	53,836	86,478	64,824	22,102	21,828	70,838
1960	47,492	66,317	77,936	39,867	63,517	84,363	23,260	22,305	73,305
1961	68,505	46,073	88,274	51,457	28,015	242,753	91,290	65,565	150,205
1962	57,705	56,056	69,189	44,851	49,179	208,180	61,489	47,608	133,653
1963	52,585	91,914	173,985	86,405	67,733	425,626	104,436	77,970	102,072
1964	124,014	333,621	291,013	174,469	86,271	1,093,795	684,005	485,033	571,173
1965	622,257	1,053,029	1,524,848	1,044,851	196,487	3,385,205	1,655,024	1,436,258	476,830
1966	2,800,056	3,709,779	673,429	466,228	418,141	4,916,319	974,862	724,354	1,829,852
1967	3,652,342	4,636,627	1,881,333	1,244,265	1,238,428	2,788,299	525,653	400,183	1,721,304
1968	1,025,969	1,323,302	4,726,074	3,145,775	8,343,706	10,210,266	1,330,361	1,405,117	7,522,015
1969	145,111	229,185	706,272	529,080	3,704,065	15,112,041	1,223,457	1,134,395	9,523,012
1970	74,366	85,151	70,725	72,798	320,797	11,031,255	987,213	738,955	8,836,897
1971	15,595	45,006	43,988	42,624	339,078	2,925,191	193,255	36,514	3,275,227
1972	19,736	32,657	43,939	24,748	81,937	1,388,348	101,784	20,165	1,003,380
1973	14,283	16,448	9,980	16,320	25,090	680,834	19,584	13,469	798,805
1974	22,111	14,951	19,555	32,240	29,582	524,504	30,735	16,333	778,696
1975	15,865	13,479	10,793	13,678	25,827	269,197	25,164	21,048	370,265
1976	76,202	54,217	37,464	59,842	105,332	507,519	59,753	42,776	434,574
1977	75,628	52,919	22,826	54,444	81,293	301,515	49,972	30,152	235,514
1978	48,754	16,469	(2,816)	27,331	43,126	348,674	(653)	1,500	297,817
1979	241	6,906	13,401	14,229	25,411	293,786	9,846	7,856	245,590
1980	18,165	18,813	15,608	27,498	34,190	1,676,267	29,169	23,023	1,719,775
1981	10,309	14,885	26,473	20,972	25,515	(1,076,221)	27,551	33,674	(1,142,721)
1982	8,237	6,608	7,680	8,346	16,339	(745,914)	9,886	29,393	(804,147)
1983	14,488	9,792	14,174	13,050	35,872	419,650	17,389	24,933	115,983
1984	7,533	27,613	87,907	49,271	22,732	54,590	75,453	63,060	63,537
1985	9,215	6,949	5,263	8,013	8,875	(49,408)	9,523	5,867	54,782
1986	22,335	16,664	16,014	25,031	20,483	140,642	25,960	13,913	154,089
1987	16,704	13,512	12,369	20,023	15,435	101,453	20,411	8,581	227,047
1988	(159,357)	(73,648)	(151,040)	(51,401)	(120,104)	161,077	(75,276)	(75,307)	144,369
1989	70,153	65,216	63,382	120,925	73,037	2,778,880	119,559	36,660	2,952,046
1990	34,841	29,230	27,269	49,082	34,048	715,031	44,187	14,537	440,017
1991	36,888	32,195	30,146	55,119	34,144	423,235	50,345	12,116	353,596
1992	103,321	99,765	98,178	192,455	97,638	991,603	185,311	9,210	387,615
1993	90,291	70,131	63,247	118,440	80,530	687,462	109,792	38,960	942,211
1994	65,737	29,221	26,997	50,234	35,154	400,534	44,481	17,426	324,942
1995	435,909	32,487	25,516	49,885	41,733	524,524	48,740	29,125	450,952
1996	253,433	19,489	15,020	30,202	29,333	403,125	26,945	16,405	253,622
1997	73,458	30,890	25,368	48,767	40,900	451,910	47,815	29,878	809,848
1998	14,618	7,107	5,773	10,697	9,676	288,667	10,799	6,819	119,562
1999	47,359	17,022	13,362	34,410	31,539	260,623	24,634	14,826	264,538
2000	43,459	21,186	32,480	40,180	25,119	168,825	15,243	11,006	151,512
2001	42,731	14,471	22,325	34,996	8,027	71,645	4,537	3,988	66,918
2002	87,805	19,626	7,157	78,600	47,505	276,160	22,632	34,980	164,596
2003	22,946	9,280	8,935	18,114	15,308	136,429	6,671	9,686	110,489
2004	5,594	3,375	4,258	7,098	5,927	53,324	5,667	1,542	51,186
2005	7,253	5,983	12,511	6,256	6,256	21,215	11,967	0	8,411
2006	2,314	1,942	3,578	2,043	5,642	6,578	3,543	3,444	7,775
2007	34,934	30,687	55,978	29,409	32,387	119,374	55,791	3,148	62,342
2008	54,653	48,162	90,904	46,686	49,697	175,261	90,360	2,965	82,608
2009	39,336	35,236	65,368	33,703	36,554	128,174	64,590	2,647	60,312
2010	18,874	17,791	29,677	16,017	19,316	70,373	28,778	3,061	37,479
2011	4,427	5,329	4,754	3,556	6,854	28,112	3,855	3,061	19,961
2012	4,855	5,845	5,214	3,900	7,517	30,833	4,228	3,358	21,893
2013	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0
TOTAL	10,577,387	12,729,873	11,498,142	8,509,097	16,303,094	66,760,386	9,363,010	7,204,727	47,232,731

TABLE B-10. Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

Sheet 5 of 8

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SOUTH SAN JOAQUIN (contd.)		TEHACHAPI DIVISION			MOJAVE DIVISION			
	Reach 16A	Subtotal	Reach 17E	Reach 17F	Subtotal	Reach 18A	Reach 19	Reach 19C	Reach 20A
[38]	[39]	[40]	[41]	[42]	[43]	[44]	[45]	[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	361,516	1,124,224	662,144	12,166	674,310	113,232	49,150	5,329	171,935
2000	372,997	938,801	408,352	14,333	422,685	120,267	90,145	936	83,478
2001	167,694	477,838	266,815	10,891	277,706	65,580	186,973	2,223	343,775
2002	286,748	1,093,667	247,986	9,586	257,572	35,787	(139,334)	1,374	(11,675)
2003	159,972	535,468	189,013	12,339	201,352	84,433	(19,049)	0	(11,368)
2004	323,072	493,625	374,614	4,946	379,560	20,129	17,620	0	18,936
2005	43,428	166,571	2,263,047	5,983	2,269,030	26,711	17,950	0	23,933
2006	18,798	68,178	5,859,005	8,232	5,867,237	7,616	5,574	0	6,872
2007	215,592	723,551	4,705,300	44,569	4,749,869	87,167	87,101	0	111,979
2008	332,982	1,107,341	5,887,774	63,443	5,951,217	131,826	139,221	0	180,924
2009	240,406	802,543	7,162,729	50,626	7,213,355	97,703	100,539	0	129,228
2010	118,642	406,066	7,155,078	35,592	7,190,670	53,766	47,393	0	57,611
2011	32,133	122,702	108,719	23,131	131,850	21,619	10,008	0	7,764
2012	35,243	134,577	119,240	25,369	144,609	23,712	10,977	0	8,515
2013	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0
TOTAL	76,633,940	292,344,785	282,724,267	54,860,922	337,585,189	51,282,215	24,051,706	759,941	18,834,311

TABLE B-10. Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

Sheet 6 of 8

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	MOJAVE DIVISION (continued)							SANTA ANA DIVISION	
	Reach 20B	Reach 21	Reach 22A	Reach 22B	Reach 23	Reach 24	Subtotal	Reach 25	Reach 26A
[47]	[48]	[49]	[50]	[51]	[52]	[53]	[54]	[55]	
1952	892	5,788	35	2,013	2,074	2,413	21,386	3,334	5,599
1953	3,402	17,846	71	5,752	6,886	7,438	65,936	10,275	17,264
1954	4,548	23,558	369	8,560	7,849	9,820	87,036	13,566	22,790
1955	2,213	7,947	178	2,754	2,725	3,313	29,357	4,575	7,687
1956	2,655	8,542	216	2,905	2,961	3,561	31,562	4,917	8,264
1957	9,826	31,616	800	10,757	10,962	13,177	116,825	18,205	30,586
1958	16,752	53,569	1,397	18,717	18,578	22,627	199,237	31,001	52,019
1959	18,604	56,724	1,844	25,421	20,372	45,646	255,388	39,325	58,137
1960	37,179	43,893	11,029	136,751	17,152	109,816	449,110	65,655	93,700
1961	37,102	21,532	14,517	215,859	9,546	373,473	777,154	26,979	56,734
1962	10,730	8,197	4,186	164,168	4,336	279,421	817,994	9,964	36,235
1963	40,865	26,670	17,081	237,695	7,228	358,503	1,205,145	31,013	112,271
1964	71,116	33,912	22,793	262,996	6,863	244,003	1,495,651	69,669	202,642
1965	343,506	91,095	65,689	827,655	11,836	621,566	2,916,174	279,237	206,356
1966	1,311,628	160,388	178,538	1,746,245	31,078	1,018,628	6,629,975	415,066	364,004
1967	1,718,942	498,257	367,961	3,146,128	62,135	2,331,106	11,009,612	3,184,296	638,539
1968	2,291,691	1,141,929	1,145,768	4,588,850	102,207	2,600,293	21,078,184	8,264,126	1,268,194
1969	5,626,284	2,358,737	1,515,147	7,750,478	260,659	11,131,406	37,268,731	6,807,783	1,768,456
1970	5,304,372	3,232,911	2,081,810	23,451,612	1,240,798	16,885,193	59,277,133	2,169,051	7,229,429
1971	1,091,123	825,070	432,464	16,772,680	1,922,115	5,385,721	29,292,507	1,135,248	9,811,736
1972	635,507	484,772	324,865	3,788,894	48,049	788,479	7,085,469	1,095,740	5,528,987
1973	83,840	63,774	36,179	1,623,274	24,333	4,225,877	6,247,801	136,994	1,810,729
1974	118,639	103,545	54,198	5,699,605	130,567	766,562	7,248,472	68,180	1,922,999
1975	169,294	167,240	19,453	4,793,580	19,467	373,783	5,731,466	166,653	3,787,797
1976	102,909	44,896	24,732	3,103,916	84,188	204,705	3,837,735	475,176	1,494,750
1977	120,160	71,389	49,445	1,654,122	60,112	232,230	2,708,024	76,255	776,085
1978	68,838	32,855	18,183	677,448	36,484	210,198	1,711,657	57,463	131,076
1979	36,225	18,948	10,675	560,506	10,634	103,615	1,754,670	29,960	80,482
1980	284,545	133,526	121,171	2,239,224	60,229	559,963	5,914,309	31,462	181,638
1981	32,214	13,223	6,466	(774,614)	138,917	203,941	1,737,796	5,864	69,031
1982	77,988	13,158	14,459	432,274	346,905	79,819	8,717,959	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	58,392	37,660	17,874	1,006,721	2,208,657	123,472	3,792,422	224,119	843,638
2000	75,230	44,857	20,181	724,837	1,251,684	83,871	2,495,486	129,156	1,285,637
2001	121,907	77,799	54,526	550,843	342,965	26,780	1,773,371	73,031	447,282
2002	(82,663)	(7,369)	(43,431)	270,386	269,139	71,793	264,007	54,815	1,753,554
2003	(7,565)	(3,239)	(3,009)	382,019	146,659	30,254	599,135	86,731	350,994
2004	12,753	13,853	5,500	264,180	49,194	12,693	414,858	13,919	276,692
2005	17,950	23,933	6,256	62,195	103,834	143,825	426,587	16,594	120,006
2006	5,062	6,298	21,328	83,354	295,907	645,475	1,077,486	22,443	17,130
2007	84,583	107,205	30,721	2,818,136	1,602,998	1,240,247	6,170,137	20,457	144,201
2008	136,816	176,646	48,284	2,607,610	1,497,496	1,027,759	5,946,582	22,251	223,141
2009	98,366	125,583	35,417	657,670	92,296	19,579	1,356,381	22,227	160,304
2010	44,879	53,395	18,000	177,892	55,500	22,647	531,083	25,710	77,581
2011	7,494	3,548	5,538	53,997	27,686	22,647	160,301	25,710	19,065
2012	8,220	3,891	6,074	59,223	30,365	24,839	175,816	28,198	20,910
2013	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0
TOTAL	18,087,416	8,870,004	13,062,772	131,886,848	67,414,395	54,822,512	389,072,120	60,839,596	45,513,126

TABLE B-10. Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

Sheet 7 of 8

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	SANTA ANA DIVISION (continued)				WEST BRANCH					
	Reach 28G (a)	Reach 28H	Reach 28J	Subtotal	Reach 29A	Reach 29F	Reach 29G	Reach 29H	Reach 29J	
[56]	[57]	[58]	[59]	[60]	[61]	[62]	[63]	[64]		
1952	4,785	4,055	3,020	20,793	2,924	136	175	459	553	
1953	15,580	11,511	9,476	64,106	9,093	344	237	1,754	1,683	
1954	18,015	18,100	12,160	84,631	7,389	1,201	2,229	2,350	4,162	
1955	6,052	6,081	4,151	28,546	1,019	585	1,086	1,147	2,029	
1956	6,496	6,525	4,480	30,682	490	698	1,297	1,366	2,420	
1957	24,044	24,156	16,585	113,576	1,809	2,583	4,792	5,057	8,952	
1958	40,844	41,033	28,470	193,367	3,256	4,516	8,714	8,878	15,847	
1959	45,746	45,946	44,331	233,485	7,953	9,150	19,414	18,243	35,583	
1960	59,102	58,548	118,969	395,974	21,753	14,990	34,447	29,764	69,752	
1961	32,226	34,382	674,787	825,108	22,442	12,775	21,559	20,086	39,761	
1962	21,383	20,530	47,484	135,596	40,237	28,729	86,938	58,215	108,962	
1963	43,884	41,698	1,506,440	1,735,306	91,959	69,162	163,347	110,015	211,592	
1964	89,710	45,762	98,569	506,352	150,670	66,420	207,977	143,340	291,404	
1965	96,956	76,899	146,095	805,543	361,811	77,914	403,115	127,430	589,638	
1966	170,878	308,756	589,107	1,847,811	489,512	203,497	1,233,640	348,918	3,231,797	
1967	233,968	283,126	987,832	5,327,761	1,589,715	882,096	1,117,247	891,607	31,088,491	
1968	871,337	266,295	780,587	11,450,539	3,899,363	300,921	396,190	1,104,832	36,157,768	
1969	1,117,873	1,444,654	756,442	11,895,208	6,592,580	336,480	693,348	1,184,454	9,655,871	
1970	1,843,621	1,013,468	2,829,523	15,085,092	7,986,733	6,089,401	2,624,747	3,002,968	8,463,475	
1971	16,095,702	6,401,303	12,111,623	45,555,612	4,247,037	3,768,699	1,120,231	8,244,651	5,844,024	
1972	1,537,880	11,960,791	21,542,747	41,666,145	1,871,831	426,932	985,512	18,787,722	(23,015,734)	
1973	209,664	247,769	3,673,344	6,078,500	775,824	168,064	399,856	9,408,706	1,821,206	
1974	162,178	101,638	1,980,991	4,235,986	560,657	168,878	169,717	3,901,261	(3,454,239)	
1975	157,365	124,399	1,626,274	5,862,488	353,670	421,176	925,693	664,113	609,891	
1976	178,287	118,748	1,497,465	3,764,426	396,809	650,417	1,274,484	706,244	650,209	
1977	127,106	89,036	323,091	1,391,573	390,637	3,018,637	2,152,961	196,012	1,135,148	
1978	147,112	153,867	347,482	837,000	1,427,190	2,219,135	6,694,615	57,817	149,932	
1979	29,723	19,225	225,947	385,337	940,013	2,168,382	19,813,742	597,858	331,313	
1980	137,833	154,821	1,077,900	1,583,654	1,276,793	4,108,143	24,537,814	550,337	204,751	
1981	28,815	22,654	61,349	187,713	(711,751)	2,699,873	19,806,531	94,944	28,852	
1982	16,069	58,900	55,841	299,314	(465,217)	351,251	17,964,617	215,678	42,587	
1983	18,213	89,581	(264,804)	376,058	100,394	180,971	6,751,649	220,029	24,295	
1984	14,462	12,259	49,547	350,573	71,759	68,930	2,870,259	335,942	17,285	
1985	17,816	11,481	54,070	151,493	142,244	25,386	2,126,670	102,366	21,971	
1986	31,564	25,037	86,794	267,883	133,914	62,294	274,660	141,894	36,149	
1987	17,141	8,005	45,528	102,790	13,936	453,949	711,773	192,511	27,931	
1988	41,892	21,113	90,784	323,104	427,544	118,010	1,660,959	203,130	95,930	
1989	28,708	12,619	51,556	(2,196,424)	207,067	430,662	584,186	241,811	97,472	
1990	27,478	12,817	55,408	(1,385,019)	197,428	355,480	386,882	813,211	54,269	
1991	142,139	15,524	62,794	(893,417)	219,321	344,386	453,336	1,132,520	55,176	
1992	34,185	13,422	69,479	(1,427,482)	541,026	295,312	464,421	4,402,524	47,182	
1993	44,300	27,047	162,854	5,720,209	464,987	320,182	643,189	3,361,457	74,198	
1994	16,351	11,673	54,581	4,680,290	203,666	231,527	362,717	306,148	33,758	
1995	35,402	28,202	164,254	4,039,213	344,358	392,647	536,253	468,656	34,007	
1996	76,723	73,629	344,747	19,414,376	150,901	161,394	427,223	203,201	15,357	
1997	50,662	20,720	268,293	7,322,753	298,002	71,310	432,940	276,180	50,095	
1998	10,268	8,970	479,138	3,105,500	346,973	21,003	2,028,979	181,951	49,377	
1999	84,683	45,293	324,223	1,521,956	296,520	37,641	1,080,682	125,373	51,213	
2000	64,095	41,331	114,224	1,634,443	212,174	33,747	238,676	116,588	13,241	
2001	20,193	13,635	88,656	642,797	43,281	6,448	104,127	110,850	10,737	
2002	53,787	12,619	196,949	2,071,724	171,190	30,767	252,912	60,146	7,881	
2003	1,096,665	2,482,178	179,465	4,196,033	50,516	9,140	103,157	57,710	51,000	
2004	1,736,590	856,794	24,931	2,908,926	48,551	6,994	28,690	108,375	216,380	
2005	2,049,472	409,829	270,555	2,866,456	273,242	11,934	53,022	6,256	51,947	
2006	2,302,499	408,909	2,572,763	5,323,744	656,785	25,232	132,339	2,018	2,302,783	
2007	1,426,808	11,528	25,841,097	27,444,091	1,301,833	63,629	630,057	1,652,931	233,481	
2008	1,426,519	11,963	103,765,927	105,449,801	1,131,921	211,990	713,115	762,804	28,440	
2009	11,066	11,555	173,032,676	173,237,828	52,282	1,058,447	428,549	53,970	28,151	
2010	12,800	13,366	86,529,778	86,659,235	32,182	910,795	4,038,193	39,461	32,562	
2011	12,800	13,366	23,673	94,614	16,830	13,597	507,135	26,999	32,562	
2012	14,039	14,659	25,964	103,770	18,459	14,912	267,229	29,612	35,714	
2013	0	0	0	0	0	0	0	0	0	
2014	0	0	0	0	0	0	0	0	0	
2015	0	0	0	0	0	0	0	0	0	
TOTAL	34,489,554	27,943,800	447,948,466	616,734,542	40,513,487	34,239,901	132,160,247	66,222,850	78,158,224	

a) Includes excess capacity costs (not shown in Table B-9) allocated to MWDSC in the following years and repaid under Article 24(c) of its contract: 1970 - \$362,000; 1971 - \$6,198,000; 1972 - \$139,000.

TABLE B-10. Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

Sheet 8 of 8

Calendar Year	CALIFORNIA AQUEDUCT (continued)											GRAND TOTAL
	WEST BRANCH (cont.)		COASTAL BRANCH								Total	
	Reach 30	Subtotal	Reach 31A	Reach 33A	Reach 33B	Reach 34	Reach 35	Reach 37	Reach 38	Subtotal		
[65]	[66]	[67]	[68]		[69]	[70]	[71]	[72]	[73]	[74]	[75]	
1952	1,408	5,655	0	0	0	0	0	0	0	0	98,857	99,353
1953	4,346	17,457	0	0	0	0	0	0	0	0	309,387	311,812
1954	5,743	23,074	0	0	0	0	0	0	0	0	394,688	402,143
1955	1,943	7,809	0	0	0	0	0	0	0	0	159,842	169,342
1956	2,077	8,348	0	0	0	0	0	0	0	0	255,679	351,551
1957	7,684	30,877	0	0	0	0	0	0	0	0	708,753	1,464,452
1958	13,931	55,142	0	0	0	0	0	0	0	0	1,331,616	2,286,623
1959	44,384	134,727	28,046	49,114	0	7,441	8,236	0	0	92,837	2,096,392	2,967,412
1960	84,703	255,409	34,404	70,450	0	8,507	14,265	0	0	127,626	2,937,049	4,660,833
1961	123,330	239,953	13,801	17,868	0	1,501	3,931	0	0	37,101	4,650,264	8,545,244
1962	348,366	671,447	10,121	7,798	0	524	1,689	0	0	20,132	5,827,774	8,875,171
1963	521,491	1,167,566	20,470	14,299	0	880	2,943	0	0	38,592	18,981,487	24,610,278
1964	1,372,464	2,232,275	315,418	26,963	0	1,687	5,639	0	0	349,707	31,550,813	41,736,060
1965	3,383,950	4,943,858	747,023	36,178	0	2,118	7,060	0	0	792,379	57,936,405	62,664,743
1966	9,364,753	14,872,117	2,258,915	35,864	0	1,736	5,764	0	0	2,302,279	124,748,128	129,110,330
1967	17,618,827	53,187,979	6,310,419	38,331	0	1,891	6,213	0	0	6,356,854	187,465,580	194,146,365
1968	15,736,691	57,595,765	2,707,580	30,784	0	1,324	4,369	0	0	2,744,057	192,593,079	197,978,911
1969	16,228,175	34,690,908	423,797	26,549	0	907	2,905	0	0	454,158	182,530,023	184,473,490
1970	22,330,328	50,497,652	269,194	24,368	0	851	2,787	0	0	297,200	206,720,774	207,082,650
1971	16,890,503	40,115,145	164,446	32,230	0	1,315	3,804	0	0	201,795	158,414,033	158,624,739
1972	3,818,001	2,874,264	131,332	17,601	0	522	1,660	0	0	151,115	68,228,670	68,362,291
1973	13,426,222	25,999,878	182,493	16,154	0	542	1,758	0	0	200,947	45,110,823	45,263,853
1974	2,988,318	4,334,592	190,866	18,799	0	463	1,405	0	0	211,533	24,036,199	24,402,166
1975	1,808,235	4,782,778	64,582	36,012	0	2,255	6,656	0	0	109,505	21,065,768	21,318,838
1976	1,253,067	4,931,230	198,266	68,898	0	5,088	14,988	0	0	287,240	17,183,961	17,492,910
1977	345,023	7,238,418	918,473	81,305	0	1,834	5,387	0	0	1,006,999	15,165,801	15,544,382
1978	763,445	11,312,134	52,994	83,300	0	1,302	3,852	0	0	141,448	18,661,117	19,119,151
1979	282,145	24,133,453	38,182	108,951	0	1,505	4,433	0	0	153,071	31,202,118	31,857,362
1980	2,055,206	32,733,044	189,070	376,036	0	1,152	3,449	0	0	569,707	73,891,101	74,986,833
1981	275,460	22,193,909	19,897	(157,537)	0	1,427	4,261	0	0	(131,952)	15,246,649	15,742,773
1982	351,376	18,460,292	(16,381)	(96,449)	0	588	1,787	0	0	(110,455)	38,256,580	39,705,931
1983	566,545	7,843,883	85,496	67,106	0	794	2,398	0	0	155,794	34,705,281	38,044,649
1984	1,118,954	4,483,129	28,568	54,074	0	986	2,959	0	0	86,587	24,454,091	30,382,250
1985	284,243	2,702,880	36,834	54,314	0	2,111	6,263	0	0	99,522	14,914,930	28,537,556
1986	213,353	862,264	82,358	223,134	0	17,458	51,279	0	0	374,229	13,435,351	43,155,828
1987	158,313	1,558,413	53,817	1,061,939	0	92,506	272,968	0	0	1,481,230	11,711,428	34,331,982
1988	222,068	2,727,641	183,853	1,141,272	0	99,456	293,612	0	0	1,718,193	11,026,370	18,123,243
1989	148,674	1,709,872	84,678	893,765	0	77,283	228,038	0	0	1,283,764	30,302,112	33,130,497
1990	119,438	1,926,708	133,868	1,100,167	0	103,785	277,889	0	0	1,615,709	32,589,619	34,435,721
1991	229,315	2,434,054	164,610	1,635,283	0	123,603	363,889	0	0	2,287,385	38,320,942	39,811,664
1992	206,495	5,956,960	183,240	1,220,510	1,495,646	566,230	240,553	102,051	74,162	3,882,392	34,312,996	35,041,233
1993	296,349	5,160,362	344,928	5,274,657	5,052,431	1,345,211	688,935	268,937	358,367	13,333,467	53,122,385	53,921,788
1994	168,426	1,306,242	282,150	15,905,886	21,341,196	8,915,445	2,363,238	678,753	1,315,559	50,802,227	73,751,564	74,225,377
1995	304,983	2,080,904	1,196,326	45,172,271	62,947,362	23,975,738	20,849,939	7,029,108	7,117,197	168,287,940	191,033,089	191,525,570
1996	98,522	1,056,598	948,730	42,987,442	54,300,990	26,475,298	18,790,572	7,213,823	6,616,310	157,333,164	187,776,346	188,025,324
1997	233,956	1,362,483	562,583	11,209,633	13,893,576	10,456,863	4,149,105	545,378	798,606	41,615,744	62,137,369	62,583,537
1998	67,874	2,696,157	248,671	2,355,322	4,159,441	3,368,320	952,615	192,567	280,779	11,557,715	27,083,446	27,217,157
1999	118,013	1,709,442	288,236	2,906,010	4,398,935	2,616,574	356,318	36,680	51,648	10,654,401	24,085,344	24,556,054
2000	187,926	802,352	132,435	228,901	2,965,936	2,746,120	17,830	0	0	6,091,222	13,504,772	13,742,556
2001	23,847	299,290	103,281	(7,057)	568,968	3,960	(1,112)	0	0	668,040	5,130,622	7,470,509
2002	62,684	585,580	98,021	147,827	105,972	77,266	13,119	0	0	442,205	8,836,703	17,138,613
2003	34,280	305,803	42,071	43,753	31,706	25,734	6,272	0	0	149,536	3,109,548	10,874,362
2004	17,442	426,432	27,034	14,576	22,446	3,605	2,229	0	0	69,890	5,140,297	16,159,984
2005	593,265	989,666	29,204	(262,373)	37,518	0	0	0	0	(195,651)	8,092,124	17,205,658
2006	167,750	3,286,907	7,671	574,914	37,459	95,671	110,010	0	0	825,725	16,831,936	33,259,996
2007	366,991	4,248,922	126,575	147,227	57,500	27,525	17,076	0	0	375,903	45,991,986	65,581,685
2008	5,171,379	8,019,649	202,213	219,203	62,642	29,987	18,603	0	0	532,648	131,104,930	146,816,730
2009	12,118,228	13,739,627	143,867	170,099	62,642	29,987	18,603	0	0	425,198	201,102,252	206,049,778
2010	7,323,269	12,376,462	64,226	107,557	72,459	34,686	21,519	0	0	300,447	109,641,234	110,062,173
2011	60,820	657,943	8,781	59,159	72,459	34,686	21,519	0	0	196,604	1,488,178	1,573,920
2012	66,706	432,632	9,631	64,884	79,472	38,043	23,601	0	0	215,631	1,343,214	1,437,255
2013	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
2015	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	162,201,703	513,496,412	21,177,364	135,735,321	171,766,756	81,432,291	50,279,080	16,067,297	16,612,628	493,070,737	2,963,839,870	3,208,780,642

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

Sheet 1 of 8

Calendar Year	UPPER FEATHER DIVISION	NORTH BAY AQUEDUCT					SOUTH BAY AQUEDUCT			
		Reach 1	Reach 2	Reach 3A	Reach 3B	Total	Reach 1	Reach 2	Reach 4	Reach 5
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	37,396	5,522	0	0
1963	0	0	0	0	0	0	147,719	20,639	0	0
1964	0	0	0	0	0	0	149,750	15,574	19,405	0
1965	0	0	0	0	0	0	259,939	45,718	46,485	0
1966	0	0	0	0	0	0	270,890	23,799	63,921	0
1967	0	0	0	0	0	0	438,050	32,798	108,127	0
1968	0	0	0	0	130	130	410,919	44,277	66,973	706
1969	0	0	0	0	80,875	80,875	487,377	48,339	75,644	706
1970	0	0	0	0	94,872	94,872	381,734	44,852	64,833	71,376
1971	54	0	0	0	45,579	45,579	357,850	25,666	50,344	38,735
1972	40	0	0	0	37,895	37,895	347,941	30,606	56,800	100,106
1973	1	0	0	0	32,993	32,993	386,897	36,172	58,288	28,810
1974	143	0	0	0	46,498	46,498	456,381	57,081	83,120	61,623
1975	1,069	0	0	0	37,707	37,707	624,989	46,111	81,361	36,682
1976	139	0	0	0	60,786	60,786	614,362	47,862	123,838	91,096
1977	892	0	0	0	78,400	78,400	511,065	48,926	104,280	102,083
1978	39	0	0	0	56,318	56,318	671,195	125,224	176,855	50,289
1979	3,235	0	0	0	73,852	73,852	650,826	76,849	212,826	91,380
1980	416	0	0	0	81,769	81,769	1,128,840	212,974	242,118	110,786
1981	3,847	0	0	0	101,340	101,340	884,763	130,126	167,118	204,772
1982	11,075	0	0	0	191,987	191,987	1,156,605	141,718	249,447	96,020
1983	1,928	0	0	0	80,215	80,215	1,258,144	84,360	373,875	152,255
1984	3,765	0	0	0	139,121	139,121	1,998,984	113,797	340,344	34,461
1985	2,888	0	0	0	259,515	259,515	2,044,121	207,478	427,930	247,308
1986	2,787	0	0	0	229,508	229,508	1,834,838	285,908	305,149	159,054
1987	2,388	0	0	0	310,683	310,683	2,118,974	163,714	400,547	283,067
1988	545	0	(94)	0	330,156	330,062	2,068,655	186,275	299,934	370,212
1989	1,800	473,408	178,069	237,480	373,427	1,262,384	2,164,688	163,481	320,734	497,038
1990	788	556,610	244,897	123,144	427,257	1,351,908	2,233,036	251,434	355,022	571,415
1991	3,654	651,307	302,327	205,516	428,470	1,587,620	1,806,699	152,509	95,745	93,986
1992	647	443,912	189,330	265,462	280,505	1,179,209	2,064,907	405,932	409,435	363,964
1993	3,630	435,240	294,416	213,267	289,206	1,232,129	3,925,050	621,712	480,832	399,558
1994	2,279	430,112	198,322	206,594	365,646	1,200,674	4,673,275	302,115	404,709	408,066
1995	2,906	428,313	282,898	151,703	295,326	1,158,240	3,849,620	316,905	566,447	330,706
1996	8,007	796,526	272,743	240,106	260,001	1,569,376	3,526,989	254,075	664,485	493,300
1997	7,449	504,476	210,763	213,211	315,374	1,243,824	3,010,809	189,269	591,540	230,371
1998	798	405,029	227,562	204,964	251,183	1,088,738	2,965,468	426,872	532,042	303,325
1999	416	668,954	326,989	296,605	288,169	1,580,717	3,701,631	472,798	429,082	414,830
2000	505	920,906	255,241	658,168	414,700	2,249,015	3,817,480	542,905	442,515	552,538
2001	319	1,072,623	229,820	455,870	181,522	1,939,835	2,909,692	272,876	290,330	391,186
2002	3,627	1,588,349	416,749	411,379	399,274	2,815,751	3,865,610	343,132	468,352	543,895
2003	3,393	1,777,671	545,908	567,857	354,476	3,245,912	2,352,793	366,393	576,229	964,901
2004	3,455	1,602,507	635,773	738,104	818,511	3,794,895	3,345,983	511,123	747,800	701,961
2005	3,452	1,071,074	320,166	730,768	410,257	2,532,265	3,293,554	249,463	389,196	811,002
2006	3,975	788,054	405,372	482,879	378,547	2,054,852	3,685,546	497,254	736,619	497,908
2007	2,241	1,243,573	492,580	704,045	575,206	3,015,404	3,728,335	469,128	698,510	923,554
2008	3,302	1,344,283	534,070	762,353	620,571	3,261,277	4,079,687	514,879	763,856	1,007,436
2009	3,415	1,379,747	551,203	779,609	638,628	3,349,187	4,061,240	519,709	772,713	896,611
2010	4,274	1,015,739	283,392	507,450	427,875	2,234,456	4,495,852	525,147	847,461	731,380
2011	4,273	1,019,645	284,353	509,396	429,322	2,242,716	4,510,510	526,977	850,466	737,081
2012	4,273	1,019,924	284,396	509,541	429,421	2,243,282	4,511,306	527,067	850,625	737,339
2013	4,273	1,020,823	284,414	510,007	429,674	2,244,918	4,512,258	527,161	850,858	738,345
2014	4,272	1,021,548	284,256	510,401	429,778	2,245,983	4,510,776	526,964	850,664	739,426
2015	4,274	1,022,307	284,479	510,780	430,102	2,247,668	4,514,269	527,372	851,320	739,958
2016	4,271	1,020,912	284,179	510,074	429,565	2,244,730	4,509,250	526,791	850,353	738,813
2017	4,272	1,021,499	284,286	510,373	429,780	2,245,938	4,511,095	527,003	850,712	739,323
2018	4,273	1,022,552	284,306	510,923	430,075	2,247,856	4,512,214	527,113	850,986	740,507
2019	4,268	1,021,015	284,043	510,138	429,519	2,244,715	4,507,559	526,581	850,071	739,139
2020	4,273	1,021,853	284,342	510,554	429,908	2,246,657	4,512,112	527,117	850,916	739,647
2021	4,276	1,022,216	284,563	510,724	430,127	2,247,630	4,515,258	527,495	851,481	739,725
2022	4,272	1,022,294	284,265	510,791	429,982	2,247,332	4,511,441	527,025	850,836	740,274
2023	4,271	1,020,965	284,216	510,099	429,602	2,244,882	4,509,771	526,855	850,446	738,814
2024	4,271	1,021,533	284,214	510,396	429,752	2,245,895	4,510,195	526,891	850,563	739,472
2025	4,276	1,022,556	284,542	510,903	430,205	2,248,206	4,515,252	527,485	851,506	740,148
2026	4,267	1,020,714	283,963	509,989	429,394	2,244,060	4,506,272	526,431	849,829	738,916
2027	4,282	1,023,917	284,951	511,582	430,797	2,251,247	4,521,674	528,239	852,710	741,086
2028	4,267	1,020,687	283,889	509,981	429,348	2,243,905	4,505,295	526,312	849,658	738,998
2029	4,273	1,021,856	284,397	510,548	429,938	2,246,739	4,512,830	527,206	851,038	739,563
2030	4,271	1,020,777	284,182	510,002	429,533	2,244,494	4,509,178	526,783	850,329	738,650
2031	4,281	1,024,462	284,890	511,870	430,909	2,252,131	4,521,321	528,182	852,693	741,808
2032	4,264	1,020,129	283,716	509,704	429,102	2,242,651	4,502,592	525,994	849,153	738,624
2033	4,274	1,021,851	284,517	510,538	430,005	2,246,911	4,514,399	527,397	851,306	739,371
2034	4,273	1,022,257	284,427	510,757	430,061	2,247,502	4,513,546	527,284	851,191	739,978
2035	4,264	1,020,259	283,765	509,766	429,163	2,242,953	4,503,330	526,083	849,292	738,699
TOTAL	206,387	45,136,964	14,506,047	21,916,371	21,909,392	103,468,774	208,040,851	23,847,284	37,052,218	32,944,162

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

Sheet 2 of 8

Calendar Year	SOUTH BAY AQUEDUCT (continued)					CALIFORNIA AQUEDUCT			
						NORTH SAN JOAQUIN DIVISION			
	Reach 6	Reach 7	Reach 8	Reach 9	Total	Reach 1	Reach 2A	Reach 2B	Subtotal
[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	42,918	0	0	0	0
1963	0	0	0	0	168,358	0	0	0	0
1964	0	0	0	0	184,729	0	0	0	0
1965	2,634	6,490	4,704	12,904	378,874	0	0	0	0
1966	4,707	10,328	9,233	25,519	408,397	0	0	0	0
1967	2,712	7,659	10,812	34,347	634,505	0	0	0	0
1968	3,109	7,960	10,166	40,372	584,482	1,001,998	228,359	103,116	1,333,473
1969	3,944	5,975	8,795	38,566	669,346	933,116	301,596	188,194	1,422,906
1970	2,464	(1,991)	6,870	28,210	598,348	971,602	306,198	151,539	1,429,339
1971	3,116	9,394	9,895	31,068	526,068	1,103,021	254,786	113,694	1,471,501
1972	5,125	10,247	12,054	44,699	607,578	1,107,855	230,906	110,109	1,448,870
1973	4,178	7,500	4,890	43,816	570,551	1,150,864	221,445	100,221	1,472,530
1974	7,812	7,564	5,523	48,054	727,158	1,272,034	231,383	117,156	1,620,573
1975	18,120	14,683	18,325	68,377	908,648	1,434,736	455,110	201,075	2,090,921
1976	10,873	5,557	19,920	49,921	963,429	1,519,801	217,348	453,400	2,190,549
1977	(240)	2,228	8,391	89,579	866,312	1,913,643	292,380	196,564	2,402,587
1978	(1,404)	16,766	(5,313)	104,078	1,137,690	1,860,456	306,503	188,214	2,355,173
1979	1,269	29,294	7,351	106,835	1,176,630	1,848,109	231,339	145,205	2,224,653
1980	3,621	24,270	17,404	110,852	1,850,865	2,365,292	472,660	247,608	3,085,560
1981	4,038	20,109	17,586	98,143	1,526,655	2,649,730	435,226	154,191	3,239,147
1982	2,236	22,870	21,919	202,590	1,893,405	3,192,710	599,793	244,664	4,037,167
1983	(2,047)	48,781	45,573	216,434	2,177,375	4,244,937	802,908	273,081	5,320,926
1984	4,449	44,017	23,563	455,054	3,014,669	4,373,157	808,917	290,728	5,472,802
1985	13,097	74,565	57,920	238,067	3,310,486	4,717,323	629,825	189,199	5,536,347
1986	11,614	31,084	46,864	363,350	3,037,861	5,217,491	929,919	359,365	6,506,775
1987	15,273	25,182	37,949	416,375	3,461,081	5,292,200	958,927	362,065	6,613,192
1988	30,207	41,047	49,156	335,408	3,380,894	5,329,317	822,300	360,336	6,511,953
1989	9,740	54,881	114,203	179,323	3,504,088	5,753,966	851,745	907,609	7,513,320
1990	31,161	69,416	119,309	247,781	3,878,574	6,788,986	1,066,314	883,822	8,739,122
1991	22,434	(18,690)	99,577	262,052	2,514,312	6,796,247	1,067,078	585,008	8,448,333
1992	26,787	332,012	98,670	186,640	3,888,347	9,415,121	1,419,603	673,833	11,508,557
1993	24,845	181,592	94,169	316,045	6,043,803	10,274,070	1,371,074	900,996	12,546,140
1994	28,383	90,791	80,942	416,061	6,404,342	8,451,199	1,325,511	802,217	10,578,927
1995	29,298	64,012	80,278	373,657	5,610,923	10,406,784	2,386,507	959,685	13,752,976
1996	(1,020)	60,610	11,672	312,097	5,322,208	10,246,985	2,604,651	628,177	13,479,813
1997	18,428	95,321	15,691	335,566	4,486,995	10,429,338	1,098,381	2,084,859	13,612,578
1998	26,323	54,255	611,290	658,090	5,577,665	11,410,436	1,449,411	5,364,368	18,224,215
1999	49,762	34,829	426,694	2,030,604	7,560,230	11,446,675	1,365,947	1,301,570	14,114,192
2000	135,909	87,815	185,985	641,445	6,406,592	12,637,999	905,934	648,421	14,192,354
2001	112,970	188,989	197,745	1,048,191	5,411,979	17,559,077	1,375,177	752,734	19,686,988
2002	143,886	171,491	501,630	2,781,431	8,819,427	14,429,951	961,125	622,521	15,913,597
2003	78,084	97,968	248,068	987,782	5,672,218	16,534,136	1,724,007	749,673	19,007,816
2004	156,691	179,277	205,603	454,479	6,302,917	14,177,440	1,308,095	733,356	16,218,891
2005	143,198	195,310	135,676	218,060	5,435,459	12,180,665	1,869,960	852,126	14,902,751
2006	54,950	82,397	279,763	823,196	6,657,633	14,493,268	1,803,139	2,039,645	18,336,052
2007	128,454	166,275	233,290	562,286	6,909,832	14,389,857	1,710,507	1,329,357	17,429,721
2008	138,360	179,561	258,244	623,024	7,565,047	15,786,282	1,871,873	1,478,169	19,136,324
2009	144,312	186,546	258,228	622,061	7,461,420	15,641,343	1,850,153	2,140,911	19,632,407
2010	99,636	92,328	112,228	550,711	7,454,743	12,454,304	2,372,668	790,848	15,617,820
2011	99,973	92,642	112,608	552,573	7,482,830	12,494,892	2,381,860	793,549	15,670,301
2012	99,989	92,656	112,624	552,656	7,484,262	12,496,764	2,382,390	793,720	15,672,874
2013	99,991	92,661	112,631	552,683	7,486,588	12,500,804	2,384,322	794,314	15,679,440
2014	99,935	92,607	112,565	552,363	7,485,300	12,501,301	2,386,229	794,869	15,682,399
2015	100,012	92,678	112,654	552,795	7,491,058	12,508,021	2,387,460	795,283	15,690,764
2016	99,908	92,582	112,536	552,214	7,482,447	12,497,394	2,384,987	794,478	15,676,859
2017	99,945	92,617	112,576	552,419	7,485,690	12,501,530	2,386,065	794,823	15,682,418
2018	99,951	92,622	112,583	552,450	7,488,426	12,506,274	2,388,337	795,521	15,690,132
2019	99,859	92,536	112,479	551,944	7,480,168	12,495,637	2,385,479	794,606	15,675,722
2020	99,963	92,634	112,600	552,528	7,487,517	12,503,914	2,386,733	795,036	15,685,683
2021	100,042	92,706	112,687	552,958	7,492,352	12,508,941	2,387,087	795,182	15,691,210
2022	99,936	92,607	112,566	552,366	7,487,051	12,504,495	2,387,852	795,368	15,687,715
2023	99,920	92,595	112,550	552,285	7,483,236	12,498,193	2,385,024	794,494	15,677,711
2024	99,918	92,592	112,547	552,276	7,484,454	12,500,531	2,386,280	794,877	15,681,688
2025	100,033	92,699	112,676	552,913	7,492,712	12,510,015	2,387,876	795,419	15,693,310
2026	99,830	92,512	112,448	551,786	7,478,024	12,493,097	2,384,976	794,439	15,672,512
2027	100,178	92,833	112,840	553,712	7,503,272	12,522,267	2,390,064	796,153	15,708,484
2028	99,805	92,487	112,418	551,642	7,476,615	12,491,808	2,385,063	794,452	15,671,323
2029	99,983	92,652	112,622	552,636	7,488,530	12,504,803	2,386,621	795,012	15,686,436
2030	99,909	92,583	112,537	552,220	7,482,189	12,496,867	2,384,679	794,383	15,675,929
2031	100,156	92,812	112,815	553,585	7,503,372	12,523,568	2,391,374	796,543	15,711,485
2032	99,743	92,430	112,349	551,303	7,472,188	12,486,700	2,384,181	794,155	15,665,036
2033	100,026	92,692	112,669	552,874	7,490,734	12,506,719	2,386,372	794,956	15,688,047
2034	99,994	92,662	112,632	552,691	7,489,978	12,506,965	2,387,444	795,270	15,689,679
2035	99,761	92,447	112,369	551,399	7,473,380	12,488,025	2,384,369	794,219	15,666,613
TOTAL	4,252,258	5,434,109	7,633,086	31,644,471	350,848,439	627,753,046	103,049,812	51,650,750	782,453,608

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

Sheet 3 of 8

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	SAN LUIS DIVISION						SOUTH SAN JOAQUIN DIVISION			
	Reach 3	Reach 4	Reach 5	Reach 6	Reach 7	Subtotal	Reach 8C	Reach 8D	Reach 9	
	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[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	3,792,041	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	5,684,969	1,219,793	531,972	670,006	8,804,633	104,822	396,623	409,411	
2000	712,071	5,849,518	1,033,992	528,537	876,030	9,000,148	104,381	467,347	513,824	
2001	(558,917)	7,151,253	851,983	373,030	679,856	8,497,205	58,436	553,295	603,147	
2002	1,071,739	5,193,633	673,240	255,190	738,467	7,932,269	55,252	729,942	417,109	
2003	1,026,535	6,039,979	750,339	304,182	620,749	8,741,784	62,618	674,449	643,946	
2004	655,509	7,033,601	725,042	344,853	606,863	9,365,868	37,161	484,074	337,980	
2005	541,075	5,859,307	942,001	379,255	756,775	8,478,413	27,787	405,593	298,659	
2006	1,144,022	6,479,675	1,930,354	613,576	860,696	11,028,323	110,004	563,587	559,747	
2007	1,713,227	8,824,760	2,375,605	542,580	878,941	14,335,113	62,804	537,745	444,133	
2008	2,362,345	8,779,050	561,631	925,367	15,948,996	17,317,359	67,393	576,021	475,612	
2009	2,672,498	7,882,449	2,902,863	576,209	946,017	14,980,036	70,084	574,578	471,172	
2010	886,984	5,014,321	1,074,071	505,796	690,737	8,171,909	299,973	1,139,833	934,839	
2011	896,318	5,043,020	1,079,588	508,872	694,886	8,222,684	301,004	1,144,493	938,750	
2012	896,707	5,044,950	1,079,753	509,047	695,114	8,225,571	301,054	1,144,826	939,042	
2013	898,700	5,053,073	1,079,807	509,719	695,966	8,237,265	301,089	1,145,950	940,088	
2014	901,387	5,062,371	1,079,180	510,431	696,836	8,250,205	300,949	1,146,948	941,099	
2015	901,795	5,065,957	1,080,025	510,802	697,343	8,255,922	301,184	1,147,796	941,790	
2016	900,377	5,057,651	1,078,891	510,017	696,299	8,243,235	300,857	1,146,184	940,418	
2017	901,095	5,061,458	1,079,289	510,366	696,758	8,248,966	300,974	1,146,872	941,012	
2018	903,439	5,070,991	1,079,352	511,156	697,759	8,262,697	301,017	1,148,193	942,244	
2019	901,461	5,060,761	1,078,363	510,227	696,539	8,247,351	300,726	1,146,383	940,671	
2020	901,580	5,063,885	1,079,500	510,585	697,044	8,252,594	301,037	1,147,292	941,379	
2021	901,061	5,063,786	1,080,344	510,649	697,166	8,253,006	301,262	1,147,636	941,600	
2022	903,095	5,069,242	1,079,189	510,999	697,551	8,260,076	300,969	1,147,887	941,976	
2023	900,267	5,057,537	1,079,032	510,019	696,310	8,243,165	300,895	1,146,228	940,443	
2024	901,620	5,062,909	1,079,013	510,463	696,865	8,250,870	300,905	1,146,949	941,122	
2025	901,989	5,067,299	1,080,255	510,930	697,515	8,257,988	301,248	1,148,074	942,021	
2026	901,252	5,059,217	1,078,057	510,074	696,331	8,244,931	300,640	1,146,042	940,389	
2027	902,651	5,073,567	1,081,816	511,585	698,416	8,268,035	301,679	1,149,592	943,249	
2028	901,645	5,060,117	1,077,774	510,125	696,379	8,246,040	300,569	1,146,045	940,427	
2029	901,237	5,063,024	1,079,714	510,531	696,986	8,251,492	301,092	1,147,263	941,328	
2030	900,035	5,056,324	1,078,904	509,908	696,163	8,241,334	300,858	1,146,012	940,252	
2031	904,300	5,079,610	1,081,571	512,060	699,005	8,276,546	301,629	1,150,308	943,952	
2032	901,412	5,057,642	1,077,114	509,864	696,017	8,242,049	300,385	1,145,428	939,929	
2033	900,477	5,061,070	1,080,181	510,410	696,857	8,248,995	301,210	1,147,198	941,208	
2034	901,992	5,066,294	1,079,824	510,810	697,345	8,256,265	301,131	1,147,756	941,776	
2035	901,414	5,058,090	1,077,300	509,916	696,094	8,242,814	300,435	1,145,566	940,035	
TOTAL	44,050,694	279,499,143	58,317,857	25,434,776	47,460,538	454,763,008	11,021,928	46,219,665	38,764,289	

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

Sheet 4 of 8

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	SOUTH SAN JOAQUIN DIVISION (continued)									
	Reach 10A	Reach 11B	Reach 12D	Reach 12E	Reach 13B	Reach 14A	Reach 14B	Reach 14C	Reach 15A	
	[29]	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	
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	83,706	59,077	0	0	0	0	0	0	0	0
1970	118,046	85,758	94,171	123,374	152,424	0	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	167,249	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	1,125,514	373,814	171,495	399,331	504,020	5,041,004	351,551	231,583	4,753,855	
2000	924,210	407,081	329,756	651,715	567,781	5,957,878	343,438	141,041	5,385,171	
2001	870,742	413,016	893,071	519,027	660,369	4,701,148	(133,796)	(94,419)	6,007,151	
2002	1,309,728	381,311	295,967	959,788	862,655	5,969,394	39,304	256,180	5,598,378	
2003	817,168	338,931	233,756	690,414	612,296	6,182,663	(128,254)	24,819	6,974,013	
2004	609,367	244,096	173,363	623,894	584,409	7,283,893	(107,944)	(142,634)	8,848,430	
2005	900,730	205,133	108,873	851,677	468,777	5,880,867	(179,986)	(191,188)	5,627,114	
2006	1,048,009	318,337	178,077	562,775	611,484	6,185,576	374,008	287,411	6,112,822	
2007	935,068	284,958	180,522	742,191	606,376	7,684,962	355,894	222,714	8,756,553	
2008	1,002,523	305,212	192,685	796,000	649,915	8,259,233	380,859	238,213	8,355,652	
2009	1,021,612	303,741	175,681	817,602	657,380	8,273,976	371,074	229,090	6,824,060	
2010	950,579	711,546	646,289	1,005,740	1,057,102	6,538,270	892,167	616,295	6,228,946	
2011	953,787	714,395	649,193	1,009,600	1,061,336	6,560,698	895,948	618,938	6,249,232	
2012	953,932	714,592	649,436	1,009,847	1,061,626	6,562,269	896,235	619,141	6,250,513	
2013	953,979	715,221	650,427	1,010,514	1,062,554	6,566,445	897,298	619,919	6,253,067	
2014	953,427	715,725	651,542	1,010,890	1,063,299	6,568,626	898,362	620,721	6,252,925	
2015	954,173	716,258	652,005	1,011,652	1,064,090	6,573,580	899,018	621,170	6,257,711	
2016	953,170	715,280	650,955	1,010,352	1,062,639	6,565,213	897,683	620,233	6,250,289	
2017	953,523	715,691	651,435	1,010,881	1,063,248	6,568,587	898,267	620,644	6,253,149	
2018	953,577	716,427	652,596	1,011,665	1,064,338	6,573,490	899,517	621,555	6,256,142	
2019	952,702	715,350	651,317	1,010,299	1,062,740	6,564,731	897,967	620,459	6,248,818	
2020	953,710	715,941	651,735	1,011,191	1,063,617	6,570,575	898,629	620,904	6,254,780	
2021	954,454	716,192	651,749	1,011,663	1,063,994	6,573,721	898,808	621,002	6,258,512	
2022	953,435	716,245	652,380	1,011,436	1,064,068	6,572,018	899,252	621,370	6,254,922	
2023	953,295	715,315	650,946	1,010,426	1,062,693	6,565,695	897,704	620,240	6,250,889	
2024	953,278	715,714	651,601	1,010,838	1,063,282	6,568,247	898,394	620,746	6,252,327	
2025	954,376	716,430	652,174	1,011,886	1,064,345	6,575,107	899,240	621,325	6,259,118	
2026	952,434	715,141	651,120	1,010,004	1,062,426	6,562,818	897,700	620,271	6,247,016	
2027	955,753	717,385	652,990	1,013,266	1,065,767	6,584,088	900,402	622,123	6,267,856	
2028	952,183	715,120	651,220	1,009,914	1,062,397	6,562,188	897,753	620,319	6,246,012	
2029	953,897	715,938	651,635	1,011,244	1,063,618	6,570,962	898,563	620,849	6,255,487	
2030	953,182	715,183	650,792	1,010,258	1,062,498	6,564,612	897,516	620,107	6,249,969	
2031	955,537	717,764	653,718	1,013,605	1,066,324	6,586,121	901,131	622,664	6,268,489	
2032	951,600	714,730	650,899	1,009,345	1,061,815	6,558,471	897,283	619,999	6,242,362	
2033	954,311	715,936	651,414	1,011,356	1,063,619	6,571,778	898,417	620,725	6,257,011	
2034	953,995	716,220	652,039	1,011,564	1,064,034	6,572,983	899,013	621,176	6,256,909	
2035	951,764	714,820	650,956	1,009,485	1,061,951	6,559,397	897,382	620,066	6,243,322	
TOTAL	48,988,014	28,335,758	24,491,848	42,477,272	43,290,554	322,840,696	33,071,584	23,389,316	313,083,167	

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

Sheet 5 of 8

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SOUTH SAN JOAQUIN DIVISION (continued)		TEHACHAPI DIVISION			MOJAVE DIVISION			
	Reach 16A	Subtotal	Reach 17E	Reach 17F	Subtotal	Reach 18A	Reach 19	Reach 19C	Reach 20A
	[38]	[39]	[40]	[41]	[42]	[43]	[44]	[45]	[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	5,313,388
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	7,588,901
1999	8,717,679	22,580,702	19,690,120	152,644	19,842,764	3,104,013	632,659	0	5,313,388
2000	12,484,909	28,278,532	23,258,426	245,010	23,503,436	1,876,491	740,777	0	1,382,646
2001	15,785,706	30,836,893	24,056,649	618,258	24,674,907	2,440,376	2,549,692	0	1,843,160
2002	11,475,179	28,350,187	20,789,485	472,793	21,262,278	1,405,443	800,065	0	758,244
2003	11,510,629	28,637,446	20,858,132	293,196	21,141,328	3,734,791	673,419	0	707,540
2004	14,644,290	33,620,379	26,619,990	244,908	26,864,898	1,819,685	1,349,413	0	1,303,773
2005	12,961,937	27,365,973	16,549,289	1,416,330	17,965,619	5,564,255	1,487,195	0	1,471,355
2006	13,473,936	30,385,773	17,464,274	283,406	17,747,680	3,200,621	618,894	0	2,427,854
2007	13,928,476	34,742,396	21,599,353	670,333	22,269,686	3,928,091	1,032,960	0	2,064,404
2008	14,989,579	36,288,897	23,275,745	719,570	23,995,315	4,186,366	1,092,942	0	2,155,220
2009	14,363,862	34,153,912	20,388,226	754,455	21,142,681	4,287,753	892,710	0	1,956,419
2010	8,992,895	30,014,474	25,505,875	374,296	25,880,171	2,151,608	1,148,379	0	1,729,728
2011	9,021,890	30,119,264	25,558,918	375,741	25,934,659	2,160,269	1,158,484	0	1,739,553
2012	9,024,080	30,126,593	25,563,770	375,831	25,939,601	2,160,862	1,159,979	0	1,740,666
2013	9,030,056	30,146,607	25,571,564	376,087	25,947,651	2,162,746	1,168,477	0	1,746,175
2014	9,033,404	30,157,917	25,566,883	376,234	25,943,117	2,164,241	1,180,720	0	1,753,465
2015	9,040,211	30,180,638	25,586,571	376,515	25,963,086	2,165,854	1,181,334	0	1,754,638
2016	9,028,628	30,141,901	25,557,224	376,032	25,933,256	2,162,911	1,177,048	0	1,750,837
2017	9,033,324	30,157,607	25,568,262	376,230	25,944,492	2,164,154	1,179,592	0	1,752,839
2018	9,040,329	30,181,090	25,577,413	376,524	25,953,937	2,166,357	1,189,435	0	1,759,218
2019	9,028,134	30,140,297	25,549,329	376,017	25,925,346	2,163,122	1,182,587	0	1,753,909
2020	9,036,107	30,166,897	25,574,457	376,346	25,950,803	2,164,903	1,181,404	0	1,754,195
2021	9,040,319	30,180,912	25,591,071	376,519	25,967,590	2,165,681	1,178,018	0	1,752,799
2022	9,038,291	30,174,249	25,572,740	376,443	25,949,183	2,165,824	1,188,481	0	1,758,457
2023	9,029,282	30,144,051	25,559,933	376,060	25,935,993	2,163,032	1,176,563	0	1,750,656
2024	9,032,950	30,156,353	25,563,986	376,216	25,940,202	2,164,228	1,182,391	0	1,754,381
2025	9,042,332	30,187,676	25,592,230	376,607	25,968,837	2,166,390	1,182,100	0	1,755,341
2026	9,025,509	30,131,510	25,542,007	375,909	25,917,916	2,162,492	1,182,276	0	1,753,426
2027	9,054,644	30,228,794	25,628,315	377,117	26,005,432	2,169,280	1,182,668	0	1,757,142
2028	9,024,712	30,128,859	25,537,155	375,876	25,913,031	2,162,420	1,184,236	0	1,754,426
2029	9,036,583	30,168,459	25,577,964	376,366	25,954,330	2,164,919	1,179,769	0	1,753,345
2030	9,027,777	30,139,016	25,556,382	375,996	25,932,378	2,162,642	1,175,821	0	1,750,059
2031	9,057,649	30,238,891	25,628,493	377,247	26,005,740	2,170,411	1,190,119	0	1,761,706
2032	9,019,617	30,111,863	25,522,015	375,664	25,897,679	2,161,237	1,184,164	0	1,753,769
2033	9,037,587	30,171,770	25,585,598	376,403	25,962,001	2,164,922	1,175,891	0	1,751,282
2034	9,039,443	30,178,039	25,582,863	376,486	25,959,349	2,165,756	1,182,775	0	1,757,321
2035	9,020,873	30,116,052	25,526,078	375,718	25,901,796	2,161,526	1,184,136	0	1,753,921
TOTAL	498,839,174	1,474,813,265	1,235,531,066	18,696,410	1,254,227,476	111,161,195	54,199,914	0	89,350,281

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

Sheet 6 of 8

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	MOJAVE DIVISION (continued)							SANTA ANA DIVISION		
	Reach 20B	Reach 21	Reach 22A	Reach 22B	Reach 23	Reach 24	Subtotal	Reach 25	Reach 26A	
[47]	[48]	[49]	[50]	[51]	[52]	[53]	[54]	[55]		
1961	0	0	0	0	0	0	0	0	0	
1962	0	0	0	0	0	0	0	0	0	
1963	0	0	0	0	0	0	0	0	0	
1964	0	0	0	0	0	0	0	0	0	
1965	0	0	0	0	0	0	0	0	0	
1966	0	0	0	0	0	0	0	0	0	
1967	0	0	0	0	0	0	0	0	0	
1968	0	0	0	0	0	0	0	0	0	
1969	0	0	0	0	0	0	0	0	0	
1970	0	0	0	0	0	0	0	0	0	
1971	0	0	0	0	0	0	0	0	0	
1972	120,271	75,768	80,436	1,036,831	51,520	362,153	2,030,064	26	578	
1973	148,631	60,641	66,539	1,283,816	65,475	353,262	2,323,148	20,541	679,328	
1974	88,200	65,007	77,667	1,477,946	96,340	334,302	2,375,962	24,380	799,400	
1975	118,898	135,462	77,825	1,630,554	111,141	419,450	2,794,186	29,337	885,021	
1976	151,555	106,314	131,007	1,598,071	107,787	304,638	2,902,124	51,356	1,103,139	
1977	112,589	98,757	86,279	1,882,080	71,228	48,359	2,800,647	62,584	1,412,740	
1978	120,584	109,271	71,763	2,211,965	72,179	637,401	3,731,410	67,186	1,159,950	
1979	194,104	203,078	121,586	2,104,832	76,960	202,566	3,571,387	84,462	1,235,189	
1980	237,250	156,794	117,274	2,670,387	147,009	688,605	4,870,700	72,651	1,532,535	
1981	292,081	181,062	119,602	3,030,407	134,895	47,750	5,032,502	35,662	1,575,444	
1982	330,502	186,109	125,429	3,248,883	299,712	623,755	6,176,507	26,852	1,822,250	
1983	326,767	219,943	140,523	3,899,769	223,626	384,292	6,472,986	19,017	1,663,599	
1984	329,933	266,919	146,866	4,783,997	59,337	1,104,149	7,935,729	11,319	2,325,661	
1985	388,327	799,514	125,780	5,330,501	261,135	811,346	8,941,007	17,764	2,707,662	
1986	315,566	242,158	178,847	6,190,812	156,053	515,945	9,001,390	31,012	2,768,728	
1987	357,971	298,190	236,263	5,731,239	151,796	732,607	10,146,593	19,362	2,847,390	
1988	400,005	331,099	149,876	6,910,472	253,833	970,052	11,403,401	36,576	3,087,873	
1989	345,614	194,047	138,825	5,963,386	349,544	1,242,144	9,932,830	30,881	3,190,809	
1990	202,412	273,748	49,174	6,905,442	436,785	1,891,053	11,755,736	25,518	3,330,913	
1991	516,257	478,555	231,223	7,488,366	263,723	1,561,051	13,662,067	32,172	3,847,589	
1992	696,623	585,072	168,251	7,076,997	317,042	622,116	12,038,418	55,819	4,043,878	
1993	818,675	509,309	207,818	7,765,751	359,632	1,708,915	15,078,017	72,464	5,638,325	
1994	957,350	873,215	241,679	7,691,548	1,220,795	1,245,936	15,839,195	105,373	5,139,991	
1995	2,411,412	355,198	179,930	6,994,639	842,041	746,371	15,369,990	96,781	4,357,648	
1996	1,713,145	790,618	136,397	8,590,347	889,842	(78,782)	15,117,753	156,395	4,051,744	
1997	2,043,179	640,177	189,241	8,138,580	1,586,227	3,355,446	16,176,507	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	1,583,887	1,344,804	158,127	9,548,762	2,027,154	1,340,712	25,053,506	189,880	5,957,072	
2000	1,437,269	974,362	165,942	9,541,048	1,711,994	1,520,219	19,350,748	353,640	4,203,640	
2001	1,526,739	1,071,309	476,330	7,684,613	1,893,231	25,579	19,511,029	298,329	2,985,173	
2002	593,717	1,157,056	281,096	11,281,918	1,694,767	946,719	18,909,025	508,094	3,423,421	
2003	621,363	467,741	278,116	13,346,098	2,096,392	(411,897)	21,513,563	368,565	3,749,154	
2004	1,025,345	1,043,564	404,058	10,436,430	2,128,942	1,106,945	20,618,155	427,842	5,453,713	
2005	865,782	658,906	342,772	6,789,196	2,312,372	2,147,433	21,639,266	450,328	5,530,037	
2006	2,602,688	518,519	326,485	12,622,800	1,927,789	1,868,222	26,113,872	323,983	5,280,283	
2007	1,448,438	710,249	282,076	14,749,703	2,480,570	2,298,028	28,994,519	453,960	5,473,137	
2008	1,538,589	753,242	297,486	15,594,284	2,611,000	2,419,259	30,648,388	487,304	5,842,537	
2009	1,433,744	688,345	237,590	14,144,110	2,499,207	1,856,982	27,996,860	510,929	5,660,260	
2010	1,013,179	762,066	419,783	9,111,232	494,102	1,946,726	18,776,803	74,924	6,673,770	
2011	1,020,665	766,915	423,010	9,153,353	495,664	2,451,411	19,369,324	75,177	6,694,562	
2012	1,021,668	767,508	423,451	9,158,238	495,957	2,093,550	19,021,879	75,188	6,695,872	
2013	1,027,140	770,609	425,873	9,181,388	497,451	1,103,425	18,083,284	75,191	6,698,160	
2014	1,034,846	774,856	429,310	9,210,967	499,442	2,887,246	19,935,093	75,147	6,697,321	
2015	1,035,457	775,353	429,558	9,217,269	499,762	1,097,244	18,156,469	75,206	6,702,465	
2016	1,032,412	773,430	428,239	9,199,277	498,682	3,147,316	20,170,152	75,127	6,694,683	
2017	1,034,149	774,483	428,998	9,208,328	499,229	1,838,094	18,879,866	75,156	6,697,636	
2018	1,040,487	778,077	431,806	9,235,251	500,979	2,166,142	19,267,752	75,159	6,700,324	
2019	1,035,834	775,271	429,773	9,211,130	499,482	3,130,336	20,181,444	75,092	6,692,791	
2020	1,035,362	775,205	429,532	9,214,354	499,593	1,914,684	18,969,232	75,169	6,699,305	
2021	1,033,406	774,248	428,642	9,209,930	499,228	850,803	17,892,755	75,228	6,703,528	
2022	1,039,834	777,678	431,520	9,231,571	500,722	2,001,721	19,095,808	75,147	6,699,070	
2023	1,032,138	773,301	428,115	9,198,623	498,603	3,091,915	20,112,946	75,137	6,695,368	
2024	1,035,874	775,408	429,772	9,214,189	499,613	1,831,733	18,887,589	75,136	6,696,603	
2025	1,036,007	775,699	429,795	9,220,443	499,921	2,037,299	19,102,995	75,223	6,703,956	
2026	1,035,555	775,061	429,660	9,208,478	499,318	3,204,902	20,251,168	75,070	6,690,869	
2027	1,036,771	776,411	430,095	9,230,703	500,445	1,650,626	18,734,141	75,331	6,713,376	
2028	1,036,745	775,682	430,192	9,212,260	499,603	886,891	17,942,455	75,050	6,689,671	
2029	1,034,372	774,683	429,084	9,211,059	499,346	3,025,627	20,072,204	75,184	6,700,165	
2030	1,031,626	772,990	427,889	9,195,865	498,429	3,147,248	20,162,569	75,128	6,694,419	
2031	1,041,495	779,035	432,193	9,249,372	501,673	247,743	17,373,747	75,314	6,713,648	
2032	1,036,528	775,444	430,112	9,208,385	499,413	2,998,240	20,047,292	75,004	6,685,723	
2033	1,031,997	773,423	428,020	9,203,191	498,787	1,579,012	18,606,525	75,219	6,702,034	
2034	1,036,331	775,812	429,953	9,219,804	499,910	1,353,892	18,419,609	75,192	6,701,534	
2035	1,036,557	775,494	430,121	9,209,178	499,419	4,630,306	21,680,658	75,017	6,686,774	
TOTAL	55,779,927	38,045,885	18,105,774	495,589,330	46,888,937	93,402,052	1,002,523,295	7,833,180	297,781,849	

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

Sheet 7 of 8

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	SANTA ANA DIVISION (continued)					WEST BRANCH				
	Reach 28G	Reach 28H	Reach 28J	Subtotal	Reach 29A	Reach 29F	Reach 29G	Reach 29H	Reach 29J	
[56]	[57]	[58]	[59]	[60]	[61]	[62]	[63]	[64]		
1961	0	0	0	0	0	0	0	0	0	
1962	0	0	0	0	0	0	0	0	0	
1963	0	0	0	0	0	0	0	0	0	
1964	0	0	0	0	0	0	0	0	0	
1965	0	0	0	0	0	0	0	0	0	
1966	0	0	0	0	0	0	0	0	0	
1967	0	0	0	0	0	0	0	0	0	
1968	0	0	0	0	0	0	0	0	0	
1969	0	0	0	0	0	0	0	0	0	
1970	0	0	0	0	0	0	0	0	0	
1971	0	0	0	0	0	0	0	0	0	
1972	109	30	0	743	719,255	159,249	199,145	234,196	88,198	
1973	136,352	79	0	836,300	779,949	339,363	122,664	264,850	119,743	
1974	155,262	34,693	854,637	1,868,372	883,312	158,366	112,458	350,160	(4,525)	
1975	110,729	69,082	723,814	3,013,554	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	3,077,463	883,714	446,468	
1989	230,953	281,861	1,130,035	4,864,539	4,025,641	405,583	2,378,143	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	4,822,480	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	2,937,381	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	493,493	1,964,137	845,343	9,449,925	4,768,390	4,338,174	4,924,176	1,391,028	1,000,370	
2000	844,558	1,004,569	1,130,423	7,536,830	5,460,691	782,887	4,277,874	2,361,194	171,261	
2001	1,668,195	811,163	5,688,912	10,901,772	5,908,798	1,533,322	5,137,414	4,393,983	240,853	
2002	1,251,118	424,389	2,197,952	7,805,974	5,341,980	1,480,328	4,082,857	4,442,291	(51,885)	
2003	535,209	376,265	1,279,384	6,308,577	4,461,372	1,289,703	3,728,632	3,336,304	(627,530)	
2004	1,206,016	440,811	3,465,088	10,993,470	8,918,901	1,317,754	3,491,206	5,059,781	(615,239)	
2005	1,438,728	662,067	(1,829,030)	6,252,130	5,290,812	2,444,349	8,737,268	(549,888)	2,708,878	
2006	608,949	930,503	2,481,766	9,625,484	6,135,063	1,330,881	4,585,284	2,993,830	1,979,129	
2007	1,174,649	727,359	2,881,575	10,710,680	7,091,841	1,033,750	5,591,893	4,195,425	948,464	
2008	1,260,929	780,785	3,121,382	11,492,937	7,639,579	1,098,604	5,995,144	4,474,999	1,009,869	
2009	1,322,059	818,638	2,292,948	10,604,834	7,730,333	885,692	6,173,584	3,947,460	940,909	
2010	695,671	485,026	2,564,789	10,494,180	6,742,077	716,627	3,288,430	3,970,809	795,521	
2011	697,903	486,664	2,110,444	10,064,750	6,762,254	725,835	3,300,082	4,008,240	797,218	
2012	698,010	486,737	2,310,043	10,265,850	6,763,552	727,291	3,300,987	4,013,326	797,340	
2013	698,044	486,761	2,600,249	10,558,405	6,765,691	736,401	3,303,887	4,044,615	797,380	
2014	697,639	486,478	2,177,866	10,134,451	6,764,575	750,041	3,306,226	4,090,514	796,917	
2015	698,186	486,860	2,454,199	10,416,916	6,769,780	750,203	3,308,680	4,092,215	797,540	
2016	697,451	486,349	2,105,016	10,058,626	6,761,985	746,038	3,304,168	4,076,199	796,701	
2017	697,711	486,528	2,772,713	10,729,744	6,764,932	748,559	3,306,061	4,085,380	796,997	
2018	697,749	486,557	2,246,039	10,205,828	6,767,442	759,231	3,309,464	4,121,894	797,043	
2019	697,110	486,110	2,795,645	10,746,748	6,759,961	752,179	3,304,491	4,096,124	796,312	
2020	697,847	486,624	1,971,271	9,930,216	6,766,587	750,412	3,307,203	4,091,264	797,153	
2021	698,392	487,003	2,314,770	10,278,921	6,770,943	746,328	3,308,377	4,078,556	797,776	
2022	697,646	486,483	3,215,402	11,173,748	6,766,201	758,043	3,308,620	4,117,193	796,925	
2023	697,544	486,412	2,250,922	10,205,383	6,762,702	745,331	3,304,328	4,073,493	796,808	
2024	697,529	486,404	2,600,598	10,556,270	6,763,831	751,611	3,306,167	4,094,971	796,793	
2025	698,333	486,963	1,892,240	9,856,715	6,771,288	750,772	3,309,466	4,093,410	797,709	
2026	696,913	485,972	3,128,576	11,077,400	6,758,026	751,876	3,303,515	4,094,431	796,086	
2027	699,342	487,667	1,597,513	9,573,229	6,780,821	750,580	3,313,888	4,094,829	798,863	
2028	696,730	485,845	2,512,183	10,459,479	6,756,762	754,286	3,303,433	4,102,897	795,879	
2029	697,983	486,718	2,372,934	10,332,984	6,767,494	748,405	3,307,203	4,084,369	797,311	
2030	697,461	486,354	2,444,495	10,397,857	6,761,760	744,543	3,303,722	4,070,583	796,713	
2031	699,185	487,557	3,261,072	11,236,776	6,780,937	758,693	3,315,638	4,122,509	798,682	
2032	696,303	485,548	1,794,648	9,737,226	6,752,766	754,556	3,301,625	4,102,925	795,391	
2033	698,286	486,929	2,640,639	10,603,107	6,769,471	743,964	3,307,193	4,069,927	797,655	
2034	698,054	486,769	2,392,815	10,354,364	6,768,820	751,664	3,308,507	4,096,327	797,393	
2035	696,424	485,631	3,173,220	11,117,066	6,753,834	754,152	3,302,037	4,101,074	795,528	
TOTAL	39,348,070	35,130,706	110,215,595	490,309,400	321,165,089	46,150,195	196,716,777	179,144,790	43,645,136	

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

Sheet 8 of 8

Calendar Year	CALIFORNIA AQUEDUCT (continued)									GRAND TOTAL
	WEST BRANCH (cont.)		COASTAL BRANCH						Total	
	Reach 30	Subtotal	Reach 31A (a)	Reach 33A	Reach 33B	Reach 34	Reach 35	Subtotal		
[65]	[66]	[67]	[68]	[69]	[70]	[71]	[72]	[73]	[74]	
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	0	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	63,947,632	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	2,059,968	18,482,106	4,186,890	1,950,758	16,646	184,325	87,373	6,425,992	124,753,820	133,895,183
2000	1,529,054	14,582,961	2,887,384	2,533,121	20,756	253,532	109,322	5,804,115	122,249,124	130,905,236
2001	(942,708)	16,271,662	3,113,399	2,241,933	14,426	153,879	58,875	5,582,512	135,962,968	143,315,101
2002	3,419,111	18,714,582	3,187,937	2,686,101	49,670	189,442	81,720	6,194,870	125,082,782	136,721,587
2003	968,853	13,157,334	3,337,953	2,777,886	41,188	200,985	85,013	6,443,025	124,950,875	133,872,398
2004	1,515,533	19,687,936	3,542,320	2,668,727	70,179	240,426	109,830	6,631,482	144,001,079	154,102,346
2005	(1,191,954)	17,439,465	3,682,756	2,861,562	119,674	275,853	130,286	7,070,131	121,113,748	129,084,924
2006	823,351	17,847,538	4,185,645	3,056,641	55,167	280,648	133,139	7,711,240	138,795,962	147,512,422
2007	2,443,044	21,304,417	4,094,664	2,468,770	87,904	216,954	56,603	6,924,895	156,711,427	166,638,904
2008	2,602,120	22,820,315	4,399,775	2,656,560	94,361	232,722	60,313	7,443,731	167,774,903	178,604,529
2009	1,696,649	21,374,627	4,558,488	2,647,823	98,936	239,958	52,481	7,597,686	157,483,043	168,297,065
2010	3,209,564	18,723,028	4,393,251	2,129,229	0	1,776	4,719	6,528,975	134,207,360	143,900,833
2011	3,393,570	18,987,199	4,408,967	2,135,166	0	1,888	5,019	6,551,040	134,919,221	144,649,040
2012	3,204,848	18,807,344	4,409,919	2,135,604	0	1,909	5,076	6,552,508	134,612,220	144,344,037
2013	3,652,141	19,300,115	4,412,046	2,136,487	0	2,050	5,449	6,556,032	134,508,799	144,244,578
2014	3,307,245	19,015,518	4,412,452	2,136,459	0	2,266	6,021	6,557,193	135,675,898	145,411,453
2015	3,153,985	18,872,403	4,415,812	2,138,091	0	2,262	6,008	6,562,178	134,098,371	143,841,371
2016	3,765,353	19,450,444	4,410,451	2,135,551	0	2,205	5,862	6,554,069	136,228,542	145,959,990
2017	3,570,863	19,272,792	4,412,548	2,136,531	0	2,240	5,954	6,557,273	135,473,158	145,209,058
2018	3,472,023	19,227,097	4,415,043	2,137,569	0	2,405	6,393	6,561,410	135,349,943	145,090,498
2019	4,062,392	19,771,459	4,409,643	2,135,055	0	2,305	6,123	6,553,126	137,241,493	146,970,644
2020	3,847,831	19,560,450	4,413,761	2,137,092	0	2,266	6,025	6,559,144	135,075,019	144,813,466
2021	2,986,241	18,688,221	4,416,225	2,138,362	0	2,197	5,838	6,562,622	133,515,237	143,259,495
2022	3,009,779	18,756,761	4,414,140	2,137,150	0	2,387	6,347	6,560,024	135,657,564	145,396,219
2023	3,403,075	19,085,737	4,410,841	2,135,756	0	2,194	5,826	6,554,617	135,959,603	145,691,992
2024	4,252,125	19,965,498	4,412,084	2,136,254	0	2,290	6,082	6,556,710	135,995,180	145,729,800
2025	2,321,872	18,044,517	4,416,815	2,138,573	0	2,266	6,025	6,563,679	133,675,717	143,420,911
2026	4,283,104	19,987,038	4,408,370	2,134,441	0	2,302	6,116	6,551,229	137,833,704	147,560,055
2027	40,833	15,779,814	4,422,937	2,141,559	0	2,250	5,982	6,572,728	130,870,657	140,629,458
2028	7,761,573	23,474,830	4,407,752	2,134,103	0	2,339	6,219	6,550,413	138,386,430	148,111,217
2029	1,947,686	17,652,468	4,414,181	2,137,330	0	2,233	5,941	6,559,685	134,678,058	144,417,600
2030	3,424,293	19,101,614	4,410,169	2,135,440	0	2,182	5,798	6,553,589	136,204,286	145,935,240
2031	104,583	15,881,042	4,423,681	2,141,780	0	2,380	6,318	6,574,159	131,298,386	141,058,170
2032	7,742,406	23,449,669	4,405,203	2,132,854	0	2,350	6,247	6,546,654	139,697,468	149,416,571
2033	2,285,250	17,973,460	4,415,088	2,137,847	0	2,160	5,743	6,560,838	133,814,743	143,556,662
2034	3,329,673	19,052,384	4,415,300	2,137,820	0	2,284	6,070	6,561,474	134,471,163	144,212,916
2035	4,345,976	20,052,601	4,405,858	2,133,182	0	2,343	6,226	6,547,609	139,325,209	149,045,806
TOTAL	136,740,129	923,562,116	207,790,008	86,021,507	670,293	2,687,148	1,207,151	298,376,107	6,681,028,275	7,135,551,875

a) Includes certain costs to be assigned directly to Kern County Water Agency. Refer to Appendix B text discussion of Table B-16A under "Project Water Charges."

TABLE B-12. Variable OMP&R Costs to Be Reimbursed through Variable OMP&R Component of Transportation Charge^a

(in dollars)

Sheet 1 of 3

Calendar Year	NORTH BAY AQUEDUCT				SOUTH BAY AQUEDUCT	CALIFORNIA AQUEDUCT			
	Reach 1	Reach 3A	Reach 3B	Total Plants	Reach 1	Reach 1	Reach 4	Reach 14A	Reach 15A
	Barker Cordelia Slough Pumping Plant	Cordelia Pumping Plant (Solano)	Cordelia Pumping Plant (Napa) (b)		South Bay & Del Valle Pumping (c)	Banks Pumping Plant	Dos Amigos Pumping Plant	Buena Vista Pumping Plant	Wheeler Ridge Pumping Plant
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	
1962	0	0	0	0	36,970	0	0	0	0
1963	0	0	0	0	57,711	0	0	0	0
1964	0	0	0	0	74,134	0	0	0	0
1965	0	0	0	0	142,609	0	0	0	0
1966	0	0	0	0	192,605	0	0	0	0
1967	0	0	0	0	223,117	13,881	0	0	0
1968	0	0	6,989	6,989	336,671	452,630	202,947	0	0
1969	0	0	8,551	8,551	257,579	293,741	135,425	0	0
1970	0	0	13,598	13,598	396,358	346,215	211,197	1	0
1971	0	0	10,609	10,609	381,662	574,015	225,188	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	178,807	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	31,618	25,288	10,570	67,476	514,166	5,319,699	2,316,189	1,587,062	1,295,067
2000	58,651	42,587	15,094	116,332	861,671	8,025,528	3,046,708	2,966,168	3,038,567
2001	360,761	250,331	214,209	825,301	4,068,696	24,182,487	9,885,380	14,868,284	15,252,650
2002	191,948	105,385	61,953	359,286	2,258,767	17,207,932	6,949,418	8,493,564	8,803,124
2003	181,608	118,767	98,077	398,452	2,567,656	21,542,492	9,051,535	10,696,186	11,139,389
2004	246,316	136,402	105,066	487,784	2,452,187	21,375,154	9,167,252	12,084,098	12,682,850
2005	279,237	144,265	146,323	569,825	2,745,626	29,059,637	12,814,469	12,402,303	12,757,307
2006	208,754	287,013	145,028	640,795	2,690,955	25,655,625	11,136,200	11,825,610	12,221,482
2007	477,197	200,475	469,675	1,147,347	4,570,779	40,412,066	17,295,859	18,003,164	20,747,633
2008	562,004	277,371	569,193	1,408,568	5,542,444	45,225,461	19,466,463	21,266,110	24,552,479
2009	244,995	287,542	305,744	838,281	3,893,412	34,027,043	14,705,042	16,213,537	18,747,083
2010	493,069	391,422	416,518	1,301,009	6,507,580	45,220,164	18,371,738	22,342,980	22,184,629
2011	496,138	391,567	424,244	1,311,949	6,509,881	41,237,117	18,378,231	22,318,437	22,155,170
2012	513,832	404,948	448,456	1,367,236	6,741,047	39,519,287	19,221,613	23,483,480	23,321,552
2013	560,013	444,221	504,326	1,508,560	7,364,689	51,274,211	21,417,857	26,272,510	26,076,975
2014	600,463	476,875	556,355	1,633,693	7,883,253	46,181,110	23,299,648	28,701,877	28,483,238
2015	615,599	484,040	585,983	1,685,622	7,997,013	51,650,783	23,686,419	29,176,761	28,950,610
2016	627,608	488,983	611,797	1,728,388	8,075,520	59,022,332	24,372,717	30,274,574	30,070,187
2017	625,762	481,926	621,137	1,728,825	7,963,435	52,444,860	23,699,203	29,230,245	29,009,982
2018	648,401	495,855	661,842	1,806,098	8,184,635	51,486,772	24,526,018	30,362,109	30,139,969
2019	669,420	508,101	701,669	1,879,190	8,379,101	60,423,941	25,815,291	32,235,551	32,029,674
2020	642,270	480,276	679,668	1,802,214	7,937,222	53,507,958	24,269,976	30,304,957	30,126,085
2021	642,532	479,487	681,741	1,803,760	7,924,710	52,672,771	24,363,551	30,493,041	30,322,899
2022	623,724	463,956	657,470	1,745,150	7,678,086	48,635,288	23,534,476	29,451,550	29,295,603
2023	627,067	466,716	661,782	1,755,565	7,721,909	52,475,638	23,780,858	29,823,097	29,671,836
2024	648,871	484,720	689,917	1,823,508	8,007,811	57,647,508	24,635,127	30,818,581	30,641,832
2025	646,099	482,429	686,339	1,814,867	7,971,455	48,307,968	24,508,491	30,676,795	30,504,211
2026	650,304	485,903	691,768	1,827,975	8,026,603	60,133,386	24,723,247	30,933,340	30,755,761
2027	640,989	478,212	679,748	1,798,949	7,904,461	53,764,736	24,407,027	30,814,251	30,453,045
2028	645,211	481,697	685,195	1,812,103	7,959,830	53,050,111	26,361,853	30,603,233	30,429,219
2029	637,413	475,259	675,134	1,787,806	7,857,584	52,360,351	24,223,406	30,368,610	30,208,175
2030	642,289	479,286	681,426	1,803,001	7,921,504	54,700,536	24,328,723	30,429,299	30,256,807
2031	633,951	472,401	670,665	1,777,017	7,812,178	48,397,898	23,552,954	29,275,841	29,090,823
2032	645,931	482,292	686,126	1,814,349	7,969,271	53,937,159	24,352,134	30,326,398	30,136,506
2033	676,778	507,762	725,926	1,910,466	8,373,718	55,931,490	25,586,834	31,900,979	31,691,034
2034	653,115	488,224	695,394	1,836,733	8,063,463	53,626,236	24,761,213	30,899,362	30,710,224
2035	640,445	477,760	679,043	1,797,248	7,897,316	53,320,404	24,432,885	30,668,610	30,512,023
TOTAL	19,282,673	14,406,399	19,081,283	52,770,355	252,499,155	1,721,246,696	771,378,374	929,790,562	935,490,141

a) Excludes extra peaking costs assigned directly to contractors. Refer to Appendix B text discussion of Table B-17 under "Project Water Charges."
 b) Costs for the period 1968 through 1987 are for an interim facility.
 c) The relatively minor costs of Del Valle Pumping Plant have been combined with those of South Bay Pumping Plant to simplify the allocation procedures.

**TABLE B-12. Variable OMP&R Costs to Be Reimbursed through
Variable OMP&R Component of Transportation Charge^a**

(in 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	Edmonston Pumping Plant	Alamo Powerplant	Pearblossom Pumping Plant	Mojave Siphon Powerplant	Silverwood Lake (d)	Devil Canyon Powerplant	Lake Perris (d)	Oso Pumping Plant	
[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]		
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	180,602	542,625	0	25,568	0	0	(3,024)	0	102,315	0
1973	441,598	1,548,428	0	231,389	0	0	(436,768)	0	158,587	0
1974	618,864	2,164,223	0	354,093	0	0	(521,656)	0	193,311	0
1975	1,149,731	4,010,395	0	604,161	0	0	(1,071,023)	0	350,436	0
1976	1,561,385	5,443,936	0	932,444	0	0	(1,519,156)	0	362,767	0
1977	703,802	2,360,624	0	358,028	0	0	(1,175,966)	0	111,135	0
1978	1,186,696	4,180,131	0	1,551,015	0	0	(3,038,194)	0	125,183	0
1979	1,581,250	5,475,688	0	1,881,587	0	0	(3,419,581)	0	138,384	0
1980	2,102,439	7,028,235	0	1,762,063	0	0	(3,318,152)	0	236,768	0
1981	2,838,773	9,351,931	0	2,296,771	0	0	(3,842,971)	0	444,280	0
1982	2,424,920	8,352,207	0	1,498,620	0	0	(2,736,072)	0	539,245	0
1983	540,330	1,582,582	0	341,957	0	384,275	(5,478,830)	0	71,197	0
1984	1,129,131	3,448,759	0	622,123	0	0	(7,326,265)	(10,080)	240,134	0
1985	2,781,953	9,261,674	0	1,195,768	0	0	(10,477,567)	(56,570)	874,069	0
1986	4,999,949	16,956,023	(1,013,756)	2,359,599	0	0	(11,484,996)	0	1,269,590	0
1987	4,456,059	14,684,476	(1,026,193)	1,831,238	0	131,606	(10,814,483)	53,242	1,325,936	0
1988	5,126,229	16,819,159	(744,374)	2,375,784	0	0	(14,495,967)	0	1,421,097	0
1989	8,369,623	28,090,313	(766,443)	4,102,557	0	686,468	(18,532,961)	89,890	2,013,335	0
1990	13,630,073	48,369,421	(834,673)	6,504,876	0	89,075	(20,911,839)	147,163	2,857,409	0
1991	2,426,220	8,641,086	(269,625)	996,352	0	0	(4,884,013)	0	534,818	0
1992	2,642,161	8,854,347	(934,311)	1,167,670	0	156,847	(9,513,281)	(61,233)	717,740	0
1993	(582,580)	(2,649,876)	(56,908)	(253,503)	0	(34,870)	(7,502,549)	0	68,719	0
1994	5,276,189	18,302,830	(58,712)	2,572,826	0	0	(11,662,318)	147,989	1,203,006	0
1995	1,677,210	5,571,517	(1,242,189)	1,025,717	0	467,095	(9,742,248)	0	247,869	0
1996	4,723,600	16,483,976	(2,644,648)	2,487,165	(857,876)	1,959,474	(12,358,465)	0	895,929	0
1997	5,424,334	19,413,834	(2,488,338)	3,037,087	(1,680,469)	0	(13,293,791)	111,776	897,657	0
1998	(488,690)	(1,683,606)	(1,969,187)	(402,338)	(1,217,950)	(144,207)	(10,183,555)	0	(25,895)	0
1999	3,326,334	12,889,920	(2,811,928)	1,795,375	(2,482,354)	(4)	(14,772,635)	(4)	677,032	0
2000	6,993,106	25,232,756	(5,129,549)	3,969,325	(4,429,149)	(4)	(25,856,637)	(4)	1,216,343	0
2001	34,362,262	126,969,963	(3,298,048)	19,044,251	(3,649,034)	(3)	(19,498,071)	(3)	6,445,378	0
2002	19,884,738	73,074,994	(4,926,146)	10,767,871	(5,255,302)	(2)	(24,635,887)	(2)	3,834,216	0
2003	25,395,242	93,471,975	(3,431,664)	14,896,580	(6,760,773)	(1)	(28,000,328)	(1)	4,519,298	0
2004	28,967,907	106,508,265	(6,227,543)	16,646,955	(7,691,607)	0	(31,217,777)	0	5,385,468	0
2005	28,986,888	102,884,712	(6,140,331)	18,267,341	(6,778,579)	0	(30,592,888)	0	4,130,683	0
2006	27,669,314	101,493,156	(18,246,652)	18,993,458	(6,387,729)	0	(34,523,432)	0	3,833,868	0
2007	43,807,068	154,929,290	(5,322,682)	26,459,353	(6,994,545)	0	(27,495,280)	0	7,812,770	0
2008	51,799,150	182,869,004	(6,116,246)	31,911,739	(7,555,837)	0	(29,698,460)	0	8,858,419	0
2009	39,528,876	139,818,933	(5,063,837)	24,414,433	(7,660,795)	0	(29,210,000)	0	6,817,968	0
2010	51,911,930	194,655,158	(5,505,328)	29,409,294	(6,468,388)	1,014,484	(31,339,258)	0	11,111,155	0
2011	51,845,287	194,396,809	(5,493,984)	29,393,754	(6,441,920)	0	(31,896,973)	0	10,991,055	0
2012	54,603,864	204,785,652	(5,679,220)	31,406,967	(6,752,204)	3,105,998	(32,143,480)	3,146,088	11,472,516	0
2013	61,116,003	229,242,537	(5,606,871)	34,959,099	(6,679,674)	2,188,242	(32,133,186)	0	12,823,194	0
2014	66,805,051	250,621,493	(5,665,856)	37,993,869	(6,746,848)	0	(32,520,186)	780,212	13,986,006	0
2015	67,908,747	254,762,566	(5,695,652)	38,951,013	(6,860,371)	0	(33,045,327)	0	14,118,172	0
2016	70,579,491	264,863,764	(5,843,590)	40,857,302	(7,077,798)	4,228,307	(33,735,744)	235,610	14,560,536	0
2017	68,057,019	255,330,586	(5,673,876)	39,137,813	(6,910,285)	0	(33,441,080)	0	14,074,520	0
2018	70,729,501	265,396,804	(5,859,111)	41,459,906	(7,412,051)	6,569,801	(33,738,030)	3,731,220	14,368,159	0
2019	75,231,168	282,372,893	(5,786,355)	42,446,795	(7,170,423)	0	(33,970,295)	0	15,892,758	0
2020	70,735,217	265,497,462	(5,822,196)	40,566,277	(7,274,355)	0	(34,387,434)	3,156,924	14,789,569	0
2021	71,209,165	267,298,586	(5,904,385)	41,117,953	(7,423,332)	151,523	(34,535,237)	72,588	14,742,887	0
2022	68,783,997	258,193,999	(5,875,823)	39,158,664	(7,330,875)	3,498,893	(34,151,671)	0	14,547,634	0
2023	69,679,345	261,575,540	(5,945,856)	39,927,498	(7,450,819)	2,121,563	(34,526,566)	1,506,880	14,621,403	0
2024	71,960,832	270,116,134	(5,838,327)	41,045,798	(7,339,323)	0	(34,508,899)	0	15,150,318	0
2025	71,636,463	268,904,418	(5,874,582)	40,794,103	(7,339,651)	3,438,553	(34,112,927)	0	15,087,281	0
2026	72,231,264	271,133,013	(5,889,829)	41,626,970	(7,446,606)	0	(34,845,736)	714,376	14,997,325	0
2027	71,524,023	268,502,600	(5,912,408)	40,977,095	(7,385,012)	1,472,019	(34,472,073)	0	14,982,748	0
2028	71,458,724	268,230,733	(5,857,163)	41,027,759	(7,356,242)	0	(34,537,954)	984,722	14,901,260	0
2029	70,944,404	266,321,424	(5,892,489)	40,634,738	(7,407,115)	804,642	(34,453,446)	0	14,873,965	0
2030	71,051,248	266,699,006	(5,861,097)	40,835,711	(7,362,085)	0	(34,530,842)	0	14,789,236	0
2031	68,271,281	256,210,912	(5,896,225)	40,102,159	(7,725,270)	6,088,435	(34,178,693)	358,165	13,903,162	0
2032	70,755,364	265,546,424	(5,796,289)	40,109,811	(7,553,869)	0	(33,978,644)	0	14,860,645	0
2033	74,418,953	279,314,023	(5,931,458)	43,640,379	(7,853,643)	3,331,764	(34,333,177)	4,704,436	15,114,805	0
2034	72,116,784	270,675,945	(5,850,735)	41,048,524	(7,716,755)	0	(33,818,225)	0	15,056,513	0
2035	71,664,116	269,047,693	(5,961,518)	41,166,585	(7,628,693)	4,153,037	(34,717,867)	6,420,643	14,946,912	0
TOTAL	2,164,871,977	8,052,444,080	(231,684,206)	1,248,423,134	(257,515,786)	45,863,010	(1,373,300,036)	26,234,027	441,670,198	0

d) These values represent a proportionate allocation of the total variable OMP&R costs of pumping and recovery plants (Table B-3) associated with net annual withdrawals from storage for Project Transportation Facilities. The allocation is determined annually by applying the following ratio, calculated from the data shown in Table B-6:
"Reservoir Storage Changes" (withdrawals, as a positive value) conveyed through each plant, divided by "Total" annual quantity conveyed through each plant, in acre-feet.
The costs so determined are accumulated for all upstream plants for each year, for each respective reservoir.

**TABLE B-12. Variable OMP&R Costs to Be Reimbursed through
Variable OMP&R Component of Transportation Charge^a**

(in dollars)

Sheet 3 of 3

Calendar Year	CALIFORNIA AQUEDUCT (continued)							GRAND TOTAL
	Reach 29G	Reach 29H	Reach 29J	Reach 30	Reach 31A	Reach 33A	Total	
	Warne Powerplant [19]	Pyramid Lake (d [20]	Castaic Powerplant [21]	Castaic Lake (d [22]	Las Perillas & Badger Hill Pumping Plants [23]	Devil's Den, Bluestone & Polonio 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)	(4)	(9,954,874)	(4)	159,358	234,077	(5,948,035)	(5,366,393)
2000	(9,464,490)	(4)	(17,958,033)	(4)	231,346	380,555	(7,737,472)	(6,759,469)
2001	(7,987,833)	(3)	(13,981,232)	(3)	1,086,309	2,152,324	205,835,058	210,729,055
2002	(10,286,902)	(2)	(18,455,024)	(2)	545,459	1,320,943	87,322,990	89,941,043
2003	(10,281,922)	(1)	(17,307,974)	(1)	641,112	1,482,405	127,053,549	130,019,657
2004	(12,033,953)	0	(20,022,179)	0	661,852	1,718,113	138,004,855	140,944,826
2005	(8,251,156)	0	(13,698,272)	0	829,541	1,669,939	158,341,414	161,656,865
2006	(8,780,170)	0	(14,679,220)	0	851,191	1,529,589	132,592,290	135,924,040
2007	(10,337,568)	0	(18,164,130)	0	1,415,982	2,917,668	265,486,648	271,204,774
2008	(10,649,975)	0	(18,824,421)	0	1,837,734	4,754,934	319,696,554	326,647,566
2009	(10,314,750)	0	(18,795,351)	0	1,446,522	3,749,857	228,424,561	233,156,254
2010	(14,867,828)	0	(25,289,891)	0	2,137,132	5,871,977	320,759,948	328,568,537
2011	(14,812,484)	0	(25,110,039)	0	2,137,861	5,874,159	314,972,480	322,794,310
2012	(14,849,603)	0	(25,331,390)	2,997,738	2,204,936	6,074,916	340,588,710	348,696,993
2013	(15,338,893)	0	(26,121,169)	0	2,401,819	6,664,187	388,556,841	397,430,090
2014	(15,768,188)	0	(26,771,606)	0	2,565,526	7,154,169	419,099,515	428,616,461
2015	(15,695,060)	0	(26,633,376)	0	2,601,440	7,261,655	431,138,380	440,821,015
2016	(16,039,861)	0	(27,242,686)	1,153,942	2,626,223	7,335,841	460,241,147	470,045,055
2017	(15,712,023)	0	(26,699,227)	0	2,590,839	7,229,930	432,368,506	442,060,766
2018	(15,525,897)	0	(26,454,838)	4,943,495	2,660,672	7,438,943	464,823,442	474,814,175
2019	(16,845,524)	0	(28,822,914)	0	2,722,065	7,622,689	484,197,314	494,455,605
2020	(16,555,708)	0	(28,214,629)	0	2,582,565	7,205,164	450,487,832	460,227,268
2021	(16,526,610)	0	(28,182,931)	0	2,578,616	7,193,340	449,644,425	459,372,895
2022	(16,823,060)	0	(28,697,642)	7,223	2,500,757	6,960,308	431,689,321	441,112,557
2023	(16,813,942)	0	(28,682,271)	50,219	2,514,591	7,001,718	441,330,732	450,808,206
2024	(16,815,386)	0	(28,688,679)	1,576,015	2,604,849	7,271,859	460,278,239	470,109,558
2025	(16,819,554)	0	(28,692,572)	138,589	2,593,371	7,237,508	450,988,465	460,774,787
2026	(16,606,603)	0	(28,323,870)	0	2,610,782	7,289,622	464,036,442	473,891,020
2027	(16,845,918)	0	(28,738,515)	1,810,105	2,572,224	7,174,210	454,900,157	464,603,567
2028	(16,634,836)	0	(28,370,722)	0	2,589,701	7,226,527	454,106,925	463,878,858
2029	(16,816,502)	0	(28,690,018)	1,247,154	2,557,422	7,129,914	448,414,635	458,060,025
2030	(16,588,167)	0	(28,292,036)	0	2,577,603	7,190,317	450,224,259	459,948,764
2031	(15,708,828)	0	(26,816,286)	10,153,135	2,543,089	7,087,012	444,709,564	454,298,759
2032	(16,542,351)	0	(28,312,354)	0	2,592,682	7,235,447	464,668,613	457,452,233
2033	(15,900,592)	0	(27,281,410)	9,693,603	2,720,364	7,617,602	494,365,986	504,650,170
2034	(16,564,662)	0	(28,359,039)	0	2,622,418	7,324,447	456,532,250	466,432,446
2035	(16,770,653)	0	(28,792,429)	31,997,480	2,569,966	7,167,454	494,196,648	503,891,212
TOTAL	(603,232,976)	(282,445)	(1,076,645,543)	56,980,717	80,568,919	205,873,119	13,138,173,962	13,443,443,472

TABLE B-13. Capital and Operating Costs of Project Conservation Facilities to Be Reimbursed through Delta Water Charge

(in dollars)

Calendar Year	Initial Project Conservation Facilities (Portions of Upper Feather Lakes, Oroville-Thermalito and California Aqueduct Facilities)					Planning and Pre-operating Costs (a) (f)	Total
	Capital Costs (a)	Capital Cost Credits (b)	Operating Costs (c)	Application of Oroville Power Revenues to:			
				Capital Costs (d)	Operating Costs (e)		
[1]	[2]	[3]	[4]	[5]	[6]	[7]	
1952	171,322	0	0	0	0	0	171,322
1953	312,190	0	0	0	0	0	312,190
1954	308,624	0	0	0	0	0	308,624
1955	194,645	0	0	0	0	0	194,645
1956	1,357,077	0	0	0	0	0	1,357,077
1957	6,210,709	0	0	0	0	0	6,210,709
1958	9,510,916	0	0	0	0	0	9,510,916
1959	11,390,586	0	0	0	0	0	11,390,586
1960	14,463,275	(4,850,000)	0	0	0	0	9,613,275
1961	18,729,965	(431,527)	0	0	0	0	18,298,438
1962	9,099,968	(479,280)	0	0	0	0	8,620,688
1963	73,098,108	(478,743)	(14,000)	(14,000)	0	0	72,605,365
1964	62,629,004	(751,330)	(14,000)	(14,000)	0	107,780	61,971,454
1965	71,048,877	(763,541)	(14,000)	0	0	551,850	70,823,186
1966	125,376,541	(748,649)	(14,000)	0	0	1,081,023	125,894,915
1967	94,481,604	(812,145)	(13,446)	0	0	1,189,212	94,945,225
1968	39,986,144	(431,574)	1,303,821	(951,000)	0	793,399	40,700,790
1969	5,367,865	(259,015)	2,890,772	(11,007,000)	0	601,867	(2,405,511)
1970	4,208,410	(203,733)	4,818,634	(14,650,000)	(1,500,000)	516,659	(6,810,030)
1971	3,956,703	(193,631)	6,026,480	(14,650,000)	(1,500,000)	408,754	(5,951,694)
1972	4,662,255	(196,361)	5,393,011	(14,650,000)	(1,500,000)	287,374	(6,003,721)
1973	4,090,077	(136,997)	6,135,774	(14,650,000)	(1,500,000)	203,384	(5,857,762)
1974	6,852,719	(137,503)	6,944,723	(17,950,000)	(1,500,000)	201,907	(5,588,154)
1975	8,343,806	(234,567)	7,697,390	(14,650,000)	(1,500,000)	146,188	(197,183)
1976	6,189,562	(204,944)	7,067,037	(14,650,000)	(1,500,000)	205,234	(2,893,111)
1977	21,554,410	(150,214)	10,547,977	(14,650,000)	(1,500,000)	857,419	16,659,592
1978	8,031,339	(64,566)	12,851,158	(14,650,000)	(1,500,000)	2,131,286	6,799,217
1979	9,751,800	0	9,547,014	(14,650,000)	(1,500,000)	2,131,884	6,280,698
1980	11,345,621	0	13,258,298	(14,650,000)	(1,500,000)	3,638,851	12,092,770
1981	11,921,709	0	10,326,538	(14,650,000)	(1,500,000)	4,597,474	10,695,721
1982	17,490,340	0	16,154,872	(14,650,000)	(1,500,000)	4,594,682	22,079,894
1983	12,760,917	0	22,253,515	(34,705,000)	(8,735,000)	3,751,993	(4,673,575)
1984	9,383,237	0	22,700,224	(14,650,000)	(10,348,000)	2,979,126	10,064,587
1985	12,537,755	0	23,464,019	(14,650,000)	(8,198,000)	2,069,024	15,222,798
1986	21,586,455	0	26,479,379	(14,650,000)	(9,107,000)	1,602,419	25,911,253
1987	32,734,584	0	23,514,665	(14,650,000)	(9,451,000)	1,762,179	33,910,428
1988	33,028,636	0	26,003,911	(14,650,000)	(8,677,000)	1,808,899	37,514,446
1989	11,075,077	0	28,442,946	(14,650,000)	(8,102,000)	2,678,007	19,444,030
1990	28,764,223	0	37,430,837	(14,650,000)	(8,496,000)	1,436,712	44,483,772
1991	37,462,302	0	76,586,733	(14,650,000)	(9,487,000)	1,727,664	91,639,699
1992	29,227,453	0	32,509,145	(14,650,000)	(8,526,000)	1,707,822	40,268,420
1993	22,371,609	0	36,984,149	(14,650,000)	(8,768,000)	1,708,480	37,546,248
1994	14,718,727	0	41,201,240	(14,650,000)	(7,484,000)	2,134,392	35,920,359
1995	15,120,939	0	46,177,149	(14,650,000)	(4,976,939)	2,042,481	43,713,630
1996	11,007,210	0	50,883,067	(14,650,000)	(5,503,289)	2,448,692	44,185,679
1997	15,304,467	0	51,775,267	(14,650,000)	(5,740,515)	1,699,730	48,388,949
1998	3,960,201	0	55,095,668	(14,650,000)	(8,155,000)	1,193,198	37,444,067
1999	6,050,855	0	56,135,894	(14,650,000)	(9,198,000)	9,686	38,348,434
2000	9,697,972	0	57,431,703	(14,650,000)	(10,452,028)	13,491	42,041,139
2001	8,186,759	0	76,838,240	(14,650,000)	(15,231,433)	23,866	55,167,432
2002	14,373,955	0	69,180,918	(14,650,000)	(22,034,770)	24,426	46,894,529
2003	16,035,287	0	78,492,785	(14,650,000)	(30,910,299)	9,833	48,977,606
2004	13,714,302	0	92,667,976	(14,650,000)	(34,155,125)	7,548	57,584,701
2005	(5,851,207)	0	98,961,996	(14,650,000)	(23,020,957)	0	55,439,831
2006	7,897,519	0	79,552,360	(14,650,000)	(25,134,386)	0	47,665,493
2007	19,080,934	0	81,776,666	(14,650,000)	(17,929,399)	0	68,278,201
2008	18,524,056	0	94,122,344	(14,650,000)	(19,372,284)	0	78,624,116
2009	15,530,772	0	95,506,141	(14,650,000)	(14,781,312)	0	81,605,001
2010	6,911,825	0	59,503,903	(14,650,000)	(9,040,000)	0	42,725,728
2011	3,269,968	0	57,582,177	(14,650,000)	(9,040,000)	0	37,162,145
2012	3,311,356	0	55,893,890	(14,650,000)	(9,040,000)	0	35,515,246
2013	396,514	0	58,938,783	(14,650,000)	(9,040,000)	0	35,645,297
2014	396,514	0	57,473,796	(14,650,000)	(9,040,000)	0	34,180,310
2015	396,514	0	55,530,069	(14,650,000)	(9,040,000)	0	32,236,583
2016	396,514	0	59,146,258	(14,650,000)	(9,040,000)	0	35,852,772
2017	396,514	0	58,342,471	(14,650,000)	(9,040,000)	0	35,048,985
2018	396,514	0	58,772,092	(14,650,000)	(9,040,000)	0	35,478,606
2019	396,514	0	57,654,803	(14,650,000)	(9,040,000)	0	34,361,317
2020	396,514	0	55,247,897	(14,650,000)	(9,040,000)	0	31,954,411
2021	396,514	0	59,316,918	(14,650,000)	(9,040,000)	0	36,023,432
2022	396,514	0	58,078,301	(14,650,000)	(9,040,000)	0	34,784,815
2023	396,514	0	55,174,272	(14,650,000)	(9,040,000)	0	31,880,786
2024	396,514	0	56,094,926	(14,650,000)	(9,040,000)	0	32,801,440
2025	396,514	0	60,518,531	(14,650,000)	(9,040,000)	0	37,225,045
2026	396,514	0	57,950,991	(14,650,000)	(9,040,000)	0	34,657,505
2027	396,514	0	54,762,648	(14,650,000)	(9,040,000)	0	31,469,162
2028	396,514	0	55,208,620	(14,650,000)	(9,040,000)	0	31,916,134
2029	396,514	0	61,108,181	(14,650,000)	(9,040,000)	0	37,814,695
2030	396,514	0	56,955,242	(14,650,000)	(9,040,000)	0	33,661,756
2031	396,514	0	55,116,455	(14,650,000)	(9,040,000)	0	31,822,969
2032	396,514	0	54,603,536	(14,650,000)	(9,040,000)	0	31,310,050
2033	396,514	0	59,509,350	(14,650,000)	(9,040,000)	0	36,215,864
2034	396,514	0	56,337,482	(14,650,000)	(9,040,000)	0	33,043,996
2035	396,514	0	56,869,502	(14,650,000)	(9,040,000)	0	33,576,016
TOTAL	1,119,024,136	(11,528,320)	3,094,655,083	(1,002,213,000)	(606,517,336)	57,085,905	2,650,506,468

- a) Reimbursed through the capital cost component of the Delta Water Charge.
- b) Negotiated settlements as to the magnitude of SWP planning costs from 1952 through 1978.
- c) Reimbursed through the minimum OMP&R component of the Delta Water Charge. Credits for Gianelli power generation are reflected in these net costs.
- d) Revenues credited through the capital cost component of the Delta Water Charge.
- e) Revenues credited through the minimum OMP&R component of the Delta Water Charge.
- f) Under amendments of Articles 22(e) and 22(g), planning and pre-operating costs of additional Project Conservation Facilities incurred through the previous year (2006) reflected in the Delta Water Charge.

TABLE B-14. Capital Costs of Transportation Facilities Allocated to Each Contractor

(in dollars)

Sheet 1 of 4

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA (a)	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[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	549,184	870,611	1,419,795	7,876	8,321	27,065	43,282	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	17,423	21,572	38,995	27,302	24,121	63,057	114,480	883,110	10,563,359	11,446,469
1999	67,602	106,355	173,957	74,165	73,552	208,296	356,013	928,738	9,596,058	10,524,796
2000	16,252	37,932	54,184	27,445	28,844	80,346	136,635	488,160	5,529,102	6,017,262
2001	6,598	13,750	20,348	140,394	270,055	1,856,845	2,267,294	72,358	539,206	611,564
2002	19,917	45,940	65,857	805,478	1,189,615	5,876,842	7,871,935	63,183	376,338	439,521
2003	54,234	20,712	74,946	1,156,873	1,331,273	4,619,173	7,107,319	(2,558)	77,219	74,661
2004	153,537	20,912	174,449	1,686,311	1,570,701	7,024,813	10,281,825	9,185	48,719	57,904
2005	60,245	62,677	122,922	1,845,034	1,715,291	4,819,009	8,379,334	(10,816)	(179,992)	(190,808)
2006	889,944	22,745	912,689	3,471,809	3,214,422	7,675,419	14,361,650	69,945	756,405	826,350
2007	4,449,082	241,766	4,690,848	3,302,441	3,091,578	7,414,360	13,808,379	48,119	275,288	323,407
2008	5,312,043	363,722	5,675,765	2,194,589	2,084,355	5,035,044	9,313,988	74,308	382,192	456,500
2009	1,399,513	236,459	1,635,972	707,304	686,732	1,680,922	3,074,958	64,575	329,243	393,818
2010	118,320	109,882	228,202	31,158	37,463	112,867	181,488	38,995	251,412	290,407
2011	19,645	21,097	40,742	7,083	7,986	27,494	42,563	16,701	175,792	192,493
2012	21,546	23,139	44,685	7,769	8,760	30,155	46,684	18,317	192,805	211,122
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
TOTAL	51,616,019	51,576,780	103,192,799	23,836,688	25,525,933	80,363,704	129,726,325	39,281,335	444,222,958	483,504,293

Note: Allocated capital costs as a result of permanent water transfers under Monterey are not reflected on this Table

- a) Costs from Table B-10 allocated to Solano County Water Agency are reduced herein by \$2,102,700 in 1986 and \$1,823,500 in 1987 under provisions of Amendment No. 10 to its water supply contract.

TABLE B-14. Capital Costs of Transportation Facilities Allocated to Each Contractor

(in dollars)

Sheet 2 of 4

Calendar Year	SAN JOAQUIN VALLEY AREA									
	Dudley Ridge Water District	Empire West Side Irrigation District (b)	Future Contractor San Joaquin Valley	Kern County Water Agency			County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
				Municipal and Industrial	Municipal and (c) Industrial	Agri- cultural				
[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	
1952	389	20	58	938	119	9,129	20	12	785	11,470
1953	1,076	53	161	2,887	345	27,383	55	33	2,157	34,150
1954	1,350	68	201	3,373	417	32,369	69	43	2,718	40,608
1955	677	34	101	1,497	197	14,721	35	23	1,371	18,656
1956	726	34	108	2,702	273	24,255	35	25	1,416	29,574
1957	932	38	139	6,048	494	49,932	39	29	1,707	59,358
1958	2,308	102	344	14,374	1,153	119,049	104	61	4,368	141,863
1959	7,384	364	2,517	26,218	2,597	253,891	372	381	14,757	308,481
1960	12,940	630	3,666	34,054	4,155	352,166	644	498	25,696	434,449
1961	21,848	1,063	3,954	51,407	6,500	538,707	1,087	598	43,377	668,541
1962	49,320	2,410	7,867	94,933	13,834	1,017,146	2,465	1,879	98,141	1,287,995
1963	208,757	10,687	32,172	364,014	55,715	3,934,636	10,932	5,990	425,330	5,048,233
1964	328,286	16,961	64,890	600,152	88,904	6,636,279	17,350	11,942	672,013	8,436,777
1965	538,215	27,481	117,996	1,098,999	152,930	11,999,892	28,116	21,802	1,095,126	15,080,551
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	70,737	(121,004)	23,083	122,934	18,622	1,474,568	3,742	1,278	144,963	1,738,923
1999	81,197	4,192	26,645	142,983	21,661	1,715,933	4,285	3,846	166,160	2,166,902
2000	21,089	1,073	9,822	45,704	6,013	547,927	1,096	(1,081)	42,826	674,469
2001	17,776	907	7,862	36,078	5,062	432,671	927	781	36,153	538,217
2002	74,205	3,811	16,014	132,974	20,050	1,498,693	3,898	727	151,445	1,901,817
2003	(51,175)	(2,675)	(5,510)	(76,111)	(13,087)	(822,799)	(2,736)	337	(105,393)	(1,079,149)
2004	7,784	398	2,528	17,202	2,101	185,079	408	1,521	15,858	232,879
2005	28,501	1,469	5,719	52,533	7,541	537,719	1,502	560	58,282	693,826
2006	6,737	346	1,393	24,062	1,794	130,498	354	613	13,754	179,551
2007	40,599	2,058	12,443	85,125	11,120	877,719	2,105	2,622	82,302	1,116,093
2008	73,536	3,738	21,175	146,100	20,012	1,550,776	3,824	2,997	149,283	1,971,441
2009	77,966	3,990	18,894	151,669	20,942	1,558,507	4,083	1,197	158,833	1,996,081
2010	39,272	2,012	9,101	83,805	10,542	780,100	2,059	423	80,049	1,007,363
2011	2,289	114	784	5,380	677	59,818	116	111	4,590	73,879
2012	2,510	125	860	5,900	743	65,607	127	122	5,034	81,028
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
TOTAL	5,912,094	(38,841)	1,950,247	13,612,996	1,733,345	150,812,949	301,030	269,781	11,876,112	186,429,713

- b) Costs from Table B-10 allocated to Empire West Side Irrigation District are reduced herein by \$31,588 in 1978; \$12,129 in 1980; \$15,173 in 1981; \$38,004 in 1983; \$43,033 in 1986; \$5,261 in 1995; \$63,318 in 1996 and \$124,667 in 1998 in accordance with letters of agreement with the district.
- c) Costs related to maximum annual entitlement of 15,000 acre-feet under Amendment No. 18 of the water supply contract with Kern County Water Agency.

TABLE B-14. Capital Costs of Transportation Facilities Allocated to Each Contractor

(in dollars)

Sheet 3 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency (d)	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]	[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	17,598	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	5,821,137	973,957
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	4,100,531	91,384	25,858	150,711	3,757	183,609	591,445	5,821,681	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	1,116,949	305,291
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	234,379	202,650	62,492	41,136	103,063	3,989	106,009	29,551	3,550,447	303,255
1999	268,224	175,939	89,312	40,069	147,294	4,812	167,592	35,399	5,481,780	235,054
2000	139,035	77,889	54,795	23,903	90,369	2,665	103,194	19,150	13,636,062	171,107
2001	130,754	44,790	50,816	15,641	83,805	2,989	102,254	20,949	19,271,172	96,254
2002	167,056	107,515	34,405	11,395	56,741	2,453	68,208	18,551	9,606,903	126,427
2003	(45,647)	(11,440)	2,964	2,129	4,889	(800)	4,230	(5,944)	3,760,236	27,246
2004	63,550	39,157	20,270	5,614	33,429	1,142	41,333	8,311	2,049,997	38,649
2005	184,380	105,143	38,392	11,901	63,316	3,203	75,718	23,585	937,336	60,740
2006	329,713	245,897	70,645	26,450	116,512	5,546	130,287	41,505	1,966,326	118,724
2007	389,122	288,488	174,789	68,311	288,270	7,053	324,345	50,892	1,307,130	316,574
2008	546,366	460,996	198,932	71,532	328,083	10,026	379,624	71,880	1,375,895	339,151
2009	593,099	646,623	134,289	34,835	221,467	10,555	276,823	76,829	643,887	176,064
2010	487,886	585,973	97,355	25,254	160,556	8,442	200,455	62,340	462,706	126,304
2011	21,396	30,033	6,222	2,002	10,261	390	12,207	2,859	42,777	11,115
2012	23,467	22,697	6,824	2,196	11,254	428	13,388	3,136	46,917	12,190
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
TOTAL	53,802,999	34,917,032	15,318,607	4,914,321	25,263,685	965,571	30,079,974	7,077,979	161,485,567	27,154,623

d) Costs from Table B-10 allocated to Castaic Lake Water Agency are reduced herein by \$14,088 in 1978 in accordance with a letter of agreement with the district.

TABLE B-14. Capital Costs of Transportation Facilities Allocated to Each Contractor

(in dollars)

Sheet 4 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				Bay Area Future Contractor	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California (e)	Ventura County Flood Control District	Total Cit	City South of Yuba y	County of Butte	Plumas County FC&WCD	Total		
	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]	[40]
1952	962	69,020	370	86,870	0	0	0	0	59	99,352
1953	3,011	217,634	1,187	273,831	0	0	0	0	264	311,811
1954	3,904	279,967	1,496	352,294	0	0	0	0	766	402,141
1955	1,474	111,602	670	140,272	0	0	0	0	969	169,342
1956	2,127	179,335	1,299	225,039	0	0	0	0	9,172	351,549
1957	6,526	516,050	3,367	648,061	0	0	0	0	23,172	1,464,453
1958	11,701	945,684	6,390	1,186,919	0	0	2	2	32,888	2,286,626
1959	15,815	1,364,298	9,894	1,702,901	0	0	14	14	57,918	2,967,412
1960	23,307	1,914,521	12,798	2,379,416	0	0	28	28	123,202	4,660,834
1961	36,153	3,212,125	18,770	3,928,343	0	0	10	10	316,220	8,545,243
1962	40,012	3,543,471	29,069	4,456,905	0	0	32	32	228,202	8,875,170
1963	99,266	11,185,928	86,807	13,638,872	0	0	51	51	528,496	24,610,279
1964	170,012	18,065,455	164,709	22,494,752	0	0	7,791	7,791	590,034	41,736,063
1965	316,082	33,763,577	307,475	41,858,192	0	0	3,139	3,139	332,680	62,664,741
1966	654,194	74,485,027	681,898	91,558,322	0	0	(48)	(48)	783,728	129,110,328
1967	958,406	130,589,417	1,279,076	155,360,062	0	0	47	47	1,479,421	194,146,365
1968	1,314,841	147,502,290	1,360,687	177,782,841	0	0	51,573	51,573	1,254,192	197,978,910
1969	1,726,891	140,096,646	1,085,026	174,739,535	0	0	234,232	234,232	398,183	184,473,488
1970	2,160,122	161,983,078	1,147,609	201,698,371	0	0	16,227	16,227	74,028	207,082,650
1971	1,237,573	133,903,316	738,822	156,388,245	0	0	27,204	27,204	12,457	158,624,741
1972	434,507	43,931,880	66,878	50,872,072	0	0	9	9	13,182	51,936,917
1973	256,711	39,723,010	290,020	44,495,462	0	0	25	25	8,099	45,263,853
1974	264,349	18,896,593	86,362	23,369,398	0	0	45	45	28,570	24,402,165
1975	253,838	16,732,939	83,975	20,509,108	0	0	21	21	8,226	21,318,836
1976	158,850	13,545,451	84,623	16,212,451	0	0	51	51	16,486	17,492,912
1977	96,517	11,769,352	110,833	13,776,860	0	0	28	28	21,181	15,544,384
1978	69,152	15,781,696	174,876	17,770,854	0	0	38	38	28,876	19,073,476
1979	66,847	27,627,424	343,361	30,302,095	0	0	23	23	26,668	31,857,364
1980	337,811	59,493,774	641,586	69,080,038	0	0	26	26	59,169	74,974,703
1981	(26,356)	15,661,179	224,257	15,865,338	0	0	34	34	(6,746)	15,727,601
1982	238,792	30,873,857	316,107	37,365,183	0	0	11	11	16,086	39,705,931
1983	357,812	25,056,047	187,121	33,156,254	0	0	19	19	72,225	38,006,645
1984	260,327	16,317,441	103,160	22,160,453	0	0	26	26	83,252	30,414,884
1985	187,699	10,243,779	56,162	14,164,563	0	0	29	29	16,338	28,581,729
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	3,352,042	11,284,364	65,745	19,339,122	0	0	7	7	11,234	32,689,230
1999	6,139,881	9,063,618	54,504	21,903,478	0	0	2	2	34,616	35,159,764
2000	17,011,985	5,393,221	24,010	36,747,385	0	0	24	24	16,912	43,646,871
2001	24,661,236	2,988,800	13,047	47,482,508	0	0	20	20	68,013	50,987,964
2002	11,956,286	5,297,703	34,824	27,488,467	0	0	14	14	380,629	38,148,240
2003	4,700,433	3,956,554	(4,162)	12,390,688	0	0	0	0	590,120	19,158,585
2004	2,388,748	4,291,031	13,324	8,994,556	0	0	0	0	601,409	20,343,022
2005	819,626	6,600,582	35,934	8,959,856	0	0	0	0	623,748	18,588,878
2006	1,861,059	13,969,385	89,979	18,972,028	0	0	5	5	1,168,588	36,420,861
2007	196,809	40,982,820	98,898	44,493,501	0	0	0	0	1,149,456	65,581,684
2008	210,332	124,468,638	150,267	128,611,722	0	0	0	0	787,314	148,816,730
2009	108,289	195,559,895	205,918	198,688,573	0	0	0	0	260,376	206,049,778
2010	77,698	105,843,674	197,288	108,335,931	0	0	0	0	18,783	110,062,174
2011	6,897	1,063,005	10,613	1,219,777	0	0	0	0	4,466	1,573,920
2012	7,564	890,917	7,860	1,048,838	0	0	0	0	4,899	1,437,256
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0
TOTAL	91,238,684	1,939,856,395	11,711,423	2,403,786,860	0	0	341,130	341,130	13,016,475	3,319,997,595

e) Costs from Table B-10 allocated to MWDSC are reduced herein by \$16,425,374 in 1972 under provisions of Amendment No. 7 to its water contract.

TABLE B-15. Capital Cost Component of Transportation Charge for Each Contractor ^{a b c}

(in dollars)

Sheet 1 of 4

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[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	153,725	105,637	364,698	624,060	0	0	0
1964	0	0	0	216,131	170,872	529,854	916,857	6,694	21,659	28,353
1965	0	0	0	284,275	259,958	899,072	1,443,206	13,751	36,017	49,768
1966	18,057	0	18,057	320,279	290,714	1,072,916	1,683,908	26,516	61,329	87,845
1967	41,560	0	41,560	391,134	320,885	1,187,229	1,899,248	56,451	118,225	174,675
1968	121,469	0	121,469	507,642	361,817	1,309,517	2,178,977	104,127	207,970	312,097
1969	165,236	0	165,236	609,754	397,257	1,411,239	2,418,251	122,005	242,348	364,353
1970	169,023	0	169,023	644,069	412,189	1,450,186	2,506,444	125,923	250,728	376,651
1971	171,231	0	171,231	650,885	415,305	1,457,088	2,523,279	128,362	256,289	384,651
1972	172,593	0	172,593	652,188	416,233	1,461,370	2,529,791	129,820	260,399	390,218
1973	173,593	31,353	204,946	653,518	416,883	1,464,608	2,535,010	130,802	262,956	393,758
1974	176,471	32,924	209,395	654,499	417,501	1,466,613	2,538,614	131,973	265,816	397,789
1975	184,914	36,276	221,190	656,791	418,743	1,470,336	2,545,870	133,248	268,942	402,189
1976	189,589	40,819	230,408	658,109	419,548	1,472,444	2,550,101	133,998	272,068	406,067
1977	192,530	45,078	237,608	660,769	421,313	1,478,024	2,560,106	135,711	278,710	414,421
1978	195,797	49,159	244,956	664,336	423,610	1,484,815	2,572,761	141,226	292,188	433,414
1979	199,326	53,320	252,646	669,625	426,971	1,493,720	2,590,316	142,317	297,474	439,790
1980	209,065	67,724	276,788	673,404	429,157	1,499,354	2,601,915	143,485	303,872	447,357
1981	222,528	87,377	309,905	683,540	435,488	1,514,863	2,633,891	148,742	327,440	476,182
1982	234,116	106,881	340,997	681,410	433,968	1,511,521	2,626,900	147,957	320,554	468,511
1983	262,076	151,207	413,284	682,640	434,392	1,512,899	2,629,932	148,186	317,556	465,722
1984	325,968	224,170	550,139	693,726	441,088	1,530,172	2,664,985	149,805	323,171	472,976
1985	455,691	364,186	819,877	706,125	448,265	1,548,089	2,702,480	151,610	328,656	480,266
1986	819,376	692,256	1,511,632	708,010	449,245	1,550,813	2,708,068	152,497	332,673	485,170
1987	1,360,258	1,558,749	2,919,007	710,577	450,862	1,555,321	2,716,760	154,756	348,361	503,117
1988	1,771,094	2,207,426	3,978,520	714,784	453,368	1,562,476	2,730,627	161,295	417,458	578,753
1989	1,890,890	2,432,396	4,323,286	723,660	459,184	1,578,141	2,760,985	169,399	494,091	663,490
1990	1,954,717	2,513,362	4,468,079	731,699	464,542	1,591,698	2,787,940	177,331	557,209	734,540
1991	1,977,962	2,556,601	4,534,563	748,803	476,306	1,624,504	2,849,612	188,990	639,036	828,026
1992	1,983,238	2,561,318	4,544,556	779,392	496,563	1,674,504	2,950,460	204,758	754,445	959,203
1993	1,986,275	2,564,623	4,550,898	793,748	505,611	1,698,036	2,997,395	223,986	941,012	1,164,998
1994	1,992,843	2,571,524	4,564,367	804,176	512,334	1,716,406	3,032,916	286,790	1,584,690	1,871,480
1995	1,996,698	2,576,028	4,572,726	808,650	515,474	1,728,828	3,052,952	257,259	4,094,618	4,611,877
1996	1,998,368	2,577,625	4,575,993	816,552	520,770	1,742,877	3,080,199	1,186,671	12,565,709	13,752,380
1997	1,999,484	2,578,675	4,578,160	820,601	523,416	1,749,897	3,093,914	1,808,036	20,572,450	22,380,486
1998	2,000,598	2,584,668	4,585,266	827,329	527,808	1,761,546	3,116,683	1,985,088	22,693,988	24,679,076
1999	2,001,577	2,585,880	4,587,456	829,557	529,163	1,765,088	3,123,808	2,034,690	23,287,310	25,322,000
2000	2,005,415	2,591,918	4,597,333	828,257	533,339	1,776,914	3,297,475	2,087,421	23,832,145	25,919,567
2001	2,324,673	2,779,867	5,104,540	1,119,701	534,995	1,781,529	3,436,225	2,115,456	24,149,673	26,265,129
2002	2,325,113	2,780,706	5,105,819	1,134,100	550,693	1,889,460	3,574,252	2,119,661	24,181,015	26,300,676
2003	2,326,457	2,783,515	5,109,972	1,218,759	620,730	2,235,455	4,074,944	2,123,381	24,203,172	26,326,553
2004	2,330,140	2,784,808	5,114,948	1,352,255	700,178	2,511,117	4,563,550	2,123,229	24,207,760	26,331,009
2005	2,340,705	2,786,170	5,126,875	1,517,283	795,272	2,936,415	5,248,970	2,123,785	24,210,730	26,334,514
2006	2,344,935	2,790,381	5,135,317	1,698,904	900,717	3,232,657	5,832,278	2,123,120	24,199,665	26,322,785
2007	2,405,873	2,791,878	5,197,751	2,014,178	1,101,552	3,712,211	6,827,941	2,127,490	24,246,924	26,374,414
2008	2,727,212	2,808,504	5,535,716	2,352,456	1,298,074	4,183,519	7,834,049	2,130,549	24,264,424	26,394,972
2009	3,118,026	2,834,077	5,952,103	2,583,169	1,433,027	4,509,518	8,525,715	2,135,360	24,289,169	26,424,529
2010	3,223,085	2,851,094	6,074,179	2,659,568	1,478,370	4,620,505	8,758,444	2,139,624	24,310,908	26,450,531
2011	3,232,193	2,859,137	6,091,330	2,663,483	1,480,896	4,628,115	8,772,493	2,142,253	24,327,859	26,470,112
2012	3,233,741	2,860,671	6,094,412	2,664,395	1,481,447	4,630,010	8,775,852	2,143,404	24,339,979	26,483,383
2013	3,235,480	2,862,395	6,097,875	2,490,225	1,376,428	4,267,442	8,134,095	2,144,698	24,353,595	26,498,292
2014	3,235,480	2,862,395	6,097,875	2,420,130	1,311,193	4,102,286	7,833,609	2,138,004	24,331,936	26,469,939
2015	3,235,480	2,862,395	6,097,875	2,344,796	1,222,207	3,733,067	7,300,070	2,130,946	24,317,578	26,448,524
2016	3,214,914	2,862,395	6,077,310	2,305,617	1,191,352	3,559,224	7,056,193	2,118,182	24,292,266	26,410,448
2017	3,188,201	2,862,395	6,050,597	2,231,029	1,161,180	3,444,911	6,837,120	2,088,247	24,235,370	26,323,617
2018	3,097,419	2,862,395	5,959,814	2,111,377	1,120,248	3,322,623	6,554,247	2,040,571	24,145,624	26,186,195
2019	3,047,685	2,862,395	5,910,080	2,005,888	1,084,808	3,220,900	6,311,596	2,022,693	24,111,246	26,133,939
2020	3,043,363	2,862,395	5,905,759	1,970,103	1,069,876	3,181,954	6,221,933	2,018,774	24,102,867	26,121,641
2021	3,040,832	2,862,395	5,903,228	1,962,907	1,066,760	3,175,051	6,204,719	2,016,336	24,097,306	26,113,642
2022	3,039,272	2,862,395	5,901,668	1,961,532	1,065,832	3,170,770	6,198,134	2,014,878	24,093,196	26,108,074
2023	3,038,130	2,828,877	5,867,007	1,960,123	1,065,182	3,167,531	6,192,837	2,013,896	24,090,639	26,104,535
2024	3,034,851	2,827,244	5,862,094	1,959,061	1,064,564	3,165,526	6,189,152	2,012,724	24,087,778	26,100,503
2025	3,025,238	2,823,668	5,848,906	1,956,726	1,063,322	3,161,804	6,181,851	2,011,450	24,084,653	26,096,103
2026	3,019,896	2,818,915	5,838,812	1,955,253	1,062,517	3,159,696	6,177,466	2,010,699	24,081,526	26,092,225
2027	3,016,526	2,814,482	5,831,008	1,952,266	1,060,752	3,154,115	6,167,134	2,008,987	24,074,885	26,083,872
2028	3,012,787	2,810,224	5,823,012	1,948,258	1,058,455	3,147,325	6,154,039	2,003,471	24,061,407	26,064,878
2029	3,008,751	2,805,858	5,814,609	1,942,263	1,055,095	3,138,420	6,135,778	2,002,381	24,056,121	26,058,502
2030	2,997,598	2,790,401	5,787,999	1,938,068	1,052,908	3,132,786	6,123,762	2,001,213	24,049,723	26,050,936
2031	2,982,186	2,769,341	5,751,527	1,926,589	1,046,577	3,117,277	6,090,442	1,995,956	24,026,155	26,022,111
2032	2,968,894	2,748,403	5,717,297	1,929,104	1,048,097	3,120,618	6,097,820	1,996,741	24,033,040	26,029,781
2033	2,936,844	2,700,967	5,637,811	1,927,863	1,047,674	3,119,240	6,094,777	1,996,532	24,036,038	26,032,570
2034	2,863,771	2,624,375	5,488,146	1,915,445	1,040,978	3,101,968	6,058,390	1,994,893	24,030,423	26,025,316
2035	2,715,675	2,478,119	5,193,794	1,901,602	1,033,800	3,084,050	6,019,453	1,993,088	24,024,939	26,018,026
TOTAL	133,551,055	134,619,159	268,170,214	94,967,809	53,881,435	172,486,778	321,336,022	86,214,324	964,179,168	1,050,393,491

a) Unadjusted for prior overpayments or underpayments of charges.
 b) Determined at the current Project Interest Rate of 4.608 percent per annum.
 c) Reflects the transfers of permanent aqueduct capacity among contractors.

TABLE B-15. Capital Cost Component of Transportation Charge for Each Contractor

(in dollars)

Sheet 2 of 4

Calendar Year	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	Total
				Municipal and Industrial	Municipal and (d Industrial	Agri-cultural				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	2,724	0	0	0	0	0	0	2,724
1965	0	0	6,027	64,262	9,281	0	0	0	0	79,571
1966	0	0	12,035	120,217	17,068	0	0	0	0	149,319
1967	0	0	26,249	233,186	34,339	0	0	0	0	293,774
1968	77,346	1,745	48,934	335,663	48,951	423,113	9,404	4,721	65,233	1,015,109
1969	77,481	5,234	57,399	391,879	52,519	868,924	10,154	5,132	246,821	1,715,544
1970	84,918	5,234	59,206	423,268	53,905	1,056,871	10,442	5,337	182,650	1,881,831
1971	96,818	5,234	60,310	444,380	54,695	1,403,717	10,608	5,748	194,366	2,275,876
1972	108,176	5,234	60,925	454,082	55,057	2,101,944	10,690	11,015	599,608	3,406,731
1973	118,994	5,234	61,351	458,302	55,231	2,424,271	10,733	6,363	231,918	3,372,396
1974	180,600	5,234	61,870	460,337	55,331	2,714,821	10,766	7,125	384,948	3,881,033
1975	219,354	5,234	62,432	462,650	55,472	3,251,611	10,808	7,341	459,335	4,534,237
1976	167,246	5,234	62,700	464,506	55,661	3,505,205	10,849	8,291	328,598	4,608,290
1977	164,428	5,234	63,342	467,209	55,947	3,840,698	10,911	7,595	314,181	4,929,545
1978	175,786	0	65,775	469,066	56,138	4,269,260	11,016	8,006	337,078	5,392,126
1979	208,477	5,234	66,090	471,827	56,473	4,687,832	11,082	8,211	379,368	5,894,594
1980	221,761	5,234	66,378	474,569	56,810	5,115,484	11,153	11,701	381,812	6,344,902
1981	221,761	5,234	67,964	490,958	58,751	5,598,522	11,561	8,827	404,708	6,868,287
1982	221,761	5,234	67,975	488,679	58,689	6,044,333	11,548	9,237	427,072	7,334,527
1983	232,038	5,234	68,311	492,919	59,358	6,551,887	11,681	7,739	50,843	7,480,009
1984	243,937	5,234	68,928	498,543	60,064	6,873,307	11,830	9,853	333,411	8,105,107
1985	255,296	5,234	69,656	506,425	61,223	7,319,120	12,065	10,058	242,553	8,481,630
1986	266,654	5,234	69,944	508,820	61,568	7,447,556	12,137	10,469	517,602	8,899,983
1987	278,013	5,234	70,449	512,489	62,096	8,211,652	12,247	10,674	539,968	9,702,821
1988	289,371	5,234	70,809	515,348	62,506	8,632,039	12,330	11,085	562,333	10,161,055
1989	300,730	5,234	71,694	519,003	63,130	8,935,299	12,497	11,495	585,232	10,504,314
1990	156,044	5,234	73,130	537,356	65,369	9,250,365	12,932	11,701	631,028	10,743,158
1991	288,890	5,234	75,772	566,393	69,944	9,250,365	13,757	11,701	631,028	10,913,085
1992	312,088	5,234	78,965	597,071	74,793	9,250,365	14,752	11,701	631,028	10,975,997
1993	312,088	5,234	80,456	609,930	76,633	9,250,365	15,120	11,701	631,028	10,992,555
1994	312,088	5,234	82,079	619,299	77,912	9,250,365	15,392	11,701	631,028	11,005,098
1995	312,088	5,234	83,371	626,034	78,865	9,250,365	15,603	11,701	631,028	11,014,290
1996	288,668	5,234	87,340	635,184	80,196	8,932,799	15,956	11,701	631,028	10,688,106
1997	288,668	5,234	90,203	638,976	80,681	8,867,326	16,128	11,701	631,028	10,629,945
1998	288,667	5,234	92,911	652,398	82,706	8,608,448	16,583	11,701	631,028	10,389,676
1999	288,667	5,234	94,208	659,302	83,752	8,608,448	16,818	11,701	631,028	10,399,159
2000	288,667	5,234	95,721	667,421	84,982	7,964,901	17,090	11,701	631,028	9,766,745
2001	288,667	5,234	96,285	670,045	85,327	7,836,160	17,167	11,701	631,028	9,641,614
2002	310,571	5,234	96,742	672,142	85,621	7,836,160	17,231	11,701	592,575	9,627,978
2003	310,571	5,234	97,685	679,971	86,802	7,836,160	17,471	11,701	590,367	9,635,962
2004	310,571	5,234	97,356	675,429	86,021	7,824,189	44,675	11,701	508,527	9,563,703
2005	310,571	5,234	97,509	676,470	86,148	7,824,189	44,703	11,701	508,527	9,565,052
2006	310,571	5,234	97,860	679,700	86,612	7,824,189	46,467	11,701	506,857	9,569,191
2007	310,571	5,234	97,948	681,203	86,724	7,824,189	46,490	11,701	506,857	9,570,916
2008	333,992	5,234	98,738	686,614	87,431	8,197,282	46,638	11,701	506,857	9,974,487
2009	333,992	5,234	100,109	696,074	88,726	8,197,282	46,909	11,701	506,857	9,986,884
2010	333,992	5,234	101,357	706,088	90,109	8,197,282	47,195	11,701	506,857	9,999,815
2011	333,992	5,234	101,971	711,738	90,820	8,197,282	47,342	11,701	506,857	10,006,937
2012	333,992	5,234	102,025	712,109	90,866	8,197,282	47,351	11,701	506,857	10,007,417
2013	333,992	5,234	102,085	712,526	90,919	8,197,282	47,361	11,701	506,857	10,007,957
2014	333,992	5,234	99,362	712,526	90,919	8,197,282	47,361	11,701	506,857	10,005,234
2015	333,992	5,234	96,058	648,264	81,638	8,197,282	47,361	11,701	506,857	9,928,386
2016	333,992	5,234	90,050	592,309	73,851	8,197,282	47,361	11,701	506,857	9,858,638
2017	333,992	5,234	75,837	479,340	56,580	8,197,282	47,361	11,701	506,857	9,714,183
2018	333,992	5,234	53,151	376,863	41,968	8,197,282	37,957	11,701	506,857	9,565,006
2019	333,992	5,234	44,686	320,647	38,400	8,197,282	37,207	11,701	506,857	9,496,006
2020	333,992	5,234	42,880	289,258	37,014	8,197,282	36,919	11,701	506,857	9,461,137
2021	333,992	5,234	41,776	268,146	36,224	8,197,282	36,753	11,701	506,857	9,437,965
2022	333,992	5,234	41,160	258,444	35,862	8,197,282	36,671	11,701	506,857	9,427,203
2023	333,992	5,234	40,735	254,224	35,688	8,197,282	36,628	11,701	506,857	9,422,341
2024	333,992	5,234	40,215	252,189	35,588	8,197,282	36,594	11,701	506,857	9,419,652
2025	333,992	5,234	39,653	249,876	35,447	8,197,282	36,553	11,701	506,857	9,416,595
2026	333,992	5,234	39,386	248,020	35,258	8,197,282	36,512	11,701	506,857	9,414,241
2027	333,992	5,234	38,744	245,317	34,972	8,197,282	36,450	11,701	506,857	9,410,549
2028	333,992	5,234	36,310	243,460	34,781	8,197,282	36,345	11,701	506,857	9,405,962
2029	333,992	5,234	35,996	240,699	34,446	8,197,282	36,279	11,701	506,857	9,402,485
2030	333,992	5,234	35,708	237,957	34,109	8,197,282	36,208	11,701	506,857	9,399,047
2031	333,992	5,234	34,121	221,568	32,168	8,197,282	35,800	11,701	506,857	9,378,722
2032	333,992	5,234	34,111	223,847	32,230	8,197,282	35,813	11,701	506,857	9,381,067
2033	333,992	5,234	33,775	219,607	31,561	8,197,282	35,680	11,701	506,857	9,375,689
2034	333,992	5,234	33,157	213,983	30,855	8,197,282	35,531	11,701	506,857	9,368,593
2035	333,992	5,234	32,429	206,101	29,696	8,197,282	35,296	11,701	506,857	9,358,588
TOTAL	18,851,438	347,189	4,750,600	33,500,708	4,247,475	484,090,710	1,778,283	724,269	32,747,680	581,038,352

d) Charges under Amendment No. 18 of the water supply contract with Kern County Water Agency.

TABLE B-15. Capital Cost Component of Transportation Charge for Each Contractor

(in dollars)

Sheet 3 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]	[30]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,772	0	0	0	0	0	0	0	51,711	0
1964	63,536	27,438	16,286	4,368	37,145	1,142	28,427	8,202	82,782	34,973
1965	119,810	52,989	28,459	7,191	40,756	2,081	50,300	15,217	135,023	35,333
1966	217,978	101,232	51,184	12,474	73,129	3,752	90,369	27,670	232,426	61,445
1967	421,745	210,746	98,904	23,464	141,365	7,282	175,119	54,006	433,210	115,536
1968	678,696	419,579	164,991	38,538	231,834	11,777	286,687	87,265	729,615	194,465
1969	985,871	623,244	249,378	57,283	345,252	17,243	426,562	127,179	1,136,052	302,553
1970	1,287,604	780,056	352,336	84,769	487,182	23,419	592,565	171,243	1,690,922	443,566
1971	1,548,517	946,987	471,194	120,171	659,386	28,835	790,104	208,755	2,393,322	619,582
1972	1,682,260	1,056,393	533,559	137,410	749,360	31,296	897,126	226,425	2,807,612	720,574
1973	1,732,750	1,070,861	553,392	142,098	777,217	32,271	931,509	233,266	2,944,628	756,290
1974	1,751,139	1,117,452	562,610	146,284	790,534	32,592	943,942	235,613	3,034,266	776,838
1975	1,774,561	1,131,826	577,197	150,058	812,296	33,006	970,920	238,624	3,116,614	798,523
1976	1,787,687	1,144,410	587,768	152,747	828,555	33,258	991,154	240,355	3,194,699	819,292
1977	1,799,983	1,157,452	595,329	154,643	840,037	33,474	1,005,663	241,933	3,243,692	832,321
1978	1,810,314	1,176,424	600,379	155,959	847,711	33,666	1,015,471	243,300	3,273,805	840,240
1979	1,825,957	1,200,420	604,990	157,091	854,308	33,932	1,023,954	245,268	3,295,647	845,930
1980	1,844,482	1,248,287	609,777	158,201	861,177	34,236	1,032,917	247,529	3,316,194	851,450
1981	1,941,223	1,338,843	636,015	163,962	896,759	35,887	1,077,438	259,794	3,420,097	879,355
1982	1,932,976	1,370,002	632,062	163,511	892,804	35,756	1,072,688	258,797	3,412,772	877,137
1983	2,013,826	1,413,957	648,871	167,528	917,891	37,092	1,104,477	268,810	3,485,141	896,905
1984	2,120,889	1,440,545	670,884	173,418	951,144	38,559	1,141,948	282,045	3,593,400	926,520
1985	2,199,602	1,455,666	686,764	177,750	976,129	40,247	1,173,290	291,645	3,672,145	948,078
1986	2,246,108	1,463,813	698,218	180,934	994,360	40,914	1,205,013	297,120	3,729,014	963,621
1987	2,289,872	1,469,244	709,928	183,911	1,013,034	41,377	1,219,995	301,897	3,782,694	978,277
1988	2,307,280	1,474,739	718,732	186,176	1,027,137	41,664	1,237,977	303,993	3,823,044	989,254
1989	2,320,887	1,483,801	722,401	187,353	1,032,760	41,839	1,244,955	305,378	3,845,289	995,140
1990	2,376,181	1,506,487	741,616	192,411	1,060,538	42,713	1,279,149	311,911	3,916,996	1,014,533
1991	2,411,969	1,526,128	759,874	197,542	1,089,317	43,098	1,314,428	315,436	3,996,215	1,036,031
1992	2,456,111	1,547,368	779,790	203,932	1,121,316	43,730	1,353,183	320,331	4,100,806	1,064,576
1993	2,490,168	1,566,369	794,895	210,923	1,145,092	44,239	1,379,887	324,417	4,212,242	1,095,099
1994	2,524,639	1,584,186	807,651	220,102	1,164,765	44,786	1,398,850	328,384	4,418,688	1,151,256
1995	2,550,244	1,593,144	815,344	225,178	1,176,594	45,178	1,410,669	331,262	4,545,673	1,185,752
1996	2,575,637	1,609,147	823,318	229,455	1,188,534	45,584	1,423,348	334,239	4,652,614	1,214,705
1997	2,592,399	1,620,531	830,201	231,931	1,198,571	45,853	1,435,014	336,210	4,873,092	1,268,273
1998	2,617,017	1,634,414	836,569	233,300	1,208,050	46,264	1,459,785	339,238	5,029,853	1,290,351
1999	2,630,306	1,645,796	840,462	235,611	1,213,839	46,489	1,466,670	340,897	5,229,274	1,307,384
2000	2,645,666	2,799,538	845,895	237,886	1,222,202	46,762	1,977,056	404,657	5,540,513	1,320,729
2001	2,653,761	2,805,478	849,309	239,259	1,227,391	46,915	1,983,625	405,860	6,323,611	1,330,556
2002	2,677,918	2,808,770	852,412	240,168	1,232,263	47,089	1,989,922	407,134	7,443,770	1,336,151
2003	2,687,815	2,816,410	854,705	240,839	1,235,603	47,233	1,994,572	408,326	8,009,369	1,343,594
2004	2,685,142	2,816,330	854,705	240,966	1,235,895	47,185	1,995,162	408,026	8,233,772	1,345,220
2005	2,689,049	2,819,774	854,705	241,306	1,235,895	47,254	1,998,116	408,604	8,357,884	1,347,560
2006	2,700,553	2,829,182	858,143	242,037	2,008,039	47,451	2,004,123	410,278	8,415,505	1,351,294
2007	2,721,520	2,850,963	863,124	243,690	2,020,644	47,798	2,015,337	413,383	8,538,360	1,358,712
2008	2,746,657	2,878,206	875,939	248,032	2,121,541	48,246	2,039,069	417,133	8,621,450	1,378,735
2009	2,782,567	2,919,017	9,529,356	252,664	2,448,038	48,895	2,067,719	422,458	8,710,533	1,400,794
2010	2,822,333	2,974,606	13,269,621	254,964	2,966,423	49,592	2,090,775	428,321	8,753,047	1,412,419
2011	2,855,802	3,031,282	15,190,599	256,666	3,235,582	50,161	2,108,957	433,299	8,784,244	1,420,935
2012	2,857,301	3,034,461	15,194,335	256,804	3,236,729	50,188	2,109,945	433,520	8,787,194	1,421,701
2013	2,825,213	3,036,843	15,136,702	256,959	3,216,303	50,218	2,111,056	433,768	8,738,796	1,409,465
2014	2,795,446	3,002,712	15,071,382	252,591	3,199,872	49,076	2,078,168	424,869	8,707,725	1,401,287
2015	2,739,175	2,971,900	15,013,936	249,768	3,176,169	48,137	2,052,649	417,276	8,655,484	1,387,229
2016	2,641,007	2,914,784	14,909,951	244,485	3,132,820	46,466	2,005,186	403,688	8,558,081	1,361,117
2017	2,437,240	2,780,929	14,685,598	233,495	3,040,725	42,937	1,905,705	375,258	8,357,297	1,307,025
2018	2,180,289	2,493,206	14,368,156	218,421	2,916,304	38,441	1,768,173	338,048	8,060,892	1,228,097
2019	1,873,114	2,197,260	13,939,545	199,677	2,756,390	32,975	1,590,900	291,955	7,654,454	1,120,009
2020	1,571,381	1,966,622	13,419,542	172,191	2,558,129	26,799	1,383,853	241,039	7,099,584	978,995
2021	1,310,468	1,719,621	12,772,700	136,788	2,314,608	21,383	1,151,445	197,663	6,397,185	802,980
2022	1,176,725	1,560,137	11,878,655	119,550	2,112,294	18,922	1,026,114	176,819	5,982,895	701,808
2023	1,126,235	1,552,415	11,180,244	114,862	1,992,778	17,948	984,899	168,785	5,845,879	666,272
2024	1,107,845	1,493,560	11,065,705	110,675	1,965,235	17,627	969,988	165,975	5,756,241	645,724
2025	1,084,424	1,475,701	10,952,913	106,902	1,930,207	17,212	940,199	162,400	5,673,893	624,039
2026	1,071,298	1,457,458	10,850,319	104,212	1,901,519	16,960	918,499	160,382	5,595,808	603,270
2027	1,059,001	1,438,953	10,775,034	102,317	1,880,888	16,744	902,913	158,570	5,546,814	590,241
2028	1,048,671	1,411,126	10,738,520	101,000	1,868,965	16,553	892,619	157,054	5,516,702	582,322
2029	1,033,028	1,372,825	10,707,265	99,869	1,858,768	16,286	883,102	154,842	5,494,860	576,632
2030	1,014,503	1,295,635	10,681,770	98,759	1,849,102	15,983	873,086	152,329	5,474,313	571,112
2031	917,762	1,152,628	10,551,326	92,997	1,799,445	14,331	817,715	138,171	5,370,410	543,207
2032	926,009	1,101,139	10,561,416	93,449	1,804,229	14,462	826,737	139,803	5,377,735	545,425
2033	845,159	1,028,611	10,482,695	89,431	1,770,779	13,126	791,601	129,141	5,305,365	525,657
2034	738,096	986,388	10,373,397	83,542	1,725,736	11,360	746,158	115,156	5,197,106	496,041
2035	659,382	964,673	10,290,770	79,209	1,691,735	9,971	713,520	105,262	5,118,361	474,484
TOTAL	135,671,555	120,969,115	385,707,344	12,024,104	108,294,932	2,393,523	91,360,213	19,312,904	366,856,404	66,042,275

TABLE B-15. Capital Cost Component of Transportation Charge for Each Contractor

(in dollars)

Sheet 4 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				South Bay Area Future Contractor	GRAND TOTAL
	San Geronio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total Contractor		
	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]	[40]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	690,539	0	776,021	0	0	0	0	0	1,400,081
1964	21,728	1,260,042	9,374	1,595,448	0	0	0	0	0	2,543,381
1965	21,859	2,179,810	17,760	2,706,589	0	0	405	405	0	4,279,539
1966	37,952	3,898,819	33,415	4,841,844	0	0	564	564	0	6,781,538
1967	71,260	7,691,085	68,133	9,511,856	0	0	562	562	0	11,921,674
1968	120,056	14,340,331	133,256	17,437,091	0	0	564	564	0	21,065,308
1969	187,000	21,850,137	202,534	26,510,287	0	0	3,190	3,190	0	31,176,860
1970	274,923	28,982,865	257,777	35,429,228	0	0	15,116	15,116	0	40,378,292
1971	384,903	37,229,879	316,207	45,717,842	0	0	15,942	15,942	0	51,088,820
1972	447,913	44,047,132	353,823	53,691,062	0	0	17,327	17,327	0	60,207,723
1973	470,035	46,283,635	357,228	56,285,179	0	0	17,327	17,327	0	62,808,616
1974	483,106	48,306,053	371,994	58,552,421	0	0	17,329	17,329	0	65,596,581
1975	496,565	49,268,119	376,391	59,744,699	0	0	17,331	17,331	0	67,465,517
1976	509,489	50,120,026	380,667	60,790,107	0	0	17,332	17,332	0	68,602,305
1977	517,576	50,809,655	384,975	61,616,735	0	0	17,335	17,335	0	69,775,749
1978	522,490	51,408,868	390,618	62,319,244	0	0	17,336	17,336	0	70,979,836
1979	526,011	52,212,368	399,522	63,225,398	0	0	17,338	17,338	0	72,420,081
1980	529,415	53,618,983	417,004	64,769,650	0	0	17,339	17,339	0	74,457,950
1981	546,614	56,648,010	449,669	68,293,666	0	0	17,341	17,341	0	78,599,271
1982	545,272	57,445,385	461,087	69,100,248	0	0	17,342	17,342	0	79,888,525
1983	557,430	59,017,274	477,181	71,006,383	0	0	17,343	17,343	0	82,012,673
1984	575,647	60,292,946	486,708	72,694,954	0	0	17,344	17,344	0	84,505,505
1985	588,902	61,123,708	491,961	73,825,888	0	0	17,345	17,345	0	86,327,486
1986	598,458	61,645,242	494,820	74,557,636	0	0	17,347	17,347	0	88,179,835
1987	607,471	62,073,455	496,600	75,167,755	0	0	17,348	17,348	0	91,026,809
1988	614,224	62,431,535	498,461	75,654,214	0	0	17,350	17,350	0	93,120,519
1989	617,863	62,774,747	501,420	76,073,833	0	0	17,353	17,353	0	94,343,261
1990	629,735	63,740,657	509,405	77,322,332	0	0	17,355	17,355	0	96,073,403
1991	642,915	64,655,258	515,983	78,504,194	0	0	17,358	17,358	0	97,646,839
1992	660,418	65,753,902	522,988	79,928,450	0	0	17,361	17,361	0	99,376,026
1993	679,129	66,882,231	529,216	81,353,907	0	0	17,363	17,363	0	101,077,115
1994	713,838	68,463,303	534,886	83,355,334	0	0	17,365	17,365	0	103,846,560
1995	735,201	69,349,936	537,642	84,501,816	0	0	17,366	17,366	0	107,771,027
1996	753,283	70,227,179	541,582	85,618,625	0	0	17,366	17,366	0	117,732,670
1997	813,865	71,506,673	544,296	87,296,908	0	0	17,366	17,366	0	127,996,779
1998	924,385	72,258,932	548,317	88,926,475	0	0	17,366	17,366	0	131,714,543
1999	1,112,663	72,892,733	552,010	90,014,134	0	0	17,366	17,366	0	133,463,923
2000	1,461,267	73,407,341	555,105	92,464,616	0	0	17,367	17,367	0	136,063,102
2001	2,438,239	73,717,086	556,484	94,577,573	0	0	17,368	17,368	0	139,042,449
2002	3,871,700	73,891,014	557,242	97,355,552	0	0	17,369	17,369	0	141,981,647
2003	4,575,618	74,203,116	559,292	98,976,492	0	0	17,370	17,370	0	144,141,293
2004	4,856,130	74,439,679	559,044	99,771,754	0	0	17,370	17,370	0	145,362,333
2005	5,000,750	68,332,606	559,850	100,319,169	0	0	17,370	17,370	0	146,611,951
2006	5,051,136	68,667,408	562,059	100,875,208	0	0	17,370	17,370	0	147,752,148
2007	5,167,413	69,495,450	567,681	102,072,195	0	0	17,370	17,370	0	150,060,588
2008	5,179,924	71,406,727	573,968	104,914,727	0	0	17,370	17,370	0	154,671,321
2009	5,193,542	76,900,457	583,697	113,259,736	0	0	17,370	17,370	0	164,166,337
2010	5,200,692	85,579,523	597,293	126,399,609	0	0	17,370	17,370	0	177,699,949
2011	5,205,931	90,544,961	610,595	133,729,015	0	0	17,370	17,370	0	185,087,256
2012	5,206,406	90,614,568	611,327	133,814,478	0	0	17,370	17,370	0	185,192,913
2013	5,198,791	90,052,960	611,882	133,078,957	0	0	17,370	17,370	0	183,834,548
2014	5,193,737	89,539,097	602,507	132,318,470	0	0	17,370	17,370	0	182,742,498
2015	5,185,081	88,670,701	594,121	131,161,627	0	0	16,966	16,966	0	180,953,448
2016	5,168,988	87,043,899	578,466	129,008,940	0	0	16,806	16,806	0	178,428,334
2017	5,135,680	83,452,061	543,748	124,297,699	0	0	16,808	16,808	0	173,240,024
2018	5,086,884	77,088,031	478,625	116,263,568	0	0	16,806	16,806	0	164,545,637
2019	5,019,940	69,968,822	409,347	107,054,389	0	0	14,180	14,180	0	154,920,190
2020	4,932,018	63,309,320	354,104	98,013,578	0	0	2,254	2,254	0	145,726,302
2021	4,822,037	55,661,417	295,675	87,603,970	0	0	1,428	1,428	0	135,264,951
2022	4,759,027	49,787,884	258,059	79,558,890	0	0	43	43	0	127,194,012
2023	4,736,905	48,321,376	254,654	76,963,250	0	0	43	43	0	124,550,012
2024	4,723,835	46,418,466	239,888	74,680,764	0	0	42	42	0	122,252,207
2025	4,710,376	45,567,836	235,491	73,481,592	0	0	39	39	0	121,025,087
2026	4,697,452	44,820,348	231,215	72,428,740	0	0	38	38	0	119,951,523
2027	4,689,364	44,207,567	226,907	71,595,314	0	0	36	36	0	119,087,912
2028	4,684,450	43,644,056	221,264	70,883,302	0	0	34	34	0	118,331,226
2029	4,680,929	42,870,789	212,360	69,961,555	0	0	32	32	0	117,372,961
2030	4,677,526	41,487,673	194,878	68,386,668	0	0	31	31	0	115,748,443
2031	4,660,326	38,576,889	162,212	64,797,420	0	0	30	30	0	112,040,252
2032	4,661,668	37,772,551	150,795	63,975,417	0	0	28	28	0	111,201,410
2033	4,649,510	36,270,914	134,700	62,036,692	0	0	27	27	0	109,177,567
2034	4,631,293	35,094,285	125,173	60,323,731	0	0	26	26	0	107,264,202
2035	4,618,038	34,339,263	119,921	59,184,590	0	0	25	25	0	105,774,477
TOTAL	188,272,195	4,078,547,593	28,854,543	5,604,306,701	0	0	868,351	868,351	0	7,826,113,130

**TABLE B-16A. Minimum OMP&R Component of
Transportation Charge for Each Contractor**

(in dollars)

Sheet 1 of 4

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	9,699	8,868	21,132	39,699	0	0	0
1963	0	0	0	38,048	34,788	82,896	155,732	0	0	0
1964	0	0	0	41,148	38,323	91,320	170,791	0	0	0
1965	0	0	0	78,529	75,616	195,793	349,938	0	0	0
1966	0	0	0	79,753	78,779	218,543	377,075	0	0	0
1967	0	0	0	127,896	123,667	335,224	586,787	0	0	0
1968	130	0	130	126,058	120,563	333,506	580,127	11,800	21,770	33,570
1969	80,875	0	80,875	145,411	138,050	372,585	656,046	63,113	116,435	179,548
1970	94,872	0	94,872	128,993	120,245	320,664	569,902	74,187	136,867	211,054
1971	45,579	0	45,579	113,071	108,346	296,004	517,421	74,011	136,541	210,552
1972	37,895	0	37,895	122,407	117,483	334,366	574,256	79,196	146,107	225,303
1973	32,993	0	32,993	122,738	116,785	325,726	565,249	75,714	139,683	215,397
1974	46,498	0	46,498	154,435	146,929	403,080	704,444	76,530	141,189	217,719
1975	37,707	0	37,707	189,175	182,087	513,823	885,085	92,605	170,845	263,450
1976	60,786	0	60,786	203,064	193,435	524,813	921,312	94,935	175,144	270,079
1977	78,400	0	78,400	179,866	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	573,814	658,274	1,232,088	1,368,665	1,312,746	3,560,310	6,241,721	481,022	888,287	1,369,309
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	461,928	661,476	1,123,404	1,064,807	1,174,968	3,502,904	5,742,679	810,178	2,963,767	3,773,945
1999	607,013	995,190	1,602,203	1,221,500	1,263,225	5,075,978	7,560,703	788,146	2,994,744	3,782,890
2000	776,091	1,492,976	2,269,067	2,174,362	2,195,738	3,755,201	7,225,301	714,603	3,446,638	4,161,241
2001	650,709	1,442,691	2,093,400	2,031,962	1,037,198	3,542,165	6,611,325	732,910	3,127,544	3,860,454
2002	1,087,797	1,872,282	2,970,079	2,451,182	1,358,411	6,061,824	9,871,417	770,413	3,588,248	4,358,661
2003	1,168,090	2,246,218	3,414,308	2,255,722	1,056,635	3,546,653	6,859,010	816,881	3,745,236	4,562,117
2004	1,618,445	2,345,386	3,963,831	2,583,387	1,278,759	3,533,253	7,395,399	821,144	3,751,765	4,572,909
2005	913,335	1,760,715	2,674,050	2,347,744	1,108,795	2,891,080	6,347,619	841,274	4,028,358	4,869,632
2006	852,220	1,392,475	2,244,695	2,593,924	1,291,584	3,930,488	7,815,996	949,450	4,312,626	5,262,076
2007	1,241,013	2,031,055	3,272,068	2,936,083	1,401,197	3,940,401	8,277,681	1,153,673	3,716,032	4,631,705
2008	1,342,289	2,199,075	3,541,364	3,210,393	1,532,693	4,318,243	9,061,329	989,932	4,002,327	4,992,259
2009	1,340,548	2,174,806	3,515,354	3,018,857	1,450,546	4,118,584	8,587,987	963,214	3,990,902	4,954,116
2010	899,860	1,473,881	2,373,741	2,942,407	1,428,955	3,982,828	8,354,190	815,792	3,028,628	3,844,420
2011	903,074	1,479,476	2,382,550	2,954,168	1,434,126	3,997,193	8,385,487	818,651	3,038,530	3,857,181
2012	903,285	1,479,862	2,383,147	2,954,771	1,434,392	3,997,918	8,387,081	818,829	3,039,245	3,858,074
2013	903,844	1,481,026	2,384,870	2,956,032	1,434,812	3,998,976	8,389,820	819,257	3,041,157	3,860,414
2014	904,114	1,481,872	2,385,986	2,956,120	1,434,547	3,998,050	8,388,717	819,402	3,042,159	3,861,561
2015	904,793	1,482,975	2,387,768	2,958,302	1,435,626	4,001,074	8,395,002	820,004	3,044,416	3,864,420
2016	903,655	1,481,009	2,384,664	2,954,871	1,434,019	3,996,624	8,385,514	819,023	3,040,602	3,859,625
2017	904,114	1,481,826	2,385,940	2,956,201	1,434,623	3,998,284	8,389,108	819,411	3,042,138	3,861,549
2018	904,767	1,483,193	2,387,960	2,957,685	1,435,117	3,999,527	8,392,329	819,914	3,044,384	3,864,298
2019	903,580	1,481,064	2,384,644	2,954,265	1,433,581	3,995,316	8,383,162	818,910	3,040,386	3,859,296
2020	904,385	1,482,314	2,386,699	2,956,967	1,434,962	3,999,212	8,391,141	819,637	3,043,049	3,862,686
2021	904,826	1,482,904	2,387,730	2,958,623	1,435,876	4,001,827	8,396,326	820,057	3,044,482	3,864,539
2022	904,569	1,482,838	2,387,407	2,957,113	1,434,862	3,998,827	8,390,802	819,745	3,043,714	3,863,459
2023	903,727	1,481,098	2,384,825	2,955,136	1,434,169	3,997,053	8,386,358	819,089	3,040,824	3,859,913
2024	904,064	1,481,828	2,385,892	2,955,860	1,434,386	3,997,579	8,387,825	819,344	3,041,987	3,861,331
2025	905,007	1,483,329	2,388,336	2,958,947	1,435,936	4,001,935	8,396,818	820,186	3,045,115	3,865,301
2026	903,319	1,480,633	2,383,952	2,953,440	1,433,180	3,994,194	8,380,814	818,681	3,039,516	3,858,197
2027	906,238	1,485,312	2,391,550	2,962,931	1,437,916	4,007,490	8,408,337	821,280	3,049,206	3,870,486
2028	903,230	1,480,557	2,383,787	2,953,008	1,432,911	3,993,411	8,379,330	818,583	3,039,229	3,857,812
2029	904,441	1,482,345	2,386,786	2,957,266	1,435,156	3,999,780	8,392,202	819,702	3,043,225	3,862,927
2030	903,580	1,480,836	2,384,416	2,954,707	1,433,974	3,996,517	8,385,198	818,964	3,040,330	3,859,294
2031	906,502	1,485,977	2,392,479	2,963,311	1,437,921	4,007,393	8,408,625	821,455	3,050,133	3,871,588
2032	902,719	1,479,742	2,382,461	2,951,347	1,432,081	3,991,078	8,374,506	818,128	3,037,537	3,855,665
2033	904,562	1,482,409	2,386,971	2,957,913	1,435,577	4,001,019	8,394,509	819,841	3,043,590	3,863,431
2034	904,711	1,482,880	2,387,591	2,957,951	1,435,422	4,000,482	8,393,855	819,919	3,044,148	3,864,067
2035	902,846	1,479,935	2,382,781	2,951,781	1,432,305	3,991,711	8,375,797	818,244	3,037,957	3,856,201
TOTAL	42,886,579	65,852,105	108,738,684	120,789,074	68,093,058	195,504,008	384,386,140	37,716,693	135,057,521	172,774,214

**TABLE B-16A. Minimum OMP&R Component of
Transportation Charge for Each Contractor**

(in dollars)

Sheet 2 of 4

Calendar Year	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	Total	
				Municipal and Industrial	Agricultural					
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	
1961	0	0	0	0	0	0	0	0	0	
1962	0	0	0	0	0	0	0	0	0	
1963	0	0	0	0	0	0	0	0	0	
1964	0	0	0	0	0	0	0	0	0	
1965	0	0	0	0	0	0	0	0	0	
1966	0	0	0	0	0	0	0	0	0	
1967	0	0	0	0	0	0	0	0	0	
1968	37,806	1,963	5,639	60,701	678,086	2,008	2,073	77,591	865,867	
1969	45,479	2,235	30,158	80,554	1,197,126	2,286	2,085	90,773	1,450,696	
1970	46,969	2,292	35,450	96,673	1,381,493	2,344	2,158	93,408	1,660,787	
1971	47,997	2,314	35,366	106,654	1,643,163	2,366	2,288	94,874	1,935,022	
1972	49,866	2,414	37,844	122,313	1,729,169	2,469	2,254	98,777	2,045,106	
1973	50,006	2,385	36,180	125,553	1,719,873	2,440	2,310	98,330	2,037,077	
1974	52,818	2,556	36,570	135,661	1,823,065	2,614	2,529	104,609	2,160,422	
1975	66,963	3,243	44,251	162,738	2,235,242	3,317	3,191	132,663	2,651,608	
1976	66,504	3,328	45,364	159,303	2,215,999	3,404	2,919	133,940	2,630,761	
1977	75,595	3,812	49,192	189,661	2,522,290	3,898	3,708	152,838	3,000,994	
1978	70,688	3,503	49,725	174,897	2,427,163	3,583	3,644	141,672	2,874,875	
1979	68,879	3,436	48,142	173,677	2,378,315	3,514	3,492	138,493	2,817,948	
1980	95,898	4,722	59,551	235,741	3,146,570	4,830	4,777	191,582	3,743,671	
1981	118,448	5,965	66,183	266,353	3,440,557	6,099	5,187	239,323	4,148,115	
1982	134,083	6,711	67,061	311,879	3,848,922	6,862	6,382	270,061	4,651,961	
1983	184,902	9,242	80,869	426,485	5,030,031	9,450	8,494	372,182	6,121,655	
1984	194,228	9,656	95,555	471,854	5,636,134	9,874	8,719	389,892	6,815,912	
1985	200,694	9,957	115,227	486,162	6,042,593	10,182	8,982	402,457	7,276,254	
1986	207,028	10,302	110,479	530,803	6,372,710	10,536	10,341	415,776	7,667,975	
1987	205,002	10,259	109,401	533,451	6,378,437	10,493	10,517	412,889	7,670,449	
1988	203,711	10,223	122,903	516,432	6,388,497	10,455	10,341	410,868	7,673,430	
1989	224,049	11,269	116,197	564,169	6,747,046	11,526	11,102	452,406	8,137,764	
1990	271,051	13,666	148,238	664,040	8,111,616	13,976	13,206	547,974	9,783,767	
1991	275,748	13,854	144,486	662,755	8,111,610	14,168	13,218	556,474	9,792,313	
1992	317,889	16,027	162,466	764,224	9,115,453	16,393	18,209	642,672	11,053,333	
1993	359,879	17,989	184,477	831,662	10,372,245	18,399	19,560	724,397	12,528,608	
1994	309,084	15,486	224,254	738,619	9,789,833	15,839	16,434	622,879	11,732,428	
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	489,210	24,564	288,941	1,098,338	12,675,474	25,125	21,596	995,327	15,618,575	
1999	409,423	20,889	272,342	963,550	11,347,683	21,364	21,511	832,731	13,889,493	
2000	414,557	21,089	207,531	1,020,792	10,386,585	21,569	22,694	841,923	12,936,740	
2001	499,979	25,444	231,676	1,208,436	11,751,169	26,023	31,679	1,015,604	14,790,010	
2002	457,889	21,551	224,731	1,079,700	10,693,217	22,041	25,564	812,862	13,337,555	
2003	529,616	25,086	242,911	1,172,976	11,743,675	25,658	30,576	940,332	14,710,430	
2004	486,184	23,155	246,564	1,139,332	11,300,426	25,698	25,920	748,385	14,033,045	
2005	444,129	21,187	247,788	979,149	10,369,520	57,659	23,569	684,348	12,827,349	
2006	560,976	26,712	289,097	1,226,436	12,648,076	82,955	27,309	860,645	15,722,206	
2007	647,203	31,081	290,726	1,447,868	14,214,114	95,625	31,116	1,000,052	17,757,785	
2008	709,902	34,088	314,884	1,578,350	15,420,857	104,624	33,695	1,096,678	19,293,078	
2009	659,664	31,494	321,642	1,326,267	14,616,739	96,991	29,305	1,013,729	18,095,831	
2010	470,945	21,802	287,004	1,065,961	11,751,828	70,558	24,901	709,824	14,402,823	
2011	472,990	21,896	288,081	1,070,266	11,799,453	70,858	24,985	712,913	14,461,442	
2012	473,100	21,902	288,144	1,070,519	11,802,206	70,875	24,989	713,077	14,464,812	
2013	473,468	21,918	288,303	1,071,308	11,810,572	70,927	24,999	713,626	14,475,121	
2014	473,787	21,933	288,368	1,071,922	11,816,716	70,970	25,003	714,104	14,482,803	
2015	474,071	21,946	288,576	1,072,620	11,824,528	71,014	25,017	714,529	14,492,301	
2016	473,536	21,921	288,232	1,071,353	11,810,552	70,933	24,994	713,727	14,475,248	
2017	473,763	21,932	288,369	1,071,882	11,816,347	70,967	25,003	714,067	14,482,330	
2018	474,195	21,951	288,555	1,072,809	11,826,170	71,029	25,015	714,713	14,494,437	
2019	473,595	21,924	288,199	1,071,422	11,811,008	70,940	24,992	713,816	14,475,896	
2020	473,902	21,938	288,449	1,072,201	11,819,829	70,988	25,008	714,275	14,486,590	
2021	474,022	21,944	288,590	1,072,549	11,823,950	71,008	25,017	714,455	14,491,535	
2022	474,093	21,947	288,495	1,072,575	11,823,613	71,014	25,011	714,561	14,491,309	
2023	473,551	21,922	288,254	1,071,402	11,811,149	70,936	24,986	713,751	14,475,961	
2024	473,786	21,933	288,349	1,071,902	11,816,409	70,970	25,002	714,102	14,482,453	
2025	474,164	21,950	288,640	1,072,843	11,827,008	71,028	25,021	714,668	14,493,322	
2026	473,482	21,919	288,119	1,071,147	11,807,940	70,923	24,987	713,647	14,472,164	
2027	474,672	21,973	289,019	1,074,098	11,841,080	71,106	25,045	715,428	14,512,421	
2028	473,480	21,919	288,088	1,071,112	11,807,423	70,921	24,985	713,644	14,471,572	
2029	473,895	21,938	288,470	1,072,209	11,820,031	70,988	25,010	714,265	14,486,806	
2030	473,479	21,919	288,210	1,071,233	11,809,294	70,925	24,993	713,642	14,473,695	
2031	474,904	21,984	289,089	1,074,566	11,845,884	71,138	25,049	715,774	14,518,388	
2032	473,273	21,909	287,931	1,070,598	11,801,646	70,889	24,975	713,334	14,464,555	
2033	473,877	21,937	288,513	1,072,223	11,820,424	70,987	25,012	714,239	14,487,212	
2034	474,056	21,945	288,549	1,072,566	11,823,852	71,011	25,015	714,506	14,491,500	
2035	473,320	21,911	287,970	1,070,719	11,803,020	70,897	24,978	713,405	14,466,220	
TOTAL	23,789,120	1,135,302	13,645,211	54,441,701	609,187,164	2,752,248	1,235,215	39,816,373	746,002,334	

TABLE B-16A. Minimum OMP&R Component of Transportation Charge for Each Contractor

(in dollars)

Sheet 3 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[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	89,580	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	2,825,193	1,608,731	794,991	225,121	1,311,100	51,259	1,634,886	376,180	4,794,820	1,267,565
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	3,876,895	2,050,492	1,070,620	299,667	1,765,661	73,841	3,208,177	561,294	6,077,012	1,635,116
1999	3,759,052	2,078,428	1,098,033	308,180	1,810,872	74,297	3,177,868	538,747	6,389,522	1,718,367
2000	3,753,245	3,381,437	1,035,666	291,684	1,708,021	68,473	3,000,250	594,938	5,873,262	1,571,225
2001	4,457,941	3,768,942	1,110,674	297,870	1,831,713	80,824	3,284,565	699,672	5,752,335	1,554,602
2002	3,642,409	3,495,416	1,018,470	282,635	1,679,659	62,597	3,002,723	549,856	5,635,219	1,511,997
2003	4,059,623	3,385,840	1,121,431	298,299	1,849,452	67,903	3,289,203	607,416	5,906,080	1,602,807
2004	4,454,661	4,040,877	1,441,663	322,550	1,905,655	76,867	3,426,241	678,148	6,632,790	1,762,929
2005	4,091,261	3,508,621	5,938,292	292,266	2,282,032	70,913	2,917,549	609,857	6,124,306	1,611,595
2006	4,112,339	3,711,763	8,086,355	340,425	2,878,838	75,059	3,487,281	659,799	6,880,828	1,826,242
2007	4,866,122	4,293,213	9,243,084	391,590	3,279,874	84,490	3,934,856	748,086	7,859,303	2,075,577
2008	5,202,597	4,605,444	9,852,772	416,259	3,489,365	90,036	4,199,718	799,386	8,359,267	2,205,456
2009	4,673,888	4,230,836	8,978,108	373,068	3,185,973	82,907	3,833,915	717,257	7,573,510	2,024,385
2010	4,067,995	3,755,153	7,358,229	293,420	2,577,709	72,036	3,214,614	624,553	6,232,974	1,660,446
2011	4,082,361	3,774,106	7,249,506	300,815	2,577,131	72,307	3,226,858	626,808	6,367,557	1,688,424
2012	4,083,526	3,768,995	7,306,784	296,441	2,579,922	72,331	3,227,927	626,995	6,290,019	1,673,458
2013	4,087,452	3,786,977	7,382,946	284,486	2,577,371	72,419	3,231,960	627,654	6,077,854	1,632,703
2014	4,090,924	3,778,807	7,302,735	307,311	2,597,113	72,509	3,236,111	628,273	6,483,302	1,712,498
2015	4,093,850	3,776,446	7,349,270	285,098	2,576,714	72,561	3,238,413	628,721	6,089,314	1,635,952
2016	4,088,325	3,791,343	7,280,983	310,322	2,596,802	72,456	3,233,677	627,852	6,536,432	1,722,494
2017	4,090,706	3,787,142	7,466,552	294,139	2,602,723	72,503	3,235,802	628,232	6,249,271	1,666,786
2018	4,095,284	3,787,974	7,314,978	298,753	2,590,283	72,606	3,240,499	629,000	6,331,632	1,683,596
2019	4,089,071	3,801,582	7,506,646	310,285	2,628,039	72,483	3,234,924	628,007	6,535,455	1,722,532
2020	4,092,167	3,797,415	7,212,259	295,228	2,570,318	72,532	3,237,136	628,467	6,268,871	1,670,810
2021	4,093,332	3,770,511	7,295,851	281,903	2,565,035	72,544	3,237,608	628,617	6,032,717	1,624,765
2022	4,094,285	3,772,011	7,622,195	296,612	2,628,747	72,586	3,239,617	628,841	6,293,390	1,676,006
2023	4,088,517	3,779,716	7,326,830	309,628	2,602,133	72,458	3,233,761	627,877	6,524,208	1,720,115
2024	4,091,032	3,809,506	7,412,088	294,145	2,595,763	72,516	3,236,391	628,302	6,249,198	1,666,882
2025	4,094,864	3,750,259	7,194,293	296,941	2,570,825	72,580	3,239,275	628,880	6,300,027	1,677,185
2026	4,087,934	3,807,703	7,614,427	311,142	2,643,316	72,463	3,234,018	627,833	6,550,396	1,725,321
2027	4,100,060	3,680,830	7,096,869	292,427	2,553,543	72,670	3,243,302	629,671	6,221,247	1,662,367
2028	4,087,933	3,920,730	7,354,280	282,177	2,572,470	72,468	3,234,259	627,847	6,035,435	1,624,910
2029	4,092,090	3,735,598	7,370,958	309,089	2,608,744	72,527	3,236,876	628,443	6,515,345	1,718,842
2030	4,087,769	3,779,729	7,389,509	310,258	2,611,096	72,443	3,233,099	627,759	6,535,260	1,722,173
2031	4,102,577	3,685,098	7,603,625	275,197	2,602,116	72,732	3,246,134	630,109	5,915,026	1,603,089
2032	4,085,812	3,918,200	7,175,019	308,473	2,580,282	72,431	3,232,635	627,526	6,502,163	1,715,745
2033	4,091,843	3,746,380	7,417,588	290,877	2,591,970	72,513	3,236,211	628,376	6,191,983	1,655,624
2034	4,093,784	3,782,027	7,336,566	288,339	2,579,153	72,563	3,238,536	628,722	6,146,770	1,647,193
2035	4,086,337	3,808,265	7,664,781	328,930	2,671,942	72,440	3,233,029	627,605	6,865,882	1,786,756
TOTAL	203,745,840	165,153,609	254,368,241	15,180,067	116,174,229	3,624,433	150,932,942	30,222,017	316,021,039	84,104,674

**TABLE B-16A. Minimum OMP&R Component of
Transportation Charge for Each Contractor**

(in dollars)

Sheet 4 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				South Bay Area Future Contractor	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total		
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
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	41,811,654
1983	394,524	38,953,367	326,258	47,754,649	0	0	1,928	1,928	220,926	56,802,779
1984	496,808	45,597,671	382,104	56,371,786	0	0	3,765	3,765	225,959	67,072,552
1985	531,765	50,064,444	416,652	61,532,075	0	0	2,888	2,888	340,322	73,228,724
1986	551,066	52,858,915	442,334	64,885,109	0	0	2,787	2,787	279,227	76,682,112
1987	564,352	50,737,631	411,276	62,892,289	0	0	2,388	2,388	345,116	75,240,983
1988	593,787	51,262,231	406,248	63,712,843	0	0	545	545	365,207	76,126,694
1989	576,852	52,638,942	431,020	64,815,348	0	0	1,800	1,800	422,329	78,708,338
1990	667,687	61,053,824	494,721	75,175,234	0	0	788	788	474,284	91,448,066
1991	711,803	60,874,529	470,139	75,935,908	0	0	3,654	3,654	214,683	91,098,893
1992	688,558	67,460,598	502,131	82,396,468	0	0	647	647	443,676	100,077,318
1993	828,208	68,749,547	538,751	85,955,989	0	0	3,630	3,630	599,571	107,321,034
1994	783,691	63,898,029	473,897	80,045,463	0	0	2,279	2,279	609,966	101,233,254
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	80,549,487	608,366	102,777,293	0	0	798	798	465,142	129,501,836
1999	1,054,909	84,884,925	628,098	107,521,298	0	0	416	416	559,471	134,916,474
2000	964,052	82,467,206	635,833	105,345,292	0	0	505	505	0	131,938,146
2001	948,812	92,865,248	708,297	117,361,495	0	0	319	319	0	144,717,003
2002	923,393	85,334,068	657,014	107,795,456	0	0	3,627	3,627	0	138,336,785
2003	987,797	82,206,058	619,937	106,001,846	0	0	3,393	3,393	0	135,551,104
2004	1,090,709	99,380,021	762,493	125,975,604	0	0	3,452	3,452	0	155,944,243
2005	997,639	74,061,995	648,427	103,154,753	0	0	3,452	3,452	0	129,876,855
2006	1,131,621	84,321,638	675,569	118,187,757	0	0	3,975	3,975	0	149,236,705
2007	1,281,125	99,019,971	796,935	137,874,226	0	0	2,764	2,764	0	171,816,229
2008	1,367,922	105,814,675	852,000	147,254,897	0	0	4,759	4,759	0	184,147,686
2009	1,248,663	95,430,889	786,966	133,140,365	0	0	3,415	3,415	0	168,297,068
2010	1,027,247	83,336,739	700,272	114,921,387	0	0	4,274	4,274	0	143,900,835
2011	1,045,342	83,842,633	704,260	115,558,108	0	0	4,273	4,273	0	144,649,041
2012	1,035,513	83,581,893	702,846	115,246,650	0	0	4,273	4,273	0	144,344,037
2013	1,008,719	83,652,132	707,406	115,130,079	0	0	4,273	4,273	0	144,244,577
2014	1,060,908	84,312,464	705,158	116,288,113	0	0	4,272	4,272	0	145,411,452
2015	1,010,706	83,236,236	704,326	114,697,607	0	0	4,274	4,274	0	143,841,372
2016	1,067,509	84,813,866	708,606	116,850,667	0	0	4,271	4,271	0	145,959,989
2017	1,030,962	84,253,687	707,356	116,085,861	0	0	4,272	4,272	0	145,209,060
2018	1,041,873	84,153,359	707,366	115,947,203	0	0	4,273	4,273	0	145,090,500
2019	1,067,501	85,555,527	711,323	117,863,375	0	0	4,268	4,268	0	146,970,641
2020	1,033,571	84,093,326	709,978	115,682,078	0	0	4,273	4,273	0	144,813,467
2021	1,003,396	82,806,055	702,757	114,115,091	0	0	4,276	4,276	0	143,259,497
2022	1,036,917	84,194,540	703,222	116,258,969	0	0	4,272	4,272	0	145,396,218
2023	1,065,949	84,523,952	705,522	116,580,666	0	0	4,271	4,271	0	145,691,994
2024	1,031,009	84,807,935	713,262	116,608,029	0	0	4,271	4,271	0	145,729,801
2025	1,037,708	82,710,661	697,361	114,270,859	0	0	4,276	4,276	0	143,420,912
2026	1,069,346	86,003,747	713,017	118,460,663	0	0	4,267	4,267	0	147,560,057
2027	1,027,923	80,182,783	678,687	111,442,379	0	0	4,282	4,282	0	140,629,455
2028	1,003,542	87,455,572	742,825	119,014,448	0	0	4,267	4,267	0	148,111,216
2029	1,065,052	83,237,368	693,674	115,284,606	0	0	4,273	4,273	0	144,417,600
2030	1,067,312	84,686,389	705,572	116,828,368	0	0	4,271	4,271	0	145,935,242
2031	989,015	80,458,367	679,724	111,862,809	0	0	4,281	4,281	0	141,058,170
2032	1,063,093	88,311,427	742,316	120,335,122	0	0	4,264	4,264	0	149,416,573
2033	1,023,647	82,776,772	696,481	114,420,265	0	0	4,274	4,274	0	143,556,662
2034	1,018,067	83,534,089	705,821	115,071,630	0	0	4,273	4,273	0	144,212,916
2035	1,109,617	86,991,650	713,310	119,960,544	0	0	4,264	4,264	0	149,045,807
TOTAL	51,972,604	4,320,140,861	35,108,772	5,746,749,328	0	0	208,367	208,367	8,723,775	7,167,582,842

TABLE B-16B. Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(in dollars)

Sheet 1 of 4

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[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	81,666	157,196	238,862	396,340	233,205	673,431	1,302,976	134,574	595,294	729,868
2002	40,384	128,219	168,603	384,774	230,122	521,729	1,136,625	91,976	586,079	678,055
2003	37,618	92,735	130,353	301,657	180,804	643,729	1,126,190	78,771	477,048	555,819
2004	50,258	128,102	178,360	447,529	209,965	546,009	1,203,503	92,779	661,706	754,485
2005	54,901	153,366	208,267	465,143	272,424	793,306	1,530,873	109,791	602,910	712,701
2006	55,304	145,292	200,596	469,442	273,314	786,615	1,529,371	107,922	596,790	704,712
2007	180,995	246,192	427,187	707,210	427,806	1,281,740	2,416,756	148,639	1,147,988	1,296,627
2008	219,507	267,225	486,732	867,512	418,664	1,181,503	2,467,679	199,330	1,879,503	2,078,833
2009	231,728	277,740	509,468	948,707	435,032	1,227,995	2,611,734	207,174	1,953,462	2,160,636
2010	241,728	251,192	492,920	1,024,467	630,945	1,200,615	2,856,027	911,022	1,657,549	2,568,571
2011	239,704	245,880	485,584	1,002,231	617,251	1,174,555	2,794,037	891,248	1,621,572	2,512,820
2012	242,888	245,982	488,870	1,041,408	617,152	1,377,209	3,035,769	891,106	1,621,313	2,512,419
2013	143,679	143,976	287,655	609,200	361,020	805,636	1,775,856	521,276	948,431	1,469,707
2014	35,012	34,581	69,593	146,240	86,664	193,395	426,299	125,134	227,673	352,807
2015	21,286	20,486	41,772	86,582	51,310	114,500	252,392	74,086	134,795	208,881
2016	18,668	17,542	36,210	74,142	43,937	98,049	216,128	63,441	115,428	178,869
2017	18,354	16,849	35,203	71,210	42,200	94,171	207,581	60,932	110,862	171,794
2018	7,788	6,988	14,776	29,536	17,503	39,059	86,098	25,273	45,982	71,255
2019	7,925	6,954	14,879	29,391	17,417	38,868	85,676	25,149	45,757	70,906
2020	8,704	7,479	16,183	31,611	18,733	41,803	92,147	27,048	49,213	76,261
2021	13,487	11,319	24,806	48,813	28,927	64,553	142,293	41,768	75,994	117,762
2022	12,802	9,075	21,877	46,333	27,457	61,273	135,063	39,646	72,133	111,779
2023	9,102	7,795	16,897	32,943	19,523	43,566	96,032	28,189	51,288	79,477
2024	6,630	5,678	12,308	23,997	14,221	31,734	69,952	20,533	37,359	57,892
2025	671	574	1,245	2,427	1,439	3,210	7,076	2,077	3,779	5,856
2026	965	826	1,791	3,491	2,069	4,617	10,177	2,988	5,436	8,424
2027	1,635	1,400	3,035	5,916	3,506	7,823	17,245	5,062	9,210	14,272
2028	1,011	849	1,860	3,660	2,169	4,840	10,669	3,132	5,698	8,830
2029	997	820	1,817	3,609	2,139	4,773	10,521	3,088	5,619	8,707
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
TOTAL	3,163,143	5,186,471	8,349,614	17,538,476	12,712,800	39,853,678	70,104,954	5,406,861	18,105,326	23,512,187

TABLE B-16B. Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(in dollars)

Sheet 2 of 4

Calendar Year	SAN JOAQUIN VALLEY AREA							
	Dudley Ridge Water District	Empire West Side Irrigation District	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
			Municipal and Industrial	Agricultural				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	159,191	0	34,366	2,964,185	13,174	9,673	3,733	3,184,322
1984	389,518	0	816,103	9,095,509	26,774	33,576	49,601	10,411,081
1985	527,952	59,322	1,053,957	11,978,046	38,810	42,297	1,253,257	14,953,641
1986	552,172	12,858	885,988	11,788,714	40,659	38,275	872,008	14,190,674
1987	450,941	24,936	1,192,388	10,448,063	39,134	37,538	917,938	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	200,485	6,563	113,854	2,948,087	7,528	11,821	287,409	3,575,747
2002	153,869	4,557	309,688	2,803,477	9,257	10,806	301,042	3,592,696
2003	125,188	3,901	301,142	2,626,386	10,030	7,904	287,531	3,362,082
2004	167,903	12,186	431,994	2,937,167	30,970	10,800	278,035	3,869,055
2005	323,664	15,207	367,688	5,761,656	78,558	11,346	555,302	7,113,421
2006	283,834	12,924	395,726	5,409,695	45,735	11,393	426,093	6,585,400
2007	348,833	23,310	1,077,171	6,117,106	57,335	20,111	686,906	8,330,772
2008	363,884	19,037	1,276,343	6,451,546	60,283	24,669	608,697	8,804,459
2009	378,203	19,786	1,326,567	6,705,415	62,655	25,640	632,649	9,150,915
2010	320,913	16,789	1,103,568	5,891,735	53,164	21,756	536,815	7,944,740
2011	313,947	16,425	1,079,615	5,763,855	52,010	21,284	525,163	7,772,299
2012	313,897	16,422	1,079,442	5,749,341	52,001	21,281	525,079	7,757,463
2013	183,623	9,607	631,449	3,363,233	30,420	12,449	307,159	4,537,940
2014	44,079	2,306	151,581	807,352	7,302	2,988	73,734	1,089,342
2015	26,097	1,365	89,744	477,996	4,323	1,769	43,655	644,949
2016	22,348	1,169	76,850	409,318	3,702	1,515	37,382	552,284
2017	21,464	1,123	73,810	393,129	3,556	1,455	35,904	530,441
2018	8,902	466	30,614	163,058	1,475	604	14,892	220,011
2019	8,859	463	30,464	162,258	1,468	601	14,819	218,932
2020	9,528	498	32,765	174,514	1,578	646	15,938	235,467
2021	14,713	770	50,596	269,484	2,437	997	24,612	363,609
2022	13,965	731	48,025	255,791	2,314	947	23,361	345,134
2023	9,930	519	34,147	181,872	1,645	673	16,610	245,396
2024	7,233	378	24,873	132,478	1,198	490	12,099	178,749
2025	732	38	2,516	13,401	121	50	1,224	18,082
2026	1,052	55	3,619	19,275	174	71	1,760	26,006
2027	1,783	93	6,132	32,660	295	121	2,983	44,067
2028	1,103	58	3,794	20,207	183	75	1,845	27,265
2029	1,088	57	3,741	19,926	180	74	1,820	26,886
2030	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0
TOTAL	10,202,519	457,043	25,301,486	208,476,588	992,195	659,533	19,031,287	265,120,651

TABLE B-16B. Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(in dollars)

Sheet 3 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic C Lake Water Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[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	2,680,895	1,418,179	460,256	53,460	759,169	0	213,385	445,872	1,339,699	119,363
2002	1,674,587	1,389,921	569,606	74,418	939,655	0	140,550	531,620	2,422,881	844,839
2003	1,445,146	1,353,956	411,258	44,506	678,236	0	405,376	277,984	780,631	624,561
2004	1,812,210	1,676,067	554,535	71,930	759,819	0	465,681	368,704	2,071,504	449,688
2005	2,103,007	1,482,590	1,767,682	33,550	2,040,823	0	557,032	411,667	1,610,906	581,370
2006	2,805,036	1,594,473	4,998,269	16,592	2,063,695	0	1,397,378	435,914	1,511,582	672,104
2007	3,080,115	1,953,138	3,522,352	183,825	1,614,290	40,485	658,465	826,466	4,181,448	652,889
2008	3,749,939	2,745,970	8,054,773	222,155	3,325,670	129,339	1,723,970	1,197,794	4,828,873	1,745,312
2009	4,014,452	2,916,726	8,371,729	239,192	3,456,536	134,429	2,413,985	1,244,927	5,018,890	1,813,990
2010	7,012,539	4,277,137	7,103,570	340,221	2,932,936	114,065	4,444,971	1,056,344	6,018,384	1,689,371
2011	6,860,332	4,184,302	6,949,387	332,836	2,869,276	111,590	4,348,493	1,033,416	5,887,755	1,652,703
2012	6,859,236	4,183,633	6,948,277	332,783	2,868,818	111,572	4,347,798	1,033,251	5,886,814	1,652,439
2013	4,012,497	2,447,330	4,064,584	194,670	1,678,193	65,267	2,543,363	604,428	3,443,652	966,639
2014	963,209	587,487	975,712	46,731	402,854	15,667	610,540	145,094	826,656	232,044
2015	570,272	347,824	577,675	27,667	238,512	9,276	361,473	85,904	489,426	137,383
2016	488,335	297,849	494,675	23,692	204,242	7,943	309,536	73,561	419,105	117,643
2017	469,022	286,069	475,111	22,755	196,165	7,629	297,295	70,652	402,530	112,991
2018	194,536	118,653	197,061	9,438	81,363	3,164	123,309	29,304	166,957	46,865
2019	193,582	118,071	196,095	9,392	80,964	3,149	122,704	29,160	166,138	46,635
2020	208,204	126,989	210,906	10,101	87,079	3,387	131,972	31,363	178,687	50,158
2021	321,507	196,096	325,680	15,598	134,467	5,230	203,790	48,431	275,927	77,453
2022	305,171	186,132	309,133	14,806	127,635	4,964	193,436	45,970	261,908	73,518
2023	216,982	132,343	219,799	10,527	90,751	3,529	137,536	32,685	186,221	52,273
2024	158,053	96,401	160,105	7,668	66,104	2,571	100,184	23,809	135,646	38,076
2025	15,989	9,752	16,196	776	6,687	260	10,135	2,408	13,722	3,852
2026	22,996	14,026	23,295	1,116	9,618	374	14,576	3,464	19,736	5,540
2027	38,964	23,765	39,470	1,890	16,297	634	24,698	5,869	33,440	9,387
2028	24,108	14,704	24,421	1,170	10,083	392	15,281	3,632	20,690	5,808
2029	23,773	14,500	24,081	1,153	9,943	387	15,069	3,581	20,403	5,727
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
TOTAL	106,247,120	59,178,643	100,257,485	4,028,631	85,937,842	1,466,256	34,342,707	17,796,972	62,341,014	31,666,218

TABLE B-16B. Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(in dollars)

Sheet 4 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				TOTAL STATE WATER PROJECT (a)
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total	
	[29]	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0
1983	0	12,791,358	0	16,045,220	0	0	0	0	20,182,468
1984	0	39,229,567	0	47,840,887	0	0	0	0	60,556,781
1985	0	77,446,523	0	89,844,437	0	0	0	0	108,590,343
1986	0	77,581,287	0	90,192,510	0	0	0	0	107,702,921
1987	0	68,939,195	0	82,614,055	0	0	0	0	99,411,597
1988	0	79,936,309	0	92,720,660	0	0	0	0	108,898,833
1989	0	68,311,546	0	78,302,473	0	0	0	0	89,857,307
1990	0	83,964,409	277,885	95,002,982	0	0	0	0	104,000,038
1991	0	54,214,229	132,209	61,123,236	0	0	0	0	64,233,890
1992	0	72,401,054	0	82,482,592	0	0	0	0	92,173,695
1993	0	55,312,615	0	69,847,379	0	0	0	0	87,174,348
1994	0	72,838,621	0	86,354,006	0	0	0	0	97,722,979
1995	0	40,862,813	0	56,786,199	0	0	0	0	74,988,898
1996	0	36,536,259	401	57,198,086	0	0	0	0	71,940,675
1997	0	37,121,379	108,559	54,131,368	0	0	0	0	65,536,671
1998	0	30,341,609	149,170	52,004,747	0	0	0	0	65,310,733
1999	0	42,257,580	106,226	58,122,094	0	0	0	0	72,133,666
2000	0	43,977,877	123,318	52,641,597	0	0	0	0	60,213,003
2001	0	49,405,276	84,868	56,980,422	0	0	0	0	62,827,875
2002	0	45,579,833	154,113	54,322,023	0	0	0	0	59,898,002
2003	3,303	41,917,356	129,134	48,071,447	0	0	0	0	53,245,891
2004	44,621	58,640,223	170,747	67,085,729	0	0	0	0	73,091,132
2005	42,569	57,740,836	62,784	68,434,816	0	0	0	0	78,000,078
2006	261,264	59,827,942	69,256	75,653,505	0	0	0	0	84,673,584
2007	429,225	90,431,642	1,072,306	108,646,646	0	0	0	0	121,117,988
2008	1,150,682	94,683,278	1,206,570	124,764,325	0	0	0	0	138,602,028
2009	1,195,961	98,409,076	1,254,048	130,483,941	0	0	0	0	144,916,694
2010	1,014,796	94,808,243	1,064,084	131,876,661	0	0	0	0	145,738,919
2011	992,770	92,750,434	1,040,988	129,014,282	0	0	0	0	142,579,022
2012	992,611	92,735,616	1,040,822	128,993,670	0	0	0	0	142,788,191
2013	580,655	54,248,219	608,857	75,458,354	0	0	0	0	83,529,512
2014	139,387	13,022,409	146,157	18,113,947	0	0	0	0	20,051,988
2015	82,525	7,709,976	86,533	10,724,446	0	0	0	0	11,872,440
2016	70,668	6,602,207	74,100	9,183,556	0	0	0	0	10,167,047
2017	67,873	6,341,092	71,169	8,820,353	0	0	0	0	9,765,372
2018	28,152	2,630,087	29,519	3,658,408	0	0	0	0	4,050,548
2019	28,014	2,617,187	29,374	3,640,465	0	0	0	0	4,030,858
2020	30,129	2,814,877	31,593	3,915,445	0	0	0	0	4,335,503
2021	46,526	4,346,711	48,785	6,046,201	0	0	0	0	6,694,671
2022	44,162	4,125,856	46,307	5,738,998	0	0	0	0	6,352,851
2023	31,400	2,933,559	32,925	4,080,530	0	0	0	0	4,518,332
2024	22,872	2,136,849	23,983	2,972,321	0	0	0	0	3,291,222
2025	2,314	216,163	2,426	300,680	0	0	0	0	332,939
2026	3,328	310,905	3,489	432,463	0	0	0	0	478,861
2027	5,639	526,792	5,912	732,757	0	0	0	0	811,376
2028	3,489	325,940	3,658	453,376	0	0	0	0	502,000
2029	3,440	321,405	3,607	447,069	0	0	0	0	495,000
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
TOTAL	7,318,375	1,982,224,219	9,495,882	2,502,301,364	0	0	0	0	2,869,388,770

a) Costs allocated to contractors in 1989 through 2002 are reduced by credits for Off-Aqueduct Power Facility costs allocated to the pumping of non-SWP water.

TABLE B-17. Unit Variable OMP&R Component of Transportation Charge

(in dollars per acre-foot)

Sheet 1 of 4

Calendar Year	NORTH BAY AQUEDUCT						SOUTH BAY AQUEDUCT		CALIFORNIA AQUEDUCT	
	Reach 1 Barker Slough Pumping Plant		Reach 3A Cordelia Pumping Plant Solano County WA		Reach 3B Cordelia Pumping Plant Napa County FC&WCD (a)		Reach 1 South Bay and Del Valle Pumping Plants (b)		Reach 1 Banks Pumping Plant	
	Unit Rate	Cumulative	Unit Rate	Cumulative	Unit Rate	Cumulative	Unit Rate	Cumulative	Unit Rate	Cumulative
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[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	5.1866576	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	5.3126683	1.6186559	1.6186559
1986	0	0	0	0	4.4046604	4.4046604	7.2799131	10.6056639	3.3257508	3.3257508
1987	0	0	0	0	3.5386715	3.5386715	6.4837861	9.2421280	2.7583419	2.7583419
1988	1.1792022	1.1792022	0	1.1792022	4.4545623	5.6337645	6.1749958	8.7900561	2.6150603	2.6150603
1989	1.2712038	1.2712038	2.5418648	3.8130686	4.2795803	5.5507841	8.1600349	11.6976286	3.5375937	3.5375937
1990	2.0024548	2.0024548	4.2324041	6.2348589	5.8752161	7.8776709	11.7200790	15.8670513	4.1469723	4.1469723
1991	1.2488027	1.2488027	2.6241245	3.8729272	3.8050725	5.0538752	7.5402614	11.2642636	3.7240022	3.7240022
1992	0.7095451	0.7095451	1.4174620	2.1270071	2.3506623	3.0602074	4.0600957	6.4118184	2.3517227	2.3517227
1993	-0.3463994	-0.3463994	-0.6048649	-0.9512643	-1.0204313	-1.3668307	-1.4929839	-1.2402745	0.2527094	0.2527094
1994	1.4607776	1.4607776	2.6575471	4.1183247	4.2850412	5.7458188	7.9485622	11.2592004	3.3106382	3.3106382
1995	0.7544766	0.7544766	1.2974895	2.0519661	2.2753763	3.0298529	3.2312761	5.2800374	2.0487613	2.0487613
1996	1.6427835	1.6427835	2.7704025	4.4131860	4.7993051	6.4420886	8.0186492	11.3633990	3.3447498	3.3447498
1997	1.7801484	1.7801484	3.0246843	4.8048327	5.0575904	6.8377388	9.6521246	12.6148371	2.9627125	2.9627125
1998	-0.3031174	-0.3031174	-0.5212041	-0.8243215	-0.8497854	-1.1529028	-1.7656471	-1.6140875	0.1515596	0.1515596
1999	0.7893362	0.7893362	1.2927037	2.0820399	1.9928526	2.7821888	5.1162295	6.9791811	1.8629516	1.8629516
2000	1.3973507	1.3973507	1.9784901	3.3758408	3.0443727	4.4417234	6.3676472	8.6695487	2.3119015	2.3119015
2001	8.2119915	8.2119915	12.6833359	20.8953274	22.9223114	31.1343029	42.6778833	55.3804905	12.7026072	12.7026072
2002	4.2246726	4.2246726	5.3443379	9.5690106	9.0113455	13.2360181	18.2782152	24.4115705	6.1333552	6.1333552
2003	4.3658918	4.3658918	7.1156312	11.4815229	12.8272299	17.1931217	19.3472882	26.0823961	6.7351080	6.7351080
2004	4.8168805	4.8168805	6.1857512	11.0026317	12.9168921	17.7337725	19.4729290	26.6477905	7.1748615	7.1748615
2005	6.1386959	6.1386959	7.3872190	13.5259149	19.0798018	25.2184977	25.3904898	33.3135671	9.9230773	9.9230773
2006	4.8205633	4.8205633	15.3886000	20.2091633	17.9467657	22.7673291	22.7522588	29.9371588	7.1849000	7.1849000
2007	7.9931157	7.9931157	8.9449716	16.9380873	25.5508060	33.5439218	38.0368943	48.8698140	10.8329198	10.8329198
2008	9.3753351	9.3753351	13.5468361	22.9221712	29.0404452	38.4157803	44.1087783	56.8327713	12.7239929	12.7239929
2009	7.2848330	7.2848330	10.6782547	17.9630877	23.7626304	31.0474634	35.6033634	46.0131109	10.4097475	10.4097475
2010	6.9099808	6.9099808	19.1170696	26.0270504	17.4640537	24.3740340	38.0941173	49.2606845	11.1665672	11.1665672
2011	6.9166504	6.9166504	19.1241514	26.0408018	17.5488834	24.4655338	38.1075896	48.2740179	10.1664283	10.1664283
2012	7.1260585	7.1260585	19.7776801	26.9037386	18.3043461	25.4304046	34.2018452	44.1107446	9.9088994	9.9088994
2013	7.7316713	7.7316713	21.6957753	29.4274466	20.3562550	28.0879263	37.3660000	50.0444120	12.6784120	12.6784120
2014	8.2417738	8.2417738	23.2905983	31.5323721	22.1214868	30.3632606	39.9970226	51.3952065	11.3981839	11.3981839
2015	8.3662810	8.3662810	23.6405372	32.0068182	22.6905149	31.0567959	40.5742033	53.3079737	12.7337704	12.7337704
2016	8.4576404	8.4576404	23.8819536	32.3395940	23.1303345	31.5879749	40.9725214	55.6262463	14.6537249	14.6537249
2017	8.3623301	8.3623301	23.5372894	31.8996195	22.9413589	31.3036890	40.4038397	53.3333784	12.9295387	12.9295387
2018	8.5930973	8.5930973	24.2175824	32.8106797	23.8931962	32.4862935	41.5261368	54.4775197	12.9513829	12.9513829
2019	8.7987837	8.7987837	24.8156777	33.6144614	24.7720791	33.5708628	42.5127883	57.4094567	14.8966684	14.8966684
2020	8.3758667	8.3758667	23.4567033	31.8325700	23.4975804	31.8734471	40.2708430	53.5189942	13.2481512	13.2481512
2021	8.3683752	8.3683752	24.4948659	32.8632411	23.4880469	31.8564221	40.2073618	53.1966658	12.9893040	12.9893040
2022	8.1234121	8.1234121	36.4601965	44.5836086	22.6518429	30.7755250	38.9560710	50.9975279	12.0414569	12.0414569
2023	8.1669617	8.1669617	22.7944322	30.9613939	22.8004134	30.9673751	39.1784144	52.1763328	12.9979184	12.9979184
2024	8.4509319	8.4509319	23.6737485	32.1246804	23.7697554	32.2206873	40.6289862	54.8763595	14.2473733	14.2473733
2025	8.4148272	8.4148272	23.5618559	31.9766831	23.6464692	32.0612964	40.4452774	52.4046214	11.9600940	11.9600940
2026	8.4695960	8.4695960	23.7315263	32.2011223	23.8335171	32.3031131	40.7243325	55.5633400	14.8390075	14.8390075
2027	8.3482794	8.3482794	23.3558974	31.7041768	23.4193937	31.7676731	40.1046219	53.4204343	13.3158124	13.3158124
2028	8.4032695	8.4032695	24.6077650	33.0110345	23.6070617	32.0103312	40.3855472	53.4815914	13.0960442	13.0960442
2029	8.3016972	8.3016972	25.4489424	33.7506396	23.2604203	31.5621175	39.8667842	52.8136473	12.9468631	12.9468631
2030	8.3652124	8.3652124	26.9640506	35.3292630	23.4771960	31.8424084	40.1910957	53.6767394	13.4856437	13.4856437
2031	8.2566118	8.2566118	28.1610134	36.4176252	23.1064761	31.3630879	39.6364098	51.8627972	12.2263874	12.2263874
2032	8.4126406	8.4126406	23.5551648	31.9678054	23.6391319	32.0517725	40.4334493	53.7308934	13.2974441	13.2974441
2033	8.8144003	8.8144003	24.7991209	33.6135212	25.0103686	33.8247689	42.4854790	56.6040557	14.1185767	14.1185767
2034	8.5062084	8.5062084	23.8448840	32.3510924	23.9584568	32.4646652	40.9113455	54.1321359	13.2207904	13.2207904
2035	8.3411860	8.3411860	24.4066411	32.7482721	23.3951085	31.7362945	40.0683705	54.0502142	13.9818437	13.9818437

a) For the period 1968 through 1987, rates are for an interim facility.

b) The relatively minor costs of Del Valle Pumping Plant have been combined with those of South Bay Pumping Plant to simplify the allocation procedure.

TABLE B-17. Unit Variable OMP&R Component of Transportation Charge

(in dollars per acre-foot)

Sheet 2 of 4

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	Reach 4 Dos Amigos Pumping Plant		Reach 14A Buena Vista Pumping Plant		Reach 15A Teerink Pumping Plant		Reach 16A Chrisman Pumping Plant		Reach 17E Edmonston Pumping Plant	
	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[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	3.5538857	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	3.4832335	1.3715867	4.8549102	2.9301764	7.7850866	9.9900004	17.7840870
1978	0.4578324	2.0737238	0.9617095	3.0354333	1.0432294	4.0786627	1.9992416	6.0779043	7.1214594	13.1958367
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	20.9745181
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	16.0769503	30.0688208
1989	1.4991710	5.0367642	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	3.8793042	13.1077230	8.7425943	21.8503173	31.1242008	52.9745181
1991	1.0592185	4.7832207	2.1212585	6.9044792	2.4222131	9.3266923	5.7602628	15.0869551	20.6196938	35.7066489
1992	0.9064819	3.2580246	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	11.8222270	19.7163594
1996	1.6726383	5.0173881	2.5952092	7.6125973	2.8425227	10.4551200	6.3087407	16.7638607	22.6420778	39.4059385
1997	1.2769880	4.2397005	2.5012144	7.6470919	2.6893394	9.4302543	6.2890095	15.7192638	23.0714697	38.7907335
1998	-0.2050857	-0.0535261	-0.3945877	-0.4481138	-0.4188957	-0.8670095	-0.9854414	-1.8524509	-3.5434867	-5.3959376
1999	0.8422034	2.7051550	1.4022138	4.1073688	1.2802066	5.3875754	3.4122984	8.7998738	13.6052879	22.4051617
2000	0.9316549	3.2435564	1.6394743	4.8830307	1.8260642	6.6856349	4.2496003	10.9352352	15.9598613	26.4905965
2001	6.1193793	18.8219865	11.2725023	30.0944888	12.3601920	42.4546808	28.5680342	71.0227150	106.9263979	177.9491128
2002	2.6473913	8.7807465	4.6365438	13.4172903	5.0569039	18.4741942	11.7019905	30.1761846	43.4837175	73.6599021
2003	3.1429017	9.8780097	5.6418887	15.5198984	6.1466260	21.6665244	14.3017388	35.9626352	53.1783305	89.1465938
2004	3.2649455	10.4398070	5.7479412	16.1877482	6.2400492	22.4277973	14.5398729	36.9676702	54.0553692	91.0230394
2005	3.7410992	11.6641765	6.7111593	18.3753359	7.2747956	25.6501314	16.9141969	42.5643283	60.6903154	103.2504648
2006	3.1808000	10.3657000	5.6939000	16.0596000	6.2135000	22.2731000	14.4060000	36.6791000	53.4785000	90.1576000
2007	4.8292721	15.6621919	8.5210178	24.1832096	10.3671299	34.5503395	22.4183946	56.9687341	80.3130278	137.2817619
2008	5.6919798	18.4159727	10.0318845	28.4478572	12.2020995	40.6499567	26.3951186	67.0450753	94.4672785	161.5123538
2009	4.4193858	14.8291333	7.8078244	22.6369577	9.5047340	32.1416917	20.5562456	52.6979373	73.6722200	126.3701574
2010	4.7471406	15.9137078	8.9034442	24.8171520	9.2479264	34.0650784	22.1045180	56.1695964	83.8374609	140.0070573
2011	4.7407311	14.9071594	8.8703280	23.7774874	9.2102982	32.9877856	22.0142547	55.0020403	83.4887931	138.4908334
2012	5.0817849	14.9906843	9.6065223	24.5972066	9.9799738	34.5771804	23.8743511	58.4515315	90.5940795	149.0456110
2013	5.5798845	18.2582965	10.5069572	28.7652537	10.8981597	39.6634134	26.0835397	65.7469531	98.9638513	164.7108044
2014	6.0584485	17.4566324	11.4446177	28.9012501	11.8670615	40.7683116	28.4217189	69.1900305	107.8483234	177.0383539
2015	6.1516839	18.8854543	11.6127429	30.4981972	12.0387869	42.5369841	28.8350311	71.3720152	109.4144461	180.7864613
2016	6.3769621	21.0306870	12.1874538	33.2181408	12.6537949	45.8719357	30.3348903	76.2068260	115.1573070	191.3641330
2017	6.1550041	19.0845428	11.6340302	30.7185730	12.0634763	42.7820493	28.8979892	71.6800385	109.6583963	181.3384358
2018	6.5063016	19.4576845	12.4861604	31.9438449	12.9692234	44.9130683	31.0999927	76.0130610	118.0800346	194.0930956
2019	6.7045807	21.6012491	12.8301822	34.4314313	13.3191812	47.7506125	31.9442361	79.6948486	121.2724230	200.9672716
2020	6.3316983	19.5798495	12.1454333	31.7252828	12.6183981	44.3436809	30.2575214	74.6012023	114.7846156	189.4798179
2021	6.3293803	19.3186843	12.1420383	31.4607226	12.6152975	44.0760201	30.2507836	74.3268037	114.8534660	189.1802697
2022	6.1396772	18.1811341	11.8029984	29.9841325	12.2701015	42.2542340	29.4217778	71.6760118	111.7142605	183.3902723
2023	6.2067919	19.2047103	11.9603022	31.1650125	12.4368132	43.6018257	29.8271204	73.4289461	113.2632790	186.6922251
2024	6.4147695	20.6621420	12.3153241	32.9774669	12.7953771	45.7728440	30.6861628	76.4590068	116.5098204	192.9688272
2025	6.3935967	18.3536907	12.2934906	30.6471813	12.7572787	43.4229100	30.6404675	74.0633775	116.3429114	190.4062889
2026	6.4273370	21.2663445	12.3306276	33.5969721	12.8097818	46.4067539	30.7202497	77.1270036	116.6364662	193.7634698
2027	6.3695118	19.6853242	12.2754856	31.9608098	12.7619694	44.7227792	30.6111631	75.3339423	116.2412323	191.5751746
2028	6.8560656	19.9521098	12.2065145	32.1586243	12.6818901	44.8405144	30.4115522	75.2520666	115.4642526	190.7163192
2029	6.3170747	19.2576038	12.1449034	31.4025073	12.6244923	44.0269995	30.2777123	74.3047118	114.9689952	189.2737070
2030	6.3184989	19.8041426	12.1112697	31.9154123	12.5819543	44.4973666	30.1693822	74.6667488	114.5408627	189.2076115
2031	6.2763190	18.5027064	12.1237465	30.6264529	12.6095220	43.2359749	30.2439679	73.4799428	114.8571437	188.3370865
2032	6.3245790	19.6220231	12.0703140	31.6923371	12.5317415	44.2240786	30.0437455	74.2678241	114.0458561	188.3136802
2033	6.8127204	20.9312971	13.1940755	34.1253726	13.7183141	47.8436867	32.9225344	80.7662211	125.0417558	205.8079769
2034	6.4308225	19.6516129	12.2983612	31.9499741	12.7705025	44.7204766	30.6218238	75.3423004	116.2488629	191.5911633
2035	6.7723577	20.7542014	13.5114782	34.2656796	14.1120925	48.3777721	33.9251429	82.3029150	128.9927041	211.2956191

TABLE B-17. Unit Variable OMP&R Component of Transportation Charge

(in dollars per acre-foot)

Sheet 3 of 4

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	Reach 18A Alamo Powerplant		Reach 22B Pearblossom Pumping Plant		Reach 23 Mojave Siphon Powerplant		Reach 26A Devil Canyon Powerplant		Reach 29A Oso Pumping Plant	
	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate
	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]	[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	9.6552699	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	22.0954044	0	0	-6.9141441	15.1853963	1.4949290	19.8801030
1983	0	0	1.7592652	11.9990051	0	0	-23.7923414	-11.7933363	1.2824635	11.5222034
1984	0	0	2.5203002	17.5460979	0	0	-29.2940447	-11.7479468	1.7818310	16.8076287
1985	0	0	3.5406919	24.5146535	0	0	-30.7672356	-6.2525821	2.1691578	23.1431194
1986	-2.3583180	34.1758985	6.0306655	40.2065640	0	0	-29.2499580	10.9566060	3.2296473	39.7638638
1987	-2.5482255	29.4907224	5.0997322	34.5904546	0	0	-29.7006533	4.8898013	3.1281318	35.1670797
1988	-1.3847067	28.6841141	4.7880132	33.4721273	0	0	-29.0334518	4.4386755	2.9887414	33.0575622
1989	-1.1019487	38.4996363	6.4559997	44.9556360	0	0	-28.3706997	16.5849363	3.5266078	43.1281928
1990	-1.0673268	51.9071913	9.0317647	60.9389560	0	0	-28.8797266	32.0592294	3.6820302	56.6565483
1991	-1.5206590	34.1859899	6.1338271	40.3198170	0	0	-30.3294563	9.9903607	2.1966277	37.9032766
1992	-2.6080003	19.5839837	3.6796265	23.2636102	0	0	-29.7938993	-6.5302891	1.9058052	24.0977892
1993	-0.1885524	-4.2578449	-0.9592579	-5.2171028	0	0	-30.6629489	-35.8800517	0.1578038	-3.9114887
1994	-0.1279266	37.6304211	6.5139903	44.1444114	0	0	-30.4781656	13.6662458	3.0574815	40.8158292
1995	-3.4425314	16.2738280	3.4305039	19.7043319	0	0	-30.3517624	-10.6474305	1.5732257	21.2895851
1996	-5.9839345	33.4220040	6.6794995	40.1015035	-2.3423415	37.7591620	-29.5900574	8.1691046	3.1318961	42.5378346
1997	-4.7847600	34.0059735	6.8397922	40.8457657	-3.8632009	36.9825648	-30.6066647	6.3759001	2.7928728	41.5836063
1998	-5.0614104	-10.4573480	-1.2355351	-11.6928831	-3.7700558	-15.4629389	-30.6550762	-46.1180151	-0.3008626	-5.6968002
1999	-4.7679511	17.6372106	3.5508098	21.1880204	-4.9754645	16.2125559	-29.6766184	-13.4640625	1.8929287	24.2890904
2000	-5.3795304	21.1155661	4.6180019	25.7335679	-5.2137446	20.12598234	-30.4798154	-9.9599920	1.8205294	28.3156258
2001	-4.6442419	173.3048710	29.9688592	203.2737301	-5.7699535	197.5037766	-30.8825050	166.6212716	13.5034055	191.4525183
2002	-5.4660253	68.1938768	13.0727227	81.2665995	-6.4072093	74.8593902	-30.1161904	44.7431998	4.9201780	78.5800801
2003	-3.3577630	85.7888308	15.6946862	101.4835169	-7.2230625	94.2604534	-30.5285166	63.7319369	6.1428628	95.2894565
2004	-5.5585791	85.4644603	15.8923087	101.3567690	-7.4295016	93.9272674	-30.2125160	63.7147514	6.3357925	97.3588319
2005	-5.4922951	97.7623487	17.4740873	115.2364360	-6.5987131	108.6377229	-30.2097976	78.4279253	7.1557832	110.4140269
2006	-14.2409000	75.9167000	15.9960000	91.9127000	-5.5334000	86.3793000	-29.9165000	56.4628000	6.2183000	96.3759000
2007	-4.6332942	132.6484677	24.8388886	157.4873563	-6.6301266	150.8572297	-26.1410684	124.7161613	10.0128027	147.2945646
2008	-5.1687255	156.3436283	29.2285845	185.5722127	-7.0818886	178.4903241	-27.9230038	150.5673203	11.7723922	173.2847460
2009	-5.1828864	121.1872709	22.8674917	144.0547626	-7.1559388	136.8988239	-28.0109316	108.8878923	9.1467626	135.5169200
2010	-3.7755771	136.2314802	22.7451477	158.9766279	-5.3135341	201.2645081	-25.7270549	127.9360389	12.8649867	152.8720440
2011	-3.7508151	134.7400183	22.6176438	157.3576621	-5.2632475	152.0944146	-26.1848950	125.9095196	12.7259303	151.2167637
2012	-3.9911673	145.0544437	24.9698221	170.0242658	-5.7118144	164.3124514	-26.8926839	137.4197675	13.6980682	162.7436792
2013	-3.8594800	160.8513244	27.1505263	188.0018507	-5.5114960	182.4903547	-26.3788078	156.1115469	14.8472619	179.5580663
2014	-3.8803008	173.1580531	29.3386912	202.4967443	-5.5331105	196.9636338	-26.7973672	170.1662666	16.1936165	193.2319704
2015	-3.8884966	176.8979647	29.9716779	206.8696426	-5.6051345	201.2645081	-27.1276030	174.1369051	16.3466447	197.1331060
2016	-4.0477608	187.3163722	31.9569668	219.2733390	-5.8841412	213.3891978	-27.7232620	185.6659358	17.0028802	208.3670132
2017	-3.8736300	177.4648058	30.1154156	207.5802214	-5.6459159	201.9343055	-27.4524854	174.4818201	16.2961026	197.6345384
2018	-4.1416920	189.9514036	33.1807722	223.1321758	-6.3142225	216.8179533	-28.1533374	188.6646159	17.2500366	211.3431322
2019	-3.9504209	197.0168507	32.6615815	229.6784322	-5.8584571	223.8199751	-27.8869287	195.9330464	18.4013384	219.3686100
2020	-4.0224122	185.4574057	31.6358303	217.0932360	-6.0286094	211.0646266	-28.6361736	182.4284530	17.1240177	206.6038356
2021	-4.0340774	185.1461923	31.6662927	216.8124850	-6.0706310	210.7418540	-28.3599678	182.3818862	17.0699673	206.2502370
2022	-4.0590803	179.3311920	30.5348574	209.8660494	-6.0747654	203.7912840	-28.0358243	175.7554597	16.8448510	200.2351233
2023	-4.1116319	182.5805932	31.1700780	213.7506712	-6.1816828	207.5689884	-28.5407915	179.0281969	16.9358374	203.6280625
2024	-3.9859025	188.9829247	31.5835548	220.5664795	-5.9964536	214.5700259	-28.3290803	186.2409456	17.7476098	210.7164370
2025	-4.0555500	186.3507389	31.7864814	218.1372203	-6.0772334	212.0599869	-28.0040188	184.0559681	18.4868223	207.8931112
2026	-4.0315750	189.7318948	32.1251532	221.8570480	-6.1031504	215.7538976	-28.6955598	187.0583378	17.3645675	211.1280373
2027	-4.0556002	187.5195744	31.6991378	219.2187122	-6.0680209	213.1506913	-28.2988488	184.8518425	17.5846423	209.1598169
2028	-4.0134349	186.7028843	31.7002955	218.4031798	-6.0366881	212.3664917	-28.4781231	183.8883686	17.2533383	207.9696575
2029	-4.0334045	185.2403025	31.3594811	216.5997836	-6.0707984	210.5289852	-28.2835575	182.2454277	17.3854502	206.6591572
2030	-4.0014480	185.2061635	31.4218984	216.6280619	-6.0150504	210.6130115	-28.3470936	182.2659179	17.1236319	206.3312434
2031	-4.1126307	184.2244558	31.6129205	215.8373763	-6.4761122	209.3612641	-28.1035947	181.2576694	17.4442600	205.7813465
2032	-3.9572026	184.3564776	30.8633399	215.2198175	-6.1717440	209.0480735	-27.8937829	181.1542906	17.2063127	205.5199929
2033	-4.11571318	201.6508451	34.5895140	236.2403591	-6.6218750	229.6184841	-28.7373051	200.8811790	18.7307597	224.5387366
2034	-3.9943737	187.5967896	31.5856519	219.1824415	-6.3048271	212.8776144	-27.7620914	185.1155230	17.4330971	209.0242604
2035	-4.2115244	207.0840947	32.9233912	240.0074859	-6.4940243	233.5134616	-29.2555610	204.2579006	22.30110356	233.5966547

TABLE B-17. Unit Variable OMP&R Component of Transportation Charge

(in dollars per acre-foot)

Sheet 4 of 4

Calendar Year	CALIFORNIA AQUEDUCT (continued)							
	Reach 29G		Reach 29J		Reach 31A		Reach 33A	
	Warne Powerplant		Castaic Powerplant		Las Perillas and Badger Hill Pumping Plants		Devil's Den, Bluestone, and Polonio Pass Pumping Plants	
	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate
[31]	[32]	[33]	[34]	[35]	[36]	[37]	[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	0	11.7917121	1.9517720	3.4238559	0	0
1973	0	0	-2.9350830	7.5085237	1.5374531	3.0786506	0	0
1974	0	0	-6.8099448	-7.4013274	5.8578876	1.5168982	2.9908236	0
1975	0	0	-7.4013274	-6.5604921	6.6706490	1.1130304	2.6730490	0
1976	0	0	-6.7213324	8.0056968	1.5685447	0.0000000	0	0
1977	0	0	-30.4985994	-11.8068952	1.7573375	3.2823187	0	0
1978	0	0	-9.0130187	4.9178147	1.9429506	4.1425967	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	8.8463219	-27.8324731	-18.9861512	1.3273109	4.0324659	9.8021998	13.8346657
2000	-14.1657262	14.1498996	-26.9670098	-12.8171102	1.8861983	5.1297547	14.2513950	19.3811497
2001	-16.7349298	174.7175886	-29.2914155	145.4261731	12.3563556	31.1783420	92.6567653	123.8351073
2002	-13.2004532	65.3796269	-23.7780801	41.6015468	5.4664522	14.2471987	41.2910819	55.5382806
2003	-13.9757183	81.3137382	-23.6270529	57.6868853	6.3405497	16.2185594	47.1787976	63.3973570
2004	-14.1574752	83.2013568	-23.6679973	59.5333594	6.3551621	16.7949690	50.7266903	67.5216593
2005	-14.2938791	96.21165479	-23.7301832	72.3863646	8.0399019	19.7040785	60.5159993	80.2200777
2006	-14.2409000	82.1350000	-23.8088000	58.3262000	7.3739000	17.7396000	55.6538000	73.3934000
2007	-13.2485701	134.0459945	-23.3734086	110.6725859	11.1903510	26.8525429	81.3196627	108.1722055
2008	-14.1532798	159.1314662	-25.1218709	134.0095954	13.0137291	31.4297018	94.5126946	125.9423964
2009	-14.1900937	121.3268262	-25.1613966	96.1654297	10.3196969	25.1488303	75.0051497	100.1539800
2010	-18.1724359	135.6574145	-29.3889433	106.2684712	13.0002966	28.9140044	83.3069960	112.2210004
2011	-17.1505503	134.0662134	-29.1799403	104.8862731	13.0047339	27.9118933	83.3379586	111.2498519
2012	-17.7302767	145.0134025	-30.3596089	114.6537936	13.4127536	28.4034379	86.1861297	114.5895676
2013	-17.7600495	161.7980168	-30.3549570	131.4430598	14.6104072	32.8687037	94.5462531	127.4149568
2014	-18.2571062	174.9748642	-31.1108180	143.8640462	15.6062424	33.0628748	101.4977369	134.5606117
2015	-18.1724359	178.9606701	-30.9501835	148.0104866	15.8247081	34.7101624	103.0226598	137.7328222
2016	-18.7303439	189.6366693	-31.9297503	157.7069190	15.9754651	37.0061521	104.0751506	141.0813027
2017	-18.1920762	179.4424622	-31.0267079	148.4157543	15.7602259	34.8447687	102.5725622	137.4173309
2018	-18.6399868	192.7031454	-31.8815576	160.8215878	16.1850200	35.6427045	105.5378794	141.1805839
2019	-19.5044936	199.8641164	-33.4946083	166.3695081	16.5584801	38.1597292	108.1447283	146.3044575
2020	-19.1689315	187.4349041	-32.7877308	154.6471733	15.7098909	35.2897404	102.2212065	137.5109489
2021	-19.1352403	187.1149967	-32.7508952	154.3641015	15.6858705	35.0045548	102.0534527	137.0580075
2022	-19.4795888	180.7555345	-33.3509310	147.4046035	15.2122487	33.3933828	98.7473762	132.1407590
2023	-19.4754352	184.1526273	-33.3440719	150.8085554	15.2964048	34.5011151	99.3348751	133.8359902
2024	-19.6981279	191.0183091	-33.7313865	157.2869226	15.8454475	36.5075903	103.1674163	139.6750066
2025	-19.4946032	188.3985080	-33.3778164	155.0206916	15.7756261	34.1293168	102.6800758	136.8093926
2026	-19.2278605	191.9001768	-32.9146773	158.9854995	15.8815386	37.1478831	103.4194320	140.5673151
2027	-19.7713688	189.3884481	-33.8543871	155.5340610	15.6469887	35.3323129	101.7820589	137.1143718
2028	-19.2605498	186.7091077	-32.9691231	155.7399846	15.7533007	35.7054105	102.5242864	138.2296969
2029	-19.6559862	187.0031710	-33.6582840	153.3448870	15.5569485	34.8145523	101.1536253	135.9681776
2030	-19.2065145	187.1247289	-32.8776841	154.2470448	15.6797080	35.4838506	102.0105661	137.4944167
2031	-19.7098239	186.0715226	-33.7798290	152.2916936	15.4697596	33.9724660	100.5449659	134.5174319
2032	-19.1534669	186.3665260	-32.9012951	153.4652309	15.7714371	35.3934602	102.6508388	138.0442990
2033	-19.7045326	204.8342040	-33.9405031	170.8937009	16.5481346	37.4794317	108.0725480	145.5519797
2034	-19.1792990	189.8449614	-32.9555472	156.8894142	15.9523224	35.6039353	103.9135053	139.5174406
2035	-25.0220864	208.5745683	-43.1616241	165.4129442	15.6332532	36.3874546	101.6862005	138.0736551

TABLE B-18. Variable OMP&R Component of Transportation Charge for Each Contractor

(in dollars)

Sheet 1 of 4

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water Total District		San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[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)	(65,206)	(87,874)	(15,961)	(82,727)	(98,688)
1999	14,757	52,720	67,477	243,434	193,968	450,667	888,069	51,783	278,589	330,372
2000	22,022	94,310	116,332	378,285	239,313	755,432	1,373,030	76,788	440,747	517,535
2001	290,950	534,351	825,301	1,688,783	997,070	2,851,440	5,537,293	530,386	2,346,180	2,876,566
2002	90,998	268,287	359,285	1,074,401	642,200	1,461,863	3,178,464	241,869	1,541,397	1,783,266
2003	131,458	266,997	398,455	1,079,980	649,713	2,307,741	4,037,434	282,325	1,709,803	1,992,128
2004	144,247	343,537	487,784	1,301,725	613,444	1,584,553	3,499,722	281,237	2,005,796	2,287,033
2005	193,401	376,424	569,825	1,471,109	853,768	2,495,092	4,819,969	343,579	1,886,735	2,230,314
2006	176,473	323,892	500,365	1,321,197	755,240	2,205,366	4,281,803	312,604	1,713,244	2,025,848
2007	601,949	1,147,346	1,749,295	2,270,067	1,357,587	4,012,902	7,640,556	444,912	3,436,198	3,881,110
2008	733,741	655,619	1,389,360	2,840,438	1,396,836	3,853,785	8,091,059	607,546	5,728,616	6,336,162
2009	376,955	451,611	828,566	2,116,203	979,750	2,732,229	5,828,182	474,767	4,476,628	4,951,395
2010	581,321	719,688	1,301,009	3,311,173	2,068,949	3,858,965	9,239,087	2,805,525	5,104,484	7,910,009
2011	591,454	720,495	1,311,949	3,231,236	2,027,509	3,759,662	9,018,407	2,781,246	5,060,311	7,841,557
2012	623,045	744,191	1,367,236	3,103,864	1,852,651	4,119,874	9,076,389	2,864,739	5,212,221	8,078,960
2013	695,878	812,682	1,508,560	3,540,819	2,101,865	4,686,580	10,329,264	3,185,374	5,795,597	8,980,971
2014	763,636	870,057	1,633,693	3,616,281	2,158,599	4,800,135	10,575,015	3,364,015	6,120,624	9,484,639
2015	802,042	883,580	1,685,622	3,762,969	2,238,935	4,986,572	10,988,476	3,443,321	6,264,915	9,708,236
2016	835,502	892,886	1,728,388	3,947,168	2,336,302	5,216,669	11,500,139	3,527,033	6,417,224	9,944,257
2017	847,547	881,277	1,728,824	3,767,713	2,240,002	4,990,849	10,998,564	3,435,433	6,250,565	9,685,998
2018	899,870	906,227	1,806,097	3,847,965	2,288,056	5,097,554	11,233,575	3,529,515	6,421,740	9,951,255
2019	950,895	928,296	1,879,191	4,072,087	2,411,197	5,382,864	11,866,148	3,657,611	6,654,805	10,312,416
2020	921,939	880,274	1,802,213	3,787,475	2,247,798	5,012,508	11,047,781	3,437,774	6,254,823	9,692,597
2021	924,633	879,127	1,803,760	3,762,439	2,234,260	4,980,887	10,977,586	3,426,450	6,234,221	9,660,671
2022	893,252	851,898	1,745,150	3,601,635	2,141,896	4,771,589	10,515,120	3,303,519	6,010,555	9,314,074
2023	898,828	856,737	1,755,565	3,694,256	2,191,406	4,887,917	10,773,579	3,345,900	6,087,664	9,433,564
2024	935,205	888,303	1,823,508	3,892,630	2,304,807	5,145,494	11,342,931	3,491,875	6,353,257	9,845,132
2025	930,579	884,287	1,814,866	3,695,897	2,200,994	4,899,953	10,796,844	3,420,235	6,222,912	9,643,147
2026	937,598	890,377	1,827,975	3,946,728	2,333,660	5,213,364	11,493,752	3,514,183	6,393,845	9,908,028
2027	922,057	876,892	1,798,949	3,782,694	2,243,658	5,004,692	11,031,044	3,427,859	6,236,784	9,664,643
2028	929,100	883,004	1,812,104	3,790,791	2,246,227	5,012,864	11,049,882	3,455,742	6,287,516	9,743,258
2029	916,090	871,715	1,787,805	3,736,558	2,218,173	4,945,804	10,900,535	3,399,204	6,184,649	9,583,853
2030	924,226	878,775	1,803,001	3,801,226	2,254,423	5,028,948	11,084,597	3,437,360	6,254,071	9,691,431
2031	910,314	866,704	1,777,018	3,662,945	2,178,237	4,852,679	10,693,861	3,362,936	6,118,660	9,481,596
2032	930,303	884,046	1,814,349	3,801,924	2,256,698	5,032,001	11,090,623	3,451,107	6,279,083	9,730,190
2033	981,764	928,703	1,910,467	4,009,253	2,377,370	5,303,678	11,690,301	3,638,799	6,620,577	10,259,376
2034	942,287	894,446	1,836,733	3,828,497	2,273,550	5,068,408	11,170,455	3,487,936	6,346,090	9,834,026
2035	921,146	876,102	1,797,248	3,840,261	2,270,109	5,072,061	11,182,431	3,451,841	6,280,418	9,732,259
TOTAL	25,732,948	26,881,652	52,614,600	116,262,501	70,220,582	168,740,968	355,224,051	91,313,801	185,179,765	276,493,566

Note: B-18 includes Extra Peaking Charges for additional power shown in Table 9.

TABLE B-18. Variable OMP&R Component of Transportation Charge for Each Contractor

(in dollars)

Sheet 2 of 4

Calendar Year	SAN JOAQUIN VALLEY AREA								
	Dudley Ridge Water Irri District	Empire West Side gation District	Future Contractor San Joaquin Valley	Kern County Water Agency		County of Water Kings	Oak Flat District	Tulare Lake Basin Water Storage District	Total
				Municipal and Industrial	Agricultural				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	68,977	5,176	0	0	440,922	2,355	4,760	65,680	587,870
1969	56,774	101	0	0	321,387	181	3,338	17,956	399,737
1970	69,818	6,811	0	0	470,867	0	5,595	16,550	569,641
1971	53,097	7,747	0	0	769,054	4,785	6,353	158,419	999,455
1972	62,365	8,515	0	0	1,151,788	2,057	7,375	379,686	1,611,786
1973	33,931	4,615	0	0	770,121	2,307	3,017	77,630	891,621
1974	49,114	4,413	0	46,752	677,660	2,206	3,114	106,332	889,591
1975	63,140	4,671	0	34,580	848,249	2,491	3,920	134,295	1,091,346
1976	70,851	5,132	0	94,853	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	190,875	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	3,151,297
1980	88,746	1,935	0	121,603	1,731,588	4,762	7,766	163,301	2,119,701
1981	129,687	18,533	0	263,077	2,398,339	7,275	8,904	263,922	3,089,737
1982	108,561	937	0	145,246	2,375,404	4,541	6,763	48,137	2,689,589
1983	61,443	0	0	13,954	929,183	5,662	3,232	1,218	1,014,692
1984	82,423	0	0	216,437	1,996,259	5,946	7,475	10,496	2,319,036
1985	114,571	12,938	0	242,645	2,567,184	8,422	8,815	271,970	3,226,545
1986	236,756	5,513	0	377,798	4,876,960	17,433	16,927	376,088	5,907,475
1987	187,090	10,273	0	504,168	4,230,949	16,140	15,529	375,604	5,339,753
1988	188,170	14,894	0	524,965	4,250,194	15,528	11,928	374,528	5,380,207
1989	285,261	15,450	0	661,238	6,158,648	20,063	21,693	649,604	7,831,957
1990	218,786	7,710	0	845,877	4,778,185	12,056	12,072	344,008	6,218,694
1991	4,393	1,047	0	185,013	47,869	0	521	10,331	249,174
1992	76,840	4,426	0	227,332	1,699,824	6,059	5,222	151,055	2,170,758
1993	20,064	4,843	0	78,585	340,588	2,090	1,467	123,913	571,550
1994	135,626	7,854	0	471,316	3,417,815	9,967	10,102	293,748	4,346,428
1995	181,772	4,611	0	409,656	3,437,735	11,619	10,492	288,010	4,343,895
1996	286,064	9,577	0	715,404	6,328,965	21,039	16,403	1,196,303	8,573,755
1997	308,515	0	0	650,416	5,627,735	0	15,559	94,838	6,697,063
1998	19,652	(28)	0	63,221	63,450	(1)	1,318	(1,107)	146,505
1999	181,490	8,592	0	470,360	3,349,552	10,821	9,074	790,700	4,800,589
2000	196,361	5,835	0	417,381	4,037,481	11,676	10,422	643,240	5,322,396
2001	782,016	25,598	0	445,105	11,597,942	29,363	45,628	1,121,076	14,046,728
2002	429,531	12,337	0	831,424	7,493,178	25,061	29,961	814,946	9,636,438
2003	455,198	14,185	0	1,094,200	9,535,804	36,469	28,732	1,045,499	12,210,087
2004	512,493	37,194	0	1,390,386	8,791,836	94,531	33,223	848,428	11,708,091
2005	1,002,036	47,032	0	1,137,856	17,918,737	242,964	34,907	1,717,434	22,100,966
2006	904,509	34,129	0	1,044,098	14,036,507	99,040	30,565	1,124,184	17,273,032
2007	984,416	65,781	0	3,015,781	17,316,170	162,165	57,555	1,938,462	23,540,330
2008	1,056,027	55,248	0	3,674,681	18,776,332	175,330	72,527	1,766,496	25,576,641
2009	791,956	41,433	0	2,765,400	14,141,931	131,630	54,309	1,324,765	19,251,424
2010	912,540	47,741	0	3,071,896	16,919,148	152,042	63,649	1,526,475	22,693,491
2011	854,821	44,721	0	2,932,695	16,041,965	142,678	57,949	1,429,925	21,504,754
2012	859,611	44,972	0	3,021,692	16,276,607	143,579	56,481	1,437,936	21,840,878
2013	1,046,986	54,775	0	3,554,555	19,405,390	174,350	72,267	1,751,372	26,059,695
2014	1,001,016	52,370	0	3,544,704	19,009,320	167,194	64,970	1,674,475	25,514,049
2015	1,082,949	56,656	0	3,754,422	20,300,549	180,556	72,582	1,811,531	27,259,245
2016	1,205,963	63,092	0	4,105,299	22,297,448	200,563	83,526	2,017,306	29,973,197
2017	1,094,365	57,254	0	3,783,735	20,471,894	182,389	73,698	1,830,628	27,493,963
2018	1,115,762	58,373	0	3,925,434	21,023,747	185,990	73,823	1,866,420	28,249,549
2019	1,238,680	64,804	0	4,249,490	22,985,212	206,050	84,911	2,072,035	30,901,182
2020	1,122,767	58,740	0	3,906,441	21,011,682	186,982	75,514	1,878,138	28,240,264
2021	1,107,791	57,956	0	3,870,982	20,783,168	184,545	74,039	1,853,087	27,931,568
2022	1,042,561	54,543	0	3,682,912	19,683,341	173,815	68,636	1,743,971	26,449,779
2023	1,101,256	57,614	0	3,837,534	20,610,659	183,365	74,088	1,842,154	27,706,670
2024	1,184,829	61,986	0	4,070,032	21,996,850	197,094	81,210	1,981,954	29,573,955
2025	1,052,456	55,061	0	3,757,301	19,991,270	175,593	68,173	1,760,523	26,860,377
2026	1,219,476	63,799	0	4,152,831	22,525,435	202,727	84,582	2,039,910	30,288,760
2027	1,128,816	59,056	0	3,935,128	21,127,042	187,944	75,900	1,888,256	28,402,142
2028	1,144,114	59,856	0	3,962,983	21,349,375	190,459	74,647	1,913,846	28,695,280
2029	1,104,289	57,773	0	3,863,662	20,720,195	183,937	73,797	1,847,228	27,850,881
2030	1,135,629	59,412	0	3,932,964	21,195,141	189,060	76,868	1,899,653	28,488,727
2031	1,061,001	55,508	0	3,760,438	20,056,007	176,886	69,690	1,774,817	26,954,347
2032	1,125,186	58,866	0	3,903,442	21,036,070	187,393	75,795	1,882,184	28,268,936
2033	1,200,263	62,794	0	4,199,539	22,488,373	199,813	80,476	2,007,772	30,239,030
2034	1,126,882	58,955	0	3,931,562	21,128,651	187,724	75,359	1,885,022	28,394,155
2035	1,190,108	62,263	0	4,215,291	22,330,946	197,886	79,697	1,990,785	30,066,976
TOTAL	39,242,102	2,011,565	0	122,597,170	727,921,471	5,960,949	2,565,868	67,338,185	967,637,311

TABLE B-18. Variable OMP&R Component of Transportation Charge for Each Contractor

(in dollars)

Sheet 3 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic Lake Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[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	1,109,447	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)	(1,334,424)	(3,246)	(61,112)	(29,466)	(157,452)	(519,798)
1994	1,841,902	66,338	189,616	34,480	312,719	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	1,218,255	(530,571)	(679,666)	18,353	(782,262)	6,032	167,446	245,763	(173,336)	(242,474)
2000	1,764,776	(351,463)	(421,537)	24,501	(580,010)	0	286,563	191,307	(183,254)	(100,795)
2001	10,890,564	4,503,328	1,516,253	208,761	2,500,986	0	859,606	1,807,050	4,413,464	393,226
2002	3,973,403	2,000,325	749,672	163,867	1,236,702	0	335,275	1,261,314	3,200,111	1,111,913
2003	5,149,818	3,049,311	920,481	147,329	1,518,031	0	1,444,747	990,604	1,747,211	1,397,897
2004	5,109,028	3,228,755	985,382	188,423	1,350,162	0	1,316,069	1,039,446	3,577,705	799,074
2005	6,451,939	3,368,481	2,899,779	24,781	4,136,881	0	1,722,597	1,262,977	1,595,617	1,178,475
2006	6,120,430	2,601,515	6,854,687	35,541	2,830,177	0	3,121,021	952,757	2,149,148	767,867
2007	9,597,213	4,120,107	7,551,564	476,709	3,460,873	110,187	1,782,004	2,229,025	8,964,598	1,450,821
2008	10,425,618	6,124,721	18,233,702	596,158	7,528,366	359,590	4,809,193	3,330,119	10,931,187	3,950,866
2009	8,120,986	4,340,190	12,808,557	460,983	5,288,421	271,941	4,902,464	2,518,410	7,678,788	2,775,364
2010	19,263,131	8,658,729	15,493,054	891,246	6,396,802	313,332	12,047,017	2,901,731	13,126,238	3,684,558
2011	19,052,239	8,533,557	15,247,643	882,148	6,295,476	309,902	11,924,318	2,869,962	12,918,317	3,626,194
2012	20,510,698	9,301,245	16,641,534	953,012	6,870,988	333,625	12,884,094	3,089,660	14,099,268	3,957,689
2013	22,744,377	10,676,901	18,905,108	1,058,444	7,805,577	369,958	14,246,468	3,426,133	16,017,045	4,496,013
2014	24,484,549	11,640,569	20,607,135	1,142,389	8,508,313	398,264	15,344,852	3,688,267	17,459,059	4,900,788
2015	25,013,372	11,990,421	21,087,979	1,167,334	8,706,845	406,865	15,676,223	3,767,927	17,866,446	5,015,143
2016	26,486,535	12,786,056	22,484,145	1,237,657	9,283,297	430,828	16,616,126	3,989,839	19,049,325	5,347,179
2017	25,093,524	12,025,111	21,129,748	1,171,219	8,724,091	408,169	15,730,063	3,790,000	17,901,835	5,025,076
2018	26,859,128	13,004,139	22,847,285	1,257,544	9,433,231	436,888	16,908,442	4,045,965	19,356,990	5,433,541
2019	27,858,183	13,476,668	23,727,492	1,298,156	9,796,652	453,139	17,404,726	4,196,459	20,102,731	5,642,872
2020	26,223,677	12,520,526	22,092,086	1,224,175	9,121,423	426,552	16,450,922	3,950,243	18,717,159	5,253,939
2021	26,179,672	12,493,806	22,086,446	1,222,303	9,119,094	425,836	16,429,636	3,943,614	18,712,382	5,252,598
2022	25,357,431	11,927,393	21,283,986	1,181,989	8,787,773	412,462	15,903,266	3,819,754	18,032,510	5,061,757
2023	25,816,896	12,211,488	21,680,315	1,203,900	8,951,410	419,935	16,197,625	3,888,967	18,368,293	5,156,012
2024	26,722,186	12,746,166	22,553,779	1,244,506	9,312,047	434,661	16,714,202	4,025,336	19,108,321	5,363,739
2025	26,349,994	12,529,285	22,289,178	1,229,948	9,202,798	428,607	16,530,033	3,969,271	18,884,142	5,300,812
2026	26,828,090	12,889,483	22,652,765	1,251,373	9,352,917	436,383	16,811,945	4,041,289	19,192,185	5,387,280
2027	26,515,268	12,591,296	22,385,558	1,236,274	9,242,592	431,295	16,612,024	3,994,167	18,965,799	5,323,733
2028	26,399,798	12,612,572	22,268,881	1,231,726	9,194,418	429,417	16,550,206	3,976,771	18,968,947	5,295,985
2029	26,192,979	12,412,291	22,069,921	1,221,068	9,112,271	426,053	16,413,560	3,945,618	18,598,381	5,248,668
2030	26,188,152	12,492,868	22,072,403	1,221,555	9,113,296	425,974	16,415,694	3,944,891	18,700,483	5,249,258
2031	26,049,338	12,316,575	21,950,304	1,214,295	9,062,883	423,716	16,355,731	3,923,981	18,597,037	5,220,221
2032	26,068,006	12,429,184	21,937,785	1,212,479	9,057,715	424,020	16,309,033	3,926,793	18,586,430	5,217,244
2033	28,513,430	13,819,008	24,326,711	1,331,787	10,044,059	463,797	17,901,831	4,295,163	20,610,409	5,785,378
2034	26,526,186	12,698,544	22,417,490	1,234,690	9,255,776	431,473	16,609,291	3,995,812	18,992,853	5,331,327
2035	29,281,691	13,381,913	24,735,632	1,354,378	10,212,895	476,293	18,187,629	4,410,891	20,956,861	5,882,628
TOTAL	752,242,535	345,595,304	611,960,713	34,033,541	267,066,490	11,862,839	438,306,424	118,135,789	518,232,025	146,585,539

TABLE B-18. Variable OMP&R Component of Transportation Charge for Each Contractor

(in dollars)

Sheet 4 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				South Bay Area Future Contractor	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	County Total	City of Yuba City	County of Butte	Plumas FC&WCD	Total		
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	36,970
1963	0	0	0	0	0	0	0	0	0	57,711
1964	0	0	0	0	0	0	0	0	0	74,134
1965	0	0	0	0	0	0	0	0	0	142,609
1966	0	0	0	0	0	0	0	0	0	192,606
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	(3,007,977)	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	2,428,721	(921)	6,336,979	0	0	0	0	0	14,932,641
1998	0	(14,440,371)	(67,583)	(23,842,827)	0	0	0	0	0	(23,707,573)
1999	0	(10,520,287)	(35,124)	(11,307,871)	0	0	0	0	0	(5,221,364)
2000	0	(14,676,247)	7,418	(14,088,741)	0	0	0	0	0	(6,759,448)
2001	0	160,070,513	269,038	187,432,789	0	0	0	0	0	210,718,677
2002	0	60,681,496	282,777	74,996,855	0	0	0	0	0	89,954,308
2003	7,393	94,646,001	362,859	111,381,682	0	0	0	0	0	130,019,786
2004	53,585	104,912,701	408,346	122,968,676	0	0	0	0	0	140,951,306
2005	58,317	109,097,851	139,017	131,936,712	0	0	0	0	0	161,657,786
2006	453,911	86,480,532	109,204	112,476,790	0	0	0	0	0	136,557,838
2007	935,371	193,044,690	2,287,078	235,010,240	0	0	0	0	0	271,219,592
2008	2,604,815	213,581,454	2,759,326	285,235,135	0	0	0	0	0	326,628,357
2009	1,829,794	149,320,111	1,934,590	202,250,589	0	0	0	0	0	233,110,166
2010	2,213,293	200,217,864	2,217,945	287,424,940	0	0	0	0	0	328,568,536
2011	2,178,235	197,090,011	2,189,642	283,117,644	0	0	0	0	0	322,794,311
2012	2,377,362	214,927,644	2,388,709	308,335,528	0	0	0	0	0	348,696,991
2013	2,700,730	245,380,368	2,724,479	350,551,601	0	0	0	0	0	397,430,091
2014	2,943,876	267,315,725	2,975,280	381,409,066	0	0	0	0	0	428,616,462
2015	3,012,568	274,410,610	3,057,703	391,179,436	0	0	0	0	0	440,821,015
2016	3,212,021	292,721,348	3,254,717	416,899,073	0	0	0	0	0	470,045,054
2017	3,018,535	275,079,995	3,066,049	392,153,415	0	0	0	0	0	442,060,764
2018	3,263,898	297,409,788	3,316,859	423,573,698	0	0	0	0	0	474,814,174
2019	3,389,642	308,717,050	3,432,898	439,496,688	0	0	0	0	0	494,455,605
2020	3,156,012	287,111,473	3,196,225	409,444,412	0	0	0	0	0	460,227,267
2021	3,155,207	286,788,269	3,190,447	408,999,310	0	0	0	0	0	459,372,895
2022	3,040,569	275,226,394	3,053,148	393,088,432	0	0	0	0	0	441,112,555
2023	3,097,188	281,025,596	3,121,205	401,138,830	0	0	0	0	0	450,808,208
2024	3,221,968	292,825,127	3,251,992	417,524,030	0	0	0	0	0	470,109,556
2025	3,184,168	288,555,762	3,205,554	411,659,552	0	0	0	0	0	460,774,786
2026	3,236,109	295,009,292	3,283,391	420,372,502	0	0	0	0	0	473,891,017
2027	3,197,937	289,993,524	3,217,323	413,706,790	0	0	0	0	0	464,603,568
2028	3,181,269	289,351,700	3,218,652	412,578,332	0	0	0	0	0	463,878,856
2029	3,152,846	285,870,372	3,172,921	407,936,949	0	0	0	0	0	458,060,023
2030	3,153,200	286,714,726	3,188,506	408,881,006	0	0	0	0	0	459,948,762
2031	3,135,758	283,989,859	3,152,240	405,391,938	0	0	0	0	0	454,298,760
2032	3,133,969	285,072,536	3,172,944	406,548,138	0	0	0	0	0	457,452,236
2033	3,475,244	316,459,392	3,524,787	450,550,996	0	0	0	0	0	504,650,170
2034	3,202,499	291,259,538	3,241,598	415,197,077	0	0	0	0	0	466,432,446
2035	3,533,662	315,253,609	3,444,218	451,112,300	0	0	0	0	0	503,891,214
TOTAL	85,510,951	8,375,802,968	88,942,662	11,794,277,782	0	0	0	0	0	13,446,247,309

TABLE B-19. Total Transportation Charge for Each Contractor

(in dollars)

Sheet 1 of 4

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley District	Total	San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[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	199,673	190,236	447,594	837,503	0	0	0
1964	0	0	0	263,210	277,398	621,174	1,161,782	6,694	21,659	28,353
1965	0	0	0	373,722	404,239	1,157,791	1,935,753	13,751	36,017	49,768
1966	18,057	0	18,057	419,362	421,628	1,412,600	2,253,589	26,516	61,329	87,845
1967	41,560	0	41,560	538,988	498,337	1,685,708	2,723,033	56,451	118,225	174,675
1968	128,588	0	128,588	663,599	603,365	1,984,791	3,251,756	115,927	229,740	345,667
1969	254,662	0	254,662	787,024	539,211	2,082,792	3,409,028	185,118	358,783	543,901
1970	277,493	0	277,493	822,749	532,434	2,202,293	3,557,476	200,110	387,595	587,705
1971	227,419	0	227,419	787,798	551,979	2,169,421	3,509,199	202,373	392,830	595,203
1972	224,922	0	224,922	829,433	678,385	2,319,944	3,827,762	209,016	406,506	615,521
1973	221,035	31,353	252,388	794,654	549,258	2,338,141	3,682,054	206,516	402,639	609,155
1974	240,442	32,924	273,366	818,433	564,459	2,505,879	3,888,772	208,503	407,005	615,508
1975	237,400	36,276	273,676	868,284	605,595	2,409,443	3,883,322	225,853	439,787	665,639
1976	271,231	40,819	312,050	959,047	734,676	2,500,026	4,193,749	228,933	447,212	676,146
1977	293,565	45,078	338,643	923,216	713,422	2,475,917	4,112,555	238,656	468,632	707,288
1978	273,807	49,159	322,966	978,548	692,451	2,785,503	4,456,502	245,286	484,166	729,452
1979	289,415	53,320	342,735	1,043,712	736,221	2,813,091	4,593,024	243,065	483,342	726,406
1980	310,779	67,724	378,502	1,161,722	866,233	3,027,715	5,055,670	269,813	536,977	806,790
1981	347,710	87,377	435,087	1,127,385	879,216	2,917,088	4,923,689	288,950	586,152	875,102
1982	438,260	106,881	545,141	1,165,269	850,343	3,261,611	5,277,224	290,002	582,655	872,657
1983	354,703	151,207	505,911	1,176,820	900,223	3,794,952	5,871,996	319,167	633,079	952,246
1984	467,232	224,170	691,403	1,468,956	1,097,338	5,737,303	8,303,596	351,573	695,455	1,047,028
1985	735,929	364,186	1,100,115	1,919,390	1,789,224	6,551,041	10,259,656	394,545	776,889	1,171,434
1986	1,084,468	692,256	1,776,724	1,746,591	1,528,587	6,862,724	10,137,902	385,497	762,577	1,148,074
1987	1,773,371	1,558,749	3,332,120	2,236,446	2,011,731	6,674,848	10,923,025	385,240	812,199	1,197,439
1988	2,231,006	2,333,097	4,564,103	2,238,074	2,210,377	6,368,341	10,816,791	420,102	978,488	1,398,590
1989	2,396,678	3,325,671	5,722,349	2,154,377	1,871,882	5,916,199	9,942,458	414,171	1,162,567	1,576,738
1990	2,745,521	3,432,532	6,178,053	2,573,671	2,261,764	6,667,922	11,503,358	487,553	1,234,234	1,721,787
1991	2,748,016	3,681,509	6,429,525	1,753,295	1,621,035	4,527,400	7,901,729	491,359	1,476,188	1,967,547
1992	2,553,906	3,528,155	6,082,061	2,074,466	2,003,168	5,385,315	9,462,950	550,978	1,490,922	2,041,900
1993	2,592,266	3,503,436	6,095,702	2,879,705	2,011,060	6,511,316	11,402,081	610,046	1,675,150	2,285,196
1994	2,717,705	3,536,653	6,254,358	2,906,453	2,642,296	7,313,960	12,862,709	767,812	2,472,977	3,240,789
1995	2,648,648	3,509,127	6,157,775	3,034,812	2,288,863	5,893,109	11,216,784	995,188	4,975,941	5,971,129
1996	2,698,584	3,890,907	6,589,491	2,583,952	2,137,277	6,674,929	11,396,158	1,837,045	13,762,993	15,600,038
1997	2,641,264	3,630,366	6,271,631	2,657,207	2,007,165	6,550,904	11,215,276	2,294,048	21,854,825	24,149,233
1998	2,538,665	3,478,850	6,017,515	2,266,239	2,066,610	6,302,904	10,635,753	2,977,681	26,603,248	29,580,929
1999	2,681,364	3,829,352	6,510,715	2,854,391	2,433,011	8,331,305	13,618,707	3,021,823	37,352,589	40,374,412
2000	2,832,287	4,307,597	7,139,884	3,914,676	2,305,528	7,036,367	13,256,572	2,961,440	28,193,798	31,155,239
2001	3,347,998	4,914,105	8,262,103	5,236,786	2,802,468	8,848,565	16,887,819	3,513,326	30,218,691	33,732,017
2002	3,554,292	5,049,494	8,603,786	5,044,452	2,781,426	9,934,876	17,760,758	3,223,919	29,896,739	33,120,658
2003	3,663,623	5,389,465	9,053,088	4,856,118	2,507,882	8,733,578	16,097,578	3,301,358	30,135,259	33,436,617
2004	4,143,090	5,601,833	9,744,923	5,684,896	2,802,346	8,174,932	16,662,174	3,318,389	30,627,047	33,945,436
2005	3,502,342	5,076,675	8,579,018	5,801,279	3,030,259	9,115,893	17,947,431	3,418,429	30,728,733	34,147,161
2006	3,428,932	4,652,040	8,080,973	6,083,467	3,220,855	10,155,126	19,459,448	3,493,096	30,822,325	34,315,421
2007	4,429,830	5,614,522	10,044,352	7,927,538	4,288,142	12,947,254	25,162,934	3,636,714	32,547,142	36,183,856
2008	5,022,749	5,930,423	10,953,172	9,270,799	4,646,267	13,537,050	27,454,116	3,927,357	35,874,870	39,802,226
2009	5,067,257	5,738,234	10,805,491	8,666,936	4,298,355	12,588,326	25,553,618	3,780,515	34,710,161	38,490,676
2010	4,945,945	5,295,855	10,241,849	9,937,615	5,607,219	13,662,913	29,207,748	6,671,963	34,101,569	40,773,531
2011	4,966,425	5,304,988	10,271,413	9,851,118	5,559,782	13,559,525	28,970,424	6,633,398	34,048,272	40,681,670
2012	5,002,959	5,330,706	10,333,665	9,764,438	5,385,642	14,125,011	29,275,091	6,718,078	34,212,758	40,930,836
2013	4,978,881	5,300,079	10,278,960	9,596,276	5,274,125	13,758,634	28,629,035	6,670,605	34,138,780	40,809,384
2014	4,938,242	5,248,905	10,187,147	9,138,771	4,991,003	13,093,866	27,223,640	6,446,555	33,722,392	40,168,946
2015	4,963,601	5,249,436	10,213,037	9,152,649	4,948,078	12,835,213	26,935,940	6,468,357	33,761,704	40,230,061
2016	4,972,739	5,253,832	10,226,572	9,281,798	5,005,610	12,870,566	27,157,974	6,527,679	33,865,520	40,393,199
2017	4,958,216	5,242,347	10,200,564	9,026,153	4,878,005	12,528,215	26,432,373	6,404,023	33,638,935	40,042,958
2018	4,909,844	5,258,803	10,168,647	8,946,563	4,860,924	12,458,763	26,266,249	6,415,273	33,657,730	40,073,003
2019	4,910,085	5,278,709	10,188,794	9,061,631	4,947,003	12,637,948	26,646,582	6,524,363	33,852,194	40,376,557
2020	4,878,391	5,232,462	10,110,854	8,746,156	4,771,369	12,235,477	25,753,002	6,303,233	33,449,952	39,753,185
2021	4,883,778	5,235,745	10,119,524	8,732,782	4,765,823	12,222,318	25,720,924	6,304,611	33,452,003	39,756,614
2022	4,849,895	5,206,206	10,056,102	8,566,613	4,670,047	12,002,459	25,239,119	6,177,788	33,219,598	39,397,386
2023	4,849,787	5,174,507	10,024,294	8,642,458	4,710,280	12,096,067	25,448,806	6,207,074	33,270,415	39,477,489
2024	4,880,570	5,203,053	10,083,623	8,831,548	4,817,978	12,340,333	25,989,860	6,344,476	33,520,381	39,864,858
2025	4,861,495	5,191,858	10,053,353	8,613,997	4,701,691	12,066,902	25,382,589	6,253,948	33,356,459	39,610,407
2026	4,861,778	5,190,751	10,052,530	8,858,912	4,831,426	12,371,871	26,062,209	6,346,551	33,520,323	39,866,874
2027	4,846,456	5,178,086	10,024,542	8,703,807	4,745,832	12,174,120	25,623,760	6,263,188	33,370,085	39,633,273
2028	4,846,128	5,174,634	10,020,763	8,695,717	4,739,762	12,158,440	25,593,920	6,280,928	33,393,850	39,674,778
2029	4,830,279	5,160,738	9,991,017	8,639,696	4,710,563	12,088,777	25,439,036	6,224,375	33,289,614	39,513,989
2030	4,825,404	5,150,012	9,975,416	8,694,001	4,741,305	12,158,251	25,593,557	6,257,537	33,344,124	39,601,661
2031	4,799,002	5,122,022	9,921,024	8,552,845	4,662,735	11,977,349	25,192,928	6,180,347	33,194,948	39,375,295
2032	4,801,916	5,112,191	9,914,107	8,682,375	4,736,876	12,143,697	25,562,949	6,265,976	33,349,660	39,615,636
2033	4,823,170	5,112,079	9,935,249	8,895,029	4,860,621	12,423,937	26,179,587	6,455,172	33,700,205	40,155,377
2034	4,710,769	5,001,701	9,712,470	8,701,893	4,749,950	12,170,858	25,622,700	6,302,748	33,420,661	39,723,409
2035	4,539,667	4,834,156	9,373,823	8,693,644	4,736,214	12,147,822	25,577,681	6,263,173	33,343,314	39,606,466
TOTAL	205,333,725	232,539,387	437,873,112	349,557,860	204,907,875	576,585,432	1,131,051,167	220,651,679	1,302,521,780	1,523,173,458

TABLE B-19. Total Transportation Charge for Each Contractor

(in dollars)

Sheet 2 of 4

Calendar Year	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	Total
				Municipal and Industrial	Agri- cultural				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	2,724	0	0	0	0	0	2,724
1965	0	0	6,027	73,544	0	0	0	0	79,571
1966	0	0	12,035	137,284	0	0	0	0	149,319
1967	0	0	26,249	267,525	0	0	0	0	293,774
1968	184,129	8,884	54,573	445,315	1,542,121	13,767	11,554	208,504	2,468,846
1969	179,734	7,570	87,557	524,952	2,387,437	12,621	10,555	355,550	3,565,977
1970	201,705	14,337	94,656	573,846	2,909,231	12,786	13,090	292,608	4,112,259
1971	197,912	15,295	95,676	605,729	3,815,934	17,759	14,389	447,659	5,210,353
1972	220,407	16,163	98,769	631,452	4,982,901	15,216	20,644	1,078,071	7,083,624
1973	202,931	12,234	97,531	639,086	4,914,265	15,480	11,690	407,878	6,301,094
1974	282,532	12,203	98,440	698,081	5,215,546	15,586	12,788	595,889	6,931,046
1975	349,457	13,148	106,683	715,440	6,335,102	16,616	14,452	726,293	8,277,191
1976	304,601	13,694	108,064	774,124	6,688,024	16,990	16,120	563,135	8,484,752
1977	266,588	10,804	112,534	797,692	6,861,612	18,453	13,905	510,086	8,591,673
1978	355,418	4,441	115,500	890,777	8,313,398	18,918	17,944	503,651	10,220,046
1979	385,312	13,541	114,232	896,026	9,437,322	20,198	24,875	952,333	11,843,839
1980	406,405	11,891	125,929	888,723	9,993,642	20,745	24,244	736,695	12,208,274
1981	469,896	29,732	134,147	1,079,139	11,437,418	24,935	22,918	907,953	14,106,139
1982	464,405	12,882	135,036	1,004,492	12,268,659	22,951	22,382	745,270	14,676,077
1983	637,574	14,476	149,180	1,027,082	15,475,286	39,967	29,138	427,976	17,800,678
1984	910,106	14,890	164,483	2,063,001	23,601,209	54,424	59,623	783,400	27,651,136
1985	1,098,513	87,451	184,883	2,350,412	27,906,943	69,479	70,152	2,170,237	33,938,070
1986	1,262,610	33,907	180,423	2,364,977	30,485,940	80,765	76,012	2,181,474	36,666,107
1987	1,121,046	50,702	179,850	2,804,592	29,269,101	78,014	74,258	2,240,399	35,817,961
1988	1,106,513	61,497	193,712	2,750,239	29,180,780	74,164	60,133	2,197,954	35,624,992
1989	1,141,892	49,179	187,891	2,435,448	29,241,976	67,045	68,596	2,441,249	35,633,276
1990	865,262	34,341	221,368	2,541,123	27,356,728	51,053	49,025	1,867,953	32,986,853
1991	582,079	23,246	220,258	2,055,047	17,556,120	27,925	26,794	1,228,518	21,719,988
1992	951,447	39,082	241,431	2,369,575	25,854,241	55,791	50,848	1,905,658	31,468,073
1993	1,163,737	53,609	264,933	2,799,265	31,368,410	72,885	69,531	2,639,246	38,431,616
1994	1,018,827	43,735	306,333	2,808,608	29,244,221	60,455	57,298	2,115,176	35,654,654
1995	1,515,515	46,593	304,270	3,499,388	36,367,776	88,870	85,121	2,769,286	44,671,820
1996	1,374,706	48,225	389,175	3,559,914	36,680,643	86,087	73,769	4,315,177	46,527,696
1997	1,416,549	25,382	276,653	3,107,537	32,941,056	36,710	68,629	1,669,254	39,541,769
1998	1,269,522	34,367	381,852	2,733,891	29,714,189	41,834	60,073	1,800,619	36,036,347
1999	1,220,134	53,897	366,550	3,051,913	31,029,566	73,162	62,351	4,004,384	39,861,957
2000	1,093,480	37,920	303,252	2,583,235	26,604,739	61,865	54,664	2,783,318	33,522,473
2001	1,771,147	62,839	327,961	2,522,768	34,133,358	80,081	100,829	3,055,117	42,054,099
2002	1,351,860	43,679	321,473	2,978,576	28,826,032	73,590	78,032	2,521,425	36,194,667
2003	1,420,573	48,406	339,996	3,335,091	31,742,225	89,628	78,913	2,863,729	39,918,561
2004	1,477,151	77,769	343,920	3,723,162	30,853,618	233,255	81,644	2,383,375	39,173,894
2005	2,080,400	88,660	345,297	3,247,312	41,874,102	423,884	81,523	3,465,611	51,606,788
2006	2,059,890	78,999	386,957	3,432,572	39,918,467	274,197	80,968	2,917,779	49,149,829
2007	2,291,023	125,406	388,674	6,308,747	45,471,579	361,615	120,483	4,132,277	59,199,803
2008	2,463,805	113,607	413,622	7,303,419	48,846,017	386,875	142,592	3,978,728	63,648,665
2009	2,163,815	97,947	421,751	6,203,034	43,661,367	338,185	120,955	3,478,000	56,485,054
2010	2,038,390	91,566	388,361	6,037,622	42,759,993	322,959	122,007	3,279,971	55,040,869
2011	1,975,750	88,276	390,052	5,885,134	41,802,555	312,888	115,919	3,174,858	53,745,432
2012	1,980,600	88,530	390,169	5,974,629	42,025,436	313,806	114,452	3,182,949	54,070,570
2013	2,038,069	91,534	390,388	6,060,757	42,776,477	323,058	121,416	3,279,014	55,080,713
2014	1,852,874	81,843	387,730	5,571,652	39,830,670	292,827	104,662	2,969,170	51,091,428
2015	1,917,109	85,201	384,634	5,646,687	40,800,355	303,254	111,069	3,076,572	52,324,881
2016	2,035,839	91,416	378,282	5,919,663	42,714,600	322,559	121,736	3,275,272	54,859,367
2017	1,923,584	85,543	364,206	5,465,347	40,878,652	304,273	111,857	3,087,456	52,220,917
2018	1,932,851	86,024	341,706	5,447,688	41,210,257	296,451	111,143	3,102,882	52,529,003
2019	2,055,126	92,425	332,885	5,710,423	43,155,760	315,665	122,205	3,307,527	55,092,016
2020	1,940,189	86,410	331,329	5,337,679	41,203,307	296,467	112,869	3,115,208	52,423,458
2021	1,930,518	85,904	330,366	5,298,497	41,073,884	294,743	111,754	3,099,011	52,224,677
2022	1,864,611	82,455	329,655	5,097,818	39,960,027	283,814	106,295	2,988,750	50,713,425
2023	1,918,729	85,289	328,989	5,232,995	40,800,962	292,574	111,458	3,079,372	51,850,368
2024	1,999,840	89,531	328,564	5,454,583	42,143,019	305,856	118,403	3,215,012	53,654,809
2025	1,861,344	82,283	328,293	5,117,983	40,028,961	283,295	104,945	2,983,272	50,790,376
2026	2,028,002	91,007	327,505	5,510,874	42,549,932	310,336	121,341	3,262,174	54,201,171
2027	1,939,263	86,356	327,763	5,295,647	41,198,064	295,795	112,767	3,113,524	52,369,179
2028	1,952,689	87,067	324,398	5,316,129	41,374,287	297,908	111,408	3,136,192	52,600,079
2029	1,913,264	85,002	324,466	5,214,757	40,757,434	291,384	110,582	3,070,170	51,767,058
2030	1,943,100	86,565	323,918	5,276,263	41,201,717	296,193	113,562	3,120,152	52,361,469
2031	1,869,897	82,726	323,210	5,088,740	40,099,173	283,824	106,440	2,997,448	50,851,457
2032	1,932,451	86,009	322,042	5,230,118	41,034,998	294,095	112,471	3,102,375	52,114,558
2033	2,008,132	89,965	322,288	5,522,930	42,506,079	306,480	117,189	3,228,868	54,101,931
2034	1,934,930	86,134	321,706	5,248,966	41,149,785	294,266	112,075	3,106,385	52,254,248
2035	1,997,420	89,408	320,399	5,521,807	42,331,248	304,079	116,376	3,211,047	53,891,784
TOTAL	92,085,179	3,951,099	18,395,811	240,088,540	2,029,675,933	11,483,675	5,184,885	158,933,525	2,559,798,648

TABLE B-19. Total Transportation Charge for Each Contractor

(in dollars)

Sheet 3 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline - Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,772	0	0	0	0	0	0	0	51,711	0
1964	63,539	27,438	16,286	4,368	37,145	1,142	28,427	8,202	82,782	34,973
1965	119,810	52,989	28,459	7,191	40,756	2,081	50,300	15,217	135,023	35,333
1966	217,978	101,232	51,184	12,474	73,129	3,752	90,369	27,670	232,426	61,445
1967	421,745	210,746	98,904	23,464	141,365	7,282	175,119	54,006	433,210	115,536
1968	743,770	478,065	176,688	41,496	251,125	12,866	311,067	95,438	781,930	208,864
1969	1,072,210	724,213	264,900	61,208	370,850	18,688	458,910	138,023	1,205,471	321,659
1970	1,395,411	904,063	371,728	89,673	519,163	25,223	632,956	184,783	1,777,649	467,431
1971	1,727,337	1,087,837	503,422	128,321	712,537	31,827	857,103	231,214	2,537,458	659,218
1972	2,046,595	1,306,589	640,299	181,162	925,397	42,393	1,111,673	274,527	3,387,842	864,867
1973	2,137,697	1,322,594	777,545	183,667	1,136,869	43,472	1,174,829	287,241	3,970,608	946,446
1974	2,201,565	1,381,962	794,192	193,237	1,163,708	45,201	1,206,898	291,996	3,997,546	989,818
1975	2,378,538	1,449,895	836,481	205,992	1,231,490	48,479	1,274,028	304,204	4,158,104	1,088,088
1976	2,731,790	1,445,195	883,730	215,036	1,307,153	51,452	1,316,666	313,608	4,298,577	1,141,338
1977	2,674,654	1,514,207	780,142	225,984	1,144,829	47,338	1,388,527	329,288	4,552,801	1,196,952
1978	2,992,385	1,598,920	961,523	230,990	1,420,338	47,108	1,388,663	321,604	4,459,127	1,208,453
1979	3,545,984	1,633,432	1,029,691	237,905	1,518,496	48,384	1,516,225	332,394	4,421,335	1,152,106
1980	4,092,638	1,715,001	1,119,626	259,351	1,679,613	53,338	1,635,658	360,382	4,834,599	1,269,177
1981	4,423,088	1,968,513	1,195,134	271,128	1,797,033	77,794	1,756,052	391,786	5,223,096	1,357,401
1982	3,985,592	2,060,071	1,245,674	280,261	1,883,312	55,949	1,952,500	406,809	5,409,792	1,564,903
1983	5,176,411	2,322,179	1,837,054	333,027	2,827,158	69,370	2,026,549	494,603	6,019,822	1,556,367
1984	7,212,364	3,363,799	2,920,693	445,283	4,553,156	75,761	2,254,144	553,232	7,048,308	2,331,555
1985	8,927,864	3,748,092	3,717,539	540,331	5,827,873	79,219	2,364,599	758,960	7,739,192	2,378,093
1986	8,826,853	4,315,578	4,143,184	577,416	6,515,636	102,386	2,473,819	999,968	7,856,385	3,047,434
1987	8,843,579	4,156,115	3,998,374	604,923	6,363,049	121,795	2,506,202	1,026,303	9,223,407	3,033,831
1988	8,318,460	4,219,317	3,997,055	615,940	6,426,199	124,654	2,560,676	779,724	9,504,046	2,828,684
1989	8,695,508	4,099,142	3,641,415	586,536	5,896,166	170,557	2,508,000	1,442,530	8,943,405	2,930,080
1990	9,983,550	4,539,480	4,316,516	620,333	6,956,699	289,335	2,703,594	1,639,390	9,793,777	3,677,786
1991	6,484,309	3,508,406	2,823,346	567,387	4,492,594	175,123	3,462,707	1,294,508	8,920,573	3,035,311
1992	8,585,236	4,465,965	2,894,932	470,101	4,609,710	121,321	4,264,130	1,129,477	8,572,065	2,979,755
1993	8,968,863	4,097,375	3,092,789	472,751	4,934,951	157,733	4,142,989	1,347,409	9,504,354	3,191,667
1994	11,155,716	4,709,583	3,137,403	554,582	5,006,990	225,795	5,136,037	1,698,886	10,207,695	4,076,345
1995	10,756,902	4,967,419	3,910,360	509,093	6,281,228	155,546	4,223,734	1,527,143	9,441,804	3,715,006
1996	11,125,701	5,155,494	6,847,257	553,160	11,124,041	150,598	4,290,582	1,867,098	9,867,870	3,807,043
1997	11,375,990	4,922,212	6,408,674	579,209	7,362,617	144,818	4,594,025	1,869,201	11,265,726	4,037,468
1998	9,918,468	4,561,475	5,509,370	546,699	5,889,643	146,245	5,631,977	1,477,869	11,187,207	3,323,758
1999	11,304,586	4,888,504	4,454,514	633,806	5,920,525	145,123	5,813,470	1,836,081	12,260,461	4,158,852
2000	10,535,817	6,823,908	2,880,830	594,154	4,305,160	115,235	5,638,841	1,448,048	11,848,185	3,249,417
2001	20,683,161	12,495,927	3,936,492	799,350	6,319,259	127,739	6,341,181	3,358,454	17,829,109	3,397,747
2002	11,968,317	9,694,432	3,190,160	761,088	5,088,279	109,686	5,468,470	2,749,924	18,701,981	4,804,900
2003	13,342,402	10,605,517	3,307,875	730,973	5,281,322	115,136	7,133,898	2,284,330	16,443,291	4,968,859
2004	14,061,041	11,762,029	3,890,783	823,869	5,251,531	124,052	7,203,153	2,494,324	20,515,771	4,356,911
2005	15,335,256	11,179,466	17,126,466	591,903	10,455,438	118,167	7,195,294	2,693,105	17,688,713	4,719,000
2006	15,738,358	10,736,933	26,525,454	634,595	9,780,749	122,510	10,009,803	2,458,748	18,957,063	4,617,507
2007	19,264,970	13,217,421	26,948,246	1,295,814	10,375,681	182,960	8,390,662	4,216,960	29,543,709	5,537,999
2008	22,124,811	16,354,341	43,396,186	1,482,604	16,464,942	627,211	12,771,950	5,744,432	32,740,777	9,280,489
2009	19,591,893	14,406,769	39,687,750	1,325,907	14,378,968	538,172	13,218,083	4,903,052	28,981,721	8,014,533
2010	33,165,998	19,665,625	43,224,474	1,779,851	14,873,870	549,025	21,797,377	5,010,949	34,130,643	8,446,794
2011	32,850,734	19,523,247	44,637,135	1,772,465	14,977,465	543,960	21,608,626	4,963,485	33,957,873	8,388,256
2012	34,310,761	20,288,334	46,090,930	1,839,040	15,556,457	567,716	22,569,764	5,183,426	35,063,295	8,705,287
2013	33,669,539	19,948,051	45,489,340	1,794,559	15,277,444	557,862	22,132,847	5,091,983	34,277,347	8,504,820
2014	32,334,128	19,009,575	43,956,964	1,749,022	14,708,152	535,516	21,269,671	4,886,503	33,476,742	8,246,617
2015	32,416,669	19,086,591	44,028,860	1,729,867	14,698,240	536,839	21,328,758	4,899,828	33,100,670	8,175,707
2016	33,704,202	19,790,032	45,169,754	1,816,156	15,217,161	557,693	22,164,525	5,094,940	34,562,943	8,548,433
2017	32,090,492	18,879,251	43,757,009	1,721,608	14,563,704	531,238	21,168,865	4,854,142	32,910,933	8,111,878
2018	33,329,237	19,403,972	44,727,480	1,784,156	15,021,181	551,099	22,040,423	5,042,317	33,916,471	8,392,099
2019	34,013,950	19,593,581	45,369,778	1,817,510	15,262,045	561,746	22,353,254	5,145,581	34,458,778	8,532,048
2020	32,095,429	18,411,552	42,934,793	1,701,695	14,336,949	529,270	21,203,883	4,851,112	32,264,301	7,953,902
2021	31,904,979	18,180,034	42,480,677	1,656,592	14,133,204	524,993	21,022,479	4,818,325	31,418,211	7,757,796
2022	30,933,612	17,445,673	41,093,969	1,612,957	13,656,449	508,934	20,362,433	4,671,384	30,570,703	7,513,089
2023	31,248,630	17,675,962	40,407,188	1,638,917	13,637,072	513,870	20,553,821	4,718,314	30,924,601	7,594,672
2024	32,079,116	18,145,633	41,191,677	1,656,994	13,939,149	527,375	21,020,765	4,843,422	31,249,406	7,714,421
2025	31,545,271	17,764,997	40,452,580	1,634,567	13,710,517	518,659	20,719,642	4,762,959	30,871,784	7,605,888
2026	32,010,318	18,168,670	41,140,806	1,667,843	13,907,370	526,180	20,979,038	4,832,968	31,358,125	7,721,411
2027	31,713,293	17,734,844	40,296,931	1,632,908	13,693,320	521,343	20,782,937	4,788,277	30,767,300	7,585,728
2028	31,560,500	17,959,132	40,386,102	1,616,073	13,645,936	518,830	20,692,365	4,765,304	30,439,774	7,509,025
2029	31,341,870	17,535,214	40,172,225	1,631,179	13,589,726	515,253	20,548,607	4,732,484	30,728,989	7,549,869
2030	31,290,424	17,568,232	40,143,682	1,630,572	13,573,494	514,400	20,521,879	4,724,979	30,710,056	7,542,543
2031	31,069,677	17,154,301	40,105,255	1,582,489	13,464,444	510,779	20,419,580	4,692,261	29,882,473	7,366,517
2032	31,079,827	17,448,523	39,674,220	1,614,401	13,442,226	510,913	20,368,405	4,694,122	30,466,328	7,478,414
2033	33,450,432	18,593,999	42,226,994	1,712,095	14,406,808	549,436	21,929,643	5,052,680	32,107,757	7,966,659
2034	31,358,066	17,466,959	40,127,453	1,606,571	13,560,665	515,396	20,593,985	4,739,690	30,336,729	7,474,561
2035	34,027,410	18,154,851	42,691,183	1,762,517	14,576,572	558,704	22,134,178	5,143,758	32,941,104	8,143,868
TOTAL	1,197,907,051	690,896,670	1,352,293,783	65,266,343	577,473,494	19,347,051	714,942,287	185,467,682	1,263,450,483	328,398,706

TABLE B-19. Total Transportation Charge for Each Contractor

(in dollars)

Sheet 4 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				South Bay Area Future Contractor	GRAND TOTAL
	San Geronio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total		
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
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	690,539	0	776,021	0	0	0	0	12,626	1,626,150
1964	21,728	1,260,042	9,374	1,595,448	0	0	0	0	13,938	2,802,244
1965	21,859	2,179,810	17,760	2,706,589	0	0	405	405	28,937	4,801,023
1966	37,952	3,898,819	33,415	4,841,844	0	0	564	564	31,321	7,382,540
1967	71,260	7,691,085	68,133	9,511,856	0	0	562	562	47,718	12,793,177
1968	128,877	15,313,065	142,760	18,686,012	0	0	564	564	46,945	24,928,379
1969	198,704	23,145,744	215,144	28,195,723	0	0	3,190	3,190	52,963	36,025,443
1970	289,546	30,607,434	273,523	37,538,584	0	0	15,116	15,116	69,744	46,158,376
1971	409,205	39,946,463	342,325	49,174,267	0	0	15,996	15,996	55,532	58,787,968
1972	537,044	52,933,606	422,192	64,674,187	0	0	17,367	17,367	80,412	76,503,795
1973	587,814	57,257,279	435,541	70,261,602	0	0	17,328	17,328	54,219	81,177,839
1974	611,275	61,759,841	455,447	75,092,684	0	0	17,472	17,472	76,783	86,895,631
1975	644,464	66,739,819	478,284	80,837,865	0	0	18,400	18,400	84,547	94,040,641
1976	668,153	68,467,779	475,466	83,315,943	0	0	17,471	17,471	106,717	97,106,828
1977	696,350	66,216,668	506,941	81,274,681	0	0	18,227	18,227	98,618	95,141,684
1978	708,874	72,917,066	523,053	88,778,103	0	0	17,375	17,375	100,786	104,625,230
1979	712,699	72,648,617	526,278	89,323,546	0	0	20,573	20,573	119,352	106,969,474
1980	777,814	79,908,126	571,100	98,276,421	0	0	17,755	17,755	178,812	116,922,223
1981	805,858	91,241,966	636,261	111,145,110	0	0	21,188	21,188	185,347	131,691,661
1982	853,227	93,125,063	670,228	113,493,380	0	0	28,417	28,417	173,894	135,066,790
1983	951,954	101,767,502	803,439	126,185,435	0	0	19,271	19,271	220,926	151,556,463
1984	1,072,455	137,486,443	868,812	170,186,006	0	0	21,109	21,109	225,959	208,126,237
1985	1,120,667	173,421,376	908,613	211,532,419	0	0	20,233	20,233	340,322	258,362,249
1986	1,149,524	193,220,922	937,154	234,166,260	0	0	20,134	20,134	279,227	284,194,427
1987	1,171,823	178,743,184	907,876	220,790,461	0	0	19,736	19,736	345,116	272,425,859
1988	1,208,011	190,222,146	904,709	231,709,619	0	0	17,895	17,895	365,207	284,497,197
1989	1,194,715	193,213,771	932,440	234,253,905	0	0	19,153	19,153	422,329	287,570,208
1990	1,297,422	239,518,615	1,486,593	286,823,430	0	0	18,143	18,143	474,284	339,705,907
1991	1,354,718	179,928,886	1,140,954	217,188,822	0	0	21,012	21,012	214,683	255,443,307
1992	1,348,976	196,144,526	1,025,119	236,611,312	0	0	18,008	18,008	272,425,859	286,127,979
1993	1,507,337	169,470,518	1,067,967	212,084,703	0	0	20,993	20,993	599,571	270,919,861
1994	1,497,529	209,259,636	1,008,783	257,674,980	0	0	19,644	19,644	609,966	316,317,100
1995	1,520,392	173,396,660	1,061,154	221,466,440	0	0	20,272	20,272	534,971	290,039,191
1996	1,526,936	181,380,152	1,103,083	238,799,015	0	0	25,373	25,373	571,857	319,509,629
1997	1,731,237	186,712,246	1,216,389	242,219,811	0	0	24,815	24,815	428,638	323,851,173
1998	1,925,050	168,709,657	1,238,270	220,065,688	0	0	18,164	18,164	465,142	302,819,539
1999	2,167,572	189,514,951	1,251,210	244,349,655	0	0	17,782	17,782	559,471	335,292,699
2000	2,425,319	185,176,177	1,321,674	236,362,764	0	0	17,872	17,872	0	321,454,803
2001	3,387,051	376,058,123	1,618,687	456,352,279	0	0	17,687	17,687	0	557,306,004
2002	4,795,093	265,486,411	1,651,146	334,469,886	0	0	20,996	20,996	0	430,170,752
2003	5,574,111	292,972,531	1,671,222	364,431,467	0	0	20,763	20,763	0	462,958,074
2004	6,045,045	337,372,624	1,900,630	415,801,763	0	0	20,825	20,825	0	515,349,014
2005	6,099,275	309,233,288	1,410,078	403,845,450	0	0	20,822	20,822	0	516,146,670
2006	6,897,932	299,297,520	1,416,088	407,193,260	0	0	21,345	21,345	0	518,220,275
2007	7,813,134	451,991,753	4,724,000	583,603,307	0	0	20,134	20,134	0	714,214,387
2008	10,303,343	485,486,134	5,391,864	662,169,084	0	0	22,129	22,129	0	804,049,392
2009	9,467,960	420,060,533	4,559,301	579,134,641	0	0	20,785	20,785	0	710,490,265
2010	9,456,028	463,942,369	4,579,594	660,622,597	0	0	21,644	21,644	0	795,908,239
2011	9,422,278	464,228,039	4,545,485	661,419,049	0	0	21,643	21,643	0	795,109,630
2012	9,611,892	481,859,721	4,743,704	686,390,326	0	0	21,643	21,643	0	821,022,132
2013	9,488,895	473,333,679	4,652,624	674,218,991	0	0	21,643	21,643	0	809,038,728
2014	9,337,908	454,189,695	4,429,102	648,129,596	0	0	21,642	21,642	0	776,822,400
2015	9,290,880	454,027,523	4,442,683	647,763,116	0	0	21,240	21,240	0	777,488,275
2016	9,519,186	471,181,320	4,615,889	671,942,236	0	0	21,077	21,077	0	804,600,424
2017	9,253,050	449,126,835	4,388,322	641,357,328	0	0	21,080	21,080	0	770,275,220
2018	9,420,807	461,281,265	4,532,369	659,442,877	0	0	21,079	21,079	0	788,500,859
2019	9,505,097	466,858,586	4,582,942	668,054,897	0	0	18,448	18,448	0	800,377,294
2020	9,151,730	437,328,996	4,291,900	627,055,513	0	0	6,527	6,527	0	755,102,539
2021	9,027,166	429,602,452	4,237,664	616,764,572	0	0	5,704	5,704	0	744,592,014
2022	8,880,675	413,334,674	4,060,736	594,645,289	0	0	4,315	4,315	0	720,055,636
2023	8,931,442	416,804,483	4,114,306	598,763,276	0	0	4,314	4,314	0	725,568,546
2024	8,999,684	426,188,377	4,229,125	611,785,144	0	0	4,313	4,313	0	741,382,786
2025	8,934,566	417,050,422	4,140,832	599,712,683	0	0	4,315	4,315	0	725,553,724
2026	9,006,235	426,144,292	4,231,112	611,694,368	0	0	4,305	4,305	0	741,881,458
2027	8,920,863	414,910,666	4,128,829	597,477,240	0	0	4,318	4,318	0	725,132,311
2028	8,872,750	420,777,268	4,186,399	602,929,458	0	0	4,301	4,301	0	730,823,298
2029	8,902,267	412,299,934	4,082,562	593,630,179	0	0	4,305	4,305	0	720,345,584
2030	8,898,038	412,888,788	4,088,956	594,096,042	0	0	4,302	4,302	0	721,632,447
2031	8,785,099	403,025,115	3,994,176	582,052,167	0	0	4,311	4,311	0	707,397,182
2032	8,858,730	411,156,514	4,066,055	590,858,677	0	0	4,292	4,292	0	718,070,219
2033	9,148,401	435,507,078	4,355,968	627,007,953	0	0	4,301	4,301	0	757,384,399
2034	8,851,859	409,887,912	4,072,592	590,592,438	0	0	4,299	4,299	0	717,909,564
2035	9,261,317	436,584,522	4,277,449	630,257,434	0	0	4,289	4,289	0	758,711,498
TOTAL	333,074,125	18,756,715,641	162,401,859	25,647,635,174	0	0	1,076,718	1,076,718	8,723,775	31,309,332,052

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 millions of acre-feet [AF] discounted to 2007 at 4.608 percent per annum)

Procedure	Capital Cost Component		Minimum Operation, Maintenance, Power and Replacement Component (a)		Total Delta Water Rate	
	[1]		[2]		[3]	
Commencing in 2008						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Project Water Entitlements during the Project Repayment Period.	\$5,038.92 (b)	310.63 AF	\$3,472.92 (c)	310.63 AF	\$8,511.84	310.63 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period.	(1,811.27)		(744.74)		(\$2,556.01)	
Less, Delta Water Charges Paid and Project Water Entitlements, Prior to 2008	(2,386.16) (d)	(245.78) AF	(1,760.71)	(245.78) AF	(\$4,146.87)	(245.78) AF
TOTAL	\$841.49	64.85 AF	\$967.47	64.85 AF	\$1,808.96	64.85 AF
Rate Applicable in 2008	\$12.98 per acre-foot		\$14.92 per acre-foot		\$27.89 per acre-foot	

Calculation under original provisions, without the Monterey Amendment

(for Plumas County, and Empire)

Procedure	Capital Cost Component		Minimum Operation, Maintenance, Power and Replacement Component (a)		Total Delta Water Rate	
	[4]		[5]		[6]	
Commencing in 2008						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Project Water Entitlements during the Project Repayment Period.	\$5,026.44 (b)	310.63 AF	\$3,457.32 (c)	310.63 AF	\$8,483.76	310.63 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period.	(1,811.27)		(744.74)		(\$2,556.01)	
Less, Delta Water Charges Paid and Project Water Entitlements, Prior to 2008	(2,386.16) (d)	(245.78) AF	(1,760.71)	(245.78) AF	(\$4,146.87)	(245.78) AF
TOTAL	\$829.01	64.85 AF	\$951.87	64.85 AF	\$1,780.88	64.85 AF
Rate Applicable in 2008	\$12.78 per acre-foot		\$14.68 per acre-foot		\$27.46 per acre-foot	

a) Considering that all operating costs of Project Conservation Facilities will not vary with annual amounts of Project water delivered, and therefore are properly classified as "Minimum" OMP&R Costs. OMP&R costs exclude amounts for Conservation RAS.

b) Including net credits of \$4,850,000 for settlements as to the magnitude of Project Capital costs incurred prior to December 31, 1960, and net credits of \$6,678,320 for settlement as to the magnitude of Project Capital costs incurred during the 1961 through 1978 period.

c) Includes conservation power costs and credits at San Luis.

d) Applying all Delta Water Charges paid prior to 1970 to reimburse Capital costs (the charge was not divided into components until 1970).

TABLE B-20B. DELTA WATER RATES BY FACILITY

(in dollars per acre-foot)

Item	Capital Cost Component	Minimum Operation, Maintenance, Power and Replacement Component	Total Delta Water Rate
	[1]	[2]	[3]
Initial Conservation Facilities			
Oroville Division			
Water Supply and power costs (a)	46.93	26.72	73.65
Less, Oroville Power Revenues	<u>-27.93</u>	<u>-11.44</u>	<u>-39.37</u>
Subtotal	19.00	15.28	34.28
Delta Facilities (b)			
California Aqueduct, portion	13.84	13.72	27.56
Reach 1	2.99	4.86	7.85
Reach 2A	1.78	0.78	2.57
Reach 2B	0.95	0.45	1.40
Reach 3	<u>0.64</u>	<u>0.27</u>	<u>0.91</u>
Subtotal	6.36	6.37	12.73
San Luis Facilities	8.96	6.45	15.42
Planning and preoperating costs through 2006	2.60	0.00	2.60
45,000 AF relinquished costs	0.19	0.24	0.43
Less, Capital Cost Credits	-1.26	0.00	-1.26
Less, Delta Water Charges paid prior to 2008	<u>-36.73</u>	<u>-27.15</u>	<u>-63.87</u>
Rate applicable in 2008	12.97	14.92	27.89

a) Includes revenue received from non-contractors.

b) Includes (1) Delta Facility planning costs, (2) Delta Studies costs, and (3) Suisun Marsh Facilities Costs.

TABLE B-21. Total Delta Water Charge for Each Contractor

(in dollars)

Sheet 1 of 4

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[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	515,037	1,323,518	1,838,555	1,848,004	990,002	2,357,148	5,195,154	589,286	1,072,172	1,661,458
2005	544,123	1,156,941	1,701,064	1,973,748	1,028,262	2,448,242	5,450,252	612,060	1,113,607	1,725,667
2006	559,368	1,173,458	1,732,826	1,999,809	1,041,839	2,480,569	5,522,217	620,142	1,128,312	1,748,454
2007	623,728	1,291,247	1,914,975	2,198,222	1,145,206	2,726,679	6,070,107	681,671	1,240,257	1,921,928
2008	647,090	1,322,240	1,969,330	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2009	656,155	1,323,634	1,979,789	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2010	665,220	1,325,029	1,990,249	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2011	674,285	1,326,423	2,000,708	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2012	683,350	1,327,818	2,011,168	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2013	691,020	1,329,213	2,020,233	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2014	701,479	1,330,607	2,032,086	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2015	720,306	1,332,002	2,052,308	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2016	737,739	1,332,002	2,069,741	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2017	755,171	1,332,002	2,087,173	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2018	772,603	1,332,002	2,104,605	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2019	790,036	1,332,002	2,122,038	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2020	806,771	1,332,002	2,138,773	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2021	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2022	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2023	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2024	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2025	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2026	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2027	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2028	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2029	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2030	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2031	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2032	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2033	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2034	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
2035	809,560	1,332,002	2,141,562	2,248,611	1,171,457	2,789,182	6,209,250	697,296	1,268,687	1,965,983
TOTAL	27,801,761	53,600,232	81,401,993	92,101,300	55,983,409	139,713,900	287,798,609	30,298,429	55,744,912	86,043,341

TABLE B-21. Total Delta Water Charge for Each Contractor

(in dollars)

Sheet 2 of 4

Calendar Year	SAN JOAQUIN VALLEY AREA								
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency		County of Water Kings	Oak Flat District	Tulare Lake Basin Water Storage District	Total
				Municipal and Industrial	Agri-cultural				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	40,695	10,469	0	0	165,522	3,177	8,073	98,608	326,544
1969	61,267	3,281	0	0	337,686	4,200	8,905	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	427,591	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	21,369,565
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	1,351,659	70,317	0	3,508,929	20,084,922	94,286	134,357	2,619,428	27,863,898
2005	1,403,895	73,157	0	3,474,639	20,976,687	220,342	139,550	2,598,245	28,886,515
2006	1,422,433	74,130	0	3,338,845	21,435,340	223,252	141,392	2,386,977	29,022,369
2007	1,563,559	81,479	0	3,670,110	23,562,051	253,717	155,421	2,615,486	31,901,823
2008	1,599,401	83,191	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,946
2009	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2010	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2011	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2012	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2013	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2014	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2015	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2016	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2017	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2018	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2019	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2020	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2021	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2022	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2023	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2024	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2025	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2026	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2027	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2028	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2029	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2030	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2031	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2032	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2033	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2034	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
2035	1,599,401	82,377	0	3,754,239	24,102,160	259,533	158,983	2,675,439	32,632,132
TOTAL	76,549,934	4,235,350	0	176,655,320	1,200,481,512	9,898,391	7,828,261	138,494,667	1,614,143,435

TABLE B-21. Total Delta Water Charge for Each Contractor

(in dollars)

Sheet 3 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[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	174,470	11,889	284,640	117,285	714,457	189,700
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	1,126,006	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	3,333,008	2,244,004	544,501	136,715	898,074	54,215	1,786,717	502,073	2,418,434	678,859
2005	3,461,814	2,330,727	565,544	141,999	932,780	56,310	1,917,073	521,475	2,511,896	705,093
2006	3,507,524	2,361,502	3,003,969	143,873	1,240,285	57,053	1,880,272	528,361	2,545,064	714,404
2007	3,855,524	2,595,798	3,302,008	158,148	1,363,339	62,714	2,066,822	580,783	2,797,573	785,284
2008	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2009	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2010	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2011	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2012	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2013	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2014	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2015	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2016	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2017	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2018	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2019	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2020	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2021	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2022	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2023	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2024	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2025	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2026	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2027	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2028	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2029	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2030	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2031	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2032	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2033	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2034	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
2035	3,943,904	2,655,301	3,377,700	161,773	1,394,591	64,151	2,114,200	594,096	2,861,701	803,284
TOTAL	179,438,391	111,838,188	112,004,557	7,618,447	59,827,469	3,018,491	92,434,166	26,946,841	137,185,772	38,314,123

TABLE B-21. Total Delta Water Charge for Each Contractor

(in dollars)

Sheet 4 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				South Bay Area Future Contractor	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District		City of Yuba City	County of Butte	Plumas County FC&WCD	Total		
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	241,150
1968	0	0	0	13,060	0	1,050	875	1,925	0	583,631
1969	0	0	0	17,804	0	1,225	929	2,154	0	827,578
1970	0	0	0	37,905	0	3,848	1,995	5,843	0	2,160,886
1971	0	0	0	48,508	0	4,546	3,186	7,732	0	2,696,792
1972	0	2,043,211	0	2,926,327	0	4,929	3,778	8,707	0	7,206,052
1973	0	2,317,893	0	2,979,146	0	7,059	4,444	11,503	0	7,456,998
1974	0	4,231,933	0	5,562,447	0	8,336	4,931	13,267	0	10,683,514
1975	0	5,073,286	0	6,533,045	0	9,416	5,117	14,533	0	12,440,851
1976	0	6,422,167	0	8,194,042	0	7,004	5,780	12,784	0	15,299,760
1977	0	7,104,278	0	8,974,576	0	16,917	5,827	22,744	0	15,869,924
1978	0	9,016,389	0	11,302,568	0	12,635	6,844	19,479	0	19,425,531
1979	0	10,935,192	0	13,609,812	0	16,575	7,773	24,348	0	23,095,855
1980	84,294	13,102,796	12,396	16,333,423	0	19,834	8,801	28,635	0	27,557,096
1981	140,930	20,910,099	36,136	25,991,995	0	21,682	13,370	35,052	0	43,335,911
1982	167,929	23,998,560	57,248	29,441,595	0	16,117	14,694	30,811	0	49,027,703
1983	124,148	17,203,307	50,672	21,298,366	0	15,202	10,134	25,336	0	34,186,736
1984	138,982	18,766,458	64,344	22,444,314	20,590	15,442	10,681	46,713	0	37,051,405
1985	166,935	22,050,974	84,882	26,382,073	24,050	16,976	12,166	53,192	0	43,235,458
1986	195,056	25,089,658	120,965	29,997,662	31,753	18,145	13,457	63,355	0	49,817,447
1987	207,598	26,095,043	148,284	31,198,109	37,071	17,794	13,642	68,507	0	51,663,899
1988	233,604	28,781,238	201,116	34,429,224	46,722	18,565	14,852	80,139	0	57,062,086
1989	268,530	32,505,376	265,215	40,190,518	61,184	19,891	16,576	97,651	0	65,617,116
1990	289,119	33,616,369	334,242	41,790,252	63,506	20,055	17,381	100,942	0	68,658,631
1991	306,835	35,676,185	354,722	44,521,184	170,267	21,283	19,155	210,705	0	73,265,317
1992	350,587	40,763,329	405,303	50,869,555	194,545	24,318	22,697	241,560	0	83,873,685
1993	351,415	40,859,579	406,260	50,989,668	195,005	24,376	23,563	242,944	0	84,237,281
1994	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	288,436	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	141,429	47,414,032	471,429	60,623,490	226,287	83,306	0	309,593	0	97,492,148
2005	159,136	49,246,383	489,648	63,039,878	235,031	29,701	0	264,732	0	101,068,108
2006	173,640	47,416,073	496,113	64,068,133	238,135	30,107	49,810	318,052	0	102,412,051
2007	204,501	52,120,469	545,336	70,438,299	268,738	33,950	19,600	322,288	0	112,569,420
2008	334,702	53,315,217	557,836	72,178,456	274,736	794,785	56,138	1,125,659	0	116,081,624
2009	390,486	53,315,217	557,836	72,234,240	267,761	767,025	57,389	1,092,175	0	116,113,569
2010	446,269	53,315,217	557,836	72,290,023	267,761	767,025	59,311	1,094,097	0	116,181,734
2011	482,529	53,315,217	557,836	72,326,283	267,761	767,025	61,508	1,096,294	0	116,230,650
2012	482,529	53,315,217	557,836	72,326,283	267,761	767,025	63,705	1,098,491	0	116,243,307
2013	482,529	53,315,217	557,836	72,326,283	267,761	767,025	66,176	1,100,962	0	116,254,843
2014	482,529	53,315,217	557,836	72,326,283	267,761	767,025	68,647	1,103,433	0	116,269,167
2015	482,529	53,315,217	557,836	72,326,283	267,761	767,025	71,393	1,106,179	0	116,292,135
2016	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,312,314
2017	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,329,746
2018	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,347,178
2019	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,364,611
2020	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,381,346
2021	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2022	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2023	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2024	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2025	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2026	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2027	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2028	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2029	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2030	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2031	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2032	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2033	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2034	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
2035	482,529	53,315,217	557,836	72,326,283	267,761	767,025	74,139	1,108,925	0	116,384,135
TOTAL	18,067,538	2,569,786,836	24,664,187	3,381,145,006	11,371,008	22,521,915	2,642,532	36,535,455	0	5,487,067,839

TABLE B-22. Water System Revenue Bond Surcharge for Each Contractor

(in dollars)

Sheet 1 of 4

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County	Santa Barbara County	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[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	253,413	385,602	639,015	610,756	284,369	793,318	1,688,443	217,970	1,361,594	1,579,564
2006	274,219	417,261	691,480	660,900	307,716	858,451	1,827,067	235,866	1,473,385	1,709,251
2007	370,309	562,856	933,165	905,481	413,428	1,153,347	2,472,256	317,984	2,009,741	2,327,725
2008	425,866	648,010	1,073,876	1,026,385	477,887	1,333,184	2,837,456	366,303	2,288,183	2,654,486
2009	431,355	656,364	1,087,719	1,039,616	484,047	1,350,370	2,874,033	371,025	2,317,680	2,688,705
2010	412,166	627,164	1,039,330	993,367	462,513	1,290,296	2,746,176	354,519	2,214,572	2,569,091
2011	445,988	678,630	1,124,618	1,074,884	500,468	1,396,179	2,971,531	383,612	2,396,303	2,779,915
2012	446,477	679,374	1,125,851	1,076,062	501,016	1,397,710	2,974,788	384,032	2,398,931	2,782,963
2013	471,334	717,197	1,188,531	1,135,970	528,910	1,475,525	3,140,405	405,414	2,532,486	2,937,898
2014	489,263	744,478	1,233,741	1,179,180	549,029	1,531,652	3,259,861	420,834	2,628,819	3,049,653
2015	515,230	783,991	1,299,221	1,241,765	578,168	1,612,943	3,432,876	443,169	2,768,342	3,211,511
2016	520,601	792,162	1,312,763	1,254,708	584,194	1,629,755	3,468,657	447,788	2,797,196	3,244,984
2017	512,752	780,219	1,292,971	1,235,791	575,387	1,605,184	3,416,362	441,037	2,755,024	3,196,061
2018	450,593	685,636	1,136,229	1,085,980	505,634	1,410,593	3,002,207	387,572	2,421,042	2,808,614
2019	486,958	740,970	1,227,928	1,173,625	546,442	1,524,435	3,244,502	418,851	2,616,433	3,035,284
2020	447,346	680,696	1,128,042	1,078,157	501,992	1,400,430	2,980,579	384,780	2,403,600	2,788,380
2021	452,316	688,258	1,140,574	1,090,133	507,568	1,415,987	3,013,688	389,054	2,430,300	2,819,354
2022	436,578	664,311	1,100,889	1,052,203	489,908	1,366,720	2,908,831	375,517	2,345,741	2,721,258
2023	436,195	663,727	1,099,922	1,051,280	489,478	1,365,520	2,906,278	375,188	2,343,681	2,718,869
2024	418,423	636,685	1,055,108	1,008,447	469,535	1,309,884	2,787,866	359,901	2,248,192	2,608,093
2025	375,873	571,941	947,814	905,898	421,788	1,176,682	2,504,368	323,303	2,019,574	2,342,877
2026	336,507	512,040	848,547	811,021	377,613	1,053,445	2,242,079	289,442	1,808,058	2,097,500
2027	375,242	570,980	946,222	904,377	421,080	1,174,707	2,500,164	322,760	2,016,183	2,338,943
2028	274,189	417,215	691,404	660,827	307,682	858,357	1,826,866	235,840	1,473,222	1,709,062
2029	303,851	462,348	766,199	732,315	340,967	951,213	2,024,495	261,353	1,632,594	1,893,947
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
TOTAL	12,768,255	19,563,806	32,332,061	29,000,468	14,610,093	40,817,647	84,428,208	11,193,800	66,873,155	78,066,955

TABLE B-22. Water System Revenue Bond Surcharge for Each Contractor

(in dollars)

Sheet 2 of 4

Calendar Year	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	Total
				Municipal and Industrial	Agri-cultural				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0
1988	33,986	1,657	0	67,288	726,501	2,228	2,851	66,748	901,259
1989	59,273	2,785	0	116,689	1,251,452	3,733	4,927	116,736	1,555,595
1990	53,349	2,419	0	287,811	947,351	3,248	4,367	109,118	1,407,663
1991	82,252	3,731	0	359,380	1,564,983	5,035	6,771	168,217	2,190,369
1992	112,566	5,127	0	452,691	2,153,423	6,927	9,285	230,217	2,970,236
1993	119,670	5,459	0	272,449	2,491,672	7,381	9,894	244,813	3,151,338
1994	118,265	5,379	0	244,671	2,485,820	7,300	9,766	241,933	3,113,134
1995	139,227	6,339	0	317,885	2,894,182	8,598	11,490	284,798	3,662,519
1996	169,333	7,703	0	354,341	2,722,241	10,460	13,978	346,366	3,624,422
1997	165,364	7,980	0	366,285	2,673,847	10,826	14,465	357,986	3,596,753
1998	159,011	7,672	0	352,211	2,571,110	10,410	13,909	344,232	3,458,555
1999	218,784	10,373	0	485,897	3,371,115	14,376	19,166	476,017	4,595,728
2000	251,339	11,735	0	557,296	3,620,348	16,500	21,990	546,406	5,025,614
2001	247,338	11,547	0	548,424	3,461,158	16,238	21,640	537,707	4,844,052
2002	273,542	11,904	0	565,321	3,496,023	16,737	22,306	521,659	4,907,492
2003	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	269,179	11,714	0	556,305	3,431,851	39,485	21,951	488,483	4,818,968
2006	291,279	12,676	0	601,979	3,713,614	42,726	23,753	528,589	5,214,616
2007	391,534	17,008	0	805,870	4,920,671	65,135	31,897	621,158	6,853,272
2008	452,361	19,685	0	934,881	5,767,286	68,714	36,888	741,968	8,021,783
2009	458,192	19,939	0	946,932	5,841,631	69,599	37,364	751,532	8,125,189
2010	437,808	19,052	0	904,806	5,581,753	66,503	35,702	718,099	7,763,723
2011	473,735	20,615	0	979,055	6,039,799	71,961	38,631	777,027	8,400,823
2012	474,255	20,638	0	980,129	6,046,422	72,039	38,674	777,879	8,410,036
2013	500,658	21,787	0	1,034,695	6,383,044	76,050	40,827	821,186	8,878,247
2014	519,702	22,616	0	1,074,054	6,625,846	78,943	42,380	852,423	9,215,964
2015	547,285	23,816	0	1,131,059	6,977,510	83,133	44,629	897,664	9,705,096
2016	552,989	24,064	0	1,142,848	7,050,236	83,999	45,094	907,021	9,806,251
2017	544,652	23,702	0	1,125,617	6,943,942	82,733	44,414	893,346	9,658,406
2018	478,626	20,828	0	989,163	6,102,153	72,703	39,030	785,049	8,487,552
2019	517,254	22,509	0	1,068,993	6,594,630	78,571	42,180	848,406	9,172,543
2020	475,178	20,678	0	982,036	6,058,190	72,180	38,749	779,393	8,426,404
2021	480,456	20,908	0	992,945	6,125,488	72,981	39,179	788,051	8,520,008
2022	463,739	20,180	0	958,397	5,912,359	70,442	37,816	760,632	8,223,565
2023	463,332	20,163	0	957,556	5,907,168	70,380	37,783	759,964	8,216,346
2024	444,455	19,341	0	918,542	5,666,491	67,513	36,244	729,000	7,881,586
2025	399,258	17,374	0	825,135	5,090,267	60,647	32,558	654,869	7,080,108
2026	357,443	15,555	0	738,716	4,557,147	54,296	29,148	586,282	6,338,587
2027	398,588	17,345	0	823,750	5,081,720	60,546	32,503	653,769	7,068,221
2028	291,248	12,674	0	601,913	3,713,206	44,241	23,750	477,708	5,164,740
2029	322,754	14,045	0	667,027	4,114,897	49,027	26,319	529,386	5,723,455
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
TOTAL	13,779,218	605,525	0	29,268,960	183,962,952	1,849,418	1,130,746	23,808,778	254,405,596

TABLE B-22. Water System Revenue Bond Surcharge for Each Contractor

(in dollars)

Sheet 3 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline Lake Arrowhead Water Agency	Desert Water Agency	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[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	959,268	1,148,920	210,078	60,105	346,290	16,457	734,849	136,853	1,189,420	316,297
2006	1,038,026	1,243,248	213,645	65,040	501,286	17,809	795,182	148,089	1,287,074	342,266
2007	1,394,594	1,693,182	1,888,006	87,361	706,294	23,909	1,078,823	199,463	1,729,067	459,893
2008	1,612,066	1,930,779	1,884,805	101,008	778,503	27,657	1,234,926	229,984	1,998,840	531,542
2009	1,632,847	1,955,668	1,909,101	102,310	788,538	28,013	1,250,845	232,949	2,024,607	538,394
2010	1,560,206	1,868,666	1,824,171	97,759	753,458	26,767	1,195,199	222,585	1,934,538	514,443
2011	1,688,238	2,022,011	1,973,865	105,781	815,288	28,963	1,293,278	240,851	2,093,288	556,658
2012	1,690,090	2,024,228	1,976,029	105,897	816,182	28,995	1,294,696	241,115	2,095,584	557,269
2013	1,784,182	2,136,923	2,086,041	111,792	861,622	30,609	1,366,776	254,539	2,212,251	588,294
2014	1,852,050	2,218,209	2,165,391	116,045	894,396	31,774	1,418,766	264,221	2,296,402	610,671
2015	1,950,346	2,335,939	2,280,318	122,204	941,866	33,460	1,494,067	278,244	2,418,282	643,083
2016	1,970,675	2,360,286	2,304,085	123,478	951,683	33,809	1,509,639	281,144	2,443,488	649,785
2017	1,940,964	2,324,701	2,269,347	121,616	937,335	33,299	1,486,879	276,906	2,406,648	639,989
2018	1,705,667	2,042,886	1,994,242	106,873	823,705	29,262	1,306,630	243,337	2,114,899	562,405
2019	1,843,324	2,207,758	2,155,189	115,498	890,183	31,624	1,412,082	262,976	2,285,583	607,794
2020	1,693,379	2,028,168	1,979,875	106,103	817,771	29,052	1,297,216	241,584	2,099,662	558,353
2021	1,712,190	2,050,698	2,001,869	107,282	826,855	29,374	1,311,626	244,268	2,122,986	564,556
2022	1,652,617	1,979,346	1,932,216	103,549	798,086	28,352	1,265,990	235,769	2,049,120	544,913
2023	1,651,166	1,977,609	1,930,520	103,458	797,385	28,327	1,264,879	235,562	2,047,321	544,434
2024	1,583,892	1,897,035	1,851,864	99,243	764,897	27,173	1,213,343	225,964	1,963,906	522,252
2025	1,422,826	1,704,125	1,663,548	89,151	687,115	24,410	1,089,959	202,986	1,764,197	469,145
2026	1,273,809	1,525,647	1,489,320	79,814	615,151	21,853	975,804	181,727	1,579,427	420,010
2027	1,420,437	1,701,264	1,660,755	89,001	685,961	24,369	1,088,129	202,645	1,761,235	468,357
2028	1,037,912	1,243,111	1,213,512	65,033	501,231	17,806	795,094	148,073	1,286,932	342,228
2029	1,150,192	1,377,590	1,344,788	72,068	555,453	19,733	881,107	164,091	1,426,151	379,250
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
TOTAL	49,256,132	55,829,802	47,444,147	3,096,459	22,552,067	849,002	36,479,614	6,962,020	61,274,139	16,277,819

TABLE B-22. Water System Revenue Bond Surcharge for Each Contractor

(in dollars)

Sheet 4 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				South Bay Area Future Contractor	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total		
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	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	69,992	19,770,593	167,960	25,127,082	32,213	9,776	7,983	49,972	0	33,903,044
2006	75,738	20,330,228	181,750	27,239,381	34,858	10,579	8,638	54,075	0	36,735,870
2007	98,338	27,018,517	243,948	36,621,395	46,822	14,431	11,640	72,893	0	49,280,706
2008	117,622	31,573,085	282,260	42,303,077	54,135	16,429	13,415	83,979	0	56,974,657
2009	119,139	31,980,088	285,898	42,848,397	54,833	16,641	13,588	85,062	0	57,709,105
2010	113,839	30,557,375	273,180	40,942,186	52,394	15,901	12,983	81,278	0	55,141,784
2011	123,180	33,064,960	295,597	44,301,958	56,693	17,206	14,049	87,948	0	59,666,793
2012	123,315	33,101,213	295,921	44,350,534	56,755	17,224	14,064	88,043	0	59,732,215
2013	130,181	34,944,059	312,396	46,819,665	59,915	18,183	14,847	92,945	0	63,057,691
2014	135,133	36,273,279	324,279	48,600,616	62,194	18,875	15,412	96,481	0	65,456,316
2015	142,305	38,198,467	341,490	51,180,071	65,495	19,877	16,230	101,602	0	68,930,377
2016	143,788	38,596,608	345,049	51,713,517	66,178	20,084	16,399	102,661	0	69,648,833
2017	141,620	38,014,699	339,847	50,933,850	65,180	19,781	16,152	101,113	0	68,598,763
2018	124,452	33,406,315	298,649	44,759,322	57,278	17,383	14,194	88,855	0	60,282,779
2019	134,496	36,102,387	322,751	48,371,645	61,901	18,786	15,339	96,026	0	65,147,928
2020	123,555	33,165,644	296,497	44,436,859	56,866	17,258	14,091	88,215	0	59,848,479
2021	124,928	33,534,063	299,791	44,930,486	57,497	17,450	14,248	89,195	0	60,513,305
2022	120,581	32,367,285	289,360	43,367,184	55,497	16,842	13,752	86,091	0	58,407,818
2023	120,475	32,338,865	289,106	43,329,107	55,448	16,828	13,740	86,016	0	58,356,538
2024	115,567	31,021,281	277,327	41,563,744	53,189	16,142	13,180	82,511	0	55,978,908
2025	103,815	27,866,735	249,125	37,337,137	47,780	14,501	11,840	74,121	0	50,286,425
2026	92,942	24,948,161	223,034	33,426,699	42,776	12,982	10,600	66,358	0	45,019,770
2027	103,641	27,819,946	248,707	37,274,447	47,700	14,476	11,820	73,996	0	50,201,993
2028	75,730	20,327,996	181,730	27,236,388	34,854	10,578	8,637	54,069	0	36,682,529
2029	83,922	22,527,060	201,389	30,182,794	38,625	11,722	9,571	59,918	0	40,650,808
2030	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0
TOTAL	3,964,987	980,508,509	8,666,457	1,293,161,154	1,646,441	472,341	406,457	2,525,239	0	1,744,919,213

TABLE B-23. Total Transportation and Delta Water Charge for Each Contractor

(in dollars)

Sheet 1 of 4

Calendar Year	NORTH BAY AREA			SOUTH BAY AREA				CENTRAL COASTAL AREA		
	Napa County FC&WCD	Solano County WA	Total	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Total	San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[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	199,673	190,236	447,594	837,503	0	0	0
1964	0	0	0	263,210	277,398	621,174	1,161,782	6,694	21,659	28,353
1965	0	0	0	373,722	404,239	1,157,791	1,935,753	13,751	36,017	49,768
1966	18,057	0	18,057	419,362	421,628	1,412,600	2,253,589	26,516	61,329	87,845
1967	41,560	0	41,560	552,988	548,387	1,862,808	2,964,183	56,451	118,225	174,675
1968	128,588	0	128,588	682,755	633,066	2,178,036	3,493,858	115,927	229,740	345,667
1969	254,662	0	254,662	817,348	583,307	2,298,275	3,698,931	185,118	358,783	543,901
1970	277,493	0	277,493	903,657	640,164	2,787,493	4,331,314	200,110	387,595	587,705
1971	227,419	0	227,419	845,118	675,059	2,806,541	4,326,719	202,373	392,830	595,203
1972	224,922	0	224,922	929,101	822,262	3,027,272	4,778,635	209,016	406,506	615,521
1973	221,035	31,353	252,388	915,534	716,357	3,120,308	4,752,200	206,516	402,639	609,155
1974	240,442	32,924	273,366	956,117	746,798	3,324,543	5,027,459	208,503	407,005	615,508
1975	237,400	36,276	273,676	1,014,488	792,919	3,213,566	5,020,973	225,853	439,787	665,639
1976	271,231	40,819	312,050	1,127,536	943,328	3,362,062	5,432,926	228,933	447,212	676,146
1977	293,565	45,078	338,643	1,096,147	922,067	3,302,979	5,321,193	238,656	468,632	707,288
1978	273,807	49,159	322,966	1,184,926	935,682	3,712,097	5,832,705	245,286	484,166	729,452
1979	289,415	53,320	342,735	1,281,483	1,009,429	3,819,046	6,109,958	283,065	483,342	726,406
1980	310,779	86,049	396,827	1,434,439	1,173,659	4,118,582	6,726,680	282,209	504,456	822,665
1981	347,710	112,817	460,527	1,542,949	1,348,984	4,507,072	7,399,005	307,018	596,566	903,584
1982	438,280	141,798	580,058	1,623,257	1,369,396	4,940,900	7,933,554	328,168	682,443	1,010,611
1983	354,703	163,242	517,946	1,493,523	1,259,998	4,909,747	7,663,269	357,171	701,981	1,059,152
1984	467,232	246,623	713,856	1,803,543	1,478,252	6,869,751	10,151,545	409,482	800,953	1,210,435
1985	735,929	386,187	1,122,116	2,301,360	2,224,952	7,795,980	12,322,293	500,648	969,826	1,470,474
1986	1,119,826	714,023	1,833,849	2,169,969	2,013,959	8,193,339	12,377,267	536,703	1,037,924	1,574,627
1987	1,773,371	1,581,733	3,355,104	2,666,470	2,505,517	7,979,748	13,151,735	570,595	1,148,863	1,719,458
1988	2,349,015	2,524,068	4,873,083	2,727,624	2,774,284	7,829,776	13,331,683	673,020	1,439,487	2,112,507
1989	2,548,170	3,700,620	6,248,790	2,711,573	2,515,323	7,578,335	12,805,231	772,517	1,814,603	2,587,120
1990	2,899,410	3,848,146	6,747,556	3,146,865	2,929,625	8,354,874	14,431,365	933,311	2,046,195	2,979,506
1991	2,940,701	4,169,425	7,110,126	2,418,793	2,384,093	6,430,306	11,233,191	979,649	2,366,642	3,346,291
1992	2,797,105	4,144,190	6,941,295	2,893,258	2,926,955	7,656,397	13,476,611	1,118,743	2,526,627	3,645,370
1993	2,854,875	4,171,687	7,026,562	3,750,031	2,977,192	8,849,446	15,576,669	1,185,596	2,725,769	3,911,365
1994	2,987,314	4,224,485	7,211,799	3,787,121	3,586,091	9,612,990	16,986,202	1,335,886	3,517,570	4,853,456
1995	2,960,697	4,404,411	7,365,108	4,035,758	3,313,187	8,393,269	15,742,214	1,647,663	6,194,235	7,841,898
1996	3,044,394	4,897,402	7,941,796	3,643,595	3,178,232	9,227,992	16,049,819	2,591,704	15,229,003	17,820,707
1997	3,027,378	4,733,999	7,761,378	3,870,103	3,145,383	9,337,451	16,352,937	3,002,323	23,731,435	26,733,758
1998	2,935,963	4,589,685	7,525,648	3,479,579	3,204,051	9,084,660	15,768,290	3,255,725	28,306,095	31,561,820
1999	3,154,559	5,069,227	8,223,785	4,165,943	3,671,220	11,380,701	19,217,864	3,800,049	29,549,061	33,349,110
2000	3,461,794	5,620,799	9,082,593	5,803,844	5,396,181	10,225,806	19,625,832	3,778,476	30,647,074	34,425,551
2001	4,079,183	6,370,601	10,449,784	7,667,034	4,088,807	12,025,877	23,781,718	4,327,018	32,650,491	36,977,509
2002	4,324,740	6,566,774	10,891,514	7,550,821	4,091,399	13,171,992	24,814,211	4,053,158	32,386,138	36,439,296
2003	4,442,833	6,910,184	11,353,017	7,347,772	3,808,299	11,952,818	23,108,889	4,128,951	32,658,510	36,785,461
2004	4,926,552	7,333,795	12,260,347	8,168,970	4,093,562	11,372,392	23,634,924	4,138,558	33,141,471	37,280,029
2005	4,299,878	6,619,218	10,919,097	8,385,783	4,342,890	12,357,453	25,086,126	4,248,459	33,203,934	37,452,392
2006	4,262,519	6,242,759	10,505,279	8,744,176	4,570,410	13,494,146	26,808,732	4,349,104	33,424,022	37,773,126
2007	5,423,867	7,468,625	12,892,492	11,031,241	5,846,776	16,272,281	33,705,297	4,636,368	35,797,141	40,433,509
2008	6,095,705	7,900,673	13,996,378	12,545,795	6,295,611	17,659,416	36,500,822	4,990,956	39,431,740	44,422,695
2009	6,154,767	7,718,232	13,872,999	11,955,163	6,953,859	16,727,878	34,636,901	4,848,836	38,296,528	43,145,364
2010	6,023,380	7,248,048	13,271,428	13,179,593	7,241,189	17,742,391	38,163,174	7,723,778	37,584,828	45,308,605
2011	6,086,698	7,310,041	13,396,739	13,174,613	7,231,707	17,744,886	38,151,205	7,714,306	37,713,262	45,427,568
2012	6,132,786	7,337,898	13,470,684	13,089,111	7,058,115	18,311,903	38,459,129	7,799,406	37,880,376	45,679,782
2013	6,141,235	7,346,489	13,487,724	12,980,857	6,974,492	18,023,341	37,978,690	7,773,313	37,939,953	45,713,265
2014	6,128,984	7,323,990	13,452,974	12,566,562	6,711,489	17,414,700	36,692,751	7,564,685	37,619,898	45,184,582
2015	6,199,137	7,365,429	13,564,566	12,643,025	6,697,703	17,237,338	36,578,066	7,608,822	37,798,733	45,407,555
2016	6,231,079	7,377,996	13,609,076	12,785,117	6,761,261	17,289,503	36,835,881	7,672,763	37,931,403	45,604,166
2017	6,226,139	7,354,568	13,580,708	12,510,555	6,624,849	16,922,581	36,057,985	7,542,356	37,662,646	45,205,002
2018	6,133,040	7,276,441	13,409,481	12,281,154	6,538,015	16,658,538	35,477,706	7,500,141	37,347,459	44,847,600
2019	6,187,079	7,351,681	13,538,760	12,483,867	6,664,902	16,951,565	36,100,334	7,640,510	37,373,314	45,437,824
2020	6,132,508	7,245,160	13,377,669	12,072,924	6,444,818	16,425,089	34,942,831	7,385,309	37,122,239	44,507,548
2021	6,145,654	7,256,005	13,401,660	12,071,526	6,444,848	16,427,487	34,943,862	7,390,961	37,150,990	44,541,951
2022	6,096,033	7,202,519	13,298,553	11,867,427	6,331,412	16,158,361	34,357,200	7,250,601	36,834,026	44,084,627
2023	6,095,542	7,170,236	13,265,778	11,942,349	6,371,215	16,250,769	34,564,334	7,279,558	36,882,783	44,162,341
2024	6,108,733	7,171,740	13,280,472	12,088,606	6,458,970	16,439,399	34,986,976	7,401,673	37,037,260	44,438,934
2025	6,046,928	7,095,801	13,142,729	11,768,506	6,294,936	16,032,766	34,096,207	7,274,547	36,644,720	43,919,267
2026	6,007,845	7,034,793	13,042,639	11,918,544	6,380,496	16,214,498	34,513,538	7,333,289	36,597,068	43,930,357
2027	6,031,258	7,081,068	13,112,326	11,856,795	6,338,369	16,138,009	34,333,174	7,283,244	36,654,955	43,938,199
2028	5,929,877	6,923,851	12,853,729	11,605,155	6,218,901	15,805,979	33,630,036	7,214,064	36,135,759	43,349,823
2029	5,943,690	6,955,088	12,898,778	11,620,622	6,222,987	15,829,172	33,672,781	7,183,024	36,190,895	43,373,919
2030	5,634,964	6,482,014	12,116,978	10,942,612	6,912,762	14,947,433	31,802,807	6,954,833	34,612,811	41,567,644
2031	5,608,562	6,454,024	12,062,586	10,801,456	5,834,192	14,766,531	31,402,178	6,877,643	34,463,635	41,341,278
2032	5,611,476	6,444,193	12,055,669	10,930,986	5,908,333	14,932,879	31,772,199	6,963,272	34,618,347	41,581,619
2033	5,632,730	6,444,081	12,076,811	11,143,640	6,032,078	15,213,119	32,388,837	7,152,468	34,968,892	42,121,360
2034	5,520,329	6,333,703	11,854,032	10,950,504	5,921,407	14,960,040	31,831,950	7,000,044	34,689,348	41,689,392
2035	5,349,227	6,166,158	11,515,385	10,942,255	5,907,671	14,937,004	31,786,931	6,960,469	34,612,001	41,572,469
TOTAL	245,903,741	305,703,425	551,607,166	470,659,627	275,501,378	757,116,979	1,503,277,984	262,143,907	1,425,139,847	1,687,283,754

TABLE B-23. Total Transportation and Delta Water Charge for Each Contractor

(in dollars)

Sheet 2 of 4

SAN JOAQUIN VALLEY AREA									
Calendar Year	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	Total
				Municipal and Industrial	Agri-cultural				
	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	2,724	0	0	0	0	0	2,724
1965	0	0	6,027	73,544	0	0	0	0	79,571
1966	0	0	12,035	137,284	0	0	0	0	149,319
1967	0	0	26,249	267,525	0	0	0	0	293,774
1968	224,824	19,353	54,573	445,315	1,707,643	16,944	19,627	307,112	2,795,390
1969	241,001	10,851	87,557	524,952	2,725,123	16,821	19,360	458,028	4,083,694
1970	306,110	34,287	94,656	573,846	3,874,146	21,431	30,380	520,703	5,455,559
1971	327,508	37,015	95,676	605,729	5,193,706	27,171	34,661	711,919	7,033,385
1972	381,163	40,276	98,769	631,452	7,158,736	26,469	63,775	1,983,128	10,383,769
1973	398,472	38,898	97,531	1,025,724	7,287,432	28,813	39,243	781,185	9,697,297
1974	506,734	40,112	98,440	1,144,626	7,997,141	29,540	42,538	1,041,027	10,900,159
1975	679,145	40,561	106,683	1,197,000	9,376,150	31,236	48,154	1,553,884	13,032,813
1976	718,846	43,082	108,064	1,323,673	10,619,809	32,663	52,086	1,440,286	14,338,509
1977	579,120	38,999	112,534	1,367,237	10,932,830	34,430	54,194	1,136,296	14,255,639
1978	697,626	36,029	115,500	1,565,716	13,264,357	38,924	59,009	1,170,167	16,947,327
1979	780,835	47,835	114,232	1,668,783	15,339,308	43,061	70,600	1,723,946	19,788,600
1980	961,746	49,570	125,929	1,770,094	16,977,668	48,017	94,902	1,670,176	21,698,102
1981	1,210,685	83,936	134,147	2,430,626	22,578,148	66,491	100,610	2,281,121	28,885,765
1982	1,246,801	70,130	135,036	2,523,485	24,972,095	70,658	108,255	2,275,713	31,402,173
1983	1,181,036	52,480	149,180	2,084,871	24,616,601	75,438	87,411	506,482	28,753,498
1984	1,490,485	28,462	164,483	3,396,201	33,342,832	94,317	121,393	1,539,532	40,177,705
1985	1,766,253	129,892	184,883	3,891,023	39,310,863	117,579	139,472	2,814,620	48,354,585
1986	2,008,057	79,269	180,423	4,079,656	43,411,053	136,711	153,127	3,651,199	53,699,494
1987	1,883,226	95,187	179,850	4,570,657	42,679,918	137,328	151,366	3,744,000	53,441,531
1988	1,968,168	109,565	193,712	4,734,317	44,615,044	138,274	146,524	3,898,382	55,803,986
1989	2,122,786	101,692	187,891	4,677,170	46,805,789	137,082	166,348	4,379,678	58,578,436
1990	1,882,899	86,896	221,368	4,827,700	45,581,038	121,149	148,651	3,957,454	56,827,155
1991	1,687,705	80,185	220,258	4,535,666	37,456,693	103,904	134,661	3,498,464	47,717,537
1992	2,233,312	105,004	241,431	5,549,954	48,653,789	143,779	175,644	4,537,294	61,640,207
1993	2,455,467	120,007	264,933	5,805,843	54,554,956	161,518	195,209	5,291,148	68,849,081
1994	2,260,290	107,512	306,333	5,210,088	52,025,496	145,620	178,021	4,663,848	64,897,209
1995	2,856,751	115,429	304,270	6,621,268	60,485,652	180,796	210,354	5,522,682	76,297,203
1996	2,078,857	125,119	389,175	6,670,890	58,895,698	178,468	189,966	7,088,447	75,616,620
1997	2,790,434	100,524	276,653	6,521,730	57,763,876	138,112	212,166	4,710,578	72,514,072
1998	2,645,204	119,846	381,852	5,812,613	54,355,675	143,432	203,924	4,964,999	68,627,545
1999	2,697,151	134,244	366,550	6,357,458	57,224,980	181,841	215,898	7,274,116	74,452,238
2000	2,622,875	120,598	303,252	6,363,810	51,445,322	174,153	213,152	6,167,454	71,617,454
2001	3,296,821	145,444	327,961	5,935,892	58,704,888	192,128	258,997	6,431,176	75,293,306
2002	3,019,377	127,704	321,473	6,818,953	53,382,486	187,564	239,902	5,754,240	69,847,698
2003	3,070,047	131,351	339,996	7,126,941	55,999,814	202,248	237,788	6,081,025	73,165,210
2004	3,113,935	160,494	343,920	7,821,350	54,582,599	344,987	239,252	5,546,551	72,153,088
2005	3,753,474	173,531	345,297	7,278,256	66,282,640	683,711	243,024	6,552,339	85,312,271
2006	3,773,602	165,805	386,957	7,373,396	65,067,421	540,175	246,113	5,833,345	83,886,814
2007	4,246,116	223,893	388,674	10,784,727	73,954,301	680,467	307,801	7,368,921	97,954,899
2008	4,515,567	216,483	413,622	11,992,539	78,715,463	715,122	338,463	7,396,135	104,303,394
2009	4,221,408	200,263	421,751	10,904,205	73,605,158	667,317	317,302	6,904,971	97,242,375
2010	4,075,599	192,995	388,361	10,696,667	72,443,906	648,995	316,692	6,673,509	95,436,724
2011	4,048,886	191,268	390,052	10,618,428	71,944,514	644,382	313,533	6,627,324	94,778,387
2012	4,054,256	191,545	390,169	10,708,997	72,174,018	645,378	312,109	6,636,267	95,112,738
2013	4,138,128	195,698	390,388	10,849,691	73,261,681	658,641	321,226	6,775,639	96,591,092
2014	3,971,977	186,836	387,730	10,399,945	70,558,676	631,303	306,025	6,497,032	92,939,524
2015	4,063,795	191,394	384,634	10,531,985	71,880,025	645,920	314,681	6,649,675	94,662,109
2016	4,188,229	197,857	378,282	10,816,750	73,866,996	666,091	325,813	6,857,732	97,297,750
2017	4,067,637	191,622	364,206	10,345,203	71,924,754	646,539	315,254	6,656,241	94,511,455
2018	4,010,878	189,229	341,706	10,191,090	71,414,570	628,687	309,156	6,563,370	93,648,687
2019	4,171,781	197,311	332,885	10,533,655	73,852,550	653,769	323,368	6,831,372	96,896,691
2020	4,014,768	189,465	331,329	10,073,954	71,363,657	628,180	310,601	6,570,040	93,481,994
2021	4,010,375	189,189	330,366	10,045,681	71,301,532	627,257	309,916	6,562,501	93,376,817
2022	3,927,751	185,012	329,655	9,810,454	69,974,546	613,789	303,094	6,424,821	91,569,122
2023	3,981,462	187,829	328,989	9,944,790	70,810,290	622,487	308,224	6,514,775	92,688,846
2024	4,043,696	191,249	328,564	10,127,364	71,911,670	632,902	313,630	6,619,451	94,168,527
2025	3,860,003	182,034	328,293	9,697,357	69,221,388	603,475	296,486	6,313,580	90,502,616
2026	3,984,846	188,939	327,505	10,003,829	71,209,239	624,165	309,472	6,523,895	93,171,890
2027	3,937,252	186,078	327,763	9,873,636	70,381,944	615,874	304,253	6,442,732	92,069,532
2028	3,843,338	182,118	324,398	9,672,281	69,189,653	601,682	294,141	6,289,339	90,396,951
2029	3,835,419	181,424	324,466	9,636,023	68,974,491	599,944	295,884	6,274,995	90,122,645
2030	3,542,501	168,942	323,918	9,030,502	65,303,877	555,726	272,545	5,795,591	84,993,601
2031	3,469,298	165,103	323,210	8,842,979	64,201,333	543,357	265,423	5,672,887	83,483,589
2032	3,531,852	168,366	322,042	8,984,357	65,137,158	553,628	271,454	5,777,814	84,746,690
2033	3,607,533	172,342	322,288	9,277,169	66,608,239	566,013	276,172	5,904,307	86,734,063
2034	3,534,331	168,511	321,706	9,003,205	65,251,945	553,799	271,058	5,781,824	84,886,380
2035	3,596,821	171,785	320,399	9,276,046	66,433,408	563,612	275,359	5,886,486	86,523,916
TOTAL	182,414,331	8,791,974	18,395,811	446,012,821	3,414,120,397	23,231,483	14,143,892	321,236,970	4,428,347,679

TABLE B-23. Total Transportation and Delta Water Charge for Each Contractor

(in dollars)

Sheet 3 of 4

Calendar East Year	SOUTHERN CALIFORNIA AREA									
	Antelope Valley - Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline - Lake Arrowhead Water Agency	Desert Water Irrigation Agency	Littlerock Creek District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District
	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,772	0	0	0	0	0	0	0	51,711	0
1964	63,539	27,438	16,286	4,368	37,145	1,142	28,427	8,202	82,782	34,973
1965	119,810	52,989	28,459	7,191	40,756	2,081	50,300	15,217	135,023	35,333
1966	217,978	101,232	51,184	12,474	73,129	3,752	90,369	27,670	232,426	61,445
1967	421,745	210,746	98,904	23,464	141,365	7,282	175,119	54,006	433,210	115,536
1968	743,770	491,125	176,688	41,496	251,125	12,866	311,067	95,438	781,930	208,864
1969	1,072,210	742,017	264,900	61,208	370,850	18,688	458,910	138,023	1,205,471	321,659
1970	1,395,411	941,968	371,728	89,673	519,163	25,223	632,956	184,783	1,777,649	467,431
1971	1,727,337	1,136,345	503,422	128,321	712,537	31,827	857,103	231,214	2,537,458	659,218
1972	2,207,351	1,381,340	682,096	185,824	989,700	43,760	1,179,191	287,548	3,757,581	950,069
1973	2,359,904	1,429,757	829,097	190,946	1,216,863	46,049	1,269,933	313,372	4,025,516	960,784
1974	2,480,655	1,525,228	853,731	204,028	1,256,738	48,922	1,328,767	331,627	4,462,696	1,104,245
1975	2,698,360	1,616,202	900,445	219,242	1,332,005	53,231	1,414,750	355,193	4,637,837	1,207,793
1976	3,162,808	1,652,868	958,179	232,081	1,424,703	57,721	1,491,032	381,199	4,837,349	1,278,480
1977	3,144,576	1,740,709	859,286	245,063	1,267,009	54,199	1,578,375	406,543	5,093,211	1,336,049
1978	3,592,565	1,873,739	1,058,836	255,418	1,567,751	56,795	1,625,576	419,949	5,090,895	1,373,766
1979	4,266,157	1,953,509	1,144,724	267,741	1,689,966	60,273	1,800,865	449,679	5,135,792	1,341,866
1980	4,950,456	2,091,846	1,254,546	295,300	1,890,349	67,594	1,972,835	498,972	5,646,551	1,484,871
1981	5,778,188	2,561,144	1,413,847	328,765	2,140,325	100,740	2,290,865	603,182	6,460,754	1,688,045
1982	5,537,026	2,724,153	1,499,972	346,669	2,284,051	82,284	2,265,557	641,909	6,751,715	1,923,385
1983	6,287,405	2,794,700	2,021,337	380,786	3,118,525	88,372	2,461,066	658,528	6,963,597	1,808,463
1984	7,662,769	3,873,401	3,123,607	497,530	4,874,874	96,480	2,726,426	727,732	8,052,068	2,597,938
1985	9,493,745	4,339,438	3,957,883	601,871	6,209,843	103,693	2,916,333	959,565	8,892,175	2,686,498
1986	9,461,919	4,974,837	4,418,531	647,576	6,954,134	130,208	3,099,813	1,223,753	9,141,638	3,398,233
1987	9,496,029	4,832,291	4,286,505	678,027	6,830,144	240,859	3,154,204	1,254,957	10,543,136	3,398,610
1988	9,094,367	5,019,010	4,343,583	704,352	6,996,687	158,832	3,328,313	1,044,110	11,093,980	3,270,823
1989	10,984,769	5,028,315	4,050,973	691,132	6,579,291	210,621	3,409,070	1,746,666	10,810,769	3,453,364
1990	12,376,227	5,496,317	4,745,014	729,168	7,663,400	331,158	3,639,895	1,953,805	11,721,704	4,220,945
1991	9,235,841	4,610,075	3,298,997	688,804	5,277,044	221,152	4,499,324	1,639,984	11,103,608	3,642,283
1992	11,791,946	5,798,757	3,452,415	612,831	5,529,109	174,984	5,477,412	1,532,224	11,142,805	3,693,763
1993	12,205,052	5,445,415	3,656,000	617,132	5,863,795	211,890	5,368,250	1,753,869	12,105,846	4,041,979
1994	14,273,855	6,011,870	3,681,573	694,352	5,904,427	277,998	6,319,108	2,090,620	12,730,316	4,776,392
1995	14,140,141	6,387,515	4,503,309	661,742	7,259,099	212,229	5,511,533	1,952,389	12,203,021	4,480,563
1996	14,566,548	6,618,652	7,455,778	710,580	12,127,573	208,342	5,609,154	2,300,101	12,729,472	4,598,694
1997	15,136,098	6,512,304	7,071,320	750,347	8,455,419	207,872	6,031,129	2,342,092	14,397,503	4,897,093
1998	13,675,652	6,145,906	6,170,181	717,194	6,979,423	209,228	7,635,744	1,950,284	14,303,588	4,179,810
1999	15,393,564	6,645,774	5,163,636	823,195	7,122,924	213,822	8,243,319	2,351,000	15,720,890	5,115,031
2000	14,790,420	10,254,636	3,644,461	793,259	5,564,450	186,799	8,190,188	2,080,019	15,496,695	4,250,963
2001	24,923,520	15,908,832	4,696,893	997,528	7,573,227	199,053	8,881,206	4,004,220	21,459,187	4,399,390
2002	16,380,482	13,176,227	3,965,191	963,162	6,366,369	182,322	8,057,882	3,406,786	22,404,823	5,828,435
2003	17,722,474	14,086,810	4,079,902	932,602	6,554,449	187,286	9,715,361	2,936,036	20,143,543	5,989,930
2004	18,410,141	15,223,011	4,657,807	1,024,250	6,516,408	195,689	9,768,249	3,141,357	24,194,082	5,370,803
2005	19,756,338	14,659,113	17,902,088	794,007	11,734,508	190,934	9,847,216	3,351,433	21,390,029	5,740,390
2006	20,283,908	14,341,683	30,743,068	843,508	11,522,320	197,372	12,685,257	3,135,198	22,789,201	5,674,177
2007	24,515,087	17,506,400	32,138,260	1,541,323	12,445,314	369,583	11,536,307	4,997,207	34,070,349	6,783,176
2008	27,680,781	20,940,421	48,658,691	1,745,385	18,638,036	719,019	16,121,076	6,568,512	37,601,318	10,615,315
2009	25,168,644	19,017,738	44,974,551	1,589,990	16,562,097	630,336	16,583,128	5,730,097	33,868,029	9,356,211
2010	38,670,108	24,189,592	48,426,345	2,039,383	17,021,919	639,943	25,106,776	5,827,630	38,926,882	9,764,521
2011	38,482,876	24,200,559	49,988,700	2,040,019	17,187,344	637,074	25,016,104	5,798,432	38,912,862	9,748,198
2012	39,944,755	24,967,863	51,444,659	2,106,710	17,767,230	660,862	25,978,660	6,018,637	40,020,580	10,065,840
2013	39,397,625	24,740,275	50,953,081	2,068,124	17,533,657	652,622	25,613,823	5,940,618	39,351,299	9,896,398
2014	38,130,082	23,883,085	49,500,055	2,026,840	16,997,139	631,441	24,802,637	5,744,820	38,634,845	9,660,572
2015	38,310,919	24,077,831	49,686,878	2,013,844	17,034,697	634,450	24,937,025	5,772,168	38,380,653	9,622,074
2016	39,618,781	24,805,619	50,851,539	2,101,407	17,563,435	655,653	25,788,364	5,970,180	39,868,132	10,001,502
2017	37,975,360	23,859,253	49,404,056	2,004,997	16,895,630	628,688	24,769,944	5,725,144	38,179,282	9,555,151
2018	38,978,808	24,102,159	50,099,422	2,052,802	17,239,477	644,512	25,461,253	5,879,750	38,893,071	9,757,788
2019	39,801,178	24,456,640	50,902,667	2,094,781	17,546,819	657,521	25,879,536	6,002,653	39,606,062	9,943,126
2020	37,732,712	23,095,021	48,292,368	1,969,571	16,549,311	622,473	24,615,299	5,686,792	37,225,664	9,315,539
2021	37,561,073	22,886,033	47,860,246	1,925,647	16,354,650	618,518	24,448,305	5,656,689	36,402,898	9,125,636
2022	36,530,133	22,080,320	46,403,885	1,878,279	15,849,126	601,437	23,742,623	5,501,249	35,481,524	8,861,286
2023	36,843,700	22,308,872	45,715,408	1,904,148	15,829,048	606,348	23,932,900	5,547,972	35,833,623	8,942,390
2024	37,606,912	22,697,969	46,421,241	1,918,010	16,098,637	618,699	24,348,308	5,663,482	36,075,013	9,039,957
2025	36,912,001	22,124,423	45,493,828	1,885,491	15,792,223	607,220	23,923,801	5,560,041	35,497,682	8,878,317
2026	37,228,031	22,349,618	46,007,826	1,909,430	15,917,112	612,184	24,069,042	5,608,791	35,799,253	8,944,705
2027	37,077,634	22,091,409	45,335,386	1,883,682	15,773,872	609,863	23,985,266	5,585,018	35,390,236	8,857,369
2028	36,542,316	21,857,544	44,977,314	1,842,879	15,541,758	600,787	23,601,659	5,507,473	34,588,407	8,654,537
2029	36,435,966	21,568,105	44,894,713	1,865,020	15,539,770	599,137	23,543,914	5,490,671	35,016,841	8,732,403
2030	35,234,328	20,223,533	43,521,382	1,792,345	14,968,085	578,551	22,636,079	5,319,075	33,571,757	8,345,827
2031	35,013,581	19,809,602	43,482,955	1,744,262	14,859,035	574,930	22,533,780	5,286,357	32,744,174	8,169,801
2032	35,023,731	20,103,824	43,051,920	1,776,174	14,836,817	575,064	22,482,605	5,288,218	33,328,029	8,281,698
2033	37,394,336	21,249,300	45,604,694	1,873,868	15,801,399	613,587	24,043,843	5,646,776	34,969,458	8,769,943
2034	35,301,970	20,122,660	43,505,153	1,768,344	14,955,256	579,547	22,708,185	5,333,786	33,198,430	8,277,845
2035	37,971,314	20,810,152	46,068,883	1,924,290	15,971,163	622,855	24,248,378	5,737,854	35,802,805	8,947,152
TOTAL	1,426,601,573	858,564,660	1,511,742,487	75,981,249	659,853,030	23,214,544	843,856,066	219,376,543	1,461,910,394	382,990,648

TABLE B-23. Total Transportation and Delta Water Charge for Each Contractor

(in dollars)

Sheet 4 of 4

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA				South Bay Area Future Contractor	GRAND TOTAL
	San Geronio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Flood Control District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total		
	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]
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	690,539	0	776,021	0	0	0	0	12,626	1,626,150
1964	21,728	1,260,042	9,374	1,595,448	0	0	0	0	13,938	2,802,244
1965	21,859	2,179,810	17,760	2,706,589	0	0	405	405	28,937	4,801,023
1966	37,952	3,898,819	33,415	4,841,844	0	0	564	564	31,321	7,382,540
1967	71,260	7,691,085	68,133	9,511,856	0	0	562	562	47,718	13,034,327
1968	128,877	15,313,065	142,760	18,699,072	0	1,050	1,439	2,489	46,945	25,512,010
1969	198,704	23,145,744	215,144	28,213,527	0	1,225	4,119	5,344	52,963	36,853,021
1970	289,546	30,607,434	273,523	37,576,489	0	3,848	17,111	20,959	69,744	48,319,262
1971	409,205	39,946,463	342,325	49,222,775	0	4,546	19,182	23,728	55,532	61,484,760
1972	537,044	54,976,817	422,192	67,600,514	0	4,929	21,145	26,074	80,412	83,709,847
1973	587,814	59,575,172	435,541	73,240,748	0	7,059	21,772	28,831	54,219	88,634,837
1974	611,275	65,991,774	455,447	80,655,131	0	8,336	22,403	30,739	76,783	97,579,145
1975	644,464	71,813,105	478,284	87,370,910	0	9,416	23,517	32,933	84,547	106,481,492
1976	668,153	74,889,946	475,466	91,509,985	0	7,004	23,251	30,255	106,717	112,406,588
1977	696,350	73,320,946	506,941	90,249,257	0	16,917	24,054	40,971	98,618	111,011,608
1978	708,874	81,933,455	523,053	100,080,671	0	12,635	24,219	36,854	100,786	124,050,761
1979	712,699	83,583,809	526,278	102,933,358	0	16,575	28,346	44,921	119,352	130,065,329
1980	862,108	93,010,922	583,496	114,609,844	0	19,834	26,556	46,390	178,812	144,479,319
1981	946,788	112,152,065	672,397	137,137,105	0	21,682	34,558	56,240	185,347	175,027,572
1982	1,021,156	117,123,823	727,476	142,934,975	0	16,117	43,111	59,228	173,894	184,094,493
1983	1,076,102	118,970,809	854,111	147,483,801	0	15,202	29,405	44,607	220,926	185,743,199
1984	1,211,437	156,252,901	933,156	192,630,320	20,590	15,442	31,790	67,822	225,959	245,177,642
1985	1,287,602	195,472,350	993,495	237,914,492	24,050	16,976	32,399	73,425	340,322	301,597,707
1986	1,344,580	218,310,580	1,058,119	264,163,922	31,753	18,145	33,591	83,489	279,227	334,011,874
1987	1,379,421	220,838,227	1,056,160	251,988,570	37,071	17,794	33,378	88,243	345,116	324,089,758
1988	1,465,634	221,645,738	1,123,943	269,289,370	48,058	19,117	33,600	100,775	365,207	345,876,611
1989	1,505,285	230,306,788	1,232,220	280,009,263	61,184	20,809	37,183	119,176	422,329	360,770,345
1990	1,624,564	277,172,964	1,855,829	333,530,990	66,041	20,855	36,807	123,703	474,284	415,114,558
1991	1,720,675	221,864,964	1,549,791	269,352,542	180,212	22,526	42,194	244,932	214,683	339,219,303
1992	1,779,694	245,343,167	1,503,314	297,832,420	208,216	26,028	43,511	277,755	443,676	384,257,333
1993	1,943,123	219,215,370	1,551,085	273,978,806	209,613	26,203	47,582	283,398	599,571	370,225,451
1994	1,919,993	257,342,564	1,474,900	317,497,968	201,284	25,161	46,074	272,519	609,966	412,329,119
1995	1,982,578	225,839,767	1,568,231	286,702,116	216,944	27,118	50,016	294,078	534,971	394,777,588
1996	1,651,010	235,386,436	1,622,470	305,584,810	217,250	27,156	56,618	301,024	571,857	423,886,634
1997	1,759,496	245,429,286	1,777,095	314,767,053	236,300	29,847	59,910	326,057	428,638	438,883,893
1998	1,952,224	227,227,917	1,797,418	292,944,569	128,021	29,927	54,386	212,334	465,142	417,105,349
1999	2,268,269	254,392,032	1,866,824	325,340,280	254,675	31,834	58,367	344,876	559,471	461,487,624
2000	2,567,277	253,151,553	1,968,875	322,944,584	282,163	79,001	61,576	402,740	453,891,915	453,891,915
2001	3,551,861	443,728,757	2,263,314	542,586,987	261,699	93,471	62,743	417,913	0	689,507,217
2002	4,963,456	334,475,909	2,308,016	422,476,959	266,107	95,018	68,293	429,418	0	564,899,098
2003	5,767,163	361,782,310	2,324,907	452,201,773	262,547	93,638	68,652	425,137	0	597,043,489
2004	6,260,612	405,728,399	2,549,969	503,040,787	260,408	93,662	29,281	383,351	0	648,752,525
2005	6,328,403	378,250,264	2,067,686	492,012,410	267,244	39,477	28,805	335,526	0	651,117,822
2006	7,147,310	367,043,821	2,093,951	498,500,774	272,993	40,686	79,793	393,472	0	657,368,196
2007	8,115,973	531,130,739	5,513,284	690,663,001	315,560	48,381	51,374	415,315	0	876,064,513
2008	10,755,667	570,374,436	6,231,960	776,650,617	328,871	811,214	91,682	1,231,767	0	977,105,673
2009	9,977,585	505,355,838	5,403,035	694,217,278	322,594	785,900	91,762	1,198,022	0	884,312,936
2010	10,016,136	547,814,961	5,410,610	773,854,806	320,155	782,926	93,938	1,197,019	0	967,231,757
2011	10,027,987	550,608,216	5,398,918	778,047,290	324,454	784,231	97,200	1,205,885	0	971,007,073
2012	10,217,736	568,276,151	5,597,461	803,067,143	324,516	784,249	99,412	1,208,177	0	996,997,654
2013	10,101,605	561,592,955	5,522,856	793,364,939	327,676	785,208	102,666	1,215,550	0	988,351,262
2014	9,955,570	543,778,191	5,311,217	769,056,495	329,955	785,900	105,701	1,221,556	0	958,547,883
2015	9,915,714	545,541,207	5,342,009	771,269,470	333,256	786,902	108,863	1,229,021	0	962,710,787
2016	10,145,503	563,093,145	5,518,774	795,982,036	333,939	787,109	111,615	1,232,663	0	990,561,571
2017	9,877,199	540,456,751	5,286,005	764,617,461	332,941	786,806	111,371	1,231,118	0	955,203,729
2018	10,027,788	548,002,797	5,388,854	776,528,482	325,039	784,408	109,412	1,218,859	0	965,130,816
2019	10,122,122	556,276,190	5,463,529	788,752,825	329,662	785,811	107,926	1,223,399	0	981,889,833
2020	9,757,814	523,809,857	5,146,233	743,818,655	324,627	784,283	94,757	1,203,667	0	931,332,364
2021	9,634,623	516,451,732	5,095,291	734,021,341	325,258	784,475	94,091	1,203,824	0	921,489,454
2022	9,483,785	499,017,176	4,907,932	710,338,756	323,258	783,867	92,206	1,199,331	0	894,847,589
2023	9,534,446	502,458,565	4,961,248	714,418,666	323,209	783,853	92,193	1,199,255	0	900,309,219
2024	9,597,780	510,524,875	5,064,288	725,675,171	320,950	783,167	91,632	1,195,749	0	913,745,829
2025	9,520,910	498,232,374	4,947,793	709,376,103	315,541	781,526	90,294	1,187,361	0	892,224,284
2026	9,581,706	504,407,670	5,011,982	717,447,350	310,537	780,007	89,044	1,179,588	0	903,285,363
2027	9,507,033	496,045,829	4,935,372	707,077,970	315,461	781,501	90,277	1,187,239	0	891,718,439
2028	9,431,009	494,420,481	4,925,965	702,492,129	302,615	777,603	87,077	1,167,295	0	883,889,962
2029	9,468,718	488,142,211	4,841,787	696,139,256	306,386	778,747	88,015	1,173,148	0	877,380,527
2030	9,380,567	466,204,005	4,646,792	666,422,325	267,761	767,025	78,441	1,113,227	0	838,016,582
2031	9,267,628	456,340,332	4,552,012	654,378,450	267,761	767,025	78,450	1,113,236	0	823,781,317
2032	9,341,259	464,471,731	4,623,891	663,184,960	267,761	767,025	78,431	1,113,217	0	834,454,354
2033	9,630,930	488,822,295	4,913,804	699,334,236	267,761	767,025	78,440	1,113,226	0	873,768,534
2034	9,334,388	463,203,129	4,630,428	662,918,721	267,761	767,025	78,438	1,113,224	0	834,293,699
2035	9,743,846	489,899,739	4,835,285	702,583,717	267,761	767,025	78,428	1,113,214	0	875,095,633
TOTAL	355,106,650	22,307,010,986	195,732,502	30,321,941,334	13,017,449	22,994,256	4,125,707	40,137,411	8,723,775	38,541,319,104

TABLE B-24. Equivalent Unit Charge for Water Supply for Each Contractor^(a)

(in dollars per acre-foot)

Project Service Area and Water Supply Contractor	Transportation Charge					Delta Water Charge	Water System Revenue Bond Surcharge	Total Equivalent Unit Charge
	Capital Cost Component	Minimum OMP&R Component	Off-Aqueduct Component	Variable OMP&R Component	Total			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
FEATHER RIVER AREA								
City of Yuba City	0.00	0.00	0.00	0.00	0.00	61.78	8.44	70.23
County of Butte	0.00	0.00	0.00	0.00	0.00	35.99	0.96	36.95
Plumas County Flood Control and Water Conservation District	26.28	3.55	0.00	0.00	29.82	32.92	4.72	67.46
Feather River Area	3.03	0.41	0.00	0.00	3.44	42.38	3.35	49.17
NORTH BAY AREA								
Napa County Flood Control and Water Conservation District	139.44	44.77	4.35	17.07	205.62	21.25	10.95	237.82
Solano County Water Agency	86.40	35.93	4.53	11.14	137.99	28.05	10.29	176.33
North Bay Area	106.49	39.27	4.46	13.38	163.61	25.47	10.54	199.62
SOUTH BAY AREA								
Alameda County Flood Control and Water Conservation District, Zone 7	39.46	35.78	7.93	24.63	107.80	26.78	7.07	141.64
Alameda County Water District	26.92	27.01	7.08	18.16	79.16	22.31	4.29	105.77
Santa Clara Valley Water District	23.14	19.85	6.35	13.11	62.45	15.73	3.06	81.24
South Bay Area	26.76	23.96	6.76	16.06	73.54	18.85	4.00	96.39
SAN JOAQUIN VALLEY AREA								
County of Kings	5.09	5.55	3.47	9.81	23.92	21.09	3.33	48.34
Dudley Ridge Water District	5.10	4.94	3.19	5.99	19.22	16.43	2.15	37.81
Empire West Side Irrigation District	1.99	4.15	2.46	5.49	14.08	17.71	1.65	33.44
Kern County Water Agency	9.15	9.52	4.90	8.27	31.84	19.32	2.29	53.44
Oak Flat Water District	2.00	2.33	1.97	3.72	10.01	16.25	1.64	27.90
Tulare Lake Basin Water Storage District	5.17	4.80	3.12	5.70	18.80	16.75	2.07	37.62
San Joaquin Valley Area	8.44	8.72	4.59	5.75	27.50	16.89	2.09	46.48
CENTRAL COASTAL AREA								
San Luis Obispo County Flood Control and Water Conservation District	192.68	95.68	12.23	126.39	426.97	68.99	23.09	519.05
Santa Barbara County Flood Control and Water Conservation District	751.47	120.63	18.11	108.93	999.14	50.66	51.78	1,101.58
Central Coastal Area	592.80	113.54	16.44	113.89	836.68	55.86	43.63	936.17
SOUTHERN CALIFORNIA AREA								
Antelope Valley-East Kern Water Agency	46.23	42.38	29.13	88.06	205.80	34.28	7.70	247.79
Castaic Lake Water Agency	50.97	43.94	22.88	54.48	172.27	29.38	12.18	213.82
Coachella Valley Water District	80.49	52.72	37.81	100.27	271.28	23.12	9.58	303.98
Crestline-Lake Arrowhead Water Agency	114.38	94.21	32.32	115.02	355.93	45.05	14.39	415.37
Desert Water Agency	47.89	40.73	48.41	59.95	196.98	20.49	6.29	223.76
Littlerock Creek Irrigation District	61.64	55.96	28.44	98.89	244.93	44.54	9.89	299.36
Mojave Water Agency	102.37	107.85	25.57	168.88	404.66	63.01	20.52	488.19
Palmdale Water District	52.38	49.90	36.68	115.02	253.97	43.31	8.94	306.22
San Bernardino Valley Municipal Water District	180.24	125.79	26.51	107.56	440.09	54.74	18.39	513.23
San Gabriel Valley Municipal Water District	97.31	81.88	41.21	74.13	294.52	36.94	11.93	343.39
San Geronio Pass Water Agency	587.79	204.78	22.37	163.37	978.31	60.03	13.17	1,051.50
The Metropolitan Water District of Southern California	79.25	57.41	35.13	58.72	230.51	32.50	9.62	272.63
Ventura County Flood Control District	137.93	103.83	24.21	131.78	397.75	60.40	19.10	477.25
Southern California Area	74.07	54.32	31.86	60.22	220.47	31.77	9.30	261.54
ALL AREAS	48.70	34.66	19.03	36.43	138.82	26.03	6.40	171.25

a) Hypothetical charges, which, if assessed on all Table A water delivered to date, all surplus water delivered prior to May 1, 1973, and all Table A water 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, 4.608 percent per annum.

TABLE B-25. Equivalent Unit Transportation Costs of Water Delivered from or through Each Aqueduct Reach ^a

(in dollars per acre-foot)

Aqueduct Reach	Unit Costs of Reach ^b						Cumulative Unit Costs from the Delta					
	Capital Costs	Water System Revenue Bond Surcharge ^c	Minimum OMP&R	Off-Aqueduct Costs	Variable OMP&R	Total	Capital Costs	Water System Revenue Bond Surcharge ^c	Minimum OMP&R	Off-Aqueduct Costs	Variable OMP&R	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
North Bay Aqueduct												
1	39.97	13.26	11.65	1.31	3.81	70.00	39.97	13.26	11.65	1.31	3.81	70.00
2	42.54	14.11	5.09	0.00	0.00	61.74	82.51	27.37	16.74	1.31	3.81	131.74
3A	7.58	2.51	10.13	2.45	6.17	28.84	90.09	29.88	26.87	3.76	9.98	160.58
3B	48.77	16.18	22.90	3.15	13.69	104.69	131.28	43.55	39.64	4.46	17.50	236.43
South Bay Aqueduct												
1	6.99	2.32	13.66	5.39	14.28	42.64	8.94	2.97	16.35	7.15	20.95	56.36
2	0.66	0.22	1.54	0.00	0.00	2.42	9.60	3.19	17.89	7.15	20.95	58.78
4	2.20	0.73	2.63	0.00	0.00	5.56	11.80	3.92	20.52	7.15	20.95	64.34
5	4.61	1.53	2.06	0.00	0.00	8.20	16.41	5.45	22.58	7.15	20.95	72.54
6	0.27	0.09	0.22	0.00	0.00	0.58	16.68	5.54	22.80	7.15	20.95	73.12
7	2.04	0.68	0.40	0.00	0.00	3.12	18.72	6.22	23.20	7.15	20.95	76.24
8	2.77	0.92	0.66	0.00	0.00	4.35	21.49	7.14	23.86	7.15	20.95	80.59
9	5.73	1.90	2.48	0.00	0.00	10.11	27.22	9.04	26.34	7.15	20.95	90.70
California Aqueduct												
1	1.95	0.65	2.69	1.76	6.67	13.72	1.95	0.65	2.69	1.76	6.67	13.72
2A	1.24	0.41	0.53	0.00	0.00	2.18	3.19	1.06	3.22	1.76	6.67	15.90
2B	0.64	0.21	0.27	0.00	0.00	1.12	3.83	1.27	3.49	1.76	6.67	17.02
3	0.55	0.18	0.20	0.00	0.00	0.93	4.38	1.45	3.69	1.76	6.67	17.95
4	0.88	0.29	1.33	0.82	3.01	6.33	5.26	1.74	5.02	2.58	9.68	24.28
5	0.68	0.23	0.27	0.00	0.00	1.18	5.94	1.97	5.29	2.58	9.68	25.46
6	0.17	0.06	0.13	0.00	0.00	0.36	6.11	2.03	5.42	2.58	9.68	25.82
7	1.02	0.34	0.32	0.00	0.00	1.68	7.13	2.37	5.74	2.58	9.68	27.50
8C	0.02	0.01	0.06	0.00	0.00	0.09	7.15	2.38	5.80	2.58	9.68	27.59
8D	0.39	0.13	0.26	0.00	0.00	0.78	7.54	2.51	6.06	2.58	9.68	28.37
9	0.33	0.11	0.24	0.00	0.00	0.68	7.87	2.62	6.30	2.58	9.68	29.05
10A	0.35	0.12	0.31	0.00	0.00	0.78	8.22	2.74	6.61	2.58	9.68	29.83
11B	0.51	0.17	0.20	0.00	0.00	0.88	8.73	2.91	6.81	2.58	9.68	30.71
12D	0.48	0.16	0.18	0.00	0.00	0.82	9.21	3.07	6.99	2.58	9.68	31.53
12E	0.34	0.11	0.30	0.00	0.00	0.75	9.55	3.18	7.29	2.58	9.68	32.28
13B	0.73	0.24	0.35	0.00	0.00	1.32	10.28	3.42	7.64	2.58	9.68	33.60
14A	2.81	0.93	2.70	1.39	5.68	13.51	13.09	4.35	10.34	3.97	15.36	47.11
14B	0.44	0.15	0.33	0.00	0.00	0.92	13.53	4.50	10.67	3.97	15.36	48.03
14C	0.37	0.12	0.25	0.00	0.00	0.74	13.90	4.62	10.92	3.97	15.36	48.77
15A	2.09	0.69	2.81	1.68	6.17	13.44	15.99	5.31	13.73	5.65	21.53	62.21
16A	3.45	1.14	4.35	3.63	14.39	26.96	19.44	6.45	18.08	9.28	35.92	89.17
17E	11.65	3.86	12.23	12.70	53.14	93.58	31.09	10.31	30.31	21.98	89.06	182.75
17F	3.02	1.00	0.15	0.00	0.00	4.17	34.11	11.31	30.46	21.98	89.06	186.92
18A	2.71	0.90	1.47	0.00	(5.58)	(0.50)	36.82	12.21	31.93	21.98	83.48	186.42
19	2.00	0.66	0.89	0.00	0.00	3.55	38.82	12.87	32.82	21.98	83.48	189.97
19C	2.18	0.72	0.00	0.00	0.00	2.90	41.00	13.59	32.82	21.98	83.48	192.87
20A	1.59	0.53	1.47	0.00	0.00	3.59	42.59	14.12	34.29	21.98	83.48	196.46
20B	1.93	0.64	0.97	0.00	0.00	3.54	44.52	14.76	35.26	21.98	83.48	200.00
21	0.98	0.33	0.67	0.00	0.00	1.98	45.50	15.09	35.93	21.98	83.48	201.98
22A	1.02	0.34	0.35	0.00	0.00	1.71	46.52	15.43	36.28	21.98	83.48	203.69
22B	9.98	3.31	9.47	4.10	17.52	44.38	56.50	18.74	45.75	26.08	101.00	248.07
23	2.74	0.91	0.65	0.00	(7.12)	(2.82)	59.24	19.65	46.40	26.08	93.88	245.25
24	5.32	1.76	1.84	0.00	0.00	8.92	64.56	21.41	48.24	26.08	93.88	254.17
25	3.88	1.29	0.10	0.00	0.00	5.27	68.44	22.70	48.34	26.08	93.88	259.44
26A	4.24	1.41	6.13	0.00	(48.59)	(36.81)	72.68	24.11	54.47	26.08	45.29	222.63
28G	7.90	2.62	2.32	0.00	0.00	12.84	80.58	26.73	56.79	26.08	45.29	235.47
28H	7.60	2.52	2.43	0.00	0.00	12.55	88.18	29.25	59.22	26.08	45.29	248.02
28J	85.27	28.28	33.82	0.00	0.00	147.37	173.45	57.53	93.04	26.08	45.29	395.39
West Branch												
29A	3.95	1.31	7.02	1.56	6.24	20.08	38.06	12.62	37.48	23.54	95.30	207.00
29F	2.89	0.96	0.84	0.00	0.00	4.69	40.95	13.58	38.32	23.54	95.30	211.69
29G	9.58	3.18	3.99	0.00	(22.46)	(5.71)	50.53	16.76	42.31	23.54	72.84	205.98
29H	5.97	1.98	3.79	0.00	0.00	11.74	56.50	18.74	46.10	23.54	72.84	217.72
29J	10.01	3.32	1.09	0.00	(42.01)	(27.59)	66.51	22.06	47.19	23.54	30.83	190.13
30	16.06	5.33	3.40	0.00	0.00	24.79	82.57	27.39	50.59	23.54	30.83	214.92
Coastal Branch												
31A	7.26	2.41	16.04	1.73	5.37	32.81	14.80	4.92	22.10	4.31	15.05	61.18
33A	271.38	90.02	30.24	14.69	70.17	476.50	286.18	94.94	52.34	19.00	85.22	537.68
34	193.89	64.31	0.84	0.00	0.00	259.04	480.07	159.25	53.18	19.00	85.22	796.72
35	0.00	0.00	0.00	0.00	0.00	0.00	480.07	159.25	53.18	19.00	85.22	796.72

a) Representative of transportation unit costs only; does not include a unit cost of conservation. The Delta Water Rate should be added to these values in order to approximate unit costs at canalside. Includes surplus water prior to May 1, 1973.

b) Hypothetical charges which, if assessed on all Table A water delivered to date, all surplus water delivered prior to May 1, 1973, and all Table A water 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 4.608 percent per annum.

c) The Water System Revenue Bond Surcharge equivalent unit rate is calculated by multiplying Column 1 by the ratio of the 2008 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**

(in dollars)

Sheet 1 of 2

Calendar Year	CALIFORNIA AQUEDUCT							
	MOJAVE DIVISION							
	Reach 18A	Reach 19	Reach 20A	Reach 20B	Reach 21	Reach 22A	Reach 22B	Reach 23B
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1952	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	117,000	0	0	0	0	0	0	0
1980	200,000	0	0	0	0	0	0	74,000
1981	135,000	0	0	0	0	0	0	385,000
1982	1,503,000	0	0	0	0	0	0	1,586,000
1983	2,260,000	0	0	0	0	0	0	2,965,000
1984	735,000	0	0	0	0	0	796,000	1,380,000
1985	93,000	435,000	75,000	544,000	859,000	703,000	970,000	146,000
1986	784,000	4,477,000	3,144,000	2,234,000	1,569,000	1,203,000	1,808,000	34,000
1987	11,000	951,000	1,076,000	666,000	399,000	47,000	16,421,000	43,000
1988	1,000	125,000	1,681,000	1,730,000	2,024,000	40,000	13,326,000	70,000
1989	0	206,000	2,089,000	2,174,000	2,510,000	61,000	11,242,000	229,000
1990	1,000	577,000	903,000	735,000	928,000	194,000	20,131,000	887,000
1991	1,000	280,000	413,000	333,000	422,000	93,000	20,702,000	1,215,000
1992	0	40,000	41,000	39,000	35,000	13,000	9,599,000	3,719,000
1993	0	19,000	16,000	19,000	12,000	6,000	2,319,000	19,654,000
1994	0	2,000	3,000	2,000	4,000	3,000	803,000	3,173,000
1995	0	0	0	0	0	0	223,000	1,465,000
1996	0	0	0	0	0	0	6,014,000	478,000
1997	0	0	0	0	0	0	404,000	1,327,000
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
TOTAL	5,841,000	7,112,000	9,441,000	8,476,000	8,762,000	2,363,000	104,758,000	38,830,000

**TABLE B-26. Capital Costs of Each Aqueduct Reach
to Be Reimbursed through the Capital Cost Component
of the East Branch Enlargement Transportation Charge**

(in dollars)

Sheet 2 of 2

Calendar Year	CALIFORNIA AQUEDUCT (continued)							GRAND TOTAL
	MOJAVE DIVISION (continued)			SANTA ANA DIVISION				
	Reach 23C	Reach 24	Total	Reach 25	Reach 26A	Reach 26B	Total	
[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	
1952	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	117,000	0	0	0	0	117,000
1980	0	0	274,000	0	0	0	0	274,000
1981	0	0	520,000	0	0	0	0	520,000
1982	0	0	3,089,000	0	0	0	0	3,089,000
1983	0	0	5,225,000	0	0	0	0	5,225,000
1984	0	0	2,911,000	0	0	0	0	2,911,000
1985	0	0	3,825,000	0	528,000	89,000	617,000	4,442,000
1986	25,000	0	15,278,000	0	1,926,000	154,000	2,080,000	17,358,000
1987	178,000	0	19,792,000	0	3,699,000	437,000	4,136,000	23,928,000
1988	632,000	0	19,629,000	0	5,667,000	3,329,000	8,996,000	28,625,000
1989	1,130,000	0	19,641,000	0	40,879,000	1,650,000	42,529,000	62,170,000
1990	2,066,000	0	26,422,000	0	29,853,000	1,650,000	31,503,000	57,925,000
1991	4,980,000	0	28,439,000	0	26,027,000	999,000	27,026,000	55,465,000
1992	11,920,000	0	25,406,000	0	15,317,000	299,000	15,616,000	41,022,000
1993	16,303,000	0	38,348,000	0	4,878,000	0	4,878,000	43,226,000
1994	7,081,000	0	11,071,000	0	3,151,000	0	3,151,000	14,222,000
1995	5,350,000	0	7,038,000	0	2,137,000	0	2,137,000	9,175,000
1996	1,706,000	0	8,198,000	0	9,181,000	0	9,181,000	17,379,000
1997	1,905,000	0	3,636,000	0	175,000	0	175,000	3,811,000
1998	28,000	0	28,000	0	0	0	0	28,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
TOTAL	53,304,000	0	238,887,000	0	143,418,000	8,607,000	152,025,000	390,912,000

TABLE B-27. Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of the East Branch Enlargement Transportation Charge

(in dollars)

Sheet 1 of 2

Calendar Year	CALIFORNIA AQUEDUCT							
	MOJAVE DIVISION							
	Reach 18A	Reach 19	Reach 20A	Reach 20B	Reach 21	Reach 22A	Reach 22B	Reach 23B
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994	0	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	1,315,920	0
2001	347	146	183	116	108	48	1,045,627	0
2002	1,639	690	861	546	510	226	1,539,859	0
2003	0	0	0	0	0	0	1,813,951	0
2004	2,132	27,868	18,579	18,731	10,355	8,528	1,485,104	0
2005	1,205	15,418	10,279	10,588	5,729	4,820	959,833	0
2006	4,628	60,496	40,330	40,661	22,479	18,512	1,860,053	0
2007	0	0	0	0	0	0	2,052,782	0
2008	0	0	0	0	0	0	2,083,716	0
2009	0	0	0	0	0	0	1,980,601	0
2010	0	0	0	0	0	0	1,980,601	0
2011	0	0	0	0	0	0	1,980,601	0
2012	0	0	0	0	0	0	1,980,601	0
2013	0	0	0	0	0	0	1,980,601	0
2014	0	0	0	0	0	0	1,980,601	0
2015	0	0	0	0	0	0	1,980,601	0
2016	0	0	0	0	0	0	1,980,601	0
2017	0	0	0	0	0	0	1,980,601	0
2018	0	0	0	0	0	0	1,980,601	0
2019	0	0	0	0	0	0	1,980,601	0
2020	0	0	0	0	0	0	1,980,601	0
2021	0	0	0	0	0	0	1,980,601	0
2022	0	0	0	0	0	0	1,980,601	0
2023	0	0	0	0	0	0	1,980,601	0
2024	0	0	0	0	0	0	1,980,601	0
2025	0	0	0	0	0	0	1,980,601	0
2026	0	0	0	0	0	0	1,980,601	0
2027	0	0	0	0	0	0	1,980,601	0
2028	0	0	0	0	0	0	1,980,601	0
2029	0	0	0	0	0	0	1,980,601	0
2030	0	0	0	0	0	0	1,980,601	0
2031	0	0	0	0	0	0	1,980,601	0
2032	0	0	0	0	0	0	1,980,601	0
2033	0	0	0	0	0	0	1,980,601	0
2034	0	0	0	0	0	0	1,980,601	0
2035	0	0	0	0	0	0	1,980,601	0
TOTAL	15,632	107,010	73,218	72,535	40,950	32,917	73,798,428	0

TABLE B-27. Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of the East Branch Enlargement Transportation Charge

(in dollars)

Sheet 2 of 2

Calendar Year	CALIFORNIA AQUEDUCT (continued)							TOTAL
	MOJAVE DIVISION (continued)			SANTA ANA DIVISION				
	Reach 23C	Reach 24	Subtotal	Reach 25	Reach 26A (a)	Reach 26B	Subtotal	
[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994	0	0	1,048,625	0	1,713,260	0	1,713,260	2,761,885
1995	0	0	953,814	0	1,452,549	0	1,452,549	2,406,363
1996	0	0	1,171,411	0	1,350,581	0	1,350,581	2,521,992
1997	679,826	0	1,789,864	0	1,528,509	0	1,528,509	3,318,373
1998	825,038	0	2,038,040	0	1,619,068	0	1,619,068	3,657,108
1999	382,178	0	1,053,997	0	956,229	0	956,229	2,010,226
2000	735,803	0	2,063,874	0	1,409,109	0	1,409,109	3,472,983
2001	812,634	0	1,859,209	0	811,400	0	811,400	2,670,609
2002	727,751	0	2,272,082	0	1,143,205	0	1,143,205	3,415,287
2003	899,739	0	2,713,690	0	1,248,051	0	1,248,051	3,961,741
2004	913,701	0	2,484,998	0	1,815,458	0	1,815,458	4,300,456
2005	992,425	0	2,000,297	0	1,840,870	0	1,840,870	3,841,167
2006	827,357	0	2,874,516	0	1,757,741	0	1,757,741	4,632,257
2007	1,016,207	0	3,068,989	0	1,907,326	0	1,907,326	4,976,315
2008	1,029,006	0	3,112,722	0	1,935,452	0	1,935,452	5,048,174
2009	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2010	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2011	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2012	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2013	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2014	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2015	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2016	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2017	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2018	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2019	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2020	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2021	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2022	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2023	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2024	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2025	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2026	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2027	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2028	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2029	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2030	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2031	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2032	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2033	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2034	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
2035	1,046,002	0	3,026,603	0	1,992,836	0	1,992,836	5,019,439
TOTAL	38,083,719	0	112,224,409	0	76,295,380	0	76,295,380	188,519,789

a) Units 3 and 4 at Devil Canyon Powerplant 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**

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA							Total
	Antelope Valley- East Kern Water Agency	Coachella Valley Water District	Desert Agency	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	The Metropolitan Water District of Southern California	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	11,731	1,010	10,566	466	0	93,227	117,000
1980	0	28,241	4,708	27,495	797	0	212,759	274,000
1981	0	56,134	16,676	61,271	538	0	385,381	520,000
1982	0	326,180	76,872	337,913	5,988	0	2,342,047	3,089,000
1983	0	554,658	138,964	582,070	9,004	0	3,940,304	5,225,000
1984	0	306,514	68,842	314,468	2,928	0	2,218,248	2,911,000
1985	49,675	447,266	65,773	347,262	4,514	21,614	3,505,896	4,442,000
1986	185,353	1,757,633	236,324	1,363,586	41,900	78,842	13,694,362	17,358,000
1987	49,735	2,455,279	378,535	1,774,447	10,615	151,421	19,107,968	23,928,000
1988	124,534	2,689,959	500,466	1,712,431	13,783	231,982	23,351,845	28,625,000
1989	155,446	7,118,094	2,423,000	1,671,088	17,419	1,673,409	49,111,544	62,170,000
1990	62,786	6,459,229	1,943,918	2,234,452	8,680	1,222,053	45,993,882	57,925,000
1991	28,686	6,265,822	1,875,066	2,168,712	4,024	1,065,433	44,057,257	55,465,000
1992	2,911	4,826,764	1,610,921	1,359,335	471	627,012	32,594,586	41,022,000
1993	1,205	5,094,237	1,828,410	2,722,156	212	199,684	33,380,096	43,226,000
1994	273	1,726,376	631,816	478,543	27	128,988	11,255,977	14,222,000
1995	0	1,130,963	423,243	206,978	0	87,480	7,326,336	9,175,000
1996	0	2,025,987	645,296	606,205	0	375,830	13,725,682	17,379,000
1997	0	451,011	154,366	205,796	0	7,164	2,992,663	3,811,000
1998	0	3,551	1,293	0	0	0	23,156	28,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
TOTAL	660,604	43,735,629	13,025,499	18,184,774	121,366	5,870,912	309,313,216	390,912,000

TABLE B-29. Capital Cost Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA							Total
	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 (a)	The Metropolitan Water District of Southern California	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	18,266	1,209,293	360,156	502,810	3,356	0	8,552,529	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	2,650,139	789,274	1,101,897	7,354	0	18,742,682	23,331,375
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	19,966,108	24,854,326
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	22,425,319	27,915,615
2003	40,711	2,695,262	802,713	1,120,659	7,479	0	19,061,812	23,728,636
2004	44,352	2,936,320	874,505	1,220,888	8,148	0	20,766,652	25,850,865
2005	32,790	2,170,883	646,540	902,628	6,024	0	15,353,227	19,112,092
2006	47,064	3,115,874	927,980	1,295,545	8,647	0	22,036,516	27,431,626
2007	67,785	4,591,698	1,381,267	1,865,935	12,453	0	32,385,157	40,304,295
2008	63,563	4,292,843	1,289,700	1,749,726	11,678	0	30,288,105	37,695,615
2009	65,062	4,400,605	1,322,926	1,790,974	11,953	0	31,042,926	38,634,446
2010	64,751	4,368,248	1,311,729	1,782,426	11,896	0	30,824,165	38,363,215
2011	66,373	4,493,956	1,351,588	1,827,084	12,195	0	31,697,562	39,448,758
2012	66,477	4,501,097	1,353,745	1,829,959	12,214	0	31,747,883	39,511,375
2013	65,782	4,445,918	1,336,098	1,810,833	12,086	0	31,365,493	39,036,210
2014	66,255	4,465,953	1,340,586	1,823,812	12,172	0	31,516,732	39,225,510
2015	67,997	4,584,371	1,376,254	1,871,791	12,493	0	32,351,650	40,264,556
2016	68,184	4,596,752	1,379,948	1,876,918	12,527	0	32,439,162	40,373,491
2017	69,918	4,709,272	1,413,155	1,924,657	12,845	0	33,236,915	41,366,762
2018	68,375	4,597,514	1,378,605	1,882,171	12,562	0	32,454,702	40,393,929
2019	70,260	4,730,131	1,419,127	1,934,088	12,908	0	33,385,981	41,552,495
2020	67,268	4,530,416	1,359,436	1,851,713	12,358	0	31,974,900	39,796,091
2021	68,757	4,635,301	1,391,510	1,892,690	12,632	0	32,711,268	40,712,158
2022	68,021	4,595,620	1,380,887	1,872,435	12,497	0	32,422,911	40,352,371
2023	56,501	3,833,688	1,154,059	1,555,336	10,381	0	27,033,659	33,643,624
2024	58,474	3,965,026	1,193,268	1,609,651	10,743	0	27,961,917	34,799,079
2025	66,925	4,524,020	1,359,688	1,842,270	12,296	0	31,915,717	39,720,916
2026	24,555	1,703,468	517,616	675,948	4,511	0	11,981,032	14,907,130
2027	25,018	1,730,989	525,400	688,686	4,596	0	12,178,340	15,153,029
2028	16,326	1,120,244	338,841	449,412	3,000	0	7,889,091	9,816,914
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
TOTAL	2,053,092	137,817,032	41,295,248	56,516,333	377,197	0	973,072,303	1,211,131,205

a) Under Article 49(d)(4)(A) of its contract, San Bernardino Valley Municipal Water District elected to pay a portion of its allocated costs of East Branch Enlargement in advance rather than to participate in payment of Water System Revenue Bonds. This election made via a letter of agreement signed June 1, 1987. As of 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

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA							Total
	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	The Metropolitan Water District of Southern California	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994	0	320,415	101,486	95,075	0	70,133	2,174,776	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	403,693	121,479	120,396	40	57,683	2,769,559	3,472,982
2001	10	310,158	90,353	94,888	3	33,215	2,141,981	2,670,608
2002	49	391,107	108,642	140,014	15	46,798	2,728,663	3,415,288
2003	0	453,213	124,575	164,465	0	51,090	3,168,397	3,961,740
2004	1,278	501,557	153,704	142,324	265	74,317	3,427,011	4,300,456
2005	714	458,077	153,833	91,302	147	75,357	3,061,737	3,841,167
2006	2,774	531,091	150,713	185,305	575	71,954	3,689,845	4,632,257
2007	0	574,701	167,578	186,119	0	78,078	3,969,839	4,976,315
2008	0	582,965	169,954	188,924	0	79,229	4,027,101	5,048,173
2009	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2010	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2011	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2012	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2013	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2014	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2015	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2016	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2017	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2018	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2019	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2020	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2021	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2022	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2023	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2024	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2025	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2026	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2027	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2028	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2029	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2030	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2031	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2032	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2033	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2034	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2035	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
TOTAL	4,994	21,860,159	6,515,705	6,721,526	1,056	3,123,201	150,293,145	188,519,786

**TABLE B-31. Total East Branch Enlargement Facilities
Transportation Charge for Each Contractor**

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA							Total
	Antelope Valley-East Kern Water Agency	Coachella Valley Water District	Desert Agency	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	The Metropolitan Water District of Southern California	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	18,266	1,209,293	360,156	502,810	3,356	0	8,552,529	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	2,650,139	789,274	1,101,897	7,354	0	18,742,682	23,331,375
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	22,881,260	28,511,434
1999	44,775	3,197,893	957,160	1,292,426	8,230	39,144	22,546,556	28,086,184
2000	49,163	3,649,802	1,088,247	1,470,091	9,048	57,683	25,727,145	32,051,179
2001	49,058	3,557,421	1,057,464	1,445,063	9,014	33,215	25,107,729	31,258,964
2002	47,943	3,561,955	1,052,995	1,458,416	8,814	46,798	25,153,982	31,330,903
2003	40,711	3,148,475	927,288	1,285,124	7,479	51,090	22,230,209	27,690,376
2004	45,630	3,437,877	1,028,209	1,363,212	8,413	74,317	24,193,663	30,151,321
2005	33,504	2,628,960	800,373	993,930	6,171	75,357	18,414,964	22,953,259
2006	49,838	3,646,965	1,078,693	1,480,850	9,222	71,954	25,726,361	32,063,883
2007	67,785	5,166,399	1,548,845	2,052,054	12,453	78,078	36,354,996	45,280,610
2008	63,563	4,875,808	1,459,654	1,938,650	11,678	79,229	34,315,206	42,743,788
2009	65,062	4,982,542	1,495,866	1,970,548	11,953	81,578	35,046,336	43,653,885
2010	64,751	4,950,185	1,484,669	1,962,000	11,896	81,578	34,827,575	43,382,654
2011	66,373	5,075,893	1,524,528	2,006,658	12,195	81,578	35,700,972	44,468,197
2012	66,477	5,083,034	1,526,685	2,009,533	12,214	81,578	35,751,293	44,530,814
2013	65,782	5,027,855	1,509,038	1,990,407	12,086	81,578	35,368,903	44,055,649
2014	66,255	5,047,890	1,513,526	2,003,386	12,172	81,578	35,520,142	44,244,949
2015	67,997	5,166,308	1,549,194	2,051,365	12,493	81,578	36,355,060	45,283,995
2016	68,184	5,178,689	1,552,888	2,056,492	12,527	81,578	36,442,572	45,392,930
2017	69,918	5,291,209	1,586,095	2,104,231	12,845	81,578	37,240,325	46,386,201
2018	68,375	5,179,451	1,551,545	2,061,745	12,562	81,578	36,458,112	45,413,368
2019	70,260	5,312,068	1,592,067	2,113,662	12,908	81,578	37,389,391	46,571,934
2020	67,268	5,112,353	1,532,376	2,031,287	12,358	81,578	35,978,310	44,815,530
2021	68,757	5,217,238	1,564,450	2,072,264	12,632	81,578	36,714,678	45,731,597
2022	68,021	5,177,557	1,553,827	2,052,009	12,497	81,578	36,426,321	45,371,810
2023	56,501	4,415,625	1,326,999	1,734,910	10,381	81,578	31,037,069	38,663,063
2024	58,474	4,546,963	1,366,208	1,789,225	10,743	81,578	31,965,327	39,818,518
2025	66,925	5,105,957	1,532,628	2,021,844	12,296	81,578	35,919,127	44,740,355
2026	24,555	2,285,405	690,556	855,522	4,511	81,578	15,984,442	19,926,569
2027	25,018	2,312,926	698,340	868,260	4,596	81,578	16,181,750	20,172,468
2028	16,326	1,702,181	511,781	628,986	3,000	81,578	11,892,501	14,836,353
2029	17,026	1,748,360	525,514	648,253	3,128	81,578	12,219,228	15,243,087
2030	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2031	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2032	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2033	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2034	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
2035	0	581,937	172,940	179,574	0	81,578	4,003,410	5,019,439
TOTAL	2,058,086	159,677,191	47,810,953	63,237,859	378,253	3,123,201	1,123,365,448	1,399,650,991

CONVERSION FACTORS				
Quantity	To convert from customary unit	To metric units	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 ²)	square millimeters (mm ²)	645.16	0.00155
	square feet (ft ²)	square meters (m ²)	0.092903	10.764
	acres (ac)	hectares (ha)	0.40469	2.4710
	square miles (mi ²)	square kilometers (km ²)	2.590	0.3861
Volume	gallons (gal)	liters (L)	3.7854	0.26417
	million gallons (106 gal)	megaliters (ML)	3.7854	0.26417
	cubic feet (ft ³)	cubic meters (m ³)	0.028317	35.315
	cubic yards (yd ³)	cubic meters (m ³)	0.76455	1.308
	acre-feet (af)	thousand cubic meters (m ³ x 10 ³)	1.2335	0.8107
	acre-feet (af)	hectare-meters (ha - m)■	0.1234	8.107
	thousand acre-feet (taf)	million cubic meters (m ³ x 10 ⁶)	1.2335	0.8107
	thousand acre-feet (taf)	hectare-meters (ha - m)■	123.35	0.008107
	million acre-feet (maf)	billion cubic meters (m ³ x 10 ⁹)◆	1.2335	0.8107
million acre-feet (maf)	cubic kilometers (km ³)	1.2335	0.8107	
Flow	cubic feet per second (ft ³ /s)	cubic meters per second (m ³ /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 (af/day)	thousand cubic meters per day (m ³ x 10 ³ /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
	feet head of water	kilopascals (kPa)	2.989	0.32456
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 (μmhos/cm)	microsiemens per centimeter (μS/cm)	1.0	1.0
Temperature	degrees Fahrenheit (°F)	degrees Celsius (°C)	(°F - 32)/1.8	(1.8 x °C) + 32
<p>● When using "dual units," inches are normally converted to millimeters (rather than centimeters). ■ 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). ◆ 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).</p>				
OTHER COMMON CONVERSION FACTORS				
1 cubic foot=7.48 gallons=62.4 pounds of water		1 acre-foot=approximately 325,851 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 af a day		1 million gallons a day (mgd)=1,120 af a year		