BULLETIN 132-11 | DECEMBER 2013

MANAGEMENT OF THE

CALIFORNIA STATE WATER PROJECT

EDMUND G. BROWN Jr.
Governor, State of California

JOHN LAIRD
Secretary for Natural Resources
California Natural Resources Agency

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Publishing Information

Cover photo shows an aerial view of Pyramid Lake and Dam.

Photo provided by the Public Affairs Office Photography Unit.

Copies of this document are available for $25.00 per book and $5.00 per CD ROM from:

California Department of Water Resources
Attn: Publications Office
P.O. Box 942836
Sacramento, CA 94236-0001
(916) 653-1097

If you need this publication in alternate form, contact the Public Affairs Office, 1-800-272-8869.

Printed on recycled paper

Bulletin 132-11

Management of the California

State Water Project

Covers Activities during Calendar Year 2010

Published December 2013

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Foreword

Bulletin 132-11, Management of the California State Water Project, continues the Bulletin 132 annual series begun in 1963. Bulletin 132-11 reports water supply planning, construction, financing, management, and operation activities of the State Water Project (SWP). Appendix B contains data and computations used to determine the SWP water contractors' Statements of Charges for 2012. Appendix B was previously printed and distributed to SWP water contractors to document and support calculation of contractors' annual charges.

The Bulletin discusses significant events and issues that affect SWP management and operations. The Bulletin covers the period from January 1, 2010, through December 31, 2010.

Bulletin 132-11 also discusses water supply and delivery as well as Delta resources and environmental issues, local assistance programs, power resources, recreation, and financial analysis of the State Water Project.

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 were available at the time of publication, please consult the most recent edition of Bulletin 132 or contact DWR staff in the State Water Project Analysis Office.

Mark W. Cowin
Director

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California Water Commission

The California Water Commission consists of nine members appointed by the Governor and confirmed by the Senate. Seven members are chosen for their expertise related to the control, storage, and beneficial use of water, and two are chosen for their knowledge of the environment. The commission advises the Director of the Department of Water Resources (DWR) on matters within DWR's jurisdiction, approves rules and regulations, and monitors and reports on the construction and operation of the State Water Project (SWP).

The roles and responsibilities of the California Water Commission are defined in the Water Code, Government Code, and Code of Civil Procedure.

The commission's SWP-specific responsibilities are to:

- conduct an annual review of the construction and operation of the SWP and report to DWR and the Legislature with any recommendations (Water Code Section 165);
- hold public hearings on all additional facilities proposed to be added to the SWP and name any new facilities (Water Code Sections 161.5 and 166); and
- adopt a resolution of necessity, and give each affected person a venue to be heard, before DWR may commence an eminent domain proceeding (Code of Civil Procedure Section 1245.210).

Commission members at the time of publication are:

Joseph Byrne (Chair)

Andrew Ball

Daniel Curtin

Joe Del Bosque

Kimberley Delfino

Luther Hintz

Adan Ortega

David Orth

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Acronyms and Abbreviations

Symbols

µg/L micrograms per liter
µS/cm microsiemens per centimeter

A

AB Assembly Bill
af acre-feet/acre-foot
ANS Aquatic Nuisance Species
AWMP Agricultural Water Management Plan

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 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary
BDCP Bay Delta Conservation Plan
BO biological opinion

C

CAISO California Independent System Operator
CALFED CALFED Bay-Delta Program
California State Parks California Department of Parks and Recreation
C.A.S.T. Catch A Special Thrill
CCAR California Climate Action Registry
CCC California Conservation Corps
CEQA California Environmental Quality Act
CESA California Endangered Species Act
cfs cubic feet per second
CIMIS California Irrigation Management Information System
CVC Cross Valley Canal
CVFPB Central Valley Flood Protection Board
CVP Central Valley Project
CWC California Water Code
CWIN California Water Impact Network
CWT coded wire tag; coded wire tagged

D

D-1641 State Water Resources Control Board, Water Right Decision 1641
DBW California State Parks Division of Boating and Waterways
DDA Davis-Dolwig Act
Delta Fish Agreement Delta Pumping Plant Fish Protection Agreement
DFW Department of Fish and Wildlife
DHCCP Delta Habitat Conservation and Conveyance Program
DO dissolved oxygen
DOC dissolved organic carbon
DOE Division of Engineering
DPH Department of Public Health
DPS distinct population segment
DSC Delta Stewardship Council
DSM2 Delta Simulation Model 2
DSOD Division of Safety of Dams
DWR Department of Water Resources
DWSC Deep Water Ship Channel

E

EC electrical conductivity
EIR environmental impact report
EIS environmental impact statement
EPA U.S. Environmental Protection Agency
ESA federal Endangered Species Act

F

FERC Federal Energy Regulatory Commission
FRFH Feather River Fish Hatchery
FRPA Fish Restoration Program Agreement

G

gpm gallons per minute

H

HEA Habitat Expansion Agreement
hp horsepower

I

IEP Interagency Ecological Program
IFDM Integrated On-Farm Drainage Management
IFM Integrated Forward Market
IR Interim Renewal

IRP09 2009 Integrated Resource Plan
IRWM Integrated Regional Water Management
ITP incidental take permit

J

JPOD Joint Point of Diversion

K

kV kilovolt
kWh kilowatt hour

L

LADWP Los Angeles Department of Water and Power
LSIP Levee System Integrity Program
LTMS Long-Term Management Strategy

M

maf million acre-feet
mg/L milligrams per liter
MIDS Morrow Island Distribution System
mmhos/cm millimhos per centimeter
MRTU Market Redesign and Technology Upgrade
mS/cm millisiemens per centimeter
MW megawatt
MWELO Model Water Efficient Landscape Ordinance
MWh megawatt hour
MWQI Municipal Water Quality Investigations
MWQP Municipal Water Quality Program
MWT McCormack-Williamson Tract

N

NBA North Bay Aqueduct
NCPA Northern California Power Agency
NDFCERP North Delta Flood Control and Ecosystem Restoration Project
NDOI Net Delta Outflow Index
NEPA National Environmental Policy Act
NERC North American Electric Reliability Corporation
NOAA Fisheries National Marine Fisheries Service
NPB nonphysical barrier
NVE NV Energy

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
ORT Old River near Tracy

P

PAO Public Affairs Office
PG&E Pacific Gas & Electric Company
POD pelagic organism decline

Q

QA/QC quality assurance/quality control
QSA Quantification Settlement Agreement

R

Reclamation Bureau of Reclamation
R&FWE Recreation and Fish and Wildlife Enhancement
RM River Mile
RPA reasonable and prudent alternative
RRDS Roaring River Distribution System
RRR Red Rock Ranch
RST rotary screw trap
RTDF-CP Real Time Data and Forecasting Comprehensive Program
RWQCB Regional Water Quality Control Board

S

Sacramento Valley 40-30-30 Index Sacramento Valley Water Year Hydrologic Classification
San Joaquin Valley 60-20-20 Index San Joaquin Valley Water Year Hydrologic Classification
SB Senate Bill
SBA South Bay Aqueduct
SBX7 7 Water Conservation Act of 2009
SCE Southern California Edison
SDIP South Delta Improvements Program
SJRRP San Joaquin River Restoration Program
SMP Suisun Marsh Habitat Management, Preservation, and Restoration Plan (Suisun Marsh Plan)
SMPA Suisun Marsh Preservation Agreement
SMSCG Suisun Marsh Salinity Control Gates
SMUD Sacramento Municipal Utility District
SRCD Suisun Resource Conservation District
SVWMA Sacramento Valley Water Management Agreement
SVWMP Sacramento Valley Water Management Program
SWAT Soil and Water Assessment Tool
SWC State Water Contractors
SWP State Water Project

SWPAO State Water Project Analysis Office
SWRCB State Water Resources Control Board

U

UC University of California
USFWS U.S. Fish and Wildlife Service
USGS U.S. Geological Survey

V

VAMP Vernalis Adaptive Management Plan

W

WCI Whitaker Contractors, Inc.
WECC Western Electricity Coordinating Council
WET Water Education for Teachers
WQCP Water Quality Control Plan

Y

Yuba Accord Lower Yuba River Accord

SWP Long-term Water 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.

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

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.

Arvin-Edison Water Storage District	Arvin-Edison
Belridge Water Storage District	Belridge
Berrenda Mesa Water District	Berrenda Mesa
Browns Valley Irrigation District	Browns Valley
Buena Vista Water Storage District	Buena Vista
Byron-Bethany Irrigation District	Byron-Bethany
Cawelo Water District	Cawelo
City of Tracy	Tracy
Contra Costa Water District	Contra Costa
County of Fresno	Fresno
County of Tulare	Tulare
Del Puerto Water District	Del Puerto
East Contra Costa Irrigation District	East Contra Costa
Garden Highway Water Company	Garden Highway
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
Oswald Water District	Oswald
Pixley Irrigation District	Pixley
Placer County Water Agency	Placer
Plain View Water District	Plain View
Rag Gulch Water District	Rag Gulch
Rosedale-Rio Bravo Water Storage District	Rosedale-Rio
San Luis & Delta-Mendota Water Authority	San Luis & Delta-Mendota
San Luis Water District	San Luis
Semitropic Water Storage District	Semitropic
South Feather Water and Power Agency	South Feather
Tejon-Castac Water District	Tejon-Castac
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

State Water Project Highlights

Thermalito Pumping-Generating Plant.

The annual Bulletin 132 series began in 1963 and reported the first deliveries of water by the new State Water Project (SWP). Bulletin 132-11, *Management of the California State Water Project*, continues this series as the forty-ninth edition. It reports on SWP planning, construction, finance, management, and operations during calendar year 2010. The SWP is operated and maintained by the California Department of Water Resources (DWR).

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

Fifty Years Since the Burns-Porter Act Passed

The year 2010 commemorated the 50th year since voters approved Proposition 1, the $1.75 billion general obligation bond that provided funds to construct the initial facilities of the SWP. The Burns-Porter Act, formally known as the California Water Resources Development Bond Act, was on the November 1960 ballot.

Exhibit Honors the State Water Project at The California Museum

A special exhibit honoring California's State Water Project began in September 2010 at The California Museum. Entitled "Extreme Engineering: The California State Water Project Past, Present and Future," the exhibit showcased the SWP's delivery system and explored its many benefits.

Drought

The final California Drought Contingency Plan, released in November 2010, represents the first State drought plan and was developed following the Governor's executive orders and drought proclamations in 2008 and 2009. It is a planning and implementation document that may be used to assist agencies in preparing for, responding to, and recovering from drought. The Drought Contingency Plan was prepared in conjunction with the California Water Plan and will be updated every 5 years.

Yearly Activities Summary

2010 Precipitation and Water Storage

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 2009–2010

Water year 2009–2010 recorded near average precipitation and mountain snowpack. The State received precipitation at 108 percent of average in 2009–2010, compared to 81 percent of average in 2008–2009. The Northern Sierra 8-Station Precipitation Index recorded the eleventh wettest April precipitation totals on record. The statewide snowpack peaked at the beginning of May and gradually declined as May was unusually cool and wet.

The Sacramento Valley Water Year Hydrologic Classification (Sacramento Valley 40-30-30 Index) and the San Joaquin Valley Water Year Hydrologic Classification (San Joaquin Valley 60-20-20 Index) were "below normal" and "above normal," respectively, based on observed data for water year 2009–2010.

Runoff

Statewide river runoff totaled 91 percent of average in the 2009–2010 water year. Runoff in the Sacramento River and San Joaquin River regions was 86 and 99 percent of average, respectively.

Water Year 2009–2010 Storage Totals

At the end of the 2009–2010 water year, water storage in major SWP reservoirs and the State's share of joint-use reservoirs was 2.81 maf or 52 percent of maximum storage, compared to 2.14 maf or 39 percent of maximum storage at the end of water year 2008–2009. The average end-of-month total storage for the 2009–2010 water year in major SWP reservoirs was 2.85 maf. End-of-water-year storage on September 30, 2010, at Lake Oroville was 1.75 maf, which was about 0.41 maf more than the previous water year.

Calendar Year 2010 Storage Total

The total storage in major SWP reservoirs was about 3.58 maf at the end of 2010, compared with 1.93 maf in 2009. The State's share of San Luis Reservoir storage was 802,515 acre-feet on December 31, 2010, compared with 343,234 af at the same time in 2009. The combined storage in the southern reservoirs was 601,004 af on December 31, 2010, compared with 555,601 af at the same time in 2009.

Diversions from the Delta

In 2010, the SWP diverted 2,959,949 af at Banks Pumping Plant. There was 45,300 af of Cross Valley Canal water and 56,387 af of Central Valley Project (CVP) water wheeled at Banks Pumping Plant by DWR during 2010.

Maximum daily Delta exports occurred on December 28, 2010, at 25,260 af. Combined SWP and CVP monthly Delta exports in 2010 varied from a low of 89,057 af in April, to a high of 675,874 af in August. In 2010, Delta exports totaled approximately 5.48 maf. For more information see Chapter 8, Water Supply.

2010 Water Supplies, Contracts, and Deliveries

2010 Water Deliveries

DWR approved 0.21 maf on November 29, 2009, resulting in initial Table A amounts of 5 percent of most SWP water contractor requests. DWR increased the 2010 Table A amounts to 2.09 maf, or 50 percent, on June 22, 2010, for the final allocation. For more information on changes in Table A amounts that were approved by DWR, see Chapter 9, Water Contracts and Deliveries.

In 2010, a total of 3,502,986 af of SWP and non-SWP water involved deliveries to 29 long-term SWP water contractors and 24 other agencies. The portion delivered to the SWP water contractors was 2,069,164 af, categorized as follows:

- 1,563,676 af of total 2010 Table A water;
- 79,044 af of transferred Table A water;
- 10,330 af of exchanged Table A water;
- 11,371 af of Pool A water;
- 7,505 af of Article 21 water;
- 266,508 af of 2009 carryover water;
- 81, 602 af recovered from water banks;
- 45,395 af of flexible storage withdrawal from Castaic Lake;
- 2,566 af of settlement water; and
- 1,167 af of SWP water for recreation and fish and wildlife.

The remaining portion was delivered to 24 non-SWP agencies and totaled, 1,433,822 af, which was categorized accordingly:

- 140,320 af of 2010 Transfer/Dry Year Purchase Program water;
- 1,015,365 af of local water;
- 2,498 af of permit water; and
- 275,639 af delivered to satisfy agreements between the SWP and CVP.

Table H-1 shows SWP water deliveries by category for 1962 through 2010.

For more information, see Chapter 9, Water Contracts and Deliveries.

Power Resources

In 2010, DWR sold 1.82 million megawatt hours (MWh) of energy to one utility and seven WSPP power marketers for a total revenue of $86.41 million. DWR also received $76.11 million in revenues for capacity and other energy-related services, including $73.98 million for transactions made through the California Independent System Operator.

The sidebar, State Water Project Power Generation and Consumption in 2010, summarizes amounts of power generated and consumed by the SWP. For detailed information, see Chapter 10, Power Resources.

Hydropower License Planning and Compliance

Compliance with Federal Energy Regulatory Commission (FERC) license terms and conditions is an important function of SWP organizations. DWR's record of compliance is significant and is an important consideration of FERC. FERC requires strict compliance with license terms and conditions and has the authority to levy fines for noncompliance. In addition to FERC setting license requirements and requiring periodic submittals, DWR is subject to safety, security, and environmental inspections and is required to comply with the findings of these inspections.

On July 1, 2010, the Hydropower License Planning and Compliance Office was formally established as a new SWP organization with the following mission: to plan, manage, coordinate, lead, and oversee DWR's federal hydropower license activities to meet all regulatory requirements while securing cost-effective, safe, reliable, and responsive benefits from SWP facilities for the people and environment of the State of California.

Oroville Facilities Relicensing

On January 26, 2005, DWR filed an application with FERC requesting a new license for the Oroville Facilities (FERC Project No. 2100). The existing 50-year hydropower license expired January 31, 2007, and, until a new license is issued, FERC is issuing annual licenses. A partial list of SWP facilities that will be subject to the new license terms and conditions is available in Chapter 10, Power Resources.

A number of significant events associated with Oroville Facilities relicensing occurred in 2010. For details, see Chapter 3, Environmental Programs, Chapter 6, Legislation and Litigation, and Chapter 10, Power Resources.

Financial Analysis

In 2010, DWR continued to pay bondholders as scheduled. The SWP was financially viable and was indirectly paid for by the approximately 25 million water users served by the project. Direct payment was through the 29 long-term water contractors. In 2010, the SWP handled approximately $1.01 billion in revenues and $1.01 billion in expenses. The 2010 Income Statement for the State Water Project sidebar presents a summary of the year's revenues and expenses. For detailed information, see Chapter 14, Financial Analysis.

Table H-1 SWP Water Delivered by Category, 1962–2010 (Acre-feet)

	Table A Water			Article 21/Unscheduled		Other SWP Water Deliveries			
Year	Municipal and Industrial	Agricultural	Total Table A[a]	Municipal and Industrial	Agricultural	Other Water[b]	Feather River Diversions[c]	Fish & Wildlife/ Recreation Water	**Total Deliveries**
1962	—	—	—	—	—	9,704	7,499	—	17,203
1963	—	—	—	—	—	13,212	16,049	—	29,261
1964	—	—	—	—	—	21,743	17,891	—	39,634
1965	—	—	—	—	—	35,985	27,425	—	63,410
1966	—	—	—	—	—	59,599	33,361	—	92,960
1967	5,563	5,791	11,354	0	0	45,225	24,639	—	81,218
1968	86,541	85,168	171,709	10,000	111,534	1,214	903,367	—	1,197,824
1969	63,956	129,064	193,020	0	72,397	8,692	832,454	—	1,106,563
1970	83,415	150,578	233,993	0	131,848	25,401	804,320	—	1,195,562
1971	93,776	263,564	357,340	0	294,581	35,438	825,886	8	1,513,253
1972	186,796	425,005	611,801	0	422,322	53,848	875,529	6,489	1,969,989
1973	297,497	395,391	692,888	0	294,916	29,540	851,285	1,155	1,869,784
1974	423,982	450,093	874,075	0	412,453	31,493	963,956	2,118	2,284,095
1975	670,492	553,498	1,223,990	356	620,329	46,995	924,696	3,377	2,819,743
1976	631,876	741,126	1,373,002	4,147	547,538	103,546	1,018,653	1,745	3,048,631
1977	354,930	218,966	573,896	0	0	410,991	624,497	1,111	1,610,495
1978	782,625	529,740	1,312,365	0	16,215	177,245	836,864	1,691	2,344,380
1979	692,888	711,404	1,404,292	0	646,830	431,693	933,067	1,766	3,417,648
1980	726,545	784,946	1,511,491	52,200	350,017	40,269	925,750	2,131	2,881,858
1981	1,053,273	835,852	1,889,125	18,920	889,508	283,310	993,785	4,688	4,079,336
1982	916,014	822,042	1,738,056	140	214,994	144,267	819,586	4,646	2,921,689
1983	482,749	701,370	1,184,119	0	13,019	172,030	633,778	7,849	2,010,795
1984	725,799	861,794	1,587,593	3,663	259,254	366,273	891,128	7,040	3,114,951
1985	983,341	929,424	1,912,765	9,638	292,206	474,417	924,049	4,033	3,617,108
1986	998,611	1,009,295	2,007,906	2,595	21,755	177,176	843,040	3,865	3,056,337
1987	1,079,983	1,033,932	2,113,915	6,949	107,958	375,810	882,301	7,672	3,494,605
1988	1,308,071	1,068,302	2,376,373	0	0	520,375	884,877	4,889	3,786,514
1989	1,602,543	1,251,204	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	543,582	565,395	4,879	1,666,490
1992	955,687	455,112	1,410,799	1,156	0	166,992	613,978	2,605	2,195,530
1993	1,069,258	1,243,978	2,313,236	0	0	256,853	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	85,560	860,077	2,575	2,979,635
1996	1,143,638	1,371,186	2,514,824	12,091	16,556	252,346	1,005,148	3,907	3,804,872
1997	1,220,200	1,040,183	2,260,383	2,814	18,618	322,000	993,211	4,146	3,601,172
1998	865,795	860,724	1,726,519	9,982	10,306	127,405	872,738	2,108	2,749,058
1999	1,405,311	1,333,592	2,738,903	61,191	96,879	85,312	1,108,672	4,324	4,095,281
2000	1,968,161	1,231,745	3,199,906	170,302	138,483	333,384	1,085,886	4,030	4,931,991
2001	1,168,333	365,930	1,534,263	10,261	33,174	535,147	1,077,997	2,929	3,193,771
2002	1,849,052	715,805	2,564,857	9,502	27,663	272,277	1,131,880	3,694	4,009,873
2003	2,102,557	787,658	2,890,215	5,397	29,629	233,069	1,006,995	2,846	4,168,151
2004	1,951,657	643,342	2,594,999	103,890	112,949	341,922	1,171,835	2,865	4,328,460
2005	1,877,647	948,563	2,826,210	186,787	544,296	92,858	1,074,706	1,506	4,726,363
2006	1,973,268	998,583	2,971,851	293,358	327,981	119,405	1,112,551	1,936	4,827,082
2007	1,572,198	509,019	2,081,217	185,825	124,148	449,935	1,217,990	2,581	4,061,696
2008	1,015,241	218,999	1,234,240	2,729	0	488,818	1,109,563	2,778	2,838,128
2009	883,760	348,860	1,232,620	6,032	0	527,207	1,150,150	2,047	2,918,056
2010	1,427,202	503,727	1,930,929	7,505	0	559,553	1,005,986	1,167	3,505,140
Total	**43,049,534**	**30,032,960**	**73,082,494**	**1,247,085**	**7,311,267**	**11,025,111**	**39,886,696**	**147,402**	**132,700,055**

[a] Includes. Table A, Table A transfers, Table A exchanges, Carryover, and Pool Water.
[b] Includes water conveyed for SWP and non-SWP water contractors.
[c] Includes amounts of water diverted according to various water rights agreements.

Engineering, Construction, and Real Estate

In 2010, engineering, construction, and real estate work to enhance, expand, repair, and protect the SWP and other facilities within the State continued. Significant projects included South Bay Aqueduct enlargement, expansion of the South Bay Pumping Plant, Edmonston Pumping Plant refurbishment, Hyatt Powerplant pump-turbine refurbishment, and the East Branch Extension Phase I improvements and Phase II projects.

Design project studies, reports, and activities were continued from previous reporting periods or were initiated in 2010 for SWP facilities, including the:

- Oroville Facilities;
- Skinner Fish Facility;
- Perris Dam;
- East Branch Enlargement, Phase II;
- North Bay Aqueduct; and
- Sisk Dam.

DWR worked on 62 construction contracts in 2010. Projects included turbine and pump replacement, pipeline repair, trash rack upgrade at fish hatcheries, and recreational and maintenance facilities improvements at dam and reservoir sites.

In 2010, activities related to the Delta Habitat Conservation and Conveyance Program included the following:

- completing field activities for the 2010 overwater geotechnical investigation;
- continuing conventional soil testing and special laboratory testing, and preparing the Delta Habitat Conservation and Conveyance Program geotechnical data report; and
- organizing and/or participating in multiple stakeholder meetings.

DWR processed a net total of $5.8 million in payments in 2010 in support of right-of-way activities required for the construction, operation, and maintenance of the SWP. In 2010, DWR conducted real estate activities related to SWP acquisitions, temporary permits, property management, and appraisals.

For more information, see Chapter 12, Engineering, Construction, and Real Estate.

Delta Resources and Environmental Issues

Delta Stewardship Council

The Delta Stewardship Council (DSC), established by the Sacramento-San Joaquin Delta Reform Act of 2009, commenced operations in 2010, replacing the CALFED Bay-Delta Program. DSC replaces the function of CALFED and assumes all of the administrative rights, abilities, obligations, and duties of the California Bay-Delta Authority. The DSC's mission is to implement the coequal goals of water supply reliability and ecosystem restoration described in the strategic plan. The Delta Reform Act requires the DSC to adopt a comprehensive, long-term management plan for the Delta.

South Delta

Construction of the intertie between the SWP California Aqueduct and CVP Delta-Mendota Canal began in October 2010.

Subsidence Investigations

Work at the Twitchell Wetlands Research Facility showed that wetland restoration can accrete (gradually increase) land surface by a net average of 2 inches per year and potentially sequester 25 tons of carbon per acre, per year.

State Water Project Power Generation and Consumption in 2010

Power Generation and Consumption	Millions of Kilowatt Hours
Energy generation by SWP facilities	3,920
Energy sources and firm purchases under agreements and exchanges	5,081
Total Energy Available to the SWP	9,001
Energy sales	(1,814)
Net SWP Power Consumption	7,187

Status of Threatened or Endangered Species Listings

Delta Smelt. Effective January 20, 2010, delta smelt were uplisted to endangered under the California Endangered Species Act. The U.S. Fish and Wildlife Service status review, published in the Federal Register, April 7, 2010, determined that reclassifying delta smelt to endangered was warranted, but precluded by other higher priority listing actions, and delta smelt remained a federal Endangered Species Act threatened species.

Longfin Smelt. Longfin smelt were added to the California Endangered Species Act list of threatened species effective April 9, 2010.

Fish Restoration Program Agreement

The Fish Restoration Program Agreement, between the Department of Fish and Wildlife and DWR, was signed on October 18, 2010. The primary objective of the Fish Restoration Program Agreement is to implement the fish habitat restoration requirements and related actions of the biological opinions and the incidental take permit for the long-term coordinated operations of the SWP and CVP.

Climate Change

In 2010, several climate change studies were initiated or ongoing.

A DWR Climate Change Committee workgroup outlined an initiative to develop a three-phase DWR *Climate Action Plan*. Each phase will address a specific area of concern with respect to climate change and DWR's activities.

Recreation

In 2010, SWP facilities supported an estimated 4.3 million recreation days of use, up slightly from 2009 and 2008. In 2010, most SWP recreation use was concentrated at the lakes and major reservoirs, with 36 percent occurring in the Oroville Field Division and 44 percent in the Southern Field Division. For further recreation information, see Chapter 13, Recreation.

2010 Income Statement for the State Water Project

Revenues	Thousands of Dollars
Water Contract Payments	1,048,839
Revenue Bond Cover Adjustments	(51,484)
Rate Management Adjustments	(23,483)
Other Revenues	32,439
Total Operating Revenues	**1,006,311**
Expenses	
Project Operations, Maintenance, Power, and Replacement	682,670
Deposits to Reserves	17,230
Water Bond Principal	164,654
Water Bond Interest	141,758
Total Operating Expense and Debt Service	**1,006,311**
Net System Revenues	**0**

SWP Security Measures

Security and protection of the SWP remain primary goals for DWR. SWP facilities are closely monitored, and DWR staff are vigilant in maintaining a secure environment. Security patrols of SWP facilities are frequent and ongoing, and plans are in place to address potential or actual acts of terrorism. Security system improvements continue in conjunction with the Bureau of Reclamation and other federal and State agencies.

SWP Milestones through the Decades

Fifty Years Ago—1960

Voters approved the Burns-Porter Act, authorizing financing of SWP construction.

The Metropolitan Water District of Southern California signed the first long-term water supply contract for SWP water.

Forty Years Ago—1970

The John E. Skinner Delta Fish Protection Facility was completed.

Buena Vista Pumping Plant was dedicated and groundbreaking ceremonies were conducted at the Perris Dam site.

The Carley V. Porter Tunnel was completed.

Thirty Years Ago—1980

The Legislature added Water Code Section 109, encouraging both short- and long-term transfers of water.

Senate Bill 200 was signed by the Governor. The bill authorized the construction of the Peripheral Canal and other facilities and provided for the protection of water quality and fish and wildlife in the Delta. (Senate Bill 200 was voted down in a public referendum in 1982 and never became law.)

Twenty Years Ago—1990

In 1990, the State of California experienced its fourth year of drought. To disseminate information to the media and a wide variety of public and private organizations, and give technical assistance to water-short areas, DWR opened a newly remodeled Drought Center headquarters at 1025 P Street.

Ten Years Ago—2000

The CALFED Bay-Delta Program published a plan to fix Delta water problems and address its major water challenges over the next 30 years. The plan was formalized in a Record of Decision issued on August 28, 2000.

DWR assumed a leading role in the implementation of the CALFED plan, including programs related to water storage, Delta conveyance, Delta levee system integrity, watershed management, water use efficiency, and water quality.

Chapter 1
The State Water Project

Sunset along the California Aqueduct.

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 2010. At the end of the bulletin, Appendix B presents data and computations used to determine the SWP Contractors' Statements of Charges for 2012.

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 State Water Project (SWP) 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 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 flooding, generate power, provide recreational opportunities, and enhance habitat for fish and wildlife. SWP water irrigates about 750,000 acres of farmland, mainly in the southern San Joaquin Valley. Approximately 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 DWR-designated water year 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 water 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 4,171,996 acre-feet (af) of Table A water during 2010, gradually increasing to a maximum of 4,172,786 af by 2016. Some changes have occurred since the long-term water contracts were signed in the 1960s, including population growth variations, differences in local water use, local water conservation programs, and conjunctive-use programs. For detailed information about 2010 SWP deliveries, see Chapter 9, Water Contracts and Deliveries. 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, which 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 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

Figure 1-1 **Names and Locations of Primary Water Delivery Facilities, December 31, 2010**

summertime peaking demands of SWP and CVP water contractors.

SWP water not stored in San Luis Reservoir and water released from San Luis flows 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, home to roughly two-thirds of California's population. Before it can be delivered, the water 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 Gorgonio 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 four 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.

Table 1-1 Physical Characteristics of Primary Storage Facilities

Facility	Data at Absolute Maximum Elevation		
	Gross Capacity (Acre-feet)	Surface Area (Acres)	Shoreline (Miles)
Antelope Lake	22,600	930	15
Frenchman Lake	55,500	1,580	21
Lake Davis	84,400	4,030	32
Lake Oroville	3,537,600	15,810	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

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

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 many complex and dynamic environmental procedures, laws, and regulations.

Planners are also concerned about climate change and its potentially serious effects on water resources. Temperature increases may affect water demand and aquatic ecosystems. Projected increases in air temperature may lead to changes in the amount, timing, and form of precipitation—rain or snow, changes in the volume and timing of runoff, Delta water quality changes due to sea-level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates.

The ability of the SWP and CVP to meet the water demands of their customers and the environment depends on the accumulation of mountain snow and subsequent spring and summer snowmelt runoff. A warming climate may reduce this natural water storage mechanism.

To address these concerns, DWR and Reclamation formed a joint Climate Change Work Team to provide qualitative and quantitative assessments of the potential risks and effects of climate change on California's water resources. The team will

Table 1-2 Physical Characteristics of Primary Dams

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

[a] The term p-g indicates pumping-generating units.
[b] These plants have one unit in reserve.

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

Type and Facility	Number of Units	Normal Static Head (Feet)	Total Flow at Design Head (cfs)	Net Dependable Capacity (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[d]	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%.
[d] Castaic Pumping-Generating Plant is owned and operated by the Los Angeles Department of Water and Power.

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
Subtotal	*1.8*	*12.6*	*65.5*	*1.7*	*81.6*
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
Subtotal	*12.6*	*381.4*	*37.6*	*11.8*	*443.4*
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	16.2	0.0	16.2
Greenspot Pumping Station to Noble Creek Terminus	0.0	0.0	16.4	0.0	16.4
Subtotal	*9.7*	*23.4*	*137.1*	*9.8*	*180.0*
Total	**24.1**	**417.4**	**240.2**	**23.3**	**705.0**

regularly update decision makers on climate change impacts, the ability of existing facilities to accommodate these impacts, and available mitigation measures.

In response to changes brought about by population growth, environmental concerns, climate change, and other factors, DWR continues to plan, design, and construct transportation and power-producing facilities for the SWP. For information on current SWP planning and construction, see Chapter 12, Engineering, Construction, and Real Estate. Information about prior construction activities can be found in previous issues of Bulletin 132.

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 bond debt service.

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 in accordance with its long-term water supply contract. Therefore, only 29 agencies and districts have long-term contracts with DWR as of December 31, 2010.

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 2016 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.

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 more detailed information about each contracting agency.

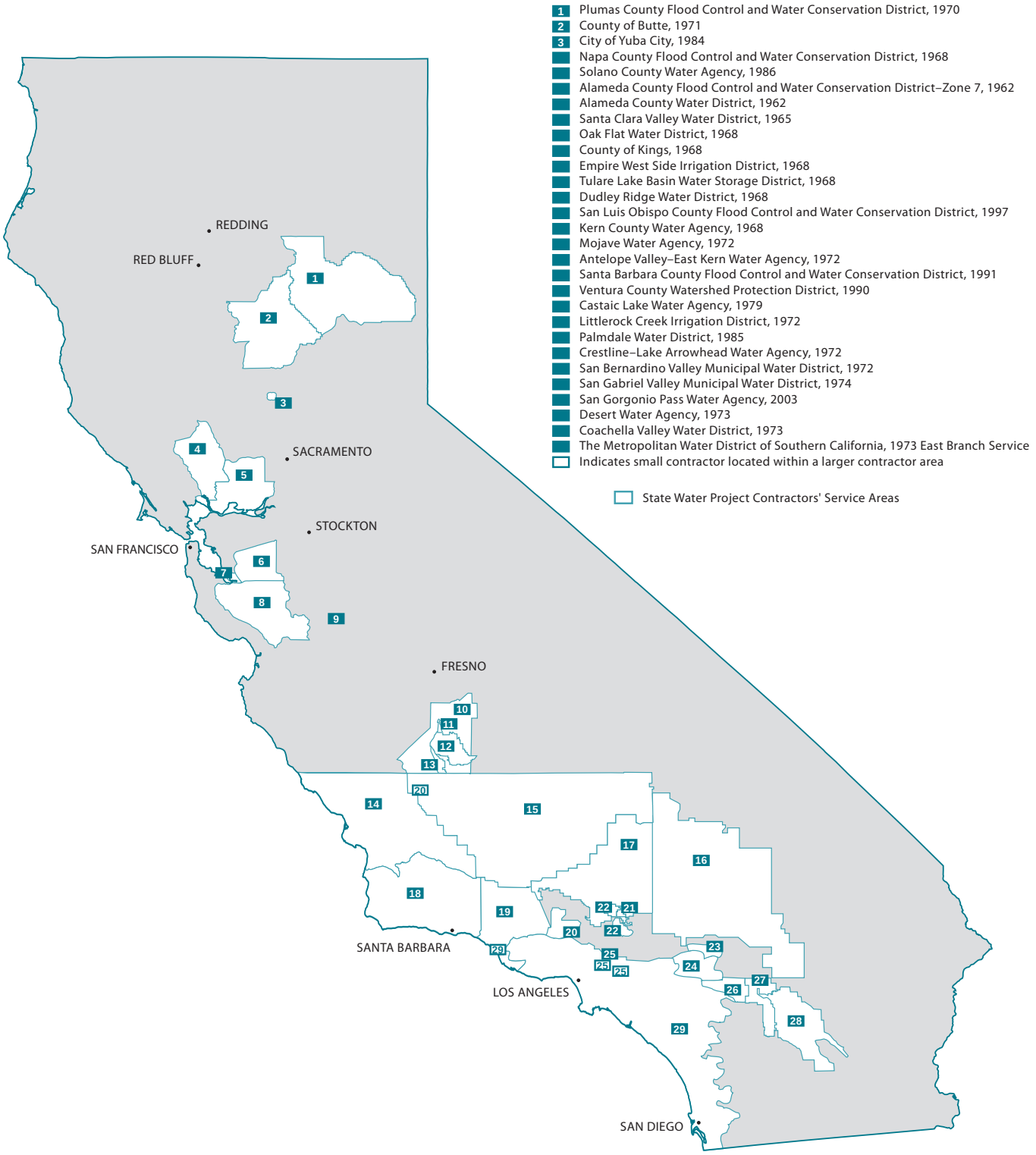

Figure 1-2 **Names, Locations, and First Year of Service of Long-term Contracting Agencies, December 31, 2010**

Table 1-6 Long-term Water Supply Contracting Agencies, by Area, as of December 31, 2010

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	31,195	9,600	5,358,045	9,332	4,400,000,000	63,338
County of Butte	34,555	27,500	3,946,299	1,049,280	18,099,000,000	220,269
Plumas County Flood Control and WCD	11,158	2,160	1,818,472	1,676,056[c]	2,060,744,342	21,200
Subtotal	*76,908*	*39,260*	*11,122,816*	*2,734,668*	*24,559,744,342*	*304,807*
North Bay Area						
Napa County Flood Control and WCD	279,988	29,025	94,316,788	510,010	26,755,229,545	136,704
Solano County Water Agency	715,172	47,506	128,569,292	581,760	39,600,000,000	413,220
Subtotal	*995,160*	*76,531*	*222,886,080*	*1,091,770*	*66,355,229,545*	*549,924*
South Bay Area						
Alameda County Flood Control and WCD–Zone 7	1,380,507	80,619	199,174,506	275,900	40,363,000,000	220,000
Alameda County WD	1,186,907	42,000	111,939,728	67,200	46,878,995,000	326,000
Santa Clara Valley WD	3,814,283	100,000	339,366,728	849,000	299,096,733,565	1,781,642
Subtotal	*6,381,697*	*222,619*	*650,480,962*	*1,192,100*	*386,338,728,565*	*2,327,642*
San Joaquin Valley Area						
County of Kings	130,415	9,305	7,442,457	893,300	8,835,356,035	156,289
Castaic Lake Water Agency	471,637	12,700		8,700[e]	4,532,936	0
Dudley Ridge WD	2,187,720	50,343	82,580,652	37,600	87,100,000	36
Empire West Side Irrigation District	117,095	3,000	4,077,718	7,400	[d]	11
Kern County Water Agency	33,239,158	982,730	1,823,168,638	5,224,000	82,640,475,000	808,808
Oak Flat WD	202,825	5,700	6,539,878	4,500	[d]	10
Tulare Lake Basin Water Storage District	4,723,013	88,922	161,954,477	189,519	180,000,000	23
Subtotal	*41,071,863*	*1,152,700*	*2,085,763,820*	*6,365,019*	*91,747,463,971*	*965,177*
Central Coastal Area						
San Luis Obispo County Flood Control and WCD	63,882	25,000	77,369,178	2,122,240	39,516,894,496	269,637
Santa Barbara County Flood Control and WCD	289,495	45,486	509,849,200	1,775,296	49,196,921,210	421,625
Subtotal	*353,377*	*70,486*	*587,218,378*	*3,897,536*	*88,713,815,706*	*691,262*
Southern California Area						
Antelope Valley-East Kern Water Agency	1,791,516	141,400	468,406,117	1,525,547	19,983,687,618	284,499
Castaic Lake Water Agency	845,472	95,200	288,815,645	124,800[e]	32,962,819,443	264,200
Coachella Valley WD	1,099,156	138,350	365,291,540	639,857	54,432,958,000	286,192
Crestline-Lake Arrowhead Water Agency	54,532	5,800	25,485,642	54,777	2,679,570,132	30,137
Desert Water Agency	1,165,633	55,750	260,070,149	209,760	8,909,874,500	71,821
Littlerock Creek Irrigation District	21,937	2,300	6,301,234	10,000	402,936,827	2,900
The Metropolitan WD of Southern California	32,045,339	1,911,500	9,514,337,863	3,314,621[f]	2,103,656,331,845	18,559,751
Mojave Water Agency	347,972	82,800	258,355,342	3,118,720	28,208,750,912	453,266
Palmdale WD	233,553	21,300	74,241,945	119,680	1,528,534,611	103,386
San Bernardino Valley Municipal WD	760,041	102,600	537,522,278	225,576	41,240,912,192	661,546
San Gabriel Valley Municipal WD	365,131	28,800	144,599,078	18,297	11,720,110,333	210,145
San Gorgonio Pass Water Agency	28,778	17,300	115,654,979	140,800	581,148,848	75,000
Ventura County Watershed Protection District	57,569	20,000	57,921,281	308,252	25,763,165,853	460,000
Subtotal	*38,816,629*	*2,623,100*	*12,117,003,093*	*9,810,687*	*2,342,363,172,337*	*21,447,941*
Total	**87,695,634**	**4,184,696**	**15,674,475,149**	**25,091,780[g]**	**2,332,070,801,114**	**21,462,843**

[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] Castaic Lake Water Agency (Southern California Area) 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 Watershed Protection District.
[g] Includes duplicate values. Some areas that are within two or more agencies are included in each agency's total.

Chapter 2
Delta Resources

The Mokelumne River in the Delta.

Significant Events in 2010

The Delta Stewardship Council, established by the Sacramento-San Joaquin Delta Reform Act of 2009, commenced operations in 2010, replacing the CALFED Bay-Delta Program.

The final environmental impact report for the North Delta Flood Control and Ecosystem Restoration Project was certified in November 2010.

Work at the Twitchell Wetlands Research Facility showed that wetland restoration can accrete (gradually increase) land surface by a net average of 2 inches per year and potentially sequester 25 tons of carbon per acre, per year.

Information for this chapter was contributed by the FloodSAFE Environmental Stewardship and Statewide Resources Office, the Bay-Delta Office, and the Division of Flood Management.

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 areas of the Sacramento-San Joaquin Delta: the North Delta, West Delta, and South Delta (see Figure 2-1).

These programs share common goals to:

- 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

Future water deliveries to millions of Californians throughout the State will be affected by many factors, including two significant changes: Delta pumping restrictions and climate change.

The CALFED Bay-Delta Program (CALFED) first attempted to address these changes. In 2009, the Delta Stewardship Council (DSC; see sidebar, Delta Stewardship Council) was established and took over from CALFED in February 2010. The first DSC public meeting was held in April 2010. DSC is in the process of developing and implementing a comprehensive Delta Plan based on the Delta Vision (see Bulletin 132-10).

The Bay Delta Conservation Plan (BDCP) is being developed in compliance with the federal Endangered Species Act and the California Natural Community Conservation Planning Act. When complete, the BDCP will provide the basis for the issuance of endangered species permits for the operation of the State and federal water projects. The plan would be implemented over the next 50 years. The heart of the BDCP is a long-term conservation strategy that sets forth actions needed for a healthy Delta.

For more information regarding BDCP, see Chapter 3, Environmental Programs.

The SWP and CVP obtained take authorization for federal Endangered Species Act and California Endangered Species Act listed species for coordinated operations in the Delta through a U.S. Fish and Wildlife Service biological opinion (BO) for delta smelt in December 2008, a Department of Fish and Wildlife (DFW; formerly the Department of Fish and Game) incidental take permit for longfin smelt in February 2009, and a National Marine Fisheries Service (NOAA Fisheries) BO for salmon, steelhead, and green sturgeon in June 2009. Some of the requirements in these documents were implemented right away, while other requirements needed development of studies and projects before being implemented. The Bay-Delta Office and Division of Environmental Services have begun developing studies and projects. The operational requirements are being implemented by the Division of Operations and Maintenance.

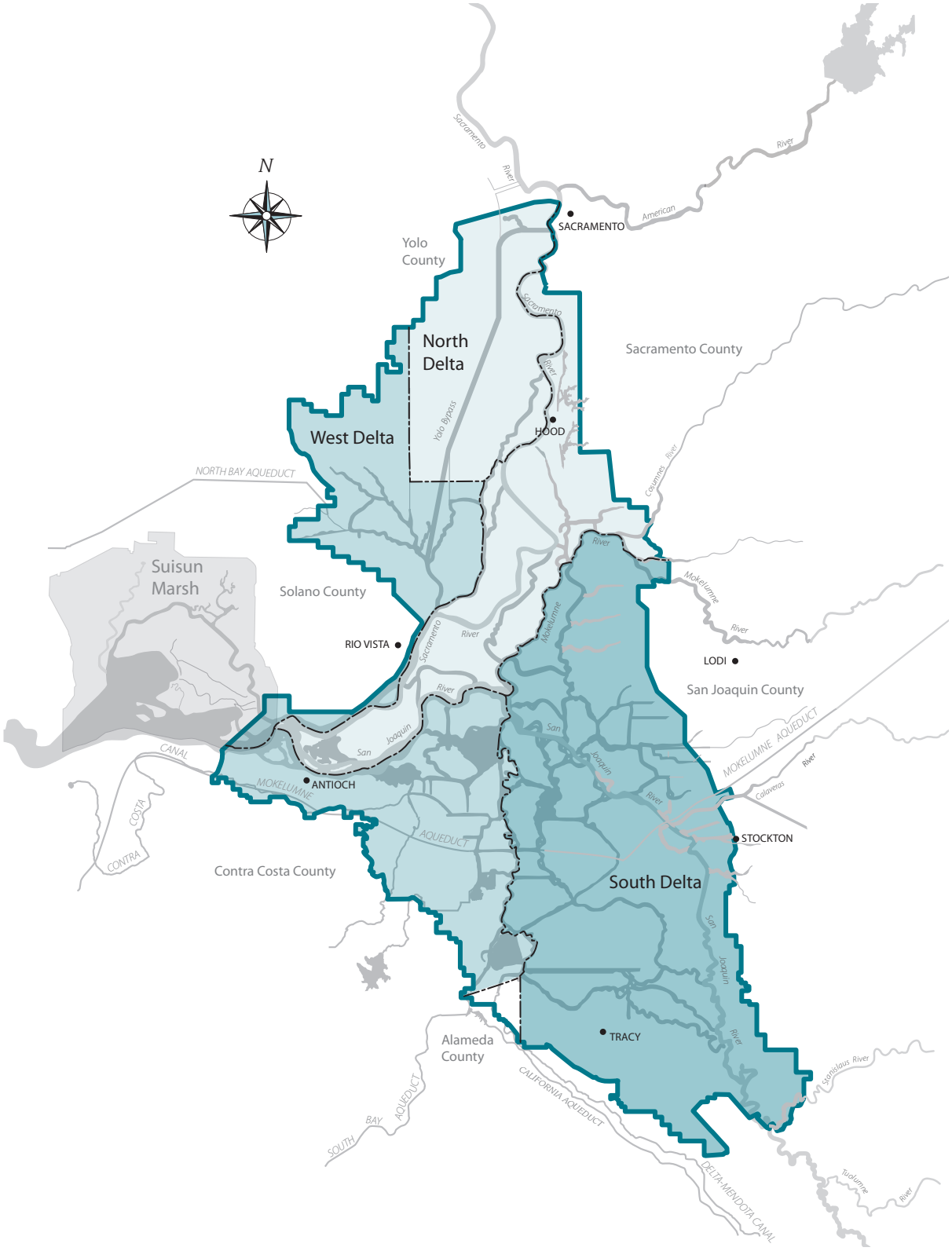

Figure 2-1 **The North, West, and South Delta as Defined in Public Resources Code Section 29735**

Delta Stewardship Council

Created by the Legislature in the Sacramento-San Joaquin Delta Reform Act of 2009 (Delta Reform Act), the Delta Stewardship Council (DSC) is an independent agency of the State of California composed of members who represent different parts of the State and offer diverse expertise in fields such as agriculture, science, the environment, and public service. Of the seven members, four are appointed by the Governor, one each by the Senate and Assembly, and the seventh is the Chair of the Delta Protection Commission. The council is the successor to the California Bay-Delta Authority and assumes all of its administrative rights, abilities, obligations, and duties.

The DSC is mandated by law to develop, adopt, and begin implementing a legally enforceable, comprehensive, long-term management plan for the Sacramento-San Joaquin Delta by January 1, 2012. The *Delta Plan* will establish a set of integrated, legally enforceable policies, strategies, and actions to guide State and local agencies to help achieve coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. It will also guide protection and enhancement of the unique resources, culture, and values of the Delta as an evolving place (California Water Code Section 85054).

The Delta Reform Act also specifies eight policy objectives that are "inherent" in the coequal goals (see Water Code Section 85020); a related statewide policy to reduce reliance on the Delta in meeting the State's future water supply needs through improved regional water self-reliance (Water Code Section 85021); and certain specific subjects and strategies that must be included in the Delta Plan (see generally, Water Code Sections 85301–85309).

The Delta Reform Act also established the Delta Science Program and Delta Independent Science Board (ISB) to provide the scientific support and oversight the DSC needs to make decisions based on sound science. Members of both are appointed by the DSC. The Delta Science Program replaces the CALFED Science Program, and the Delta ISB replaces the CALFED ISB.

The Delta Science Program will develop scientific information and synthesis on issues critical for managing the Bay-Delta system. That body of knowledge must be unbiased, relevant, authoritative, integrated across State and federal agencies, and communicated to Bay-Delta decision-makers, agency managers, stakeholders, the scientific community, and the public.

The Delta ISB is a standing board of nationally or internationally prominent scientists with appropriate expertise to evaluate the broad range of scientific programs that support adaptive management of the Delta. The Delta ISB will provide oversight of the scientific research, monitoring, and assessment programs that support adaptive management of the Delta through periodic reviews of each of those programs. The overall objective of Delta ISB oversight is to ensure that the science supporting Bay-Delta programs, the application of that science, and the technical aspects of the Bay-Delta programs are optimally developed and implemented.

Delta Plan

The Governor's Delta Vision Blue Ribbon Task Force issued the *Delta Vision Strategic Plan* in November 2008. It outlined strategies for addressing a range of threats facing the Delta and called for the Delta to be managed according to two coequal goals: "Restore the Delta ecosystem and create a more reliable water supply for California."

In 2009, the Legislature and Governor enacted a bill package dealing with water policy and the Delta. Among other things, Senate Bill X7 1 enacted the Sacramento-San Joaquin Delta Reform Act of 2009 (Delta Reform Act). Programs authorized by the act were designed according to the recommendations in the *Delta Vision Strategic Plan*. The Delta Reform Act created two new agencies, the Delta Stewardship Council (DSC) and the Sacramento-San Joaquin Delta Conservancy. The bill also amended key provisions governing the organization and operations of the Delta Protection Commission.

The DSC's mission is to implement the coequal goals of water supply reliability and ecosystem restoration described in the strategic plan. DSC replaces the function of CALFED and assumes all of the administrative rights, abilities, obligations, and duties of the California Bay-Delta Authority. The Delta Reform Act requires the DSC to adopt a comprehensive, long-term management plan for the Delta (*Delta Plan*). Additionally, the Delta Reform Act includes requirements in connection with the preparation of the BDCP and could be permitted to be incorporated in the *Delta Plan* if certain requirements are met.

For more information regarding the Delta Reform Act, visit the California legislative information website, DSC's website, or the Delta Vision website.

Delta Risk Management Strategy

The Delta Risk Management Strategy project was placed on hold during calendar year 2010 due to economic challenges faced by the State of California and direction received from the Governor. Therefore, no further developments or changes occurred on the project during calendar year 2010.

North Delta Program

Since 2003, DWR has been involved in evaluating changes in the North Delta's conveyance facilities to improve Delta water quality, fisheries, and water supply reliability, as well as improvements to flood protection and ecosystem health.

North Delta actions include:

- evaluation and implementation of improved operational procedures for the Delta Cross Channel to address fishery and water quality concerns;
- evaluation of a screened through-Delta facility 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 through installation of operable barriers in the Franks Tract region; and
- design and construction of floodway improvements to provide conveyance, flood control, and ecosystem health (North Delta Flood Control and Ecosystem Restoration Project).

In 2009, work on several projects was suspended as a result of the State's fiscal crisis. The Delta Regional Salmon Outmigration Study, undertaken as part of the Delta Cross Channel evaluations to address fishery and water quality concerns, was not completed. The last phase of the field study and subsequent data analysis were suspended. In 2010, efforts were made to resume analysis of data that

were collected in the winter of 2008–2009. Unfortunately, U.S. Geological Survey (USGS) staff contracted to conduct the Salmon Outmigration Study were not readily available to do the analysis work in 2010. However, it is expected the work will resume at a future date.

The environmental impact statement (EIS)/environmental impact report (EIR) for 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, was also suspended in 2009. However, in 2010, work on the Franks Tract Project resumed, including completing a final wetland delineation report for a U.S. Army Corps of Engineers (Corps) Section 404 (Clean Water Act) permit; developing three technical memorandums on design, cost estimating, and construction of the project; and conducting a sensitivity model analysis to assess the benefits of the project under the new BO and incidental take permit for SWP and CVP operations.

For more information about North Delta Program activities, see Chapter 7, Water Supply Development and Reliability, or DWR's website.

North Delta Flood Control and Ecosystem Restoration Project

The North Delta Flood Control and Ecosystem Restoration Project (NDFCERP) provides flood control improvements and ecosystem restoration in the North Delta. The project will implement important flood control improvements in the area of the North Delta where the Mokelumne River, Cosumnes River, Dry Creek, and Morrison Creek converge. Flood flows in the area threaten levees, bridges, and roadways when levees on McCormack-Williamson Tract (MWT) are overtopped and a flood surge occurs. The proposed project will help regulate peak flood flows and prevent flood surges. It will also provide substantial aquatic and terrestrial habitat benefits.

Proposed as a CALFED Stage 1 action in addition to ecosystem restoration and flood management, 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.

Project Area. The project area (Figure 2-2) is approximately 197 square miles in which DWR considered alternatives for flood control and restoration actions.

Environmental Review. Proposed project actions and alternatives were subdivided into two basic groups for analysis in the EIR.

Group I consisted of modifications to levees on MWT, downstream levee raising to offset potential hydraulic impacts caused by these modifications, restoration of MWT and the Grizzly Slough property, and dredging of the Mokelumne River.

Group II consisted of proposed project actions on Staten Island and levee modifications and dredging along the Mokelumne River.

DWR staff worked with federal regulatory agency scientists and academic experts to complete development of three ecological conceptual model alternatives for the Group I actions. Details of the conceptual models are in Appendix D of the public draft EIR.

A preferred project alternative was chosen through the EIR process and identified in the final EIR.

Project Status. Staff completed preparation of the final EIR, addressing comments received during the 2008 comment period and input

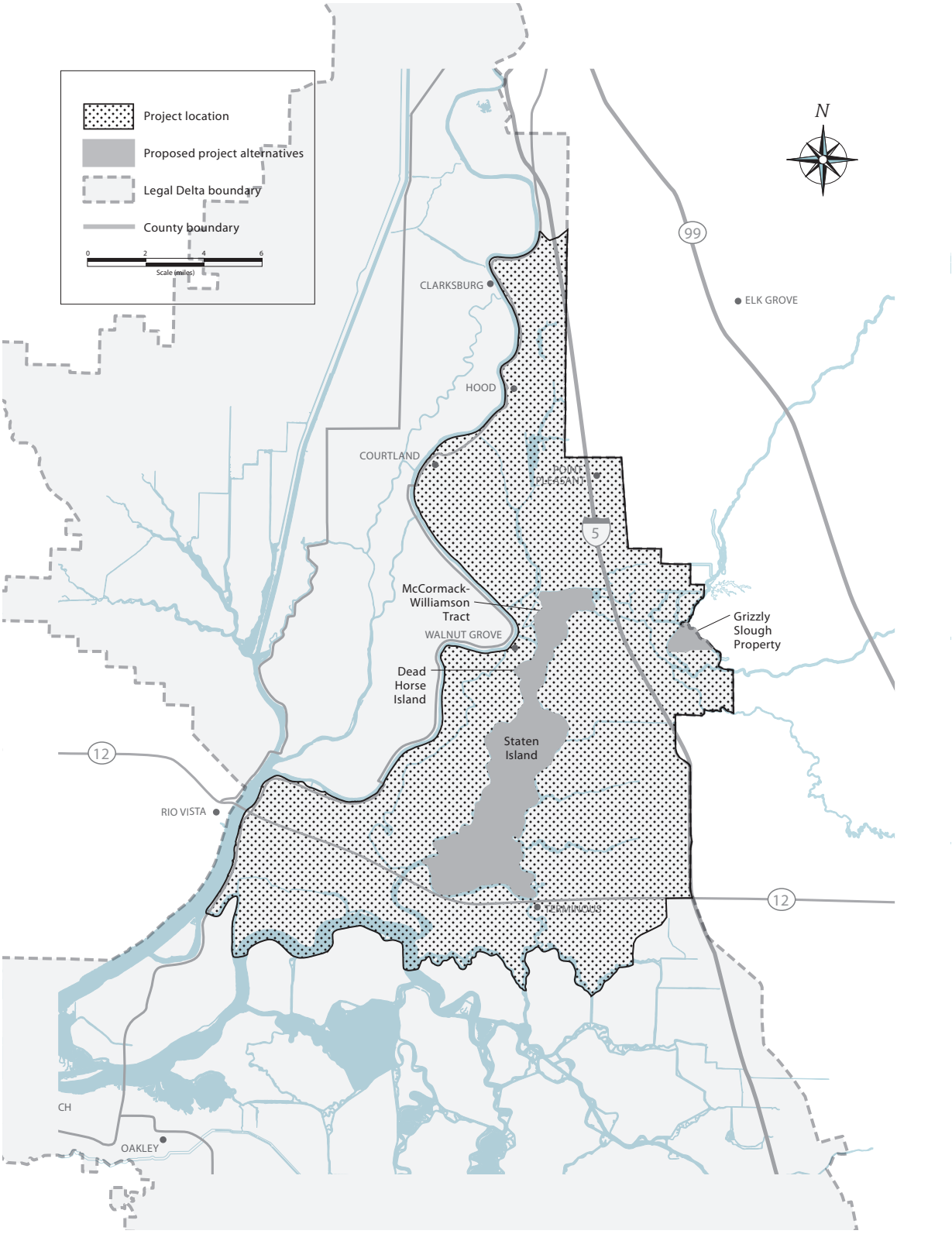

Figure 2-2 North Delta Flood Control and Ecosystem Restoration Project, Project Area

received during 2009 meetings with local, State, and federal regulatory agencies. The final NDFCERP EIR was certified in November 2010, and recommended the implementation of the preferred alternative (Alternative 1-A and the No Action Alternative for the Group II actions). The project will create tidal, subtidal, aquatic, and terrestrial habitats benefiting a number of special status species such as Sacramento splittail and Chinook salmon. The project, as proposed, will provide contiguous habitat and a riparian corridor from the downstream portion of the Cosumnes River Preserve to the Delta.

The following project elements are proposed for implementation over a 6-year timeline: the MWT element combines North Delta flood surge reduction measures with the construction of habitat-friendly levees, floodplain restoration, and the creation of freshwater tidal habitat on MWT. The MWT property, purchased using a CALFED grant, is currently owned and managed by The Nature Conservancy. When completed, the MWT element will result in nearly 1,500 acres of tidal marsh and floodplain restoration consistent with the objectives put forth in the evolving Delta Plan and BDCP. The Grizzly slough element consists of breaching the Grizzly and Bear Slough levees near MWT to help attenuate peak flood flows and maximize floodplain habitat on the DWR-owned property.

Through the CALFED Levee Stability Program, the Corps expressed renewed interest in the flood control and ecosystem restoration actions proposed for MWT (a component of the NDFCERP). The Corps tentatively committed federal funds to evaluate the project for its involvement, so DWR and the local reclamation district negotiated an agreement to support project planning with the Corps.

For more information on the NDFCERP and the project elements, visit DWR's website.

West Delta Program

The West Delta Program is a part of the Special Investigations Branch in the FloodSAFE Environmental Stewardship and Statewide Resources Office with specific SWP-related objectives that include the following:

- effectively manage SWP-owned lands on Sherman and Twitchell islands (approximately 12,500 acres total);
- improve the integrity of local levees;
- implement land-use management techniques to control subsidence and soil erosion on Sherman and Twitchell islands; and
- provide diverse habitat for wildlife, especially waterfowl.

DWR is a major landowner on Twitchell and Sherman islands and holds two of the three trustee positions for Reclamation Districts 1601 (Twitchell Island) and 341 (Sherman Island). Consequently, DWR, through the West Delta Program, 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.

In 2010, the West Delta Program acquired additional land on Twitchell Island. The westernmost parcel of the island, known locally as Chevron Point, was purchased by the West Delta Program with help and service from Reclamation District 1601. A total of 117 acres of agricultural land and facilities, along with new levee access, was acquired with the purchase. The current plan is to use this land for tidal marsh restoration, additional subsidence reversal projects, or as access to the planned salinity control gates for the Franks Tract Project. The remaining 400 acres of Chevron Point are also under

current consideration for purchase by DWR and Reclamation District 1601.

South Delta Improvements Program

In 1999, the South Delta facilities became a key component of CALFED.

South Delta Improvements Program (SDIP) elements in the CALFED record of decision 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 in Clifton Court Forebay. SDIP is proposed to be implemented in two component stages.

The SDIP Stage 1 component comprises proposed physical/structural improvements which include constructing and utilizing permanent operable gates, dredging, and modifying agricultural diversions. The SDIP Stage 2 component comprises proposed operational changes to increase water deliveries and improve delivery reliability south of the Delta.

DWR and the Bureau of Reclamation (Reclamation) identified the following project objectives and purposes for SDIP:

- reduce movement of San Joaquin River watershed Central Valley fall-run and late fall-run juvenile Chinook salmon into the South Delta via Old River (SDIP Stage 1);
- maintain adequate water levels and water quality through improved circulation for agricultural diversions in the South Delta, downstream of Head of Old River (SDIP Stage 1);
- increase water deliveries and delivery reliability to SWP and CVP water contractors south of the Delta (SDIP 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 (SDIP Stage 2).

The SDIP Stage 1 physical/structural component includes the following elements:

- construct and operate a fish-control gate at Head of Old River to reduce 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) at Middle River (near the confluence of Middle River with Victoria Canal), Grant Line Canal (near the confluence of Grant Line Canal and Old River), and Old River (just east of the Delta-Mendota Canal intake) to improve existing water level and circulation patterns in South Delta water channels;
- 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.

The SDIP final EIR/EIS (2006) determined the preferred alternative for SDIP Stage 1, which entails installation of permanent control gates to replace temporary structures currently installed and removed each year under the DWR Temporary Barriers Project. The preferred alternative also includes the elements of dredging and extending agricultural diversions.

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.

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.

Program Status

DWR and Reclamation continued to suspend most SDIP planning and permitting activities during 2010. Some activities were undertaken to address requirements of the 2009 NOAA Fisheries BO for the CVP and SWP Long-term Operations Criteria and Plan.

Discussions between DWR and NOAA Fisheries revealed NOAA Fisheries' concern for potential barrier hydraulic disturbances which could promote increased predation on juvenile salmon. DWR conducted a hydrodynamic study focusing on barrier design features to minimize these disturbances. A study report was submitted to NOAA Fisheries in April 2010, which identified several features that could be incorporated into the design.

NOAA Fisheries stated an interest to hold off further discussions on the SDIP until completion of an on-going multiyear South Delta Temporary Barriers Project predation study. The study is being conducted to satisfy requirements of the 2008 NOAA Fisheries BO for the project and is examining the occurrence of predation associated with the project. Data from the study could be useful in considering permanent barrier design options and operation strategies to minimize predation.

For additional information about SDIP, see Chapter 7, Water Supply Development and Reliability.

Temporary Barriers Project Facilities

The South Delta Temporary Barriers Project is an ongoing project that installs up to four rock barriers in channels located in the southern portion of the Sacramento-San Joaquin Delta near the cities of Tracy and Lathrop in San Joaquin County. The barriers are installed during irrigation season from April to November at four sites (see Figure 2-3), 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 Jones Pumping Plant intake and about 8 miles northwest of Tracy;
(3) Middle River near Victoria Canal, 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 Old River near Tracy, Middle River near Victoria Canal, and Grant Line Canal rock barriers are designed to act as flow control structures to improve water levels and circulation within the South Delta. The Head of Old River barrier is designed to improve migration conditions for Central Valley fall-run Chinook salmon in both spring and fall. In the spring, the barrier blocks juvenile salmon migratory movements into Old River from the mainstream San Joaquin River. In the fall, the barrier increases the volume of San Joaquin River flow passing downstream through the Port of Stockton and improves dissolved oxygen levels in the San Joaquin River. As a result, it improves the low dissolved oxygen sag that occurs near that area and aids adult salmon upstream migration in the San Joaquin River basin.

In 2010, the three agricultural barriers at Middle River near Victoria Canal, Grant Line Canal, and Old River near Tracy were installed and operated as planned. However, due to a 2008 court order (Wanger Decision) to protect delta smelt, installation of the

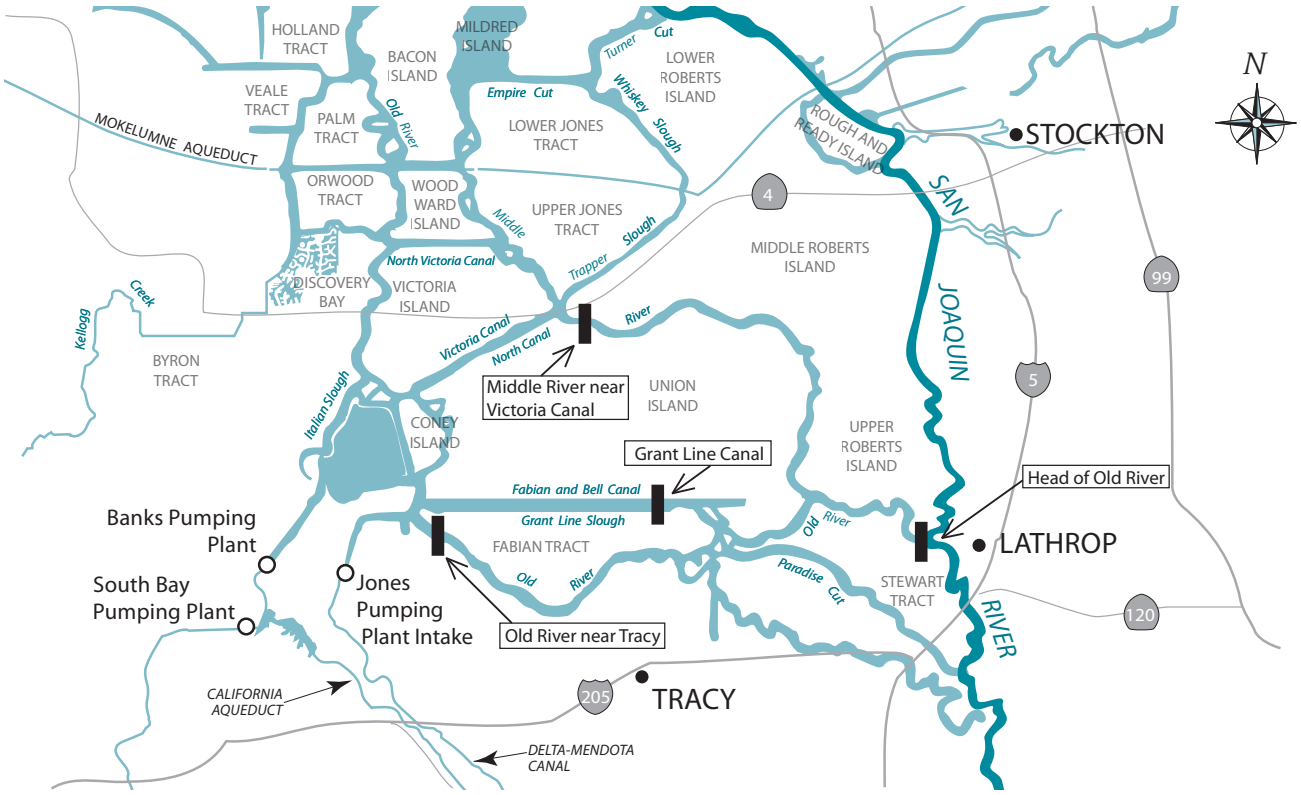

Figure 2-3 Temporary Barrier Locations in the South Delta

spring Head of Old River physical rock barrier was prohibited. In 2009 and 2010, in lieu of a rock barrier, DWR installed a nonphysical barrier comprised of sound projectors, strobe lights, and perforated pipe (to create an air bubble curtain). The overall function and design of the 2010 nonphysical barrier did not change; however, minor changes to the 2010 project consisted of lengthening the nonphysical barrier, reducing the number of support piles, and increasing the number of hydrophones used to create fish tracks. The nonphysical barrier was tested to determine its effectiveness to prevent the outmigrating juvenile salmon from entering the South Delta via Old River. To test the nonphysical barrier's effectiveness, a biotelemetry fish study was coordinated and implemented with assistance from the U.S. Fish and Wildlife Service and Reclamation. Acoustic transmitters were inserted into outmigrating salmon smolts that were released in several groups at different times upstream of the nonphysical barrier. Receivers were installed at strategic locations to monitor fish survival and track their movement near the nonphysical barrier.

In 2010, DWR continued the fish study data collection at all four barrier sites. The study will continue through 2012. Data associated with this project will be combined in a single comprehensive report.

The fall Head of Old River barrier was not installed because the existing flows and dissolved oxygen levels in the San Joaquin River were sufficient for Chinook salmon, and it was not requested by DFW.

More information on the temporary barriers can be found on DWR's website.

Other South Delta Actions

Besides SDIP, actions in the South Delta included implementing flood and ecosystem

improvements in the lower San Joaquin River. Reclamation began construction of the intertie between the SWP California Aqueduct and CVP Delta-Mendota Canal in October 2010.

Delta Flood Control

Many important assets in the Sacramento-San Joaquin Delta are protected from flooding by levees. The levees serve many needs. They protect valuable wildlife habitat, farms, homes, urban areas, recreational developments, highways, railroads, natural gas infrastructure, utility lines, a major aqueduct, and other public developments. Some levees are critical to the protection of in-Delta water quality and water quality for approximately 25 million Californians who receive a portion of their water from the Delta. The State Legislature recognized the importance of the Delta and enacted the Delta Flood Protection Act of 1988 (Senate Bill 34 [Water Code Sections 12300 et seq., and 12980 et seq.]). With Senate Bill 34, the Legislature declared that ". . . the Delta is endowed with many invaluable and unique resources and that these resources are of major statewide significance."

Since 1988, the Delta Levees Program has provided approximately $310 million in State-appropriated funds. These monies, combined with local funds, have realized approximately $385 million in levee improvements (through State fiscal year 2009–2010).

In Senate Bill 34, the Legislature declared its intent to appropriate $12 million annually for the Delta Flood Protection Fund. Of this appropriation, $6 million 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.

In 1996, Assembly Bill 360 was signed into law, expanding the area covered by the Delta Levees Program to include the remainder of the legal Delta and northern Suisun Bay from Van Sickle Island to westerly 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 provided $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 (LSIP).

Proposition 84, approved by voters in November 2006, allocated $275 million to the Delta for 4 years.

Proposition 1E, also approved by voters in November 2006, added funding for Delta levee improvements.

CALFED Levee System Integrity Program

The CALFED Bay-Delta Authorization Act (Public Law 108-361, 2004) authorized the Corps to develop action strategies to address urgent levee improvement needs and identify and prioritize potential short-term and long-term levee stability projects in the Delta.

The CALFED LSIP is the Corps' short-term strategy to move quickly on high-priority levee reconstruction projects.

The Corps' long-term strategy for Delta levees will be developed in the Sacramento-San Joaquin Delta Islands and Levees Feasibility Study. The feasibility study will build on recommendations in the State's

Delta Risk Management Strategy, a technical study to assess the risks to the Delta levee system and the associated effects of levee failures.

CALFED LSIP goals and objectives are described below.

Base-Level Protection

According to the CALFED record of decision, all Delta levees should be built to the Corps Delta-specific levee standard (Public Law 84-99). The minimum freeboard is 1.5 feet above the water level of a 100-year flood event 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.

The CALFED LSIP provides funding to help local levee-maintaining agencies improve all Delta levees to the Public Law 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 standard. During CALFED Stage 1 (implemented 2000–2007), about 200 additional miles of levees were planned to be altered to meet the Public Law 84-99 level of protection, provided there was sufficient funding. Funding for flood protection through Propositions 1E and 84 totals $275 million.

Levee Upgrades

Upgrading the Delta levees is an integral part of the CALFED LSIP plan which is implemented through DWR's Delta Flood Protection Program.

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

Levee improvements beyond the Public Law 84-99 standard, where appropriate, will follow or complement the completion of base-level protection depending on continuation of the program and funding availability. Results from Delta planning studies will enable DWR to prioritize future work.

Special Improvement Projects

Another LSIP goal is to enhance the stability of levees in the Delta. LSIP would provide funding to levee-maintaining agencies for making improvements such as raising levee crests to Hazard Mitigation Plan and Public Law 84-99 sustainable levee cross-section standards. This work will be completed on levees that have particular importance in the State. Priorities include protecting life and property; water quality (preventing salinity intrusion); the Delta ecosystem; and agricultural production.

Suisun Marsh Flood Protection and Ecosystem Enhancement

LSIP support of maintenance and improvement of the levee system in the Suisun Marsh provides for levee integrity, ecosystem restoration, and water quality benefits. The Suisun Marsh Levee Investigation was undertaken in January 1999, at the request of the CALFED Policy Group, to determine whether adding Suisun Marsh levees into the LSIP would contribute to CALFED program goals. The team identified significant links between Suisun Marsh levee maintenance and achievement of CALFED drinking water quality and ecosystem restoration goals. Furthermore, modeling research indicated a significant risk of negative water quality impacts in the Delta if Suisun Marsh levees were inadequately maintained and allowed to fail.

CALFED LSIP actions for the Suisun Marsh will be developed during preparation of the Suisun Marsh Plan. Full implementation of the Suisun Marsh portion of LSIP awaits completion of the Suisun Marsh Charter, independent funding, and authority in the Water Code, or other law, for program authorization.

For more information about the Suisun Marsh Plan and Charter, see Chapter 4, Water Quality.

Delta Flood Emergency Preparedness and Response Plan

DWR continued developing a Delta Flood Emergency Preparedness, Response, and Recovery Plan to improve its ability to prepare for, respond to, and recover from multiple-island levee failures within the Sacramento-San Joaquin Delta caused by a flood or seismic event. The plan will be a flood emergency operations plan for emergency events in the Delta and is intended to inform DWR's emergency response partners of DWR's roles and responsibilities.

For more information, visit DWR's website.

Delta Levees Maintenance Subventions Program

The Delta Levee Maintenance Subventions Program provides funding, as a reimbursement of up to 75 percent of eligible costs, to local Delta reclamation districts for levee maintenance and improvement. The program helps protect the Delta ecosystem, Delta communities and agriculture, State and private infrastructure, and the State's water supply.

Each year, up to 70 participating local agencies prepare work plans and file funding applications with the Central Valley Flood Protection Board (CVFPB). DWR reviews funding applications and work plans, makes recommendations, and requests CVFPB approval for program funding levels. CVFPB approves each local reclamation district's maximum possible reimbursement and maximum advanced reimbursement. CVFPB and the local agency enter into an agreement for the reimbursement of the costs of the work. The work is to be performed in accordance with the approved application; provisions and policies in the Water Code; and DWR guidelines, procedures, criteria, and recommendations. The local agency is responsible for ensuring projects are in compliance with the California Environmental Quality Act and all applicable environmental laws and regulations. The projects must also receive confirmation from DFW that a net long-term habitat improvement of riparian, fisheries, and wildlife habitat will result.

Delta Levees Habitat Improvement

As part of the CALFED LSIP, the DWR FloodSAFE Environmental Stewardship and Statewide Resources Office continued to work to create valuable habitat in the Delta. By the end of 2009, 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 of shaded riverine aquatic habitat for enhancement.

Completed mitigation and enhancement projects include:

- Medford, Bethel, and Kimball islands;
- Terminous, Wright-Elmwood, Palm, and Thornton-New Hope (Grizzly Slough) tracts;
- Sherman Island setback levee;
- Twitchell Island setback levee;
- Twitchell Island mitigation areas;
- Staten Island berm and channel islands;
- Canal Ranch attached berm;
- lower Sacramento River revegetation on 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;
- Tyler Island bank stabilization demonstration; and
- Delta In-Channel Demonstration Project.

Other projects underway include the following:

- long-term management of Meins Landing for conversion to tidal marsh and enhancement of salt marsh harvest mouse habitat;
- bird monitoring at the Decker Island restoration site;
- Sherman Island Parcel 11 Revegetation Project;
- Dutch Slough tidal marsh restoration on nearly 1,200 acres; and
- Bradford Island Tract 19 mitigation area monitoring and maintenance.

DWR, DFW, and reclamation districts are successfully providing avoidance or mitigation of habitat losses and net long-term habitat improvement in the Delta. Reclamation districts have cooperated in helping DWR meet its mitigation and enhancement needs. In 2010, DWR initiated a Bulk Acquisition of Mitigation Credits Program as a means of encouraging reclamation districts to meet their mitigation obligations by purchasing mitigation credits from established mitigation banks. In this way, credits can be acquired as cost effectively as possible, and will have all of the guarantees to assure habitat mitigation is maintained in perpetuity.

Also in 2010, DWR released a proposal solicitation package for reclamation districts to submit proposals specifically for habitat enhancement projects. As a result, several new habitat enhancement funding agreements were being developed.

DWR and DFW will continue to work with the reclamation districts to preserve existing habitat and 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 long-term actions and priorities in May 1990. The long-term actions and priorities serve as a guide for DWR to determine the best use of appropriations to protect these islands. Long-term actions and priorities include the following:

- rehabilitation of threatened levees through the beneficial reuse of dredged material;
- verification of elevations in the Delta through the use of global positioning system equipment and light detection and ranging;
- upgrading levees to the standards included in Bulletin 192-82 (Delta Levees Investigation); 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. Districts receiving these funds are required to participate in a habitat improvement program to ensure net long-term habitat enhancement.

Levee restoration projects, habitat projects, and other special projects were conducted on various Delta islands and tracts in 2010.

Reuse of Dredged Material for Delta Levees

As local sources of fill material for levee repair are depleted, new economical sources must be located. DWR has worked to find more opportunities to reuse clean, dredged materials in the Sacramento-San Joaquin Delta.

As part of this effort, a charter for the multiagency Delta Long-Term Management Strategy (LTMS) for the beneficial reuse of dredged material became effective in February 2007. The LTMS is designed to improve operational efficiency and coordination of collective and individual agency decision-making responsibilities, resulting in approved dredging and dredged material management actions in the Delta. Regular LTMS meetings include representatives from DWR, the Corps, the U.S. Environmental Protection Agency, the Regional Water Quality Control Board (RWQCB), the Ports of Stockton and West Sacramento, and other interested parties. LTMS is evaluating potential beneficial reuse opportunities, particularly from the proposed Sacramento and Stockton Deep Water Ship Channel projects, and has prepared a draft summary of Delta dredged material placement sites and a draft Delta-wide map of existing sediment placement sites.

To facilitate the permitting process for dredging and dredged material placement and reuse, a draft joint permit application for dredging and dredged material placement/reuse has been developed. An interagency agreement between DWR and the RWQCB is underway, a sediment background study is planned for Sherman, Twitchell, and Brannan-Andrus islands, and development of general order waste discharge requirements to help streamline the RWQCB's approval process has also been initiated.

LTMS long-term goals include the following:

- developing a streamlined permitting process for dredging and dredged material reuse;
- developing a consolidated guidance document addressing sampling, tests, protocols, and methods for assessing sediment and dredged material characterization;
- developing a sediment management plan of methodologies for assessing and characterizing sediments and determining appropriate disposal options;
- developing a programmatic biological assessment for sensitive Delta species;
- drafting a programmatic EIR/EIS for the Delta LTMS; and
- identifying and permitting additional sediment placement and beneficial reuse sites in the Delta.

For more information, visit DWR's website.

Subsidence Investigations

Subsidence in the Sacramento-San Joaquin Delta marshlands is widely accepted to be the result of local draining and cultivation projects, which cause the peat soil to break down and compact. The peat soil has oxidized and subsided since the mid-1800s when the land was first drained and levees were constructed. The surface of organic soils in the Delta is now between 10 and 30 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. The West Delta Program has been given the specific task of implementing land-use management techniques to control subsidence and soil erosion on Sherman and Twitchell islands, where SWP owns approximately 12,500 acres of land.

DWR continued its partnership with USGS for research on the 15-acre Twitchell Wetlands Research Facility, initially funded in 1999 using CALFED Category III funds. 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. Additional research activities performed in 2010 by USGS include assessments of water quality impacts, greenhouse gas release, and other impacts of tule cultivation in subsided Delta islands.

Work at the Twitchell Wetlands Research Facility has shown that wetland restoration can accrete (gradually increase) land surface by a net average of 2 inches of per year and potentially sequester 25 tons of carbon per acre, per year. In 2010, the accretion at the 15-acre site started to become apparent when the surrounding berms had to be increased in volume due to a consistently lowered freeboard height in the wetland. Because of the success of this wetland site, there have been plans to expand the project in size, creating a farm-scale wetland between 300 and 1,000 acres on Twitchell Island. Further development of a Farm Scale Wetlands Demonstration Project has been proposed adjacent to the existing Subsidence Reversal Demonstration Project conducted in 2010 to determine land accretion and carbon sequestration rates associated with wetland farming within the western Delta.

In 2010, construction of the Mayberry Farms Subsidence Reversal and Carbon Sequestration Project occurred after extensive planning, design, and environmental permitting activities. The Mayberry Farms project created permanently flooded wetlands on a 307-acre parcel owned by DWR on Sherman Island. The completion of construction restored approximately 192 acres of emergent wetlands and enhanced approximately 115 acres of seasonally flooded wetlands. The Mayberry Farms project was conceived as a demonstration project that would provide subsidence reversal benefits and develop knowledge that could be used by operators of private wetlands, including "duck clubs," which manage lands for waterfowl-based recreation. When construction is complete, the plan is to permanently maintain water levels to stimulate the growth and subsequent decomposition of emergent vegetation, which will control and reverse subsidence. The completed project is also anticipated to provide climate benefits by sequestering atmospheric carbon dioxide and providing several research opportunities for greenhouse gas release/sequestration; methyl mercury production; or general hydraulic, hydrologic, or water quality projects. The parcel is expected to provide year-round wetland habitat for waterfowl and other wildlife.

In addition to tules, rice is a wetland crop with an existing agricultural market that has the potential to accrete land mass and sequester carbon. The Subsidence Mitigation Rice Cultivation Research project continued to determine whether growing rice reverses subsidence, can be grown without deleterious effects to the environment, and is economically feasible in the Delta.

In April 2010, 304 acres of rice were planted on Twitchell Island, an increase from the 160 acres planted in 2009. Initial data from 2010 research performed by consultants (University of California (UC), Davis, and USGS), shows approximately 304 acres of rice production stopped subsidence and achieved small amounts of accretion, sequestered atmospheric carbon dioxide, and acted as a sink for methyl mercury. Planting is scheduled again for spring 2011,

with approximately 304 acres of rice production planned.

In 2010, work began on a greenhouse gas protocol, which is a collaborative effort between DWR, the State Water Contractors, the California Air Resources Board, the Delta Conservancy, and several research organizations, including UC, Berkeley. The West Delta Program worked with UC, Berkeley researchers to construct a tower that measures greenhouse gas fluxes at Mayberry Farms. The tower will collect data that will be analyzed by DWR and used to develop future protocols.

DWR continued to work with the Delta Science Program (formerly 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.

For current information related to these projects, please visit DWR's website.

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 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 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 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. Ongoing efforts are being made to improve water levels, circulation, and quality in South Delta channels. These efforts have included modifying and dredging around local diverters' intakes, conducting a series of computer modeling studies, and modifying barrier flap gate operations. Other alternatives being considered include changing barrier heights at Middle River by 1 foot, dredging portions on upper Middle River, and installing portable pumps at Paradise Cut. No dredging or portable pumps were installed in 2010, but permits to raise the Middle River barrier were received. Data collected in the Temporary Barriers Project were 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 the City of 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 contract, 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.

Photo: Gina Benigno

Chapter 3
Environmental Programs

Liberty Island tidal marsh.

Significant Events in 2010

Effective January 20, 2010, delta smelt were uplisted to endangered under the California Endangered Species Act (CESA). The U.S. Fish and Wildlife Service (USFWS) status review, published in the Federal Register, April 7, 2010, determined that reclassifying delta smelt to endangered was warranted, but precluded by other higher priority listing actions. Therefore, delta smelt remained a federal Endangered Species Act (ESA) threatened species.

Longfin smelt were added to the CESA list of threatened species effective April 9, 2010.

The Fish Restoration Program Agreement (FRPA), between the Department of Fish and Wildlife (DFW, formerly the Department of Fish and Game) and the Department of Water Resources (DWR), was signed on October 18, 2010. The primary objective of FRPA is to implement the fish habitat restoration requirements and related actions of the biological opinions (BOs) and the incidental take permit (ITP) for the long-term coordinated operations of the State Water Project (SWP) and Central Valley Project (CVP).

Highlights of the Bay Delta Conservation Plan, released in December 2010, is a summary of major plan elements and outstanding issues.

A DWR Climate Change Committee workgroup outlined an initiative to develop a three-phase DWR *Climate Action Plan*. Each phase will address a specific area of concern with respect to climate change and DWR's activities.

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

The Department of Water Resources (DWR) has developed and implemented several programs to avoid, minimize, and/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/or offsetting adverse impacts to species of concern, species listed as threatened or endangered by a State or federal agency, or species proposed for listing. The SWP is operated pursuant to biological opinions (BOs) issued under the federal Endangered Species Act (ESA), as well as consistency determinations or incidental take permits (ITPs) issued under the California Endangered Species Act (CESA). A key to avoiding and minimizing adverse impacts to these species is maintaining flexibility in SWP operations. Operational responses can include Delta Cross Channel gate closure, export curtailments, changes in delivery schedules, increased reservoir releases, preferential use of certain facilities, or a combination of these actions. Additional information can be found in Chapter 7, Water Supply Development and Reliability.

San Joaquin River Activities

Vernalis Adaptive Management Plan

The *Vernalis Adaptive Management Plan* (VAMP), was initiated in 2000 as part of State Water Resources Control Board, Water Right Decision 1641. VAMP is a large-scale, long-term (12-year), experimental management program designed to protect juvenile Chinook salmon migrating from the San Joaquin River through the Sacramento-San Joaquin Delta (Delta). The goal of VAMP is to conduct operational changes and associated fisheries studies to determine if a relationship exists between river flow, Delta exports, and salmon survival throughout the southern Delta. VAMP's study results 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 (*Oncorhynchus tshawytscha*).

DWR, the Bureau of Reclamation (Reclamation), and the San Joaquin River Group Authority member agencies coordinate SWP and Central Valley Project (CVP) operations to increase flows in the San Joaquin River during the specified VAMP pulse flow period, a 31-day period during the months of April and May, to benefit fall-run Chinook salmon emigrating from the San Joaquin River Basin. Intensive fisheries sampling is conducted in the lower San Joaquin River during the pulse flow period. VAMP studies coordinate variable export pumping rates with a fish release and tracking study to estimate the relative survival of marked salmon moving through the Delta under VAMP during the pulse flow period. A temporary rock barrier is installed at the Head of Old River to block the movement of juvenile salmon into Old River, allowing them to continue down the main stem of the San Joaquin River.

In 2010, VAMP marked its eleventh year of operating in compliance with Water Right Decision 1641. Actions associated with VAMP were implemented between April 25 and May 25, 2010.

Forecasted runoff and water year hydrologic classification determined that a "single-step" condition was in effect for the 2010 VAMP operation. The VAMP target flow was 4,450 cubic feet per second (cfs) with a supplemental water requirement of

21,840 acre-feet. Flood control operations on the Tuolumne River and San Joaquin River flows associated with the San Joaquin River Restoration Program increased the uncertainty of achieving a stable flow for 31 days at Vernalis.

The mean daily flow in the San Joaquin River at the Vernalis gauge averaged 5,140 cfs during the VAMP target flow period. The mean daily flow at Vernalis varied between 4,210 cfs and 5,980 cfs during the target flow period. The deviation from the target flow of 4,450 cfs was caused by flood control operations on the Tuolumne River, and flows upstream of the Merced River were generally higher than expected.

The combined CVP and SWP Delta export rate target during the VAMP period was 1,500 cfs. The observed exports during this period averaged 1,520 cfs and ranged from 1,320 cfs to 1,560 cfs.

The fish release and tracking study was conducted as planned.

Temporary Barriers

VAMP-participating agencies install temporary barriers in the San Joaquin River to provide an adequate water supply for South Delta water diverters, improve water quality in the Stockton Deep Water Ship Channel, and prevent entrainment of juvenile Chinook salmon at the South Delta facilities.

Brief background information about the temporary barriers can be found in Chapter 2, Delta Resources.

Head of Old River. The spring Head of Old River rock barrier was not installed in 2010. Instead, as in 2009, a nonphysical barrier (NPB) was installed. Installation began April 5 and was completed on April 15. The operation of the NPB supported the VAMP fish study and includes a determination of the NPB's effectiveness. The salmon smolt monitoring was concluded on May 26 at the end of the VAMP; however, the NPB stayed in operation through June 15 in compliance with the National Marine Fisheries Service (NOAA Fisheries) BO to benefit non-VAMP smolts that may have still been in the river. The NPB was removed on June 18.

As of October 1, 2010, dissolved oxygen concentrations in the Stockton Deep Water Ship Channel were above the 6.0 milligrams per liter objective; the Department of Fish and Wildlife (DFW, formerly the Department of Fish and Game) determined that the fall Head of Old River barrier would not be required.

Agricultural Barriers—Old River near Tracy, Middle River, Grant Line Canal. Construction of the Old River near Tracy (ORT) barrier began on May 10, and the boat ramp was completed on May 13. Closure of the ORT barrier was achieved on June 3; all flap-gates were tied open.

The periodic opening and closing of the center culvert flap-gates was coordinated with the spring (new moon or no moon) and neap (half moon) tides.

To improve water circulation and quality, the four center flap-gates were tied open on August 20, 2010.

To evaluate the effectiveness of improving water quality with the increased weir height at Middle River, the four center culvert flap-gates at the ORT barrier were tied open October 1–7, 2010. The ORT barrier was removed on November 10, 2010.

Construction of the Middle River barrier began on May 19. All flap-gates were untied on June 16, and the barrier was operating fully. The Middle River barrier was removed on November 2.

Installation of the Grant Line Canal barrier began on June 16, and the boat ramp was

completed on July 2. The Grant Line Canal barrier was removed by November 16, 2010.

On September 15, 2010, the weir at Middle River and ORT barriers was notched and the flash boards removed at the Grant Line Canal barrier to allow salmon passage.

San Joaquin River Restoration Program

In 2006, the San Joaquin River Restoration Program (SJRRP) was established to implement the court settlement to restore 153 miles of the San Joaquin River from Friant Dam to the confluence of the Merced River. The agencies responsible for the implementation of SJRRP include Reclamation, the U.S. Fish and Wildlife Service (USFWS), NOAA Fisheries, DWR, and DFW. On March 30, 2009, the San Joaquin River Restoration Settlement Act was signed into law, authorizing and funding the SJRRP.

In 2010, the program environmental impact statement (EIS)/environmental impact report (EIR) was developed. The first year of interim flows was completed, which included extensive physical and biological monitoring and the recapture of 52,000 acre-feet of flows that were recirculated back to CVP Friant Division long-term contractors. Planning, design, and environmental compliance activities continued in support of the Reach 2 (Gravelly Ford to Mendota Dam) and Reach 4B (Sand Slough Control Structure to the confluence of Bear Creek and the Eastside Bypass) projects under SJRRP. The project description for the Reach 4B project was refined, and an additional public scoping meeting was held for interested parties. USFWS submitted the application for the reintroduction of salmon to the San Joaquin River to NOAA Fisheries.

More information is available on SJRRP's website.

Lower Yuba River Accord

The Lower Yuba River Accord's (Yuba Accord) purpose is to resolve instream flow issues and protect and enhance lower Yuba River fisheries and local water supply reliability. The Yuba Accord provides revenues for local flood control and water supply projects, water to enhance SWP and CVP water supply reliability by offsetting Delta export reductions for protection and restoration of Delta fisheries, and improvements in statewide water supply management, including dry year supplies for participating SWP and CVP contractors.

Water contracted by DWR under the Yuba Accord continues to be used to help offset Delta export reductions to benefit fish.

For more information about the Yuba Accord see Chapter 9, Water Contracts and Deliveries.

Oroville Facilities Relicensing

DWR continued to seek a new 50-year license for the Oroville Facilities from the Federal Energy Regulatory Commission (FERC) to generate hydroelectric power while meeting existing commitments and complying with laws and regulations regarding water supply, flood control, the environment, and recreational opportunities. On December 15, 2010, the State Water Resources Control Board issued a water quality certification for the Oroville Facilities under Section 401 of the federal Clean Water Act, an important regulatory document in the process to obtain a new FERC license.

Implementation of most of the actions outlined in the *Settlement Agreement for Licensing of the Oroville Facilities, FERC Project No. 2100* cannot take place prior to the issuance of the new license; however, a short list of projects was initiated when the

settlement agreement was signed by DWR. The projects include:

- continued funding of the Feather River Fish Hatchery (FRFH);
- planning and permitting for Feather River spawning gravel supplementation;
- funding for development of an Oroville Wildlife Area management plan;
- funding for the operations of the Oroville Wildlife Area;
- a screening-level analysis for Feather River riparian/floodplain habitat enhancement; and
- engineering studies to determine the best approach for providing cooler Feather River water temperatures below Oroville Dam.

Various conservation measures for the species identified in the USFWS 2007 BO for the Oroville Facilities relicensing project are currently being implemented on SWP lands. Monitoring associated with these measures includes an annual vernal pool survey (645 mapped vernal pools and/or features), protective measures for elderberry shrubs (*Sambucus* species, host plant for the valley elderberry longhorn beetle [*Desmocerus californicus dimorphus*]), and annual monitoring of nesting bald eagles (*Haliaeetus leucocephalus*) in the area (four currently active nests). In addition, habitat management activities within the Oroville Wildlife Area are coordinated through DFW staff. These activities include providing nest and forage habitat for waterfowl and upland bird species, monitoring and maintaining Thermalito Afterbay brood pond water surface elevations, and protecting and conserving giant garter snake (*Thamnophis gigas*) habitat. An annual compliance report for 2010 was compiled by DWR and submitted to USFWS.

In July 2009, NOAA Fisheries released its draft BO for the Oroville Facilities relicensing for the ESA-listed species under its jurisdiction: the Southern Resident killer whale (*Orcinus orca*), California Central Coast steelhead (*Oncorhynchus mykiss*), Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley steelhead (*Oncorhynchus mykiss*), and the Southern distinct population segment (DPS) of North American green sturgeon (*Acipenser medirostris*). During 2010, DWR continued to review the draft document to identify its consistency with the settlement agreement and its anticipated impacts on operations of the Oroville Facilities. NOAA Fisheries did not finalize this document during 2010.

For more information, see Chapter 10, Power Resources, or visit the Oroville Relicensing webpage on DWR's website.

Oroville Facilities—Existing FERC License Activities

Invasive Plant Management

During 2010, DWR worked with DFW, Butte County Resource Conservation District, and the California Conservation Corps (CCC) to control and remove red sesbania (*Sesbania punicea*). DWR removed all red sesbania along the Thermalito Power Canal and Thermalito Forebay. This ongoing maintenance was started by the Department of Parks and Recreation (California State Parks) in 2007. DWR took over in 2008 and will continue until red sesbania is eradicated. The Thermalito Power Canal and Thermalito Forebay are the upstream extent of the red sesbania population. Also in 2010, the Butte County Weed Management Area acquired a grant for red sesbania removal, and DFW and DWR provided some labor and two weeks of CCC funding. The grant was used to target the upstream red sesbania population on the Feather River and in the Oroville Wildlife Area. Giant reed (*Arundo donax*) was also treated by the CCC in several locations within the Oroville Wildlife Area, along the Feather River, and around Thermalito Afterbay.

Lake Oroville Fishery Management

Prior to 1993, DWR had been stocking fish and improving fish habitat at Lake Oroville, and since 1993, FERC has required DWR to improve fish habitat in Lake Oroville as part of DWR's revised recreation plan.

In 2010, DWR funded the stocking of 184,415 coho salmon (*Oncorhynchus kisutch*) yearlings (approximately 8 inches long) into Lake Oroville. The fish were reared at FRFH, and all were tagged (coded wire tags; CWTs) for monitoring purposes.

In the fluctuation zone of Lake Oroville, DWR constructed fish habitat structures and planted several thousand willow tree cuttings.

Feather River Fish Hatchery

A total of 11,846,636 juvenile fall-run Chinook salmon were released into the Delta, Sacramento River, and San Francisco and San Pablo bays in 2010. A total of 273,398 juvenile steelhead were released in the Feather River (272,798 at Boyd's Pump [Sutter County] and an additional 600 juvenile steelhead at Bedrock Park [Butte County] as part of the Delta Pumping Plant Fish Protection Agreement).

Also in 2010, 2,122,131 juvenile spring-run Chinook salmon were released. All fish were CWT and adipose fin marked; 1,037,222 were released in the Feather River, and 1,084,909 were released in San Pablo Bay. (The FRFH juvenile spring-run Chinook salmon release numbers for 2009 that were published in Bulletin 123-10 have been updated. A total of 2,024,012 were released [1,016,835 released in the Feather River and 1,007,177 released in San Pablo Bay].)

During 2010, 1,655 adult spring-run Chinook salmon and 17,216 fall-run Chinook salmon returned to the hatchery for spawning. Slightly more than 29 million Chinook salmon eggs were collected. Additional numbers of salmon returned to the hatchery but were not used for egg collection as the hatchery quotas had already been met. Eight-six steelhead returned to the hatchery, and 76,919 steelhead eggs were collected.

Oroville Wildlife Area Wetland Ponds

Construction activities for two new wetland ponds in the Oroville Wildlife Area began in August 2010. The wetland ponds are anticipated to be completed in the fall of 2011 and will convert a 20-acre area of low-quality upland habitat (flat, open area, with sand/cobble soils and sparsely vegetated with invasive plants) into emergent wetland and riparian habitat. These wetlands are being created as mitigation required by Section 404 of the federal Clean Water Act for two waterfowl brood ponds that were constructed at the Thermalito Afterbay. Those brood ponds were a requirement of the revised recreation plan that was part of the September 22, 1944, FERC order.

Lake Oroville Elevation

The 2010 low point for the Lake Oroville reservoir elevation was reached on January 11 at 665.34 feet, and the annual high point of 843.28 feet was reached on June 30. The full pool elevation of Lake Oroville is approximately 900 feet.

Invasive Species

Quagga and Zebra Mussels

The quagga mussel, *Dreissena rostriformis bugensis*, and the zebra mussel, *D. polymorpha*, are invasive freshwater mussels that pose a significant threat to the SWP. Both species attach to hard substrates, including other mussels, with strong byssal threads, forming dense colonies and causing significant biofouling impacts to raw water infrastructure by clogging small diameter piping and filters and encrusting trash racks and fish screens.

In early 2007, the quagga mussel was detected in the lower Colorado River and spread throughout connected water diversion systems (see Bulletin 132-08). The following year, the zebra mussel was detected in San Justo Reservoir in San Benito County, adding to the existing threat. In response, DWR formed the Aquatic Nuisance Species (ANS) Program within the Division of Operations and Maintenance (O&M). The program includes early detection monitoring, vector management, rapid response planning, long-term mussel management, and public outreach.

Prevention and Response Planning

To protect and prepare the SWP against mussels, ANS Program staff developed several planning documents to guide actions and identify vulnerabilities. The *Quagga and Zebra Mussel Vector Management Plan for the State Water Project* identifies potential mussel points-of-entry and vectors, and outlines mechanisms to reduce the risk of introduction. The two primary vectors of mussels are downstream transport of planktonic veligers (the free-floating larval stage) in natural and constructed waterways and overland transport of veligers and attached adults on watercraft. A critical component of the vector management plan is reducing the risk posed by watercraft; therefore, DWR is evaluating the feasibility and cost of implementing boat inspection programs at SWP reservoirs.

In the event mussels are detected in the SWP, the *Quagga and Zebra Mussel Rapid Response Plan for the State Water Project* outlines a course of action to confirm the sighting, delineate the population, implement containment and eradication measures, and notify State and federal partner agencies, the SWP water contractors, and any potentially impacted entities.

With uncontrolled watercraft access to and from infested bodies of water, such as the Colorado River, the SWP and the Delta remain vulnerable to mussel infestation. Therefore, DWR is preparing a long-term mussel management plan for the SWP. The plan will identify facility vulnerabilities and provide options to prevent or mitigate mussel biofouling impacts.

DWR entered into a 5-year contract with RNT Consulting, Inc. on July 1, 2010. RNT will provide technical assistance to ANS Program staff on evaluating the suitability of SWP water quality for mussel growth and developing control and management plans for SWP facilities.

Monitoring

DWR routinely monitors the California Aqueduct, SWP reservoirs, and the Sacramento-San Joaquin Delta for the presence of quagga and zebra mussels. DWR uses three different methods to monitor for mussels: zooplankton tows (with DNA analysis) for veligers; settlement plates (see Bulletin 132-10); and bioboxes for adults (attached/settled stage).

In 2010, DWR and two collaborating water agencies, Santa Clara Valley Water District and The Metropolitan Water District of Southern California, collected veliger samples at 16 locations (see Bulletin 132-10). In addition, DWR staff are trained in quagga and zebra mussel identification and are instructed to look for mussels during regular field work and during routine facility maintenance activities. No mussels were detected in the SWP, the Delta, or other SWP source water during 2010.

More information about quagga and zebra mussels and State and federal interagency efforts is provided on DFW's website.

The Bay Delta Conservation Plan

State and federal agencies continued collaboration and analysis toward drafting

the Bay Delta Conservation Plan (BDCP) and the corresponding EIR/EIS documents in 2010. Other highlights of 2010 include the release of the document, *Highlights of the BDCP*, and geotechnical work.

Bay Delta Conservation Plan

The BDCP Steering Committee continues to collaborate in the preparation of a Draft Habitat Conservation Plan and Natural Communities Conservation Plan for the Sacramento San-Joaquin Delta. The goal of the BDCP is to contribute to the recovery of at-risk species in the Delta. In addition to restoring water supplies and meeting water reliability goals, the water conveyance approach proposed by the BDCP contributes to the conservation of covered fish species and their habitats by aligning water operations to reflect natural seasonal flow patterns, reducing entrainment, designing state-of-the-art fish screens, improving natural flow conditions in the estuary, creating new habitat, and reducing the effects of other stressors.

The BDCP Conservation Strategy includes 19 conservation measures that are organized by ecosystem level, natural community level, and species level. Preliminary details for the BDCP include habitat restoration targets of up to 113,000 acres of restored and protected aquatic and terrestrial habitat, 10 habitat conservation measures, and 9 conservation measures covering operations and other stressors. Other preliminary details include new water conveyance facilities, up to 5 intakes along the Sacramento River from Freeport to Courtland, additional study of two underground 33-foot-diameter tunnels/pipelines designed for a combined capacity of up to 15,000 cfs, and a range of potential new diversion rules for new North Delta water facilities in combination with continued operation of existing South Delta facilities and other key flow rules.

The BDCP will propose water operations criteria for a new water conveyance facility along the Sacramento River. A range of operations is currently being studied. These operational rules will be put in place to support the BDCP's goals.

A working draft of the BDCP was released on November 18, 2010, and is available for review on BCDP's website. The working draft describes key elements of the BDCP and interrelated aspects of ongoing scientific and technical analysis, refinements to conservation actions, cost estimates, and other plan elements.

Highlights Document

The *Highlights of the BDCP* document was released in December 2010 and is a summary of major plan elements and outstanding issues as envisioned by the California Natural Resources Agency based on technical information completed and stakeholder input received. This document includes summaries of the BDCP, conservation measures, EIR/EIS, funding, and implementation structure.

BDCP EIR/EIS

Scoping Report

In March 2010, DWR, Reclamation, NOAA Fisheries, and USFWS released the *Scoping Report, Bay Delta Conservation Plan Environmental Impact Report/Environmental Impact Statement*. This report summarizes the scoping process that took place in 2008 and 2009. It describes the methods used to identify and categorize scoping comments, describes issues to be analyzed in the BDCP EIR/EIS, and includes copies of the notice of preparation and notice of intent, newspaper notifications, a list of commenters, comment letters, e-mails, and comment cards.

EIR/EIS

A combined EIR/EIS is currently underway and will fulfill requirements under the

California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). DWR is the State lead agency and Reclamation, USFWS, and NOAA Fisheries are the federal co-lead agencies. This joint document will review the environmental effects of the proposed BDCP and a reasonable range of alternatives, including a "no action" alternative. This evaluation will help determine the ultimate preferred alternative and final plan. The lead agencies will continue evaluation of options that include a 3,000 cfs capacity pipeline/tunnel as well as options to restore up to 100,000 acres of tidal habitat. These options will undergo screening criteria to determine if they are fully analyzed. The EIR/EIS will evaluate the potential impacts of the BDCP including impacts to local communities, cultural resources, and the physical and biological environment.

Geotechnical

DWR prepared a draft initial study in support of the mitigated negative declaration for the project, "Engineering Geotechnical Studies for the Bay Delta Conservation Plan and/or Preliminary Engineering Studies for the Delta Habitat Conservation and Conveyance Program." DWR began conducting overwater and land geotechnical borings, performing cone penetration tests, and digging small test pits in order to test soils in the Delta beginning in August 2010.

Biological Opinions Issued on the CVP/SWP Long-term Operations Criteria and Plan

The CVP and SWP Long-term Operations Criteria and Plan (OCAP) incorporates measures to provide protection for ESA-listed fish species. In 2010, a joint agency task force was developed to complete an integrated BO by the USFWS and NOAA Fisheries that will cover the BDCP and CVP/SWP operations. A near-term science strategy was released in June 2010. Water operations in 2010 followed two previously issued BOs.

USFWS Biological Opinion

On December 15, 2008, the USFWS issued a BO, which concluded that long-term coordinated SWP and CVP operations were likely to jeopardize the continued existence of delta smelt (*Hypomesus transpacificus*) and adversely modify critical habitat for the species. The BO outlined five components of a reasonable and prudent alternative (RPA) to ensure the long-term OCAP did not jeopardize the survival of delta smelt (Bulletin 132-09). In 2010, CVP and SWP were operating under a conditionally accepted RPA, despite lawsuits challenging the BO.

NOAA Fisheries Biological Opinion

On June 4, 2009, NOAA Fisheries issued a BO on the effect of OCAP on salmonids and green sturgeon. The BO concluded that long-term OCAP was likely to jeopardize the continued existence of, as well as destroy or adversely modify the designated/proposed critical habitat for, federally listed species (see Bulletin 132-10). The RPA includes specific actions for the Sacramento River, American River, East Side (Stanislaus River), and the Delta, as well as procedures for decision-making, monitoring, and adaptive management protocols. Technical review identified actions that could be clarified, adaptively managed, or more efficiently implemented. In November 2010, NOAA Fisheries proposed adjustments, developed in conjunction with USFWS and Reclamation, to various RPA actions.

SWP Longfin Smelt Incidental Take Authorization

On February 23, 2009, DWR received from DFW an ITP for longfin smelt (*Spirinchus thaleichthys*) for SWP operations. Conditions of approval included pumping restrictions and operational measures to minimize

impacts, as well as habitat restoration measures to mitigate losses that cannot be avoided.

This permit will expire December 31, 2018.

Delta Operations for Delta Smelt and Longfin Smelt

The Smelt Working Group is a team of interagency experts in delta smelt and longfin smelt biology. Based on up-to-date biological and technical information, the group meets to evaluate current and projected conditions, then make recommendations for CVP and SWP water operations.

Recommendations are made based on guidelines outlined in the 2008 USFWS BO and the 2009 DFW longfin smelt ITP (see Bulletin 132-10), and are aimed at reducing entrainment of longfin and delta smelt at CVP and SWP export facilities.

The Smelt Working Group met throughout 2010 and recommended several water project operation actions to minimize adverse effects on smelt. Recommended actions primarily included limiting the magnitude of negative Old and Middle river flows.

Endangered Species and Biological Opinions

An endangered species is one in danger of extinction in all or a significant portion of its range; a threatened species is one likely to become endangered. The Endangered Species Act (ESA) and the California Endangered Species Act (CESA) 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 or for other forms of agency action and prohibit the unauthorized take of endangered species. Biological opinions (BOs) and incidental take permits are issued to protect ESA- and CESA-listed species.

ESA Section 7 requires federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species or modify their critical habitat, otherwise formal consultation is required. Federal agencies must consult with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service (wildlife agencies). As part of the consultation process, the wildlife agency issues a BO which states the agency's determination of whether the action is likely to jeopardize a species or adversely modify critical habitat. If the wildlife agency determines an action will jeopardize or adversely modify, it will suggest reasonable and prudent alternatives that the "action agency" may take to avoid the likely jeopardy or adverse modification (Title 16, United States Code Sections 1531–1544 [1973]).

CESA is substantially similar to ESA in all aspects (California Fish and Game Code Sections 2050–2098 [1984]). Under CESA, an incidental take permit issued by the Department of Fish and Wildlife can allow for the take of State-listed species if specific criteria are met, including measures to minimize and mitigate the impacts of authorized take (California Code of Regulations, Title 14, Sections 783.0–783.8).

In 2010, 22 delta smelt were salvaged by SWP facilities and 95 were salvaged by CVP facilities. Longfin smelt salvage was 4 at SWP facilities and 31 at CVP facilities in 2010. These numbers are extremely low compared with a combined annual salvage of 765 delta smelt and 88 longfin smelt at both facilities in 2009.

Fish Restoration Program Agreement

During 2009, DWR and DFW continued negotiations to address the losses of delta smelt, longfin smelt, winter-run Chinook salmon, and spring-run Chinook salmon and to determine the required mitigation for those fish losses as identified in the RPAs of the USFWS BO, NOAA Fisheries BO, and DFW ITP. The Fish Restoration Program Agreement (FRPA), between DFW and DWR, was signed on October 18, 2010. The primary objective of the FRPA is to implement the fish habitat restoration requirements and related actions of the BOs and the ITP in the Delta, Suisun Marsh, and Yolo Bypass, specifically:

- USFWS delta smelt BO RPA Component 4 (fish habitat restoration actions);
- NOAA Fisheries salmonid BO RPA Actions 1.2.6 (Battle Creek restoration) and 1.6.2 (Cache Slough Complex habitat creation/restoration), in partnership with Reclamation;
- NOAA Fisheries salmonid BO RPA Action Suite 1.6 (salmonid rearing habitat improvements) and Action 1.7 (anadromous fish actions in the Yolo Bypass) (FRPA will not be the lead, but will provide funding and technical support assistance); and
- DFW longfin smelt ITP Condition 7 (fish habitat restoration actions).

Decisions on Endangered Species

Table 3-1 lists several fish species of concern found in the Delta.

Splittail

Sacramento splittail (*Pogonichthys macrolepidotus*) was listed as threatened under the ESA in 1999, but was delisted in 2003 (see Bulletin 132-04). In August 2009, the Center for Biological Diversity challenged the 2003 ruling. The USFWS subsequently initiated a new status review of Sacramento splittail to determine whether listing is warranted. The October 7, 2010, Federal Register published the USFWS finding that ESA listing was not warranted. The USFWS will continue to monitor splittail population range and abundance and will periodically review the status of the species.

North American Green Sturgeon

The Southern DPS of North American green sturgeon (*Acipenser medirostris*) was listed as threatened under ESA in 2006 (see Bulletin 132-07). Critical habitat was

Table 3-1 Special Status Delta Fish Species

Common Name	Scientific Name	ESA (date listed)	CESA (date listed)
delta smelt	*Hypomesus transpacificus*	threatened (4/5/1993)	endangered (1/20/2010)
longfin smelt	*Spirinchus thaleichthys*	none	threatened (4/9/2010)
Chinook salmon (winter-run)	*Oncorhynchus tshawytscha*	endangered (2/3/1994)	endangered (9/22/1989)
Chinook salmon (spring-run)	*Oncorhynchus tshawytscha*	threatened (11/15/1999)	threatened (2/5/1999)
Chinook salmon (fall/late fall-run)	*Oncorhynchus tshawytscha*	species of concern (4/15/2004)	none
steelhead (Central Valley DPS)	*Oncorhynchus mykiss*	threatened (5/18/1998)	none
green sturgeon (Southern DPS)	*Acipenser medirostris*	threatened (6/6/2006)	none

ESA = Federal Endangered Species Act; CESA = California Endangered Species Act; DPS = distinct population segment

designated in 2009 (see Bulletin 132-10). On June 2, 2010, NOAA Fisheries published a Federal Register notice that established take prohibitions to protect the Southern DPS, along with defined exemptions and exceptions, to be effective July 2, 2010.

Delta Smelt

Delta smelt was listed as threatened under both ESA and CESA in 1993. The USFWS initiated a status review for delta smelt in 2008, based on a 2006 petition to reclassify the listing status from threatened to endangered (Bulletin 132-07). The USFWS status review, published in the Federal Register on April 7, 2010, determined that reclassifying delta smelt to endangered was warranted, but precluded by other higher priority listing actions. Therefore, delta smelt remain an ESA threatened species. The Fish and Game Commission was also petitioned to change the State listing status from threatened to endangered in February 2007. On August 7, 2008, the Fish and Game Commission voted to uplist the species to endangered, and on March 4, 2009, they adopted regulations upgrading the delta smelt's status from threatened to endangered under CESA. Rulemaking was completed and published in the California Regulatory Notice Register on January 1, 2010. Effective January 20, 2010, delta smelt were uplisted to endangered under CESA.

Longfin Smelt

On August 8, 2007, the Bay Institute, the Center for Biological Diversity, and the Natural Resources Defense Council petitioned USFWS to list the Bay-Delta population of longfin smelt as threatened or endangered under ESA, and petitioned the Fish and Game Commission to list longfin smelt statewide under CESA.

In 2009, the Fish and Game Commission determined that longfin smelt should be listed as threatened throughout their range in California under CESA. The ruling was published in the California Regulatory Notice Register on March 19, 2010, to add longfin smelt to the CESA list of threatened species, effective April 9, 2010.

The USFWS longfin smelt 12-month finding, released April 9, 2009, determined that the Bay-Delta population of longfin smelt was not a DPS, and therefore not a listable entity under ESA. On November 13, 2009, the Center for Biological Diversity filed a complaint challenging the merits of the USFWS determination. This issue was not settled in 2010.

Trends in Fish Abundance

The abundance index for longfin smelt, based on the DFW fall midwater trawl sampling from 1967 through 2010, is shown on Figure 3-1.

Figure 3-2 shows the abundance index for delta smelt, from 1967 through 2010, based on fall midwater trawl sampling conducted every year from September through December. Index calculations are based on average catch per trawl for 100 core index stations, which are partitioned into 14 geographic areas. The average monthly catch per tow in each area is multiplied by a weighting factor that is based on the estimated volume of water in each area. The resulting values are then summed over all areas and months to obtain the annual index. This fall abundance index provides one of the best indicators of the status of the adult delta smelt population. The 2010 index rose 71 percent from 2009, but was still the fifth lowest on record, continuing a trend of notably low index values since 2003. Abundance indices for this species have remained at markedly low levels since 2002. See the Pelagic Organism Decline section in this chapter for more about the declining abundance of delta smelt and other pelagic fish species in the Delta.

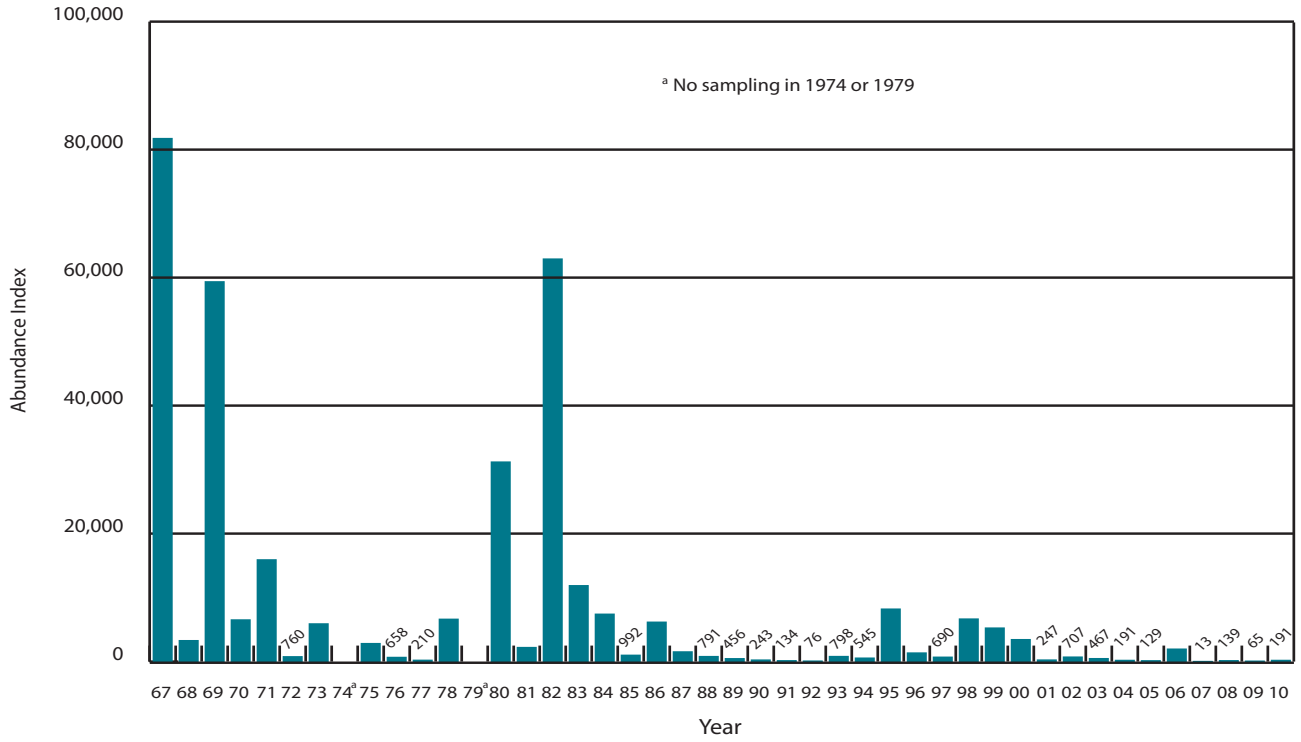

Figure 3-1 **Longfin Smelt Fall Midwater Trawl Abundance Index, 1967–2010**

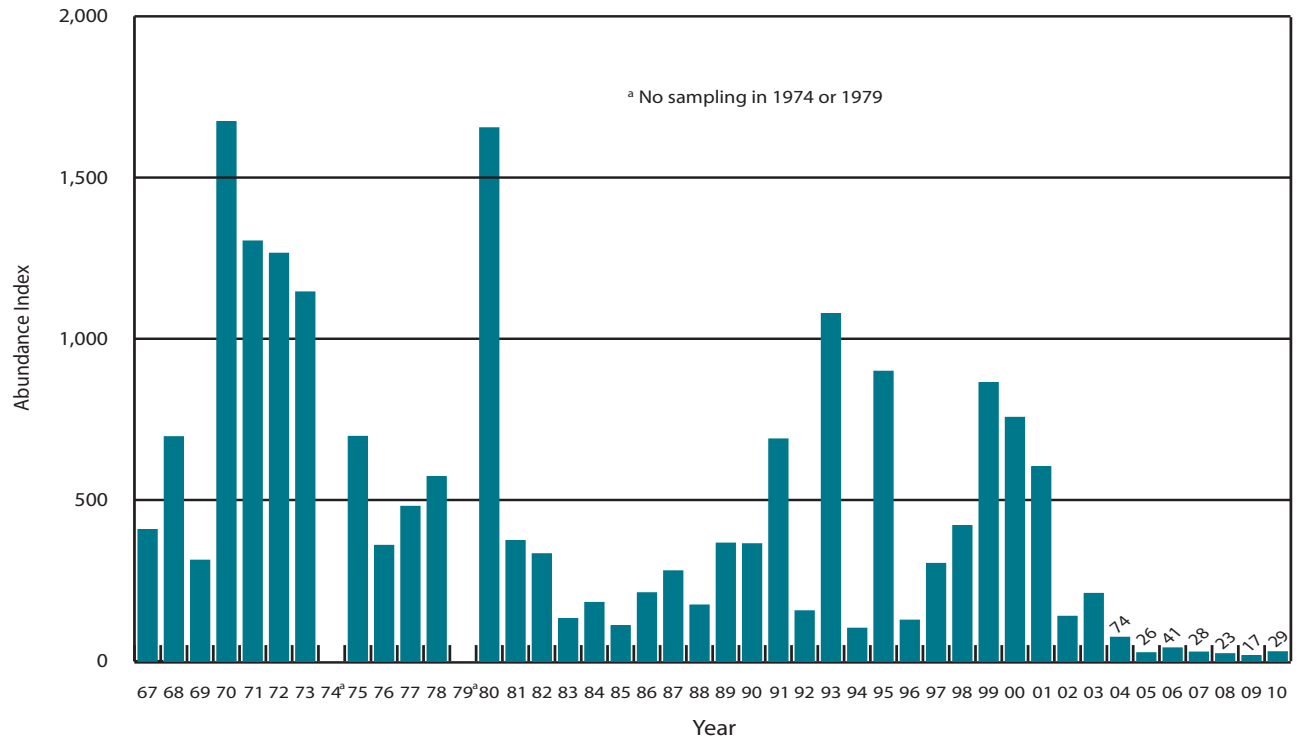

Figure 3-2 **Delta Smelt Fall Midwater Trawl Abundance Index, 1967–2010**

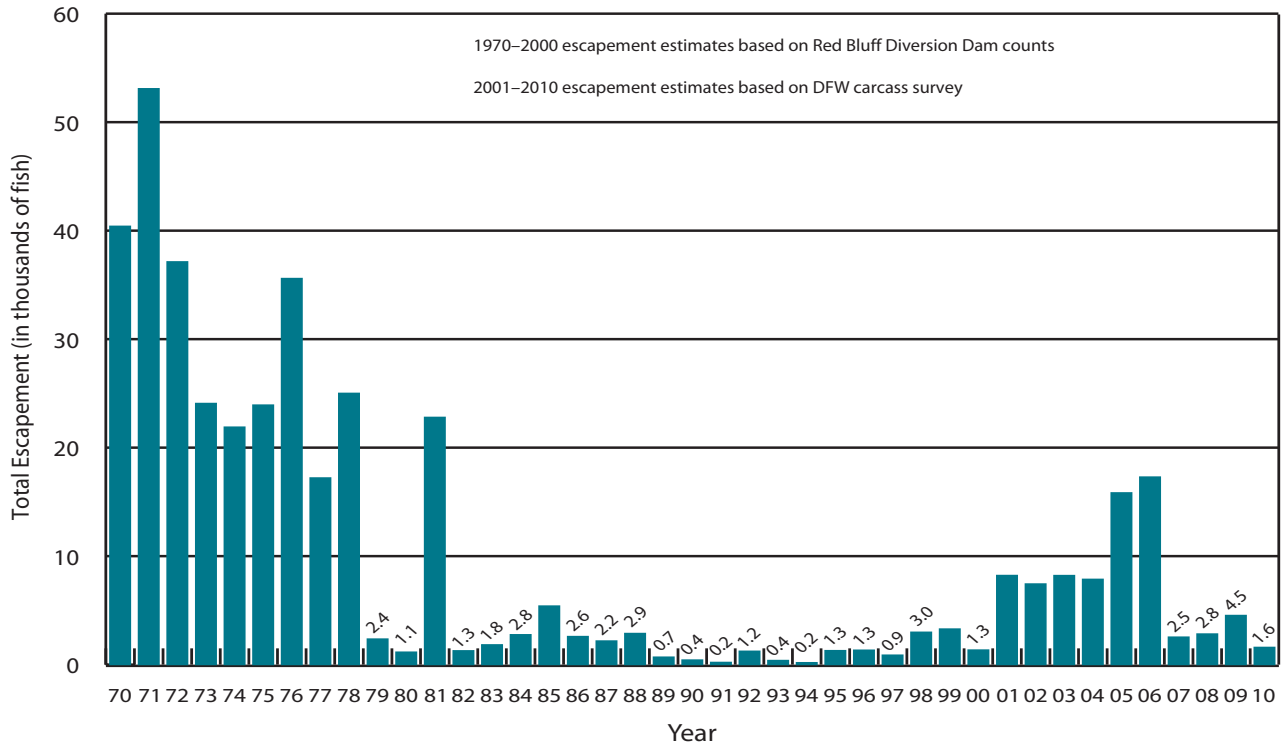

Figure 3-3 Estimated Total Adult Winter-Run Chinook Salmon Escapement, 1970–2010

Figure 3-3 shows estimates of returning adult winter-run Chinook salmon from 1970 through 2010. These estimates, referred to as escapement estimates, are 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 DFW carcass survey. DFW has been using the carcass survey data to generate escapement estimates since 2001, prior to which Red Bluff Diversion Dam counts were used. The estimated winter-run Chinook escapement for 2010 was 1,596, which was a 65 percent decrease from 2009 and the lowest estimate since 2001.

Figure 3-4 shows estimates of returning adult spring-run Chinook salmon from 1985 through 2010. Individual estimates are shown for FRFH and the principal spring-run spawning streams: Mill Creek, Deer Creek, and Butte Creek. The escapement estimates are shown separately for each stream, because the Feather River estimate is based on returns to the FRFH, where the genetic integrity of spring-run Chinook salmon is uncertain. The estimated escapement for 2010 was 1,661 for FRFH and 1,904 for the other streams combined. The 2010 FRFH escapement was approximately 63 percent of the 2007 parent stock escapement estimate. The escapement of naturally spawned fish for Mill, Deer, and Butte creeks was about 29 percent of the 2007 parent stock.

Due to the 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. The program has

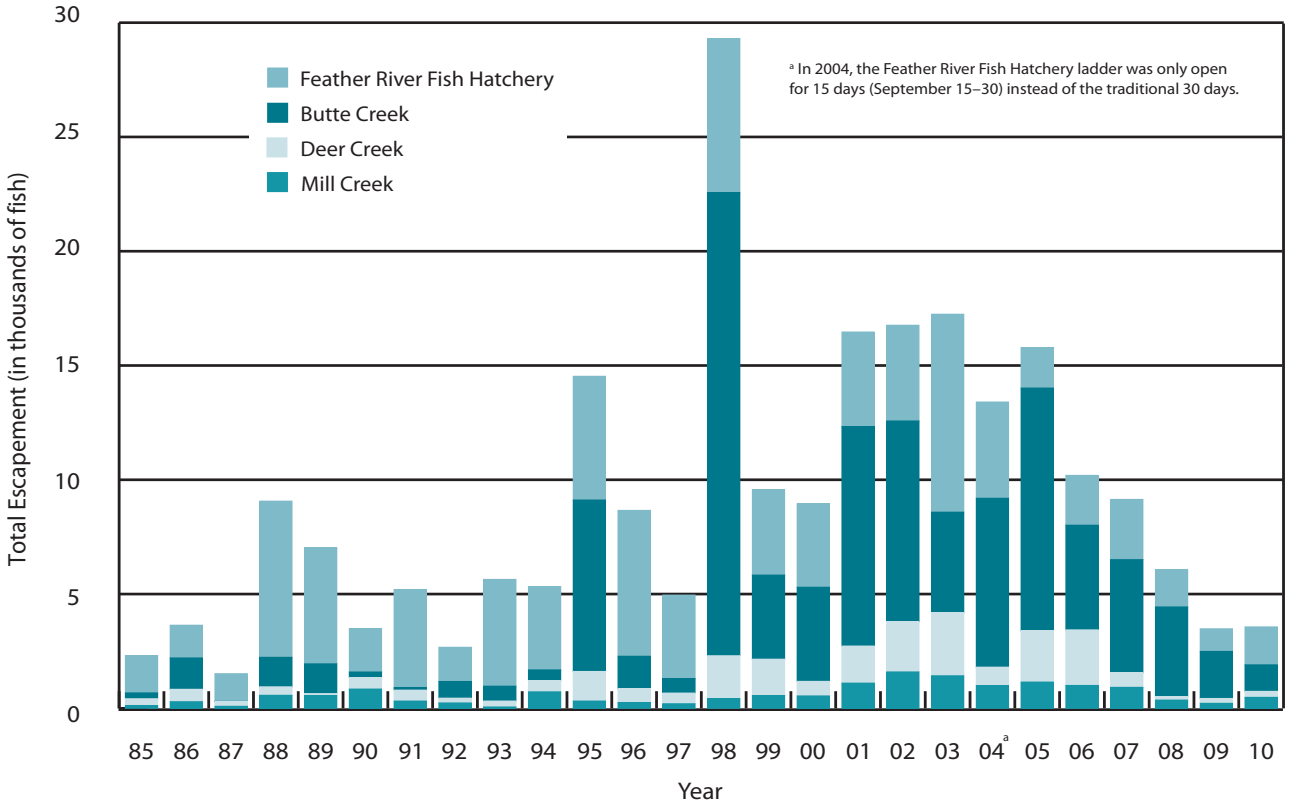

Figure 3-4 Estimated Total Adult Spring-Run Chinook Salmon Escapement, 1985–2010

progressively expanded since the mid-1990s in preparation for the FERC relicensing of the Oroville Facilities. Field program elements include operation of rotary screw traps (RST), acoustic and radio telemetry, salmon and steelhead spawning surveys, salmon escapement surveys, spring-run Chinook tagging, and otolith thermal marking studies.

Rotary Screw Traps

RSTs capture juvenile salmon and steelhead as they emigrate from the Feather River. Over the last 13 years, DWR has used RSTs as the primary method to assess the general abundance and timing of emigrating juvenile salmon and steelhead in the lower Feather River. In addition, large numbers of naturally produced salmon have been coded wire tagged (CWT) in an effort to examine their return success. This long-term monitoring yields valuable baseline information about juvenile salmonid production in the lower Feather River and the effects of project operations on abundance and migration timing.

Emigration timing and speed measurements confirm that most naturally produced juvenile Chinook salmon move rapidly through the upper reaches of the lower Feather River. Consistent with select years of trapping data, turbidity may influence the emigration timing of naturally produced juvenile salmon. However, other studies demonstrate that the timing of adult spawning plays a large role in determining juvenile salmon emigration patterns as well.

The 2010 season was fished throughout the emigration period (December through August). Two RST locations were used to assess the timing and general abundance of juvenile Chinook salmon, steelhead, and other fishes emigrating in the lower Feather River. Within the low-flow channel, one

RST (Steep Riffle) was stationed at River Mile (RM) 61, approximately 2 miles above Thermalito Afterbay Outlet. Within the high-flow channel, two RSTs were fished in tandem below Sunset Pumps at RM 38 from the beginning of December 2009 through August 2010. The Steep Riffle location provided a passage estimate of 968,797 juveniles, and the Sunset Pumps location estimate was 715,474 juveniles.

Although Chinook salmon and steelhead were the primary targets of trapping efforts, records were kept on all fish species caught. Twenty-five species were caught during the 2010 season. Chinook salmon was the dominant species, comprising 70 percent of the catch. Of the total salmon catch during the 2009 and 2010 trapping seasons, 720,435 (91.6 percent) were caught in the low-flow channel and 66,199 (8.4 percent) were caught in the high-flow channel.

During the 2010 trapping season, approximately 61.8 percent of the salmon trapped and measured in the low-flow channel and high-flow channel were less than 50 millimeters in length, demonstrating that more than half of the Feather River salmon emigrate well before smolting.

Based on adult escapement, average fecundity, and the emigration estimate, the egg-to-fry survival rate for fall-run Chinook juveniles in the low-flow channel was 9.8 percent in 2010. The emigration index (per capita production) of juveniles was 462 in 2010.

In 2010, the annual mark-recapture study began on January 6 when the first tagged salmon were released. Approximately 175,596 CWT, fall-run-sized fry and parr (from 18 tag codes) were released just above Thermalito Afterbay Outlet (RM 59). The last release of CWT salmon occurred on March 8, and the study ended on April 26 after substantial declines in CWT recaptures were observed at the Sunset Pumps RSTs. Individuals recaptured downstream were evaluated for survival and emigration timing. In 2010, 602 CWT salmon were recovered at the Sunset Pumps RSTs (RM 38). Using RST efficiency estimates, it was calculated that 18,991 CWT salmon passed by the recapture point during the study period.

The emigration time over the 21-mile river reach from the Thermalito Afterbay Outlet to Sunset Pumps varied significantly among release groups, taking an average of 6.9 ± 3 days. The average speed of the recaptured salmon fry was approximately 6.8 ± 2 miles per day.

In 2010, the variation in the physical characteristics of the river measured at the time of release predicted approximately 55 to 64 percent of the variation in emigration speed and timing respectively, with water temperature being the most important physical driver.

The mean survival index for the CWT release groups (over the 21-mile river reach) was 0.11 ± 0.02. The survival index was also related to water temperature at the time of release. In addition, there was a statistically significant relationship between the survival index and the speed or timing of emigration—the survival index increased as emigration time decreased, or emigration speed increased. Emigration timing and speed measurements confirmed that most naturally produced Chinook salmon move through the upper reaches of the high-flow channel rapidly, suggesting an ocean-type life history pattern.

Acoustic and Radio Telemetry

Acoustic and radio telemetry gathers baseline information on the migration and holding patterns of adult Chinook salmon in the Feather River. A telemetry study was conducted to collect additional data to evaluate the relationship between water temperature and migration patterns of prespawning adult Chinook salmon in the river below the Fish Barrier Dam.

Chinook salmon with a spring-run life history enter freshwater in early summer and hold in streams up to several months before spawning. In order to collect additional data to evaluate water temperature and migration patterns of prespawning adult Chinook salmon, spring-run adult Chinook salmon are captured and tagged with Lotek radio tags or Vemco acoustic tags to document their habitat use. Because the water temperature regime associated with the ongoing operation of the Oroville Facilities may expose prespawning adult Chinook salmon to elevated water temperatures during the migration and holding period, radio and acoustic tagging was implemented to determine whether the pools downstream of the Thermalito Afterbay Outlet provide water temperatures suitable for holding.

In 2010, 29 adult Chinook salmon designated as having spring-run life history traits were captured using hook-and-line sampling (angling) and implanted with Vemco tags at Sunset Pumps (RM 38). This was the first year since this project's inception that all fish for this study were obtained by hook-and-line sampling, thereby creating a better opportunity to perform analysis of their movements over time and distance. These fish were monitored along the 67-mile stretch of river from the Fish Barrier Dam near the FRFH to the confluence with the Sacramento River at Verona. Thirty Vemco VR2W submersible hydrophone receivers positioned at various locations along this stretch picked up the signals from the implanted tags as the fish passed the receivers. Mobile tracking was accomplished using a Vemco VR100 ultrasonic receiver mounted in a boat that was driven downstream from the Fish Barrier Dam. Fixed station receivers were checked at least once per month during the survey season for data downloads and maintenance, while mobile tracking was performed approximately once a week from June through November.

All 29 of the tagged fish were subsequently detected, three of which showed no upstream movement and were excluded from the analysis. Two of these fish were last detected at the Highway 20 bridge Vemco receiver (the receiver farthest down in the Feather River above the confluence of the Yuba River), so it is likely that these fish proceeded up the Yuba River. The remaining fish was last detected at the Shanghai Bend Vemco receiver just 3 days after it was tagged, so it is likely that this fish died soon after being tagged.

Of the 26 fish that showed subsequent upstream movement, the longest average cumulative holding duration was 34.9 days at the Fish Barrier Dam (RM 67). The second longest holding duration was 14.6 days at Riverbend Park (RM 65.6), while the third and fourth longest durations were 7.9 days at Sunset Pumps (RM 38) and 6.1 days at the Thermalito Afterbay Outlet (RM 59).

The average time it took tagged spring-run Chinook salmon to swim from Sunset Pumps (RM 38) to the Thermalito Afterbay Outlet (RM 59) was 4.4 days with an average speed of 4.8 miles per day.

Spawning Surveys

Salmon and steelhead spawning surveys (redd surveys) are conducted to determine the abundance and distribution as well as physical characteristics of natural spawning sites in the lower Feather River.

To better understand Feather River salmon and steelhead spawning characteristics, redd surveys are performed to identify the location, timing, and magnitude (where possible) of spawning in the lower Feather River. The survey is generally performed weekly, and most of the available spawning area between the Fish Barrier Dam and Honcut Creek is searched.

Salmon

The 2010 Chinook salmon redd survey began on September 17 and continued through October 30. During the seven weekly surveys, 980 mature redds were found within the spawning area between Table Mountain Riffle (RM 66.9) and the Thermalito Afterbay Outlet (RM 59) in the low-flow channel. Another 147 redds were discovered in the high-flow channel from the Thermalito Afterbay Outlet to the Gridley Bridge.

The week 3 survey (September 30 to October 7) covering the low-flow channel identified the highest number of redds with 426. The second highest total was 318 redds for the survey conducted October 15 and 16 covering the area from Table Mountain Riffle (RM 66.9) to Bedrock Riffle (RM 65.8). The location with largest number of redds was Auditorium Riffle with 369 (33 percent). Trailer Park Riffle was next at 83 (8 percent). The uppermost 3-mile section of the river between the Fish Barrier Dam and Trailer Park Riffle contained 87 percent of Chinook salmon redds. The average depth for all recorded spawning areas was 0.46 meters with a water velocity of 0.51 meters per second. The dominant substrate size was between 5 and 15 centimeters. The average size of all redds was 1.80 meters by 2.59 meters.

Steelhead

In 2010, a total of 17 steelhead redds were identified during the eight weekly surveys. Steelhead redds were first observed on January 13 (survey week 2) with newly constructed redds continuously observed through February 8 (survey week 6). No newly constructed steelhead redds were observed during survey weeks 7 and 8.

During the 2010 sampling period, 82.4 percent (14 of 17) steelhead redds were located within the low-flow channel, while 17.6 percent were located in the high-flow channel. Additionally, 58.8 percent of all steelhead redds observed were located within 1 mile downstream of the Fish Barrier Dam. This pattern is generally consistent with past steelhead redd surveys and affirms preference for upstream spawning distribution.

Salmon Escapement Survey

The purpose of the salmon escapement survey is to evaluate the abundance, distribution, and timing of in-river Chinook salmon spawning.

The survey provides information crucial to monitoring, managing, and conserving the Feather River's salmon populations. The data are used to identify trends in population and age structure, track patterns in spawning distribution, determine proportions of hatchery versus wild fish, and explore environmental effects on salmon survival rates. Estimating the number of salmon returning to spawn is the basic goal of the carcass survey. This estimate is based on a weekly mark and recapture experiment in which salmon carcasses are tagged, chopped, and placed back into the river. The rate at which tagged carcasses are recovered (the recovery rate) relative to the number of carcasses checked for tags (chopped) provides the basis for an estimate of the total population.

The Chinook salmon spawning escapement survey began September 7 and continued through December 23, 2010. The low-flow channel included the area in the Feather River from the Fish Barrier Dam downstream to the Thermalito Afterbay Outlet, and the high-flow channel extended from the Thermalito Afterbay Outlet downstream to the Gridley Bridge. Due to the low numbers of returning fish in the high-flow channel, the high-flow and low-flow channel data were pooled to generate one estimate for the lower Feather River.

The carcass mark-recapture study, using a Schaefer estimator to calculate total escapement, resulted in a population estimate of 44,693 Chinook salmon for the lower Feather River. There were an estimated 3,924 grilse (fish less than 65 centimeters fork length). These estimates include both fall-run and spring-run Chinook salmon since their spawning is currently not fully segregated on the Feather River.

Approximately 95.1 percent of the spawning population utilized the low-flow channel. This is the second highest percentage for any of the previous years monitored by DWR (surveys began in 2000). The long-term average for the high-flow channel's spawning population since 2000 is 77.7 percent. In the low-flow channel, section 8 (RM 66.5) had the highest carcass concentration followed by section 10 (RM 65.5). The highest concentrations of carcasses in the high-flow channel were found in sections 27 (RM 57) and 38 (RM 51).

Spring-run Chinook Salmon Tagging

To better understand spring-run Chinook salmon life history in the Feather River, a program was developed to mark spring-run Chinook salmon entering the FRFH. The spring-run Chinook salmon tagging program segregates spawning of spring- and fall-run Chinook salmon in the hatchery. The program also investigates potential differences in spawning distribution and timing of the early arriving spring-run salmon in the river. Early arriving spring-run salmon entering the hatchery were marked with individually numbered Hallprint dart tags for identification. Once marked, the fish were released back into the river and allowed to over-summer. During the hatchery spawning season, the mark enabled hatchery staff to distinguish the early arriving spring-run fish from the fall-run fish, so that spring-run fish could be spawned separately from fall-run fish. The mark also enabled the escapement survey crew to differentiate spring- and fall-run salmon, so that any potential differences or trends in the in-river spawning behavior of the two runs could be analyzed.

In 2010, 3,502 Central Valley spring-run Chinook salmon were tagged at the FRFH. Tagging began on June 1 and ended on July 6. When spawning commenced in the fall, a total of 1,792 were recaptured: 1,661 at the FRFH and 131 in the river escapement survey.

Otolith Thermal Marking Studies

The Chinook salmon run in the Feather River consists of both Central Valley spring-run and fall-run fish, both of which are heavily supplemented by the FRFH. In order to effectively determine the composition of the run (spring-run versus fall-run) and the origin of the fish (hatchery versus naturally produced), DFW and DWR developed an otolith thermal marking program for the FRFH. Thermal marking is an efficient method to mark 100 percent of the fish produced at the hatchery.

In 2005, 100 percent marking of spring- and fall-run Chinook salmon began. In 2010, all returning salmon were thermally marked (ages 2 through 5 years) and otolith sample preparation continued. With continuation of this program, DWR will be able to definitively determine the origin and the proportions of spring- and fall-run fish within the river and the hatchery. With known origin and race, more advanced otolith analysis techniques can be employed to investigate potential differences in life history strategy for fall- and spring-run fish, as well as hatchery and naturally produced Chinook salmon. This will provide valuable information to evaluate the effectiveness of past management decisions aimed at the recovery of natural-origin Chinook salmon and guide future restoration actions.

Pelagic Organism Decline in the Upper San Francisco Estuary

By the early 2000s, long-term monitoring by the Interagency Ecological Program (IEP) revealed marked declines in numerous pelagic (open water) fish species in the upper San Francisco Estuary (the Delta and Suisun Bay). This decline has collectively become known as pelagic organism decline (POD).

Abundance indices calculated from several IEP monitoring programs for pelagic fish of the upper estuary increased slightly in 2010 over the prior year, but remained at extremely low levels. Pelagic fish species in decline include delta smelt, longfin smelt, striped bass, and threadfin shad. These declines have had significant management consequences, including limits to pumping operations for the protection of delta smelt (listed as threatened under ESA and endangered under CESA) and longfin smelt (listed as threatened under CESA).

Since 2005, IEP scientists have been coordinating studies investigating potential causes of POD. In 2010, IEP scientists prepared a synthesis of major results from recent research investigating the effects of predation, water export operations, changes in food availability, contaminants, and other environmental drivers on declining species (*IEP Pelagic Organism Decline Work Plan and Synthesis of Results* is available on DWR's website). In this synthesis, a new conceptual model was put forward, hypothesizing that POD was caused by changes to multiple and interacting environmental variables, such as outflow, turbidity, and salinity which led to fundamental changes in both physical aspects and community composition of the Delta ecosystem. This "ecosystem regime shift" conceptual model has been used to explain dramatic shifts in other aquatic systems and will serve as a working hypothesis for future POD investigations.

Additional information can be found in the *Pelagic Fish Action Plan*, published in March 2007, available from the Delta Initiatives website.

Fish-related Mitigation Projects

In 1986, DWR and DFW signed the Delta Pumping Plant Fish Protection Agreement (Delta Fish Agreement) to annually provide funds to offset direct losses of Chinook salmon, steelhead, and striped bass at Banks Pumping Plant. The Delta Fish Agreement is commonly referred to as the Four Pumps Agreement because it was adopted as part of the mitigation for four additional pumps at Banks Pumping Plant. Direct losses are defined as losses of fish that occur from the time fish are drawn into Clifton Court Forebay until the surviving fish are returned to the Delta. In principle, DFW and DWR intended this agreement to offset direct losses of all fish caused by the diversion of water by the pumping plant starting in 1986. However, at that time, information on impacts and measures to offset those impacts was sufficient only to deal with Chinook salmon, steelhead, and striped bass. The agreement allowed for addressing impacts on other fish species once impacts could be identified and measures could be developed that would offset such impacts.

The process that led to this agreement included an advisory committee of representatives from interest groups concerned with fish resources affected by the SWP, including, but not limited to, representatives of the SWP water contractors, sport and commercial fishing groups, and environmental groups. The agreement formalized the Delta Pumping Plant Fish Advisory Committee.

To mitigate fish loss, mitigation projects are selected and funded by the Delta Fish Agreement. The agreement outlines how project proposals are reviewed and

selected for funding and gives priority to mitigation measures for habitat restoration and other nonhatchery measures. Under the agreement, DWR calculates fish loss as prescribed in the agreement, and approved mitigation projects earn fish mitigation credits to satisfy the fish loss mitigation provisions in the agreement. Mitigation is on a fish-for-fish basis.

DWR and DFW work with the Delta Pumping Plant Fish Advisory Committee to review the success of the agreement in offsetting the direct effects of diversions by Banks Pumping Plant. If warranted, the agreement can be renegotiated to fulfill SWP's responsibilities to compensate direct fish loss. The agreement requires DWR and DFW to conduct an annual review and report the results.

The agreement provides for two funding components. One component is the Annual Mitigation Account for compensating the annual fish loss. It has no expiration date. The second is a $15 million Lump Sum Account provided by DWR for additional projects to compensate for post-1986 fish loss. The agreement specifies that the $15 million must be expended by December 29, 1996.

The Delta Fish Agreement has been amended three times:

- Amendment 1 (1996)—extended the period to expend the remaining $9 million of the $15 million to December 29, 2001;
- Amendment 2 (2001)—extended the period to expend the remaining $5 million of the $15 million to December 31, 2004; and
- Amendment 3 (2004)—extended the period to expend the remaining $3.6 million of the $15 million to December 31, 2007.

In 2010, a fourth amendment was being drafted to extend the period to expend the remaining $1.6 million of the $15 million to December 31, 2015.

Since 1986, DWR has spent $55 million on mitigation projects developed under the Delta Fish Agreement. (For a list of some of the mitigation projects initiated, approved, or implemented in association with the agreement, see Bulletin 132-09.) Mitigation fund expenditures through December 31, 2010, were $41.9 million for the Annual Mitigation Account and $13.4 million for the $15 million Lump Sum Account. Funds approved but unexpended from each account were $10 million and $1.5 million, respectively.

Climate Change

Climate change is impacting snowpack, sea level, and river flows. Consequently, California's historical trends in water supply, flood management, and its ecosystems are changing. Climate warming is expected to continue to diminish the SWP's natural snowpack and shift reservoir storage inflows to earlier months of the year when storage capacity is limited. As sea levels rise, more saline water flows into the Sacramento-San Joaquin Delta. The need to reduce Delta salinity will require increased SWP reservoir releases, which could potentially impact SWP delivery schedules. Existing ecological issues in Central Valley rivers and the Delta will be exacerbated by rising water temperatures, increasing sediment loading (as a result of increased wildfires and strong precipitation events), and increasing water demands.

DWR is committed to contributing to statewide, national, and international efforts to mitigate the future impacts of climate change by reducing greenhouse gas emissions from its activities and adapting to unavoidable climate changes. DWR's efforts throughout 2010 represent a multipronged approach to addressing these issues by

conducting research to determine potential future impacts, monitoring and reporting greenhouse gas emissions, and researching and developing plans and strategies to improve the resiliency of SWP facilities and operations.

Studies

Completed in 2010

Isolated and integrated effects of sea level rise, seasonal runoff shifts, and annual runoff volume on California's largest water supply. The study, a detailed analysis of climate change impacts on the seasonal pattern shift of inflow to reservoirs, annual inflow volume change, and sea level rise on water supply in the Central Valley of California, will be published in the *Journal of Hydrology* in 2011.

Ongoing during 2010

Development of User Interface and Data Analysis Tools to Provide Public Access to Information about Impacts of Climate Change on Streamflows in California. Preliminary work was started using a Google Earth interface to provide geo-referenced streamflow locations in California where data is available; static data (such as metadata, references, and web links to completed impact studies; and dynamic tools that allow users to perform customized impact studies. The first step of this activity has been completed, and work has begun on the second step. This activity will require a server to host the data and provide internet access.

Using Downscaled Climate Change Information for Water Resource Planning. Climate change projections from global climate models typically provide information at a scale that is too large to use for water resource planning. To make the climate change projection information more useful for planning purposes, it is converted to a smaller scale by a process called downscaling. Downscaling methods fall into two categories: statistical downscaling, which is based on historical patterns, and dynamical downscaling, which relies on physical principles and relationships. Both downscaling and the use of downscaled data for water resource planning are evolving areas of research. In 2010, DWR's activities related to downscaling included:

- creating downscaled data at 2-kilometer resolution;
- comparing dynamical and statistical downscaling methods to determine the strengths and weaknesses of each method for use in water resource planning; and
- generating climate change reservoir inflow projections.

Sensitivity Analysis of Sierra Nevada Upper Watersheds to Temperature Changes Using Soil and Water Assessment Tool (SWAT). Physically based, distributed hydrologic models are essential tools for evaluating long-term hydrologic changes in California. The semidistributed Soil Water Assessment Tool (SWAT) is being used to develop individual models of six representative Sierra Nevada watersheds: Shasta Lake, the Yuba River, Feather River, and American River in the northern Sierra, and the Tuolumne River and Merced River in the southern Sierra. A common and consistent database of digital elevation, land use, soil data, and climate data is used with a geographic information system to develop the SWAT models. Model calibration and validation are based on observed or reconstructed monthly unimpaired streamflows at the watershed outlets. Additional SWAT models will be developed for other major watersheds in the region. The calibrated models will be used to study the effect of imposed warming on the hydrology of these source watersheds and their impacts on water supply of the Central Valley of California.

Upper Watershed Restoration Study. In 2010, DWR continued to work with the U.S. Forest Service on a study initiated in 2009 to

investigate the hydrologic effects of upper watershed restoration. DWR is funding the U.S. Forest Service for a 3-year investigation of the hydrologic effects of meadow restoration and how restored meadows can contribute to improved system operation as well as ecosystem functioning. In 2010, the project began delineating potential meadows using available geographic information system datasets, delineating meadows in the field and comparing the field delineations to those derived from geographic information system analysis; assessing meadow condition in a random sample to extrapolate to the condition of all Sierra meadows; and installing instrumentation to assess hydrology of undisturbed and restored meadows.

Initiated during 2010

Reoperation of Water Supply and Flood Protection Systems Study. California's water system is composed of State, federal, and local agencies, each having infrastructure in place to provide water supply and flood control benefits. The current operation of these independent systems is based on physical and legal constraints. Changes in the climate, legal framework, and social values associated with water use may require modifications to existing operations and management procedures, new facilities, and new laws.

As authorized in Senate Bill X2 1(SBX2 1), DWR initiated a system reoperation study to identify potential reoperation strategies of California's existing water supply and flood protection systems that will optimize the use of existing facilities and groundwater storage capacity. SBX2 1 defines the following objectives for the System Reoperation Program:

- integrate flood protection and water supply systems to increase water supply reliability and flood protection, improve water quality, and provide for ecosystem protection and restoration;
- reoperate existing reservoirs, flood facilities, and other water facilities in conjunction with groundwater storage to improve water supply reliability, flood control, and ecosystem protection, and to reduce groundwater overdraft;
- promote more effective groundwater management and protection and greater integration of groundwater and surface water resource uses; and
- improve existing water conveyance systems to increase water supply reliability, improve water quality, expand flood protection, and protect and restore ecosystems.

More information on the System Reoperation Program can be found on DWR's website.

Climate Change Characterization and Analysis in DWR Planning Studies. In 2010, DWR completed a project to survey and describe the procedures and methodologies that have been used in the past by DWR and its partners to characterize projected future climate and analyze the impacts. The study report was published in December 2010.

This study took a comprehensive and comparative look at planning studies conducted by DWR and its partner agencies that have addressed climate change. Thirteen past and ongoing planning studies conducted by DWR and its partners between 2006 and 2010 were summarized. Each study was evaluated across 18 different characteristics including number of climate scenarios, climate scenario development approach, hydrologic simulation approach, sea level rise estimation, and project purpose. The 13 studies were analyzed to identify trends over time or across similar type projects. Each of the various climate change characterization approaches and hydrologic simulation approaches were compared and contrasted and strengths and weaknesses were discussed. The study also discussed the lack of important tools and

analysis procedures for measuring some important climate change impacts.

The study provided the background needed to develop guidance for DWR project managers on selecting and implementing climate change analyses. In addition, it also served as a review of potential approaches available for other water planning entities as they address climate change in their planning processes.

Energy and Greenhouse Gas Emissions

Integrated Resource Plan for the SWP

To assist in reducing SWP's reliance on fossil-fired power generation, with its associated adverse impacts, DWR has developed an integrated resource plan for procuring power that will increase the use of renewable energy as part of SWP's power portfolio, contributing to the reduction of greenhouse gas emissions in California. This plan is consistent with State policy and the Governor's Executive Order S-03-05 (which established greenhouse gas emission reduction goals for California).

2009 Emissions Reports to the California Climate Action Registry and the California Air Resources Board

DWR reported its estimated total direct and indirect carbon dioxide emissions to the California Climate Action Registry (CCAR) for the third consecutive year. The emissions are the result of SWP power purchase transactions, energy consumed at DWR-occupied buildings, and fuel consumed by DWR's vehicles and field equipment. DWR's CCAR greenhouse gas emission report was audited and approved by an independent third party certifier in October 2010. Ninety-nine percent of DWR's emissions in 2009 were the result of SWP power purchases. In May 2010, DWR reported to the California Air Resources Board the energy generated and consumed by the SWP in 2009 and the estimated sulfur hexafluoride associated with the SWP's transmission yard circuit breakers.

Addressing Climate Change and Greenhouse Gas Emissions in CEQA Documents

During 2010, the DWR CEQA Climate Change Committee, DWR's standing committee charged with reviewing and approving analysis of greenhouse gas emissions and climate change in DWR's CEQA documents, initiated discussions and formed a workgroup and a steering committee to develop a comprehensive approach to addressing climate change. This workgroup outlined an initiative to develop a three-phase DWR *Climate Action Plan*. Each phase will address a specific area of concern with respect to climate change and DWR's activities. Phase I will be a *Greenhouse Gas Emissions Reduction Plan* documenting historical, current, and projected future emissions of greenhouse gases from DWR activities as well as targets and strategies for reducing future emissions. Phase II will be a Climate Change Analysis Framework to provide DWR project managers with guidance and tools for characterizing future climate conditions and analyzing the impact of climate changes for DWR planning studies, such as environmental impact reports, the *California Water Plan*, and the *State Water Project Delivery Reliability Report*. Phase III will be a detailed incorporation of adaptation strategies/actions in environmental documents, building on *Managing an Uncertain Future; Climate Change Adaptation Strategies for California's Water,* published by DWR in October 2008.

During 2010, work began on development of Phase I of the *Climate Action Plan—Greenhouse Gas Emissions Reduction Plan*. Meetings and consultations were conducted with all of DWR's divisions that have operational control over activities that release greenhouse gases. Work on the *Greenhouse Gas Emissions Reduction Plan*

will continue in 2011 and is expected to be completed by mid-2012.

Environmental Document Review

DWR's Division of Environmental Services, Environmental Document Review Section screens State Clearinghouse documents and circulates SWP-related materials for review by the Division of Integrated Regional Water Management, O&M, and the Division of Engineering. Other divisions and offices are notified and asked to comment when their expertise is required.

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

During 2010, the Environmental Document Review Section tracked documents related to development along the California Aqueduct, levee encroachment, dam safety issues, water transfers and other water supply issues, wastewater treatment, quarry development, solar and wind power facilities, and climate change issues.

DWR comments submitted through the CEQA and/or NEPA processes addressed a number of issues, including runoff from proposed developments, safety and water supply, conveyance of nonproject water through SWP facilities, encroachment on physical facilities, impacts to cross-drainage facilities, cropping patterns, and climate change.

In 2010, the Environmental Document Review Section screened 2,987 State Clearinghouse documents. After screening, 620 documents were referred for information, and 183 formal referrals were made for negative declarations, EIRs, and NEPA documents. In addition, 501 early consultation and notice of preparation documents were referred, mostly for information.

O&M received 105 formal referrals and the State Water Project Analysis Office received 19 formal referrals and one for information.

The total number of referrals to O&M and the State Water Project Analysis Office decreased by about one-third from 2009. A major factor contributing to this decrease is the overall decrease in documents submitted through the environmental process (down about 14 percent), probably related to the continuing effects of the economic downturn.

In 2010, formal referrals to all DWR reviewers, including the Central Valley Flood Protection Board and the Division of Dam Safety, were down by 10 percent from 2009. Part of this reduction may be due to the lack of funding to start new construction projects, also related to the economic downturn. Part of this reduction may also be attributed to an increase in administrative-type projects (such as master plans, implementation plans, and transportation plans plus "elements" of these plans, such as "housing element" and others). Many of the documents for administrative-type projects would be of little or no interest to DWR.

Chapter 4
Water Quality Programs

Water quality monitoring station on the Rio Vista Bridge.

Significant Events in 2010

The 2009–2010 water year hydrologic classifications for the Sacramento and the San Joaquin valleys were "below normal" and "above normal," respectively, based on observed data.

The 2007–2009 Municipal Water Quality Investigations biennial report, a report of the summary and findings of discrete data collected by the program throughout the Delta, was completed in June 2010.

The draft environmental impact statement/environmental impact report for the *Suisun Marsh Habitat Management, Preservation, and Restoration Plan* was released in October 2010.

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

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 16 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 Water Quality

Maintaining adequate water quality to support multiple beneficial uses of water from the San Francisco Bay/Sacramento-San Joaquin Delta (Bay-Delta) is of concern to DWR as well as other resource agencies. The State Water Resources Control Board (SWRCB) establishes water quality objectives to protect a variety of beneficial uses of water within the Bay-Delta. The objectives are contained within the water quality control plans (WQCPs)adopted by SWRCB. Water quality objectives are also contained in Article 19 of the long-term SWP water supply contracts. The Department of Public Health (DPH) establishes maximum contaminant levels for treated drinking water.

Under its authority to protect beneficial uses of water, SWRCB adopted the 2006 *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (Bay-Delta Plan) on December 13, 2006 (Resolution No. 2006-0098). It contains objectives for flow, salinity, dissolved oxygen (DO) levels, and other parameters necessary for protection of various beneficial uses such as municipal and industrial, agricultural, and fish and wildlife.

SWRCB adopted Water Right Decision 1641 (D-1641) in December 1999 (amended March 15, 2000). D-1641 implemented the objectives of the 1995 Bay-Delta Plan.

One method used by SWRCB to implement the objectives in the WQCPs is through conditioning water rights permits. D-1641 amends the water rights of a number of water rights holders—primarily those for the SWP and Central Valley Project (CVP)—to help achieve the WQCP objectives.

For additional background information about SWRCB activities and the Bay-Delta Plan, see the sidebar, State Water Resources Control Board, and Chapter 7, Water Supply Development and Reliability.

Strategic Workplan for the Bay-Delta Estuary

In 2008, SWRCB adopted the *Strategic Workplan for Activities in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*. The strategic workplan identifies a broad, integrated list of water right and water quality activities. The workplan activities are divided into nine broad elements that cover a range of actions that implement SWRCB's and the Regional Water Quality Control Boards' (RWQCBs) core water quality responsibilities; continue meeting prior SWRCB and RWQCB commitments; respond to priorities identified by the Governor and the Delta Vision Blue Ribbon Task Force; and build on existing processes, such as the Bay Delta Conservation Plan (BDCP).

State Water Resources Control Board

The State Water Resources Control Board (SWRCB), established by the California Legislature in 1967, oversees water rights and protects water quality by setting and implementing statewide policy, administering appropriative water rights, coordinating with and supporting Regional Water Quality Control Board (RWQCB) efforts, and reviewing petitions that contest RWQCB actions. The five SWRCB members are appointed by the Governor and confirmed by the Senate. SWRCB is responsible for four major programs.

Water quality: to preserve, protect, enhance, and restore water quality.

Water rights: to issue permits for water rights specifying amounts, conditions, and construction timetables for diversion and storage.

Financial assistance: to assist local agencies and individuals with pollution prevention or clean-up.

Enforcement: to enforce water rights and water quality laws and regulations.

Under their water quality authority, the SWRCB and RWQCBs adopt water quality control plans (WQCPs) for each of the planning basins in the State. The WQCPs contain water quality objectives for flow, salinity, dissolved oxygen levels, and other parameters necessary for the protection of various beneficial uses, such as municipal and industrial, agricultural, and fish and wildlife. SWRCB implements these objectives in a number of ways, depending on the circumstances, including imposing conditions on water right permits and licenses.

SWRCB amended Water Right Decision 1641 (D-1641) on March 15, 2000, which placed terms and conditions on a number of water rights, primarily those for the State Water Project (SWP) and Central Valley Project (CVP). D-1641 implemented the objectives in the 1995 Bay-Delta Plan. The Department of Water Resources and the Bureau of Reclamation operate the SWP and CVP in coordination to meet the terms in D-1641 and other applicable regulatory requirements relevant to each project.

Current water quality objectives for the Sacramento-San Joaquin Delta and Suisun Marsh are contained in the *WQCP for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (Bay-Delta Plan), adopted December 13, 2006. SWRCB is required to conduct periodic updates of the Bay-Delta Plan. As part of the update process, SWRCB conducts proceedings to gather information, receive recommendations, consider public comments, and facilitate detailed discussions to evaluate new information relevant to potential changes to the water quality objectives.

Some of the recent issues of concern related to the WQCP include pelagic organism decline, special status fish species, Delta inflow, San Joaquin River flows, and southern delta salinity.

In July 2008, SWRCB adopted the *Strategic Workplan for Activities in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*, which prioritizes and describes the scope of individual activities and provides specificity regarding timelines and resource needs for implementing coordinated activities in the Bay-Delta.

SWRCB staff prepare quarterly updates on the implementation of the workplan and, as appropriate, recommend modifying activities in the workplan to ensure that SWRCB actions continue to protect beneficial uses in the Bay-Delta. SWRCB will consider modifying the Bay-Delta strategic workplan as necessary.

2006 Bay-Delta Plan Review

Water Code Section 13240 requires that the WQCP be periodically reviewed. Federal Clean Water Act Section 303(c) (33 U.S.C. Section 1313(c)) requires a triennial review of State water quality "standards," as defined in the act. The comprehensive review of the 2006 WQCP and its implementation is one of the significant water quality related activities in the SWRCB strategic workplan.

The WQCP review and amendment process will consist of review of the 2006 Bay-Delta Plan to identify elements that may need amendment or new elements that may need to be added, staff preparation of any amendments or revision of the entire WQCP, and SWRCB adoption of some or all of the amendments or revisions. SWRCB information-gathering activities may affect the scope of the WQCP review and may include a series of evidentiary hearings on a number of critical issues concerning the Delta's ecology. The BDCP environmental review may include some of the analyses needed for the comprehensive WQCP review. The intent of the comprehensive review is to establish interim and long-term water quality objectives in the Bay-Delta that are protective of fish and wildlife beneficial uses and the public trust. The comprehensive review will also develop a broad range of alternatives for potential changes to the Bay-Delta Plan and its implementation under the following scenarios: in the interim until any new conveyance facility is completed; in the long-term with new conveyance facilities; and in the long-term in the event that a new conveyance facility is not constructed.

Review of the 2006 Bay-Delta Plan began in 2008. To assist in updating of the San Joaquin River flow objectives in the 2006 Bay-Delta Plan, the Delta Science Program (Delta Stewardship Council) commissioned a panel of independent experts at SWRCB's request to review the Vernalis Adaptive Management Plan (VAMP). A public workshop for the review was held in March 2010.

Operations Under SWRCB Water Right Decision 1641

In 2010, DWR and the Bureau of Reclamation (Reclamation) jointly operated the SWP and CVP in accordance with D-1641, which includes water quality, flow, and operational criteria for the SWP and CVP Delta operations. SWP and CVP operations were coordinated to meet the various objectives of the Bay-Delta Plan, Central Valley Project Improvement Act, and biological opinions (BOs) for listed species as well as other regulatory requirements. Fish species currently listed under the Endangered Species Act and the California Endangered Species Act 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 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.)

D-1641 includes the requirement to monitor a number of stations within the Delta for specific water quality constituents. DWR conducts extensive monitoring in the Delta and the Suisun Marsh, as required. Figure 4-1 shows water quality compliance and monitoring stations throughout the Sacramento-San Joaquin Delta specified by D-1641.

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

Delta Cross Channel Gates

The Delta Cross Channel gates are operated in accordance with SWRCB D-1641. In 2010, the gates were open for 163 days to allow fresher Sacramento River water to flow into interior Delta channels toward the SWP and CVP export facilities. Reclamation's standard operating procedures call for gate closure when flow on the Sacramento River at Freeport reaches between 20,000 cubic feet per second (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 U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service, and the Department of Fish and Wildlife (DFW; formerly the Department of Fish and Game).

Water Quality Standards

Water quality objectives in D-1641 are categorized by the beneficial uses they are intended to protect, including municipal, industrial, agricultural, and fish and wildlife. DWR operators adjust upstream releases and Delta exports in order to meet D-1641 water quality and flow standards. D-1641 contains salinity standards (recorded as electrical conductivity [EC]) for three stations in the South Delta downstream of Vernalis. The stations are primarily influenced by San Joaquin River flows and in-Delta diversions. San Joaquin River flows are not influenced by SWP upstream reservoirs, but local water levels may be influenced by SWP exports, and circulation may be influenced by the annual placement of South Delta barriers. For more information about the South Delta barriers, see Chapter 2, Delta Resources, and Chapter 3, Environmental Programs.

Water Year 2009–2010 Classifications and Water Supply Indices

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."

The Sacramento Valley Water Year Hydrologic Classification (Sacramento Valley 40-30-30 Index) forecast on May 1 of each year determines the water year type for the implementation of flow and water quality criteria contained in D-1641. In 2010, the SWP and CVP were operated using water quality and flow criteria based on the May 1 forecast of a below normal water year for the Sacramento River basin.

The Sacramento Valley 40-30-30 Index and the San Joaquin Valley Water Year Hydrologic Classification (San Joaquin Valley 60-20-20 Index) were below normal and above normal, respectively, based on observed data for water year 2009–2010. (For a detailed discussion of water year 2009–2010, see Chapter 8, Water Supply.)

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, Jones Pumping Plant, Cache Slough at the City of Vallejo Intake, and Barker Slough). Chloride levels remained below the objective for all days in 2010.

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. This objective was met in calendar year 2010.

Agricultural Objectives

D-1641 contains agricultural salinity objectives, which vary by location. The salinity objectives, recorded as EC, are 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 West and Central Delta. The agricultural salinity objectives at these Delta locations become less stringent under dryer conditions. Emmaton and Jersey Point met the objective in 2010. (Data for Terminous and San Andreas were not available.)

In the South Delta, the salinity objectives are based on a 30-day running average. The 0.7 millisiemens per centimeter (mS/cm) objective for the South Delta was met at Vernalis, Old River near Middle River, Old River near Tracy Road Bridge, and Brandt Bridge. The SWP and CVP are jointly required by D-1641 to meet the agricultural EC objectives 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 BO. The upstream movement of 2 parts per thousand 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 (Collinsville, Chipps Island, Port Chicago, or Martinez) are associated with an abundance of fish and biota.

The requirement for meeting X2 criteria at Collinsville applies to all days during February through June. The number of days per month when the daily average EC maximum (2.64 mS/cm) is in effect at Chipps Island or Port Chicago is conditioned by the previous month's Eight River Index (more information about this can be found in Chapter 8, Water Supply). 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 7,100 cfs, 11,400 cfs, or 29,200 cfs, when the X2 position is at Collinsville, Chipps Island, or Port Chicago, respectively. The Port Chicago standard becomes effective when the Port Chicago 14-day EC average, immediately prior to the first day of the month, is less than or equal to 2.64 mS/cm.

The Eight River Index for January through May 2010, in million acre-feet, was 2.48, 2.31, 2.31, 3.25, and 3.7, respectively. The X2 habitat protection objective at Chipps Island was 28 days in February, 31 days in March, 27 days in April, 29 days in May, and 17 days in June.

Additionally in 2010, the X2 habitat protection objective at Port Chicago was met in the month of May for 6 days.

Net Delta Outflow Index Standard

Delta outflow cannot be measured directly due to the tidal influence in the Delta. Instead, an approximation of Delta outflow is calculated using measured inflows, exports, and estimated Delta water use. The NDOI was introduced in the 1995 Bay-Delta Plan and is now part of D-1641. NDOI calculates Delta outflow using 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 Operations Agreement, allow for greater flexibility in project operations.

D-1641 sets specific minimum monthly NDOI standards for the protection of fish and wildlife based on water year type. In 2010, the monthly mean NDOI was highest in December, averaging 44,000 cfs. The monthly mean NDOI remained above 3,000 cfs during all months of the year, with the lowest monthly mean NDOI occurring in August, with 4,030 cfs. All NDOI standards were met in 2010.

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 BO, set flow requirements based on the May 1 Sacramento Valley water year classification forecast. Water year 2009–2010 was forecast to be below normal, requiring mean monthly flows of 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 11,748 cfs for September, 6,451 cfs for October, 7,585 cfs for November, and 31,172 cfs for December.

If the X2 objective is required to be at or west of the Chipps Island location, above normal year base Vernalis 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 VAMP, part of the San Joaquin River Agreement and approved in D-1641, contains SWRCB-approved alternative spring pulse flow and export limits. Typically, Reclamation and DWR use this alternative in lieu of D-1641 limits.

VAMP marked its eleventh year of operation in compliance with D-1641 in calendar year 2010. Actions associated with VAMP were implemented between April 25 and May 25. For more information about 2010 VAMP activities, see Chapter 3, Environmental Programs.

Additional information about San Joaquin River water quality can be found in Chapter 5, Local Assistance.

Export Standards

D-1641 includes an export limitation 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 diverted Delta inflow 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 Jones 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 2010, the Delta was in excess conditions for a total of 197 days. The dates were from January 20 to June 30 and November 27 to December 31. Within this period, combined SWP and CVP exports averaged about 21 percent of Delta inflow, meeting the 65 percent limitation in January and July to December, while also meeting the 35 percent limitation from February to May.

The Delta was in balanced conditions for 168 days from January 1 to January 19 and July 1 to November 26. Within this period, combined SWP and CVP exports averaged about 53 percent of Delta inflow, meeting the 65 percent limitation in January and from July to December.

South Delta Temporary Barriers

The South Delta Temporary Barriers Project, initiated as a test project in 1991, was extended for 5 years in 1996, and extended again for 7 years in 2001. The project was created partially in response to a 1982 lawsuit filed by the South Delta Water Agency and consists of rock barriers across four 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 near Tracy, Grant Line Canal, and at Head of Old River.

In 2010, the spring Head of Old River rock barrier was not installed; instead, a nonphysical "bubble barrier" was installed to prevent salmon from entering Old River.

For more information about the temporary barriers, see Chapter 2, Delta Resources, and Chapter 3, Environmental Programs.

Special Study and Biological Surveys

DWR conducts several special studies and biological surveys each year. This includes a special study in the Stockton Deep Water Ship Channel (DWSC) during the late summer and early fall to monitor the occurrence of low DO levels. Low DO levels 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 DWSC

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 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 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. In 2010, the fall barrier was not required (see Chapter 3, Environmental Programs).

Also, 2010 marked the final year of the Port of Stockton aeration demonstration project. The aeration facility was undergoing operational testing, which included injecting oxygen intermittently throughout the DO monitoring study period. The aeration facility was located on Rough and Ready Island near station 11. For more information about this project, visit DWR's website.

Methods

Monitoring DO concentration in the Stockton DWSC was conducted by boat on 12 monitoring runs, from June 11 to November 19, 2010. During each run, 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 western region of the channel begins at Prisoners Point and ends at Columbia Cut. The central region of the channel begins one-half mile east of Columbia Cut and ends at Fourteen Mile Slough. Finally, the eastern region of the 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 period of this study (June 11 to November 19), DO levels varied between regions within the channel (not including the turning basin). Overall, the study period range was 4.6 to 9.1 mg/L at the surface and 4.2 to 9.2 mg/L at the bottom. In the western region of the channel, DO concentrations were relatively high and stable, ranging from 7.2 to 9.1 mg/L at the surface and 7.0 to 9.2 mg/L at the bottom. In the central region of the channel, DO concentrations were variable, ranging from 5.6 to 9.0 mg/L at the surface and 5.1 to 8.9 mg/L at the bottom. In the eastern region of the channel, DO levels were slightly lower and tended to be more stratified than the other regions, ranging from 4.6 to 8.4 mg/L at the surface and 4.2 to 8.4 mg/L at the bottom.

DO concentrations in the Stockton DWSC fell below both the State's 5.0 mg/L and 6.0 mg/L objectives on two monitoring runs: July 23 (stations 10 through 13) and August 9 (station 13). 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 2010 special study were suspended after November 19, 2010.

Benthic Survey

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

Benthic monitoring was conducted at 10 sampling sites distributed throughout the major habitat types within the estuary:

- 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 Point;
- 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 2010. 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 195 species of benthic macrofauna were collected in 2010 at the 10 sampling sites. Of the 195 species, the following 10 dominant species represented 78 percent of all organisms collected:

- amphipods: *Ampelisca abdita*, *Americorophium spinicorne*, *Corophium alienense*, and *Gammarus daiberi*;
- Asian clams: *Corbula amurensis* and *Corbicula fluminea;*
- Cumacean: *Nippoleucon hinumensis;*
- Sabellidae polychaete: *Manayunkia speciosa*; and
- Tubificidae worms: *Limnodrilus hoffmeisteri* and *Varichaetadrilus angustipenis*.

Of the 10 dominant species, *Corbula amurensis*, *Ampelisca abdita*, and *Nippoleucon hinumensis* represent macrofauna that inhabit a typically high saline environment and were found in San Pablo Bay, Suisun Bay, and Grizzly Bay. *Corophium alienense* and *Americorophium spinicorne* 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 five species, *Gammarus daiberi*, *Manayunkia speciosa*, *Limnodrilus hoffmeisteri*, *Varichaetadrilus angustipenis*, 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 micrometers 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 2010 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 Bulls Head Point 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 at 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 2010, 94.2 percent had chlorophyll *a* levels below 10 micrograms per liter (µg/L). Chlorophyll *a* levels below 10 µg/L are considered limiting for zooplankton growth. The mean chlorophyll *a* concentration for all samples in 2010 was 3.21 µg/L, and the median value was 1.72 µg/L. In comparison, during 2009, mean chlorophyll *a* concentrations were higher, with a mean of 6.30 µg/L (the mean chlorophyll *a* concentration for 2009 that was publised in Bulletin 132-10 has been updated from 5.38 to 6.30) and a median of 1.72 µg/L. The maximum chlorophyll *a* concentration in 2010 was 59.20 µg/L, recorded in August at the San Joaquin River at Vernalis. This maximum was lower than the 2009 peak of 260.59 µg/L. The minimum chlorophyll *a* concentration in 2010 was 0.38 µg/L, recorded in March at the San Joaquin River at Potato Point monitoring station.

There were 9 samples with chlorophyll *a* levels above 10 µg/L. Of those, seven were from the San Joaquin River near Vernalis, one was from Disappointment Slough near Bishop Cut, and one was from Grizzly Bay at Dolphin near Suisun Slough.

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 *a*.

Pheophytin *a* 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 *a* are normally expected to be low in relation to chlorophyll *a*. The mean pheophytin *a* concentration for all samples in 2010 was 1.42 µg/L, and the median value was 0.88 µg/L. The maximum pheophytin *a* concentration was 13.50 µg/L, recorded at the San Joaquin River near Vernalis monitoring station in August. The minimum pheophytin *a* concentration was 0.20 µg/L, recorded at San Pablo Bay near Pinole Point in November.

Phytoplankton populations consisted of these categories (in order of abundance):

- centric diatoms (class Coscinodiscophyceae);

- pennate diatoms (classes Bacillariophyceae and Fragilariophyceae);
- green algae (classes Chlorophyceae, Ulvophyceae, and Zygnematophyceae);
- cryptomonad flagellates (class Cryptophyceae);
- cyanobacteria (class Cyanophyceae);
- haptophyte flagellates (class Haptophyceae);
- dinoflagellates (class Dinophyceae);
- euglenoid flagellates (class Euglenophyceae);
- ciliates (classes Kinetofragminophora and Spirotrichea);
- chrysophyte flagellates (class Chrysophyceae);
- little green algal balls (class unknown);
- kathablepharid flagellates (class Cryptophycophyta incertae sedis); and
- silicoflagellates (class Dictyochophyceae).

Of the genera identified, the following were the 10 most common, in order of abundance:

- *Cyclotella* (centric diatom; class Coscinodiscophyceae);
- *Melosira* (centric diatom; class Coscinodiscophyceae);
- *Fragilaria* (pennate diatom; class Fragilariophyceae);
- *Nitzschia* (pennate diatom; class Bacillariophyceae);
- *Cryptomonas* (cryptomonad flagellate; class Cryptophyceae);
- *Chroomonas* (cryptomonad flagellate; class Cryptophyceae);
- *Monoraphidium* (green alga; class Chlorophyceae);
- *Cocconeis* (pennate diatom; class Bacillariophyceae);
- *Oscillatoria* (cyanobacterium; class Cyanophyceae); and
- *Chlamydomonas* (green alga; class Chlorophyceae).

Activities Outside the Delta

Routine SWP water quality monitoring activities, as well as special studies, are conducted outside the Delta. The 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 fish and wildlife and water quality concerns held by agencies that provide domestic water service.

Water Quality Monitoring in the SWP

DWR's Division of Operations and Maintenance (O&M) monitors water quality throughout the SWP. This monitoring program has more than 40 sampling stations and analyzes more than 200 different chemical, biological, and physical constituents. O&M has installed water quality monitoring stations at SWP storage and conveyance facilities located around the State, ranging from the Feather River watershed in the north to Lake Perris in the south. Conveyance facilities include the Oroville Facilities, California Aqueduct with its East and West Branches, North Bay Aqueduct, South Bay Aqueduct, and the San Luis Joint-Use Complex. O&M collects and analyzes samples monthly at most stations, although O&M may vary the frequency from weekly to annually depending on location, time of year, or special events. O&M sends the water samples to DWR's Bryte Chemical Laboratory in West Sacramento for processing and analysis. Constituents analyzed include: dissolved solids; nutrients; minerals such as chloride, sulfate, and sodium; trace metals; herbicides; pesticides; organic substances; and phytoplankton.

Table 4-1 shows mean water quality during 2010 for several sampling stations around the SWP and one station on the CVP's Delta-Mendota Canal.

Table 4-1 Mean Water Quality at Selected SWP Grab Sample Locations, 2010

Constituent	Units[a]	Reporting Limit	Thermalito Afterbay at Outlet	North Bay Aqueduct, Barker Slough Pumping Plant	Delta-Mendota Canal Upstream of McCabe Road	California Aqueduct					
						Banks Pumping Plant	O'Neill Forebay Outlet (Check 13)	Kettleman City (Check 21)	Near Highway 119 (Check 29)	Tehachapi Afterbay (Check 41)	Devil Canyon Headworks
Alkalinity	mg/L as $CaCO_3$	1	41	104	73	67	76	74	67	72	69
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	0.002	0.002	0.002	0.002	0.002	0.003	0.003	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	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1
Bromide	mg/L	0.01	<0.01	0.05	0.21	0.22	0.25	0.24	3.38	0.21	0.21
Calcium	mg/L	1	9	17	21	18	21	20	20	21	20
Chloride	mg/L	1	1	30	69	70	80	76	62	64	64
Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Copper	mg/L	0.001	<0.001	0.002	0.002	0.001	0.002	0.001	0.002	0.002	0.002
Fluoride	mg/L	0.1	NR	NR	NR	NR	NR	NR	0.1	NR	NR
Hardness	mg/L as $CaCO_3$	1	38	106	103	94	108	103	90	97	90
Iron	mg/L	0.005	0.007	0.033	0.012	0.022	0.013	<0.006	<0.005	0.006	<0.005
Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium	mg/L	1	4	15	13	12	14	13	10	11	10
Manganese	mg/L	0.005	<0.005	0.033	<0.005	0.017	<0.005	<0.005	<0.005	<0.005	0.010
Nitrite + Nitrate	mg/L as N	0.01	0.01	0.23	0.83	0.48	0.69	0.57	0.61	0.68	0.51
Organic Carbon, Dissolved	mg/L as C	0.5	NR	6.3	3.8	3.7	4.0	3.5	2.9	2.8	2.9
Organic Carbon, Total	mg/L as C	0.5	NR	7.1	3.9	4.0	4.2	3.7	3.2	3.0	3.3
Phosphate-Ortho	mg/L as P	0.01	<0.01	0.12	0.08	0.06	0.07	0.06	NR	0.04	0.04
Phosphorus-Total	mg/L	0.01	<0.01	0.19	0.11	0.08	0.09	0.09	0.07	0.06	0.07
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	4	33	51	48	55	53	46	48	47
Specific Conductance	µS/cm	1	88	355	468	432	500	473	397	432	425
Sulfate	mg/L	1	2	27	45	34	41	38	35	38	35
Total Dissolved Solids	mg/L	1	55	207	266	245	283	268	231	244	237
Turbidity	NTU	1	3	29	8	6	3	4	13	6	5
Zinc	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	<0.005

[a] mg/L = milligrams per liter; µS/cm = microsiemens per centimeter; NTU = 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 through December. The yearly mean may be based upon one to twelve samples for the list of constituents.

O&M's water quality monitoring program also operates a network of 16 automated monitoring stations at key locations along the SWP. This network provides real-time data by continuously monitoring a variety of physicochemical parameters such as conductivity, turbidity, pH, UV_{254} (254 nanometer ultraviolet absorbance; measures dissolved organic carbon), and fluorometry. SWP water contractors rely on this essential data to assure safe drinking water.

O&M's water quality monitoring program is an important operational component of the SWP. O&M uses the data generated to assess water quality changes in the SWP, short- and long-term trends, and impacts from emergencies such as spills and pipe ruptures. O&M also uses the data to influence operations and hydrology, and to determine the general suitability of water for drinking water purposes as defined by public health protection standards. The findings are periodically assessed and disseminated through a variety of media including memos, network postings, conference calls, and email distribution. O&M periodically conducts special studies to investigate the impacts of specific incidents affecting SWP water quality. The special studies include groundwater turn-ins, floodwater inflows, hydrology, and Delta hydrodynamics. O&M posts a number of water quality reports on DWR's website.

During 2010, the entire SWP's water quality was good. Specific conductance (measured as EC) averaged 88 microsiemens per centimeter (µS/cm) at Thermalito and 355 µS/cm at North Bay Aqueduct. However, average EC concentrations in the California Aqueduct ranged from 397 to 500 µS/cm. Dissolved organic carbon (DOC) was highest at the North Bay Aqueduct, with an average concentration of 6.3 mg/L, while average concentrations in the California Aqueduct ranged from 2.8 to 4.0 mg/L. North Bay Aqueduct exhibited higher levels of turbidity (an average of 29 NTU [nephelometric turbidity units]) as compared to other locations (see Table 4-1). Water quality in the Oroville Facilities was very good, with nondetectable to low levels of minerals, nutrients, and most minor elements. Average alkalinity and total dissolved solids concentrations in the Oroville facilities were 41 mg/L and 55 mg/L, respectively.

Pesticides, herbicides, and other organic compounds were sampled in March, June, and September 2010. The sampling and analyses of these organic compounds provided information on potential SWP exposure to contaminants. Of the eight sampled locations, only Banks Pumping Plant showed the presence of 2,4-dichlorophenoxyacetic acid (2,4-D), while five locations showed the presence of diuron. Simazine was detected in all eight locations.

California Aqueduct at Check 29, Check 41, and Devil Canyon Headworks stood out as having high concentrations of diuron (1.4, 1.5, and 1.68 µg/L, respectively), while North Bay Aqueduct at Barker Slough and Check 21 had low diuron concentrations of 0.32 µg/L and 0.36 µg/L, respectively (see Table 4-2).

Of the five detected organic chemicals, diuron had the highest concentration of 1.68 µg/L, followed by metolachlor and 2,4-D, each with 0.4 µg/L. Simazine and methoxychlor concentrations were 0.08 µg/L and 0.06 µg/L, respectively. The detected pesticide concentrations ranged from 0.02 to 1.68 µg/L (see Table 4-2).

Groundwater Turn-ins

Groundwater turn-ins to the California Aqueduct are authorized during periods of drought or reduced SWP allocations. SWP water contractors or other participants of an approved program convey groundwater into the California Aqueduct at various locations. This water may be used for local redistribution or transfer to other water

Table 4-2 Pesticides, Herbicides, and Other Organic Substances Detected in the SWP, 2010

Sampling Location[a]	Sampling Station ID Number	Sample Date	Chemical Detected[b]	Concentration (µg/L)[c]
North Bay Aqueduct, Barker Slough Pumping Plant	KG000000	3/17/10	Simazine	0.02
		6/16/10	Diuron	0.32
			Metolachlor	0.4
Delta-Mendota Canal upstream of McCabe Road	DMC06716	3/16/10	Simazine	0.02
		6/15/10	Methoxychlor	0.06
Banks Pumping Plant	KA000331	3/17/10	Simazine	0.08
		6/16/10	Metolachlor	0.1
		9/15/10	2,4-D	0.4
O'Neill Forebay Outlet (California Aqueduct at Check 13)	KA007089	3/16/10	Simazine	0.07
		6/15/10	Simazine	0.02
California Aqueduct near Kettleman City (Check 21)	KA017226	3/16/10	Diuron	0.36
			Simazine	0.07
		6/15/10	Metolachlor	0.1
			Simazine	0.02
California Aqueduct near Highway 119 (Check 29)	KA024454	3/16/10	Diuron	1.4
			Simazine	0.02
		6/21/10	Simazine	0.02
California Aqueduct at Tehachapi Afterbay (Check 41)	KA030341	3/17/10	Diuron	1.5
			Simazine	0.03
		6/16/10	Metolachlor	0.1
			Simazine	0.02
California Aqueduct at Devil Canyon Headworks	KA041134	3/17/10	Diuron	1.68
			Simazine	0.02
		6/16/10	Simazine	0.02

[a] Water at these locations was sampled during March, June, and September.
[b] Only chemicals found in detectable amounts at the sampling stations are included in this table. Refer to the document entitled *Analytical Methods for Organic Chemicals* for a complete listing of all organic chemicals included in the laboratory analysis. This document is available online on DWR's website.
[c] µg/L = micrograms per liter.

contractors. Groundwater turn-ins are allowed provided they do not result in the degradation of SWP water quality, cause toxicity to fish and wildlife, or adversely affect beneficial uses.

In 2001, DWR established interim criteria to review the water quality of groundwater turn-ins using a two-tiered approach. Tier 1 programs have a "no adverse impact" criterion 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 California Aqueduct and have the potential to cause adverse impacts to the State 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 a proposed groundwater turn-in program.

During 2010, 196,856 acre-feet (af) of groundwater was pumped into the California Aqueduct. The majority of the groundwater pump-ins was from Tier 2 sources in the south San Joaquin Valley (San Joaquin Field Division). These sources were Kern County Water Agency (112,881 af), Arvin-Edison Water Storage District (82,137 af), Westlands Water District (1,771 af), and San Luis Water District (67 af).

Additional SWP water quality data are available electronically through DWR's website.

Non-project Floodwater Inflows

In 2010, floodwater entered the California Aqueduct between Check 17 and Check 21, at Cantua Creek, Drain Inlet, and Salt Creek. These inflows resulted from rainfall runoff from agricultural or undeveloped lands north of Cantua Creek and west of Blakeley Canal. These inflows occurred in January, February, March, and December 2010. The floodwater volume totaled 1,770 af. Cantua Creek recorded the highest floodwater inflow of 1,350 af, followed by Drain Inlet with 229 af, and lastly Salt Creek with 191 af. Floodwater inflows into the California Aqueduct from the Cantua Creek watershed have the potential to affect California Aqueduct water quality. Floodwater can deposit sediments, asbestos, and other trace elements such as selenium, which naturally exist in the rugged terrain and channel networks of these watersheds, and have been documented to cause water quality degradation in downstream areas. However, the floodwater inflow volumes in 2010 were very small compared to the California Aqueduct flow volumes for the specified months.

Municipal Water Quality Program Branch

The Sacramento-San Joaquin Delta provides drinking water for more than 25 million people in California. The Division of Environmental Services, Municipal Water Quality Program (MWQP) is responsible for evaluating the suitability of Delta water as a drinking water source, identifying sources of water quality degradation, and ensuring water quality data meet quality assurance and quality control objectives. The MWQP Branch includes the Municipal Water Quality Investigations (MWQI) Program (MWQI Section, Field Support Section, and the Real Time Data and Forecasting Comprehensive Program), the Water Quality Special Studies Section, and the Quality Assurance/Quality Control (QA/QC) Section.

The mission of the MWQI Program is to:

- support the effective and efficient use of the SWP as a source water supply used for municipal purposes through monitoring, forecasting, and reporting SWP water quality;
- provide early warning of changing conditions in source water quality used for municipal purposes;
- provide data and knowledge-based support for operational decision-making on the SWP;
- conduct scientific studies of importance to drinking water; and
- provide scientific support to DWR, the State Water Project Contractors Authority-MWQI Specific Project Committee, CALFED, and other governmental entities.

Real Time Data and Forecasting Comprehensive Program

The Real Time Data and Forecasting Comprehensive Program (RTDF-CP) has become a central element of the MWQP. The goal of the program is to further develop the capability for real-time data and forecasting of short- and long-term source drinking water quality conditions in the Delta and SWP. Within the MWQP, the RTDF-CP entails the following elements:

- organizational coordination and collaboration between DWR's monitoring and forecasting groups;
- real-time data acquisition for the Delta and SWP through monitoring;
- enhancement of forecasting and source fingerprinting of drinking water quality through use of computer models;
- centralized information management and dissemination;
- scientific support studies;
- emergency response preparedness as related to drinking water quality; and
- organizational coordination and collaboration with outside agencies to enhance real-time monitoring activities.

The real-time monitoring network now includes stations located at Banks Pumping Plant, Jones Pumping Plant (a new station became active in January 2009), the Sacramento River at Hood, and the San Joaquin River near Vernalis (McCune Station). MWQP is evaluating the feasibility of adding a fifth station at the Gianelli Pumping-Generating Plant at San Luis Reservoir.

The RTDF-CP worked with several other agencies to develop a Delta spill early-warning model and alert system. This enables Delta water users to receive early warning of spills or sewage overflows, estimating concentration and arrival time.

Quality Assurance/Quality Control

The QA/QC Program was established by Water Resources Engineering Memorandum No. 60 in 1992 to ensure that data generated by DWR's environmental monitoring programs meet high quality standards and are scientifically defensible. This is accomplished by encouraging monitoring programs to follow standardized procedures including quality control measurements in their sampling protocols.

The program performs the following functions:

- procures specialized products and services from outside sources on an as-needed basis, which may include obtaining certified laboratory standards and outside instructors for teaching technical classes;
- publishes QA/QC guidance documents;
- develops and maintains the drinking water quality database and associated quality control metadata as part of the DWR Water Data Library; and
- assists departmental programs with developing quality assurance project plans.

In 2010, the QA/QC Program, with assistance from California State University, Sacramento, organized and presented three classes open to all permanent DWR staff. The first class, "Applied Environmental Statistics" was held June 21–25. The class provided statistical training for analyzing different types of environmental data. The second class, "Quality Assurance for Water Quality Monitoring" was held August 18 and 19. The class taught basic concepts in data quality and monitoring design, and provided tools and resources to assist with planning a sound monitoring project with the goal of integrating quality assurance and data management into the project's planning and data collection processes. These QA/QC procedures are required under Water

Resources Engineering Memorandum No. 60. This second class was intended to create a cadre of skilled operators who could deliver monitoring data that are defensible in court and are acceptable to other agencies such as the U.S. Environmental Protection Agency (EPA), the U.S. Geological Survey, the Reclamation, the SWRCB, and the State Water Contractors. The third class was "Time Series Analysis and Forecasting" held December 7–9. This class taught the fundamentals of time series modeling and forecasting using examples from DWR's continuous water quality monitoring data. Such high-frequency data are auto correlated and require special statistical techniques to isolate the correlations so the rest of the data are properly interpreted.

Water Quality Special Studies

Special studies are conducted to investigate the origins, fate, and transport, and in some cases, loads of current and emerging contaminants of concern. Such studies help determine where new instruments should be located. Special studies can also be used to:

- investigate seasonal patterns and trends of constituents or examine circulation patterns of contaminants;
- refine modeling assumptions; and
- assess the impacts of increasing urbanization on levels of water quality constituents of concern.

MWQI engages in special studies that focus on specific aspects of source waters, contaminant loading, measurement methods and instrumentation, and climate and hydrology. The following studies were in progress during the 2010 calendar year:

- Urban Sources and Loads Investigation of Lathrop, California;
- Nitrosamines, their Precursors, and *Cryptosporidium/Giardia* Occurrence from Waste Water Treatment Plant Facilities in the Delta;
- investigation of O'Neill Forebay water circulation;
- investigation of constituent dispersion and travel time in the SWP;
- Delta Simulation Model 2 (DSM2) boundary improvement and model recalibration monitoring for DOC;
- monitoring of the upstream Sacramento River for the Systech WARMF (Watershed Analysis Risk Management Framework) model;
- spectrofluorometer study;
- feasibility study for portable water quality monitoring station;
- MWQI Program Summary Report; and
- 2006–2010 State Water Project Sanitary Survey Update.

Accomplishments for the 2009–2010 MWQI Work Plan

During the 2009–2010 work plan cycle, the MWQP accomplished the following goals:

- production of a web-based, daily water quality summary report. This accomplishment allows contractors and interested parties to quickly and easily identify daily changes to water quality at key points in the Delta and Delta diversion points. This is a significant step toward providing contractors with the early-warning system envisioned in the RTDF component of MWQP's 5-year strategic plan;
- implementation of the Delta Simulation Model 2 (DSM2) Aqueduct Extension Model of the SWP (Aqueduct model) to provide seasonal forecasts;
- completion of a multiyear management plan for the forecasting component of the RTDF-CP;
- completion of DOC sampling for the DSM2 boundary improvement/model calibration special study;
- completion by June 2010 of the 2007–2009 MWQI biennial report (*Summary and Findings of Data Collected*

from the Sacramento-San Joaquin Delta Region, October 2007–September 2009; available on DWR's website);

- presentation of N-nitrosodimethylamine results at an international Gordon Conference on disinfection byproducts; and
- production of several projects to develop data for simulation of historical conditions for the Delta and Aqueduct models, including assembling, synthesizing, and refining EC, DOC, and bromide data necessary to define boundary conditions. These projects are part of a large RTDF-CP water quality forecast project involving the Bay Delta Office and SWP Operations Control Office.

The study report and other MWQP publications can be found on DWR's website.

Bryte Chemical Laboratory

Established in 1951, Bryte Chemical Laboratory is DWR's primary analytical laboratory. Its main function is to analyze drinking, surface, waste, and ground water for the various water quality programs within DWR. Since 1990, the laboratory has been certified biannually by the DPH Environmental Laboratory Accreditation Program to perform water quality analyses following EPA or American Water Works Association procedures and analytical methods. This certification allows the laboratory to perform analyses for regulatory work that can be used for compliance purposes. The laboratory continues to perform the vast majority of chemical and other related analyses required to support DWR's water quality programs. Each year, thousands of water samples are routinely analyzed for inorganic and organic constituents such as standard minerals, cations, anions, nutrients, metals, chlorophyll, pesticides, herbicides, and volatile organic compounds.

In 2010, the laboratory upgraded its capability and capacity to detect and analyze pesticides and herbicides following EPA Method 525 with the purchase of an Agilent 5975 gas chromatograph/mass spectrometer. The spectrometer is a fully automated and computer controlled instrument equipped with a new technologically advanced triple-axis high-energy dynode-electron multiplier detector that generates data that are highly stable, accurate, and reproducible. The instrument's detection limit has been established at 10 parts per trillion.

The laboratory has continued to manage a variety of analytical contracts with other State agencies and several outside laboratories in accordance with the master contract policy approved in fiscal year 1994–1995. These contracts are used to perform analyses that are beyond the capability and capacity of the laboratory, such as solids and fish tissues. The laboratory works in conjunction with the DWR MWQP QA/QC Program to replace these contracts as they expire each fiscal year. On June 1, 2010, the interagency agreement between DWR and DFW was renewed. The scope of work covers analyses of fish tissues and sediments for chemical contaminants and is worth $750,000 over 3 years.

SWP security and protection has been a primary goal for DWR since September 11, 2001. To help protect the SWP from biochemical and chemical agents, the laboratory continues to be an active member in a group of laboratories called the California Association of Mutual Aid Laboratories Network (CAMAL Net) headed by DPH. The laboratory network's main objective is to voluntarily assist DPH in the analysis of chemical agents in water quality samples should a natural disaster or biochemical or chemical event occur in California. The assistance is only required should the analytical capacity of DPH

be exceeded or to confirm the presence or absence of chemical agents in water quality samples provided by DPH. In 2007, Bryte Chemical Laboratory was classified as a Level II participating laboratory in the CAMAL Net organization. Level II only allows the laboratory to receive samples that are prescreened and determined nonhazardous to laboratory personnel.

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. The marsh is the resting and feeding ground for thousands of waterfowl and shorebirds migrating on the Pacific Flyway. It provides important habitat for more than 221 bird species, 45 mammal species, 16 reptile and amphibian species, and more than 40 fish species.

DWR became intricately involved in Suisun Marsh in response to SWRCB Water Right Decision 1485 which required mitigation for effects of the SWP and CVP. The 1984 Plan of Protection for Suisun Marsh, completed by DWR, included a series of facilities to distribute lower salinity water to managed wetlands and monitoring in relation to these facilities. Today, DWR operates and maintains DWR/Reclamation water management facilities, including the Roaring River Distribution System (RRDS), Morrow Island Distribution System (MIDS), Goodyear Slough Outfall, and the Suisun Marsh Salinity Control Gates (SMSCG). Figure 4-2 shows the water quality compliance and monitoring sampling locations and the water management facilities.

Through agreements and plans, DWR has been working in coordination with Reclamation, DFW, Suisun Resource Conservation District (SRCD), USFWS, and other agencies on habitat management, preservation, and restoration of the Suisun Marsh.

Revised Suisun Marsh Preservation Agreement

In 1987, DWR, Reclamation, DFW, and SRCD signed the *Suisun Marsh Preservation Agreement* (SMPA). It required Reclamation and DWR to meet salinity standards as specified in the then-current SWRCB Water Right Decision 1485, set a timeline for implementing the Plan of Protection for the Suisun Marsh, and delineated monitoring and mitigation requirements. A revised SMPA and *Revised Mitigation and Monitoring Agreement* were signed in 2005 to make channel water salinity requirements consistent with D-1641 and included management activities in lieu of western marsh facilities proposed in the Plan of Protection.

The revised SMPA includes the following actions: operate facilities in order to meet channel water salinity standards consistent with D-1641; implement a Water Manager Program; provide portable pumps; update Individual Ownership Adaptive Management Habitat Plans; establish a Drought Response Fund; and replace turnouts on the RRDS. The monitoring agreement includes monitoring for fish, salt marsh harvest mouse, vegetation, and other biological monitoring.

During 2010, DWR, DFW, Reclamation, and SRCD continued to implement these activities.

Figure 4-2 **Compliance and Monitoring Stations and Water Management Facilities in the Suisun Marsh**

Operation and Maintenance

Morrow Island Distribution System Fish Screen and Alternatives

MIDS is an interior ditch bordered by levees that was created to distribute water to managed wetlands. Water with relatively lower salinity is taken from Goodyear Slough in the west through water control structures that transport the water into MIDS. Water is then distributed to managed wetlands through private landowner water control structures along the ditch. Water not used by the landowners exits into Grizzly Bay through water control structures in the east.

Based on previous study results, a fish screen at MIDS would likely have negligible benefits to sensitive fish populations (see Bulletin 132-07, Chapter 4, Water Quality). DWR and Reclamation are proposing to fulfill the outstanding terms and conditions of the USFWS 1997 BO for the MIDS maintenance project by acquiring and protecting, in perpetuity, aquatic habitat in Suisun Marsh. (For additional information about the BO, see Bulletin 132-08.) The status of this proposal remains on-going without new notable developments or changes.

On February 23, 2009, DFW issued an incidental take permit for the on-going and long-term operation of existing SWP facilities in the Sacramento-San Joaquin Delta for the protection of longfin smelt. MIDS is included as one of these facilities.

To minimize the take of longfin smelt at the MIDS diversion, DFW specifies the average intake velocities each year in order to adequately protect longfin smelt.

Also, as a requirement of the incidental take permit, DWR is developing a study to confirm that the aforementioned operation prevents or substantially reduces the entrainment of longfin smelt at MIDS.

Suisun Marsh Salinity Control Gates

The SMSCG are operated as needed to meet salinity standards. When they are not in operation, they are placed in an open position to minimize fish concerns related to predation and impedance. In the past, installation or removal of the flashboards and operation of the gates has varied due to salinity conditions, fisheries agencies' requests for sensitive species concerns, or special studies and repairs.

Status of SMSCG in 2009–2010. During the control season (October through May), the flashboards were installed October 8, 2009 with the three radial gates in the open position and the boat lock gates open as required in the National Marine Fisheries Service agreement for fish passage. The SMSCG were tidally operated between November 25–30, 2009 and again between December 21, 2009 and January 4, 2010 due to salinity concerns in the marsh. During the December 21, 2009 to January 4, 2010 period, only two gates were operating due to a failure in Gate 1. The failed gate was held in the open position. The radial gates were set in the open position on January 5, 2010 and remained open until April 13, 2010 due to low salinity levels resulting from storms in January and February. Two gates were tidally operated (Gate 1 was still inoperable) between April 14–25, 2010 to test the new acoustic velocity meter that was installed on March 10, 2010. DWR removed the flashboards on April 26, 2010.

Other Facility Operation and Maintenance

The RRDS and Goodyear Slough Outfall were operated and maintained as needed to provide lower salinity water to managed wetland properties.

Water Quality and Compliance

Deficiency standards as defined in D-1641 were in effect for the 2009–2010 control season, and applied to compliance stations

S-21 (Sunrise) and S-42 (Volanti). Data for S-21 were not available for October 2009, due to equipment and software upgrades, and SWRCB was informed of this issue. Salinity levels for the control season were below monthly standards. Details of salinity levels in the marsh are available in the monthly report entitled, *Suisun Marsh Monitoring Program Channel Water Salinity Report*, available on DWR's website.

Blacklock Tidal Marsh Restoration Project

DWR received CALFED Ecosystem Restoration Program grant funds in 2001 to acquire 70 acres of what is referred to as the Blacklock property in December 2003. DWR, in cooperation with Reclamation, DFW, USFWS, and SRCD, implemented the Blacklock Restoration Project (location shown on Figure 4-2). This project restored diked, managed wetlands to tidal wetlands. Although a natural breach in the levee occurred in July 2006, it was determined that the planned breach should still be constructed to allow for full tidal flow and optimum sediment transportation. The planned breach construction occurred on October 3 and 4, 2006.

The project goals and objectives are to:

- restore the area to a fully functioning, self-sustaining marsh ecosystem created through restoration of natural hydrologic, sedimentation, and biological processes;
- increase the area and contiguity of emergent wetlands providing habitat for tidal marsh species; and
- assist in the recovery of at-risk species.

The final restoration plan for the project was published in June 2007.

In 2010, DWR continued implementing the 10-year monitoring program at the Blacklock site. Monitoring is performed in cooperation with State and federal agencies. There are 15 parameters being monitored, including sediment accretion, channel network evolution, vegetation development, water quality, methyl mercury concentrations, and avian use.

For more information about the Blacklock Restoration Project, visit the Suisun Marsh Program webpage on DWR's website.

Suisun Marsh Habitat Management, Preservation, and Restoration Plan

The *Suisun Marsh Habitat Management, Preservation, and Restoration Plan*, referred to as the Suisun Marsh Plan (SMP), is being developed by the Principal Agencies (or Principals), a group of agencies with primary responsibility for Suisun Marsh management. The SMP is intended to balance the benefits of tidal wetland restoration with other habitat uses in the marsh by evaluating alternatives that provide a politically acceptable change in marshwide land uses, such as salt marsh harvest mouse habitat, managed wetlands public use, and upland habitat. It relies on the incorporation of existing science and information developed through adaptive management.

The Principals include USFWS, Reclamation, DFW, DWR, National Marine Fisheries Service, and SRCD. The Principals have consulted with other participating agencies, such as the U.S. Army Corps of Engineers, San Francisco Bay Conservation and Development Commission, the RWQCBs, and SWRCB in developing this plan.

During 2010, work continued on the SMP. Representatives from the Principals met monthly to review potential actions and develop alternatives to be included in the SMP. The SMP environmental impact statement/environmental impact report was developed in coordination with the recommendations of the Delta Vision Process and with information and evaluation provided by the Delta Risk Management

Study and other regional programmatic processes. Reclamation and USFWS served as joint National Environmental Policy Act lead agencies, and DFW served as the California Environmental Quality Act lead agency. An adaptive management plan will be implemented as a component of the SMP. The draft environmental impact statement/environmental impact report was released in October 2010. It is anticipated a final environmental impact statement/ environmental impact report will be available in 2011.

Suisun Marsh Expenditure History

Suisun Marsh expenditures and reimbursements administered by DWR for calendar years 1968 through 2010 are summarized in Table 4-3. From 1968 through December 31, 2010, DWR disbursed more than $135.1 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 the Suisun Marsh through the SMPA and for meeting standards set by SWRCB. Reclamation has reimbursed DWR approximately $51.1 million (38 percent), and the State's General Fund has reimbursed approximately $9.5 million (7 percent). These figures do not include up-front payments made by Reclamation for staff and other direct costs, as well as approximately $5.7 million in Reclamation interest payments during 1988 and 1989.

Annual figures are reported in Table 4-3 for DWR's up-front payments, Reclamation reimbursements, General Fund reimbursements, and DWR's cumulative expenditure balance.

Table 4-3 Suisun Marsh Expenditures and Reimbursements Administered by DWR (in dollars), 1968–2010

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	124,618	3,535,481
1980	5,005,759					5,005,759	170,772	4,834,987
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	3,752,486			(791,319)		2,961,167	124,386	2,836,780
2003	3,258,583			(2,389,979)		868,604	107,566	761,038
2004	2,874,629			(952,940)		1,921,689	94,885	1,826,804
2005	3,940,875			(1,409,296)		2,531,579	130,049	2,401,530
2006	5,790,721			(868,449)		4,922,272	193,303	4,728,968
2007	4,086,170			(939,879)		3,146,291	134,850	3,011,441
2008	3,807,087			(1,670,278)		2,136,809	125,119	2,011,690
2009	4,607,737			(1,123,705)		3,484,032	152,057	3,331,975
2010	2,899,341			(1,663,530)		1,235,811	95,678	1,140,133
Total	**135,097,922**	**(9,478,000)**	**6,634,600**	**(51,091,520)**	**(2,323,609)**	**78,839,393**	**4,547,197**	**74,292,197**

[a] Under Assembly Bill 1442, the General Fund paid 20 percent of the Suisun Marsh costs through June 1988, which totaled $9,478,000. This payment included $2,843,400, which represents 7 percent 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 DWR's recreation project purpose share of 14 percent.
[b] Excludes interest payments made by Reclamation in 1988 and 1989.
[c] Allocation factors for capital recreation costs have changed from 14 percent to 3.4 percent, and operations and maintenance recreation costs from 14 percent to 3.3 percent.

Chapter 5
Local Assistance

Harvesting crops in the Central Valley.

Significant Events in 2010

The California Irrigation Management Information System (CIMIS) made significant improvements to data quality and availability in support of the Water Conservation Act of 2009 (Senate Bill X7 7) and the Model Water Efficient Landscape Ordinance (MWELO).

Recycling and Water Desalination Section contributed information for various components of SBX7 7, including assessing how to determine reasonable 2020 and 2030 targets for statewide water recycling; brackish groundwater desalination and infiltration; and direct use of urban storm water runoff.

The Department of Water Resources (DWR) convened an Agricultural Stakeholder Committee (ASC) to seek technical and policy input from stakeholder representatives and the public as it plans and implements the requirements for developing the Agricultural Water Measurement regulations and implementing other agricultural provisions and mandates of SBX7 7.

DWR convened urban and agricultural stakeholder committees to provide guidance and input to the department. DWR, working with the urban stakeholder committee, developed and released *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* in October of 2010. DWR also began to develop the fourth target method and the process for water regulation.

Information in this chapter was contributed by the Division of Statewide Integrated Water Management, the Division of Environmental Services, and the Division of Integrated Regional Water Management.

The Department of Water Resources (DWR) manages the Davis-Grunsky Act Program, water use efficiency, agricultural drainage, and Water Conservation Bond Law programs, and participates in several other programs that assist local agencies and benefit State Water Project (SWP) water 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 supply. It also provides grants for recreation and fish and wildlife enhancement. Additionally, loans and grants may be given to rehabilitate dams and reservoirs.

DWR's ongoing administration of Davis-Grunsky program loans and grants includes management and oversight of 32 recreation projects and contracts. Administration costs are recovered from revenues generated by repayment of Davis-Grunsky Act loans. Recreation grant contracts are being amended to reflect modification of DWR's fee oversight functions and actual construction of recreation facilities.

The Davis-Grunksy Act requires participating State agencies to operate and maintain the recreation projects, while DWR inspects the recreation facilities, monitors the recreation contracts, and maintains a list of the recreation projects.

Water Use Efficiency

The Water Use and Efficiency Branch in the Division of Statewide Integrated Water Management 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. After performing quality control and calculations, data are made available to the public for such diverse purposes as irrigation scheduling, resource planning, research, and modeling.

In 2010, DWR's CIMIS network collected data from 139 stations, with approximately 55 percent of the stations on the network belonging to local cooperators. The demand for CIMIS data has been increasing steadily since its establishment in 1982. In 2010, the number of registered data users had grown from 661 in 1989, to more than 35,500.

Approximately 2 million reports were generated from the database using the CIMIS website in 2010. Thousands of reports were also retrieved from the CIMIS FTP (File Transfer Protocol) site. 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 maintained for redundancy to protect the data.

CIMIS continued providing the spatially distributed reference evapotranspiration (ET_0) data, known as Spatial CIMIS, and expanded its user base through outreach activities. Spatial CIMIS is produced by coupling remotely sensed data from the National Oceanic and Atmospheric Administration's Geostationary Operational Environmental Satellite with point measurements from CIMIS stations to estimate ET_0 data at 2-kilometer grids.

In addition to increasing the number of its stations, CIMIS made significant improvements to data quality and availability in support of the Water Conservation Act of 2009 (SB X7 7) and the Model Water Efficient Landscape Ordinance (MWELO). SBX7 7 requires all water suppliers to increase water use efficiency. It also requires, among other things, the development of agricultural water management plans and a reduction in urban water consumption by 20 percent by the year 2020.

CIMIS initiated multiple projects to upgrade its hardware and software in an effort to accommodate the anticipated increase in demand for data for implementation of SBX7 7 and MWELO. The revised MWELO retains the water budget method, but increases the efficiency standards in new landscapes over 2,500 square feet. The update includes prescriptive measures to reduce runoff and water waste and foster sustainable landscaping practices. Cities and counties are required to either adopt MWELO or their own ordinance using the model ordinance as a guide by January 1, 2010.

Recycling and Water Desalination

The goal of the Division of Statewide Integrated Water Management's Recycling and Water Desalination Section 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 section's mission consists of increasing safe and beneficial use of recycled water, advancing energy-efficient treatment and desalination technologies, and encouraging economically and environmentally acceptable use of desalinated brackish and ocean waters.

In 2010, Recycling and Water Desalination Section activities included the following:

- contributed timely water recycling information for various components of SBX7 7, including assessing how to determine reasonable 2020 and 2030 targets for statewide water recycling, brackish groundwater desalination, and infiltration and direct use of urban stormwater runoff, and providing desalination information;
- continued to develop new knowledge on water recycling and desalination activities and projects in California;
- continued to manage grant agreements for 48 desalination projects awarded in the first and second cycles of Proposition 50's desalination grant program. The funded projects include: 14 research and development projects, 15 pilot projects and demonstrations, 12 feasibility studies, and 7 construction projects;
- continued to provide technical knowledge on water recycling and water desalination issues, including responses to questions from policymakers, 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; and
- made presentations about California's water recycling and desalination activities to DWR's visitors.

Proposition 50 Water Use Efficiency Grant Program

Proposition 50 has provided approximately $105 million for the Water Use Efficiency grant program since 2005. The grant program provided funds for implementation of all urban best management practices and agricultural efficient water management practices (EWMPs) that would result in local, regional, and statewide benefits. The State benefits are water conservation, flow and timing, water quality, and energy, among others.

A competitive proposal solicitation package was developed for all grant cycles, along with a comprehensive review and evaluation of the project proposals. The proposal solicitation package defines project benefits, eligible projects, eligible applicants, funding caps, reporting, and other contract requirements.

In 2009, and following the award of 53 Drought Assistance grants in the summer of 2008 in response to the Governor's drought emergency declaration, DWR continued developing agreements for the awarded grants. Unfortunately, due to the State's fiscal crisis and the funding freeze, a "Stop Work" order affected all the water use efficiency grants (more than 150 active agreements), including the drought assistance grants. Although several agencies opted to continue working on their projects, the Stop Work order remained in effect until 2010.

Agricultural Water Management Plans

SBX7 7, the Water Conservation Act of 2009, (Steinberg), (Section I, Part 2.55, Division 6 of the California Water Code), and the associated Agricultural Water Management Planning Act (Section I, Part 2.8, Division 6 of the Water Code) require that an agricultural water supplier prepare and adopt the Agricultural Water Management Plan (AWMP) on or before December 31, 2012, and shall update that AWMP on December 31, 2015, and on or before December 31 every 5 years thereafter.

"Agricultural water supplier" is defined as a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding the acreage that receives recycled water. "Agricultural water supplier" includes a supplier or contractor for water regardless of the basis of right that distributes or sells water for ultimate resale to customers. Every water supplier that becomes an agricultural water supplier after December 31, 2012, shall prepare and adopt the AWMP within one year after the date it has become an agricultural water supplier.

The agricultural water supplier shall make its proposed AWMP available for public review and provide copies of its adopted AWMP to certain entities. An agricultural water supplier shall implement its AWMP according to the schedule set forth in its AWMP. On or after July 1, 2013, an agricultural water supplier will not be eligible for a water grant or loan awarded or administered by the State unless the supplier complies with the Water Code (adopts the AWMP and implements EWMPs). No agricultural water supplier that provides water to less than 25,000 irrigated acres, excluding recycled water, shall be required to adopt and implement its AWMP unless sufficient funding has specifically been provided to that water supplier for that purpose.

Agricultural Water Measurement Regulation

SBX7 7 placed into the California Water Code a requirement that DWR adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirement in paragraph (1) of subdivision (b) of Section 10608.48. The regulation would apply to agricultural water suppliers

providing water to 25,000 irrigated acres or more. Suppliers providing water to 10,000 or more irrigated acres, but less than 25,000 irrigated acres, are also subject to this regulation if sufficient funding is provided to them specifically for that purpose, as stated in Water Code Section 10853. Agricultural water suppliers that are subject to the requirements must measure the volume of water delivered to customers with sufficient accuracy to (1) submit an annual report that summarizes aggregated farm-gate delivery data using best professional practices, and (2) adopt a pricing structure for water customers based at least in part on quantity delivered.

For the purpose of developing the Agricultural Water Measurement regulations and to advise the department in implementing other agricultural provisions and mandates of SBX7 7, DWR convened an Agricultural Stakeholder Committee (ASC). DWR has formed the ASC to seek technical and policy input from stakeholder representatives and the public as it plans and implements the requirements of the law. In addition, a subcommittee focusing on agricultural measurement was formed. DWR conducted two listening sessions and approximately seven meetings of the ASC and its measurement subcommittee in 2010.

Urban Water Management Plans

In 2010, DWR began revising the *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan.* A revised draft guidebook was released in December 2010. SBX7 7 extended the deadline to adopt urban water management plans to July 1, 2011. In 2010, one 2010 urban water management plan was submitted.

SBX7 7

SBX7 7, the Water Conservation Act of 2009, directed DWR to be the lead agency in implementing 14 separate actions required by the law. These actions are listed below.

- Consult with the: California Urban Water Conservation Council, Agricultural Water Management Council, California Public Utilities Commission, Department of Public Health (DPH), California Bay-Delta Authority (CBDA) (or its successor agency), and State Water Resources Control Board (SWRCB) on various parts of the legislation.
- Develop regulations for commercial, industrial, and institutional (CII) process water.
- Develop regulation for agricultural water measurement.
- Update the agricultural (EWMPs).
- Convene a CII Task Force and develop alternative best management practices for CII.
- Develop technical methodologies and criteria for urban water suppliers to set per capita baseline, target, and compliance water use.
- Develop a fourth water use target method that cumulatively could result in a statewide 20 percent reduction in urban per capita water use considering certain flexibilities.
- Report to the Legislature by the end of 2016 and make recommendations on needed changes if the State is not "on track" to meet per capita targets.
- Promote implementation of regional water resources management practices.
- Propose new, or review and update existing, statewide targets for regional water resources management practices, including recycled water, brackish groundwater desalination and infiltration, and direct use of urban stormwater runoff.

To implement these actions through a public process, DWR convened urban and agricultural stakeholder committees to provide guidance and input to the

department. DWR, working with the urban stakeholder committee, developed and released *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* in October of 2010. DWR also began to develop the fourth target method and the process water regulation.

Assembly Bill 1420 Compliance

AB 1420 (Chapter 628, Statutes of 2007) amended the Urban Water Management Planning Act (Water Code Section 10610 et seq.) and was effective January 1, 2009. AB 1420 requires that the terms of, and eligibility for, any water management grant or loan made to an urban water supplier and awarded or administered by DWR, SWRCB, or the CBDA or its successor agency (collectively referred to as "Funding Agencies"), be conditioned on the implementation of the water demand management measures described in the urban water management plan, as determined by DWR.

Water management grants and loans include programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This funding includes, but is not limited to, funds made available pursuant to Public Resources Code Section 75026 (the Integrated Regional Water Management Program).

AB 1420 required DWR to consult with SWRCB and the CBDA in the development of eligibility requirements that consider the California Urban Water Conservation Council's best management practices and alternative approaches that provide equal or greater water savings. In 2009, three workshops were conducted, and AB 1420 compliance criteria were released.

Agricultural Drainage Program

The Agricultural Drainage Program's mission is to seek in-valley solutions to the surface and subsurface agricultural drainage water problems, particularly in the San Joaquin Valley, and to improve water quality in the San Joaquin River. This will be accomplished by promoting newer technologies and management practices that can reduce or eliminate off-site discharge of saline water.

Even though the San Joaquin Valley Drainage Implementation Program 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 (University of California and California State University), CBDA, the Bureau of Reclamation (Reclamation), resource conservation districts, watershed groups, water and drainage districts, and many other local, State, and federal entities. These activities include:

- developing, educating, and promoting the use of Integrated On-Farm Regional Drainage Management systems 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 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 in the San Joaquin River; and
- providing grants for control of agricultural drainage water and the reduction of its toxic elements, using Propositions 50, 84, 204, and DWR project funding.

The Agricultural Drainage Program is divided into two major activities: management of Proposition 204 (the 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 SWRCB to the California Department of Food and Agriculture. In 1997, the California Department of Food and Agriculture, SWRCB, and DWR signed a Memorandum of Understanding that established a process for utilizing the funds designated for agricultural drainage water management activities. In 1999, the California Department of Food and Agriculture 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 memorandum of understanding. The program's goal is to develop methods of using and concentrating salts and reducing trace element contaminants in the State's subsurface agricultural drainage water.

When bond funds are available, DWR solicits proposals from public entities seeking funding for Proposition 204 eligible activities. A technical review committee screens the proposals. DWR submits the proposal packages to an oversight committee comprised of representatives from DWR, the California Department of Food and Agriculture, and SWRCB for final approval. Ultimately, DWR is responsible for preparing and managing contracts for the approved proposals. Due to fiscal constraints, there were no solicitations for proposals in 2010.

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, and the San Joaquin River Water Quality Improvement Program.

Drainage Monitoring and Evaluation

Drainage monitoring and evaluation provides information on the quality, quantity, and movement of drainage water. In 2010, the following activities were conducted:

- monitoring shallow groundwater levels and flows, and collecting water quality data for drainage water from west side San Joaquin Valley tile drain sumps;
- measuring groundwater levels quarterly for approximately 200 wells in Kern County;
- 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 (RRR) in western Fresno County; and
- 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.

- releasing, in December 2010, the South Central Region Office the *San Joaquin Valley Drainage Monitoring Program 2003–2005* region report.

Drainage Treatment

Development of Membrane Treatment of Agricultural Drainage Water. DWR continues to fund research on the use of membrane treatment for desalting agricultural drainage water under a multiyear contract with the University of California, Los Angeles (UCLA). In 2010, UCLA submitted a final report on a study conducted in 2009 on the use of a small scale membrane monitor on drainage water in the San Joaquin Valley.

In addition, a chemically enhanced seeded precipitation (CESP) process was demonstrated for the concentrated brine from a UCLA pilot reverse osmosis system operating in the San Joaquin Valley. CESP is a two-step process in which calcium carbonate precipitation is induced via lime dosing for antiscalant removal followed by calcium sulfate precipitation via gypsum seeding for concentrate desupersaturation. The CESP process can reduce the gypsum saturation index of the primary reverse osmosis concentrate, thereby enabling secondary reverse osmosis desalination to enhance the overall product water recovery.

Grassland Area Farmers: Compliance with Water Quality Control Plan. DWR continues to participate in a multiagency cooperative effort with Grassland Area Farmers and Reclamation to comply with the objectives of the Central Valley Regional Water Quality Control Board's *Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River Basin*. One of the key components of the plan is drainage water treatment.

SWRCB approved the environmental impact report/environmental impact statement (EIR/EIS) for the continuation of the *Grassland Bypass Project, 2010–2019*. The proposed actions are to:

- extend the San Luis Drain Use Agreement in order to allow the Grassland Basin Drainers time to acquire funds and develop feasible drainwater treatment technology to meet revised Basin Plan objectives (amendment underway) and Waste Discharge Requirements by December 31, 2019;
- continue the separation of unusable agricultural drainage water discharged from the Grassland Drainage Area from wetland water supply conveyance channels for the period 2010–2019; and
- facilitate drainage management that maintains the viability of agriculture in the project area and promotes continuous improvement in water quality in the San Joaquin River.

Ion Exchange Pretreatment Investigations. DWR constructed and continues to operate a manually controlled ion-exchange system. The goal of this project is to determine the effectiveness of ion-exchange treatment on removing hardness from drainage water that consists of high total dissolved solids. Producing "soft" drainage water reduces the need for cleaning or scale removal in other treatment technologies that DWR will test in the future. These future treatment technologies consist of electrocoagulation, vapor compression distillation, and reverse osmosis. Another benefit of ion exchange is that the regenerate will be in a form that can be utilized as a dust-control product (calcium chloride and magnesium chloride). DWR is effectively producing softened water at this time.

Agricultural Subsurface Drainage: Salt Recovery, Purification, and Utilization. DWR continues to support investigations of processes for concentrating and purifying drainage salts for marketing purposes.

Selenium Removal from Agricultural Subsurface Water. DWR continues to participate in cooperative research with the University of California Salinity/Drainage Program. Activities include a multiyear study for mitigating selenium eco-toxic risk in agricultural drainage systems and a study to model the optimized total selenium remediation of aquatic ecosystems.

Integrated On-Farm Drainage Management

DWR South Central Region Office's Integrated On-Farm Drainage Management (IFDM) became a permanent activity when the Integrated Drainage Management Section was created in 2001. Its objective is to provide technical assistance on IFDM systems through advisory, technical, and oversight committees. IFDM is a drainage management system based on sequential reuse of saline drainage water to irrigate crops of progressively increasing salt tolerance. Each sequential reuse reduces the volume of drainage water and increases the salt concentration. Drainage water too saline to irrigate crops is applied to solar evaporators, a management practice that SWRCB supports. 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 they reduce the volume of drainage water. The program is investigating the use of accelerated evaporation systems (solar evaporators) for zero-discharge systems.

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;
- provide assistance to research projects for the development of crops, including research being performed at RRR 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;
- assist growers, water and drainage districts, and regional entities, by providing information on salt-tolerant grasses and IFDM design specifications;
- assist SWRCB to develop policies for the management of drainage water, salt, and selenium; and
- improve enhanced evaporation features of the pilot solar evaporator.

DWR is continuing research on *Prosopis alba,* an Argentine mesquite tree, in cooperation with the Forestry Research Station at Catholic University of Santiago del Estero in Argentina. *Prosopis alba*, which originated from the plantations of Catholic University of Santiago del Estero, is a highly salt-tolerant tree species that holds promise of ameliorating subsurface drainage problems in the soils of the western San Joaquin Valley. There were a number of trees that were planted at several drainage-impaired locations within the west side of the San Joaquin Valley. DWR has partnered with the Westside Resource Conservation District to monitor the growth and performance of the trees. A group of trees with the best salt and boron tolerance qualities were selected for final testing and were planted in a test site on the west side of the San Joaquin Valley for monitoring.

DWR continues to collect operational data from IFDM projects at RRR and AndrewsAg, Inc. for performance analysis. DWR staff also provided technical information and assistance on an agriforestry planting program on Kern County farms with salinity and shallow groundwater problems.

DWR and the Center for Irrigation Technology at California State University, Fresno, are working together with the New Jerusalem Drainage District in western San Joaquin County in a study to develop an operation and management plan to manage water supplies more efficiently and reduce subsurface drainage water. The main goal is for farmers to use their water supplies efficiently and minimize percolation losses into the local underground shallow water table. A primary goal of the New Jerusalem Drainage District is to eliminate the discharge of subsurface drainage water collected from the underground water table into the San Joaquin River. A secondary goal is to meet their respective objectives without adversely impacting soil and water quality and crop productivity within the district. The combined goals result in a complex mix of irrigation and drainage management activities that need to be integrated into a single plan.

Central Valley Salinity Management Program

In 2006, the Central Valley Regional Water Quality Control Board and SWRCB initiated a comprehensive effort to address salinity problems in California's Central Valley and adopt long-term solutions that would lead to enhanced water quality and economic sustainability. The Central Valley Salinity Alternatives for Long-term Sustainability is an effort to develop and implement a comprehensive salinity management program. 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. This group provides guidance and technical support on specific issues through various committees (the Technical Advisory Committee, Social and Economic Impact Committee, and Public Education and Outreach Committee) and overall direction and management (the Executive Committee) for the development of a comprehensive Central Valley salinity management plan.

Drainage Reduction and Reuse Program

DWR's Drainage Reduction and Reuse Program 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 achieved through continued 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.

Predicting Water Use, Crop Growth and Quality of Bermuda Grass under Saline Irrigation. University of California, Davis, completed a study for DWR that demonstrated that low-quality drainage and waste waters can be used to produce forages on a salt-affected site in the western San Joaquin Valley while raising livestock without apparent adverse health effects and with acceptable rates of average daily gain. California is short of the forages needed for its expanding dairy herd and for beef and sheep production. Reusing saline drainage and other waste waters to produce forages suitable for ruminant livestock would help alleviate this shortage while finding an economic use for drainage and other waste water. Reusing saline drainage also would help manage salinity problems in the western San Joaquin Valley and provide an economic alternative to land retirement.

Development of Alternative Value-Added Products from Cactus (*Opuntia*) Grown as a New Fruit/Forage Crop for Selenium-Laden Waters and Drainage-Impacted Soils in the West Side Of Central California. DWR is working with the U.S. Department of Agriculture and California State University, Fresno, in a research project to provide new and realistic information for growing

and producing value-added products from *Opuntia* crops irrigated with poor quality water and grown under nonirrigated conditions in the west side of Central California, as well as grown in poor quality sediment soil. An additional research objective is to determine the potential of *Opuntia* for managing naturally occurring selenium, present in drainage waters and impaired soils in the west side of the San Joaquin Valley, via accumulation and volatilization, as well as for producing new marketable food products.

Environmental Services

DWR's South Central Region Office's Environmental Compliance Section investigates and reports on IFDM and other systems used for disposal and management of drainage water. Environmental activities include RRR research projects that involve biological monitoring activities required in accordance with Waste Discharge Requirements permits.

San Joaquin River Water Quality Improvement Program

DWR's Agricultural Drainage Program, in collaboration with other agencies, continues to make significant efforts to improve water quality in the San Joaquin River to benefit the State and SWP water contractors. These efforts are intended to control 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.

Specific 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, and the IFDM program maintained by DWR and collaborating agencies.

On-farm and Regional Drainage Management Activities. Agricultural Drainage Program staff continued working with the Grassland Area Farmers to help reduce subsurface agricultural drainage water discharges into the San Joaquin River. Drainage management activities involving source control and drainage reuse have proven effective in reducing salt loads in the San Joaquin River. Since the Grassland Area Farmers implemented the Grassland Bypass Project, drainage discharges have decreased from 58,000 af to less than 14,000 af, and salt loads have been reduced from 210,000 tons to about 57,000 tons. The reductions were possible due to the San Joaquin River Improvement Project, an important Grassland Bypass Project component, funded by DWR, through Propositions 13 and 50. It consists of 6,000 acres of land dedicated for reuse of subsurface drainage water generated by Grassland Area Farmers to grow salt-tolerant crops. DWR continued to provide technical assistance to improve and develop this part of the Grassland Bypass Project.

Real-time Water Quality Monitoring Program. The Real-time Water Quality Monitoring Program (RTWQMP) collects flow, electrical conductivity, and temperature data from several satellite-linked and web-accessible stations on the mainstem of the San Joaquin River and its tributaries. The information provided can be used by San Joaquin River water managers and stakeholders to improve management and coordination of east side reservoir releases and agricultural and wetland drainage flows to achieve water quality objectives at the San Joaquin River compliance points. In the early stages, RTWQMP was funded by Reclamation and then by CALFED. Currently, DWR has assumed responsibility for funding most of the RTWQMP.

Forecasting flow and salinity conditions on the San Joaquin River allows decision makers to take advantage of assimilative capacity of the river when available. Data collected from the network of monitoring stations is used with the San Joaquin River Input-Output Day model to generate biweekly forecasts of salinity and flow conditions on the river near Vernalis and other upstream stations. DWR publishes the information weekly on its website.

Salinity Objectives in the South Delta. Staff from the Agricultural Drainage Program continued to participate with a DWR team in the SWRCB public process to review salinity objectives in the South Delta. Preparation for multiple SWRCB meetings on the subject have included discussion of issues, available information, and funding and development, and preparation of specific comments, documents, and presentations to provide to SWRCB in coordination with other organizations such as the SWP water contractors, Reclamation, Central Valley Project contractors, and the San Joaquin River Group Authority.

American Society of Civil Engineers Agricultural Salinity Assessment and Management. Agricultural Drainage Program staff participated in updating Chapter 23 of the American Society of Civil Engineers Manual No. 71, *Agricultural Salinity Assessment and Management*, which was released in 1990. The manual integrates contemporary concepts and management practices for agricultural water and salinity problems. It consists of more than 34 chapters, written by multiple authors, and addresses the technical and scientific aspects, as well as the environmental, economic, and legal aspects of the topic.

Chapter 23 covers the treatment and disposal of subsurface drainage from irrigated lands, including current treatment technology research.

Water Conservation Bond Laws

To help local agencies obtain financing for their water management programs, California voters approved eight 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 (Proposition 204), approved in 1996, authorized $55 million for water conservation, groundwater recharge, and local water supply projects.
- The Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Act (Proposition 13), approved in 2000, 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) authorized $500 million for the Integrated Regional Water Management (IRWM) 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) authorized $1 billion to continue the IRWM program. Under this program, grants and construction loans are available with repayment periods of up to 20 years at reduced interest rates for most programs.

- The Disaster Preparedness and Flood Prevention Bond Act of 2006 (Proposition 1E) authorized $300 million for IRWM Stormwater Flood Management.

Propositions 25, 44, and 204

Funding is fully obligated.

Proposition 82

New local water supply construction and feasibility study loans are still available. Water conservation and groundwater recharge funding has been fully obligated.

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 March 2010, DWR released the *Proposition 50 Chapter 8 Integrated Regional Water Management Grant Program Supplemental Funding Guidelines and Proposal Solicitation Package* for $7.389 million of Proposition 50 funding made available from unused funds that were previously committed. In September, the funds were recommitted as supplemental funding to awardees from Proposition 50, Rounds 1 and 2. These awardees had previously been awarded only partial funding for their proposals.

Propositions 84 and 1E

DWR released the final program guidelines for IRWM under Propositions 84 and 1E. DWR simultaneously released the final proposal solicitation packages (PSP) for the first respective rounds of planning and implementation grants under Proposition 84, and the Stormwater Flood Management PSP under Proposition 1E. Planning grant applications were due to DWR in late September, while due dates for the Implementation and Stormwater Flood Management grant applications are set for early 2011.

A total of 39 applications for the planning grant PSP totaling approximately $29 million was received for $20 million of available funding. The review process for planning grant applications was extended into 2011.

In 2010, DWR began revising the Regional Acceptance Process (RAP) guidelines for the second round of the RAP. The RAP is the mechanism by which DWR accepts newly formed and existing IRWM regions into the IRWM grant program to compete for available funding. The second round of the RAP is anticipated to conclude in 2011.

Local Water Supply

Projects in local water supply are constructed to increase water supplies, and include the following:

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

Integrated Regional Water Management

Projects in this category protect communities from drought, protect and improve water quality, and improve water security by reducing dependence on imported water.

Chapter 6
Legislation and Litigation

A great egret (Ardea alba) *in the Sacramento-San Joaquin Delta.*

Significant Events in 2010

Significant legislation related to drinking water supply, flood control projects, Delta levee maintenance, archaeological resources, and water conservation passed in 2010.

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

The Department of Water Resources (DWR) monitors State and federal legislation that affects 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 1260 (Fuller; Chapter 125, Statutes of 2010)—California Water Commission: Terms of Office

With respect to the terms of members of the Commission who are confirmed by the Senate as of January 1, 2011, AB 1260 changes the expiration date of those terms to May 14, 2014. The bill, commencing on May 14, 2014, requires members succeeding to these terms to be appointed to the unexpired terms.

AB 1265 (Caballero; Chapter 126, Statutes of 2010)—Safe, Clean, and Reliable Drinking Water Supply Act of 2012

AB 1265 renamed the Safe, Clean, and Reliable Drinking Water Supply Act of 2010 as the Safe, Clean, and Reliable Drinking Water Supply Act of 2012 to be submitted to the voters at the November 2012 general election instead of the November 2010 election. It also deleted a provision in the act authorizing joint powers authorities to include in their membership nongovernmental partners and clarified that joint powers authorities may not include for-profit corporations.

AB 1788 (Yamada; Chapter 579, Statutes of 2010)—State Cost Share, Federal Flood Control Projects

AB 1788 changed the existing formula for calculation of the definition of a disadvantaged community for the purposes of providing up to 70 percent State share of nonfederal costs of specific flood control projects.

SB 808 (Wolk; Chapter 23, Statutes of 2010)—Delta Levee Maintenance

This bill extended, until July 1, 2013, the existing State cost-share rate for Delta levee maintenance work. This cost-sharing rate reimbursement, 75 percent of the local agency costs in excess of $1,000 per mile, was set to expire on July 1, 2010.

SB 1034 (Ducheny; Chapter 635, Statutes of 2010)—Archaeological Resources

SB 1034 set a fine of $10,000 or misdemeanor imprisonment in a county jail, or both, for anyone who knowingly and willfully excavates, removes, destroys, injures, or defaces archaeological resources on public lands. It clarified that the court shall order restitution to the State agency that manages the damaged site and establishes how the commercial or archaeological value is to be determined and what the restitution costs shall include.

SB 1070 (Cogdill; Chapter 153, Statutes of 2010)—Tulare Lake Basin; Central Valley Flood Protection Plan

SB 1070 clarified the definition of the Tulare Lake Basin as being the definition used in the *California Water Plan Update 2009*.

SB 1443 (Simitian; Chapter 293, Statutes of 2010)—Sacramento-San Joaquin Delta Multi-Hazard Coordination Task Force

SB 1443 extended the sunset of the Sacramento-San Joaquin Delta Multi-Hazard Coordination Task Force until a required report is submitted and then repeals the governing code section for the task force on January 1, 2013.

SB 1478 (Committee on Natural Resources and Water; Chapter 295, Statutes of 2010)—Water Conservation: Urban Water Management

SBX7 7 (Steinberg, 2009) required the State to achieve a 20 percent reduction in urban per capita water use by 2020 and allowed urban retail water suppliers a 6-month extension to adopt their statutorily required Urban Water Management Plans. SB 1478 extended the same deadline to urban wholesale water suppliers.

Federal Legislation

There was no significant federal legislation affecting management of the SWP in 2010.

Litigation

As of December 31, 2010, 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

***Delta Smelt Consolidated Cases* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-407).**
San Luis & Delta-Mendota Water Authority, et al. v. Salazar, et al. (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-00407); *State Water Contractors v. Salazar, et al.* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-00480); *Coalition for a Sustainable Delta, et al. v. United States Fish and Wildlife Service, et al.* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-00422); *Metropolitan Water District of Southern California v. United States Fish and Wildlife Service, et al.* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-00631); *Stewart and Jasper Orchards, et al. v. United States Fish and Wildlife Service, et al.* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-00892); *Family Farm Alliance v. Kenneth Salazar, et al.* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-01201).

Litigation stemming from a coalition of environmental groups' challenge to the 2004 biological opinion (BO) on delta smelt issued by the U.S. Fish and Wildlife Service continued. (Details of this litigation are described in earlier bulletins.)

After ruling in 2009 on cross-motions for summary judgment limited to National Environmental Policy Act (NEPA) issues, the federal district court concluded that the Bureau of Reclamation had violated NEPA by provisionally adopting and implementing the BO and the reasonable and prudent alternative (RPA) without conducting a NEPA analysis. The remaining claims were fully decided on December 14, 2010, on cross-motions for summary judgment. In its December 2010 decision, the district court ruled on all pending summary judgment motions, granting some, denying some, and granting and denying some in part. On December 27, 2010, the district court ordered the U.S. Fish and Wildlife Service to prepare a new BO.

***Kern County Water Agency v. Watershed Enforcers* (2010) 185 Cal.App.4th 969, rehg. den.** A related case filed in 2006 by Watershed Enforcers (described in earlier bulletins) was the subject of a court of appeal decision. In response to an appeal by Kern County Water Agency, the court of appeal held that the California Endangered Species Act prohibits a State agency from taking threatened or endangered species without proper permit authority. The court ruled that the DWR is a "person" for the purposes of Fish and Game Code Section 2080 and thus is prohibited from taking an endangered or threatened species without a permit.

Salmon

***The Consolidated Salmonid Cases* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-1053).** *San Luis & Delta-Mendota Water Authority, et al. v. Gary F. Lock, as Secretary of the United States Department of Commerce, et al.* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-1053); *Stockton East Water District, et al. v. National Oceanic and Atmospheric Administration, et al.* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-1090); *State Water Contractors v. Gary F. Locke, Secretary, etc., et al.* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-1053); *Kern County Water Agency, et al. v. United States Department of Commerce, et al.* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-1520); *Oakdale Irrigation District, et al. v. United States Department of Commerce, et al.* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-1580); *The Metropolitan Water District of Southern California v. National Marine Fisheries Service, et al.* (U.S. Dist. Ct., Eastern Dist. Cal., No. 1:09-cv-1625).

Litigation initiated in 2004 challenging the National Marine Fisheries Service's nonjeopardy BO for salmon on the proposed Central Valley Project (CVP)/SWP operations resulted in a new BO which concluded that CVP/SWP operations would likely cause jeopardy to the salmonid species, sturgeon, and orcas, and would adversely modify designated critical habitat for three salmon species. In response, federal and State water contractors challenged the new BO on the grounds that federal defendants failed to comply with NEPA, the Endangered Species Act, and the RPA. DWR joined the litigation as an intervenor in January 2010.

On March 31, 2010, the district court denied plaintiffs' application for a temporary restraining order that requested a mandatory reduction in exports by the SWP and the CVP for the months of April and May. Between April 1 and April 7, 2010, the court heard testimony for a preliminary injunction that sought to restrict implementation of two actions in the RPA through June. On May 18, 2010, the court granted plaintiffs' motion for a preliminary injunction and enjoined the implementation of two of the actions in the RPA. The court concluded that the National Marine Fisheries Service likely violated the Endangered Species Act by failing to rely on the best available science for the two actions in question.

Longfin Smelt

***State Water Contractors v. California Department of Fish and Game, Donald Koch, Director of the California Department of Fish and Game, California Department of Water Resources, Lester Snow, Director of the California Department of Water Resources* (Super. Ct. Sacramento County, No. 34-2009-80000203).** This case, which challenges Incidental Take Permit No. 2081-2009-001-03 issued by the Department of Fish and Wildlife (formerly the Department of Fish and Game), remains stayed pending completion of the federal litigation challenging the BOs for delta smelt and salmon. The permit authorized the SWP to take longfin smelt, which inhabit the Sacramento-San Joaquin Delta and the San Francisco and San Pablo bay areas, under limited conditions that have the potential of substantially reducing the ability of the SWP to regulate the ongoing and long-term provision of water deliveries.

Bay Delta Conservation Plan

***Central Delta Water Agency, South Delta Water Agency, RC Farms, Inc. and Reclamation District 999 v. California Department of Water Resources* (Super. Ct. Sacramento County, No. 2010-80000698).** In October 2010, parties with Delta interests filed a lawsuit challenging DWR's approval of the engineering geotechnical studies for the Delta Habitat Conservation and Conveyance Program. The studies are intended to assist DWR in identifying the best options for the construction of an isolated conveyance facility. DWR has not yet filed a responsive pleading.

***In Re: Department of Water Resources Cases* (Super. Ct. San Joaquin County, No. JCCP4594) (Court-Ordered Entry cases).** Twenty-four Delta property owners declined to grant DWR's request to gain temporary entry onto their properties in order to perform environmental and geological surveys. DWR sought orders for temporary entry onto the respondents' properties under Code of Civil Procedure Section 1245.010 et seq.

On March 9, 2010, Judge Sumner of Sacramento County granted DWR's petition for coordination of the matters, which were brought in four separate counties, and assigned venue to the San Joaquin County Superior Court.

On October 22, 2010, the court found that the legal issues to be determined were (1) the purpose of the entry; (2) the nature and scope of the activities reasonable and necessary to accomplish the entry; and (3) the probable amount of compensation to be paid to the owner for actual damage to the property and interference with its possession.

A hearing was held on November 19, 2010, to address whether compliance with the California Environmental Quality Act (CEQA) was necessary. The court held it was not because the pre-condemnation entry is not a project.

At the December 2010 hearing on the petitions, the court added additional parcels and ruled that DWR did not have to seek permission from the California Water Commission to file the entry petitions, that Code of Civil Procedure Section 1240.680 did not bar or deter an entry order, and that the amount of compensation due the property owners would be based on probable damages or interference rather than rental value. Drilling issues will be heard at a hearing in late January 2011.

State Water Resources Control Board Hearing

The State Water Resources Control Board's (SWRCB) Water Right Decision 1641 contains a water quality objective requiring DWR to annually maintain 0.7 millimhos per centimeter electrical conductivity at three compliance points within the South Delta, from April 1 through August 31, beginning in 2005. In response to allegations that the water quality objective was not being met and would not be met, SWRCB issued a cease and desist order, which became final on May 16, 2006, requiring DWR and the Bureau of Reclamation to take corrective actions to eliminate the threat of noncompliance.

After a period of negotiations, the SWRCB issued a final order on January 5, 2010, modifying its 2006 order, which extended the schedule to implement measures to meet the water quality objectives pending completion of the SWRCB's review and potential modification of the salinity objectives. The order also requires DWR, along with the Bureau of Reclamation, to undertake studies to assess the feasibility of implementing various measures to meet the salinity objectives.

Jones Tract

Armando P. Vanni, et al. v. Rindge Land Reclamation District #2039 (Super. Ct. San Joaquin County, No. CV025820)

Three consolidated lawsuits alleging damages arising out of the levee breach on Upper Jones Tract in 2004 were assigned a trial date of May 9, 2011.

Hydropower

Hyatt-Thermalito

***Alameda County Flood Control & Water Conservation District, Zone 7 et al. v. State of California Department of Water Resources* (Super. Ct. Sacramento County, No. 05AS01775).** Judgment was entered, and an appeal filed, in the lawsuit brought by 14 of the 29 State Water Contractors in 2005. The lawsuit alleged that the method used by DWR to allocate costs and revenue of its Hyatt and Thermalito Power Plants at Lake Oroville violated the terms of long-term water supply contracts.

The court affirmed its 2009 tentative decision finding in favor of DWR. The court also rejected plaintiffs' claims that their damages claim needed to be decided, since the decision found DWR had no liability. Finally, the court granted $59,772.71 in costs to DWR.

Oroville Relicensing—Federal Energy Regulatory Commission Project No. 2100

***Butte County v. Department of Water Resources* (Super. Ct. Yolo County, No. C071785).** DWR is seeking renewal of the Federal Energy Regulatory Commission (FERC) license for its hydroelectric generation facilities at Oroville (Project No. 2100). DWR filed its relicensing application in 2005. The original 50-year FERC license expired on January 31, 2007. In February 2008, FERC authorized continued operation by issuing an annual license—under the same terms and conditions—that renews each year until FERC issues a new 50-year license.

DWR used a collaborative approach (the Alternative Licensing Process) to reach agreement with federal and State resource agencies, Native American tribes, local public agencies, nongovernmental organizations, and others on operational and design changes and environmental issues. In March 2006, DWR filed a final settlement agreement with FERC executed by more than 50 interested parties. FERC's final environmental impact statement on the project was issued in May 2007. The SWRCB issued its water quality certification in December 2010.

DWR certified the environmental impact report (EIR) under CEQA and filed a notice of determination in July 2008. Butte and Plumas counties brought mandate proceedings in Butte County Superior Court challenging the adequacy of the EIR and seeking to vacate DWR's approval of the project. The petitions were consolidated and transferred to Yolo County. DWR lodged its CEQA administrative record on the project with the court in September 2009. In November 2010, the court heard oral argument on DWR's motion to compel payment of its record preparation costs. Trial in the case is set for December 2011.

Other Cases

The Monterey Amendment

***Central Delta Water Agency et al. v. California Department of Water Resources* (Super. Ct. Sacramento County, No. 34-2010-80000561) (Central Delta I); *Central Delta Water Agency et al. v. Kern County Water Agency et al.*, DWR et al., real parties in interest (Super. Ct. Kern County, No. S-1500-CV-270965) (Central Delta II); *Rosedale-Rio Bravo Water Storage District and Buena Vista Water Storage District v. DWR* (Super. Ct. Kern County, No. S-1500-CV-270635-KCT) (Rosedale-Rio Bravo).** Legal challenges were brought against the 1995 Monterey Amendment and the EIR adopted

by DWR in 2010. (The Monterey Amendment, litigation challenging the amendment and the first EIR, and the settlement of that litigation and development of the second EIR are described in earlier bulletins.)

Central Delta I challenges the EIR adopted by DWR in 2010. Petitioners allege that the EIR fails to comply with CEQA. It is also a reverse validation petition, seeking a declaration that the Monterey Amendment and the transfer of the DWR-owned Kern Water Bank to Kern County Water Agency are invalid.

Central Delta II is also a reverse validation petition, seeking a declaration that the transfer of the Kern Water Bank from the Kern County Water Agency to the Kern Water Bank Authority is invalid.

Rosedale-Rio Bravo, filed by local public entities in Kern County that are adjacent to the Kern Water Bank, challenges the EIR on its description of the past, present, and future use and operation of the Kern Water Bank lands and their impacts.

DWR is gathering documents for the administrative record. Plaintiffs have also asked for documents via a California Public Records Act request (Government Code Sections 6250–6276.48).

As of September 2010, the Central Delta II and Rosedale-Rio Bravo cases will be transferred from Kern County to Sacramento County to be consolidated with Central Delta I.

Water Diversions

***Cortopassi Partners, a California limited partnership and Reclamation District 2086 v. The State of California* (Super. Ct. San Joaquin County, No. CV034843).** Plaintiffs allege that DWR has created and maintained a nuisance in the Sacramento-San Joaquin Delta by artificially diverting water through the Delta for the SWP. This case is currently in the discovery phase. Petitioners have taken approximately 20 depositions of DWR employees.

East Branch Extension

***Cherry Valley Environmental Planning Group and Cherry Valley Pass Acres and Neighbors v. Department of Water Resources* (Super. Ct. Riverside County, No. RIC 523024).** This CEQA action challenges the March 6, 2009, EIR approval of the East Branch Extension Phase II project to install 6 miles of new large-diameter pipeline, install a new pump station and reservoir, and enlarge the existing Crafton Hills Pump Station.

In January 2010, the administrative record was completed, and shortly thereafter, the Cherry Valley Environmental Planning Group dismissed the complaint.

Drought Water Bank

***Butte Environmental Council, California Sportfishing Protection Alliance, and California Water Impact Network v. California Department of Water Resources, California Natural Resources Agency, Governor Arnold Schwarzenegger and Does 1-50* (Super. Ct. Alameda County, No. 09446708).** On February 27, 2009, the Governor proclaimed a statewide drought emergency. In March 2009, DWR implemented the 2009 Drought Water Bank to transfer water to areas in need, after filing a notice of exemption from CEQA with the concurrence of the California Natural Resources Agency and the California Environmental Protection Agency. In April 2009, Butte Environmental Council and others brought a mandate proceeding against DWR and the other two agencies, challenging DWR's reliance on the Governor's proclamation in claiming the CEQA emergency exemption.

After trial, the court found for the petitioners and ordered DWR to comply with CEQA. On July 19, 2010, DWR, the Governor, and the California Natural Resources Agency

appealed. The parties are now working on a settlement agreement.

Breach of Contract Arbitration

***State of California acting by and through the Department of Water Resources v. Whitaker Contractors, Inc., a California corporation; Whitaker Contractors, Inc., a California corporation v. State of California acting by and through the Department of Water Resources* (OAH No. A-0031-07).** The trial of this breach of contract claim took place from January through March 2010. On June 7, 2010, the arbitrator upheld DWR's termination of Whitaker Contractors, Inc. (WCI) and awarded DWR more than $13 million in damages. Over WCI's objections, the arbitrator confirmed his decision and awarded additional damages for interest and costs to DWR, increasing the total award to $15.7 million.

Colorado River

***Imperial Irrigation District v. All Interested Persons and eight related cases* (B119968, app. pending).** These nine claims, which have been coordinated into a single proceeding before the Sacramento County Superior Court, challenge the Quantification Settlement Agreement (QSA) and associated actions taken to implement the QSA—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 and earlier litigation activities are described in bulletins from 2007–2009.)

On February 11, 2010, the court found the QSA Joint Powers Agreement and a dozen other related agreements to be invalid under Article XVI, Section 6 of the State Constitution. The court reasoned that the State's unconditional contractual agreement to pay for environmental mitigation costs related to the Colorado River water transfer between Imperial Irrigation District and San Diego County Water Agency was an unconstitutionally open-ended obligation. The court stayed enforcement of the judgment until the time to file an appeal expired. Notices of appeal were filed with the 3rd District Court of Appeal, and that court upheld the stay of the lower court's judgment pending the final outcome of the appeal. The court has not yet scheduled a date for oral argument.

Area of Origin

***Solano County Water Agency, Napa County Flood Control and Water Conservation District, City of Yuba City, and County of Butte v. California Department of Water Resources and Does 1–50* (Super. Ct. Sacramento County, No. 34-2008-00016338).** In July 2008, four SWP water supply contractors—Solano County Water Agency, Napa County Flood Control and Water Conservation District, City of Yuba City, and County of Butte—sued DWR claiming priority to delivery of SWP water and protections from water shortages based on area and watershed of origin statutes, and because they signed SWP water supply contracts. Fourteen SWP contractors located south of the Delta and outside the area of origin have intervened.

On September 22, 2010, the court denied plaintiff's motion for summary adjudication finding that there remained a dispute over how much water the contractors are entitled to each year along with other disputed facts in the case. On December 7, 2010, the court denied all parties' motions for summary judgment.

Castaic Lake Water Agency

***California Water Impact Network v. Castaic Lake Water Agency and Does I through XX,* Real Parties in Interest, California Department of Water Resources, Kern County Water Agency, Wheeler Ridge-Maricopa Water Storage District and Does XXI-XC (Super. Ct. Ventura County, No. CIV 231606). Consolidated with: *Planning and Conservation League v. Castaic Lake Water Agency,* Real Parties in Interest, Kern County Water Agency, Wheeler Ridge-Maricopa Water Storage District, Department of Water Resources (2010) 180 Cal.App.4th 210 [103 Cal.Rptr.3d 124] rehg. den.** California Water Impact Network and the Planning and Conservation League challenged a new EIR certified by Castaic Lake Water Agency for the permanent transfer of 41,000 acre-feet of SWP Table A water to Castaic Lake from Kern County Water Agency member unit, Wheeler Ridge-Maricopa Water Storage District. (Previous litigation on this water transfer is described in prior bulletins.) Appeals were taken from a mixed ruling at trial court, and the court of appeal's opinion finding against the environmental groups and upholding the adequacy of the EIR became final on January 16, 2010. Plaintiffs' petition to the California Supreme Court for review of the decision and a request for depublication of the opinion was denied.

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 processes. 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 federal actions that could significantly affect environmental quality.

CEQA is patterned after NEPA. Under CEQA, agencies are required to (1) disclose, through an environmental impact report (EIR), the significant impacts a proposed project would have on the environment, and (2) identify 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 (DWR) conducts many projects in cooperation with federal agencies. In these 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 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 they cannot. When a project is subject to both CEQA and NEPA, both laws encourage agencies to cooperate in planning the project and preparing joint environmental documents.

The environmental review process allows citizens to learn about a proposed project and its potential significant effects and to participate in the decision-making process by providing feedback on agency information. The review process requires agencies to:

- describe the proposed project and the purpose or need for it;
- identify the lead and cooperating agencies involved in the project;
- invite interested parties to participate in the process;
- determine the scope of study with input from responsible agencies and the public;
- prepare and distribute a draft EIS or EIR;
- respond to comments received on the draft;
- prepare the final EIS or EIR;
- make findings and adopt feasible alternatives or mitigation measures to avoid significant effects, if applicable;

Environmental Review Acts *(continued)*

- adopt a monitoring plan to ensure compliance with mitigation measures; and
- prepare a list of permits required to implement the project if it 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 or addressed in the EIS or EIR.

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, and agencies often opt to conduct activities that provide for wide public involvement. Members of the public may raise issues and identify additional alternatives, environmental effects, methods of assessment, and mitigation measures during the scoping phase and continue to participate in the review process for the draft environmental document. Thus, the CEQA process may lead to changes in a project through the development, consideration, and adoption of alternatives or enforceable mitigation measures to avoid or reduce any potential significant adverse effects on the environment.

If the project is approved, the lead agency publishes a document discussing all the factors considered in reaching its decision to proceed with the proposed action. It also discusses whether all practical means to avoid or minimize environmental harm have been adopted, and if not, the reasons they were not.

Chapter 7
Water Supply Development and Reliability

Rain falling in the Sacramento-San Joaquin Delta.

Significant Events in 2010

The State Water Resources Control Board (SWRCB) approved the Lower Yuba River Accord (Yuba Accord) on March 25, 2008, setting the flow schedules for the river and authorizing accord-based water transfers through 2025. In 2010, under the accord, a total of 141,856 acre-feet (af) was transferred to the Department of Water Resources (DWR) and participating State Water Project (SWP) and Central Valley Project (CVP) contractors.

DWR provided 141,856 af from the Lower Yuba River Accord Water Purchase Agreement to improve water supply reliability in 2010. Of that total, 60,000 af, less 20 percent carriage water costs, was provided to offset 48,000 af of export reductions to benefit the fish of the Sacramento-San Joaquin Delta. The remaining 81,856 af, less carriage costs, was provided to 10 SWP water contractors to augment their supplies.

Information in this chapter was contributed by the State Water Project Analysis Office, the Division of Integrated Regional Water Management, the Division of Statewide Integrated Water Management, 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 long-term water contract annual Table A water allocations delivered to SWP water contractors. 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 works with the State and federal governments, local agencies, and public interest stakeholder groups to ensure water supply reliability now and in the future. To meet SWP water contractors' needs for 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:

- facilitating transfers between SWP long-term contractors and other agencies, including Central Valley Project (CVP) contractors;
- funding studies on the evapotranspiration of rice and the Giant Garter Snake, a protected species known to inhabit rice growing regions of the Sacramento Valley, to further understanding of issues related to transfer of water made available by crop idling;
- assisting with developing and implementing 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 and preserve storage capacity; and
- investigating and evaluating storage projects.

Water Conveyance Through the SWP

DWR encourages and facilitates temporary transfers of water using SWP conveyance facilities for long-term SWP water contractors and 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 will be injured; (2) there will be no unreasonable effect on fish, wildlife, or other instream beneficial uses; and (3) there will 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 transfers and exchanges among SWP long-term water contractors, between SWP water contractors and non-SWP entities, or between two or more non-SWP entities.

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.

The transferability of water depends on many 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. Several CWC provisions authorize temporary transfers of water rights issued by the State Water Resources Control Board (SWRCB) (appropriative water rights issued after 1914) and put conditions on those transfers to protect those not involved in them. Short-term transfers, of 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. Other CWC sections specify conditions under which water can be transferred and legal protections for those transferring water.

The CWC sections noted above contain provisions intended to protect other legal users of water and fish and wildlife from the possible adverse effects of a water transfer. These provisions reflect the concept that changes can be made to the authorized place and purpose of use or point of diversion of a water supply 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 the potential expansion of water use beyond what would have been used by the water rights holder in the absence of the transfer. Hence, under the no injury rule, only "new water" is transferable (i.e., water added to the downstream water supply only 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 a transfer to legal users, instream uses, and to the economy of the area from which the water would be transferred. DWR must determine whether to allow use of any surplus water conveyance capacity for a transfer. DWR reviews each request to transfer water through SWP facilities to assure that only new water will be transferred.

Transfer water is typically developed through four methods: surplus water released from storage facilities, substitution of groundwater for transferred surface water, idling agricultural land or shifting to lower water use crops, and undertaking conservation activities that develop new water. Transfers may result in direct impacts and third-party impacts (impacts to parties not involved in the transfer). Certain CWC provisions were enacted to limit potential impacts. For example, 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 in which 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 increased pumping from wells for groundwater-based transfers. 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, to evaluate possible impacts from groundwater substitution transfers, DWR requires that users proposing to transfer water through groundwater substitution provide the information required to estimate the effects on the surface water system. Each type of transfer has its own set of potential impacts that must be evaluated to protect parties not involved in the transfer.

With the exception of short-term transfers done under CWC Section 1725, which provides for an expedited process for water rights issued by the SWRCB, water transfers are subject to compliance with the California Environmental Quality Act and, possibly, the National Environmental Policy Act. The California Environmental Quality Act/ National Environmental Policy Act and SWRCB processes provide opportunities for public review and comment on water transfer proposals.

Staff in the State Water Project Analysis Office, Division of Operations and Maintenance, Division of Integrated Regional Water Management, and the Office of the Chief Counsel evaluate proposed water transfers to determine whether they will impact 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 2009 conditions and for projected conditions in a biennial report entitled the *Draft State Water Project Delivery Reliability Report 2009*. The 2009 report was finalized in August 2010, and the next draft update of this report is expected in 2011.

Delivery reliability depends on three factors: (1) the availability of water at the source, (2) the ability to convey water from the source to the desired point of delivery, and (3) the level of demand. Information in the 2009 draft report for projected conditions accounts for the forecast effects of climate change. 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 2009. 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.

Figure 7-1 shows the probability that a given amount of SWP annual Table A water will be delivered from the Delta for conditions in 2009 and projected to exist in 2029. The following can be deduced for year 2029 conditions:

- In 75 percent of the years, annual SWP Table A water delivery is estimated to be at or above 2.14 million acre-feet (maf) per year (52 percent of 4.13 maf).
- In 50 percent of the years, delivery is estimated to be at or above 2.60 maf per year (63 percent of 4.13 maf).
- In 25 percent of the years, delivery is estimated to be at or above 2.92 maf per year (71 percent of 4.13 maf).

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 referenced above, available on DWR's website.

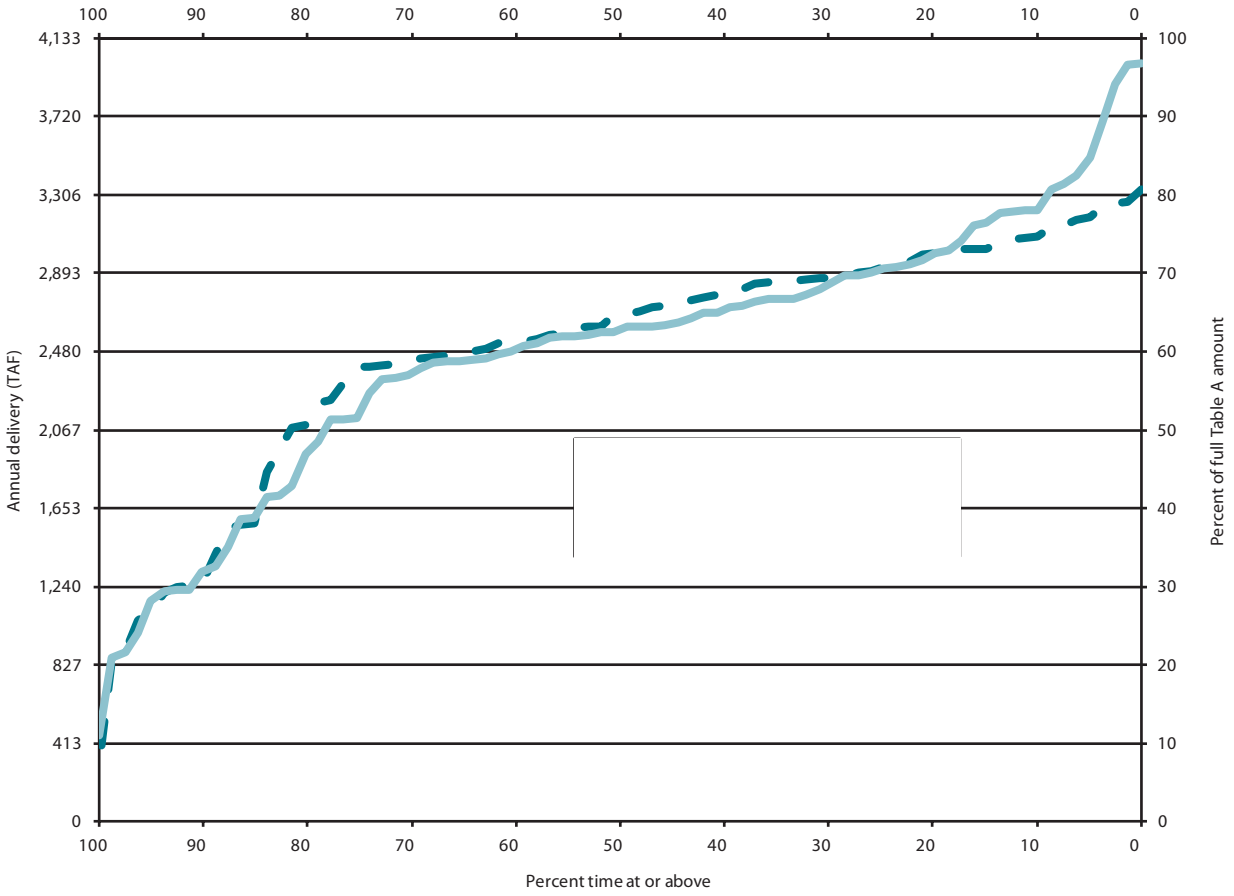

Figure 7-1 **SWP Annual Table A Water Delivery Probability for Years 2009 and 2029**

SWP Future Water Supply Program

The Future Water Supply Program coordinates DWR's efforts to implement the Sacramento Valley Water Management Program (SVWMP), provides technical support within DWR for the Lower Yuba River Accord (Yuba Accord), and monitors and assesses conditions of the Sacramento Valley groundwater basin that affect the yield of the SWP. The Future Water Supply Program's goal is to determine the effects of Sacramento Valley groundwater management activities, including water transfers, on SWP water supply reliability, and recommend actions to improve or maintain that reliability.

The Future Water Supply Program's Upper Feather River watershed management component evaluates the state of the Feather River watershed above Lake Oroville with respect to water management and restoration actions being planned or implemented within the watershed. These actions are intended to improve the ecological and hydrologic function of watersheds, thus effecting base flow, improving flood attenuation, and reducing erosion and sedimentation.

In 2010, DWR continued a collaborative effort with local stakeholders to develop and enhance monitoring activities for assessing the immediate and long-term effects of these actions, especially those related to the plug and pond meadow restoration technique.

Sacramento Valley Water Management Program

The precursor to the current Future Water Supply Program was DWR's work to incorporate conjunctive-use projects in the Sacramento Valley into the SWP to increase SWP dry-year yield. Similar projects were proposed to be implemented by the Sacramento Valley Water Management Agreement (SVWMA) which was signed by stakeholders in early 2003. For more information on issues surrounding the SVWMA, see Bulletins 132-02, 132-03, and 132-04, available on DWR's website.

In 2009, DWR, in partnership with the Bureau of Reclamation (Reclamation) and other members of the SVWMA Management Committee, continued efforts to develop the programmatic environmental impact statement (EIS)/environmental impact report (EIR) required for implementation of the SVWMP.

Development of the short-term SVWMP EIS/EIR was funded in 2009 by Reclamation, which took a lead role in managing its consultant and the process. Progress was elusive partly because baseline assumptions required to develop the environmental document were not finalized due to unsettled issues relating to the Delta, especially those regarding the water projects' Operations Criteria and Plan (OCAP) and unreleased biological opinions (BOs). Additionally, Reclamation suspended work on the EIS/EIR from August through November due to funding problems.

Development of the EIS/EIR was also hindered because participants could not identify a source of funding for the peer review of the groundwater model to be used in the development of the EIS/EIR that the SVWMA Management Committee requested at their December 2008 meeting.

DWR continued to develop monitoring facilities and collect and manage hydrologic data that is required to implement the SVWMP. Staff planned and supervised the construction of multiple-completion wells funded by Proposition 50 and the SWP near several proposed SVWMP projects in Glenn and Sutter counties.

SWP Water Rights Activities

Water Right Permits

SWP operations 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 BOs for the protection of endangered species. DWR holds water right permits which authorize SWP operations at each of the SWP facilities including the Oroville 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, purpose 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, including a change in the place or purpose of use or point of diversion, requires SWRCB approval.

Diversion and use of SWP water throughout the SWP service area has 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.

Three petitions for change to SWP water right permits were submitted to the SWRCB in 2010. DWR and Reclamation filed a joint petition for change on August 19, 2010, to consolidate the SWP and CVP authorized places of use to facilitate transfers and exchanges of SWP and CVP water. The consolidation of the SWP and CVP places of use provided the two projects with

the operational flexibility to manage the available SWP and CVP supply as efficiently as possible. The SWRCB issued Order WR 2010-0032 approving the petition on November 5, 2010. The change facilitated the delivery of water obtained through the drought water bank as well as a number of exchanges between the SWP and CVP and their respective contractors. A total of 147,239 (af) of water was transferred under the provisions of the change petition.

DWR filed a petition for temporary change on February 10, 2010, to allow the transfer of up to 8,000 af of SWP water from the Tulare Lake Basin Water Storage District (Tulare) service area and up to 2,000 af of SWP water from the Empire-West Side Irrigation District (Empire) service area to land within Westlands Water District (Westlands). Two landowners with acreage in Tulare, Empire, and Westlands requested the change to allow the delivery of a portion of their SWP supply to land in Westlands. The SWRCB issued Order WR 2010-0017-DWR approving the change on May 5, 2010. A total of 2,181 af was transferred. The transfer described above has been executed each year for over six years. To facilitate the same landowner exchange in future years, DWR filed a petition for long-term change with the SWRCB on February 10, 2010, to allow this transfer from Tulare and Empire to occur in any year for a period of up to 15 years.

For more information about specific agreements relating to the transfers facilitated by the above petitions, see Chapter 9, Water Contracts and Deliveries.

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, converge to flow westward to meet incoming seawater tides flowing through the San Francisco Bay. The watershed of the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (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 largest 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 Bay-Delta Estuary inflows, outflows, water quality, and other hydrologic characteristics.

The 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. The SWRCB coordinates its regulatory authorities under State laws governing water quality and water rights, ensuring that water quality is protected for all beneficial uses when water is diverted from the estuary.

Under its authority to protect beneficial uses of water, SWRCB adopted the 2006 *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (WQCP) on December 13, 2006 (Resolution No. 2006-0098). The WQCP contains objectives for flow, salinity, dissolved oxygen levels, and other parameters necessary for protection of various beneficial uses such as municipal and industrial, agricultural, and fish and wildlife. The SWRCB implements these objectives in part or in whole, depending on the circumstances, through conditions on water right permits and licenses. In 1999, the SWRCB adopted

Water Right Decision 1641 (later modified by Order WR 2000-02) modifying the terms and conditions of a number of water right permits and licenses, primarily those for the SWP and CVP, to implement the objectives of the 1995 WQCP.

For more information about the SWRCB, see Chapter 4, Water Quality Programs.

SWRCB Bay-Delta Proceedings—2010 Activities

In 2010, SWRCB proceedings examined a number of issues in the Bay-Delta Estuary relating to water quality, protection of beneficial use for agriculture and fish and wildlife, and salinity issues, among others, which have the potential to affect Delta water supply and reliability.

Pelagic Organism Decline

Although the SWRCB did not convene any workshops related to pelagic organism decline in 2010, the pelagic organism decline management team continued their studies through the Interagency Ecological Program.

For more information on pelagic organism decline, see Chapter 3, Environmental Programs.

Strategic Workplan for the Bay-Delta Estuary

On July 16, 2008, the SWRCB adopted the *Strategic Workplan for Activities in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*. Although the workplan contains many water quality related elements, some elements are related to water supply reliability: review of southern Delta salinity and San Joaquin River flow objectives to protect water supply for agricultural beneficial use; comprehensive review of the 2006 WQCP and its implementation through water rights and other requirements to protect fish and wildlife beneficial uses and the public trust; evaluation of SWP and CVP methods of diversion in the Delta to ensure that they are reasonable, beneficial, and protect the public trust; implementation of actions under SWRCB's statutory responsibilities regarding water right compliance, enforcement, and other activities to ensure adequate flows to meet water quality objectives; and implementation of actions to promote water use efficiency for urban and agricultural water users.

General timelines in the workplan indicate that SWRCB could consider adopting draft changes to the 2006 WQCP by December 2011. The timeline may change as a result of changes to the Bay Delta Conservation Plan timeline or other issues. SWRCB staff prepare quarterly updates on the implementation of the workplan and, as appropriate, recommend modifying activities in the workplan to ensure that SWRCB actions continue to protect beneficial uses in the Bay-Delta. SWRCB will consider modifying the Bay-Delta strategic workplan as necessary.

2006 Bay-Delta Plan Review

Water Code Section 13240 requires that the WQCP be periodically reviewed. Federal Clean Water Act Section 303(c) (33 U.S.C. Section 1313(c)) requires a triennial review of State water quality "standards," as defined in the act. A workshop on October 8, 2008, formally began a review of the 2006 WQCP.

The WQCP review and amendment process consists of review of the 2006 WQCP to identify elements that may need amendment or new elements that may need to be added, staff preparation of any amendments or revision of the entire WQCP, and SWRCB adoption of some or all of the amendments or revisions. SWRCB information-gathering activities may affect the scope of the WQCP review and may include a series of evidentiary hearings on a number of critical issues concerning the Delta's ecology. The Bay Delta Conservation Plan environmental

review may include some of the analyses needed for the comprehensive WQCP review.

Pursuant to its strategic workplan, the SWRCB has already initiated a separate, but parallel, process to review two specific elements of the 2006 WQCP: the southern Sacramento-San Joaquin Delta salinity objectives and the San Joaquin River flow objectives.

Southern Delta Salinity and San Joaquin River Flow Objectives. In 2009, the SWRCB held staff workshops to receive information and conduct detailed discussions regarding potential amendments or revisions to the southern Delta salinity and San Joaquin River flow objectives included in the 2006 WQCP. The workshops focused on issues and information needs related to the proposed modeling alternatives for the salinity and flow objectives. Related questions discussed included: (1) whether use of a fixed percentage of unimpaired flows at Vernalis is a reasonable approach; (2) appropriate monthly average electrical conductivity at various locations; and (3) whether there is a sufficiently broad range of alternatives. The SWRCB will use this information to define and focus the scope of subsequent workshops on issues relating to San Joaquin River flow objectives.

The SWRCB has scheduled a public workshop for January 2011 for presentation, discussion, and public comment on the draft technical report on the scientific basis for alternatives to these objectives.

For more information about salinity objectives and compliance monitoring in the South Delta, see Chapter 4, Water Quality Programs.

Storage Program

DWR is the State lead agency for the Storage Program, which consists of surface storage studies and groundwater programs and projects. The Storage Program began under the CALFED Bay-Delta Program. For background on the CALFED Bay-Delta Program, see the sidebar later in this chapter.

The Storage Program is a comprehensive program with potential benefit for the SWP consisting of actions related to surface and groundwater storage. The Division of Statewide Integrated Water Management and the Division of Integrated Regional Water Management have been working with CALFED agencies to enhance storage and 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 help meet California's urban, agricultural, and environmental water supply reliability, ecosystem restoration, and water quality needs.

CALFED Surface Storage Investigations

Surface storage investigations are developing environmental documentation and feasibility studies for three of the five surface storage projects identified for further study in the CALFED record of decision.

In-Delta Storage Program

The In-Delta Storage Program may 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).

In 2007, further study of the In-Delta Storage Program was suspended, and no further work was done on the project in 2010.

Los Vaqueros Reservoir Expansion Project

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 involves analysis of increasing reservoir storage by as much as 175,000 af, for a potential storage capacity up to 275,000 af.

The project objectives are to: (1) develop water supplies for environmental water management; (2) increase water supply reliability within the San Francisco Bay Area; and (3) to the extent possible, improve the quality of water deliveries to municipal and industrial customers without impairing the project's ability to meet the first two objectives.

In 2009, Contra Costa released a public draft EIS/EIR for expansion alternatives of the dam and reservoir to increase storage up to 275,000 af. Contra Costa is the lead agency under the California Environmental Quality Act and, in coordination with Reclamation and DWR, will continue with the feasibility study and environmental documentation.

In 2010, the Los Vaqueros Expansion Investigation took a two-step approach. The Contra Costa Board certified a final EIR and approved an expansion from 100,000 af to 160,000 af on March 31, 2010. Contra Costa has completed design and is moving forward with construction scheduled to begin in 2011. With additional funding, local, State, and federal partners may choose to continue to study the feasibility of a 275,000 af expansion alternative in the context of other Delta initiatives to improve Delta conveyance and better protect Delta fisheries, including long-term programs being explored in the Bay Delta Conservation Plan.

Shasta Lake Water Resources Investigation

Reclamation, in coordination with other agencies, is studying the feasibility of expanding Shasta Dam and Lake, primarily to promote increased survival of anadromous fish populations in the upper Sacramento River and to increase water supply reliability. An enlargement of Shasta Dam would inundate additional lands around the existing reservoir and affect a portion of the McCloud River. California Public Resources Code Section 5093.542(c), the Wild and Scenic Rivers Act, states that, "except for participation by the Department of Water Resources in studies involving the technical and economic feasibility of enlargement of Shasta Dam, no department or agency of the state shall assist or cooperate with, whether by loan, grant, license, or otherwise, any agency of the federal, state, or local government in the planning or construction of any dam, reservoir, diversion, or other water 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 budget does not include funding for DWR to continue participating in this study. However, Reclamation's planning is ongoing.

North-of-the-Delta Offstream Storage Investigation

DWR and Reclamation are working in partnership with local, State, and federal agencies to further study north-of-the-Delta offstream storage opportunities. The North-of-the-Delta Offstream Storage Investigation focuses on potential projects on the west side of the Sacramento Valley, including Sites Reservoir.

Storing water in offstream reservoirs during excess flow periods could provide opportunities to increase water storage in

CALFED Bay-Delta Program

The San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Estuary) is the largest estuary on the West Coast. It is a maze of tributaries, sloughs, and islands, and a haven for more than 750 plant and wildlife species. It is also the hub of California's two largest water distribution systems—the Central Valley Project (CVP), operated by the Bureau of Reclamation (Reclamation), and the State Water Project (SWP), operated by the Department of Water Resources (DWR). Together, these water development projects can divert a significant portion of the inflow to the Delta, depending on annual hydrology, water supply demands, and other factors. The Bay-Delta system is extremely complex. Project exports and other diversions, invasive species, salinity intrusion, and discharges from upstream and in-Delta sources all have had serious impacts on water supply, water quality, and fish and wildlife resources in the Bay-Delta Estuary. The estuary is important both as a reliable source of water and critical fish and wildlife habitat. Resolution of conflicts regarding methods of management, conservation, increasing system capacity, and protecting the region's ecology requires a coordinated collaborative approach.

In June 1994, in a 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 SWP and the CVP 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 both parties, detailed interim measures for both environmental protection and regulatory stability.

The CALFED Bay-Delta Program mission was to develop and implement a long-term comprehensive plan to restore ecological health and improve water management for beneficial uses of the Bay-Delta. Envisioned as a 30-year plan, the mission would be implemented through 11 major program elements.

The Bay-Delta Accord laid the foundation for the CALFED Bay-Delta Program, which began in 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 CALFED Bay-Delta Program progress, using sound science, assuring public involvement and outreach, and coordinating and integrating related government programs.

In 2009, the Delta Stewardship Council was established, and in 2010, it assumed the functions and responsibilities of the CALFED Bay-Delta Program. For more information, see Chapter 2, Delta Resources.

an environmentally sensitive manner. The stored water could then be made available to enhance water management flexibility in the Sacramento Valley and the Bay-Delta Estuary, 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 support environmental enhancement actions and adapt to climate change.

North-of-the-Delta Offstream Storage Investigation studies were ongoing in 2010.

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. The objectives of the Upper San Joaquin River Basin Storage Investigation are to: (1) increase water supply reliability and operational flexibility in the Friant Division, other San Joaquin Valley areas, and other regions, and (2) enhance water temperature and flow conditions in the San Joaquin River in support of San Joaquin River restoration efforts. Other opportunities include additional hydropower generation, reduction of flood damages, water quality improvements, and recreation site development.

In May 2009, Reclamation and DWR released a plan formulation report for the Upper San Joaquin River Basin Storage Investigation that described the alternative formulation, evaluation, and comparison activities that led to selection of Temperance Flat RM 274 Reservoir for detailed feasibility-level evaluation. The report described the progress of the study to date and includes additional information on the economics, operations, and costs of Upper San Joaquin River Basin Storage Investigation alternatives. It also defines a set of alternative plans to be considered in the study's feasibility report and EIS/EIR.

The study continued in 2010 with draft and final feasibility studies and environmental documents scheduled for 2013 and 2014.

Conveyance Program

The Conveyance Program consists of projects proposed in the North and South Delta. These projects are discussed briefly below; for more information about the North and South Delta, see Chapter 2, Delta Resources.

North Delta

The North Delta Program involves studies related to a through-Delta facility, Delta Cross Channel reoperation, a flow-control facility in the Franks Tract region, and a project to improve flood management and the ecosystem along the Mokelumne River.

The SWP obtained federal and California Endangered Species Act coverage through the December 2008 U.S. Fish and Wildlife Service BO for delta smelt; the February 2009 Department of Fish and Game Incidental Take Permit for longfin smelt; and the June 2009 National Marine Fisheries Service BO for salmon, steelhead, and green sturgeon. The new BOs and incidental take permit were necessary due to the addition of the newly listed green sturgeon. Many of the regulatory requirements will require studies and projects.

In 2009, work on several projects was suspended due to the State's fiscal crisis. *The Delta Regional Salmon Outmigration Study*, undertaken as part of the Delta Cross Channel evaluation to address fishery and water quality concerns, was unable to complete the last phase of its field study and subsequent data analysis. In 2010, efforts were made to resume analysis of data collected in the winter of 2008–2009.

Unfortunately, U.S. Geological Survey staff contracted to conduct the study were not readily available to do the analysis work on the data in 2010. However, it is expected the work will resume at a future date.

The EIS/EIR for the Franks Tract Project, which involves installation of one or more operable barriers in river channels around the Franks Tract region to reduce sea water intrusion and enhance conditions for sensitive fish species, was also suspended in 2009. However, in 2010, work on the Franks Tract Project continued, including completing a final wetland delineation report for a U.S. Army Corps of Engineers Section 404 (Clean Water Act) permit. Reclamation and DWR developed three separate draft technical memoranda on design, cost estimating, and construction of the project. A sensitivity modeling analysis was also completed to assess the benefits of the project under the implementation of the new BO and incidental take permit on SWP and CVP operations.

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.

Scientific and engineering studies continued in 2010.

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, an intertie between the SWP California Aqueduct and the CVP Delta-Mendota Canal, and continuation of DWR's Temporary Barriers Program.

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 to 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.

The SDIP final EIR/EIS (2006) evaluated alternatives and proposed proceeding with SDIP Stage 1. This component involves constructing permanent operable gates and channel dredging in the South Delta. DWR is proposing installation of these permanent gates to replace temporary structures currently installed and removed each year under DWR's Temporary Barriers Program.

In 2007 and 2008, Reclamation and DWR developed a project description and the biological assessment for the SWP and CVP OCAP that included operation of the SDIP permanent operable gates. The biological assessment was completed in 2008.

The U.S. Fish and Wildlife Service issued a BO for the OCAP in December 2008 in which it concluded the coordinated operations of the CVP and SWP would jeopardize delta smelt. The U.S. Fish and Wildlife Service provided a reasonable and prudent alternative under which SDIP could move forward.

NOAA Fisheries issued a BO for the OCAP in June 2009 which concluded that CVP and SWP operations would jeopardize a number of anadromous species, in particular Chinook salmon. NOAA Fisheries provided no reasonable and prudent alternative for SDIP. DWR initiated discussion with NOAA Fisheries in late 2009 to establish what actions could lead to a reasonable and

prudent alternative under which SDIP could move forward. NOAA Fisheries identified concern for potential barrier hydraulic disturbances that could promote increased predation. DWR conducted a hydrodynamic study that focused on barrier design features to minimize these disturbances. A report of the study findings was submitted to NOAA Fisheries in April 2010. Further, NOAA Fisheries stated an interest in holding off further discussion until completion of an on-going multiyear South Delta Temporary Barriers Program predation study. Data from the study would be useful in considering permanent barrier design options and operation strategies that could minimize predation.

Any action regarding SDIP Stage 2 will require further study and public input. Stage 2 planning continued to be suspended in 2010.

Lower Yuba River Accord

The Lower Yuba River Accord's (Yuba Accord) purpose is to resolve instream flow issues and protect and enhance lower Yuba River fisheries and local water supply reliability. The Yuba Accord provides revenues for local flood control and water supply projects; water to enhance SWP and CVP water supply reliability by offsetting Delta export reductions for protection and restoration of Delta fisheries; and improvements in statewide water supply management, including dry year supplies for participating SWP and CVP contractors.

The Yuba Accord is based on three agreements, as follows:

- a water purchase agreement with DWR;
- conjunctive use agreements with Yuba County Water Agency member units; and
- a fisheries agreement.

The three Yuba Accord agreements were executed in late 2007 and early 2008, and the SWRCB approved the Yuba Accord in March 2008, setting flow schedules for the Yuba River and authorizing accord-based water transfers through 2015.

The water purchase agreement transfers water to help offset Delta export reductions annually and provides dry year transfer water for SWP and CVP contractors from surface and groundwater substitution sources.

For additional details on Yuba Accord deliveries, see Chapter 9, Water Contracts and Deliveries.

Chapter 8
Water Supply

Sierra snow.

Significant Events in 2010

Water year 2009–2010 recorded near average precipitation and mountain snowpack. The State received precipitation at 108 percent of average in 2009–2010, compared to 81 percent of average in 2008–2009. The Northern Sierra 8-Station Precipitation Index recorded the eleventh wettest April precipitation totals on record. The statewide snowpack peaked at the beginning of May and then gradually declined as May was unusually cool and wet.

Statewide river runoff totaled 91 percent of average in the 2009–2010 water year. Runoff in the Sacramento River and San Joaquin River regions was 86 and 99 percent of average, respectively. Feather River unimpaired inflow to Lake Oroville was 3.6 million acre-feet (78 percent of average) for the water year, compared to 3.1 million acre-feet (68 percent of average) the previous year.

The Sacramento Valley Water Year Hydrologic Classification (Sacramento Valley 40-30-30 Index) and the San Joaquin Valley Water Year Hydrologic Classification (San Joaquin Valley 60-20-20 Index) were "below normal" and "above normal," respectively, based on all observed data for water year 2009–2010.

Information in this chapter was contributed by the Division of Flood Management and the Division of Operations and Maintenance.

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 2009–2010

Precipitation and Snowpack

California experienced above- or near-average rainfall and mountain snowpack during water year 2009–2010. The state received precipitation at 108 percent of average in 2009–2010, compared to 81 percent of average in 2008–2009. Figure 8-1 presents water year precipitation for the various regions of the state. The Northern Sierra 8-Station Precipitation Index (see sidebar, Precipitation and Water Supply Indices) finished the water year with 53.6 inches of precipitation, which was 107 percent of average. The statewide average snow water equivalent, based on snow sensors, reported for April 1 was 30.1 inches, or 106 percent of average.

Table 8-1 presents monthly precipitation totals for water year 2009–2010 at various gauges located throughout the state, listed north to south. For much of the state, the two wettest months were January and April when precipitation totals exceeded 150 percent of average throughout most of the state.

Mount Shasta City in far Northern California received 52.42 inches of precipitation for a water year total that was 145 percent of average. Precipitation for Mount Shasta City was above normal for 7 months of the 2009–2010 water year. January accumulated the most precipitation for the water year, 15.62 inches, and April had the highest percent of normal for the water year, 274 percent, which amounted to 7.7 inches of precipitation. January's and April's precipitation averages were due to two major storms that occurred throughout the state, which brought significant amounts of rain and snowfall accumulation in the Sierra.

Areas of the Central Valley received above-normal precipitation for the months of October, January, and April. Precipitation totals were 3.42, 4.75, and 2.65 inches, respectively, for Sacramento (372, 127, and 179 percent of average, respectively) and 1.39, 2.05, and 2.19 inches for Fresno (290, 102, and 203 percent of average, respectively).

In the San Joaquin and Tulare Lake watersheds, precipitation in April was comparable to the precipitation in the north. The April storms brought above-average (230 percent) precipitation at Yosemite Headquarters and totaled 280 percent of average at Grant Grove. Water year precipitation totals at those two sites were 115 and 120 percent of their respective annual averages. Further south, the cities of Los Angeles and San Diego were near average, totaling 97 and 102 percent of their annual rainfall averages for the water year, respectively.

The monthly totals for the Northern Sierra 8-Station Precipitation Index for water year 2009–2010 are presented in Table 8-2. Precipitation for the water year totaled 53.57 inches, which is 107 percent of average. Monthly precipitation totals for October, January, April, and May were above average at 157, 151, 208, and 195 percent of average, respectively. April and May registered as the eleventh and thirteenth, respectively, wettest on record for the index. Compared to May, the rest of the water year was quite dry and warm.

Figure 8-1 Statewide Precipitation by Hydrologic Region, 2009–2010 Water Year, as Percent of Average

Table 8-1 Monthly Precipitation Totals at Various Locations in California during Water Year 2009–2010

Monthly Precipitation (in Inches and Percent of Average)													
	2009			2010									
Station[a]	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	WY Total
Mount Shasta City	4.61	2.11	5.01	15.62	8.03	5.04	7.70	2.65	0.46	0.08	0.05	1.06	**52.42**
percent of average	*197*	*46*	*85*	*244*	*143*	*115*	*274*	*156*	*43*	*32*	*16*	*134*	***145***
Eureka Woodley Island	1.95	4.15	4.17	9.29	4.20	6.06	7.76	3.51	2.31	0.04	0.15	1.39	**44.98**
percent of average	*65*	*75*	*65*	*143*	*81*	*116*	*270*	*194*	*379*	*36*	*63*	*183*	***118***
Blue Canyon (DWR-2)	5.34	2.58	10.12	13.90	8.03	9.05	11.07	6.58	0.44	0.05	0.11	0.00	**67.27**
percent of average	*142*	*33*	*97*	*112*	*82*	*106*	*221*	*242*	*50*	*24*	*31*	*0*	***107***
Sacramento WB City	3.42	0.36	3.16	4.75	2.29	2.98	2.65	0.75	0.00	0.00	0.00	0.01	**20.37**
percent of average	*372*	*18*	*99*	*127*	*70*	*125*	*179*	*163*	*0*	*0*	*0*	*5*	***114***
San Francisco WB AP	3.11	0.45	2.77	6.66	3.42	2.79	3.59	0.95	0.07	0.00	0.01	0.02	**23.84**
percent of average	*293*	*19*	*74*	*151*	*104*	*101*	*253*	*216*	*47*	*0*	*17*	*11*	***120***
Yosemite Headquarters	5.87	0.60	8.64	7.24	6.54	4.50	7.46	1.56	0.00	0.01	0.00	0.00	**42.42**
percent of average	*341*	*14*	*131*	*108*	*104*	*91*	*230*	*111*	*0*	*4*	*0*	*0*	***115***
Fresno WB AP	1.39	0.20	2.41	2.05	2.95	0.96	2.19	0.21	0.00	0.00	0.00	0.00	**12.36**
percent of average	*290*	*18*	*137*	*102*	*142*	*52*	*203*	*75*	*0*	*0*	*0*	*0*	***113***
Grant Grove	7.81	0.49	8.86	11.01	5.94	4.89	12.09	1.12	0.00	0.02	0.02	0.00	**52.25**
percent of average	*398*	*9*	*113*	*147*	*82*	*65*	*280*	*96*	*0*	*33*	*29*	*0*	***120***
Los Angeles-WSO Airport	1.31	0.00	2.05	4.30	3.23	0.21	1.25	0.08	0.00	0.00	0.00	0.00	**12.43**
percent of average	*345*	*0*	*98*	*159*	*111*	*11*	*136*	*57*	*0*	*0*	*0*	*0*	***97***
San Diego NWS-Lindbergh	0.00	0.12	2.28	3.38	2.28	0.68	1.78	0.01	0.02	0.02	0.00	0.03	**10.60**
percent of average	*0*	*11*	*119*	*165*	*119*	*42*	*234*	*5*	*29*	*100*	*0*	*17*	***102***

[a] AP = Airport; NWS = National Weather Service; WB = Weather Bureau; WSO = Weather Service Office; WY = Water Year (October 1–September 30)

Table 8-2 Northern Sierra 8-Station Precipitation Index for Water Year 2009–2010

	Month	Precipitation (inches)	Percent of Monthly Average Precipitation
2009	October	4.70	157
	November	2.10	33
	December	6.80	81
2010	January	13.60	151
	February	7.10	89
	March	6.20	90
	April	8.10	208
	May	4.10	195
	June	0.39	39
	July	0.08	40
	August	0.10	33
	September	0.30	33
	Total	**53.57**	**107**

Taking the entire water year into consideration, 40 percent of the water year total precipitation fell during January and April, essentially during two stormy periods. The first period of storms, during the second and third week of January, produced 13.6 inches of precipitation. Storms hitting Southern California on January 19 produced rain, hail, lightning, water spouts, and tornados. The second series of storms hit California in the last week of April, bringing valley rain.

The precipitation that fell during water year 2009–2010 resulted in a snowpack near average throughout the state's mountainous regions. Monthly statewide snowpack for selected months for the 2009–2010 water year is shown in Table 8-3. Snow

Table 8-3 Statewide Snowpack for Selected Months of Water Year 2009–2010

	Date	Snow Water Equivalent (inches)	Percent of Average	Percent of April 1 Average[a]
2009	October 1	0	0	0
	November 1	0.3	30	1
	December 1	2.1	42	7
2010	January 1	8.9	87	31
	February 1	19.7	111	69
	March 1	26.7	106	93
	April 1	30.1	106	106
	May 1	32.9	148	115
	June 1	18.6	212	65

[a] April 1 is the average date of peak statewide snowpack.
This table is based on snow pillow (a device for measuring snowpack at automated reporting stations) data.

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 30.1 inches or 106 percent of average. Snowpack peaked in mid-April at approximately 34 inches of snow water content. Not only was the peak observed later than normal (April 1 is typically the average annual date of peak snow accumulation), it was almost 130 percent of normal. June 1 had the greatest percent of average snow water levels for the year, with 212 percent of average.

Runoff and Storage

Statewide river runoff totaled 91 percent of average in the 2009–2010 water year. The monthly runoff totals for the Sacramento Four Rivers, San Joaquin Four Rivers, and Tulare Lake Four Rivers, and the Feather River are shown in Table 8-4. The water year runoff totals for these regions were 86, 102, 115, and 78 percent of average, respectively.

From a water supply perspective, the most closely monitored period is April through July. April concluded with 104, 94, and 98 percent of normal runoff for the Sacramento River, San Joaquin River, and Tulare Lake regions, respectively. By the end of July, the April–July runoff volumes had increased to 113, 119, and 130 percent of average for the three respective regions.

The Sacramento Valley Water Year Hydrologic Classification (Sacramento Valley 40-30-30 Index) and the San Joaquin Valley Water Year Hydrologic Classification (San

Table 8-4 Unimpaired Runoff for Water Year 2009–2010 (million acre-feet)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	WY
SRR runoff	0.51	0.36	0.59	2.21	1.97	1.82	2.46	2.45	2.19	0.68	0.41	0.37	16.01
percent of average	*97*	*41*	*33*	*85*	*74*	*64*	*104*	*107*	*173*	*113*	*98*	*90*	*86*
SJR runoff	0.16	0.05	0.12	0.27	0.34	0.49	0.78	1.25	1.96	0.53	0.09	0.04	6.08
percent of average	*263*	*38*	*47*	*62*	*73*	*80*	*94*	*88*	*177*	*119*	*70*	*57*	*102*
TLR runoff	0.13	0.04	0.08	0.11	0.17	0.25	0.39	0.72	1.15	0.38	0.09	0.04	3.56
percent of average	*270*	*64*	*62*	*63*	*89*	*94*	*98*	*99*	*183*	*130*	*88*	*73*	*115*
Feather River runoff	0.09	0.07	0.11	0.35	0.31	0.44	0.62	0.68	0.55	0.18	0.09	0.08	3.59
percent of average	*80*	*36*	*28*	*59*	*52*	*60*	*95*	*107*	*163*	*116*	*91*	*88*	*78*
Statewide percent of average	**120**	**33**	**30**	**87**	**70**	**69**	**113**	**104**	**185**	**123**	**92**	**87**	**91**

SRR: Sacramento River Region
Sacramento River above Bend Bridge, Feather River at Oroville, Yuba River near Smartville, American River below Folsom
SJR: San Joaquin River Region
Stanislaus River below Goodwin, Tuolumne River below La Grange, Merced River below Merced Falls, San Joaquin River below Millerton Lake
TLR: Tulare Lake Region
Kings River below Pine Flat, Kaweah River below Terminus, Tule River below Lake Success, Kern River at Isabella
WY: Water Year (October 1–September 30)

Joaquin Valley 60-20-20 Index) were "below normal" and "above normal," respectively, based on all observed data for water year 2009–2010. (See sidebar, Precipitation and Water Supply Indices.)

During water year 2009–2010, statewide reservoir storage peaked during the summer months at nearly 105 percent of average following the dry 2008–2009 water year. Monthly storage totals for the major Sierra reservoirs are shown in Table 8-5. End-of-water-year storage in the major Sierra reservoirs ranged from 122 percent of average in Shasta Lake on the Sacramento River to 47 percent of average in Success Lake on the Tule River.

Water Year 2010–2011 October through December Water Conditions

The last three months of calendar year 2010 mark the beginning of new water year 2010–2011. October and December proved to be well above average for precipitation throughout the state. November was drier compared to October and December statewide. December had unusually high precipitation for the month, with ranges from 21.9 inches in Blue Canyon to 5.0 inches in San Diego. Los Angeles received precipitation greater than 400 percent of average during the months of October and December.

Table 8-5 Reservoir Storage for Water Year 2009–2010 (thousand acre-feet and percent of average)

Reservoir	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Shasta	1,708	1,674	1,777	2,597	3,380	3,869	4,391	4,465	4,279	3,841	3,492	3,319
percent of average	*64*	*62*	*63*	*85*	*102*	*105*	*112*	*114*	*117*	*119*	*121*	*122*
Oroville	1,290	1,137	1,030	1,190	1,386	1,650	2,114	2,494	2,719	2,408	2,040	1,755
percent of average	*61*	*53*	*47*	*51*	*56*	*61*	*73*	*83*	*94*	*93*	*88*	*80*
Folsom	347	284	264	322	419	562	823	905	923	754	656	624
percent of average	*70*	*61*	*56*	*63*	*77*	*89*	*113*	*110*	*114*	*109*	*107*	*113*
San Luis	502	605	874	1,160	1,439	1,715	1,669	1,448	1,185	904	775	789
percent of average	*47*	*49*	*63*	*72*	*83*	*93*	*92*	*90*	*92*	*91*	*90*	*83*
Pardee	168	170	169	174	169	168	179	194	199	192	192	187
percent of average	*97*	*97*	*96*	*97*	*94*	*92*	*98*	*102*	*103*	*101*	*104*	*103*
New Melones	1,104	1,116	1,165	1,220	1,234	1,267	1,277	1,291	1,419	1,372	1,307	1,276
percent of average	*82*	*82*	*84*	*86*	*84*	*84*	*85*	*85*	*93*	*94*	*94*	*95*
Don Pedro	1,413	1,407	1,427	1,491	1,553	1,646	1,745	1,902	2,009	1,904	1,755	1,660
percent of average	*108*	*107*	*107*	*107*	*108*	*111*	*117*	*122*	*124*	*123*	*122*	*121*
Millerton	327	190	207	241	305	421	350	192	475	424	314	247
percent of average	*168*	*87*	*76*	*72*	*89*	*115*	*96*	*48*	*114*	*129*	*133*	*118*
Pine Flat	266	285	340	416	504	583	672	728	905	712	459	357
percent of average	*77*	*77*	*83*	*88*	*95*	*103*	*110*	*101*	*131*	*140*	*121*	*106*
Kaweah	18	14	14	13	23	42	105	144	181	90	21	10
percent of average	*163*	*108*	*91*	*61*	*94*	*105*	*138*	*119*	*169*	*174*	*108*	*82*
Success	6	7	7	9	21	8	30	39	41	23	8	6
percent of average	*75*	*75*	*59*	*53*	*87*	*23*	*69*	*72*	*82*	*68*	*40*	*47*
Isabella	103	102	111	123	145	169	212	254	331	294	212	170
percent of average	*63*	*66*	*70*	*71*	*78*	*84*	*92*	*85*	*106*	*107*	*98*	*91*
Statewide percent of average	**80**	**80**	**75**	**85**	**90**	**90**	**95**	**95**	**105**	**105**	**105**	**105**

Precipitation and Water Supply Indices

Northern Sierra 8-Station Precipitation Index

In the northern Sierra Nevada, precipitation is indexed by averaging rain gauge totals at eight representative stations, creating what is known as the Northern Sierra 8-Station Precipitation Index. The eight stations are: Mount Shasta City, Shasta Dam, Mineral, Quincy, Brush Creek, Sierraville Ranger Station, Blue Canyon, and Pacific House. The 8-Station Index provides a representative sample of the major watersheds (upper Sacramento, Feather, Yuba, and American rivers) and serves as a wetness index for the Sacramento River hydrologic region.

Sacramento River Runoff

Sacramento River runoff is the sum of unimpaired flow in million acre-feet (maf) at the Sacramento River above Bend Bridge, Feather River at Oroville (inflow to Lake Oroville), Yuba River near Smartville, and American River below Folsom Lake. The Sacramento Valley unimpaired runoff represents the natural water production of the Sacramento River basin, unaltered by upstream diversions, storage, or export of water to or import of water from other basins.

Also known as the "Sacramento River Index," this index was previously used to determine year type classifications under State Water Resources Control Board (SWRCB) Water Right Decision 1485. It was also previously referred to as the "4 River Index" or "4 Basin Index."

Eight River Index

This index is the sum of the unimpaired runoff from eight rivers—four in the Sacramento Valley (Sacramento River Runoff) and four in the San Joaquin Valley: the Stanislaus River below Goodwin Dam, Tuolumne River below La Grange, Merced River below Merced Falls, and San Joaquin River below Millerton Lake.

This index determines the duration of the fish and wildlife salinity and flow standards at Chipps Island or Port Chicago from February through June.

Sacramento Valley 40-30-30 Index

SWRCB Water Right Decision 1641 (D-1641) applies the Sacramento Valley Water Year Hydrologic Classification (Sacramento Valley 40-30-30 Index), a water supply forecasting tool, to derive the water year type for the Sacramento Valley. Previously, the Sacramento River Index was used to classify types of water years. SWRCB first introduced the Sacramento Valley 40-30-30 Index in the 1991 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan), and continued using it with the 1995 Bay-Delta Plan. D-1641 implements portions of the 1995 Bay-Delta Plan with respect to the operation of the State Water Project and the Central Valley Project. The Sacramento Valley 40-30-30 Index is used to determine the Sacramento Valley water year type for the purpose of implementing water quality objectives defined in D-1641. It also provides an estimate of the potential water supply originating in the basin from rainfall and snowmelt runoff, groundwater accretion, and reservoir carryover storage. The Sacramento Valley 40-30-30 Index incorporates seasonal differences in water contribution for the year

and includes the prior year's conditions in order to establish a more reliable index of water availability. The 40-30-30 factors represent the percentage weight given to the following:

(1) 40%—the current year's April through July Sacramento Valley unimpaired runoff;

(2) 30%—the current year's October through March Sacramento Valley unimpaired runoff; and

(3) 30%—the previous year's index with a cap of 10 maf (to account for required flood control reservoir releases during wet years).

The water year type is determined by the index value on a scale specific to the Sacramento Valley (as defined in D-1641).

Classification	Index (maf)
Wet	Equal to or greater than 9.2
Above Normal	Greater than 7.8 and less than 9.2
Below Normal	Equal to or less than 7.8 and greater than 6.5
Dry	Equal to or less than 6.5 and greater than 5.4
Critical	Equal to or less than 5.4

Water year types are set by the first-of-the-month forecasts beginning in February, and the Sacramento Valley 40-30-30 Index May 1 forecast determines the final water year type for implementing water quality and flow requirements contained in D-1641. The D-1641 objectives are conditioned by water year type and generally become less stringent during dryer years.

San Joaquin Valley 60-20-20 Index

D-1641 uses a similar method to determine the water year type for the San Joaquin Valley. The San Joaquin Valley Water Year Hydrologic Classification (San Joaquin Valley 60-20-20 Index) uses (1) the current year's April through July San Joaquin Valley unimpaired runoff (60 percent); (2) the current year's October through March San Joaquin Valley unimpaired runoff (20 percent); and (3) the previous year's San Joaquin Valley 60-20-20 Index (20 percent, with a cap of 4 maf to account for required flood control reservoir releases during wet years).

The water year type is determined by the index value on a scale specific to the San Joaquin Valley (as defined in D-1641).

Classification	Index (maf)
Wet	Equal to or greater than 3.8
Above Normal	Greater than 3.1 and less than 3.8
Below Normal	Equal to or less than 3.1 and greater than 2.5
Dry	Equal to or less than 2.5 and greater than 2.1
Critical	Equal to or less than 2.1

The San Joaquin Valley 60-20-20 Index May 1 forecast determines the water year type for D-1641 San Joaquin River Vernalis flow standards.

At the end of October, water year runoff totals were 122, 409, and 142 percent of average for the Sacramento River, San Joaquin River, and Tulare Lake regions, respectively. By the end of December, runoff totals for the new water year were 151, 323, and 281 percent of average, respectively, for the same three regions.

State Water Project Storage

SWP operates a complex system of dams, canals, and reservoirs to collect and store water for future deliveries. Lake Oroville is the first of two primary SWP conservation facilities. Lake Oroville inflow comes from tributaries of the Feather River.

The San Luis Reservoir is the second of the two primary SWP conservation facilities. This Central California joint-use 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 2009–2010 Storage Totals

At the end of the 2009–2010 water year, water storage in major SWP reservoirs and the State's share of joint-use reservoirs was 2.81 million acre-feet (maf) or 52 percent of maximum storage, compared to 2.14 maf or 39 percent of maximum storage at the end of water year 2008–2009. The average end-of-month total storage for the 2009–2010 water year in major SWP reservoirs was 2.85 maf. End-of-water-year storage on September 30, 2010, at Lake Oroville was 1.75 maf, which was about 0.41 maf more than the previous water year. The State's share of San Luis Reservoir storage at the end of the 2009–2010 water year was 414,277 acre-feet (af), compared with 223,495 af in the previous water year. The combined storage in southern reservoirs was 555,202 af on September 30, 2010, compared with 498,007 af at the end of the 2008–2009 water year.

Calendar Year 2010 Storage Totals

The total storage in major SWP reservoirs was about 3.58 maf at the end of 2010, compared with 1.93 maf in 2009. The State's share of San Luis Reservoir storage was 802,515 af on December 31, 2010, compared with 343,234 af at the same time in 2009. (The storage totals for 2009 that were published in Bulletin 132-10 have been updated. The total storage amount of 2.35 maf has been updated to 1.93 maf, and the State's share of San Luis Reservoir storage amount of 760,213 af has been updated to 343,234 af.) The combined storage in the southern reservoirs was 601,004 af on December 31, 2010, compared with 555,601 af at the same time in 2009.

Lake Oroville

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

Water Year 2009–2010 Inflow

Lake Oroville inflow for the 2009–2010 water year totaled about 3.24 maf, which was 79 percent of the average (4.11 maf) over the last 30 water years. Maximum daily inflow occurred on April 28, 2010, at 35,993 af. Minimum daily inflow occurred on November 16, 2009, at 230 af. Peak monthly total inflow occurred in May at 546,672 af, 16.9 percent of the water year total. The

maximum total in the last 30 water years (1980–2010) was in water year 1982–1983 at 8,853,572 af. The minimum total in the same period was in water year 1991–1992 at 1,555,774 af.

Calendar Year 2010 Inflow and Storage

Figure 8-2 shows monthly Lake Oroville inflow for calendar years 2008, 2009, and 2010. Total Lake Oroville inflow during the calendar year was 3,959,132 af.

Figure 8-3 shows historical maximum and minimum cumulative Lake Oroville inflow for calendar years 1983 and 1994, and current cumulative inflow for 2010.

Minimum storage occurred on January 11, 2010, at 1,009,670 af, 29 percent of lake capacity. Maximum storage occurred on June 30, 2010, at 2,719,222 af, 77 percent of lake capacity. End-of-year Lake Oroville storage was 2,180,369 af. Figure 8-4 compares end-of-month storage in Lake Oroville for the 2009 and 2010 calendar years, reflecting total monthly minimum and maximum storage.

2009–2010 Water Year San Luis Reservoir Operations

San Luis Reservoir is operated jointly by DWR and the Bureau of Reclamation pursuant to operating procedures 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 April 1, 2010, at 1,715,230 af, 85 percent of its normal maximum operating capacity. At the beginning of the water year, San Luis Reservoir contained 418,344 af, 21 percent of its capacity. SWP storage share at the beginning of the water year was 218,442 af. The highest end-of-month SWP share of water storage for the 2009–2010 water year occurred on March 31, 2010, at 834,324 af. (See Figure 8-5.)

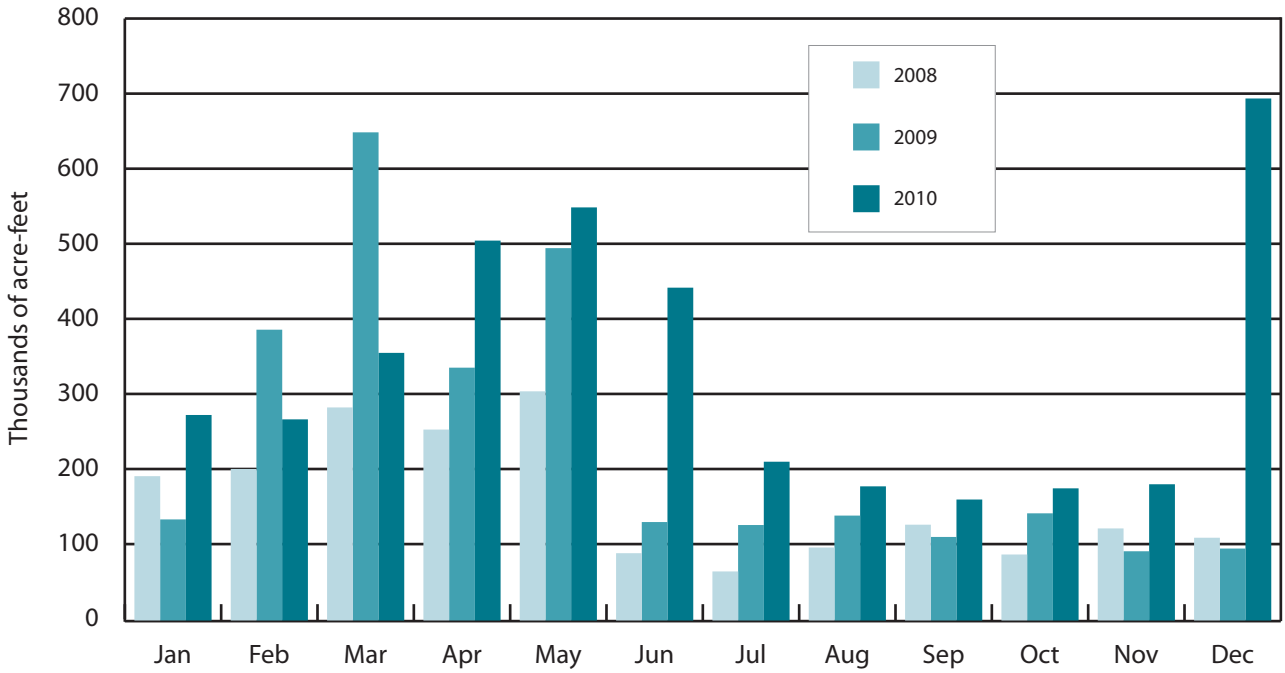

Figure 8-2 Monthly Inflow into Lake Oroville from the Feather River, 2008–2010 Calendar Years

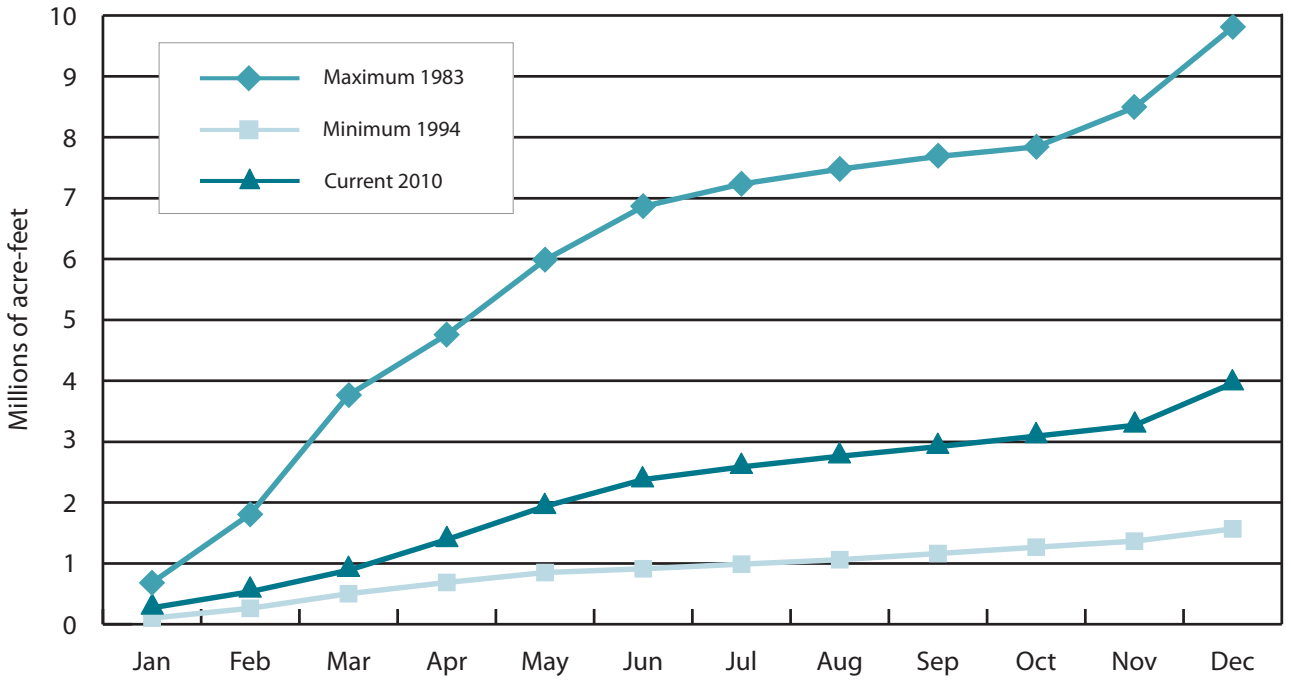

Figure 8-3 **Cumulative Last 30-year (1980–2010) Maximum, Minimum, and Current Lake Oroville Inflow, Calendar Years 1983, 1994, and 2010**

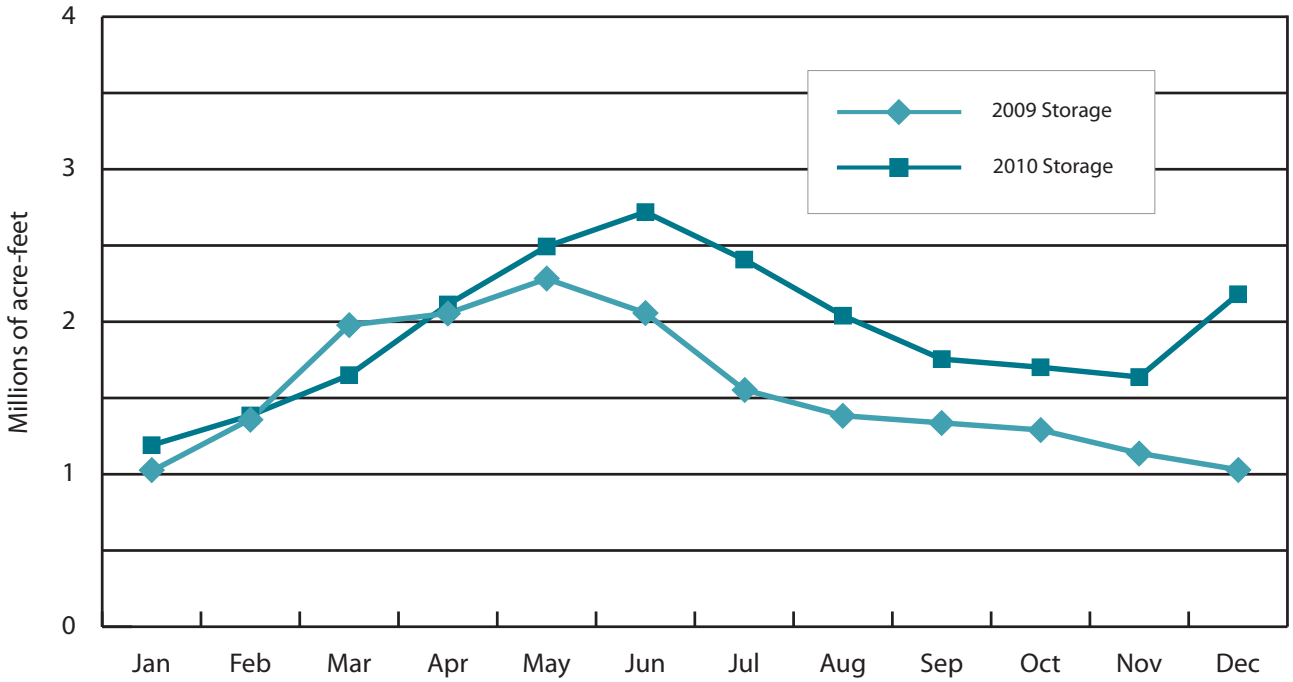

Figure 8-4 **End-of-Month Storage in Lake Oroville, 2009 and 2010 Calendar Years**

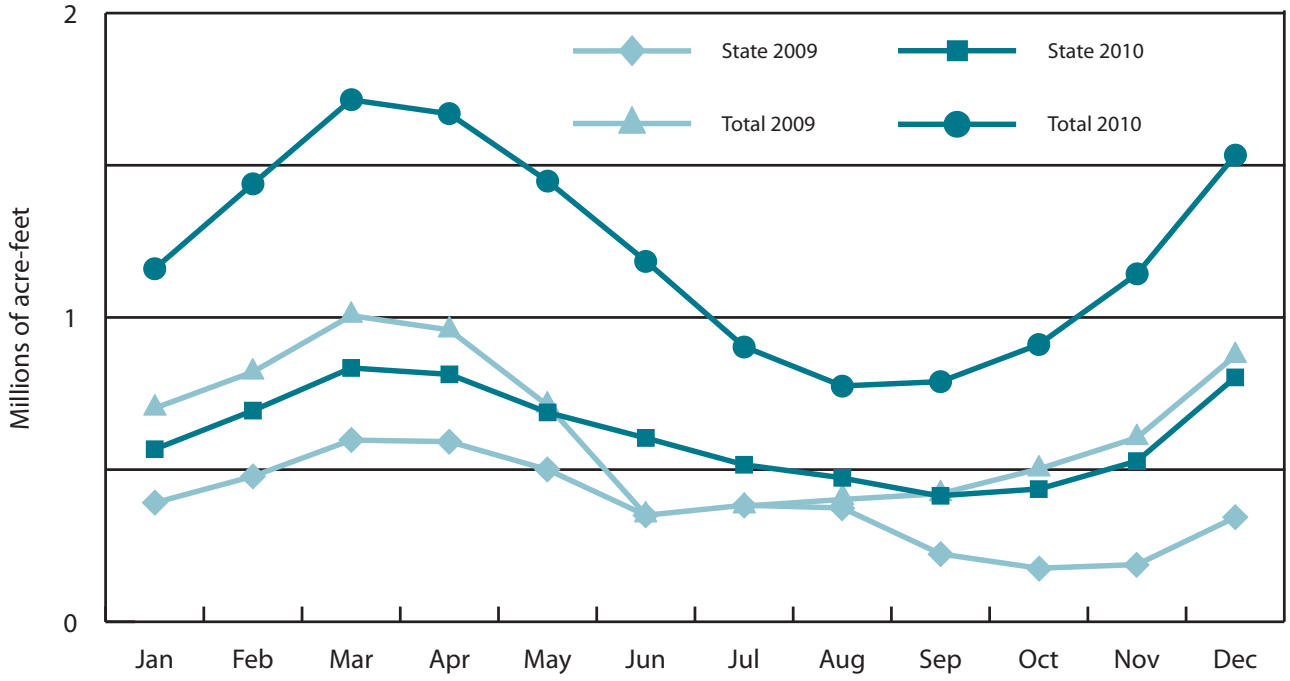

Figure 8-5 **End-of-Month Storage in San Luis Reservoir, 2009 and 2010 Calendar Years**

2009–2010 Water Year Lake del Valle Operations

Lake del Valle, located off the South Bay Aqueduct, functions primarily as a storage facility for water delivery to Santa Clara and Alameda counties. At the beginning of the water year, Lake del Valle held 36,608 af, which was about 47 percent of its maximum capacity of 77,111 af. Its highest storage during the 2009–2010 water year occurred on April 14, 2010, at 41,649 af. Its lowest storage occurred on December 22, 2009, at 28,223 af.

By the end of the water year, on September 30, 2010, storage in Lake del Valle was 36,194 af, 47 percent of its maximum capacity of 77,106 af. There was 23,023 af of natural inflow into Lake del Valle, and no inflow from the South Bay Aqueduct. There were 9,344 af of floodgate releases to Arroyo Valle, and releases for the water year to the South Bay Aqueduct from Lake del Valle totaled 11,270 af.

2009–2010 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 SWP contractors.

At the beginning of the water year, these reservoirs held 498,007 af, which is 72 percent of their combined normal maximum operating capacity of 689,021 af. At the end of the water year, the reservoirs held 555,202 af, 81 percent of combined normal maximum operating capacity.

Diversions from the Delta

SWP diverts water from the Sacramento-San Joaquin Delta, through the Banks and Barker Slough pumping plants, for delivery to SWP water contractors' storage facilities.

In 2010, the SWP diverted 2,959,949 af at Banks Pumping Plant. There was 45,300 af of Cross Valley Canal water and 56,387 af of Central Valley Project (CVP) water wheeled at Banks Pumping Plant by DWR during 2010. The CVP diverted 2,317,424 af at Jones Pumping Plant and 77,582 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 2010 at Banks Pumping Plant. Figure 8-7 shows the monthly amounts of water diverted from the Delta in 2010 by the SWP and CVP. The CVP diverts water to similar areas from the Delta through Jones 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 2010, the North Bay Aqueduct received 44,042 af of 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 calendar year 2010. The monthly total amount pumped at Dos Amigos Pumping Plant peaked in July 2010 at 592,465 af for the calendar year.

Maximum daily Delta exports occurred on December 28, 2010, at 25,260 af. Combined SWP and CVP monthly Delta exports in 2010 varied from a low of 89,057 af in April, to a high of 675,874 af in August. In 2010, Delta exports totaled approximately 5.48 maf.

In 2010, water pumped through the Edmonston Pumping Plant for delivery to Southern California totaled 1,424,907 af. Figure 8-9 shows the amount of water pumped each month in 2010.

Additional water supply information can be found on DWR's website.

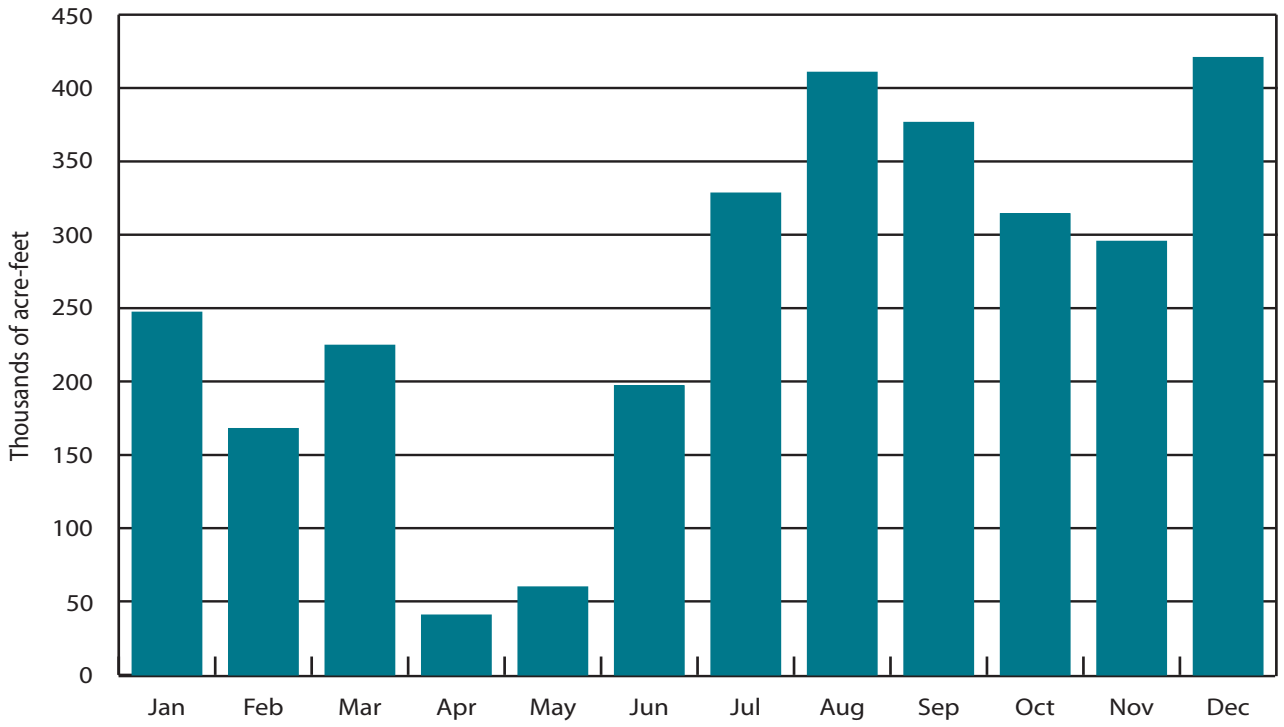

Figure 8-6 **Water Pumped at Banks Pumping Plant, 2010 Calendar Year**

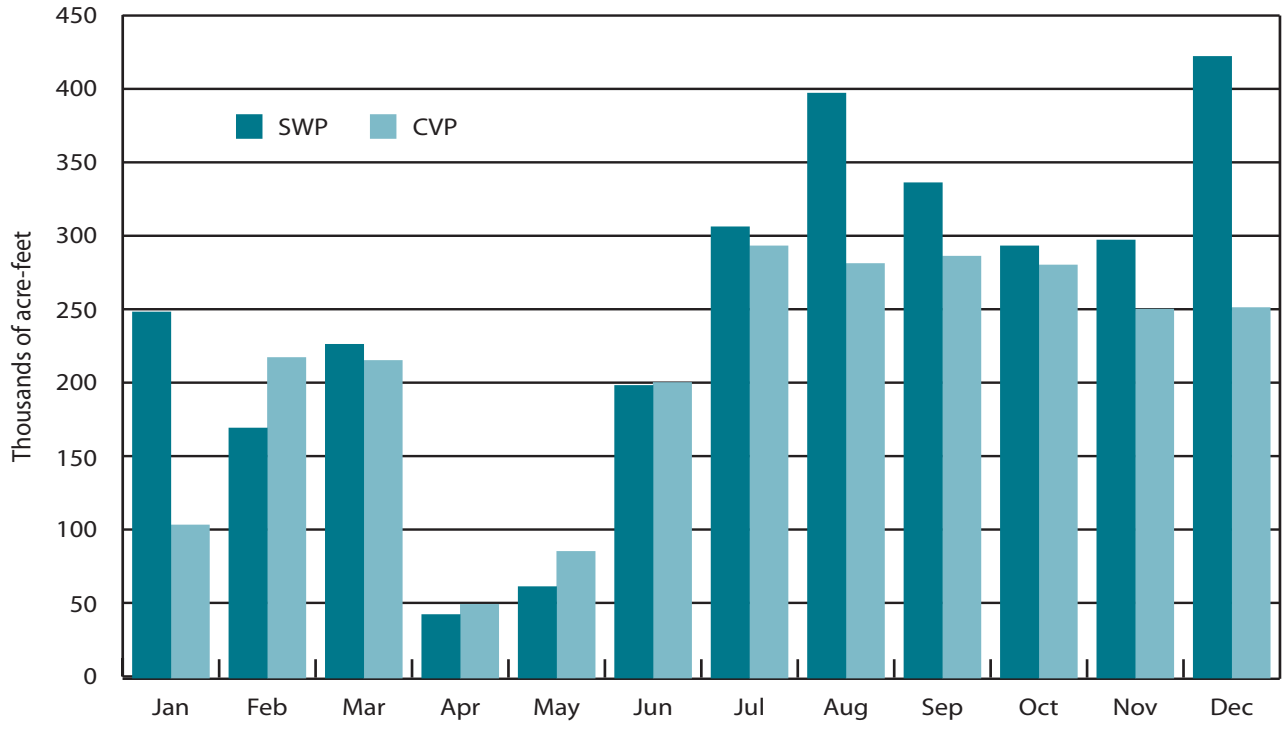

Figure 8-7 **Sacramento-San Joaquin Delta Exports by State Water Project and Central Valley Project, 2010 Calendar Year**

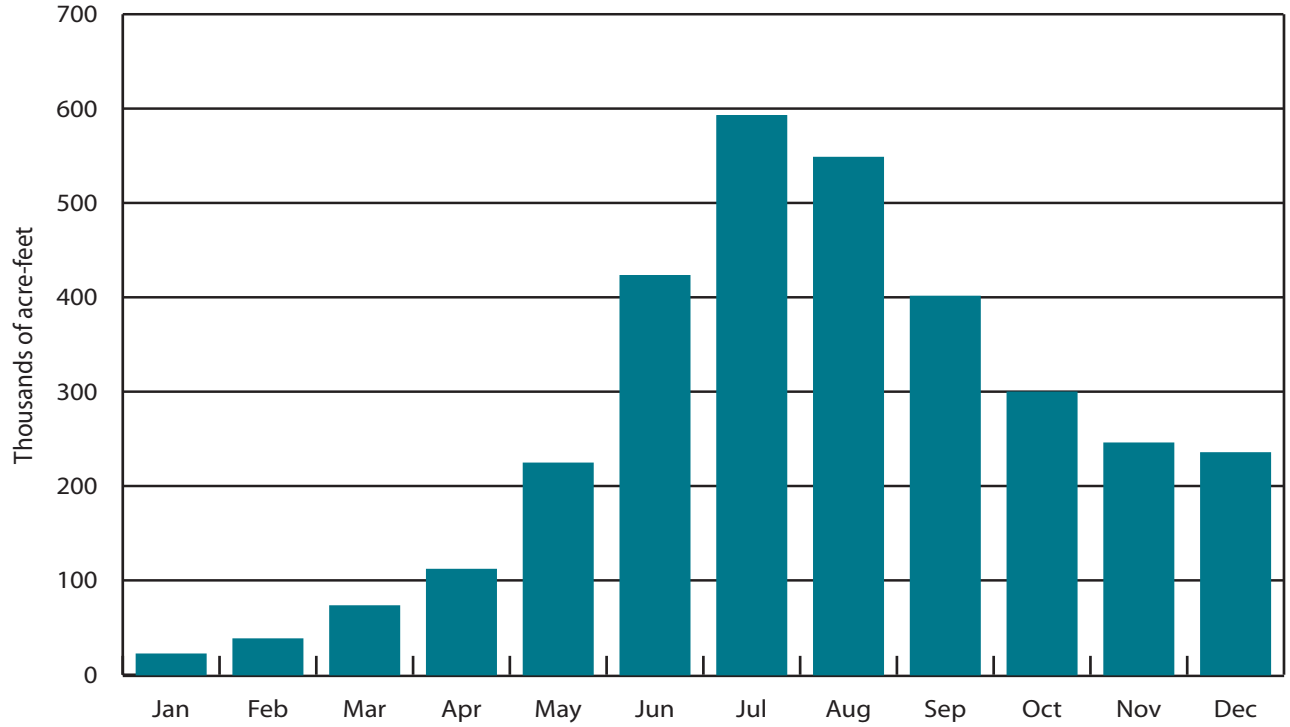

Figure 8-8 Water Pumped at Dos Amigos Pumping Plant, 2010 Calendar Year

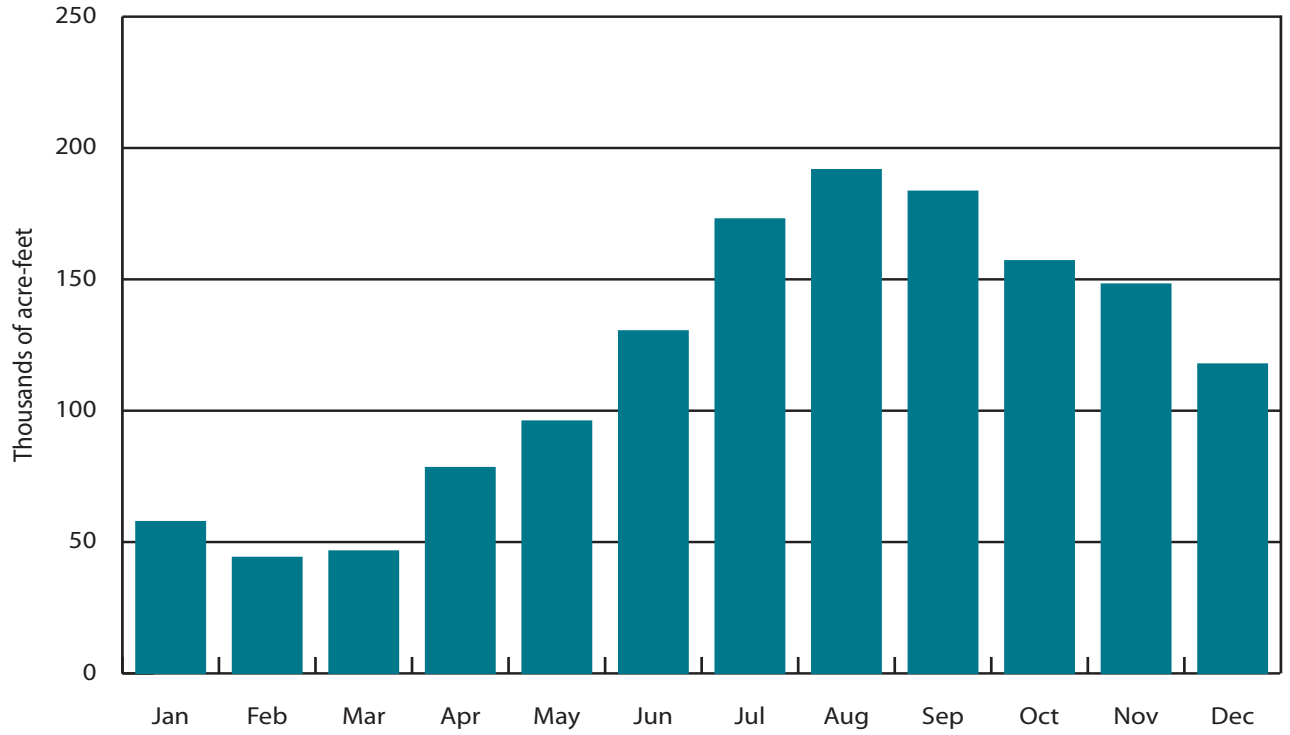

Figure 8-9 Water Pumped at Edmonston Pumping Plant, 2010 Calendar Year

Chapter 9
Water Contracts and Deliveries

East Branch of the California Aqueduct.

Significant Events in 2010

The hydrologic conditions were classified as "below normal" in the Sacramento River watershed and "above normal" in the San Joaquin River watershed in 2010. As a result, the Department of Water Resources (DWR) approved only 50 percent of the State Water Project (SWP) water contractors' Table A allocation requests totaling 2,086,000 acre-feet (af).

Two SWP water contractors recovered a total of 102,156 af from various water banking programs during 2010. In order to help meet water demands, a total of 88,305 af was delivered to their respective service areas. The remaining amount, 13,851 af, was temporarily stored in SWP facilities.

As a participant in the Flexible Storage Program, The Metropolitan Water District of Southern California (Metropolitan) withdrew a total of 43,395 af from Castaic Lake.

In 2010, Amendment Number 3 to the Lower Yuba River Accord Water Purchase Agreement was executed on April 22, 2010, to address market pricing issues for groundwater substitution water.

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

The long-term water supply contracts between the Department of Water Resources (DWR) and 29 public agencies and local water districts provide for water service from the State Water Project (SWP) and are the basis for the SWP's construction and ongoing operations. The State provides SWP financing, capital construction, improvements, and all operations and maintenance of SWP facilities, and the agencies and local districts have contractually agreed to repay all associated costs.

The water supply contracts also set forth the maximum amount of water a contractor may request each year from the SWP, and these water amounts are written within the contracts in a list format known as Table A. "Table A" or "Table A water" represents a portion or all of the annual Table A requested by SWP water contractors and approved for delivery by DWR based on hydrologic conditions, current reservoir storage, and combined requests from the SWP water contractors. Under certain conditions, DWR is not able to deliver the quantity of water requested by contractors. In these years, a proportional 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. Table A amounts may also be used as a factor to allocate other available water supplies to each contractor. Approved Table A amounts may also be referred to in this chapter as "approved amounts," "approved water," or "allocated water."

The long-term water supply contracts are amended as needed. During 2010, no amendments were executed.

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 SWP facilities and turnouts/turnins. These agreements are also 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, referred to as SWPAO numbers, are designated in Chapter 9 text as "SWPAO #XXXXX" and are located in parentheses after each contract, amendment, or agreement description. 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 long-term water supply contracts signed by DWR, public agencies, and local water districts have been previously amended to incorporate mutually desired changes. Most amendments fall under the following general categories:

(1) permanent transfers of Table A amounts from one SWP water contractor to another;
(2) allocation of costs and benefits for the addition or enlargement of SWP facilities;
(3) purchase of excess capacity in the California Aqueduct; and
(4) provisions to implement Monterey Agreement principles.

State Water Project Long-term 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 the Department of Water Resources (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 acre-feet (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 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.

2010 Amendments to Long-term Water Supply Contracts

There were no amendments to the long-term water supply contracts in 2010.

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, Bulletin 132-95, found on the DWR website.

Plumas County Flood Control and Water Conservation District (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 was released in October 2007 and is available online at DWR's website. The final EIR was released in February 2010 and a notice of determination to proceed with the project was filed in June 2010. DWR's decision was to continue to operate the SWP under the existing Monterey Amendments pursuant to the SWP long-term water supply contracts, including the Kern Water Bank transfer, and under the settlement agreement entered in the Planning and Conservation League (PCL) v. DWR. DWR's decision was challenged by two groups of plaintiffs on issues relating to the adequacy of the EIR and the validity of the Monterey Amendments. The cases are currently being heard by the trial court. Final resolution of the issues is likely to take a number of years.

The settlement agreement is discussed in detail in Chapter 9, Water Contracts and Deliveries, Bulletin 132-04 (available online at DWR's website).

See Chapter 6, Legislation and Litigation, for the current status of the Monterey Amendment litigation.

Miscellaneous Agreements with Long-term SWP Water Contractors

2010 Water Conveyance and Exchange Agreements

Water conveyance and exchange agreements that were executed or pending execution with long-term SWP water contractors during 2010 are described below.

Alameda County Flood Control and Water Conservation District, Zone 7

A long-term change in point of delivery agreement executed August 9, 2010, among DWR, Alameda-Zone 7, and Kern County Water Agency (Kern), provides for the delivery of a portion of Alameda-Zone 7's approved SWP water supplies for storage in the Semitropic Groundwater Banking and Exchange Program and for the future return of the stored water, less losses, to Alameda-Zone 7 by December 31, 2035. During 2010, 2,700 af (see Table 9-1) of Alameda-Zone 7's Table A water was conveyed to storage under this agreement. (SWPAO #04017)

Coachella Valley Water District

A letter agreement dated December 15, 2010, and executed December 17, 2010 among DWR, Coachella Valley Water District (Coachella), and Kern provides for the conveyance of water by DWR, under Article 55 of Coachella's long-term water supply contract, for up to 8,393 af of nonproject water acquired from Kern's service area to Coachella's service area via an exchange agreement with The Metropolitan Water District of Southern California (Metropolitan). DWR conveyed 8,393 af in 2010 under this agreement. (SWPAO #10032)

Crestline-Lake Arrowhead Water Agency

A letter agreement dated July 21, 2010, and executed on July 29, 2010, among DWR,

Crestline-Lake Arrowhead Water Agency (Crestline), and San Gorgonio Pass Water Agency (San Gorgonio) provides for the exchange of up to 1,000 af of Crestline's 2010 Table A water with San Gorgonio. This transfer was requested for more efficient water management with no monetary consideration. San Gorgonio will return an equal amount of its Table A water to Crestline by December 31, 2020. During 2010, a total of 1,000 af of Crestline's Table A was delivered to San Gorgonio. (SWPAO #10020)

An amendment dated December 14, 2009, and executed on February 16, 2010, extends the term for recovery of water to December 31, 2018, for the letter agreement dated December 17, 2008, and executed December 22, 2008, among DWR, Crestline, and San Bernardino Valley Municipal Water District (San Bernardino). The agreement provided for an exchange of up to 1,000 af of Crestline's 2008 Table A water to San Bernardino by December 31, 2008. Under the amendment, San Bernardino is to return its future Table A supply by a lesser amount, if certain groundwater conditions exist, than the stated 1:1 af exchange with no monetary consideration to Crestline by December 31, 2018. During 2008, 1,000 af of Crestline's Table A water was conveyed to San Bernardino and no water has been returned through 2010. (SWPAO #08063-A and #08063)

Dudley Ridge Water District

A point of delivery agreement executed February 9, 2010, among DWR, Dudley Ridge Water District (Dudley Ridge), and Kern provides for a portion of Dudley Ridge's approved SWP water to be delivered to Kern's service area for storage in the Semitropic Groundwater Banking and Exchange Program. The agreement allows delivery to storage in the groundwater bank through December 31, 2020, and return of stored water by December 31, 2035. No water was conveyed under this agreement in 2010. (SWPAO #09002)

A multiyear exchange agreement was executed on September 14, 2010 among DWR, Dudley Ridge, and San Gabriel Valley Municipal Water District (San Gabriel) for conveyance of Dudley Ridge's approved SWP water to San Gabriel effective January 1, 2010, through December 31, 2020. San Gabriel will provide for the return of its approved SWP water in future years through December 31, 2030. Terms and conditions of this agreement also covered Table A water provided for conveyance to San Gabriel during 2008 from Dudley Ridge. During 2010, 4,780 af of Dudley Ridge's Table A water was conveyed to San Gabriel. (SWPAO #10013)

A letter agreement dated May 11, 2010, and executed on May 28, 2010, among DWR, Dudley Ridge, and Kern approved the transfer of up to 18,000 af of Dudley Ridge's 2010 Table A water to be delivered to Kern on behalf of Sandridge Partners, a landowner who farms in both the Dudley Ridge and Kern service areas. Sandridge Partners will transfer up to 5,000 af to Belridge Water Storage District, up to 1,000 af to Berrenda Mesa Water District, up to 10,000 af to Lost Hills Water District, and up to 2,000 af to Semitropic Water Storage District (Semitropic), all member units of Kern. During 2010, a total of 10,317 af was delivered under this agreement. (SWPAO #10014)

A letter agreement dated November 16, 2010, and executed November 19, 2010, among DWR, Dudley Ridge, and Kern approves the delivery of up to 965 af of Kern's 2010 Table A water to Dudley Ridge in exchange for an equal amount of pre-1914 water rights water from St. Johns Water District to Kern. In 2010, 965 af was delivered to Dudley Ridge under this agreement and this agreement is complete. (SWPAO #10024)

A conveyance agreement executed on September 13, 2010, among DWR, Dudley Ridge, and Merced approves the conveyance of up to 15,000 af of water through the SWP to Dudley Ridge's service area. Merced petitioned the State Water Resources Control Board (SWRCB) for a change in place of use under its water rights permits. The SWRCB issued order WR-2010-0027-DWR approving the change on September 2, 2010. A total of 638 af of Merced water was delivered to Dudley Ridge in 2010. (SWPAO #10181)

Empire-West Side Irrigation District

A contract executed March 29, 2010, between DWR and Empire-West Side Irrigation District (Empire) provides for delivery of unscheduled water to Empire in 2010 at times when SWP water is not needed for fulfilling Table A deliveries or for meeting project operational commitments. No unscheduled water was available for delivery to Empire during 2010. (SWPAO #10001)

A letter agreement dated April 14, 2010, and executed on April 27, 2010, between DWR and Empire approved the transfer of up to 2,000 af of Empire's 2010 Table A water and 2009 Carryover water to Westlands Water District (Westlands). The transfer was made on behalf of landowners, Brooks Farms and Newton Brothers, who farm in both Empire's and Westlands' service areas. DWR petitioned SWRCB for a temporary change in place of use. The SWRCB issued Order WR-2010-0017-DWR approving the petition on May 5, 2010. During 2010, a total of 431 af of Empire's Table A and Carryover water was delivered to Westlands. (SWPAO #10010)

Kern County Water Agency

An introduction of local water into the California Aqueduct agreement executed October 12, 2010, among DWR, Kern, and Semitropic, approved the introduction of Kern's local water into the California Aqueduct at Reach 10A (Semitropic No. 3 Turnin/Turnout) at Milepost 206.99. During 2010, no water was introduced under this agreement. (SWPAO #08005)

An agreement executed on February 8, 2010, among DWR, Kern, and Kern Water Bank Authority (KWBA) approved the introduction of Kern's local water into the California Aqueduct using the KWBA turnout at Reach 13B at Milepost 238.19. During 2010, no water was introduced under this agreement. (SWPAO #08006)

A letter agreement dated January 20, 2010, was executed February 4, 2010, between DWR and Kern provided for a transfer of up to 18,750 af of Kern's 2009 Table A water to San Luis Water District (San Luis) and Westlands. In exchange, an equal amount of Central Valley Project (CVP) water would be delivered to Kern from various CVP contractors. The purpose of this agreement was to facilitate a transfer among CVP contractors via Kern, due to there being no direct conveyance facilities among the participating CVP contractors. In 2009, 18,453 af was transferred to Kern under this agreement. This agreement terminated on October 31, 2010, and is consistent with the Governor's Executive Order #S-06-08 due to drought conditions. (SWPAO #09077)

A letter agreement dated February 23, 2010, and executed March 23, 2010, between DWR and Kern, approved the conveyance of up to 50,000 af of Westlands' CVP water to Semitropic Groundwater Banking and Exchange Program through February 28, 2010, and for the future return of the water to Westlands by December 31, 2020. No water was conveyed to the groundwater bank in 2010 under this agreement and the agreement has been terminated. (SWPAO #09080)

A letter agreement dated November 15, 2010, was executed on November 19, 2010, between DWR and Kern provided approval for the conveyance of up to

50,000 af of Westlands 2010–2011 CVP water to Semitropic, a member unit of Kern, for storage and future return of a like amount of water to Westlands by December 31, 2021. The Bureau of Reclamation (Reclamation) will make Westlands' CVP water available at O'Neill Forebay for conveyance by DWR under Article 55 of Kern's long-term water supply contract to Semitropic. No water was moved under this agreement in 2010. (SWPAO #10022)

A letter agreement dated December 15, 2010, and pending execution between DWR and Kern, provides for the delivery of up to 7,000 af of Kern's 2010 Table A water for use at the Kern National Wildlife Refuge on behalf of Reclamation. In turn, Reclamation will provide Friant-Kern water at O'Neill Forebay. In 2010, 7,000 af was delivered under this agreement. (SWPAO #10026)

A conveyance agreement executed on September 13, 2010, among DWR, Kern, and Merced approved the conveyance of up to 15,000 af of water through the SWP to Kern's service area. Merced petitioned the SWRCB for a change in place of use under its water rights permits. The SWRCB issued order WR-2010-0027-DWR approving the change on September 2, 2010. A total of 12,457 af of Merced water was delivered to Kern in 2010. (SWPAO #10182)

Littlerock Creek Irrigation District

A letter agreement is pending execution among DWR, Littlerock Creek Irrigation District (Littlerock), and Antelope Valley-East Kern Water Agency (AVEK) for an exchange of up to 1,150 af of Littlerock's 2010 Table A on a 1:1 af basis for AVEK's future allocated Table A to be returned by December 31, 2020. In 2010, 1,150 af was conveyed to AVEK under this agreement. (SWPAO #10035)

The Metropolitan Water District of Southern California

A letter agreement dated July 20, 2010, and executed on July 23, 2010, among DWR, Metropolitan, and Santa Clara Valley Water District (Santa Clara) provided for the delivery of up to 37,700 af of Metropolitan's nonproject water to Santa Clara in exchange for the delivery of an equal amount of Santa Clara's approved SWP water supply to Metropolitan. This exchange completed the return of Metropolitan's nonproject water stored in Shasta Reservoir under the 2003 Reclamation/Metropolitan Water Exchange Agreement. Metropolitan's nonproject water was conveyed to Santa Clara by DWR under Article 55 of Santa Clara's long-term water supply contract. During 2010, 37,700 af of Santa Clara's approved SWP water was delivered to Metropolitan; and 37,700 af of Metropolitan's nonproject water was delivered to Santa Clara, of which 27,707 af was delivered to Santa Clara's turnout in Reach 9 of the South Bay Aqueduct and 9,993 af was delivered to San Luis Reservoir. (SWPAO #10016)

A letter agreement dated September 16, 2010, and executed on September 21, 2010, approved the delivery of 18,453 af of SWP water supply in San Luis Reservoir. This agreement is the result of an uncompleted exchange described in the agreement between DWR and Kern (see SWPAO #09077). In that agreement, 18,453 af was delivered to Kern from various CVP contractors. San Luis and Westlands were to receive an equal amount of Kern's 2009 Table A water. However, due to reduced and delayed planting, changed hydrologic conditions due to the late spring precipitation in 2010, and increased allocations, San Luis and Westlands were no longer able to receive the water being held in San Luis Reservoir. Metropolitan expressed an interest in acquiring that water. Under this agreement, a total of 18,453 af was delivered to Metropolitan in 2010 and the agreement was terminated. (SWPAO #10023)

A letter agreement dated November 17, 2010, and executed on November 19, 2010, among DWR, Metropolitan, Westlands, and San Luis provided for the conveyance of up to 150,000 af of Westlands and San Luis water to Metropolitan under Article 55 of Metropolitan's long-term water supply contract. The water was previously stored in San Luis Reservoir. Metropolitan will return two-thirds of the amount delivered to its service area, up to 100,000 af, from its future SWP water supplies. The exchange required a change in place of use for the SWP and CVP water rights permits. DWR and Reclamation filed a joint petition for change to consolidate the SWP and CVP places of use south of the Delta in order to facilitate several 2010 water transfers including this exchange. The SWRCB issued Order WR-2010-0032-DWR on November 5, 2010 approving the joint petition for change. A total of 110,692 af of CVP water was provided by Westlands and San Luis to Metropolitan. (SWPAO #10027)

Napa County Flood Control and Water Conservation District

A change in point of delivery agreement executed October 11, 2010, among DWR, Napa County Flood Control and Water Conservation District (Napa), and Solano County Water Agency (Solano) approves the conveyance of up to 500 af per year of the City of Vallejo's Permit Water from Solano's service area to Napa's service area under Article 55 of Napa's long-term water supply contract. The City of Vallejo, a member agency of Solano, has water rights to nonproject water originating from Cache Slough and Lindsay Slough, tributaries of the Sacramento River. This agreement provides the City of Vallejo water through Reach 3B of the North Bay Aqueduct, located within Napa's service area. This agreement is effective though December 31, 2035. No water was conveyed under this agreement during 2010. (SWPAO #10005)

Santa Clara Valley Water District

A point of delivery agreement executed December 30, 2010, among DWR, Santa Clara, and Kern provides for a portion of Santa Clara's approved SWP water to be delivered to Kern's service area for storage in the Semitropic Groundwater Banking and Exchange Program. The agreement allows delivery to storage in Semitropic through December 31, 2020, and return of stored water, less losses, by December 31, 2035. During 2010, 5,461 af of Santa Clara's Table A and 6,239 af of Article 56 for a total of 11,700 af was delivered to Semitropic (see Table 9-1). (SWPAO #10012)

A letter agreement dated September 13, 2010, and executed October 15, 2010, between DWR and Santa Clara approves the conveyance of up to 3,100 af of pre-1914 water rights water made available by Browns Valley Irrigation District to Santa Clara under Article 55 of its long-term water supply contract. Browns Valley released water into the Yuba River for subsequent export at Banks Pumping Plant, minus 20 percent Delta carriage water losses. In 2010, a total of 2,480 af was delivered to Santa Clara under this agreement. (SWPAO #10017)

A letter agreement is pending execution among DWR, Santa Clara, and Kern to provide for delivery of up to 40,000 af of Santa Clara's 2010–2011 CVP water to Kern's service area for storage in Semitropic by February 28, 2011, and the future return of a like amount of water. Reclamation will make Santa Clara's CVP water available at O'Neill Forebay for conveyance to Semitropic by DWR pursuant to Article 55 of Santa Clara's long-term water supply contract. Semitropic shall return a like amount of water, less losses, to Santa Clara by December 31, 2035. During 2010, a total of 38,990 af of Santa Clara's CVP water was delivered to Semitropic. (SWPAO #10029)

Tulare Lake Basin Water Storage District

A letter agreement dated February 23, 2010, and executed March 2, 2010, between DWR and Tulare, approved the transfer of up to 4,000 af of Tulare's 2010 Table A water to Westlands on behalf of Westlake Farms Incorporated. During 2010, a total of 2,100 af was delivered under this agreement. (SWPAO #10002)

A letter agreement dated February 23, 2010 and executed March 23, 2010 among DWR, Tulare, and Kern approved transfer of up to 12,000 af of Tulare's 2010 Table A water to Kern on behalf of JG Boswell Company, a landowner with farms in both Tulare's and Kern's service areas. This transfer allowed Boswell to augment its Kern water supply to meet crop requirements. In 2010, a total of 10,000 af was delivered to Kern under this agreement. (SWPAO #10003)

A letter agreement dated February 4, 2010, and executed on February 19, 2010, between DWR and Tulare approved the transfer of up to 8,000 af of Tulare's 2010 Table A water to Westlands. The transfer was made on behalf of two landowners, Hansen Ranches for up to 6,000 af, and Newton Farms for up to 2,000 af. DWR petitioned the SWRCB for a temporary change in place of use. The SWRCB issued Order WR-2010-0017-DWR approving the petition on May 5, 2010. During 2010, a total of 1,750 af of Tulare's Table A water was delivered to Westlands. (SWPAO #10004)

A letter agreement dated May 10, 2010, and executed on May 28, 2010, among DWR, Kern, and Tulare approved the transfer of up to 3,800 af of Tulare's 2010 Table A water to Kern. The transfer was made on behalf of a landowner, Sandridge Partners Incorporated. During 2010, a total of 1,774 af of Tulare's Table A water was delivered to Kern. (SWPAO #10011)

A letter agreement dated August 5, 2010, and executed August 10, 2010, between DWR and Tulare approved the conveyance of up to 28,225 af of Friant Recirculation Water associated with the San Joaquin River Restoration Program to Tulare under Article 55 of its long-term water supply contract. This non-SWP water was made available at O'Neill Forebay by Reclamation. In 2010, 17,551 af was delivered to Tulare under this agreement. (SWPAO #10021)

A letter agreement dated November 2, 2010, and executed on November 5, 2010, between DWR and Tulare approved the conveyance of up to 15,000 af of 2010 CVP water delivered under Article 55 to Tulare from two Cross Valley Canal contractors, Lower Tule River Irrigation District and Pixley Irrigation District, in exchange for a comparable amount of local river water that will be delivered by Tulare to the districts. During 2010, a total of 9,054 af was delivered to Tulare at Reaches 8C and 8D. (SWPAO #10028)

Water Conveyance and Exchange Agreements Prior to 2010

Castaic Lake Water Agency

By a letter dated June 2, 1994, DWR recognized the long-term agreement, *Wheeling of SWP Water and other Allocated Water to Castaic Lake Water Agency*, between Castaic Lake and Metropolitan for the conveyance of Castaic Lake's SWP water through Metropolitan's Foothill Feeder. Metropolitan will convey Castaic Lake's water to the Rio Vista Water Treatment Plant in Castaic's service area. During 2010, DWR delivered to Metropolitan's turnout facility 14,122 af of Castaic Lake's approved SWP water of which 8,666 af was Article 56(c) water and 5,456 af was Table A water. (SWPAO #94001)

An agreement executed February 5, 2008, among DWR, Castaic Lake, and Kern provided for the long-term

annual conveyance of up to 11,000 af of non-SWP Kern River water from Buena Vista, a member unit of Kern, to Castaic Lake. The Kern River water will be provided to Castaic Lake either by a change in point of delivery of a portion of Kern's Table A water in exchange for a like amount of Buena Vista's water or by direct pump-in to the California Aqueduct. The Kern River water was conveyed under Article 55 of Castaic Lake's long-term water supply contract. A total of 2,750 af was delivered under this agreement during 2010. (SWPAO #07008)

County of Kings

A long-term change in point of delivery agreement, executed March 10, 2006, among DWR, Kings, and Tulare provided for the delivery of up to 200 af of Kings annual Table A water to Westlands turnouts. The water was conveyed to GWF Energy, LLC, for use within Kings County's service area. During 2010, 1 af was delivered to Westlands' turnouts. (SWPAO #02031)

A long-term change in point of delivery agreement, executed March 24, 2004, among DWR, Kings, and Westlands provided for the delivery of up to 5,000 af of Kings annual Table A water through Westlands turnouts for use at Lemoore Naval Air Station. The agreement is effective from January 1, 2004, through December 31, 2035. During 2010, DWR delivered a total of Kings 2,441 af to Westlands turnouts, which included 400 af of Article 56(c) water, and 2,041 af of Table A water. (SWPAO #04005)

A long-term change in point of delivery agreement executed May 6, 2008, among DWR, Kings, and Westlands provided for Kings' approved SWP water to be conveyed to specified Westlands' turnouts in the California Aqueduct. This agreement defines the Westlands' turnouts to be used during the term of the agreement, January 1, 2007, through December 31, 2035. Kings requested the water for use on Westlands' agricultural lands within Kings' service area. During 2010, DWR conveyed 2 af of Turn-Back Pool A water and 14 af of Turn-Back Pool B water of Kings' Table A water through Westlands' turnouts pursuant to this agreement. (SWPAO #07010)

Crestline-Lake Arrowhead Water Agency

A point of delivery agreement executed April 17, 2008, among DWR, Crestline, and San Bernardino provided for an emergency water supply totaling 7,600 af to Lake Arrowhead Community Services District effective from January 1, 2007, through December 31, 2020, or until all water has been delivered pursuant to this agreement. During 2010, Crestline received 26 af from San Bernardino under this agreement. (SWPAO #07025)

Empire West Side Irrigation District

A letter agreement dated March 16, 2009, and executed April 13, 2009, between DWR and Empire West Side Irrigation District (Empire) provided delivery of Table A make-up water. A miscalculation in applying Article 18 to Empire's long-term water supply contract resulted in an under allocation of Table A water for the years 2001, 2002, 2007, and 2008. This agreement corrected the error and the result was 2,702 af of Table A make-up water to Empire. In 2010, 2,702 af was delivered to Empire and the agreement was completed. (SWPAO #09007)

Kern County Water Agency

A long-term point of delivery agreement executed on June 8, 2000, between DWR and Kern, provided approval for the delivery to Western Hills Water District (Western Hills) of a portion of Kern's annual Table A water. In exchange, Kern will take a like amount of banked local water from the Pioneer Groundwater Bank. The SWRCB approved Western Hills' service area to be included within the authorized SWP place of use on April 21, 2000. During 2010, a total of 1,124 af of Kern's Table A water was delivered to Western Hills. (SWPAO #01001)

Mojave Water Agency

A long-term change in point of delivery agreement executed November 13, 1997, among DWR, Mojave, and AVEK, effective through December 31, 2019, allows for delivery of up to 2,250 af of Mojave's annual Table A water to AVEK. Mojave does not have conveyance facilities to provide service to a solar energy generating station located within its service area. AVEK does have conveyance capability and has agreed to provide water service on Mojave's behalf. During 2010, DWR delivered 1,181 af of Mojave's Table A water to AVEK's Fairmont Turnout in Reach 19 of the California Aqueduct. (SWPAO #97003)

A letter agreement dated July 3, 1998, and executed August 25, 1998, provided for the delivery of up to 2,000 af of Solano's 1998 SWP water to Mojave and for the future return of up to 1,000 af of Mojave's SWP water to Solano by 2008. SWPAO #05019 extended the return of Mojave's water to 2010. A total of 1,000 af was delivered to Solano in 2010 to complete this agreement. (SWPAO #98014 & #05019)

A letter agreement dated December 29, 2000, and executed January 16, 2001, provided for delivery of up to 4,000 af of Solano's SWP water to Mojave and for the future return of up to 2,000 af of Mojave's SWP water to Solano by 2010. A total of 1,123 af was delivered to Solano in 2010 to complete this agreement. (SWPAO #00028)

A letter agreement dated November 9, 2004 and executed November 30, 2004 provided for the delivery of up to 2,000 af of Solano's SWP water to Mojave and for the future return of up to 1,000 af Mojave's SWP water to Solano by 2014. In 2010, a total of 877 af was delivered under this agreement. (SWPAO #04023)

Napa County Flood Control and Water Conservation District

A change in point of delivery agreement executed December 26, 2001, among DWR, Napa, and Solano approved the delivery of up to 628 af of Napa's annual Table A water to the City of Vallejo's Water Treatment Plant in Solano's service area. This water is further conveyed to the City of American Canyon, a member agency of Napa. The agreement is effective until December 31, 2035. A total of 70 af of Napa's 2010 Table A water was delivered to Solano's turnouts. (SWPAO #00029)

San Gorgonio Pass Water Agency

A letter agreement dated March 11, 2009, and executed May 4, 2009, among DWR, San Gorgonio, and San Bernardino provided for an exchange of up to 1,000 af of San Gorgonio's 2008 Table A water to San Bernardino by December 31, 2008, and for San Bernardino to return an equal amount to San Gorgonio from its future Table A supply by December 31, 2011. This agreement is a 1:1 af exchange with no monetary consideration. During 2010, San Bernardino made available 400 af of its 2010 Table A water for conveyance to San Gorgonio. (SWPAO #08064)

San Bernardino Valley Municipal Water District

San Bernardino and Metropolitan entered into *Attachment 2, Coordinated Use Agreement for Conveyance Facilities and State Water Project Water Supplies,* on May 14, 2001. By a letter dated February 27, 2002, DWR acknowledged the agreement and the coordinated use of local facilities currently existing within San Bernardino's jurisdictional boundaries. The coordinated use provided for 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. A total of 20,000 af was delivered to Metropolitan in 2010. (SWPAO #02035)

Tulare Lake Basin Water Storage District

A long-term change in point of delivery agreement executed April 5, 2009, among DWR, Tulare, and Dudley Ridge provided for the delivery of a portion of Dudley Ridge's SWP water through Tulare's turnouts, and conversely, a portion of Tulare's SWP water through Dudley Ridge's turnouts. This agreement allows SWP water to be delivered to lands within Dudley Ridge's and Tulare's service areas not otherwise serviceable using their respective conveyance facilities. This agreement is effective through December 31, 2035, and during 2010, 1,544 af was delivered to Tulare using Dudley Ridge's turnout in Reach 8D. (SWPAO #08062)

Introduction of Local Water Agreements

An introduction and conveyance of local groundwater agreement executed August 3, 2009, between DWR and San Luis, allowed up to 1,500 af of San Luis groundwater to be pumped in and subsequently conveyed and delivered to San Luis using the California Aqueduct. This agreement was approved due to dry conditions in 2008 and 2009, and San Luis' compelling need to transfer a portion of its local groundwater supply to landowners near the California Aqueduct. The agreement was effective through February 28, 2010. During 2010, 133 af was conveyed and delivered to San Luis. (SWPAO #09061)

Turnout Agreements

Antelope Valley-East Kern Water Agency

On July 9, 2010, DWR executed an agreement with AVEK for construction, operation, and maintenance of the Big Rock Creek Siphon Turnout, located at Milepost 366.53 of the California Aqueduct. The maximum design capacity of the turnout is 22.3 cubic-feet-per-second (cfs).

County of Butte

On March 8, 2010, DWR executed an amendment to the existing agreement between the County of Butte (Butte) and Del Oro Water Company for modifications to the existing Lime Saddle Marina Turnout, located on Lake Oroville. Modifications include the installation of an additional intake and Supervisory Control and Data Acquisition system, increasing the capacity from 300–360 gallons-per-minute (gpm) to 625 gpm, and additional upgrades to existing facilities.

Kern County Water Agency

On October 28, 2010, DWR executed an agreement between Kern and Tejon-Castac Water District for construction, operation, and maintenance of the Beartrap Turnout, located at Milepost 298.65 of the California Aqueduct. The maximum design capacity of the turnout ranges up to approximately 36 cfs, depending on the operating conditions of the SWP.

Mojave Water Agency

On July 21, 2010, DWR executed an agreement with Mojave for construction, operation, and maintenance of the Highway 395 Turnout, located at Milepost 393.22 of the California Aqueduct. The maximum design capacity of the turnout is 50 cfs.

Reclamation

On May 20, 2010, DWR executed an agreement with Reclamation for construction, operation, maintenance, repair, and replacement of the Delta-Mendota Canal-California Aqueduct Intertie Facilities. The Intertie Facilities connect the Delta-Mendota Canal at Milepost 7.2 to the California Aqueduct at Milepost 9.1, and restores the Delta-Mendota Canal's conveyance capacity and provides operational flexibility between the CVP and the SWP. The design flow of the turnin is 467 cfs pumped from the

Delta-Mendota Canal into the California Aqueduct, whereas the turnout's gravity flow capability is 900 cfs from the California Aqueduct into the Delta-Mendota Canal.

Activities Related to the Monterey Amendments

Storage of Water Outside SWP Contractor Service Area

Pursuant to Article 56(c) of the Monterey Amendments, six SWP water contractors have separate agreements with DWR to convey approved water supplies outside their service areas for storage in existing and operational groundwater storage programs and for future recovery of water to use within their service areas. These types of agreements, effective or pending execution during 2010, are listed in Table 9-1. The change in point of delivery agreements include provisions for conveyance to and from storage, and recovery methods by exchange and/or pump-in to the California Aqueduct. During 2010, a total of 322,672 af was conveyed to storage, including losses, and 102,156 af was recovered from storage. A total of 81,602 af, including losses, was conveyed to the participating contractors' service areas, 6,703 af was provided for flexible storage payback, and the remaining 13,851 af was placed in temporary storage in SWP facilities.

Turn-Back Water Pool Program

Pursuant to Article 56(d) of the Monterey Amendments, the Turn-Back Water Pool Program was initiated through "Notice to State Water Project Contractors, No. 10-01," dated January 4, 2010. All SWP water contractors who have signed the Monterey Amendments were permitted to participate in the program. The program allowed SWP water contractors to offer a portion of their approved 2009 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.

Initial offers for sales of Pool A and Pool B of the Turn-Back Water Pool Program occurred in February and March 2010, respectively, with 1,283 af purchased under Pool A, and 10,088 af purchased under Pool B. Pool A turn-back water sold for $19.05 per af (50 percent of the 2010 Delta Water Rate). Pool B turn-back water sold for $9.52 per af (25 percent of the 2010 Delta Water Rate). The 2010 Turn-Back Water Pool Program closed on June 1, 2010. Notices to State Water Project Contractors describing the Turn-Back Water Pool Program are available online at DWR's website.

Table 9-2 lists SWP water contractors who participated in Pool A and Pool B of the 2010 Turn-Back Water Pool Program.

Article 21 Water Program

Pursuant to the Monterey Amendment, Article 21 water replaces 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 only 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.

Guidelines for the Article 21 Water Program for 2010 are described in the December 14, 2009, "Notice to State Water Project Contractors, No. 09-10," available online at DWR's website. During 2010, Article 21 water was only available to SWP water contractors north of the Delta due to water conditions and storage amounts in San Luis Reservoir. A total of 7,505 af of Article 21 water was made available for Napa to receive 2,207 af and Solano to receive 5,298 af.

Table 9-1 Storage of Water Outside SWP Contractor Service Areas in 2010 (Acre-feet)

Contractor	Contract Status	Storage Provider	Stored (include losses, if any)	From Storage	Return By
Alameda-Zone 7					
SWPAO #99018	Continuing	Semitropic	0	0	2035
SWPAO #00037	Continuing	Semitropic	0	0	2010
SWPAO #01035	Continuing	Semitropic	0	0	2011
SWPAO #02010	Continuing	Semitropic	0	0	2012
SWPAO #03008	Continuing	Semitropic	0	0	2013
SWPAO #04017	Executed 08/09/10	Semitropic	2,700	0	2035
SWPAO #06010	Continuing	Cawelo	9,000	0	2035
Alameda County					
SWPAO #99017	Continuing	Semitropic	0	0	2035
SWPAO #00030	Continuing	Semitropic	0	0	2035
SWPAO #07005	Continuing	Semitropic	0	0	2035
SWPAO #10009	Pending	Semitropic	6,300	0	2035
Castaic Lake					
SWPAO #02015	Continuing	Semitropic	0	4	2012
SWPAO #03060	Continuing	Semitropic	0	0	2014
SWPAO #05016	Continuing	Rosedale-Rio	23,001	0	2035
Dudley Ridge					
SWP Water					
SWPAO #08050	Continuing	Kern Water Bank	274	0	2035
SWPAO #09002	Executed 02/09/10	Semitropic	0	0	2035
Non-SWP Water					
SWPAO #09040	Continuing	Kern Water Bank	0	14,094	2013
Metropolitan					
SWPAO #95010	Continuing	Semitropic	66,600	0	2035
SWPAO #01013	Continuing	Arvin-Edison	93,879	82,137	2035
SWPAO #03019	Continuing	Kern Delta	74,127	3,034	2035
SWPAO #03057	Continuing	Mojave	0	2,891	2015
Santa Clara					
SWP Water					
SWPAO #99016	Continuing	Semitropic	0	0	2035
SWPAO #06031	Continuing	Semitropic	0	0	2035
SWPAO #06032	Continuing	Semitropic	0	0	2035
SWPAO #06011	Continuing	Semitropic	0	0	2035
SWPAO #10012	Executed 12/30/10	Semitropic	11,700	0	2035
Non-SWP Water					
SWPAO #06012	Continuing	Semitropic	0	0	2035
SWPAO #10029	Pending	Semitropic	35,091	0	2035
Total[a]			**322,672**	**102,156**	

[a] Total af indicates all water recovered from various water banks. Some of the recovered water may be temporarily stored in SWP facilities. Amounts include losses, if any.

Table 9-2 2010 Turn-Back Water Pool Program (Acre-feet)

Contractor	Sold	Purchased
	Pool A	
Butte	1,283	
Alameda-Zone 7		27
Alameda County		14
AVEK		48
Castaic Lake		32
Coachella		47
Kings		2
Kings		1
Desert		19
Dudley Ridge		17
Kern		332
Napa		10
Oak Flat		2
San Gorgonio		6
Santa Barbara		15
Santa Clara		34
Metropolitan		647
Tulare		12
Tulare		18
Total	**1,283**	**1,283**
	Pool B	
Butte	10,088	
Alameda-Zone 7		222
AVEK		390
Castaic Lake		263
Coachella		382
Kings		14
Kings		11
Kings		1
Desert		154
Dudley Ridge		139
Kern		2,712
Napa		80
Oak Flat		16
Palmdale		59
Santa Barbara		125
Metropolitan		5,275
Tulare		70
Tulare		175
Total	**10,088**	**10,088**

Flexible Storage Program

Pursuant to Article 54 of the Monterey Amendment, 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 to benefit local water management activities. Participating SWP water contractors are given 5 years to replace stored water withdrawn with approved SWP or non-SWP water.

Flexible storage allows for withdrawal of up to 160,000 af at Castaic Lake and 65,000 af at Lake Perris. SWP water contractors participating in the Castaic Lake Flexible Storage Program include Metropolitan, Ventura County Watershed Protection District (Ventura), and Castaic Lake. Each contractor is allowed to withdraw up to a maximum of 153,940 af, 1,377 af, and 4,683 af, respectively. Metropolitan is the only SWP water contractor allowed to withdraw water from Lake Perris, up to a maximum of 65,000 af.

Metropolitan was the only participant in the Flexible Storage Program in 2010 at Castaic Lake. At the beginning of 2010, Metropolitan owed 0 af to Castaic Lake storage. During 2010, Metropolitan withdrew 45,395 af from storage in Castaic Lake, provided 45,382 af to storage, and ended 2010 owing a 13 af balance. Metropolitan owed 43,766 af to Lake Perris storage. Metropolitan withdrew 0 af, provided 43,766 af to storage during 2010, and ended 2010 owing 0 af to Lake Perris storage.

Extended Carryover Program

Pursuant to Article 56 of the Monterey Amendments, SWP water contractors can elect to store SWP water outside of their service areas and carry it over to the following year for use within their service areas. Qualified contractors can request

Table A water be 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. Twenty SWP water contractors took delivery of 244,549 af of approved 2009 Table A water carried over into 2010, as extended carryover.

2010 SWP Water Contractors' Dry Year Transfer Program

Although water supply conditions improved somewhat in 2010, dry conditions in 2007 through 2009 resulted in very low allocations to the SWP contractors and a depletion of local agency supplies. Several SWP water contractors experienced continued water supply shortages within their service areas. Eight SWP water contractors (SWP buyers) signed an agreement with the State Water Contractors (SWC) to manage supplemental water purchases in 2010. The SWC negotiated transfer agreements with nine agencies in the Sacramento Valley (sellers) for the sale of water to the SWP buyers.

A total of 98,959 af was made available to the SWP buyers from a combination of crop idling, groundwater substitution, and combined reservoir reoperation/ groundwater substitution. See Table 9-3 for a list of agencies that provided transfer water to the SWC purchase program. Only four SWP buyers ultimately elected to purchase transfer water in 2010. DWR executed 36 agreements and 16 amendments with the SWP buyers and sellers for the conveyance of transfer water through SWP facilities. A total of 76,793 af of transfer water was delivered to the SWP buyers after conveyance losses including Delta carriage water losses of 20 percent and aqueduct conveyance losses of 3 percent. See Table 9-4 for a list of the SWP buyers and the quantities delivered at the SWP buyer's turnouts.

Lower Yuba River Accord

The Yuba Accord was announced in 2005 to settle long-standing litigation over instream flows in the Yuba River in relation to fisheries. The purpose of the Yuba Accord is to resolve instream flow issues associated with the operation of the Yuba River Development Project in a way that protects and enhances lower Yuba River fisheries and local water supply reliability. The Yuba River Development Project provides revenues for local flood control and water supply projects, water to enhance SWP and CVP water supply reliability by offsetting Delta export reductions for the protection and restoration of Sacramento-San Joaquin Delta fisheries, and improvements in statewide water supply management, including dry year water supplies for participating SWP and CVP water contractors.

The Yuba Accord is based on three sets of agreements: a water purchase agreement with DWR, including water to help offset Delta export reductions and dry year water for participating SWP and CVP water contractors; conjunctive use agreements with Yuba County Water Agency (Yuba) member units; and a fisheries agreement resolving minimum flows. The Yuba Accord provides for higher releases into the Yuba River to benefit Chinook salmon and steelhead, transfer water to help offset Delta export reductions annually, and dry year transfer water for SWP and CVP water contractors from both surface and groundwater substitution sources.

The required agreements were executed in late 2007 and early 2008, and the SWRCB approved the Yuba Accord on

Table 9-3 2010 Dry Year Transfer Program Seller Activity (Acre-feet)

Sellers	SWPAO #	Transfer Action	Transfer Water Available
Biggs-West Gridley WD	10100-10103	Crop Idling	12,390
Butte WD	10108-10111	Groundwater Substitution	3,385
Butte WD	10108-10111	Crop Idling	10,281
Garden Hwy MWC	10116-10119	Groundwater Substitution	3,592
Richvale ID	10132-10135	Crop Idling	20,766
Sacramento Suburban South WD	10140-10143	Groundwater Substitution	2,801
South Sutter WD	10148-10151	Reservoir Re-operation/GW Sub	9,400
Sutter Extension WD	10156-10159	Groundwater Substitution	2,524
Sutter Extension WD	10156-10159	Crop Idling	6,159
Tule Basin Farms (Giusti Ranch)	10164-10167	Groundwater Substitution	3,098
Western Canal WD	10172-10175	Crop Idling	24,564
Total			**98,959**

Table 9-4 2010 Dry Year Transfer Program Buyer Activity (Acre-feet)

Buyers	Water Available to Buyer	Estimated Losses[a, b]	Net Water Delivered
AVEK	1,000	224	776
Dudley Ridge	700	157	543
Kern	9,100	2,037	7,063
Metropolitan	88,159	19,748	68,411
Total (rounded)	**98,959**	**22,166**	**76,793**

[a] A 20 percent carriage cost was assessed for water conveyed through the Delta.
[b] An additional 3 percent assessed for Delta Conveyance losses based on the reach to which the water was being delivered.

March 25, 2008, setting the flow schedules for the river and authorizing accord-based water transfers through 2025. During that same period, DWR completed the execution of 22 agreements for dry year supplies for participating SWP and CVP water contractors under the accord. A total of 166,086 af was transferred to DWR and participating SWP and CVP water contractors under the accord in 2008, a total of 180,000 af was transferred in 2009, and a total of 141,856 af was transferred in 2010.

Table 9-5 summarizes year-end accounting. In 2010, Yuba delivered 60,000 af of Component 1 water to DWR to help offset Delta export pumping reductions to benefit fish. Component 2 was not triggered because 2010 was a dry year. Component 3 water delivered totaled 15,645 af, and Component 4 water totaled 66,211 af. The total deliveries of 141,856 af were comprised of 75,645 af of storage releases (surface flows) and 66,211 af of groundwater substitution water. In addition, 9,977 af of 2010 Yuba Accord water was backed into Lake Oroville in late 2010, but was spilled during flood releases from Lake Oroville later in the winter.

On April 22, 2010, one amendment to the Lower Yuba River Accord Water Purchase Agreement was executed. Amendment Number 3 was executed by all of the parties to address market pricing issues for groundwater substitution water.

Table 9-5 2010 Lower Yuba River Accord Dry Year Water Purchase Program (Acre-feet)

	Total Deliveries		
	Purchased	Estimated Losses	Delivered
Storage Releases (Surface Flows)			
Component 1	60,000	12,000	48,000
Component 2[a]	0	0	0
Component 3	15,645	3,498	12,147
Total	**75,645**	**15,498**	**60,147**
Groundwater			
Component 4	66,211	14,831	51,380
Grand Total	**141,856**	**30,329**	**111,527**

[a] Component 2 is only triggered under dry or critically dry water year classifications.

Table 9-6 details dry year water provided to participating contractors.

Agreements with Non-SWP Agencies

In addition to negotiating agreements with long-term SWP water contractors to provide for specified water deliveries, DWR also enters into agreements with other agencies to provide water conveyance service.

Reclamation—Joint Point of Diversion

DWR conveys CVP water, made available by Reclamation at the Delta, from Banks Pumping Plant to O'Neill Forebay under the Joint Point of Diversion authorized in SWP and CVP water rights. The Joint Point of Diversion allows Reclamation to make up for curtailed water exports from C.W. "Bill" Jones (Jones) Pumping Plant associated with improving conditions for fish in the Delta, or, may allow replacing water exports foregone during maintenance and repair of the Jones Pumping Plant and/or CVP conveyance facilities between the Delta and O'Neill Forebay. In 2010, DWR delivered 56,387 af of CVP water to Reclamation under an agreement effective March 1, 2010, through February 29, 2012. (SWPAO #10312)

Reclamation and Byron-Bethany Irrigation District—Musco Family Olive Company

A pending agreement among DWR, Byron-Bethany Irrigation District (Byron-Bethany), and Reclamation provides for the conveyance of up to 800 af of Byron-Bethany's CVP water to repayment Reach 2A of the California Aqueduct for use by Musco Family Olive Company. DWR delivered a total of 518 af in 2010 under this pending agreement. (SWPAO #04300)

Reclamation and Cross Valley Canal Contractors

Through eight, three-party contracts with Reclamation and Cross Valley Canal (CVC) water contractors, DWR conveys CVP water for CVC water contractors via the California Aqueduct through the CVC turnout at Reach 12E. The following eight CVP water contractors are defined as CVC water contractors: County of Fresno (Fresno), County of Tulare (Tulare), Hills Valley Irrigation District (Hills Valley), Kern-Tulare Water District (Kern-Tulare), Lower Tule

Table 9-6 Lower Yuba River Accord Water Deliveries, 2010 (Acre-feet)

	Purchased	Estimated Carriage and Conveyance Losses[a, b]	Net Amount	Delivered
		Component 1 Water		
EWA	60,000	12,000	48,000	48,000
Total	**60,000**	**12,000**	**48,000**	**48,000**
		Component 3 Water		
Contractor				
Alameda-Zone 7	378	82	296	296
Kings	44	10	34	34
Dudley Ridge	236	53	183	183
Empire	14	3	11	11
Kern	4,611	1,033	3,578	3,578
Oak Flat	27	6	21	21
San Bernardino	481	108	373	373
Santa Clara	469	101	368	368
Metropolitan	8,968	2,009	6,959	6,959
Tulare	417	93	324	324
Total	**15,645**	**3,498**	**12,147**	**12,147**
		Component 4 Water		
Contractor				
Dudley Ridge	1,111	249	862	862
Kern	7,000	1,568	5,432	5,432
Metropolitan	58,100	13,014	45,086	45,086
Total	**66,211**	**14,831**	**51,380**	**51,380**
		Totals		
Contractor				
Alameda -Zone 7	378	82	296	296
Kings	44	10	34	34
Dudley Ridge	1,347	302	1,045	1,045
Empire	14	3	11	11
Kern	11,611	2,601	9,010	9,010
Oak Flat	27	6	21	21
San Bernardino	481	108	373	373
Santa Clara	469	101	368	368
Metropolitan	67,068	15,023	52,045	52,045
Tulare	417	93	324	324
Totals	**81,856**	**18,329**	**63,527**	**63,527**

[a] A 20 percent carriage cost is usually assumed, and is adjusted in September or October, using water quality modeling to determine the applicable costs over the entire season.
[b] An additional 2 percent or 3 percent is usually assumed for Delta Conveyance losses based on the reach to which the water is being delivered

River Irrigation District (Lower Tule), Pixley Irrigation District (Pixley), Rag Gulch Water District (Rag Gulch), and the Tri-Valley Water District (Tri-Valley). Effective January 1, 2009, Rag Gulch consolidated under Kern-Tulare. DWR approved assignment of Rag Gulch's Interim Renewal Contract to Kern-Tulare on April 7, 2009.

Fresno, Tulare, Lower Tule, and Pixley executed contracts in 1975. Hills Valley, Kern-Tulare, Rag Gulch, and Tri-Valley executed contracts in 1976. All eight original contracts terminated on December 31, 1995. In 1995, amendments were executed that extended the termination dates to February 29, 1996, for all contracts. Interim Renewal (IR) contracts have been executed during the ensuing years to extend the termination dates as follows:

- March 1, 1996, through February 28, 1998 (IR 1);
- March 1, 1998, through February 29, 2000 (IR 2);
- March 1, 2000, through November 30, 2000 (IR 3);
- December 1, 2000, through February 28, 2001 (IR 4);
- March 1, 2001, through February 28, 2002 (IR 5);
- March 1, 2002, through February 28, 2003 (IR 6);
- March 1, 2003, through February 29, 2004 (IR 7);
- March 1, 2004, through February 28, 2005 (IR 8);
- March 1, 2005, through February 28, 2006 (IR 9);
- March 1, 2006, through February 28, 2007 (IR 10);
- March 1, 2007, through February 29, 2008 (IR 11);
- March 1, 2008, through February 28, 2010 (IR 12); and
- March 1, 2010, through February 29, 2012 (IR 13).

In accordance with the terms of IR 13, DWR delivered a total of 29,230 af during 2010 to CVC water contractors as follows: Fresno, 1,350 af; Hills Valley, 1,506 af; Kern-Tulare 23,985 af; and Tulare, 2,389 af.

Additionally, during 2010, two CVC water contractors participated in point of delivery agreements for CVP water as described below.

Per Lower Tule's request for a change in point of delivery of Lower Tule's 2010–2011 CVP water from the Delta to Reaches 4 through 7 for receipt by Westlands, DWR conveyed a total of 7,350 af during 2010. (SWPAO #10313)

Per Pixley's request for a change in point of delivery, DWR conveyed a total of 7,350 af of Pixley's 2010–2011 CVP water from the Delta to Reaches 4 through 7 for receipt by Westlands during 2010. (SWPAO #10314)

Reclamation and Kern National Wildlife Refuge—U.S. Fish and Wildlife Service

A letter agreement sent by DWR on September 28, 2004, and accepted by Reclamation on January 24, 2005, provided for DWR to deliver up to 30,500 af of CVP water to the Kern National Wildlife Refuge during the term May 1, 2002, through May 31, 2009. By Amendment Number 2, sent by DWR on June 17, 2008, and accepted by Reclamation on August 1, 2008, the term was extended to May 31, 2012. Under the agreement, DWR would convey CVP water from the end of Reach 7 to Buena Vista's turnouts in Reaches 10A and 12E of the California Aqueduct. DWR conveyed 21,765 af of CVP water to Reach 10A for Kern National Wildlife Refuge during 2010. (SWPAO #03317)

Reclamation and San Joaquin Valley National Cemetery—U.S. Department of Veterans Affairs

A letter agreement sent by DWR on November 16, 2009, accepted by the U.S. Department of Veterans Affairs on November 19, 2009, and accepted by Reclamation on March 19, 2010, provided for the conveyance of up to 850 af of CVP water to Reach 2B of the California Aqueduct for the U.S. Department of Veterans Affairs' San Joaquin Valley National Cemetery. DWR delivered a total of 267 af to the national cemetery through Reach 2B of the California Aqueduct in 2010. (SWPAO #03312)

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 criterion is fairly conservative.

On October 1, 2009, SWP water contractors submitted initial requests for 2010 totaling 4.17 million acre-feet (maf).

DWR approved 0.21 maf on November 29, 2009, resulting in initial Table A amounts of 5 percent of most SWP water contractor requests. DWR increased the 2010 Table A amounts to 2.09 maf, or 50 percent, on June 22, 2010 for the final allocation. Table 9-7 lists the changes in Table A amounts that were approved by DWR based on updated hydrologic conditions.

Table 9-7 2010 Allocated Table A Amounts (Million Acre-feet)

Notice to SWP Contractors No.	Allocation Amount	Percentage of Requested Water
09-09	0.21	5
10-03	0.63	15
10-06	0.83	20
10-07	1.25	30
10-08	1.67	40
10-10	1.88	45
10-11	2.09	50

2010 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 2010, a total of 3,502,986 af of SWP and non-SWP water involved deliveries to 29 long-term SWP water contractors and 24 other agencies. The portion delivered to the SWP water contractors was 2,069,164 af, categorized as follows:

- 1,563,676 af of total 2010 Table A water;
- 79,044 af of transferred Table A water;
- 10,330 af of exchanged Table A water;
- 11,371 af of Pool A water;

- 7,505 af of Article 21 water;
- 266,508 af of 2009 carryover water;
- 81, 602 af recovered from water banks;
- 45,395 af of flexible storage withdrawal from Castaic Lake;
- 2,566 af of settlement water; and
- 1,167 af of SWP water for recreation and fish and wildlife.

The remaining portion was delivered to 24 non-SWP agencies and totaled, 1,433,822 af, which was categorized accordingly:

- 140,320 af of 2010 Transfer/Dry Year Purchase Program water;
- 1,015,365 af of local water;
- 2,498 af of permit water; and
- 275,639 af delivered to satisfy agreements between the SWP and CVP.

Figure 9-1 shows amounts of water delivered to various locations during 2010.

Specific information about water deliveries made to SWP water contractors and other agencies during 2010, and historical deliveries from 1962 through 2010, 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 2010, by Service Area (Table 9-8);
- Total Amounts of Water Delivered in 2010, by Month (Table 9-9); and
- Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962–2010 (Table 9-10).

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 DWR staff in the State Water Project Analysis Office.

2010 Water Deliveries to Long-term SWP Water Contractors

Table 9-8 shows amounts delivered in 2010. The following information is arranged by column number.

Table A Water Delivered

Columns 1 through 5 show a detailed breakdown of Table A water delivered for SWP water contractors in 2010.

Turn-Back Pool Water

Column 4 shows 11,371 af of Turn-Back Pool Water delivered to SWP water contractors in 2010, in accordance with Article 56(d) of the long-term contracts.

2009 Carryover Table A Water Delivered During 2010

Column 6 shows a total of 266,508 af was carried over from 2009 for delivery in 2010.

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 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 12(e), 14(b), and 56(c).

Total Table A Water Delivered

Column 7 shows all Table A water delivered in 2010—a total of 1,930,929 af. This total includes all allocable Table A water, which contains carryover, Turn-Back Pools A and B, transfers, and exchanges.

Total water delivered: 3,502,986 af

Figure 9-1 Water Delivered in 2010 and Delivery Locations of Long-term Water Supply Contractors and Feather River Area Districts with Water Rights Agreements with DWR

Article 21

Column 8 shows 7,505 af of 2010 Article 21 water was delivered to SWP water contractors.

Other SWP Water

Column 9 shows 47,961 af of other SWP water. Other SWP water includes flexible withdrawal water from Castaic Lake and Lake Perris, and settlement water.

Total SWP Water Delivered

Column 10 shows 1,986,395 af of total SWP water was delivered in 2010. This includes total Table A water, 2009 Table A carryover water, Article 21 water, and other SWP water consisting of settlement and flexible withdrawal water.

Non-SWP Water Deliveries

Columns 11 and 12 include deliveries of non-SWP water to long-term water contractors. Column 11 shows 81,602 af of water bank recovery water. Column 12 shows 377,855 af of other non-SWP water. Other non-SWP water is local and permit water that an SWP water contractor has a water right to, dry year purchase water, or water purchased from, exchanged with, or transferred from non-SWP agencies. In 2010, non-SWP water deliveries totaled 459,457 af.

Total Deliveries

Column 13 shows total amounts of water delivered to SWP water contractors. In 2010, the SWP delivered 2,445,852 af of water to 29 long-term contractors.

Water Delivered in 2010 by Month

During 2010, the SWP provided water service to 53 agencies, including 29 long-term SWP water contractors. Those agencies and the amounts of water delivered to them by month are listed in Table 9-9 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.

Non-SWP Water

In 2010, 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 in this chapter.

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 passes through SWP transportation facilities; some is stored in SWP reservoirs for release later. In 2010, 1,020,429 af of water in this category was delivered to the Feather River, Delta, North Bay, South Bay, and Southern California areas, and is summarized below.

Feather River Area. Ten non-SWP agencies received 978,172 af under water rights settlement agreements, water supply agreements, and conveyance agreements. The following non-SWP agencies received 965,549 af under water rights settlement agreements:

- Western Canal Water District, 291,913 af;
- Joint Water Districts Board, 651,923 af;
- Oswald Water District, 1,039 af;
- Tudor Mutual Water Company, 2,597 af;
- Garden Highway Mutual Water Company, 9,711 af;

- Plumas Mutual Water Company, 7,624 af; and
- Valberde and Ramelli, 742 af.

Under the water supply agreement between DWR and Last Chance Creek Water District, dated May 7, 2007, a total of 6,696 af was supplied from Frenchman Reservoir to Last Chance Creek Water District.

DWR conveyed local water totaling 5,927 af through SWP facilities on behalf of two non-SWP agencies:

- Thermalito Water and Sewer District (formerly Thermalito Irrigation District), 1,939 af; and
- South Feather River Water and Power Agency (formerly Oroville-Wyandotte Irrigation District), 3,988 af.

Delta. Byron-Bethany Irrigation District received 25,660 af of water, pursuant to the May 28, 2003, *Agreement Between the Department of Water Resources of the State of California and the Byron-Bethany Irrigation District Regarding the Diversion of Water from the Delta*.

North Bay Area. In the North Bay area, 2,498 af of Vallejo permit water and 2,566 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* were delivered.

South Bay Area. In the South Bay area, a total of 10,996 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. A total of 5,000 af of Byron-Bethany"s non-SWP water was transferred to Alameda-Zone 7 in 2010.

Southern California. In Southern California, 537 af of local runoff from the Houston Creek watershed was stored and delivered to Crestline under water rights held by DWR on Houston Creek. The authorized place of use is limited to Crestline.

Annual Table A Water and Water Delivered Since 1962

Information about 2010 annual Table A water and water conveyed for the previous 48 years is contained in Table 9-10. The following discussion of conveyed Table A water is arranged according to column numbers.

Annual Table A Water

Columns 1 through 7 of Table 9-10 show the amount of SWP water contractors' annual Table A water by area for years 1962 through 2010 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 in the back of this bulletin.

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 2010. In 2010, a total of 1,930,929 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 2010. 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 2010, a total of

7,505 af of Article 21 water was delivered. No unscheduled water was delivered.

Other Water. Column 10 includes amounts of water classified as other water delivered in 2010, including non-SWP water conveyed through SWP facilities and regulated delivery of local supply. In 2010, a total of 559,553 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 2010, a total of 1,003,832 af in this category was delivered to agencies in the Feather River area.

Recreation Water. Column 12 shows water conveyed for recreational use or to provide water to improve water quality for fish and wildlife. In 2010, a total of 1,167 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 9-8 Water Delivered to Long-term Contractors through 2010, by Service Area (Acre-feet)[a]

SWP Contractor	Table A Water Deliveries					SWP					Non-SWP		
	2010 Table A Not Transferred, Exchanged, or Stored (1)	2010 Table A Transferred or Exchanged (2)	2010 Table A Stored (3)	2010 Turn-Back Pools (4)	Total 2010 Table A (5)	2009 Carryover (6)	Total (7)	2010 Article 21 (8)	Other SWP Water (9)	Total SWP Water (10)	Water Bank Recovery (11)	Other Non-SWP Water (12)	Total Water Delivered (13)
Feather River													
Butte	807				807		807			807			807
Plumas	243				243		243			243			243
Yuba City	2,331				2,331		2,331			2,331			2,331
North Bay													
Napa	7,275			90	7,365	2,845	10,210	2,207		12,417			12,417
Solano	13,793				13,793	3,661	17,454	5,298	2,566	25,318		2,498	27,816
South Bay													
Alameda-Zone 7	28,694			249	28,943	13,104	42,047			42,047		11,531	53,578
Alameda County	11,668			14	11,682	10,889	22,571			22,571		4,761	27,332
Santa Clara	6,068	31,782		34	37,884	22,471	60,355			60,355		75,223	135,578
San Joaquin Valley													
Castaic Lake					0		0			0			0
Kings	4,094			29	4,123	522	4,645			4,645		34	4,679
Dudley Ridge	4,553	15,097		156	19,806	9,750	29,556			29,556		2,226	31,782
Empire	50	330			380	2,868	3,248			3,248		11	3,259
Kern	375,585	965		3,044	379,594	55,419	435,013			435,013	14,094	28,530	477,637
Oak Flat	2,412			18	2,430	455	2,885			2,885		21	2,906
Tulare	24,211	15,624		275	40,110	3,199	43,309			43,309		26,929	70,238
Central Coastal													
San Luis Obispo	3,480				3,480	277	3,757			3,757			3,757
Santa Barbara	8,640			140	8,780	8,995	17,775			17,775			17,775
Southern California													
AVEK	35,312			438	35,750	20,813	56,563			56,563		776	57,339
Castaic Lake	37,054			295	37,349	14,501	51,850			51,850		6,050	57,900
Coachella	69,175			429	69,604	7,595	77,199			77,199		8,393	85,592
Crestline	357	1,000			1,357		1,357			1,357		537	1,894
Desert	27,875			173	28,048	3,135	31,183			31,183			31,183
Littlerock		1,150			1,150		1,150			1,150			1,150
Metropolitan	817,765			5,922	823,687	67,783	891,470		45,395	936,865	67,508	209,962	1,214,335
Mojave	35,241	3,000			38,241	20	38,261			38,261			38,261
Palmdale	5,585			59	5,644	5,325	10,969			10,969			10,969
San Bernardino	17,707	20,426			38,133	11,273	49,406			49,406		373	49,779
San Gabriel	14,400				14,400		14,400			14,400			14,400
San Gorgonio	5,226			6	5,232	1,608	6,840			6,840			6,840
Ventura	4,075				4,075		4,075			4,075			4,075
Totals	**1,563,676**	**89,374**	**-**	**11,371**	**1,664,421**	**266,508**	**1,930,929**	**7,505**	**47,961**	**1,986,395**	**81,602**	**377,855**	**2,445,852**

[a] 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 publication of Bulletin 132 available and/or contact DWR staff in the State Water Project Analysis Office.

Table 9-9 Total Amounts of Water Delivered in 2010, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2010 Total Deliveries
FEATHER RIVER AREA													
SWP Agencies													
City of Yuba City													
Table A	0	0	0	0	0	0	1,178	1,120	33	0	0	0	2,331
Agency Total	0	0	0	0	0	0	1,178	1,120	33	0	0	0	2,331
County of Butte													
Table A	82	66	134	162	3	6	6	273	7	15	7	46	807
Recreation/Fish and Wildlife (SWP)													
Recreation/Fish and Wildlife	0	1	0	0	1	0	0	1	0	0	1	0	4
Agency Total	82	67	134	162	4	6	6	274	7	15	8	46	811
Plumas County Flood Control and Water Conservation District													
Table A	0	0	0	0	0	41	61	61	60	20	0	0	243
Agency Total	0	0	0	0	0	41	61	61	60	20	0	0	243
Non-SWP Agencies													
Garden Highway Water Company													
Regulated Delivery of Local Supply	0	0	0	294	1,227	1,823	1,635	1,614	254	2,864	0	0	9,711
Joint Water Districts Board													
Regulated Delivery of Local Supply	36,930	0	0	0	88,725	97,760	113,587	101,891	46,470	37,360	70,250	58,950	651,923
Last Chance Creek Water District													
Regulated Delivery of Local Supply	0	0	0	0	1,154	1,892	1,186	1,801	538	107	18	0	6,696
Oswald WD													
Regulated Delivery of Local Supply	0	0	0	0	104	308	198	209	168	52	0	0	1,039
Plumas Mutual Water Company													
Regulated Delivery of Local Supply	0	0	0	0	643	2,584	1,596	2,801	0	0	0	0	7,624
South Feather Water and Power Agency													
Regulated Delivery of Local Supply	62	0	28	152	302	634	768	785	664	450	104	39	3,988
Thermalito Irrigation District													
Regulated Delivery of Local Supply	100	84	89	107	145	246	281	295	232	172	109	79	1,939
Tudor Mutual Water Company													
Regulated Delivery of Local Supply	0	2	2	5	210	953	449	416	407	153	0	0	2,597
Western Canal Water District													
Regulated Delivery of Local Supply	7,934	0	0	0	40,284	44,312	62,279	52,765	17,995	15,519	36,310	14,515	291,913
Valberde and Ramelli													
Regulated Delivery of Local Supply	12	11	12	12	12	54	184	246	139	48	12	0	742
SWP	82	67	134	162	4	47	1,245	1,455	100	35	8	46	3,385
Non-SWP	45,038	97	131	570	132,806	150,566	182,163	162,823	66,867	56,725	106,803	73,583	978,172
Feather River Area Total	***45,120***	***164***	***265***	***732***	***132,810***	***150,613***	***183,408***	***164,278***	***66,967***	***56,760***	***106,811***	***73,629***	***981,557***

Table 9-9 Total Amounts of Water Delivered in 2010, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2010 Total Deliveries
NORTH BAY AREA													
SWP Agencies													
Napa County Flood Control and Water Conservation District													
Table A	0	0	0	0	0	411	1,378	1,330	1,447	1,143	984	512	7,205
Table A Point of Delivery through Solano*	0	0	0	1	1	27	0	17	17	5	0	2	70
Article 56(c) Carryover	600	49	50	250	846	1,050	0	0	0	0	0	0	2,845
Article 21	257	768	277	558	347	0	0	0	0	0	0	0	2,207
Pool A	0	0	0	0	0	0	10	0	0	0	0	0	10
Pool B	0	0	0	0	0	0	0	80	0	0	0	0	80
Vallejo Permit to Napa	0	0	0	0	0	0	200	200	121	9	0	0	530
Agency Total (*excluded from total)	857	817	327	808	1,193	1,461	1,588	1,610	1,568	1,152	984	512	12,877
Solano County Water Agency													
Table A	26	219	110	92	250	934	2,445	3,514	2,903	1,923	1,322	55	13,793
Table A Point of Delivery from Napa	0	0	0	1	1	27	0	17	17	5	0	2	70
Article 56(c) Carryover	0	3	0	3	43	704	1,316	204	0	900	488	0	3,661
Table A Exchanged from Mojave	0	0	0	0	0	0	1,000	1,000	1,000	0	0	0	3,000
Article 21	0	99	85	479	2,384	1,493	0	0	0	0	0	758	5,298
Settlement	0	0	0	35	411	1,090	0	0	526	504	0	0	2,566
Vallejo Permit	23	3	9	4	11	10	119	17	0	570	1,202	0	1,968
Vallejo Permit to Napa*	0	0	0	0	0	0	200	200	121	9	0	0	530
Agency Total (*excluded from total)	49	324	204	614	3,100	4,258	4,880	4,752	4,446	3,902	3,012	815	30,356
SWP	883	1,138	522	1,418	4,282	5,709	6,139	6,065	5,893	4,475	2,794	1,327	40,645
Non-SWP	23	3	9	4	11	10	329	297	121	579	1,202	0	2,588
North Bay Area Total	***906***	***1,141***	***531***	***1,422***	***4,293***	***5,719***	***6,468***	***6,362***	***6,014***	***5,054***	***3,996***	***1,327***	***43,233***
SOUTH BAY AREA													
SWP Agencies													
Alameda County Flood Control and Water Conservation District, Alameda-Zone 7													
Table A	210	18	36	36	1,222	1,104	2,177	2,233	1,901	3,502	1,928	1,327	15,694
Table A Transfer to Kern-Delta Water Bank*	0	0	0	0	0	0	12,000	1,000	0	0	0	0	13,000
Pool A	0	0	0	0	0	27	0	0	0	0	0	0	27
Pool B	0	0	0	0	0	0	222	0	0	0	0	0	222
Article 14(b) Carryover	348	0	0	0	0	0	0	0	0	0	0	0	348
Article 56(c) Carryover	0	0	0	0	1,713	2,854	2,957	2,696	2,536	0	0	0	12,756
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	114	91	91	0	0	0	296
Local	649	954	1,001	1,603	615	201	270	205	177	162	243	155	6,235

Table 9-9 Total Amounts of Water Delivered in 2010, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2010 Total Deliveries
Transfer from Byron-Bethany	0	0	0	0	0	1,291	1,435	1,406	868	0	0	0	5,000
Agency Total (*excluded from total)	1,207	972	1,037	1,639	3,550	5,477	7,175	6,631	5,573	3,664	2,171	1,482	40,578
Alameda County Water District													
Table A	0	0	0	0	0	0	0	0	0	1,663	1,598	1,407	4,668
Table A Transfer to Kern-Delta Water Bank*	0	0	0	0	0	0	7,000	0	0	0	0	0	7,000
Pool A	0	0	0	0	0	0	14	0	0	0	0	0	14
Article 14(b) Carryover	389	0	0	0	0	0	0	0	0	0	0	0	389
Article 56(c) Carryover	594	1,198	408	0	1,746	1,331	1,664	1,755	1,342	462	0	0	10,500
Local	0	0	0	1,071	0	1,000	1,000	690	1,000	0	0	0	4,761
Agency Total (*excluded from total)	983	1,198	408	1,071	1,746	2,331	2,678	2,445	2,342	2,125	1,598	1,407	20,332
Santa Clara Valley Water District													
Table A to Kern*	0	0	0	0	0	6,068	0	0	0	0	0	0	6,068
Article 56(c) Transfer to Metropolitan*	0	0	0	0	0	0	0	0	0	0	0	5,918	5,918
Table A Transfer to Metropolitan*	0	0	0	0	0	0	0	0	0	0	0	31,782	31,782
Pool A	0	0	0	0	0	0	34	0	0	0	0	0	34
Article 14(b) Carryover	0	0	0	344	2,127	3,341	0	0	0	0	0	0	5,812
Article 56(c) Carryover	0	0	1,571	0	0	9,170	0	0	0	0	0	0	10,741
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	74	67	227	0	0	0	368
General Conveyance from Storage	1,489	1,167	1,174	1,848	0	0	0	0	0	0	0	0	5,678
General Conveyance from Metropolitan	0	0	0	0	0	0	6,853	4,565	6,707	4,528	2,290	2,764	27,707
General Conveyance to Kern-Delta Water Bank*	0	0	0	0	0	14,700	19,290	0	0	0	5,000	0	38,990
Transfer from Browns Valley Irrigation District	0	0	0	0	0	0	0	2,480	0	0	0	0	2,480
Agency Total (*excluded from total)	1,489	1,167	2,745	2,192	2,127	12,511	6,961	7,112	6,934	4,528	2,290	2,764	52,820
Non-SWP Agencies													
Byron-Bethany Irrigation District													
Regulated Delivery of Local Supply	301	254	783	2,432	4,951	5,701	4,282	3,125	2,337	1,223	146	125	25,660
Recreation/Fish and Wildlife (SWP)													
Lake del Valle	1	0	5	2	16	19	21	22	21	7	2	1	117
SWP	1,541	1,216	2,015	380	6,808	17,800	7,034	6,842	6,097	5,627	3,526	2,734	61,620
Non-SWP	2,439	2,375	2,958	6,954	5,566	8,220	14,062	12,471	11,089	5,913	2,679	3,044	77,770
South Bay Area Total	***3,981***	***3,591***	***4,978***	***7,336***	***12,390***	***26,039***	***21,117***	***19,335***	***17,207***	***11,547***	***6,207***	***5,779***	***139,507***
SAN JOAQUIN VALLEY AREA													
SWP Agencies													
County of Kings													
Table A	0	0	0	0	0	1,900	0	0	148	0	4	0	2,052
Table A Point of Delivery through Westlands*	0	1	0	0	219	350	359	389	308	220	123	73	2,042

Table 9-9 Total Amounts of Water Delivered in 2010, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2010 Total Deliveries
Pool A	0	0	0	0	0	0	1	0	0	0	0	0	1
Pool A through Westlands*	0	0	0	0	0	0	2	0	0	0	0	0	2
Pool B	0	0	0	0	0	0	11	0	1	0	0	0	12
Pool B through Westlands*	0	0	0	0	0	0	14	0	0	0	0	0	14
Article 12(e) Carryover	0	0	0	0	0	0	0	0	117	0	0	0	117
Article 56(c) Carryover	0	0	0	0	0	0	0	5	0	0	0	0	5
Article 56(c) Carryover through Westlands*	60	64	116	135	25	0	0	0	0	0	0	0	400
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	3	2	10	0	0	0	15
2010 Transfer/Dry Year Purchase Program through Westlands*	0	0	0	0	0	0	4	4	11	0	0	0	19
Agency Total (*excluded from total)	0	0	0	0	0	1,900	15	7	276	0	4	0	2,202
Dudley Ridge Water District													
Table A	0	0	0	0	0	0	1,913	104	365	1,694	126	47	4,249
Table A Point of Delivery from Tulare	0	0	0	0	0	0	0	993	551	0	0	0	1,544
Table A Point of Delivery through Kern*	0	0	0	0	0	0	0	0	0	0	0	304	304
Table A Transfer from Kern	0	0	0	0	0	0	0	965	0	0	0	0	965
Table A Transfer to Kern*	0	0	0	0	0	4,500	2,667	410	1,290	950	400	100	10,317
Table A Exchange from San Gabriel*	0	0	0	0	0	0	0	0	0	2,500	1,296	984	4,780
Pool A	0	0	0	0	0	0	17	0	0	0	0	0	17
Pool B	0	0	0	0	0	0	139	0	0	0	0	0	139
Article 56(c) Carryover	0	0	0	0	0	0	2,395	5,355	2,000	0	0	0	9,750
Recovery from Kern Water Bank	109	114	285	1,097	3,014	6,535	2,857	0	0	0	83	0	14,094
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	583	586	419	0	0	0	1,588
Transfer from Merced	0	0	0	0	0	0	0	0	638	0	0	0	638
Agency Total (*excluded from total)	109	114	285	1,097	3,014	6,535	7,904	8,003	3,973	1,694	209	47	32,984
Empire West Side Irrigation District													
Table A	0	0	0	0	0	0	0	0	0	0	0	50	50
Article 56(c) Transfer to Westlands*	0	0	0	0	0	0	0	0	101	0	0	0	101
Table A Transfer to Westlands*	0	0	0	0	0	0	0	0	0	0	0	330	330
Carryover from Previous Years	0	0	0	150	956	0	0	0	165	117	246	1,133	2,767
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	0	0	11	0	0	0	11
Agency Total (*excluded from total)	0	0	0	150	956	0	0	0	176	117	246	1,183	2,828
Kern County Water Agency													
Table A	0	160	0	0	32,552	80,518	92,724	89,458	51,847	1,264	25,938	0	374,461
Table A to Western Hills*	31	39	41	54	104	166	180	161	174	92	55	27	1,124
Table A from Dudley Ridge	0	0	0	0	0	0	0	0	0	0	0	304	304

Table 9-9 Total Amounts of Water Delivered in 2010, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2010 Total Deliveries
Table A from Alameda-Zone 7	0	0	0	0	0	0	12,000	1,000	0	0	0	0	13,000
Table A from Alameda County	0	0	0	0	0	0	7,000	0	0	0	0	0	7,000
Table A from Castaic Lake	0	0	0	0	0	0	5,535	9,517	162	0	3,407	7,223	25,844
Table A from Santa Clara	0	0	0	0	0	6,068	0	0	0	0	0	0	6,068
Table A from Metropolitan	0	0	0	0	0	3,961	56,928	95,705	43,956	24,757	20,839	14,527	260,673
Table A Transfer from Tulare	0	0	0	0	0	1,896	7,294	810	800	0	0	974	11,774
Table A Transfer to Dudley Ridge*	0	0	0	0	0	0	0	965	0	0	0	0	965
Table A Transfer from Dudley Ridge	0	0	0	0	0	4,500	2,667	410	1,290	950	400	100	10,317
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	8,353	3,213	4,507	0	0	0	16,073
Pool A	0	0	0	0	0	0	0	0	0	0	332	0	332
Pool B	0	0	0	0	0	0	0	0	0	0	2,712	0	2,712
Article 56(c) Carryover	0	0	0	0	0	0	0	0	0	55,419	0	0	55,419
Transfer from Merced	0	0	0	0	0	0	0	0	12,457	0	0	0	12,457
General Conveyance from Santa Clara	0	0	0	0	0	14,700	19,290	0	0	0	5,000	0	38,990
General Conveyance to Coachella*	0	0	0	0	0	0	0	0	0	0	0	8,393	8,393
General Conveyance to Castaic*	0	0	946	1,554	250	0	0	0	0	0	0	0	2,750
Agency Total (*excluded from total)	0	160	0	0	32,552	111,643	211,791	200,113	115,019	82,390	58,628	23,128	835,424
Oak Flat Water District													
Table A	0	0	59	73	407	221	911	485	164	91	1	0	2,412
Pool A	0	0	0	0	0	0	2	0	0	0	0	0	2
Pool B	0	0	0	0	0	0	16	0	0	0	0	0	16
Article 56(c) Carryover	0	0	0	0	0	455	0	0	0	0	0	0	455
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	0	8	13	0	0	0	21
Agency Total	0	0	59	73	407	676	929	493	177	91	1	0	2,906
Tulare Lake Basin Water Storage District													
Table A	0	0	0	0	0	164	1,770	7,281	8,209	762	8	4,473	22,667
Table A Point of Delivery through Dudley Ridge*	0	0	0	0	0	0	0	993	551	0	0	0	1,544
Table A Transfer to Kern*	0	0	0	0	0	1,896	7,294	810	800	0	0	974	11,774
Table A Transfer to Westlands*	0	0	1,000	0	1,000	500	600	0	0	0	0	750	3,850
Pool A	0	0	0	0	0	0	30	0	0	0	0	0	30
Pool B	0	0	0	0	0	0	245	0	0	0	0	0	245
Article 56(c) Carryover	0	0	20	11	28	140	423	776	1,801	0	0	0	3,199
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	65	59	200	0	0	0	324
Transfer from Lower Tule	0	0	0	0	0	0	0	0	0	0	71	4,455	4,526
Transfer from Pixley	0	0	0	0	0	0	0	0	0	0	72	4,456	4,528

Table 9-9 Total Amounts of Water Delivered in 2010, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2010 Total Deliveries
Transfer from Reclamation	0	0	0	0	0	0	0	17,551	0	0	0	0	17,551
Agency Total (*excluded from total)	0	0	20	11	28	304	2,533	25,667	10,210	762	151	13,384	53,070
Recreation/Fish and Wildlife (SWP)													
Department of Fish and Wildlife, Cattle	1	1	0	0	1	0	0	0	0	0	1	1	5
Department of Fish and Wildlife, O'Neill	34	8	4	0	15	51	81	43	7	50	63	44	400
Department of Fish and Wildlife, Lateral 4	0	0	0	19	8	3	0	1	1	1	0	0	33
Department of Parks and Recreation, O'Neill	0	1	1	0	0	1	0	0	1	0	0	0	4
Department of Parks and Recreation, San Luis	0	0	0	1	0	0	0	0	0	0	0	0	1
Agency Total	35	10	5	19	24	55	81	44	9	51	64	45	443
Non-SWP Agencies													
CVP Water Annual Contractors													
Plain View/Musco Family Olive Company	25	28	40	35	33	40	42	40	35	76	75	49	518
U.S. Dept. of Veterans Affairs, S.J.V. National Cemetery	2	1	6	13	40	40	59	38	38	15	11	4	267
Agency Total	27	29	46	48	73	80	101	78	73	91	86	53	785
Cross Valley Canal Contractors													
Fresno	0	0	0	0	0	0	1,350	0	0	0	0	0	1,350
Hills Valley	0	0	0	0	0	0	1,506	0	0	0	0	0	1,506
Tulare	0	0	0	0	0	0	2,389	0	0	0	0	0	2,389
Kern-Tulare	0	0	0	0	0	0	6,542	2,384	11,175	3,884	0	0	23,985
Agency Total	0	0	0	0	0	0	11,787	2,384	11,175	3,884	0	0	29,230
Bureau of Reclamation													
Western Hills Water District													
Table A Point of Delivery from Kern	31	39	41	54	104	166	180	161	174	92	55	27	1,124
Westlands Water District													
Table A Point of Delivery from Kings	0	1	0	0	219	350	359	389	308	220	123	73	2,042
Pool A from Kings	0	0	0	0	0	0	2	0	0	0	0	0	2
Pool B from Kings	0	0	0	0	0	0	14	0	0	0	0	0	14
Article 56(c) from Kings	60	64	116	135	25	0	0	0	0	0	0	0	400
Article 56(c) Transfer from Empire	0	0	0	0	0	0	0	0	101	0	0	0	101
Table A Transfer from Empire	0	0	0	0	0	0	0	0	0	0	0	330	330
Table A Transfer from Tulare	0	0	1,000	0	1,000	500	600	0	0	0	0	750	3,850
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	4	4	11	0	0	0	19
Agency Total	60	65	1,116	135	1,244	850	979	393	420	220	123	1,153	6,758

Table 9-9 Total Amounts of Water Delivered in 2010, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2010 Total Deliveries
Kern National Wildlife Refuge	1,204	1,807	67	70	290	0	0	1,319	4,988	4,760	4,663	2,597	21,765
Recreation	0	0	1	1	0	0	1	1	0	1	0	0	5
Fish and Wildlife	28	6	4	15	19	43	67	36	6	40	51	35	350
Agency Total	1,292	1,878	1,188	221	1,553	893	1,047	1,749	5,414	5,021	4,837	3,785	28,878
SWP	235	388	1,526	1,540	38,329	107,429	204,532	216,738	116,888	85,417	54,338	30,056	857,416
Non-SWP	1,259	1,842	118	134	382	123	12,546	21,961	29,788	8,776	4,943	11,596	93,468
San Joaquin Valley Area Total	***1,494***	***2,230***	***1,644***	***1,674***	***38,711***	***122,252***	***236,368***	***238,699***	***146,676***	***94,193***	***64,281***	***41,652***	***989,874***
CENTRAL COASTAL AREA													
SWP Agencies													
San Luis Obispo County Flood Control and Water Conservation District													
Table A	0	55	156	270	368	381	465	460	431	453	107	334	3,480
Article 56(c) Carryover	225	52	0	0	0	0	0	0	0	0	0	0	277
Agency Total	225	107	156	270	368	381	465	460	431	453	107	334	3,757
Santa Barbara County Flood Control and Water Conservation District													
Table A	0	0	0	0	0	0	43	3,034	2,747	1,726	321	769	8,640
Article 14(b) Carryover	0	0	0	0	0	1,861	0	0	0	0	0	0	1,861
Article 56(c) Carryover	631	614	790	809	1,508	147	2,635	0	0	0	0	0	7,134
Pool A	0	0	0	0	0	0	15	0	0	0	0	0	15
Pool B	0	0	0	0	0	0	125	0	0	0	0	0	125
Agency Total	631	614	790	809	1,508	2,008	2,818	3,034	2,747	1,726	321	769	17,775
SWP	856	721	946	1,079	1,876	2,389	3,283	3,494	3,178	2,179	428	1,103	21,532
Non-SWP	0	0	0	0	0	0	0	0	0	0	0	0	0
Central Coastal Area Total	***856***	***721***	***946***	***1,079***	***1,876***	***2,389***	***3,283***	***3,494***	***3,178***	***2,179***	***428***	***1,103***	***21,532***
SOUTHERN CALIFORNIA AREA													
SWP Agencies													
Antelope Valley-East Kern Water Agency													
Table A	0	0	0	0	1,150	4,549	6,141	6,049	7,257	5,273	3,551	1,342	35,312
Table A Point of Delivery from Mojave	13	32	62	90	116	126	190	209	158	78	70	37	1,181
Table A Exchange from Littlerock	0	0	0	0	0	0	0	0	0	0	0	1,150	1,150
Article 56(c) Carryover	2,406	2,183	2,945	3,734	3,962	2,149	1,847	1,587	0	0	0	0	20,813
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	287	295	194	0	0	0	776
Pool A	0	0	0	0	0	0	48	0	0	0	0	0	48
Pool B	0	0	0	0	0	0	0	390	0	0	0	0	390
Agency Total	2,419	2,215	3,007	3,824	5,228	6,824	8,513	8,530	7,609	5,351	3,621	2,529	59,670

Table 9-9 Total Amounts of Water Delivered in 2010, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2010 Total Deliveries
Castaic Lake Water Agency													
Table A	0	0	0	0	0	0	950	1,100	1,882	2,418	2,317	2,543	11,210
Table A to Kern*	0	0	0	0	0	0	5,535	9,517	162	0	3,407	7,223	25,844
Article 56(c) Carryover	574	0	0	0	3,026	2,370	3,185	3,126	2,220	0	0	0	14,501
General Conveyance from Kern	0	0	946	1,554	250	0	0	0	0	0	0	0	2,750
General Conveyance from Storage	1,100	800	0	24	0	1,100	276	0	0	0	0	0	3,300
Pool A	0	0	0	0	0	0	32	0	0	0	0	0	32
Pool B	0	0	0	0	0	0	0	263	0	0	0	0	263
Agency Total (*excluded from total)	1,674	800	946	1,578	3,276	3,470	4,443	4,489	4,102	2,418	2,317	2,543	32,056
Coachella Valley Water District													
Table A	0	0	0	0	0	0	0	8,299	15,219	15,219	15,219	15,219	69,175
Article 12(e) Carryover	7,595	0	0	0	0	0	0	0	0	0	0	0	7,595
General Conveyance from Kern	0	0	0	0	0	0	0	0	0	0	0	8,393	8,393
Pool A	0	0	0	0	0	0	0	0	47	0	0	0	47
Pool B	0	0	0	0	0	0	0	0	382	0	0	0	382
Agency Total	7,595	0	0	0	0	0	0	8,299	15,648	15,219	15,219	23,612	85,592
Crestline-Lake Arrowhead Water Agency													
Table A	0	0	0	0	0	0	0	61	119	81	39	57	357
Table A Transfer from San Bernardino	11	13	0	0	0	0	0	0	2	0	0	0	26
Table A Exchange to San Gorgonio*	0	0	0	0	0	0	0	0	500	500	0	0	1,000
Local	98	37	32	31	45	75	126	81	0	0	6	6	537
Agency Total (*excluded from total)	109	50	32	31	45	75	126	142	121	81	45	63	920
Desert Water Agency													
Table A	0	0	0	0	0	0	0	3,343	6,133	6,133	6,133	6,133	27,875
Article 12(e) Carryover	3,135	0	0	0	0	0	0	0	0	0	0	0	3,135
Pool A	0	0	0	0	0	0	0	0	19	0	0	0	19
Pool B	0	0	0	0	0	0	0	0	154	0	0	0	154
Agency Total	3,135	0	0	0	0	0	0	3,343	6,306	6,133	6,133	6,133	31,183
Littlerock Creek Irrigation District													
Table A Exchange to AVEK*	0	0	0	0	0	0	0	0	0	0	0	1,150	1,150
Agency Total (*excluded from total)	0	0	0	0	0	0	0	0	0	0	0	0	0
The Metropolitan Water District of Southern California													
Table A	0	0	0	71,403	62,707	105,132	88,967	60,240	60,398	35,930	70,135	2,180	557,092
Table A to Kern*	0	0	0	0	0	3,961	56,928	95,705	43,956	24,757	20,839	14,527	260,673
Article 56(c) Transfer from Santa Clara	0	0	0	0	0	0	0	0	0	0	0	5,918	5,918
Table A Transfer from Santa Clara	0	0	0	0	0	0	0	0	0	0	0	31,782	31,782
Table A Transfer to San Bernardino	0	0	0	0	0	0	0	0	0	10,000	10,000	0	20,000

Table 9-9 Total Amounts of Water Delivered in 2010, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2010 Total Deliveries
Pool A	0	0	0	0	0	647	0	0	0	0	0	0	647
Pool B	0	0	0	0	0	0	0	5,275	0	0	0	0	5,275
Article 56(c) Carryover	0	0	0	0	0	0	0	0	10,612	29,209	11,339	16,623	67,783
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	40,832	42,079	37,545	0	0	0	120,456
General Conveyance from Storage	2,874	0	19,339	0	0	0	0	27,570	16,267	0	734	0	66,784
Reclamation Supplied Water	0	0	0	0	0	0	0	0	6,151	6,130	3,075	3,097	18,453
Exchange Water from Westlands	0	0	0	0	0	0	0	0	0	0	0	4,269	4,269
Recovery from Arvin-Edison Water Bank	17,999	18,314	0	99	23,836	1,543	0	0	0	0	0	0	61,791
Recovery from Kern-Delta Water Bank	697	0	151	971	861	146	0	0	0	0	0	0	2,826
Recovery from Mojave Water Bank	0	0	0	0	0	0	0	0	0	0	1,445	1,446	2,891
Flexible Withdrawal from Castaic Lake	23,792	0	21,603	0	0	0	0	0	0	0	0	0	45,395
Agency Total (*excluded from total)	45,362	18,314	41,093	72,473	87,404	107,468	129,799	135,164	130,973	71,269	86,728	65,315	991,362
Mojave Water Agency													
Table A	167	155	290	390	441	1,811	5,036	5,700	4,436	5,033	9,132	1,469	34,060
Table A Point of Delivery through AVEK*	13	32	62	90	116	126	190	209	158	78	70	37	1,181
Article 56(c) Carryover	0	20	0	0	0	0	0	0	0	0	0	0	20
Table A Exchange to Solano*	0	0	0	0	0	0	1,000	1,000	1,000	0	0	0	3,000
Mojave Water Bank Delivery to Metropolitan	0	0	0	0	0	0	0	0	0	0	1,445	1,446	2,891
Agency Total (*excluded from total)	167	175	290	390	441	1,811	5,036	5,700	4,436	5,033	9,132	1,469	34,080
Palmdale Water District													
Table A	0	0	0	0	0	0	0	1,450	1,502	1,279	859	495	5,585
Pool B	0	0	0	0	0	0	0	59	0	0	0	0	59
Article 56(c) Carryover	235	319	643	246	464	1,058	1,794	326	240	0	0	0	5,325
Agency Total	235	319	643	246	464	1,058	1,794	1,835	1,742	1,279	859	495	10,969
San Bernardino Valley Municipal Water District													
Table A	0	0	0	0	0	0	0	3,896	5,223	5,542	2,593	453	17,707
Table A Transfer to Castaic Lake*	11	13	0	0	0	0	0	0	2	0	0	0	26
Table A Transfer from Metropolitan	0	0	0	0	0	0	0	0	0	10,000	10,000	0	20,000
Table A Exchange to San Gorgonio*	100	0	200	100	0	0	0	0	0	0	0	0	400
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	0	72	301	0	0	0	373
Article 56(c) Carryover	1,193	52	1,045	1,025	992	1,227	3,316	2,423	0	0	0	0	11,273
Agency Total (*excluded from total)	1,193	52	1,045	1,025	992	1,227	3,316	6,391	5,524	15,542	12,593	453	49,353
San Gabriel Valley Municipal Water District													
Table A	0	0	273	103	1,795	2,725	3,078	3,233	3,154	39	0	0	14,400

Table 9-9 Total Amounts of Water Delivered in 2010, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2010 Total Deliveries
Table A Exchange from Dudley Ridge	0	0	0	0	0	0	0	0	0	2,500	1,296	984	4,780
Agency Total	0	0	273	103	1,795	2,725	3,078	3,233	3,154	2,539	1,296	984	19,180
San Gorgonio Pass Water Agency													
Table A	0	0	0	0	0	896	1,016	933	467	524	1,013	377	5,226
Table A Exchange from Castaic Lake	0	0	0	0	0	0	0	0	500	500	0	0	1,000
Table A Exchange from San Bernardino	100	0	200	100	0	0	0	0	0	0	0	0	400
Pool A	0	0	0	0	0	0	0	6	0	0	0	0	6
Article 56(c) Carryover	339	0	240	313	700	16	0	0	0	0	0	0	1,608
Agency Total	439	0	440	413	700	912	1,016	939	967	1,024	1,013	377	8,240
Ventura County Watershed Protection District													
Table A	0	0	0	0	0	0	155	154	154	154	3,304	154	4,075
Agency Total	0	0	0	0	0	0	155	154	154	154	3,304	154	4,075
Recreation/Fish and Wildlife (SWP)													
Castaic Lagoon	9	3	8	11	24	19	30	28	27	17	18	13	207
Lake Perris	24	0	0	16	41	39	37	49	33	34	21	13	307
Pyramid Lake	1	0	3	2	3	6	4	4	3	3	2	2	33
Silverwood Lake	2	1	2	1	4	9	9	10	9	5	3	1	56
Agency Total	36	4	13	30	72	73	80	91	72	59	44	29	603
SWP	58,292	21,092	27,465	78,504	100,122	124,468	156,954	150,587	158,089	119,971	138,489	88,391	1,222,424
Non-SWP	2,972	37	19,371	31	45	75	126	27,651	22,418	6,130	3,815	15,765	98,436
Southern California Area Total	***62,364***	***21,929***	***47,782***	***80,113***	***100,417***	***125,643***	***157,356***	***178,310***	***180,808***	***126,101***	***142,304***	***104,156***	***1,327,283***
SWP WATER													
SWP Long-term Water Supply Contracts													
Table A	529	745	1,161	72,674	101,335	211,491	292,606	311,802	221,532	117,033	171,133	61,635	1,563,676
Transfer Table A	11	13	1,000	0	1,000	6,896	10,561	2,185	2,092	10,950	10,400	33,936	79,044
Exchange Table A	100	0	200	100	0	0	1,000	1,000	1,500	3,000	1,296	2,134	10,330
Pool A	0	0	0	0	0	674	977	6,073	603	0	3,044	0	11,371
Article 12(e) Carryover	10,730	0	0	0	0	0	0	0	117	0	0	0	10,847
Article 14(b) Carryover	737	0	0	344	2,127	5,202	0	0	0	0	0	0	8,410
Article 56(c) Carryover	6,857	4,554	7,828	6,676	16,009	22,671	21,532	18,253	21,017	86,107	12,073	23,674	247,251
Article 21	257	867	362	1,037	2,731	1,493	0	0	0	0	0	758	7,505
Water Bank Recovery	18,805	18,428	436	2,167	27,711	8,224	2,857	0	0	0	1,528	1,446	81,602
Flexible Storage Withdrawal	23,792	0	21,603	0	0	0	0	0	0	0	0	0	45,395
Agency Total	61,818	24,607	32,590	82,998	150,913	256,651	329,533	339,313	246,861	217,090	199,474	123,583	2,065,431

Table 9-9 Total Amounts of Water Delivered in 2010, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2010 Total Deliveries
Other Water Supply Contracts													
Solano Settlement	0	0	0	35	411	1,090	0	0	526	504	0	0	2,566
Recreation/Fish and Wildlife	72	15	23	52	113	147	182	158	102	117	111	75	1,167
SWP Total	***61,890***	***24,622***	***32,613***	***83,085***	***151,437***	***257,888***	***329,715***	***339,471***	***247,489***	***217,711***	***199,585***	***123,658***	***2,069,164***
NON-SWP WATER													
Non-SWP Water Supply Contracts													
2010 Transfer/Dry Year Purchase Program	0	0	0	0	0	0	50,315	46,476	43,529	0	0	0	140,320
Local	46,086	1,342	1,947	5,707	138,417	157,543	187,841	166,924	70,381	58,110	107,198	73,869	1,015,365
Vallejo Permit	23	3	9	4	11	10	319	217	121	579	1,202	0	2,498
Subtotal	*46,109*	*1,345*	*1,956*	*5,711*	*138,428*	*157,553*	*238,475*	*213,617*	*114,031*	*58,689*	*108,400*	*73,869*	*1,158,183*
CVP/Reclamation													
Water Transfer to SWP Contractor	0	0	0	0	0	1,291	1,435	21,437	13,963	0	143	8,911	47,180
Annual Contract	27	29	46	48	73	80	101	78	73	91	86	53	785
Conveyance	5,463	1,967	21,459	3,426	250	15,800	26,419	32,135	29,125	10,658	11,099	18,523	176,324
Cross Valley Canal Contractors	0	0	0	0	0	0	11,787	2,384	11,175	3,884	0	0	29,230
Kern National Wildlife Refuge	1,204	1,807	67	70	290	0	0	1,319	4,988	4,760	4,663	2,597	21,765
Recreation/Fish and Wildlife	28	6	5	16	19	43	68	37	6	41	51	35	355
Subtotal	*6,722*	*3,809*	*21,577*	*3,560*	*632*	*17,214*	*39,810*	*57,390*	*59,330*	*19,434*	*16,042*	*30,119*	*275,639*
Non-SWP Total	***52,831***	***5,154***	***23,533***	***9,271***	***139,060***	***174,767***	***278,285***	***271,007***	***173,361***	***78,123***	***124,442***	***103,988***	***1,433,822***
Grand Total	***114,721***	***29,776***	***56,146***	***92,356***	***290,497***	***432,655***	***608,000***	***610,478***	***420,850***	***295,834***	***324,027***	***227,646***	***3,502,986***

Table 9-10 Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962–2010 (Acre-feet)

Year	Annual Table A Amounts According to Long-term Water Supply Contracts							Water Conveyed								Total (16)
								Deliveries								
	Upper Feather River Area (1)	North Bay Area (2)	South Bay Area (3)	San Joaquin Valley Area (4)	Central Coastal Area (5)	Southern California Area (6)	Total (7)	Table A Water (8)	Article 21, Surplus, and Unscheduled Water[a] (9)	Other Water[b] (10)	Feather River Diversions[c] (11)	Wildlife/ Recreation Water (12)	Subtotal (13)	Initial Fill Water (14)	Losses and Storage Changes[d] (15)	
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 9-10 Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962–2010 (Acre-feet)

Year	Annual Table A Amounts According to Long-term Water Supply Contracts							Water Conveyed								
								Deliveries								
	Upper Feather River Area (1)	North Bay Area (2)	South Bay Area (3)	San Joaquin Valley Area (4)	Central Coastal Area (5)	Southern California Area (6)	Total (7)	Table A Water (8)	Article 21, Surplus, and Unscheduled Water[a] (9)	Other Water[b] (10)	Feather River Diversions[c] (11)	Wildlife/ Recreation Water (12)	Subtotal (13)	Initial Fill Water (14)	Losses and Storage Changes[d] (15)	Total (16)
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
2007	11,520	70,231	222,619	1,170,000	70,486	2,584,450	4,129,306	2,081,217	309,973	449,935	1,217,990	2,581	4,061,696	0	(524,851)	3,536,845
2008	39,120	70,606	222,619	1,170,000	70,486	2,593,100	4,165,931	1,234,240	2,729	488,818	1,109,563	2,778	2,838,128	0	(758,813)	2,079,315
2009	39,190	70,981	222,619	1,170,000	70,486	2,593,100	4,166,376	1,232,753	6,032	527,207	1,147,396	2,047	2,915,435	0	(31,319)	2,884,116
2010	39,260	76,531	222,619	1,140,000	70,486	2,623,100	4,171,996	1,930,929	7,505	559,553	1,003,832	1,167	3,502,986	0	461,751	3,964,737
Total	**387,394**	**1,208,276**	**7,125,371**	**41,213,476**	**1,645,774**	**77,835,659**	**129,415,950**	**73,939,988**	**8,649,867**	**10,867,626**	**38,500,145**	**147,402**	**132,105,028**	**1,834,310**	**390,890**	**134,330,228**

[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; and 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 the Delta; (3) storable local inflows to SWP reservoirs; (4) side inflow to San Luis Canal; and (5) inflow into California Aqueduct from Kern River Intertie.

Energy Exchanges

Power Resources P

economical sources
Department of Wate
Table 10-3 shows amounts
program. It
transmission, and other serv
in 2010, and the costs of pu
include contractual short-te
purchases. They also includ
Power transactions, capa
services with CAISO.

Harvey O. Banks Delta Pumping Plant.

Significant Events in 2010

The Department of Water Resources (DWR) finalized a Renewable Energy Procurement Plan under which DWR will progressively add renewable and low-emission energy to the State Water Project (SWP) power portfolio to ensure compliance with the Global Warming Solutions Act (Assembly Bill 32 (AB 32)) and the Governor's Climate Change Initiative (Executive Order S-03-05).

DWR also finalized the 2009 Integrated Resource Plan (IRP09), which used a 20-year planning horizon and focused on projecting the SWP's long-term energy needs, established the means by which the value and risk of prospective energy assets may be compared, and planned for the acquisition of energy supplies for intermediate and long-term time frames.

Additionally, DWR executed the Lodi Energy Center Power Sales Agreement and Project Maintenance and Operations Agreement, which enables the SWP to purchase 33.5 percent of the capacity and energy output of the Lodi Energy Center from the Northern California Power Agency starting in 2012.

Information for this chapter was provided by the State Water Project Analysis Office, the SWP Power and Risk Office, and the Hydropower License Planning and Compliance Office.

Chapter 10
Power Re[illegible]

L[illegible] a economical sources of power in order to [illegible] Department of Water Resources (DWR) program. Key elements of the program include studies of power resources for future needs, acquisition of long-term power resources and transmission services, short-term purchases or sales of power, and the strategic operation of generation and pumping facilities.

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 power facilities and enters into long-term contracts and short-term arrangements with other electric utilities and with the California Independent System Operator (CAISO) for transmission access and for power purchases and sales. DWR's generators and pumps also provide a mix of regulation, spinning, and nonspinning reserves to the CAISO's ancillary services market. In addition, DWR's power resources program takes advantage of SWP water storage and conveyance capacities to control pump loads and generation in a cost-effective manner.

Energy Exchanges

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Table 10-3 shows amounts of energy, transmission, and other services purchased in 2010, and the costs of purchases. Amounts include contractual short-term and long-term purchases. They also include transactions of energy, transmission, capacity, and ancillary services with CAISO.

DWR purchased 4.03 million MWh of energy at a cost of $134.60 million. Other SWP-related costs, including transmission, operation, maintenance, and CAISO charges totaled $211.44 million. This amount includes $4.18 million for debt service and $5.48 million for operations and maintenance, both associated with Pine Flat Powerplant. It also includes $2.00 million for transmission service from Reid Gardner Unit 4 to El Dorado Substation and $74.73 million for operations, maintenance, fuel, insurance, waste removal, and property taxes at Reid Gardner Unit 4.

Major Electric Utility Industry Developments

On April 1, 2009, CAISO implemented its Market Redesign and Technology Upgrade (MRTU), a new market structure that fundamentally changed the way the SWP supplied energy for its pump load and marketed its energy surplus.

The most significant features of MRTU were Locational Marginal Pricing and an Integrated Forward Market (IFM). Under IFM, DWR has the flexibility to purchase energy for SWP pumping load from CAISO's IFM, thereby relieving the SWP of the long-standing requirement to "balance" each hourly pump load with equal supplies of SWP generation or purchased energy. In addition, DWR no longer needs to directly provide generation for transmission losses or load deviation adjustments because these are also managed through CAISO's markets.

For more information about MRTU please visit CAISO's website.

In 2010, CAISO continued to augment the Market Redesign and Technology Upgrade (MRTU) market implemented in 2009 with new products and to fix issues with market behavior and price fluctuations.

In August 2010, CAISO implemented its proxy demand resource product to provide a method for retail response participation in CAISO's market. However, participation

in this new market product was less than expected; additionally, the proxy demand resource stakeholder process diverted CAISO's resources from working on DWR's participating load refinements.

Multistage generator modeling was implemented in December 2010. Primarily designed for combined cycle generating units, this new model allowed resources with multiple operating configurations and limitations to be modeled in CAISO's full network model and provided optimized commitment and dispatch. However, this model did not match DWR's resource needs.

The development of convergence bidding was finalized in 2010, with implementation expected in 2011, and was intended to increase market liquidity and to provide generator participants with a way to hedge the risk of outages that occur in real time.

As part of a coordinated effort between utilities, developers, State agencies, and federal agencies to meet the State's policy goal of 33 percent renewable energy by 2020, the Renewable Energy Transmission Initiative Phase 2 continued in 2010. Phase 2 included conceptual transmission plans for major upgrades to California's transmission system to deliver renewable energy to consumers with a focus on identifying potential transmission corridors.

To meet an increase in renewable generator requests to connect to the transmission system, CAISO combined its current large and small generator interconnection procedures into a single annual cluster study process and generator interconnection procedure.

DWR Participation in Electric Utility Industry Activities

DWR continued to participate in CAISO's stakeholder processes to help ensure that the MRTU tariff, CAISO business practice manuals, and MRTU functional simulations are compatible with operations of wholesale market participants including the SWP. DWR's participation in CAISO stakeholder processes focused on the following primary elements:

- market initiatives roadmap;
- renewable resources integration market and review;
- dispatchable demand resource;
- 72-hour residual unit commitment;
- reliability demand response product;
- Grid Management Charge rate structure for 2011 and 2012;
- dynamic transfer;
- proxy demand resource;
- barriers to demand response;
- real-time imbalance energy offset costs;
- convergence bidding;
- participating load refinement;
- scarcity pricing;
- generator interconnection procedures initiatives;
- transmission planning;
- 2011 local capacity procurement;
- interim capacity procurement mechanism tariff language;
- standard capacity product, phase II;
- standard capacity product outage reporting requirement;
- replacement requirement for resource adequacy resource planned outage; and
- non-resource-specific system resource adequacy resource proposal.

In addition, DWR participated in the California Energy Commission's planning processes by submitting a demand forecast to the California Energy Commission.

Besides CAISO and California Energy Commission stakeholder processes, DWR participated in FERC proceedings to help ensure that various market requirements

[illegible] appropriately structured. This included the following major processes and litigations (with FERC docket number given in parenthesis, if applicable):

- CAISO's Treatment of Participating Load within Demand Response, Order 719 (RM05-5-017, ER06-615-041, ER06-615-037, ER08-1203, EL08-85, AD09-10, ER09-1048, ER10-765);
- CAISO's Integration of Variable Energy Resources (RM10-11);
- CAISO's Non-Generator resources providing Ancillary Services (ER10-1755);
- CAISO's Multi-Stage Generating modeling (ER10-1360 and ER10-2056);
- CAISO's Proxy Demand Resource (ER10-765);
- CAISO's Regulatory Must Take Generator clarifications (ER09-1542);
- CAISO's Start-up Cost and Minimum Load Cost allocation (ER09-1529);
- CAISO's Convergence Bidding (ER10-300, ER10-1559);
- CAISO's Scarcity Pricing (ER10-500);
- CAISO's Battery Transmission Rehearing (EL10-19-001);
- CAISO's Interim Capacity Procurement Mechanism updated to Capacity Procurement Mechanism (ER11-2256-000);
- FERC's Electric Quarterly Report filing requirements changes (RM10-12);
- FERC's Notice of Proposed Rulemaking to amend the transmission planning and allocation requirement established in Order No. 890 (RM10-23);
- FERC's request for comments regarding rates, accounting, and financial reporting associated with services provided by electric storage technologies (AD10-13);
- CAISO's proposed tariff amendments to revise the transmission planning process to meet renewable portfolio standards and environmental goals (ER10-1401);
- Southern California Edison's (SCE) request for a FERC ruling on eligibility for rate incentives with respect to Lugo-Pisgah and Red Bluff transmission projects (EL10-81);
- Pacific Gas & Electric Company's (PG&E) TO13 proposed increase to transmission revenue requirement rates for retail and wholesale customers of CAISO (ER10-2026);
- San Diego Gas & Electric Company's TO3-Cycle 4 proposed increase to transmission revenue requirement rates for retail and wholesale customers of CAISO (ER10-2235);
- PG&E's proposed annual update to its Transmission Revenue Balancing Account (ER11-44); and
- SCE's proposed annual update to its Transmission Revenue Balancing Account (ER11-1931) and Reliability Services tariff (ER11-1934).

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Bulk Electric System Reliability Standards

Background

The Energy Policy Act of 2005 assigned ownership of the Bulk Electrical System reliability to FERC and required the creation of an Electric Reliability Organization. The North American Electric Reliability Council (NERC) was named Electric Reliability Organization by FERC in July 2006 and was tasked with establishing reliability standards for the Bulk Electrical System. Compliance with NERC reliability standards is mandatory.

WECC is the implementation vehicle for promoting regional electric service reliability in both western Canada and the western United States. WECC has oversight for implementation of these standards and validation of compliance, including assessment of penalties and/or sanctions.

The standards developed by NERC fall under these categories:

- BAL—Resource and Demand Balancing;
- COM—Communications;
- CIP—Critical Infrastructure Protection;
- EOP—Emergency Preparedness and Operations;
- FAC—Facilities Design, Connections, and Maintenance;
- INT—Interchange Scheduling and Coordination;
- IRO—Interconnection Reliability Operations and Coordination;
- MOD—Modeling, Data, and Analysis;
- NUC—Nuclear;
- PER—Personnel Performance, Training, and Qualifications;
- PRC—Protection and Control;
- TOP—Transmission Operations;
- TPL—Transmission Planning; and
- VAR—Voltage and Reactive.

NERC Reliability Compliance—Program Goals

DWR is committed to providing an effective reliability compliance program. In addition, DWR strives to achieve a culture of compliance that supports its key objectives of safety and reliability.

DWR established its compliance program to ensure strict compliance with NERC's mandatory reliability standards. These standards include specific impacts on operations, maintenance, physical security, and cyber security. The compliance program performs program audits and reviews to ensure successful and ongoing compliance. Audits and reviews are done by the governance side of the compliance program and include only staff that are independent of any responsibility for meeting the reliability standards. Consultants or contractors can be used for providing the objectivity that is required.

Compliance program attributes include:

- senior management involvement and support in fostering a culture of compliance as well as having a continuous role in participating, evaluating, and authorizing the program;
- DWR participation in industry groups that develop, review, approve, and implement reliability standards, North American Energy Standards Board business practice standards, and WECC regional criteria and guidelines;
- identification of employees, designated as Business Owners and Subject Matter Experts, who have responsibility, authority, and accountability for compliance with the reliability standards;
- employee training as required to adhere to the reliability standards and to foster support and awareness of the compliance program and employees' responsibilities;
- encouragement of internal communication, along with an easy mechanism to alert program staff to any issues that have caused, or are likely to cause, DWR to be potentially noncompliant with the standards; and
- responsiveness in addressing, correcting, or mitigating issues identified during the development and implementation of the compliance program.

DWR's Compliance Responsibility

All owners, operators, and users of the Bulk Electrical System must formally register with NERC and fully comply with all applicable reliability standards and associated requirements. DWR is currently registered with NERC for 6 of 15 functional areas. These are:

- Transmission Owner (TO);
- Load Serving Entity (LSE);
- Generation Owner (GO);
- Generation Operator (GOP);

- Purchasing and Selling Entity (PSE); and
- Resource Planner (RP).

DWR organizations responsible for the registered functional areas reside within the:

- Plant Asset Management Office;
- State Water Project Operations Control Office;
- Field Division Offices;
- Operations Support Office;
- State Water Project Power and Risk Office; and
- Division of Engineering.

All management and staff in these organizations are required to support DWR's compliance efforts.

DWR has continued the work required to meet the compliance requirements of the reliability standards. The third self-certification was completed in January 2010, involving operations, maintenance, and engineering functions, and initial work on critical cyber assets. This process requires DWR to certify that it is currently in compliance with the requirements of each standard or provide a violation report supported by a mitigation plan to resolve outstanding items. Violations may lead to financial penalties or reduced operating flexibility.

Operations and maintenance requirements have increased and have been aggressively pursued. The work to remain in compliance has increased in the current year and is likely to be expanded as new standards are developed. Required mitigation plans were submitted as a result of self audits. Cyber security standards (Critical Infrastructure Protection) have progressed to include technical revisions and initial administrative procedures.

Energy Exchanges

Table 10-3 shows amounts of energy, transmission, and other services purchased in 2010, and the costs of purchases. Amounts include contractual short-term and long-term purchases. They also include transactions of energy, transmission, capacity, and ancillary services with CAISO.

Power Resources Program

Long-term State Water Project (SWP) wa economical sources of power in order to d Department of Water Resources (DWR) d program

Hydropower License Planning and Compliance

Compliance with FERC license terms and conditions is an important function of SWP organizations. DWR's record of compliance is significant and is an important consideration of FERC. FERC requires strict compliance with license terms and conditions and has the authority to levy fines for noncompliance. In addition to FERC setting license requirements and requiring periodic submittals, DWR is subject to safety, security, and environmental inspections and is required to comply with the findings of these inspections.

On July 1, 2010, the Hydropower License Planning and Compliance Office was formally established as a new SWP organization with the following mission: to plan, manage, coordinate, lead, and oversee DWR's federal hydropower license activities to meet all regulatory requirements while securing cost-effective, safe, reliable, and responsive benefits from SWP facilities for the people and environment of the State of California.

Oroville Facilities Relicensing

On January 26, 2005, DWR filed an application with FERC requesting a new license for the Oroville Facilities (FERC Project No. 2100). The existing 50-year hydropower license expired January 31, 2007, and, until a new license is issued, FERC is issuing annual licenses.

FERC issued the final environmental impact statement on May 18, 2007. DWR certified the final environmental impact report on July 22, 2008, and filed it with the State Water Resources Control Board (SWRCB) the same day. One month later, Butte and Plumas counties filed a lawsuit challenging the adequacy of the final environmental impact report.

The following significant events associated with relicensing occurred in 2010:

- DWR withdrew and resubmitted the application for Section 401 water quality certification on July 29, 2010, with SWRCB, thereby reinitiating the 1-year clock for SWRCB to take action.
- The SWRCB issued drafts of the water quality certification on January 21, July 2, and December 3, 2010. After receiving comments from DWR and other interested parties, the water quality certification was adopted by SWRCB on December 15, 2010. DWR provided comprehensive, detailed comments on the certification and requested SWRCB use the same terms and conditions described in the Oroville Facilities Settlement Agreement. DWR also requested SWRCB revise certain temperature targets and requirements until facility modifications are completed and to delete the requirement for implementing a plan for salmon habitat enhancement. The water quality certification reserved SWRCB authority to reopen the certification to consider imposition of fish passage or other measures if the salmon and steelhead Habitat Expansion Plan is not implemented by DWR;
- DWR and PG&E submitted the final Habitat Expansion Plan for Central Valley salmon and steelhead to the National Marine Fisheries Service for approval on November 19, 2010. The Habitat Expansion Plan proposed actions on the Lower Yuba River to meet the Habitat Expansion Agreement (HEA) goal of providing spawning habitat sufficient to accommodate an estimated net increase of 2,000 to 3,000 spring-run Chinook salmon in the Sacramento River Basin. On December 24, 2010, DWR filed a notice of intent to withdraw from the HEA since the December 15, 2010, water quality certification included terms that were materially inconsistent with the terms of the HEA. The HEA was executed as an off-license agreement, not subject to FERC's jurisdiction. However, Condition S9 of the certification required implementation of the HEA, which would automatically be incorporated into the new FERC license; and
- On February 11, 2010, the Attorney General, on behalf of DWR, informed Butte and Plumas counties that DWR was seeking $675,000 in payment for the costs of preparing the administrative record.

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

- Oroville Dam and Lake Oroville;
- Hyatt Pumping-Generating Plant;
- Thermalito Pumping-Generating Plant;
- Thermalito Diversion Dam Powerplant;
- Thermalito Diversion Dam;
- Feather River Fish Barrier Dam;
- Feather River Fish Hatchery;
- Thermalito Power Canal;
- Thermalito Forebay; and
- Thermalito Afterbay.

FERC Project No. 2426

DWR operates power generating facilities on the West Branch and East Branch of the SWP. This power generation is authorized by the hydropower license issued by FERC for Project No. 2426.

On October 28, 2009, FERC issued an order amending Article 52 and Exhibit S of FERC Project No. 2426. The order was issued in response to DWR's 2005 application for an amendment to revise the minimum stream flow requirements and fish stocking practices in Piru Creek below Pyramid Dam. The stream flow revisions were requested to reduce impacts to the listed arroyo toad and other special-status species, such as the California red-legged frog. FERC's order

Figure 10-1 **Names, Locations, and Nameplate Capacities of Primary Power Facilities**

also acknowledged the Department of Fish and Wildlife (formerly the Department of Fish and Game) and the National Marine Fisheries Service deliberations on future fish stocking practices in Piru Creek and provided 120 days for DWR to file a plan and schedule for providing catchable rainbow trout. On August 26, 2010, FERC issued an order modifying and approving DWR's arroyo toad and sensitive species monitoring plan for Piru Creek. DWR filed the plan with FERC on May 27, 2010.

On April 24, 2010, DWR executed Amendment No. 2 to the 1969 Memorandum of Understanding with the U.S. Forest Service regarding operation of Project No. 2426 in the Los Padres and Angeles national forests. The amendment transferred responsibility of operation and maintenance of certain recreation sites and management of public recreation activities at the Pyramid Lake Recreation Area from the U.S. Forest Service to DWR. The amendment has an effective date of January 1, 2011, and was executed to cooperatively improve facility conditions identified in a 2007 FERC inspection.

Existing SWP Power Facilities

Figure 10-1 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 kilowatt hours (kWh) of energy in a median water year, while the 3 megawatts (MW) from the Thermalito Diversion Dam Powerplant adds another 24 million kWh per 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 (which in 2008 began doing business under the name NV Energy (NVE)), DWR has received energy from Reid Gardner Powerplant, a coal-fired facility in Nevada. Reid Gardner Powerplant consists of four units. DWR owns 67.8 percent of Unit 4, and NVE owns the remainder of Unit 4, as well as all of Units 1, 2, and 3. Under this agreement, DWR receives up to 235 MW from Unit 4, subject to NVE's limited right to interrupt DWR's energy deliveries. Whenever NVE interrupts DWR's scheduled energy, DWR receives payment based on NVE's combustion turbine costs.

The Reid Gardner agreement expires in July 2013 and will not be renewed.

DWR Power Planning Activities

In March 2010, DWR finalized a Renewable Energy Procurement Plan, which called for DWR to progressively add renewable and low-emission energy to the SWP power portfolio to ensure compliance with the Global Warming Solutions Act (Assembly Bill 32 (AB 32)) and the Governor's Climate Change Initiative (Executive Order S-03-05).

In September 2010, DWR finalized the 2009 Integrated Resource Plan (IRP09). Using a 20-year planning horizon, IRP09 focused on projecting the SWP's long-term energy needs, established the means by which the value and risk of prospective energy assets may be compared, and planned for the acquisition of energy supplies for intermediate and long-term time frames. IRP09 did not address strategies for short-term (1 year or less) energy trades, but it did recognize the relationship between

Energy Exchanges

[illegible] under identified the need to better characterize the short-term transactions as a basis for future assessments. Factors considered include:

- forecasted power requirements for SWP pumping;
- forecasted power generation from SWP resources;
- transmission access and costs;
- forecasted water deliveries to contractors;
- costs of power resources;
- CAISO ancillary services and other costs;
- cost escalation rates; and
- operating characteristics of units.

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Table 10-3 shows amounts of energy, transmission, and other services purchased in 2010, and the costs of purchases. Amounts include contractual short-term and long-term purchases. They also include transactions of energy, transmission, capacity, and ancillary services with CAISO.

Power Resources Program

Key elements in IRP09's resourcing strategy are to purchase shares in state-of-the-art combined-cycle combustion turbine natural gas power plants, execute intermediate-term power purchase agreements for off-peak power, add renewable resources according to DWR's Renewable Energy Procurement Plan, and control transmission risks by acquiring assets and purchasing energy at locations that minimize those risks.

Additionally, DWR continues to study the economic viability of a second unit at the Alamo Powerplant, which would be a qualified renewable small hydroelectric facility.

Contractual Resource Arrangements

Through joint development, exchanges, and purchases, DWR obtains a significant amount of capacity and energy for SWP operations from other utilities and energy marketers throughout California, the Northwest, and the Southwest. Under these agreements, DWR can sell, buy, or exchange energy on an hourly to multiyear basis, as needed.

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 a pumped-storage facility 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 use facility of DWR and the Bureau of Reclamation (Reclamation). DWR's share is 222 MW, and Reclamation's share is 202 MW.

Purchases

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

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Long-term Purchase Agreements. The output of the 165 MW hydroelectric 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 also contracts for the energy output of five hydroelectric plants totaling 30 MW owned and operated by The Metropolitan Water District of Southern California (Metropolitan).

In May 2010, DWR entered into the Lodi Energy Center Power Sales Agreement with Northern California Power Agency (NCPA) and various public agencies to finance, construct, operate, and maintain the Lodi Energy Center. The Lodi Energy Center will be a new 280 MW combined cycle combustion turbine generation facility that uses natural gas as its source of fuel. On a pro rata basis, DWR will receive 33.5 percent of the capacity, energy, and other attributes from this facility, which NCPA would own and operate. The Power Sales Agreement supersedes the Second Phase Agreement signed with NCPA in March 2008.

In August 2010, DWR entered into the Lodi Energy Center Project Management and Operations Agreement with NCPA and the public agencies that had executed the Power Sales Agreement to specify NCPA's management and operation of the Lodi Energy Center under the direction of the parties of the Power Sales Agreement. The facility is planned to be operational in 2012.

Short-term Purchase Agreements. DWR typically transacts with member utilities and energy marketers of the WSPP. In 2010, these transactions included not only energy but also capacity to meet the requirements of resource adequacy, which is a planning and procurement process to ensure adequate resources. In addition to transactions under the WSPP master agreement, DWR can purchase surplus energy from Metropolitan's Colorado River Aqueduct system according to the terms of the 1988 Coordination Agreement between DWR and Metropolitan. This agreement also provides for monthly surplus firm and economy energy sales from DWR to Metropolitan and energy exchanges between DWR and Metropolitan.

Energy Exchanges

The energy exchange agreement with Sacramento Municipal Utility District (SMUD) in which DWR provided SMUD with energy during peak periods from June through August and SMUD provided DWR with energy during off-peak periods from January through March and from October through December expired on December 31, 2009.

Load Management

DWR operates its pumps through an extensive computerized network. This control system, coupled with the operating flexibility of DWR's pumping and generating plants provided by storage reservoirs, allows DWR to maximize pumping during off-peak periods when power costs are lower—usually at night—and maximize power generation during on-peak periods when power costs are higher. By taking advantage of this scheduling flexibility, when not restricted by operating requirements, SWP pump load and generation are optimized to reduce the net cost of power needed for SWP water deliveries.

Sales or Exchanges of Excess Power

When generation from SWP power resources exceeds requirements, DWR sells or exchanges the excess power through contracts with CAISO, utilities, and marketers.

Demand Response

DWR is the largest single supplier of demand response in the CAISO market via a Participating Load Agreement under which DWR bids SWP load to be curtailed by the CAISO when the price of energy in the CAISO market reaches DWR's bid price. Due to DWR's water delivery priority, these bids are normally restricted to contingency events.

Contractual Transmission Agreements

Although able to develop or construct 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 with interconnected utilities for power purchases, sales, and exchanges.

Under the Comprehensive Agreement with PG&E, DWR receives 1,300 MW of firm network transmission service over the PG&E transmission system to serve SWP pump loads and power resources in Northern and Central California. Upon implementation of CAISO's MRTU on April 1, 2009, transmission service to DWR under the Comprehensive Agreement is limited to point-to-point service. The remaining transmission service in Northern and Central California, which cannot be provided through

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from CAISO. Through the Comprehensive Agreement, DWR also provides a remedial action system whereby certain SWP pumping and generating plants can be instantaneously curtailed under certain predefined emergency [illegible]

Energy Exchanges

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Table 10-3 shows the amounts of energy, transmission, and other services purchased in 2010, and the costs of purchases. Amounts include contractual short-term and long-term purchases. They also include transactions for energy, transmission, capacity, ancillary services with CAISO.

Power Resources Program

In Southern California, DWR receives transmission service for SWP loads and resources through CAISO. Additionally, DWR has interconnection and wholesale distribution service agreements with SCE for service over SCE's distribution facilities from the CAISO interchange points to SWP loads and resources.

Under the participation agreement with NVE, DWR receives 235 MW of firm transmission service over NVE'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 El Dorado Substation and the Pastoria and Vincent Substations.

SWP Power Operations in 2010

Tables 10-1 through 10-4 present historical information about SWP power operations for calendar year 2010, including energy consumed, generated, exchanged, purchased, and sold.

Energy Consumed

In 2010, energy used at the 29 SWP pumping and generating plants totaled 7.187 million megawatt hours (MWh). According to the terms and conditions of various water conveyance contracts and exchange agreements, some water belonging to the Central Valley Project is pumped through Banks and Dos Amigos pumping plants and Gianelli Pumping-Generating Plant. Reclamation furnishes additional energy for this purpose.

Table 10-1 shows the amount of energy used each month at SWP pumping and power generating plants to operate the SWP in 2010, excluding transmission losses.

Energy Generated

Table 10-2 shows the amounts of energy generated at SWP facilities in 2010, as well as energy purchased for SWP operations.

Hydroelectric and Coal

The Hyatt-Thermalito power complex in Oroville generated 1.544 million MWh of energy in 2010.

Energy generated at SWP aqueduct recovery plants—Gianelli, Alamo, Devil Canyon, Mojave Siphon, and Warne—totaled 1.481 million MWh.

The SWP share of energy generated at the coal-fired Reid Gardner Unit 4 in Nevada totaled 0.895 million MWh.

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 Developments

Through the *West Branch Cooperative Development Agreement* with LADWP, DWR receives energy based on the amount of water scheduled through the West Branch. In 2010, LADWP provided 442,356 MWh for DWR's share of energy generated at Castaic Powerplant.

DWR's share of Gianelli Pumping-Generating Plant used 306,782 MWh and generated 86,533 MWh of energy.

Table 10-1 Energy Used at Pumping Plants and Power Plants in 2010, 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 (station service)	0.011	0.233	0.196	0.186	0.359	0.014	0.026	0.010	0.063	0.389	0.272	0.040	1.800
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	0.454	0.550	0.258	0.599	0.938	1.245	1.398	1.403	1.363	1.104	0.984	0.414	10.710
Barker Slough Pumping Plant	0.166	0.208	0.101	0.256	0.804	1.164	1.371	1.314	1.235	0.976	0.742	0.247	8.584
South Bay Pumping Plant	1.877	1.512	3.271	3.950	4.999	10.892	13.335	13.069	12.470	9.713	2.790	0.058	77.934
Del Valle Pumping Plant	0.028	0.024	0.026	0.024	0.024	0.015	0.013	0.016	0.016	0.154	0.074	0.029	0.444
Banks Pumping Plant	71.136	47.928	63.846	12.319	17.464	57.098	86.498	110.973	93.139	81.890	83.513	118.266	844.070
Gianelli Pumping-Generating Plant (SWP share)	65.492	40.467	50.521	0.316	0.071	1.453	1.142	5.163	7.836	15.668	28.565	90.089	306.782
Dos Amigos Pumping Plant (SWP share)	3.062	5.387	8.168	7.966	22.996	36.179	49.025	55.321	50.630	32.204	27.839	27.099	325.876
Buena Vista Pumping Plant	11.226	8.823	12.192	19.295	25.000	37.481	50.383	53.102	49.778	40.370	36.474	28.868	372.992
Teerink Pumping Plant	15.276	11.702	12.752	21.549	26.960	37.163	49.258	53.320	50.794	42.506	39.630	31.816	392.726
Chrisman Pumping Plant	34.380	26.580	28.352	48.030	59.148	80.595	106.684	117.219	112.374	94.804	88.331	71.191	867.689
Edmonston Pumping Plant	127.816	98.129	103.466	175.113	214.916	291.869	387.570	426.531	409.646	351.154	328.747	264.242	3,179.199
Alamo Powerplant (station service)	0.069	0.042	0.028	0.003	0.004	0.001	0.000	-	0.000	0.007	0.000	0.016	0.170
Pearblossom Pumping Plant	5.489	10.798	14.116	37.719	42.190	59.013	73.325	79.003	75.704	53.340	69.555	47.635	567.888
Pine Flat Powerplant (station service)[a]	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
Mojave Siphon Powerplant (station service)	0.078	0.050	0.045	0.001	0.000	0.000	0.000	-	-	0.014	0.005	0.025	0.218
Devil Canyon Powerplant (station service)	0.071	0.236	0.070	0.000	0.003	0.001	0.000	-	0.000	-	-	0.000	0.382
Oso Pumping Plant	12.714	6.740	5.666	4.164	6.706	8.358	13.148	15.553	15.165	18.234	9.423	11.190	127.061
Warne Powerplant (station service)	0.001	0.000	0.002	-	0.001	-	-	0.003	-	-	0.004	0.010	0.022
Las Perillas Pumping Plant	0.113	0.198	0.264	0.477	1.039	1.406	1.687	1.538	1.121	0.553	0.110	0.235	8.741
Badger Hill Pumping Plant	0.263	0.488	0.680	1.233	2.651	3.590	4.121	3.699	2.693	1.356	0.269	0.607	21.649
Devil's Den Pumping Plant	0.642	0.567	0.701	0.785	1.340	1.713	2.313	2.460	2.241	1.476	0.372	0.797	15.407
Bluestone Pumping Plant	0.597	0.525	0.645	0.729	1.241	1.595	2.167	2.298	2.086	1.384	0.355	0.761	14.384
Polonio Pass Pumping Plant	0.639	0.562	0.698	0.791	1.351	1.725	2.315	2.450	2.221	1.490	0.359	0.811	15.413
Greenspot Pumping Plant	0.618	0.025	0.494	0.462	0.702	0.915	1.505	1.608	1.485	1.500	1.282	0.541	11.136
Crafton Hills Pumping Plant	0.807	0.015	0.633	0.594	0.911	1.236	2.041	2.026	1.933	2.009	1.758	0.716	14.678
Cherry Valley Pumping Plant	0.022	0.012	0.015	0.025	0.036	0.041	0.082	0.124	0.134	0.128	0.093	0.046	0.759
Total Energy Required for SWP	**353.047**	**261.802**	**307.206**	**336.585**	**431.854**	**634.762**	**849.410**	**948.203**	**894.129**	**752.424**	**721.546**	**695.750**	**7,186.718**

[a] Pine Flat station service energy provided by CAISO under MRTU operation.

Table 10-2 Energy Generated and Purchased in 2010, 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	48.060	31.621	43.353	16.500	99.959	124.368	307.097	311.318	240.391	116.572	127.656	77.257	1,544.152
Gianelli Pumping-Generating Plant (SWP share)	0.000	0.000	0.000	5.326	30.175	19.022	18.528	9.623	3.859	0.000	0.000	0.000	86.533
Alamo Powerplant	0.000	1.224	2.608	6.084	7.166	8.396	9.814	9.702	9.294	8.573	9.479	6.354	78.694
Mojave Siphon Powerplant	0.514	1.095	1.294	4.028	4.468	6.215	7.871	8.220	8.181	4.347	7.342	5.931	59.507
Devil Canyon Powerplant	23.904	10.815	23.759	67.772	74.603	106.496	124.117	133.093	130.958	95.448	111.441	88.386	990.793
Reid Gardner Unit 4	116.109	66.416	0.000	70.357	52.278	72.727	107.435	101.197	83.631	80.446	62.613	81.440	894.649
Warne Powerplant	19.102	16.219	11.047	9.881	14.658	19.082	27.460	33.302	32.265	39.653	20.251	22.821	265.741
Subtotal	*207.689*	*127.390*	*82.062*	*179.948*	*283.307*	*356.307*	*602.323*	*606.453*	*508.580*	*345.039*	*338.781*	*282.189*	*3,920.069*
Energy Sources from Long-term Agreements													
Castaic Powerplant	47.159	25.624	13.574	13.073	23.984	29.451	44.568	54.242	53.482	63.703	32.638	40.860	442.356
Metropolitan Small Hydro Generation	9.794	4.108	9.037	11.572	7.274	9.350	12.216	10.437	10.610	12.004	15.211	10.578	122.191
Pine Flat Powerplant (Kings River Conservation Dist.)	0.000	0.000	11.577	26.572	90.403	132.809	134.736	85.932	26.464	5.196	0.000	0.131	513.820
Power Exchange Delivered to Other Entities	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
Power Exchange Received from Other Entities	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
Power Exchange Delivered to SCE	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
Power Exchange Received from SCE	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
Energy to Metropolitan for CRA[a] Pumping	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
Energy from Metropolitan for CRA[a]	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
Power System Imbalances	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Purchases													
Purchases (Firm and Power Contractors)	207.800	187.200	171.050	226.177	186.739	274.353	390.398	356.000	398.000	305.600	358.950	333.200	3,395.467
CAISO Energy[b]	55.205	37.480	152.956	39.242	83.548	57.692	(163.031)	(23.662)	32.993	114.482	66.366	153.592	606.864
Subtotal	*319.958*	*254.412*	*358.194*	*316.636*	*391.947*	*503.655*	*418.887*	*482.949*	*521.549*	*500.985*	*473.165*	*538.361*	*5,080.699*
Total Resources	527.647	381.802	440.256	496.585	675.254	859.962	1,021.210	1,089.403	1,030.129	846.024	811.946	820.550	9,000.768
Less Energy Sales	(174.600)	(120.000)	(133.050)	(160.000)	(243.400)	(225.200)	(171.800)	(141.200)	(136.000)	(93.600)	(90.400)	(124.800)	(1,814.050)
Total Energy Provided to the SWP	**353.047**	**261.802**	**307.206**	**336.585**	**431.854**	**634.762**	**849.410**	**948.203**	**894.129**	**752.424**	**721.546**	**695.750**	**7,186.718**

[a] Contractual Resource Arrangement.
[b] Energy provided by CAISO for balancing the total SWP loads and resources.

Table 10-3 Energy, Transmission, and Related Costs in 2010

Category	Contractual Energy Purchased (MWh)	Energy Cost (Dollars)	Transmission Cost Outside CAISO (Dollars)	Other Energy Related Costs[a] (Dollars)	Total Cost (Dollars)
CAISO				127,040,739	127,040,739
Long-term Contracts[b]	636,011	10,956,790	9,864,431	84,398,431	105,219,652
Energy Marketers (WSPP)	3,395,467	123,647,071			123,647,071
Total	**4,031,478**	**134,603,861**	**9,864,431**	**211,439,170**	**355,907,462**

[a] Includes all costs under CAISO.
[b] Kings River Conservation District, The Metropolitan Water District of Southern California, NV Energy, Pacific Gas & Electric Company, and Southern California Edison.

Table 10-4 Energy Sold in 2010 and Revenues from Sales per Contract Agreements

Category	Contractual Energy Sold (MWh)	Revenue from Energy Sales (Dollars)	Other Energy-Related Revenue[a] (Dollars)	Total Sales (Dollars)
CAISO			73,980,869	73,980,869
Long-term Contracts	5,921	374,740	2,127,666	2,502,406
Energy Marketers (WSPP)	1,814,050	86,031,887		86,031,887
Total	**1,819,971**	**86,406,627**	**76,108,535**	**162,515,162**

[a] Includes all revenue under CAISO.

Energy Exchanges

As detailed previously in this chapter, DWR's exchange agreement with SMUD expired on December 31, 2009.

Purchases and Costs

a economical sources of power in order to Department of Water Resources (DWR) program. Table 10-3 shows amounts of energy, transmission, and other services purchased in 2010, and the costs of purchases. Amounts include contractual short-term and long-term purchases. They also include transactions of energy, transmission capacity, and ancillary services with CAISO.

Power Resources Program

Long-term Purchase Agreements. According to terms of the Kings River Conservation District contract, DWR receives the total output of the 165 MW Pine Flat Powerplant. In 2010, the power plant provided 513,820 MWh of energy to the SWP at an energy component cost of $4.01 million.

Under the Metropolitan Small Hydro contract, DWR purchased 122,191 MWh of energy in 2010 from five small hydroelectric power plants on the Metropolitan system at a cost of $6.95 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 2010, the SWP purchased short-term energy from seven WSPP marketers, in addition to one public electric utility trading under the WSPP agreement.

Contractual Sales of Excess Power

In 2010, DWR sold 1.82 million MWh of energy to one utility and seven WSPP power marketers for a total revenue of $86.41 million. DWR also received $76.11 million in revenues for capacity and other energy-related services, including $73.98 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.

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Forecasting Power Operations

Each year, after reviewing the SWP water contractors' water delivery requests and the construction schedule for future facilities, DWR forecasts the associated energy consumption and generation through 2035. 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. The forecast also includes losses in reservoirs and aqueducts, recreation water, and water to replace storage in reservoirs south of the Delta.

Actual SWP power requirements may vary significantly from the forecast amounts. 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 and for generation. 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, more power would be used.

Chapter 11
Facilities Maintenance

Thermalito Diversion Dam.

Significant Events in 2010

In 2010, the Federal Energy Regulatory Commission (FERC) required Part 12D safety inspections for Cedar Springs Dam, Devil Canyon Powerplant Second Afterbay, Pyramid Dam, and Quail dams. In addition, the eighth Part 12D independent safety inspection reports for Oroville, Thermalito Diversion, Thermalito Forebay, Thermalito Afterbay, and Feather River Fish Barrier dams were published in January 2010.

A Time Sensitive Assessment of the Oroville-Thermalito dams' Emergency Action Plan (EAP) was conducted to satisfy FERC's Time Sensitive Assessment EAP Initiative.

The Division of Operations and Maintenance (O&M) resumed the Patterson Dam Modifications (Raise) project and transmitted plans and specifications to the Division of Safety of Dams (DSOD). The proposed project was originally submitted to DSOD in May 2007.

The Dewatering Excavation and Deep Soil Mixing at Perris Dam was completed.

At Oroville Dam, the River Outlet Valve Chamber's new pressure-relief wall was constructed.

Significant inspections included inspection of Mojave Siphon Barrel No. 3 and the San Bernardino Intake Tunnel.

Information for this chapter was provided by the Division of Operations and Maintenance, the Division of Safety of Dams, the Division of Integrated Regional Water Management, 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 regarding the performance of each facility. The Division of Safety of Dams (DSOD) has several programs to ensure the safety of SWP dams. DSOD engineers inspect SWP dams annually, on a fiscal year basis, to ensure they remain safe, are performing as intended, and are not developing problems. These annual inspections also include in-depth instrumentation review of dam surveillance data. Engineers from DSOD also evaluate proposed modifications to existing dams, as well as designs for any proposed new jurisdictional dams. DSOD also oversees construction activities to ensure work is performed in accordance with the approved plans and specifications. 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 (CWC) requirements, consulting engineers and geologists are retained to evaluate SWP dam facilities every 5 years.

DWR contracts periodically with independent consultants to review the safety of SWP dams and power facilities, except for Pearblossom Spill Basin. 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 2010, DSOD, along with O&M staff, inspected Antelope, Frenchman, and Grizzly Valley dams in the Upper Feather River area; Bethany, Clifton Court Forebay, Del Valle, and Patterson dams in the Delta Field Division; and Castaic, Cedar Springs, Crafton Hills, Devil Canyon Powerplant Second Afterbay, Perris, and Pyramid dams in the Southern Field Division. Feather River Fish Barrier, Oroville, Bidwell Bar Saddle, Parish Camp Saddle, Thermalito Diversion, Thermalito Forebay, and Thermalito Afterbay dams in the Oroville Field Division were inspected during calendar year 2009, and will be inspected in calendar year 2011, as a part of DSOD's fiscal year reporting cycle. Pyramid, Quail, Cedar Springs, and Devil Canyon Powerplant Second Afterbay dams were also inspected by the Part 12D Independent Consulting Board. Also in 2010, FERC performed its routine inspections of the Oroville facilities (Project No. 2100) and Southern Field Division facilities (Project No. 2426).

Joint-use Facility Inspection

The four dams in the San Luis Field Division (Sisk, O'Neill, Los Banos Dentention, and Little Panoche Detention) are used jointly with the Bureau of Reclamation (Reclamation) and are not under DSOD jurisdiction. Every 6 years, Reclamation conducts a Comprehensive Facility Review (CFR) of the four joint-use facility dams in the San Luis Field Division. The CFR's for Los Banos and Little Panoche detention dams

occurred in February 2009. The CFR's for Sisk and O'Neill Forebay dams occurred in March 2009. Periodic Facility Reviews (PFRs) are also conducted by Reclamation every 6 years using an alternate schedule spaced between the CFR schedule. PFRs will be conducted for the joint-use facilities in 2012.

Independent Reviews

California Water Code Reviews

To comply with the CWC and the California Code of Regulations (CCR), DWR is required to retain a consulting board to review: (1) the adequacy of the design of any dam or reservoir DWR proposes to construct and (2) the safety of the completed construction, including the terms and conditions for the Certificate of Approval.

These provisions require DWR to retain a board of three consultants to meet at least once every 5 years to review the operational performance of DWR-owned dams and more frequently 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 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 2010, the FERC Part 12D safety inspection for Pyramid, Quail, Cedar Springs, and Devil Canyon Powerplant Second Afterbay dams fulfilled the same function as a Director's Safety Review Board. The Safety Review Board found the dams safe for continued operation.

FERC Reviews

These reviews and the FERC Part 12D safety inspections, which may be conducted by one or more consultants, are scheduled every 5 years. The Part 12D safety inspections for Cedar Springs and Devil Canyon Powerplant Second Afterbay dams occurred in August 2010. The seventh Part 12D safety inspection for Pyramid Dam and fifth Part 12D safety inspection for Quail Dam also occurred in August 2010. As a supplement to the 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; the PFMA report; and the Supporting Technical Information document, 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 Arroyo Pasajero watershed. 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 the mid-1960s.

DWR and DWR/Reclamation Alternative Long-term Solution

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 restored the storage capacity to the detention basin and added control over releases of floodwater into the California Aqueduct and onto private farmland. The intended 50-year level of protection is achieved by raising levees, adding a control structure equipped with an inflatable rubber dam, installing flood gates, and acquiring flood easements.

One project component yet to be implemented is to armor the railroad embankment to reduce damages when it's overtopped by floodwater. DWR's agreement with the railroad expired at the end of 2009, before any progress toward armoring was made. A letter was sent to the railroad informing them that DWR believed the agreements should be renewed and the armoring project should move forward.

In 2009, DWR signed the certificate of acceptance for the deeds for the easements and lands acquired via litigation. The deeds were recorded, and the process to transfer the rights to Reclamation, as required by the joint-use agreement, was initiated. Part of the easement transfer process required that DWR obtain title reports that correctly show DWR's rights on the affected parcels. In 2010, DWR worked on correcting errors in the title reports and on the development of a legal description for a Consent to Common Use Agreement with Fresno County for a county-owned parcel.

The West Side Detention Basin is an area of interest in the U.S. Environmental Protection Agency (EPA) Atlas Mine Area Operable Unit Record of Decision issued by the EPA in 1991. Five-year reviews of the Atlas Mine Area Operable Unit began in 2001, and have continued every 5 years since. As a part of the upcoming 2011 review cycle, the EPA requested a visual inspection of the West Side Detention Basin to ensure that the presence of naturally occurring asbestos is being addressed pursuant to the Record of Decision with signage and access controls. In Fall 2010, DWR toured the basin with representatives from the EPA and inspected all of the basin flood control features as well as soil berms, gates, locks and signs used to deter soil disturbing activities.

Related Activities

Planning for a restoration project similar to the West Side Detention Basin restoration project began in 2006 for the Cantua Creek Stream Group detention basins. The project goal is to improve aqueduct flood protection and water quality.

A draft reconnaissance study for the Cantua Creek Stream Group Improvement Project 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 floodwater flows directly into the aqueduct with little detention and decanting. It is widely understood that increasing flood storage and detention of this floodwater prior to releasing it into the aqueduct would provide a significant benefit to water quality in the aqueduct. In May 2010, DWR completed the final draft reconnaissance study and began feasibility level analysis of the selected alternative. A Light Detection and Ranging (LiDAR) survey of the Cantua Creek Stream Group Improvement Project was completed in 2010 and used during the feasibility level analysis.

Repairs, Modifications, and Inspections

DWR continually monitors all SWP facilities and performs repairs, modifications, and inspections as necessary to ensure safe, reliable water delivery.

In 2010, the San Luis, San Joaquin, and Southern field divisions performed sealing and paving along the California Aqueduct and at various pumping plants and power plants. The San Luis work included chip and fog sealing aqueduct access roads. The San Joaquin work included installing a new pavement section and a slurry seal at the Buena Vista, Chrisman, and Teerink pumping plants; fog sealing the Edmonston Pumping Plant access roads; and chip and fog sealing aqueduct access roads. The Southern work included recycling and resurfacing the existing pavement along 300th Street West to the Alamo Powerplant and installing a new pavement section at the Pearblossom Pumping Plant.

In 2010, roofs were replaced at Buena Vista Pumping Plant and Chrisman Pumping Plant in the San Joaquin Field Division and at the Mobile Equipment Shop in the Southern Field Division. Approximately 50,000 square feet of the original built-up roofing was replaced with an SBS (styrene-butadiene-styrene) modified bitumen roofing system with a reflective roof coating.

In 2010, Condition Assessment Program inspections were performed on more than 20 different reaches of the SWP for more than 180 miles of canals, including 29 DWR-owned bridges crossing the aqueduct. To aid in maintenance efforts, check structures, culverts, drain inlets, gauging stations, overchutes, turn-ins, turnouts, and utility crossings along the canal, were inspected and rated.

In the Southern Field Division, features along 90 miles of the West and East branches were inspected, including the Tehachapi Tunnels, Porter Tunnel, San Bernardino Tunnel, Angeles Tunnel, and the Peace Valley Pipeline.

The San Luis Canal (Joint-Use Facilities) in the San Luis Field Division was also inspected in cooperation with Reclamation.

Inspections are scheduled annually, biannually, or every 5 years. Future inspections aim to identify trends in maintenance and aging of the SWP.

Outages for Maintenance and Repair of Facilities

Table 11-1 presents information, arranged chronologically, about significant scheduled and unscheduled outages at SWP pumping and power plants in 2010. The table includes information about incidents resulting in outages of 14 days or more.

Table 11-1 Outages for Maintenance and Repair of Facilities in 2010, by Month

Month	Facility	Unit	Outage Description
January	Hyatt Pumping-Generating Plant	2	January 1 to December 31 for cover plate and TSV Seat Inspection
	Hyatt Pumping-Generating Plant	4	January 1 to December 31 for excessive thrust bearing load
	Thermalito Pumping-Generating Plant	4	January 1 to December 31 for wear ring refurbishment
	Banks Pumping Plant	11	January 1 to December 24 for discharge vale and cooling water line repair
	Del Valle Pumping Plant	1	January 1 to September 3 to repair water leak on South Bay Aqueduct
	Del Valle Pumping Plant	2	January 1 to September 3 to repair water leak on South Bay Aqueduct
	Del Valle Pumping Plant	3	January 1 to September 3 to repair water leak on South Bay Aqueduct
	Del Valle Pumping Plant	4	January 1 to September 3 to repair water leak on South Bay Aqueduct
	Dos Amigos Pumping Plant	1	January 1 to June 11 for biennial maintenance
	Gianelli Pumping-Generating Plant	1	January 1 to July 20 for maintenance work on penstock #1 head gate
	Gianelli Pumping-Generating Plant	2	January 1 to July 20 for maintenance work on penstock #1 head gate
	Gianelli Pumping-Generating Plant	5	January 1 to December 31 investigate and repair trunnion on butterfly valve
	Edmonston Pumping Plant	2	January 1 to February 9 for pump replacement
	Edmonston Pumping Plant	4	January 1 to December 31 for motor maintenance and pump replacement
	Las Perillas Pumping Plant	5	January 1 to February 2 for maintenance on discharge line #2
	Las Perillas Pumping Plant	6	January 1 to February 2 for maintenance on discharge line #2
	Chrisman Pumping Plant	5	January 1 to July 6 for motor and pump maintenance
	Oso Pumping Plant	2	January 1 to December 31 for the motor refurbishment
	Oso Pumping Plant	5	January 1 to December 31 for motor and impeller removal
	Pearblossom Pumping Plant	6	January 1 to December 31 for condition assessment
	Warne Powerplant	1	January 1 to June 18 to inspect and repair oil leak on the unit and for electrical maintenance
	Teerink Pumping Plant	6	January 4 to December 31 for pump casing repair and discharge valve removal
	Alamo Powerplant	1	January 5 to February 17 for condition assessment
	South Bay Pumping Plant	6	January 8 to January 29 to troubleshoot and repair rotor pole field coil

Table 11-1 Outages for Maintenance and Repair of Facilities in 2010, by Month

Month	Facility	Unit	Outage Description
	South Bay Pumping Plant	1	January 10 to December 31 to troubleshoot and repair excitation system
	Devil Canyon Powerplant	1	January 11 to February 17 for condition assessment and air housing cooler maintenance
	Pearblossom Pumping Plant	9	January 11 to February 12 for condition assessment and unit relay testing
	Cherry Valley Pumping Plant	2	January 25 to March 1 to install new pump and discharge piping
	Cherry Valley Pumping Plant	3	January 25 to March 1 to install new pump and discharge piping
	Badger Hill Pumping Plant	6	January 26 to June 9 for motor refurbishment
February	Crafton Hills Pumping Plant	1	February 1 to March 1 for the Foothill Pipeline outage
	Crafton Hills Pumping Plant	2	February 1 to March 1 for the Foothill Pipeline outage
	Crafton Hills Pumping Plant	3	February 1 to March 1 for the Foothill Pipeline outage
	Crafton Hills Pumping Plant	4	February 1 to March 1 for the Foothill Pipeline outage
	Mojave Siphon Powerplant	1	February 1 to February 25 for local operation only
	Greenspot Pumping Plant	1	February 1 to March 1 for the Foothill Pipeline outage
	Greenspot Pumping Plant	2	February 1 to March 1 for the Foothill Pipeline outage
	Greenspot Pumping Plant	3	February 1 to March 1 for the Foothill Pipeline outage
	Greenspot Pumping Plant	4	February 1 to March 1 for the Foothill Pipeline outage
	Devil Canyon Powerplant	2	February 3 to February 17 to repair 114" valve
	Gianelli Pumping-Generating Plant	3	February 6 to June 11 to troubleshoot and repair excitation system
	Banks Pumping Plant	9	February 7 to February 26 to troubleshoot and clear a ground overcurrent relay action
	Dos Amigos Pumping Plant	3	February 8 to February 25 for refurbishment of unit circuit breaker
	Hyatt Pumping-Generating Plant	5	February 16 to March 6 for installation of bump head
	Pearblossom Pumping Plant	5	February 17 to June 29 for condition assessment and cooling water piping replacement
	Edmonston Pumping Plant	1	February 22 to March 10 for condition assessment
	Oso Pumping Plant	8	February 22 to March 26 for condition assessment
	Banks Pumping Plant	2	February 22 to March 19 for condition assessment

Table 11-1 Outages for Maintenance and Repair of Facilities in 2010, by Month 3 of 6

Month	Facility	Unit	Outage Description
March	Dos Amigos Pumping Plant	5	March 1 to March 18 for refurbishment of unit circuit breaker
	Edmonston Pumping Plant	6	March 1 to May 13 to replace hot water bypass line
	Devil Canyon Powerplant	3	March 3 to April 9 for condition assessment and bladder replacement on transformer KY3
	Barker Slough Pumping Plant	1	March 14 to March 29 for electrical testing and maintenance of switchgear distribution bus
	Barker Slough Pumping Plant	2	March 14 to March 29 for electrical testing and maintenance of switchgear distribution bus
	Barker Slough Pumping Plant	3	March 14 to March 29 for electrical testing and maintenance of switchgear distribution bus
	Barker Slough Pumping Plant	4	March 14 to March 29 for electrical testing and maintenance of switchgear distribution bus
	Barker Slough Pumping Plant	5	March 14 to March 29 for electrical testing and maintenance of switchgear distribution bus
	Barker Slough Pumping Plant	6	March 14 to March 29 for electrical testing and maintenance of switchgear distribution bus
	Barker Slough Pumping Plant	7	March 14 to March 29 for electrical testing and maintenance of switchgear distribution bus
	Barker Slough Pumping Plant	8	March 14 to March 29 for electrical testing and maintenance of switchgear distribution bus
	Barker Slough Pumping Plant	9	March 14 to March 29 for electrical testing and maintenance of switchgear distribution bus
	Mojave Siphon Powerplant	2	March 15 to April 16 for condition assessment
	Cordelia Pumping Plant	1	March 15 to April 1 to repair water leak on discharge line
	Cordelia Pumping Plant	2	March 15 to April 1 to repair water leak on discharge line
	Cordelia Pumping Plant	3	March 15 to April 1 to repair water leak on discharge line
	Cordelia Pumping Plant	4	March 15 to April 1 to repair water leak on discharge line
	Buena Vista Pumping Plant	7	March 16 to March 31 for condition assessment
	Banks Pumping Plant	8	March 29 to April 13 to troubleshoot and repair field circuit breaker
	Banks Pumping Plant	9	March 29 to May 7 for condition assessment and discharge valve seat repair
April	Oso Pumping Plant	1	April 5 to May 7 for condition assessment
	Devils Den Pumping Plant	6	April 6 to May 3 to troubleshoot and repair excitation system
	Edmonston Pumping Plant	7	April 8 to April 23 to inspect and repair rotating problems

Table 11-1 Outages for Maintenance and Repair of Facilities in 2010, by Month

Month	Facility	Unit	Outage Description
	Bluestone Pumping Plant	6	April 26 to September 14 for the installation of pump circulating line
	South Bay Pumping Plant	3	April 29 to December 31 to troubleshoot and repair over current on stator winding
	Thermalito Diversion Dam	1	April 30 to May 26 to troubleshoot and repair motor brakes and water leak on air housing
May	Devil Canyon Powerplant	2	May 3 to May 27 for condition assessment
	Pearblossom Pumping Plant	4	May 5 to May 20 to investigate, troubleshoot, and repair fault ground event
	Banks Pumping Plant	7	May 10 to June 3 for condition assessment and replacement of oil motor/pump
	Banks Pumping Plant	10	May 11 to May 28 for maintenance and repairs of water leaks
June	Gianelli Pumping-Generating Plant	4	June 4 to August 3 to repair oil leak on thrust bearing tub
	Buena Vista Pumping Plant	2	June 14 to December 31 to troubleshoot and repair of pump oil level
	Barker Slough Pumping Plant	9	June 23 to July 21 to restore water level
	Pearblossom Pumping Plant	2	June 29 to December 31 to investigate, troubleshoot, and repair field ground condition
July	Gianelli Pumping-Generating Plant	6	July 23 to December 31 for maintenance on the penstock
	Chrisman Pumping Plant	2	July 26 to December 31 for motor and pump refurbishment
	Devils Den Pumping Plant	1	July 28 to December 31 for drain removal
August	Edmonston Pumping Plant	8	August 9 to December 31 for motor refurbishment and replacement of pump
	Banks Pumping Plant	4	August 12 to December 31 to investigate and troubleshoot overvoltage relay action
	Banks Pumping Plant	5	August 12 to August 27 to investigate and troubleshoot overvoltage relay action
	Las Perillas Pumping Plant	6	August 30 to December 31 to investigate and troubleshoot neutral over current relay action
September	Mojave Siphon Powerplant	3	September 7 to October 8 for condition assessment
	Dos Amigos Pumping Plant	5	September 20 to December 31 for condition assessment
	Banks Pumping Plant	10	September 24 to December 22 for maintenance and repairs of water leaks
October	Pearblossom Pumping Plant	4	October 1 to November 8 to investigate and repair power circuit breakers after a relay trip event
	Pearblossom Pumping Plant	5	October 1 to November 8 to investigate and repair power circuit breakers after a relay trip event

Table 11-1 Outages for Maintenance and Repair of Facilities in 2010, by Month 5 of 6

Month	Facility	Unit	Outage Description
	Mojave Siphon Powerplant	3	October 19 to November 20 for the replacement of the whicket gate shear pins
	South Bay Pumping Plant	5	October 21 to December 31 to troubleshoot and repair over current on stator winding
	Hyatt Pumping-Generating Plant	5	October 21 to December 31 for shaft plate repair
	Gianelli Pumping-Generating Plant	7	October 28 to December 31 for inspection and maintenance of 120 RPM rotor field poles
	Las Perillas Pumping Plant	1	October 31 to November 16 for inlet work at the facility
	Las Perillas Pumping Plant	2	October 31 to November 16 for inlet work at the facility
	Las Perillas Pumping Plant	3	October 31 to November 16 for inlet work at the facility
	Las Perillas Pumping Plant	4	October 31 to November 16 for inlet work at the facility
	Las Perillas Pumping Plant	5	October 31 to November 16 for inlet work at the facility
	Polonio Pass Pumping Plant	6	October 31 to November 22 to troubleshoot and repair excitation system
November	Banks Pumping Plant	8	November 1 to December 31 to investigate oil leak on discharge valve seat
	Devils Den Pumping Plant	2	November 1 to November 19 to remove sediment in aqueduct and headworks
	Devils Den Pumping Plant	3	November 1 to November 19 to remove sediment in aqueduct and headworks
	Devils Den Pumping Plant	4	November 1 to November 19 to remove sediment in aqueduct and headworks
	Devils Den Pumping Plant	5	November 1 to November 19 to remove sediment in aqueduct and headworks
	Devils Den Pumping Plant	6	November 1 to November 19 to remove sediment in aqueduct and headworks
	Polonio Pass Pumping Plant	1	November 1 to November 20 to remove sediment in aqueduct and headworks
	Polonio Pass Pumping Plant	2	November 1 to November 20 to remove sediment in aqueduct and headworks
	Polonio Pass Pumping Plant	3	November 1 to November 20 to remove sediment in aqueduct and headworks
	Polonio Pass Pumping Plant	4	November 1 to November 20 to remove sediment in aqueduct and headworks
	Polonio Pass Pumping Plant	5	November 1 to November 20 to remove sediment in aqueduct and headworks
	Bluestone Pumping Plant	1	November 1 to November 20 to remove sediment in aqueduct and headworks
	Bluestone Pumping Plant	2	November 1 to November 20 to remove sediment in aqueduct and headworks

Table 11-1 Outages for Maintenance and Repair of Facilities in 2010, by Month

Month	Facility	Unit	Outage Description
	Bluestone Pumping Plant	6	November 1 to November 20 to remove sediment in aqueduct and headworks
	Bluestone Pumping Plant	3	November 1 to November 20 to remove sediment in aqueduct and headworks
	Bluestone Pumping Plant	4	November 1 to November 20 to remove sediment in aqueduct and headworks
	Bluestone Pumping Plant	5	November 1 to November 20 to remove sediment in aqueduct and headworks
	Badger Hill Pumping Plant	1	November 1 to November 18 to remove sediment in aqueduct and headworks
	Badger Hill Pumping Plant	2	November 1 to November 18 to remove sediment in aqueduct and headworks
	Badger Hill Pumping Plant	3	November 1 to November 18 to remove sediment in aqueduct and headworks
	Badger Hill Pumping Plant	4	November 1 to November 18 to remove sediment in aqueduct and headworks
	Badger Hill Pumping Plant	5	November 1 to November 18 to remove sediment in aqueduct and headworks
	Badger Hill Pumping Plant	6	November 1 to November 18 to remove sediment in aqueduct and headworks
	Edmonston Pumping Plant	2	November 4 to November 24 for excitation brushes maintenance
	Thermalito Pumping-Generating Plant	1	November 5 to December 10 to troubleshoot and repair the governor controls
	South Bay Pumping Plant	2	November 14 to December 31 for maintenance work on South Bay Aqueduct
	South Bay Pumping Plant	4	November 14 to December 31 for maintenance work on South Bay Aqueduct
	South Bay Pumping Plant	6	November 14 to December 31 for maintenance work on South Bay Aqueduct
	South Bay Pumping Plant	7	November 14 to December 31 for maintenance work on South Bay Aqueduct
	South Bay Pumping Plant	8	November 14 to December 31 for maintenance work on South Bay Aqueduct
	South Bay Pumping Plant	9	November 14 to December 31 for maintenance work on South Bay Aqueduct
	Chrisman Pumping Plant	1	November 15 to December 31 for regrouting of the scroll case
	Badger Hill Pumping Plant	6	November 18 to December 31 to remove sediment on the forebay and maintenance on discharge valve and 86 alarm
December	Devil Canyon Powerplant	4	December 1 to December 27 for annual maintenance
	Bluestone Pumping Plant	4	December 10 to December 28 to troubleshoot and repair excitation system
	Badger Hill Pumping Plant	2	December 11 to December 31 to troubleshoot and repair excitation system

Chapter 12
Engineering, Construction, and Real Estate

A recently installed trash rake at the Dos Amigos Pumping Plant.

Significant Events in 2010

In 2010, engineering, construction, and real estate work to enhance, expand, repair, and protect the State Water Project and other facilities within the State continued. Significant projects included South Bay Aqueduct enlargement, expansion of South Bay Pumping Plant, Edmonston Pumping Plant refurbishment, Hyatt Powerplant pump-turbine refurbishment, and the East Branch Extension Phase I improvements and Phase II projects.

The Delta Habitat Conservation and Conveyance Program continued with studies in 2010 to assess potential habitat restoration and water conveyance options.

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 Riverside 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 (NBA), 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 during the initial construction of the SWP were built to ensure water quality and fish enhancement in the Delta.

From 1974 through 2010, 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; refurbishing pump-turbine units and 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; extending the SWP through the East Branch Extension to the San Gorgonio Pass service area in San Bernardino and Riverside counties; and assessing potential habitat restoration and water conveyance options in the Delta.

Design Activities

In 2010, work to enhance, expand, repair, and protect SWP water delivery facilities continued. Engineering activities supported more efficient water deliveries within the confines of legal constraints, environmental restraints, and power availability. Significant projects included SBA enlargement, South Bay Pumping Plant expansion, and feasibility studies for the East Branch Extension Phase I improvements and Phase II projects. Table 12-1 (at the end of the chapter) provides a list of completed and ongoing design work that was undertaken in 2010.

The Department of Water Resources (DWR) Division of Engineering (DOE) continued to design projects for development into construction contracts. DOE staff worked with the Division of Operations and Maintenance; Bay-Delta Office; Division of Flood Management; Division of Environmental Services; Office of the Chief Counsel; Division of Integrated Regional Water Management; Division of Safety of

Dams; Department of Fish and Wildlife (formerly the Department of Fish and Game); Department of Parks and Recreation's Division of Boating and Waterways (formerly, the Department of Boating and Waterways); Department of Transportation; SWP water contractors; California water districts; levee maintenance districts (Sacramento River, San Joaquin River, and Delta); U.S. Army Corps of Engineers; Bureau of Reclamation (Reclamation); Federal Energy Regulatory Commission; 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; developed and administered construction contract documents and carried out construction projects; and conducted special studies of dams, canal embankments, and other SWP facilities.

Studies, reports, and activities continued from previous reporting periods, or initiated in 2010, included the following:

- analysis of Enterprise Bridge—study;
- Oroville Operations and Maintenance Subcenter, garage shop—design;
- Oroville Security Project—design;
- Brad Freeman Bike Trail realignment—design;
- flood control improvements, Lower Butte Creek, Sutter Bypass, Weir No. 2 replacement—design;
- pumping plant control systems rehabilitation, Sutter Bypass—design;
- North-of-the-Delta Offstream Storage Investigation, Sites Reservoir Project, water conveyance facilities—study;
- fish screens at Sherman and Twitchell islands—final design;
- Frank's Tract Pilot Project—design;
- NBA alternate intake—study;
- Skinner Fish Facility research lab—design;
- Sisk Dam—seismic re-evaluation—study;
- replace heating ventilation and air conditioning systems, Gianelli Pumping-Generating Plant, San Luis Field Division—design;
- furnish Edmonston Pumping Plant pump and discharge valve spare parts—design;
- East Branch Enlargement, Phase II—preliminary design and environmental documents;
- Check 66 trash rake improvement project—design;
- replace conduits and miscellaneous work, Cedar Springs Dam—design;
- Southern Field Division Headquarters project—design;
- East Branch Extension, Phase I improvements—study;
- East Branch Extension, Phase II project planning and feasibility—study;
- East Branch Extension, Phase II—furnish American National Standards Institute (ANSI) ball valves—design;
- East Branch Extension, Phase II—furnish ANSI butterfly valves—design;
- East Branch Extension, Phase II—furnish American Water Works Association (AWWA)-standard butterfly valves—design;
- East Branch Extension, Phase II—furnish pumps, motors, variable frequency drives, and excitation systems—design;
- Perris Dam outlet tower—study;
- Perris Dam embankment remediation—design;
- Perris Dam emergency release extension—design;
- Sutter Bypass motor control center replacement—design;
- seismic loading criteria for SWP—study;
- early implementation program review—study;
- local bridge seismic safety program—design; and
- emergency levee repair—Cache Creek Levee Mile 3.9 and Levee Mile 4.2 left bank—design.

In 2010, DOE staff completed the following studies and activities:

- Delta-Mendota Canal/California Aqueduct Intertie—design;
- concrete encasement of coastal pipeline under State Route 46 widening—design;
- Edmonston Pumping Plant feasibility study for upgrading seven Baldwin-Lima Hamilton units, which will be followed with a value engineering study to be completed in 2013;
- Oroville Wildlife Area—emergent wetland creation project—design;
- East Branch Extension, Phase II, furnished three energy dissipating valves—design;
- East Branch Extension, Phase II, furnished power transformers, Citrus Pump Station—design;
- SBA Enlargement, canal modification—design;
- flood control improvements, Willow Slough rehabilitation—design; and
- roofing replacement, San Joaquin and Southern field divisions—design.

Environmental Activities

Since the inception of the SWP, environmental 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 2010, projects requiring continuing environmental review are described below.

Delta Habitat Conservation and Conveyance Program

In 2008, as a result of calls from the Governor and Legislature to protect the Delta, the Delta Habitat Conservation and Conveyance Program (DHCCP) was established, prompting studies to assess potential habitat restoration and water conveyance options. DHCCP is conducting an environmental review of the Bay Delta Conservation Plan (BDCP). The lead agencies conducting the joint environmental review are DWR, Reclamation, U.S. Fish and Wildlife Service, and National Marine Fisheries Service.

DHCCP continued to:

- analyze BDCP proposed actions and alternatives through a formal environmental impact statement (EIS)/environmental impact report (EIR) process;
- analyze options and consider areas of concern presented by the public during the EIS/EIR process; and
- develop engineering options for habitat restoration, other stressors, and water conveyance.

The environmental component of the DHCCP includes environmental impact analysis, California Environmental Quality Act and National Environmental Policy Act document preparation, environmental surveys, mitigation, and all associated permitting requirements. Approval of the BDCP, its EIR/EIS, and associated documents is essential to obtaining required permits.

In 2010, the DHCCP accomplished the following:

- brought management of the BDCP under the DHCCP umbrella to achieve the necessary integration of objectives, scheduling, and resource sharing;

- completed field activities for the 2010 overwater geotechnical investigation;
- continued conventional soil testing and special laboratory testing, and preparation of the DHCCP geotechnical data report;
- presented major findings in the BDCP effects analysis to the BDCP Steering Committee;
- presented to the BDCP Steering Committee and Oversight Committee, six areas for potential refinements to BDCP operations for consideration in reducing potential adverse effects on covered fish species as identified in the effects analysis, as well as potential refinements identified for further analysis;
- organized and/or participated in multiple stakeholder meetings;
- attended meetings with the Department of Transportation and U.S. Army Corps of Engineers to discuss the intake configurations and possible impacts to the levees and highways; and
- prepared and released "Highlights of the BDCP" dated December 2010.

More information can be found on the BDCP website.

Construction Activities

DOE worked on 62 construction contracts in 2010. Projects included turbine and pump replacement, pipeline repair, trash rack upgrade at fish hatcheries, and recreational and maintenance facilities improvements at dam and reservoir sites. Table 12-2 (at the end of the chapter) shows the following information for construction project contracts: 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.

SWP—General

SWP Control System

A contract (Specification No. 08-12) to replace portions of the aging SWP Supervisory Control and Data Acquisition System began in May 2009. This contract will furnish and install 176 controller assemblies for the replacement of remote terminal units located throughout the SWP and will furnish 16 controller assemblies for Devil Canyon Powerplant and DWR's development lab at the Joint Operations Center. The controller assemblies will be assembled from components furnished by the contractor (programmable logic controllers, sequence-of-event recorders, fiber patch panels, modems, and other equipment). Completion is scheduled for May 2013.

Communication Cable

Work began in July 2009 (Specification No. 09-02) to monitor, test, and repair approximately 450 miles of communication cable and appurtenances along the California Aqueduct. This contract, which is expected to be completed in 2011, also includes provisions for emergency repairs as directed.

Oroville Division

Hyatt Powerplant

Refurbishment of turbine Units 1, 3, and 5 began in February 1999 (Specification No. 98-22) and was completed in May 2004. Refurbishment included manufacture, delivery, installation, and testing of new runners, wicket gates, bushings, and other components, and sandblasting, repairing, and coating water passages. The contractor continued working on its final contract submittals, including operations and maintenance manuals, throughout 2009. Contract acceptance is expected to be delayed to September 2011 due to outstanding submittals.

Refurbishment of pump-turbine Units 2, 4, and 6 started in November 2001 (Specification No. 01-11). All three units were commissioned by September 2007, but preparation and delivery of the final submittals continued through April 2009. Refurbishment included manufacture, delivery, installation, and testing of new runners, wicket gates, bushings, and other components, and sandblasting, repairing, and coating water passages. Acceptance is expected in May 2011, pending DWR's receipt of final submittals.

At Diversion Tunnel No. 2, removal of the baffle ring and repair of the concrete liner immediately downstream of the steel tunnel liner began and was completed in March 2009 (Specification No. 09-05). Additionally, after a July 22, 2009, failure of the pressure relief wall in the River Valve Chamber, work to repair the wall and appurtenant structures was added to this contract by change order. The added work was completed in June 2010, and contract acceptance occurred in December 2010.

Lake Oroville

Construction of a new Stage III boat ramp, parking lot, and access road in Bidwell Canyon began in November 2008 (Specification No. 08-18) and was completed in November 2009. This new ramp will allow boating access to Lake Oroville when the water surface elevation drops below 700 feet. DWR's acceptance of the contract work occurred in March 2010.

Oroville Wildlife Area

A contract to construct ponds for wetland creation in the Oroville Wildlife Area began in August 2010 (Specification No. 10-07). Work included excavation of approximately 400,000 tons of aggregate from the dredger tailings, from which gravel will be separated and stockpiled at the Feather River Fish Hatchery for later use as spawning gravel. Completion of the work is expected in November 2011, with contract acceptance to follow in early 2012. A material offset for excavated material will reduce the net payments for this work.

Warehouse, Civil Maintenance Building, and Shop Building

Roof replacement for the Warehouse, Civil Maintenance Building, and Welding Shop began in June 2008 and was completed in September 2008 (Specification No. 08-07). Added work at the Delta Operations and Maintenance Center (North San Joaquin Division) and at the Sacramento Maintenance Yard will extend the contract acceptance into 2011.

North Bay Aqueduct

Napa Turnout Reservoir

Replacement of the Napa Turnout Reservoir (Specification No. 07-01) began in April 2007, and work is expected to be completed in late 2011. The contract includes replacing the existing tank with two 5-million gallon, steel, covered tanks and installing piping and appurtenances. Acceptance will be extended, likely to January 2012, due to added corrosion monitoring equipment, a test station, and additional miscellaneous work at the valve vault.

South Bay Aqueduct

Del Valle Branch Pipeline and Surge Tank

Due to a December 22, 2009, landslide on the hillside north of the Del Valle Branch Pipeline and surge tank, emergency repairs were made. Under a change order to Specification No. 08-14, the work included replacement of 373 feet of damaged 60-inch diameter prestressed concrete cylinder pipe with steel pipe, stabilization and repair of the hillside, removal and replacement of the existing surge tank foundation and valve vault, and encasement of approximately 385 feet of the existing prestressed concrete cylinder pipe. Repairs were completed in November 2010, with contract acceptance expected in September 2011.

South Bay Aqueduct Enlargement and Improvement

The SBA Enlargement and Improvement projects will restore the first 16.38 miles of the SBA to the 300 cubic feet per second (cfs) design flow and increase the design capacity by up to 130 cfs. This work will enlarge the South Bay Pumping Plant to accommodate four additional 45 cfs units, construct a third discharge line, construct Dyer Reservoir, enlarge the canal, and modify associated structures. Projects are described below.

Canal Modifications. Various modifications will be performed along Dyer Canal, Livermore Canal, Alameda Canal, and Del Valle Pipeline under a contract that began in October 2010 (Specification No. 09-16). Work includes raising the canal lining, canal embankment, and operating roads, and removing, modifying, installing, or constructing various structures, including overchutes, inlets, pipe, bridges, trash racks, Patterson Reservoir, siphons, check structures, water level measurement systems, radial gates, motors, control systems, flowmeters, and valves. Completion is expected in April 2012.

Dyer Reservoir. In late July 2009, construction began on the new 500 acre-foot (af) (425 af of active storage) Dyer Reservoir (Specification No. 09-01). Contract features include the reservoir embankment, inlet and outlet structures, installation of steel pipe, road construction, and a turnout structure. Work is expected to be completed in fall 2012.

Siphon and Check Structure Modifications. Modifications to and replacements for siphon and check structures (Specification No. 08-14) began in September 2008, and completion occurred in March 2010. Work included construction of the concrete canal lining, check structures, new outlet and inlet transition structures, and operating roads; removal and reinstallation of an existing trash rack system; installation of a new turnout chamber, test stations, and cathodic protection; and removal of sediment and waste. Acceptance is expected in 2011 after change order work is completed, which includes:

- SBA, repair Santa Clara Pipeline;
- SBA, modify trash rack/rake system at Dyer-Altamont Check 2;
- SBA, repair Del Valle Branch Pipeline and surge tank;
- SBA, site work for wetlands at Dyer Reservoir; and
- NBA, repair at Milepost 23.77 (Pipeline Reach N3B).

A contract (Specification No. 08-21) to fabricate 10 radial gates, radial gate hoist assemblies (with associated control systems), and electric actuators for SBA check structures began in January 2009 and is expected to be completed and accepted in January 2011. Also included in this contract are the fabrication of stop logs and stop log storage racks, fabrication of one trash removal system for Dyer-Altamont Check No. 2 and two trash removal systems for Del Valle Check No. 7.

Transmission Line and Modifications to Banks Switchyard. Construction of a new 69 kilovolt (kV) transmission line from South Bay Pumping Plant to Banks Pumping Plant and modifications to the Banks Switchyard began in October 2009 (Specification No. 09-06). The new transmission line will increase the South Bay Pumping Plant power supply capacity and reliability while decreasing the unit cost of power. The Banks Switchyard modifications will allow a power step down from 230 kV to 69 kV. Project work also includes installation of DWR-furnished transformers and equipment; furnishing and installing prefabricated control buildings, 13.8 kV distribution line poles and equipment, a new substation, switchgear, and equipment; and removing

and disposing of existing 13.8 kV and 5 kV power distribution lines. Completion is expected in 2011.

South Bay Pumping Plant. The following contracts for the SBA Enlargement project at South Bay Pumping Plant continued throughout 2010.

- Specification No. 04-05: furnish 45-cfs pump and motor units for Unit Nos. 10 through 13 and one spare pump and motor. Work began in November 2004 and continued throughout 2010. Completion is expected in 2011.
- Specification No. 04-20: furnish valves, actuators, and hydraulic power units. Work began in May 2005. The equipment was furnished in June 2007. Repairs to the butterfly valves were added to this contract by change order; completion is expected in 2011.
- Specification No. 05-10: furnish switchyard equipment. Work began in September 2005 and is expected to be completed in 2011. Work added by a contract change order will furnish equipment for the Banks Switchyard expansion to accommodate the new 69 kV transmission line from Banks Pumping Plant to South Bay Pumping Plant.
- Specification No. 05-05: furnish 5 kV switchgear. Work began in October 2005 and is expected to be completed in 2011.
- Specification No. 06-04: enlarge pumping plant initial facilities. Work began in August 2006 and is expected to be completed in 2011.
- Specification No. 07-02: furnish power transformers. Work began in April 2007 and was completed in September 2008. Acceptance is expected in 2011.
- Specification No. 07-18: Added work included repairs to a water system pipeline adjacent to Banks Pumping Plant. Work began in December 2007 and is expected to be completed in mid-2011.

Surge Tank No. 3. Construction of a 120-foot-tall steel surge tank began in July 2008 (Specification No. 08-09) and was completed in November 2009. Acceptance occurred in March 2010. Work included excavation, backfill, embankment, erosion control, wiring, grounding, and lighting.

North San Joaquin Division

Delta Operations and Maintenance Center

Repairs to the Delta Operations and Maintenance Center roof began in August 2010 and are expected to be completed and accepted in early 2011. This work was performed under a change order to Specification No. 08-07.

Replacement of the existing 150 kilowatt (kW) standby engine generator with a new 500 kW diesel engine generator and automatic transfer switch began in September 2008 under a change order to Specification No. 06-10. The existing generator was considered undersized and unable to provide reliable operation during an outage. Installation and startup of the generator and transfer switch cannot be made until portions of the 69 kV transmission line contract are completed. Completion and acceptance of the project are expected in 2011.

Banks Pumping Plant

Hillside improvements began in July 2008 under a contract (Specification No. 08-10) that included removal of a retaining wall; hillside excavation; and installation of slope benches, a retaining wall, subsurface drainage, box structures, curbs, V-ditches, fencing, seeding, and erosion control. Due to a grass fire after work was completed, work was added to include the refurbishment of existing wells, increase in excavation limits, modifications to the V-ditches, replacement of high-density polyethylene piping, and cost of reseeding the burned area. All work

was completed in November 2009, and acceptance occurred in March 2010.

San Luis Division

Dos Amigos Pumping Plant

A contract (Specification No. 08-06) to design, manufacture, deliver, install, and test one complete automatic trash rake system and to manufacture, deliver, and install trash racks began in January 2009 and is expected to be completed in early 2011.

Gianelli Pumping-Generating Plant and Dos Amigos Pumping Plant

A contract (Specification No. 04-08) to refurbish the existing carbon dioxide 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. The original work was essentially complete by November 2006, but work added by a contract change order extended completion to February 2010 and acceptance to May 2010. The added work included:

- replacing and refurbishing fire extinguishers in the San Luis Field Division;
- installing an escape platform at Dos Amigos and safety platforms at Gianelli;
- repairing the carbon dioxide systems at Edmonston, Chrisman, and Teerink pumping plants;
- replacing the fire alarm systems at San Luis Operations and Maintenance Center and at Coalinga Operations and Maintenance Center; and
- inspecting and repairing the fire sprinkler system at the San Luis Operations and Maintenance Center warehouse.

Gianelli Pumping-Generating Plant, Dos Amigos Pumping Plant, Coalinga Operations and Maintenance Subcenter, Check Sites 9 through 21, and Flowmeters at Check Sites 12 and 21

A contract (Specification No. 06-10) to replace standby engine generators began in August 2006. The original work was completed in October 2009; the added change order work listed below is expected to be completed in April 2011. Acceptance is expected in September 2011. Added work included:

- furnishing and installing engine generators for the Delta Operations and Maintenance Center, Banks Pumping Plant, the Feather River Fish Hatchery, and the Skinner Fish Facility;
- furnishing and installing a backup generator for University of California, Davis; and
- furnishing and installing an electrical panel at the Dos Amigos siphon house.

San Luis Canal

Due to subsidence that caused buckling and cracking in the canal lining, a contract to remove and replace damaged portions of the concrete lining along the California Aqueduct between Mileposts 56.40 and 164.90 began in November 2007 (Specification No. 07-20). Completion is expected in 2011, and acceptance is expected in 2012. Added work included:

- construction of a stability berm at Milepost 88.30;
- dive survey and repairs at California Aqueduct Mileposts 89.02 and 138.96;
- Coastal Branch repairs (see Coastal Branch Reach 31A and Devil's Den Forebay sections in this chapter);
- Coastal Branch repairs between Milepost 1.16 and 4.27; and
- repair of irrigation crossings at Mileposts 113.02R and 113.42L.

A contract to install a sheet pile wall through the crest of the canal embankment (waterside edge of the access road) at California Aqueduct Milepost 88.30 to reduce seepage through the left canal embankment began in September 2009 (Specification No. 09-07). Completion occurred in July 2010, and DWR accepted the project in November 2010.

South San Joaquin Division

Buena Vista Pumping Plant

A contract (Specification No. 07-05) to design, manufacture, test, and deliver spare coils (17,000 horsepower and 8,500 horsepower) and materials began in June 2007. Completion occurred in August 2010, and acceptance is expected in March 2012. DWR expects to assess liquidated damages for late delivery of equipment.

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 2010. Completion is scheduled for March 2011, and acceptance is expected in May 2011. Work consisted 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.

Mojave Division

Reaches 18A and 22B

Work began in July 2010 to seal and pave roads and parking areas in the Southern Field Division (Specification No. 10-03). Completion is expected in 2012. Added work included:

- sealing and paving roads on the California Aqueduct, West Branch, Reach 29G (Los Alamos Campground Access Road, Gorman Creek Siphon, Pyramid Lake Road, and Vaquero Campground parking lot); and
- asbestos abatement and/or testing at Buena Vista, Chrisman, and Teerink pumping plants.

Reach 20B

A minor contract (Specification No. 10-15) to repair the canal culvert at Milepost 344.38 began in August 2010 and was completed in November 2010.

Cedar Springs Dam Maintenance Subcenter

In January 2008, work began to construct a 14,400 square-foot civil maintenance and mobile equipment building to replace the outdated Cedar Springs Dam Maintenance Subcenter (Specification No. 07-25). Work was completed in August 2010, and DWR accepted the project in December 2010.

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 Valley Municipal Water District deliveries to 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 took place in Yucaipa on August 23, 1999.

Below are brief descriptions of the remaining construction contracts.

Greenspot, Crafton Hills, and Cherry Valley Pump Stations. Work began in November 1999 on the contract (Specification No. 99-17) 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. 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 March 2006 due to a change order for additional pump units and related components for Greenspot and Crafton Hills pump stations. The added units are complete except for acceptance testing, and contract acceptance is expected in April 2011.

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 continued throughout 2010 and is expected to be completed in early 2011. The work includes:

- furnishing and installing a pump, motor, variable frequency drive, programmable logic controller 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 programmable logic controllers, 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 variable frequency drive at Greenspot Pump Station;
- removing existing valves, piping, and appurtenances; and
- manufacturing and delivering tools and spare parts to all three pump stations.

Added work included modifying the switchgear to allow front access to the 5 kV bus and providing a flowmeter for Devil Canyon Second Afterbay.

East Branch Extension Phase I Improvements

The Phase I improvements will provide additional operational flexibility, system reliability, and will reduce on-peak energy demands.

Yucaipa Connector Pipeline. Fabrication and testing of 42-inch and 48-inch American Water Works Association (AWWA)-standard butterfly valves for the Yucaipa Connector Pipeline is being performed under a contract (Specification No. 09-04) that began in August 2009. Completion occurred in June 2010, and acceptance is expected in 2011.

Construction of the Yucaipa Connector Pipeline began in October 2010 (Specification No. 10-12) and is expected to be completed in August 2011. The approximately one-half mile of 42-inch diameter steel pipe will allow continued deliveries of water via the East Branch Extension during enlargement of the Crafton Hills Reservoir and during

future Crafton Hills Reservoir outages. In conjunction with the enlargement of the Crafton Hills Reservoir, this project will provide additional operational flexibility, system reliability, and reduced on-peak energy demands.

East Branch Extension Phase II

Phase II of the East Branch Extension will complete the planned capacity increase for the East Branch Extension. Phase II will allow San Gorgonio Pass Water Agency to receive its maximum annual Table A water and allow the San Bernardino Valley Municipal Water District to increase its distribution system capacity to its Redlands and Yucaipa Valley service areas. Principal Phase II features include approximately 6 miles of new 72-inch and 66-inch diameter pipe, a new reservoir (Citrus Reservoir), a new 160-cfs pump station (Citrus Pump Station), expansion of the existing Crafton Hills Pump Station, and installation of an additional pump at Cherry Valley Pump Station.

Valves. Manufacturing, testing, and delivery of three energy dissipating valve assemblies (including electric actuators) for Citrus Reservoir began in September 2010 (Specification No. 10-10) and is expected to be completed in December 2011. Spare parts and special tools are included in the contract work.

Perris Dam

In 2005, a study of the Perris Dam foundation indicated the presence of thin, sandy layers that are susceptible to liquefaction and loss of strength during a large seismic event. As a result, work began in October 2009 on two test sections at Perris Dam to evaluate construction methods for future dam remediation (Specification No. 09-17). One of the test sections will evaluate the dewatering technique required for a stable excavation; the second test section, which includes two cement deep-soil mixing cells, will evaluate the optimal parameters and techniques for installing cement deep-soil mixing columns. Completion occurred in March 2010, and acceptance occurred in October 2010.

Santa Ana Pipeline

Phase IV of the excavation, inspection, and repair of the Santa Ana Pipeline began in November 2007 and continued throughout 2010 (Specification No. 07-23). Work was added by change order to encase approximately 411 linear feet of the Santa Ana Pipeline to protect the pipeline during construction and operation of the Metro Commuter Rail System Eastern Maintenance Facility in the city of Colton. Additionally, work was added in 2010 to perform emergency repairs at Las Perillas Pumping Plant. Completion occurred in February 2010, and acceptance occurred in May 2010.

Phase V of the excavation, inspection, and repair of the Santa Ana Pipeline (Specification No. 09-19) began in November 2009, was completed in February 2010, and was accepted in October 2010.

West Branch

Oso Pumping Plant

Work began in December 2007 to construct a 14,400-square-foot civil maintenance and mobile equipment building at Oso Pumping Plant (Specification No. 07-22). Work is expected to be completed in 2011; however, required added work, including a water treatment facility, may delay occupancy until 2012.

Vista del Lago Visitors Center

A contract (Specification No. 08-04) to repair erosion, install a water intake system, modify the building, and improve drainage began in July 2008 and was completed in November 2009. Acceptance occurred in June 2010.

Coastal Branch

Bluestone Pumping Plant

Removal of approximately 3,500 cubic yards of sediment from the Bluestone Pumping Plant Forebay began and was completed and accepted in November 2010 (change order to Specification No. 10-01). Work included hydraulic vacuuming, trucking, and stockpiling the saturated material.

Coastal Aqueduct Under State Route 46

Three sections of existing 57-inch inside-diameter steel pipe along the Coastal Aqueduct (Reach 1) under State Route 46 were encased in concrete to allow Caltrans to widen the highway (Specification No. 10-01). Caltrans funded this work, which began in April 2010 and was completed in November 2010. DWR expects to accept the work in December 2011.

Las Perillas Pumping Plant

Spot repairs on the coal tar enamel lining at the Las Perillas Pumping Plant Discharge Line began and were completed and accepted in February 2010 (change order to Specification No. 07-23).

Construction Activities in Multiple Divisions

Upper Feather River and Oroville Divisions

A contract to repair four spillways at Oroville, Antelope, Frenchman, and Grizzly Valley dams began in September 2009 and was completed in December 2009 (Specification No. 09-14). Repairs were made on spalled concrete, voids, cracks, and expansion and contraction joints. Acceptance of the project occurred in June 2010.

Delta Facilities, Suisun Marsh Facilities, South Bay Aqueduct, and North San Joaquin, South San Joaquin, and Mojave Divisions

Work on a multiyear (2007 through 2009) contract (Specification No. 06-26) to install and remove seasonal temporary rock barriers, provide temporary agricultural pumping facilities, and dredge in designated South Delta waterways (Middle River, Old River, and Grant Line Canal) began in January 2007. Work to install the nonphysical barrier in spring 2010 was added to this contract, which was completed in June and accepted in October 2010.

Changed or added work by construction orders included:

- North San Joaquin Division: weed harvesting and mapping at Clifton Court Forebay;
- Suisun Marsh Facilities: removal and replacement of flashboards at Montezuma Slough;
- Mojave Division: diving, Pearblossom Pumping Plant;
- North San Joaquin Division: delta smelt refugium at the Skinner Fish Facility;
- North San Joaquin Division: replacement of the water quality facility, Banks Pumping Plant;
- Oroville Division: crane rental, Thermalito Diversion Dam;
- backflush system, Sherman Island;
- observation well rehabilitation, Roberts Island;
- replace gate valves, Tom Paine Slough;
- inspect siphon with fish screen, Twitchell and Sherman islands;
- relocate emergency flood fight materials, Yorba Canyon Mission and Fabian Tract;
- SBA: relocate storage container, Dyer Reservoir;
- Delta Facilities: provide office trailer, Old River; and

- Delta Facilities: change the spring barrier at the Head of Old River from a rock barrier to an experimental bubble curtain.

Work on a multiyear (2010 through 2012) contract to install and remove seasonal temporary rock barriers in designated South Delta waterways, provide temporary agricultural pumping facilities, place and remove flashboards at the Suisun Marsh Salinity Control Structure, dredge areas of the South Delta, and remove/harvest aquatic weeds in Clifton Court Forebay and other Delta waterways began in March 2010 (Specification No. 09-21) and is expected to be completed and accepted in December 2012. The temporary barriers are installed to enhance water levels and circulation in the South Delta for local agricultural diversion, to assist fish migration, and to gather hydraulic data for the design of future permanent barriers. Added work includes:

- Delta Facilities: installation of a bubble barrier at Georgiana Slough;
- Delta Facilities: modifications to the fish release facility at Curtis Landing;
- Delta Facilities: removal of trees, Horseshoe Bend;
- Suisun Marsh Facilities: urgent repairs to the Roaring River Slough levee;
- North San Joaquin Division: repair cracks in the embankment, California Aqueduct, vicinity of Mile Post 88.96; and
- South San Joaquin Division: repair boil in the California Aqueduct, vicinity of Mile Post 248.97, Reach 13B.

North San Joaquin, San Luis, and South San Joaquin Divisions and Coastal Branch

Banks Pumping Plant and Gianelli Pumping-Generating Plant. A contract began in May 2003 to design, manufacture, deliver, and install automatic digital voltage regulators for Banks Pumping Plant and Gianelli Pumping-Generating Plant (Specification No. 02-12). The physical work was completed in March 2006; however, contract acceptance was delayed until August 2010 due to incomplete contractor submittals.

Banks Pumping Plant and Teerink Pumping Plant. A contract to furnish spare coils and materials for Banks and Teerink pumping plants began in February 2007 (Specification No. 06-27). The contract will be extended to furnish one set of spare coils for a 30,000 horsepower motor at Pearblossom Pumping Plant. Completion is expected in 2012.

San Luis and San Joaquin Field Divisions

A contract (Specification No. 08-16) to seal and pave roads and parking areas at various locations in the San Luis and San Joaquin field divisions began in September 2008 and was completed in November 2008. Acceptance occurred in April 2010.

Work began in August 2010 on a contract to seal and pave roads and parking areas at various locations in the San Luis and San Joaquin field divisions (Specification No. 10-02). Completion occurred in November 2010, and acceptance is expected in early 2011.

South San Joaquin Division and West Branch

Roofing repairs (Specification No. 10-19) began in October 2010 and are scheduled to be completed in June 2011 at Buena Vista and Chrisman pumping plants (South San Joaquin Division) and at Warne Powerplant (West Branch).

West Branch, Mojave Division, and Santa Ana Division

In September 2008, work began on a contract to seal and pave roads and parking areas at Oso Pumping Plant, Lower Quail Canal Outlet, Warne Powerplant, Pyramid Dam, Angeles Tunnel, Alamo Powerplant,

Pearblossom Powerplant, Pearblossom Sand Blast Building, and Devil Canyon Second Afterbay (Specification No. 08-17). The work was completed in January 2010 and accepted in April 2010.

Miscellaneous Construction Activities

The following non-SWP construction activities are categorized as miscellaneous.

Emergency Levee Erosion Repairs

The contracts listed below provided emergency levee erosion repairs and included most or all of the following work:

- fencing;
- removing trees, brush, and debris;
- levee repairs;
- placing in-stream woody material; and
- planting, seeding, and irrigation.

Contract work (Specification No. 08-15) began in August 2008 at San Joaquin River Mile 42.3R, Paradise Cut Mile 3.8L, and Mormon Slough Mile 11.8R and was completed in November 2009. Contract acceptance occurred in March 2010.

Erosion Repair and Bank Protection

Work began in October 2009 to repair levee erosion and protect the river banks along the San Joaquin River at River Miles 41.4L, 42.1R, 42.5R, and 42.8R (Specification No. 09-18). Work includes fencing; removal of trees, brush, debris, and a 6-inch pipe from the levee; protection of native trees; levee repairs and rock slope protection; installation of erosion control fabric; and planting, seeding, irrigation, and plant establishment. Completion is expected mid-2011.

Levee Road Repairs

A contract to repair levee roads along Cache Creek, Yolo Bypass, Willow Slough, and Putah Creek (Specification No. 10-11) began in August 2010 and was completed in October 2010. DWR accepted the project in December 2010.

Habitat Restoration

A contract to restore habitat (Specification No. 08-13) at the Colusa State Recreation Area began in October 2008 and is expected to be completed in 2012. This work to mitigate the Tisdale Bypass sediment removal project (Specification No. 07-14) includes planting approximately 34,000 oak trees and other plants, as well as irrigation.

In October 2010, work began on a contract (Specification No. 10-14) to restore the Sycamore Creek habitat as a condition of the nationwide permit for the Sycamore Creek sediment removal project (Specification No. 10-13). The work, which is expected to be completed in July 2014, includes seeding, plantings, an irrigation system, signage, and monitoring of vegetation until the plants are established.

Pumping Plant Control Systems Rehabilitation

Replacement of the motor control centers and the control systems at Sutter Bypass Pumping Plants Nos. 1 through 3 will be performed under a contract that began in December 2010 (Specification No. 10-09). The contractor will remove and dispose of the existing control structures and will furnish and install new control structures, switchgear, nonsegregated busses, relays, SCADA (supervisory control and data acquisition) systems, ground grids, and generators. Completion is expected in 2012.

Radial Gate Seal Installation

Work began in December 2009 on a minor contract to install seals on the radial gates at the Chowchilla Canal Bypass control structure (Specification No. 09-20). The work includes preparing the existing gates and fabricating and installing the new gate seals.

Completion occurred in February 2010, and acceptance occurred in May 2010.

Replacements

A contract (Specification No. 10-05) to replace the existing fish ladder structure and flow control structures at Willow Slough, Sutter Bypass, began in June 2010 and is expected to be completed in late 2012.

Sediment Removal

Work began in September 2010 to remove approximately 63,000 cubic yards of sediment from Sycamore Creek, Chico Creek, Mud Creek, and Sandy Gulch (Specification No. 10-13). The work was completed in November 2010 and is expected to be accepted in February 2011.

Real Estate Branch Activities

DWR processed a net total of $5.8 million in payments in 2010 in support of right-of-way activities required for the construction, operation, and maintenance of the SWP. This amount represents direct payments made for the cost of real property rights, damages, temporary permits, licenses, and leases, and relocation expenses.

DWR conducted the following real estate activities from January 1 through December 31, 2010.

SWP Acquisitions

Activities related to acquisitions were as follows:

- closed escrow on 0.38 acres of mitigation land in Milpitas, California, for the SBA improvement and enlargement project;
- acquired an encroachment permit from Contra Costa County for construction of a 13.5 kV transmission line for the Skinner Fish Facility for the SBA improvement and enlargement project;
- executed Director's Easement Deeds with two wind farm corporations for access around Dyer Reservoir, pursuant to receipt of the Final Order of Condemnation for the property as part of the SBA improvement and enlargement project;
- obtained an encroachment permit from San Joaquin County Public Works to install a flow monitoring station at the Tracy Bridge in San Joaquin County as part of the Doughty Cut flow monitoring station project;
- obtained an encroachment permit from Caltrans to install the Yucaipa Connector Pipeline under State Route 38 as part of the East Branch Extension Phase I Improvements Project;
- closed escrow on Parcel Nos. EBX-2 and EBX-18 for the East Branch Extension Project Phase II;
- completed five appraisal reimbursement agreements for the East Branch Extension Project Phase II;
- executed a right-of-way contract for a temporary construction area for the South Delta Improvements Project, Georgiana Slough nonphysical fish barrier;
- executed an amendment to an easement agreement with Reclamation for construction of the Central Valley Project/SWP intertie project;
- secured a borrow agreement from Wente Brothers allowing DWR to stabilize the landslide area and use the material for fill during the repair of the hillside for the Del Valle Pipeline Repair Project;
- secured right-of-entry agreements from Wente Brothers and Cresta Blanca Golf Course to begin clean-up and repair of the pipeline for the Del Valle Pipeline Repair Project;
- entered into a reimbursement agreement with Wente Brothers for the response and recovery phases of the Del Valle Pipeline Repair Project;

- secured a right-of-way agreement for routine maintenance from the Department of Fish and Wildlife for the Morrow Island Distribution System Project; and
- drafted and mailed 298 letters with exhibits to landowners in the vicinity of construction, detailing future road closure and public outreach information for the SBA Improvement and Enlargement Project.

Temporary Permits

DWR obtained 72 temporary permits, including:

- Doughty Cut Flow Monitoring Station Project, 1;
- East Branch Extension Phase I Improvements Project, 4;
- East Branch Extension Phase II Project, 4;
- NBA Alternate Intake Project, 23;
- San Joaquin River Restoration Project, 27;
- SBA Improvement and Enlargement Project, 8;
- Sutter County Monitoring Wells Project, 3;
- Morrow Island Distribution System Project, 1; and
- Truckee River Operating Agreement, 1.

SWP Property Management

Property management activities during 2010 were as follows:

- managed leasing activities of SWP nonoperating properties, which produced an income of $895,714;
- processed 23 encroachment permit applications and executed 10;
- collected fees of $74,960 for review and inspection costs related to encroachment permit applications; and
- coordinated review of 10 tentative tract map developments within 1 mile of the California Aqueduct.

SWP Appraisals

The following appraisal activities were completed:

- East Branch Extension Project, 21 appraisals;
- NBA Alternate Intake, two parcels appraised for damages;
- NBA Del Valle, two parcels appraised for easement and damages;
- NBA, one parcel appraised for Caltrans purchase for Highway 12 Jameson Canyon widening;
- NBA Alternate Intake, 143 parcels appraised for probable damages under temporary entry permits;
- SBA Improvement and Enlargement Project, one appraisal of a storage locker;
- Lake Perris Dam remediation project, an area analysis of property values;
- Suisun Marsh tidal habitat restoration, one appraisal;
- Los Angeles County, a market analysis for solar panel feasibility; and
- Oroville lease and Santa Ana Division's Crestline Hang Gliders lease, two lease rate updates.

Table 12-1 Design Activities, January 1, 2010, through December 31, 2010, by Division

Division and Facility	Design Activity	Date Design Began	Design Actual/ Estimated Completion Date
Oroville Division			
Enterprise Bridge	Seismic analysis	March 2009	February 2011
Oroville O&M Subcenter	Garage shop design	January 2010	June 2011
Oroville Field Division	Security project	October 2009	September 2011
Brad Freeman Bike Trail	Bike trail realignment	January 2009	May 2012
Sites Reservoir	North-of-the-Delta Offstream Storage Investigation studies	December 2009	March 2011
Oroville Wildlife Area	Emergent wetland creation project	February 2008	August 2010
Delta Facilities			
Fish screens at Sherman and Twitchell islands	New fish screens at existing siphons—10 sites	September 2007	On Hold
Frank's Tract	Pilot project—design	November 2007	On Hold
North Bay Aqueduct			
North Bay Aqueduct	Alternate intake study	October 2008	December 2016
South Bay Aqueduct			
South Bay Aqueduct Enlargement			
Canal	Canal modification	July 2003	October 2010
Dyer Rservoir	Construct a new 425 af reservoir	September 2003	November 2010
North San Joaquin Division			
Skinner Fish Facility	Research lab design	September 2010	March 2011
San Luis Division			
Gianelli Pumping-Generating Plant	Replace heating ventilation and air conditioning systems	March 2009	April 2011
Sisk Dam	Seismic re-evaluation	July 2007	March 2011
Tehachapi Division			
Edmonston Pumping Plant	Furnish spare parts for pumps and discharge valves	January 2009	June 2011
	Feasibility study for upgrading seven Baldwin-Lima-Hamilton units	August 2008	October 2010
East Branch Enlargement			
East Branch Enlargement	Preliminary design and environmental documents	March 2007	On Hold
Check 66	Trash rake improvement project	May 2010	September 2011
Mojave Division			
Pearblossom Administration Building	Design new administration building	March 2008	February 2011
Cedar Springs Dam	Replacement of conduits and miscellaneous work	October 2008	February 2011
Santa Ana Division			
East Branch Extension Phase I Improvements	Project planning and engineering feasibility studies for the Crafton Hills Reservoir enlargement	July 2007	April 2011

Table 12-1 Design Activities, January 1, 2010, through December 31, 2010, by Division *(continued)*

Division and Facility	Design Activity	Date Design Began	Design Actual/ Estimated Completion Date
East Branch Extension Phase II	Project planning and engineering feasibility studies	July 2008	September 2012
	Furnish ANSI ball valves	July 2008	January 2011
	Furnish ANSI butterfly valves	July 2008	January 2011
	Furnish AWWA butterfly valves	July 2008	February 2011
	Furnish pumps, motors, variable frequency drives, and excitation systems	July 2008	April 2013
	Furnish three energy dissipating valves	July 2008	September 2010
	Furnish power transformers, Citrus Pump Station	July 2008	November 2010
Perris Dam	Dam remediation	January 2007	March 2013
	Emergency outlet extension	October 2006	December 2013
	Outlet tower retrofit study	January 2007	December 2012
Coastal Branch			
Coastal Pipeline Under State Route 46	Concrete easement widening	March 2006	April 2010
Miscellaneous			
Sutter Bypass	Flood control improvements—Weir No. 2 rehabilitation	July 2006	April 2011
	Flood control improvements—Willow Slough rehabilitation	July 2006	March 2010
	Motor control center replacement	August 2008	December 2012
State Water Project	Seismic loading criteria study	January 2010	June 2012
	Delta Mendota Canal intertie design review	November 2009	September 2010
Early implementation program	Review	October 2008	June 2012
Local bridge seismic safety program	Design	October 2005	December 2011
San Joaquin and Southern field divisions	Roofing replacement	January 2010	October 2010
Cache Creek Levee Mile 3.9 and Levee Mile 4.2	Emergency levee repair	January 2007	December 2012

Table 12-2 Construction Activities, January 1, 2010, through December 31, 2010, 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)
State Water Project—General				
State Water Project Supervisory Control and Data Acquisition System	Replace remote terminal units (08-12)	May 2009	July 2013	11,500
Communication Cable	Monitor, test, and repair copper communication cable and voice and data equipment (09-02)	July 2009	August 2012	1,173
Oroville Division				
Hyatt Powerplant	Refurbish pump-turbine Units 1, 3, and 5 (98-22)	February 1999	September 2011	9,864
	Refurbish pump-turbine Units 2, 4, and 6 (01-11)	November 2001	May 2011	16,966
	Diversion Tunnel No. 2—remove baffle ring, repair concrete liner, and repair river outlet pressure relief wall (09-05)	March 2009	December 2010	1,959
Lake Oroville	Construct Bidwell Canyon Stage III boat ramp (08-18)	November 2008	March 2010	1,585
Oroville Wildlife Area	Construct ponds for wetland creation (10-07)	August 2010	March 2012	0
Warehouse, Civil Maintenance Building, and Shop Building	Replace roofs (08-07)	June 2008	September 2011	497
North Bay Aqueduct				
Napa Turnout Reservoir	Replace reservoir (07-01)	April 2007	January 2012	11,281
South Bay Aqueduct				
Del Valle Branch Pipeline and Surge Tank	Repair pipeline at landslide (08-14 change order)	December 2009	September 2011	9,522
South Bay Aqueduct Enlargement and Improvement				
Dyer Canal, Livermore Canal, Alameda Canal, and Del Valle Pipeline	Perform canal modifications (09-16)	October 2010	July 2012	21,760
Dyer Reservoir	Construct Dyer Reservoir (09-01)	July 2009	December 2012	13,340
Siphon and Check Structure Modifications	Modify and replace siphons and check structures (08-14)	September 2008	September 2011	3,916
	Furnish check structure equipment (08-21)	January 2009	January 2011	3,300
Transmission Line and Modifications to Banks Switchyard	Construct 69 kV transmission line and modify Banks Switchyard (09-06)	October 2009	January 2011	8,460
South Bay Pumping Plant	Furnish 45 cfs pump and motor units and one spare pump and motor (04-05)	November 2004	June 2011	7,370
	Furnish valves, actuators, and hydraulic power unit (04-20)	May 2005	June 2011	2,258
	Furnish switchyard equipment (05-10)	September 2005	June 2011	1,496
	Furnish 5 kV switchgear (05-05)	October 2005	June 2011	3,571
	Construct pumping plant enlargement—initial facilities (06-04)	August 2006	June 2011	16,604

Table 12-2 Construction Activities, January 1, 2010, through December 31, 2010, by Division Sheet 2 of 4

Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW[a])	Acceptance Date (Expected or Actual)	Contract Costs (In Thousands of Dollars)
	Furnish power transformers (07-02)	April 2007	June 2011	4,666
	Complete pumping plant enlargement (07-18)	December 2007	May 2011	18,674
Surge Tank No. 3	Construct Surge Tank No. 3 (08-09)	July 2008	March 2010	1,635
North San Joaquin Division				
Delta Operations and Maintenance Center	Repair roof (08-07 change order)	August 2010	February 2011	40
	Generator replacement (06-10 change order)	September 2008	September 2011	208
Banks Pumping Plant	Improve hillside (08-10)	July 2008	March 2010	1,053
San Luis Division				
Dos Amigos Pumping Plant	Replace trash rake system and trash racks (08-06)	January 2009	April 2011	3,407
Gianelli Pumping-Generating Plant and Dos Amigos Pumping Plant	Refurbish CO_2 system (04-08)	July 2004	May 2010	1,698
Gianelli Pumping-Generating Plant, Dos Amigos Pumping Plant, Coalinga Operations and Maintenance Subcenter, Check Sites, and Flowmeter Sites	Replace standby engine generators (06-10)	August 2006	September 2011	2,084
San Luis Canal	Repair canal lining, Mileposts 56.40 to 164.90 (07-20)	November 2007	November 2012	9,233
	Repair canal seepage, Milepost 88.30 (09-07)	September 2009	November 2010	2,632
South San Joaquin Division				
Buena Vista Pumping Plant	Furnish spare coils and materials (07-05)	June 2007	March 2012	3,784
Tehachapi Division				
Edmonston Pumping Plant	Replace pumps, Units W2, W4, W6, and W8 (02-10)	June 2003	May 2011	35,600
Mojave Division				
California Aqueduct Reaches 18A and 22B	Seal and pave roads and parking areas (10-03)	July 2010	January 2013	3,149
California Aqueduct Reach 20B	Repair canal culvert at Milepost 344.38 (10-15)	August 2010	February 2011	257
Cedar Springs Dam Maintenance Station	Construct civil maintenance and mobile equipment building (07-25)	January 2008	December 2010	3,700
Santa Ana Division				
East Branch Extension Phase I				
Greenspot, Crafton Hills, and Cherry Valley Pump Stations	Furnish pumps, motors, and variable frequency drives (99-17)	November 1999	April 2011	4,657
	Furnish and install additional units (06-21)	October 2006	December 2011	4,062

Table 12-2 Construction Activities, January 1, 2010, through December 31, 2010, 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)
East Branch Extension Phase I Improvements				
Yucaipa Connector Pipeline	Furnish 42-inch and 48-inch AWWA valves (09-04)	August 2009	August 2011	233
	Construct 42-inch diameter pipeline (10-12)	October 2010	December 2011	2,842
East Branch Extension Phase II				
Valves	Manufacture, test, and deliver three energy dissipating valves for Citrus Reservoir (10-10)	September 2010	June 2012	700
Perris Dam	Evaluate dewatering and cement deep-soil mixing methods (09-17)	October 2009	October 2010	2,075
Santa Ana Pipeline	Excavate, inspect, and repair, Phase IV (07-23)	November 2007	May 2010	5,906
	Excavate, inspect, and repair, Phase V (09-19)	November 2009	October 2010	827
West Branch				
Oso Pumping Plant	Construct civil maintenance and mobile equipment building (07-22)	December 2007	December 2011	4,048
Vista del Lago Visitors Center	Repair erosion, install water intake system, modify building, and improve drainage (08-04)	July 2008	June 2010	1,533
Coastal Branch				
Bluestone Pumping Plant	Remove sediment (10-01 change order)	November 2010	November 2010	264
Coastal Aqueduct under State Route 46	Encase existing steel pipeline (10-01)	April 2010	December 2011	1,770
Las Perillas Pumping Plant	Repair lining of discharge line (07-23 change order)	February 2010	February 2010	405
Multiple Divisions				
Upper Feather River and Oroville Divisions	Repair spillways, Oroville Dam, Antelope Dam, Frenchman Dam, Grizzly Valley Dam (09-14)	September 2009	June 2010	1,487
Delta Facilities, Suisun Marsh Facilities, South Bay Aqueduct, and North San Joaquin, South San Joaquin, and Mojave Divisions	Install and remove temporary rock barriers—2007 to 2009 (06-26)	January 2007	October 2010	10,452
	Install and remove temporary rock barriers—2010 to 2012 (09-21)	March 2010	December 2012	18,331
North San Joaquin, San Luis, and South San Joaquin Divisions and Coastal Branch				
Banks Pumping Plant and Gianelli Pumping-Generating Plant	Design, manufacture, deliver, and install digital voltage regulators (02-12)	May 2003	August 2010	2,082
Banks Pumping Plant and Teerink Pumping Plant	Furnish spare coils and materials (06-27)	February 2007	August 2012	2,551

Table 12-2 Construction Activities, January 1, 2010, through December 31, 2010, by Division Sheet 4 of 4

Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW[a])	Acceptance Date (Expected or Actual)	Contract Costs (In Thousands of Dollars)
San Luis and San Joaquin Field Divisions	Seal and pave roads and parking areas—2008 (08-16)	September 2008	April 2010	2,979
	Seal and pave roads and parking areas—2010 (10-02)	August 2010	January 2011	1,125
South San Joaquin Division and West Branch				
Buena Vista Pumping Plant, Chrisman Pumping Plant, and Warne Powerplant	Roofing repairs (10-19)	October 2010	January 2013	990
West Branch, Mojave, and Santa Ana Divisions				
Oso Pumping Plant, Lower Quail Canal Outlet, Warne Powerplant, Pyramid Dam, Angeles Tunnel, Alamo Powerplant, Pearblossom Powerplant, Pearblossom Sand Blast Building, and Devil Canyon Second Afterbay	Seal and pave roads and parking areas—2008, Southern Field Division (08-17)	September 2008	April 2010	2,625
Miscellaneous Activities (Non-SWP)				
San Joaquin River Mile 42.3R, Paradise Cut Mile 3.8L, and Mormon Slough Mile 11.8R	Emergency levee erosion repair (08-15)	August 2008	March 2010	1,422
San Joaquin River Miles 41.4L, 42.1R, 42.5R, and 42.8R	Repair erosion and protect banks (09-18)	October 2009	September 2011	934
Cache Creek, Yolo Bypass, Willow Slough, and Putah Creek	Repair levee roads (10-11)	August 2010	December 2010	1,801
Colusa State Recreation Area	Restore habitat (08-13)	October 2008	August 2012	942
Sycamore Creek	Restore habitat (10-14)	October 2010	October 2014	390
Sutter Bypass	Replace motor control centers and control system at Pumping Plant No. 1, Pumping Plant No. 2, and Pumping Plant No. 3 (10-09)	December 2010	February 2012	5,564
Chowchilla Bypass Structure	Install seals on radial control gates (09-20)	December 2009	May 2010	80
Willow Slough, Sutter Bypass	Replace existing fish ladder (10-05)	June 2010	March 2013	3,124
Sycamore Creek, Chico Creek, Mud Creek, and Sandy Gulch	Remove sediment (10-13)	September 2010	February 2011	447

[a] Notice to Begin Work.

Chapter 13
Recreation

Bike trails cover a variety of terrain at several SWP recreation facilities.

Significant Events in 2010

The Department of Water Resources (DWR), after a competitive bidding process, awarded a new 10-year concession contract to Parks Management Company to operate the recreation facilities at Pyramid Lake. The new concessionaire will begin managing the facilities January 1, 2011.

State Water Project (SWP) facilities supported an estimated 4.3 million recreation days of use in 2010, up slightly from 2009 and 2008.

DWR gave a 4-year grant to the California Department of Parks and Recreation (California State Parks) for a dreissenid mussel inspection and education program at San Luis Reservoir State Recreation Area to help prevent quagga and other invasive mussels from entering the SWP.

State parks staff at Lake Perris and Silverwood Lake began a comprehensive boat inspection program to prevent the spread of quagga mussels into the SWP. The 2-year pilot study will focus on how to streamline and coordinate the boat inspection process between parks, increase efficiency of the inspections, and decrease the inconvenience to park visitors. Funding was provided by the Harbors and Watercraft Revolving Fund.

DWR, California State Parks, the Department of Fish and Wildlife (DFW; formerly the Department of Fish and Game), California State Parks Division of Boating and Waterways (DBW; formerly the Department of Boating and Waterways), and the Department of Forestry and Fire Protection worked together with top anglers to take 182 disabled and disadvantaged children fishing on the SWP and offered them the opportunity to "Catch A Special Thrill" in partnership with the C.A.S.T. for Kids Foundation. Children were given their own fishing gear to take home and were educated about boating safety, ethics of fishing, and natural resources. DWR is proud to be in its sixth year of providing this opportunity to disabled and disadvantaged youth.

Information for this chapter was provided by the Division of Integrated Regional Water Management, 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 and 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 Use

In 2010, SWP facilities supported an estimated 4.3 million recreation days of use (Table 13-1), up slightly from 2009 and 2008. A recreation day is defined as one individual user visiting a recreation site along the SWP within all or part of a one-day period.

Attendance was estimated to have increased 37 percent at Lake Davis between 2009 and 2010. In 2007, the Department of Fish and Wildlife (DFW; formerly the Department of Fish and Game) treated the lake with rotenone to eliminate northern pike. Following this treatment, DFW restocked the lake with about a million trout, including "super catchable" sized Eagle Lake rainbow trout and "trophy" sized rainbow trout in an effort to restore the lake's fisheries population and its excellent fishing reputation.

DWR managed the recreation facilities at Pyramid Lake this year after the U.S. Forest Service ended its contract. DWR made numerous repairs while undergoing a competitive bidding process to find a new concessionaire. A new 10-year concession contract was awarded to Parks Management Company. The new concessionaire will begin managing the facilities January 1, 2011.

In 2010, most SWP recreation use was concentrated at the lakes and major reservoirs, with 36 percent occurring in the Oroville Field Division and 44 percent in the Southern Field Division, as indicated in Table 13-1. Since the SWP began delivering water in 1962, more than 208 million recreation days have been recorded at SWP recreation facilities. Visitation at DWR's three SWP educational visitor centers totaled:

- Lake Oroville Visitors Center, 92,400 recreation days;
- Romero Overlook Visitors Center, San Luis Reservoir, 131,200 recreation days; and
- Vista del Lago Visitors Center, Pyramid Lake, 147,900 recreation days.

Overall, recreation usage of 4.3 million recreation days at the SWP facilities listed in Table 13-1 contributed to the more than 63.5 million day-use visitors at the 278 units of the California State Parks System in fiscal year 2010–2011.

Facilities

In 2010, the following activities occurred or were planned for SWP facilities.

Figure 13-1 Names and Locations of SWP Recreation Areas

Table 13-1 Estimated Recreation Days in 2010, by Field Division and Facility

Field Division and Facility	Number of Recreation Days (rounded)
Oroville Field Division	
Frenchman Lake	61,300
Antelope Lake	29,400
Lake Davis	38,300
Lake Oroville and Thermalito Forebay	842,900
Thermalito Afterbay and Oroville Wildlife Area	279,500
Feather River Fish Hatchery	168,000
Lake Oroville Visitors Center	92,400
Subtotal	*1,511,800*
Delta Field Division	
Lake del Valle	349,600
Bethany Reservoir	11,500
Fishing Access Site:	
Niels Hansen	300 e
California Aqueduct:	
Walk-in Fishing	800 e
Bikeway	300 e
White Slough Wildlife Area	11,800 e
Subtotal	*374,300*
San Luis Field Division	
San Luis Reservoir SRA, includes San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir	355,200
Romero Overlook Visitors Center	131,200
California Aqueduct	
Walk-in Fishing	1,100 e(1)
Wildlife Areas	1,500 e
Subtotal	*489,000*
San Joaquin Field Division	
Fishing Access Sites including Kettleman City, Lost Hills, Buttonwillow, and California Aqueduct Walk-in Fishing	18,000 e
Subtotal	*18,000*
Southern Field Division	
Silverwood Lake	314,000
Lake Perris	609,500
Vista del Lago Visitors Center	147,900
Pyramid Lake	106,600 e(2)
Castaic Lake and Castaic Lagoon	679,400
Fishing Access Sites:	
Quail Lake	1,600 e
77th Street East	800 e
Longview Road	100 e
California Aqueduct:	
Walk-in Fishing	1,400 e
Bikeway	2,400 e
Subtotal	*1,863,700*
Total for Recreational Sites	**3,885,300**
Total for Visitors Centers	**371,500**
Grand Total	**4,256,800**

[e] These values are provided by numerous sources and vary in their degree of accuracy. Data provided by facility operators and other sources. Recreation days are based on counts except where marked "e," which are based on partial data; e(1) There is some discrepancy on the location(s) of these access sites. These numbers have decreased since DWR has installed a large gate and prevented visitors from walking across the dam, thereby limiting access to these recreation areas; e(2) Due to a concessionaire transition, December 2010 figures were missing. Therefore, a monthly average was calculated to get a 12-month total attendance figure.

Planning

Lake Oroville State Recreation Area

The California Department of Parks and Recreation (California State Parks) began the process of developing a general plan for the Clay Pit State Vehicular Recreation Area. The general plan will serve as a guide for future development and enhancements, including potential recreation and facility improvements, and direct future park management, resource stewardship, and appropriate public use. An environmental impact report (EIR) will be prepared concurrently with the general plan. Three public workshops were held during the summer to introduce the plan and gather public comment.

Lake del Valle State Recreation Area

East Bay Regional Park District is preparing to replace a campground restroom with a new restroom, funded partially by park entrance fees.

Castaic Lake State Recreation Area

Calfornia State Parks Division of Boating and Waterways (DBW; formerly the Department of Boating and Waterways) is planning boat ramp improvements to the existing boat ramp at the Castaic Lake Lagoon.

New Facilities

During 2010, new facilities were completed at the following sites.

Lake Oroville State Recreation Area

California State Parks and DWR purchased a new 1,000-gallon sewage pump vessel for lake operations. The vessel will be used to pump the 10 floating campsites and 6 floating restrooms.

Lake del Valle State Recreation Area

DBW began constructing a new boat dock to accommodate access for users with limited mobility. The new dock will be completed in the summer of 2011.

Silverwood Lake State Recreation Area

California State Parks completed construction of the Nature Center building and parking lot area and completed a water main addition for fire suppression in Black Oak and Sawpit Road. Two large shade ramadas for picnic sites at Cleghorn Day Use Area and one large shade ramada at Sawpit Beach picnic area were also installed. These projects were supported by Proposition 84 bond funds.

Improvements to Facilities

During 2010, improvements were made at the following facilities.

Lake Davis Recreation Area

The U.S. Forest Service installed new water pipes at the Lightning Tree Campground, expanded the Camp 5 parking area, upgraded and extended a limited mobility accessible pier, built a new access road at Jenkins Point, and installed new vaulted toilets at Jenkins Point and Fairview Point.

Lake Oroville State Recreation Area

DWR and California State Parks participated in maintaining a shaded fuel break in the corridor along the interface of wildlands on State land next to the residences in the Kelly Ridge area. The reduction of wildland fuels reduces the risk of fires sweeping into the residential area.

DWR replaced two 120-foot-long boarding floats at Thermalito Afterbay: one at Wilbur Road boat launch area on the north side of the afterbay, and one at the Monument Hill boat launch facility.

California State Parks continued construction of the North Fork Trail that connects to the Spillway Launch ramp. This expanded the multiuse trail system by 7.5 miles and allowed land access to the Bloomer Primitive Boat-In Campground area.

The third phase of a three-phase exhibit upgrade continued at the Lake Oroville Visitors Center. The upgrades included two new interactive games on hydropower generation. A new display was built addressing the design and construction of Oroville Dam, and a new display depicting the Feather River Fish Hatchery was built on the south wall exhibit area.

Lake del Valle State Recreation Area

East Bay Regional Park District installed a new irrigation system in the overflow lawn, added recycle bins throughout the park, repaired several roofs on restroom buildings, converted site number 52 in the campground to accommodate access for users with limited mobility, and installed a picnic area by the east concession to accommodate access for users with limited mobility.

San Luis Reservoir State Recreation Area

California State Parks installed new water treatment systems at the Basalt Recreation Area and San Luis Creek Day Use Area. Two new lift stations were installed, one at San Luis Group Campground and one at the San Luis Creek Day Use Area. These projects were supported by Proposition 84 bond funds.

California State Parks upgraded five picnic sites at Los Banos Creek Day Use Area to accommodate users with limited mobility. The five sites each received a new leveled pad, picnic table, shade structure, and barbeque grill. New limited-mobility vaulted toilets were also installed.

DWR provided a 4-year grant to California State Parks for a dreissenid mussel inspection and education program. Five quagga mussel inspection stations were opened and became operational at the following boat ramp locations: Dinosaur Point and Basalt on San Luis Reservoir;

San Luis Creek and Medeiros on O'Neill Forebay; and Los Banos Creek on Los Banos Reservoir. For more information about quagga mussels, see Chapter 3, Environmental Programs.

Pyramid Lake State Recreation Area

DBW completed the Visitors Dock replacement at Emigrant Landing, which included removal and replacement of the existing pier, gangway, several boarding floats, pile covers, high-density polyethylene fender cuts, and pier guardrails, and added a sidewalk to accommodate access for users with limited mobility.

DWR installed a new fish cleaning station, replaced picnic tables, and recoated shade ramadas at Emigrant Landing.

DWR replaced picnic tables and recoated shade ramadas at Yellow Bar, Serrano, Spanish Point, and Vaquero. In addition, a new water intake line was installed at Spanish Point to supply water to the Vista del Lago Water Treatment Plant. At Vaquero, the lower restrooms were refurbished with new sinks, toilets, skylights, tile roofs, light fixtures, and doors. Both the upper and lower Vaquero restroom floors were coated with epoxy.

DBW completed an improvement project at the Bear Trap Boat-In Site, which included installation of two single-unit pre-cast vault toilets, three concrete patios with picnic tables and shade structures, and concrete sidewalks.

Silverwood Lake State Recreation Area

California State Parks added sewer, water, and electrical hook-ups for recreational vehicle (RV) campsites to the New Mesa Campground.

California State Parks replaced a restroom building in Rio Group Camp consisting of four restroom stalls and four shower stalls.

DBW completed a large rehabilitation project at Serrano Beach Boat-In Site. This project included new restrooms to accommodate and a boat dock to accommodate access for users with limited mobility, shade ramadas, barbeque grills, construction of a concrete access path, picnic tables, installation of a pile-guided boarding dock system with a 60-foot steel frame, a fiberglass-reinforced plastic deck, and an 80-foot aluminum gangway. Construction was completed in June 2010.

Lake Perris State Recreation Area

DBW completed several improvements at Ramp 5. Improvements included replacement of the bottom 118 feet of the five-lane boat launching ramp, revision of the path-of-travel to the ramp to meet the current California Building Code, and the addition of parking spaces for users with limited mobility.

California State Parks replaced 2,800 square-feet of roof at the Lake Perris State Recreation Area Indian Museum and replaced ten 6-foot by 10-foot windows. In addition, four access doors were replaced with new doors to accommodate users with limited mobility.

Recreation Activities

The SWP, with its many reservoirs and hundreds of miles of aqueducts, offers Californians many recreational opportunities. From Antelope Lake in Northern California to Lake Perris in Southern California, the SWP includes facilities for anglers, boaters, campers, hikers, cyclists, and many others. While DWR manages the routing of water through the reservoirs, the recreational facilities are operated variously by federal,

State, and local agencies and, in many cases, their private concessionaires. Visitors to SWP facilities can swim, water ski, and picnic, as well as enjoy other activities. See Figure 13-2 for the various types of recreation available along the SWP.

Lake Oroville State Recreation Area

DWR, California State Parks, and some of their several sister agencies sponsored the following activities in 2010:

- DWR co-hosted a "Jack Splash" Fit-N-Fun Day with the Oroville YMCA at the North Forebay Aquatic Center. Three hundred seventy-two children came to learn the value of exercise and healthy eating habits though various activities with staff;
- DWR and California State Parks helped support, through a contract with the Oroville Chamber of Commerce, the annual Oroville Salmon Festival. This 2-day fall event was held at the Feather River Fish Hatchery and downtown Oroville, and was attended by an estimated 8,000 participants;
- DWR co-hosted a 2-week Aquatic Adventure Camp program with the Feather River Recreation and Park District, and the Chico Area Recreation District, for 30 local children. They were educated in sailing, canoeing, sail boarding, proper use of safety equipment, water safety, and rescue techniques by Forebay Aquatic Center staff;
- DWR, California State Parks, and the Department of Forestry and Fire Prevention hosted a Catch A Special Thrill (C.A.S.T.) fishing event for 32 disabled and disadvantaged children;
- California State Parks held Earth Day clean-up activities at the Saddle Dam area and Ten Dollar Hill. It was estimated that 25 yards of trash and tires were removed from the areas;
- California State Parks hosted Bidwell Bar Days at Bidwell Canyon Campground. Park visitors were treated to a day in the life of the old west; and
- California State Parks hosted Frontier Christmas at the Lake Oroville Visitors Center. Visitors learned how to make pioneer crafts and pan for real gold. An estimated 3,000 people attended the event.

Lake del Valle State Recreation Area

East Bay Regional Park District sponsored the following activities in 2010:

- Newfoundland Water Dog trials;
- Mark Aiton's Open Water Swim;
- Tri-Valley Masters Open Water Swim;
- Big Blue Adventure Race;
- Ohlone 50K Run;
- Ivan Dickson Trail Days Festival;
- Two Day Town Music Festival;
- Thirty-one campfire programs serving 3,141 individuals;
- Coastal Clean-up Day where 152 volunteers cleaned up the lake shoreline;
- with DWR and the Richmond Police Athletics League, co-sponsored two Aquatic Adventure Camps that served 80 participating children; and
- with DWR, hosted the annual C.A.S.T. fishing event, which paired 40 disabled and underprivileged children with experienced fishermen for a day of fishing.

San Luis Reservoir State Recreation Area

The following recreation activities were held at San Luis Reservoir State Recreation Area in 2010:

- DWR hosted a Kid's Fishing Day through the Romero Overlook Visitors Center; and
- California State Parks led a bi-weekly "Path of the Padres" hike, funded by the Four Rivers Association. Between March and April, 600 hikers were exposed to wildflowers, geology, cultural and historical areas, and Native American sites.

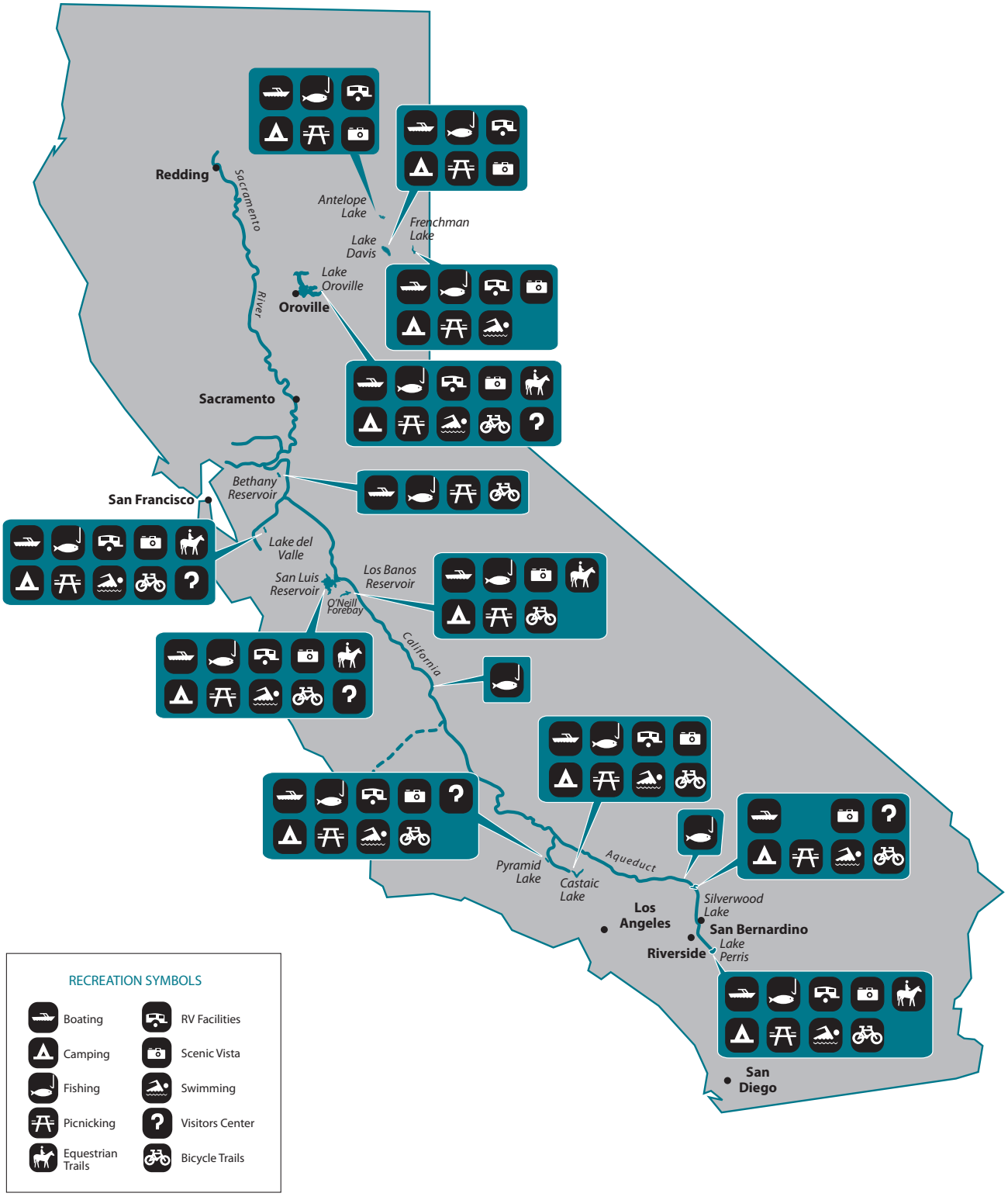

Figure 13-2 **Types of Recreation along the SWP**

Castaic Lake State Recreation Area

The County of Los Angeles Department of Parks and Recreation sponsored the following activities:

- hosted Junior Lifeguard programs for 300 participants;
- conducted two Aquatic Adventure Camp sessions for 80 participants;
- taught eight moonlight kayak classes with 30 participants in each class—the participants learned about the environment at Castaic Lake, the SWP, water safety, and boat safety;
- hosted "Splash in the Water" events with an average of 80 children who learned about water safety, kayaking, canoeing, Stand-up paddleboarding, and sailing;
- held two sessions of FamCamp, to teach about camping, leave-no-trace principles, water safety, and kayaking for 50 participants;
- taught Stand-up paddleboarding every Saturday from May through October with an average class size of 10–25 participants;
- hosted kayak clinics every Saturday from May through October to teach about water safety, boating safety, and the environment at Castaic Lake for an average of 20 people; and
- hosted, along with DWR, a C.A.S.T. fishing event for 41 participating disabled and disadvantaged children.

Silverwood Lake State Recreation Area

California State Parks sponsored the following activities:

- hosted bald eagle tours every Saturday from January through March, and also took eagle counts;
- hosted an Adopt-a-School program for 100 participants;
- hosted five school barge tours for 105 participants;
- held a Coastal Clean-up Day where 8 volunteers cleaned up the shoreline;
- conducted four Outdoor Youth Connection events where select urban middle-high school students came to the park to learn leadership and life skills;
- hosted the first Apple Festival located near Silverwood Lake's historic apple orchard. Twenty-five participants picked and collected apples from the orchard and then watched a demonstration of the original apple press making apple juice; and
- hosted, along with DWR, the first C.A.S.T. fishing event on Silverwood Lake, which paired 30 disabled and underprivileged children with experienced fishermen for a day of fishing.

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 signatories submitted a new Settlement Agreement Recreation Management Plan (SARMP, March 2006) for FERC approval, which is expected sometime in 2011 or later, pending a new FERC license.

Additional need-based recreation improvements identified and proposed in the SARMP are anticipated to be constructed when FERC issues new license terms and conditions. The new license terms and conditions are expected to be consistent with the proposed SARMP. In the meantime, DWR and its DDA collaborating partners California State Parks, DBW, and the DFW will continue to operate Oroville Facilities' recreational installations consistent with the existing FERC license (renewed annually) and its associated 1993 Amended Recreation Management Plan.

Fish Plantings

In 2010, DFW planted 538,500 fish in SWP reservoirs (see Table 13-2), less than the 879,500 planted in 2009 and the 1.6 million fish planted in 2008, but roughly the same as the 574,000 fish planted in 2007.

While most reservoirs received fewer fish than in 2009, Antelope Lake received 193 percent more fish, Lake Davis received 22 percent more fish, and Silverwood Lake received 37 percent more fish than in 2009. Lake Perris also received 10 percent more fish, most of which were the desirable Eagle Lake trout, a strain of rainbow trout.

SWP Deliveries for Recreation

DWR has an agreement with California State Parks to provide onshore recreation water at several SWP facilities in an amount prorated to the yearly SWP Table A allocation. Per the 50 percent SWP Table A allocation for 2010, maximum diversion amounts under the onshore recreation agreement were allocated at 50 percent, or a total of 3,390 af, as follows: 1,375 af at San Luis Reservoir, 200 af at Lake del Valle, 1,165 af at Castaic Lake and Castaic Lagoon, 625 af at Lake Perris, and 25 af at Bethany Reservoir. Actual deliveries under the agreement totaled 511 af as follows: 1 af at San Luis Reservoir, 117 af at Lake del Valle, 207 af at Castaic Lake, 186 af at Lake Perris, and 0 af at Bethany Reservoir. DWR also delivered 56 af to California State Parks at Silverwood Lake and 33 af at Pyramid Lake. Further detail on these deliveries is provided in Chapter 9, Water Contracts and Deliveries.

Recreation Financing

Prior to 2001, DWR reported capital costs allocated to fish and wildlife enhancement and recreation in Bulletin 132, Appendix D, *Costs of Recreation and Fish and Wildlife Enhancement* (R&FWE). This report is no longer mandated by the Legislature. DWR initially began reporting recreation capital cost information in this bulletin for fiscal year 2000–2001.

The approach to financing recreation and fish and wildlife enhancement in connection with the SWP is provided in the DDA (California Water Code (CWC) Sections 11900–11925, 1961) and the Burns Porter Act (CWC Section 12937, 1959). Additionally, as early as 1953, financing for recreation and fish and wildlife enhancement was addressed in CWC Sections 233, 345, 346, 12581, and 12582. These statutes declare that recreation at the SWP is a benefit to all the people of California and that the associated costs should be borne by all Californians. While this intent is cited in the DDA, 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 necessary State funding for this SWP purpose.

The Legislature has intermittently appropriated monies to meet State obligations to fund fish and wildlife enhancements and recreation at the SWP. 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 California State Parks and $5 million to DFW specifically for their responsibilities under the DDA at SWP facilities. Finally, AB 1442 appropriated $172 million to reimburse DWR for SWP R&FWE costs incurred over the previous dozen years as an offset to DWR's 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 costs have been made by the Legislature, DWR has used its authority

Table 13-2 Fish Planted by Department of Fish and Wildlife in 2010 (Thousands)

Location and Size	Eagle Lake Trout	Brook Trout	Rainbow Trout	Coho Salmon	Chinook Salmon	Kokanee Salmon	Total for Lake
Antelope Lake							39.8
Catchables	16.7	5.1	18.0				
Lake Davis							53.9
Catchables	51.8						
Super-Catchables	1.4						
Trophy			0.7				
Frenchman Reservoir							77.2
Catchables	77.2						
Lake Oroville							184.4
Catchables				184.4			
Thermalito Forebay	No Fish Planted						
Lake del Valle							37.3
Fingerlings					10.0	20.0	
Catchables	1.6		5.7				
Los Banos Reservoir	No Fish Planted						
Pyramid Lake							24.3
Catchables	2.0		22.3				
Castaic Lake							47.0
Catchables			47.0				
Castaic Lagoon	No Fish Planted						
Silverwood Lake							40.6
Catchables	11.6		14.0				
Super-Catchables			14.5				
Trophy			0.5				
Lake Perris							34.0
Catchables	6.8		27.2				
Total	**169.1**	**5.1**	**149.9**	**184.4**	**10.0**	**20.0**	**538.5**

Note: DFW's Hatchery Division provided this information. They use the following size classes:
fingerlings = 16.1 or more fish/pound; sub-catchables = 6.1 to 16 fish/pound; catchables = 1 to 6 fish/pound;
super-catchables = 0.99 to 0.34 fish/pound; and trophy = fewer than 0.32 fish/pound.

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 2010. Total capital costs increased by $832,930 since Bulletin 132-10. The increase in 2010 included $1,011,416 in joint costs, and a decrease of $178,486 in specific costs. 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 2010. These interest accruals were calculated through October 2001 on the portion of annual disbursements financed by the California Water Resources Development Bond Fund, based on the weighted average interest costs of Burns-Porter and Water System Revenue Bonds sold to date, and are reported here for historical reference. 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).

Table 13-3 Recreation and Enhancement Costs of the State Water Project (Dollars)

Facility	Joint Costs Allocated to Recreation and Enhancement						
	1952–2009 Updated	2010	Subtotal	Interest	Total	B132-10 Costs	Increase/ Decrease
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	2,719,908	(3)	2,719,905	0	2,719,905	2,719,908	(3)
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	4,625,718	0
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	4,591,904	(482,449)	4,109,455	0	4,109,455	4,591,904	(482,449)
Other Feather River Projects[a]							
California Water Resources Development Bond Fund	0	0	0	0	0	0	0
All Other Funds	746,169	(1)	746,168	0	746,168	746,169	(1)
Delta Facilities							
California Water Resources Development Bond Fund	0	0	0	0	0	0	0
All Other Funds	13,054,643	45,663	13,100,306	0	13,100,306	13,054,643	45,663
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	3,532,351	1,194	3,533,545	0	3,533,545	3,532,351	1,194
California Aqueduct Delta to Dos Amigos Pumping Plant (3.4%)							
California Water Resources Development Bond Fund	4,467,667	0	4,467,667	897,406	5,365,073	5,365,073	0
All Other Funds	4,756,187	7,639	4,763,826	0	4,763,826	4,756,187	7,639
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	5,984,024	94,867	6,078,891	0	6,078,891	5,984,024	94,867
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	4,208,213	753	4,208,966	0	4,208,966	4,208,213	753
California Aqueduct Dos Amigos Pumping Plant to Termini (5.7%)							
California Water Resources Development Bond Fund	48,382,162	0	48,382,162	75,353,773	123,735,935	123,735,935	0
All Other Funds	89,649,730	1,343,753	90,993,483	0	90,993,483	89,649,730	1,343,753
Subtotal	*209,118,914*	*1,011,416*	*210,130,330*	*85,626,954*	*295,757,284*	*294,745,868*	*1,011,416*
	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	49,950	0
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	554,246	0
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
Antelope Dam and Lake							
California Water Resources Development Bond Fund	3,167	0	3,167	0	3,167	3,167	0
All Other Funds	201,137	0	201,137	0	201,137	201,137	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	867,243	0
California Aqueduct Delta to Dos Amigos Pumping Plant							
California Water Resources Development Bond Fund	422,681	0	422,681	158,456	581,137	581,137	0
All Other Funds	(91,879)	0	(91,879)	0	(91,879)	(91,879)	0
Oroville Division							
California Water Resources Development Bond Fund	7,809,509	0	7,809,509	3,673,041	11,482,550	11,482,550	0
All Other Funds	6,116,514	(178,486)	5,938,028	0	5,938,028	6,116,514	(178,486)
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)	(32,202)	0
California Aqueduct Dos Amigos Pumping Plant to Termini							
California Water Resources Development Bond Fund	478,971	0	478,971	915,217	1,394,188	1,394,188	0
All Other Funds	419,088	0	419,088	0	419,088	419,088	0
Castaic Dam and Lake							
California Water Resources Development Bond Fund	1,954,297	0	1,954,297	3,856,203	5,810,500	5,810,500	0
All Other Funds	951,352	0	951,352	0	951,352	951,352	0
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	370,164	0
Perris Dam and Lake Perris							
California Water Resources Development Bond Fund	1,022,313	0	1,022,313	2,033,799	3,056,112	3,056,112	0
All Other Funds	4,939,976	0	4,939,976	0	4,939,976	4,939,976	0
Subtotal	*27,593,986*	*(178,486)*	*27,415,500*	*11,953,381*	*39,368,881*	*39,547,367*	*(178,486)*
Total Recreation and Enhancement Costs							
California Water Resources Development Bond Fund	88,488,543	0	88,488,543	97,580,335	186,068,878	186,068,878	0
All Other Funds	148,224,357	832,930	149,057,287	0	149,057,287	148,224,357	832,930
Total	***236,712,900***	***832,930***	***237,545,830***	***97,580,335***	***335,126,165***	***334,293,235***	***832,930***

[a] Actual capitalized costs for facilities not yet constructed.

Table 13-4 Calculation of Interest Accruals on California Water Resources Development (WRD) Bond Fund Disbursements (in Dollars at 4.608% per Annum)

Facility	1952–2009 Disbursements WRD Bond Funds	1952–2009 Disbursements All Other Funds	1952–2009 Reimbursements WRD Bond Funds	1952–2009 Reimbursements All Other Funds	1952–2009 Interest Accrual[a]	2010 Disbursements WRD Bond Funds	2010 Disbursements All Other Funds	2010 Reimbursements WRD Bond Funds	2010 Reimbursements All Other Funds	2010 Interest Accrual[a]	2011 Beginning of Year Balance to be Reimbursed Disbursements WRD Bond Funds	2011 Beginning of Year Balance to be Reimbursed Disbursements All Other Funds	2011 Beginning of Year Balance to be Reimbursed Reimbursements WRD Bond Funds	2011 Beginning of Year Balance to be Reimbursed Reimbursements All Other Funds	2011 Beginning of Year Balance to be Reimbursed Interest Accrual[a]
Joint Costs Allocated to Recreation and Enhancement															
Frenchman Dam and Lake	102,997	2,719,908	104,900	2,719,468	2,097	0	(3)	0	0	0	102,997	2,719,905	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	4,591,904	4,444,594	2,568,667	486,754	0	(482,449)	0	0	0	4,003,092	4,109,455	4,444,594	2,568,667	486,754
Oroville Division	5,725,216	5,984,024	7,324,529	4,570,269	1,790,491	0	94,867	0	0	0	5,725,216	6,078,891	7,324,529	4,570,269	1,790,491
Other Feather River Projects	0	746,169	0	0	0	0	(1)	0	0	0	0	746,168	0	0	0
Delta Facilities	0	13,054,643	0	0	0	0	45,663	0	0	0	0	13,100,306	0	0	0
Del Valle Dam and Lake del Valle	10,546,762	4,208,213	16,463,934	3,130,016	6,813,560	0	753	0	0	0	10,546,762	4,208,966	16,463,934	3,130,016	6,813,560
California Aqueduct Delta to Dos Amigos P.P.	4,467,667	4,756,187	5,267,351	4,092,435	897,406	0	7,639	0	0	0	4,467,667	4,763,826	5,267,351	4,092,435	897,406
Sisk Dam, San Luis Reservoir, O'Neill Forebay, and Los Banos Reservoir	988,910	3,532,351	1,938,244	2,725,578	169,085	0	1,194	0	0	0	988,910	3,533,545	1,938,244	2,725,578	169,085
California Aqueduct Dos Amigos P.P. to Termini	48,382,162	89,649,730	113,035,518	49,410,851	75,353,773	0	1,343,753	0	0	0	48,382,162	90,993,483	113,035,518	49,410,851	75,353,773
Subtotal	*75,250,067*	*133,868,847*	*149,719,392*	*73,696,216*	*85,626,954*	*0*	*1,011,416*	*0*	*0*	*0*	*75,250,067*	*134,880,263*	*149,719,392*	*73,696,216*	*85,626,954*
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
Antelope Dam & Lake	3,167	201,137	0	0	0	0	0	0	0	0	3,167	201,137	0	0	0
Oroville Division	7,809,509	6,116,514	11,028,039	649,733	3,673,041	0	(178,486)	0	0	0	7,809,509	5,938,028	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
Sisk Dam, San Luis Reservoir, O'Neill Forebay, and 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.	422,681	(91,879)	603,887	(137,494)	158,456	0	0	0	0	0	422,681	(91,879)	603,887	(137,494)	158,456
California Aqueduct Dos Amigos P.P. to Termini	478,971	419,088	1,271,912	398,349	915,217	0	0	0	0	0	478,971	419,088	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
Subtotal	*13,238,476*	*14,355,510*	*23,674,520*	*8,096,564*	*11,953,381*	*0*	*(178,486)*	*0*	*0*	*0*	*13,238,476*	*14,177,024*	*23,674,520*	*8,096,564*	*11,953,381*
Total	**88,488,543**	**148,224,357**	**173,393,912**	**81,792,780**	**97,580,335**	**0**	**832,930**	**0**	**0**	**0**	**88,488,543**	**149,057,287**	**173,393,912**	**81,792,780**	**97,580,335**

[a] Accrued interest not calculated since October 2001 when SB 1191 amended CWC Section 11912 so that DWR was no longer required to report these costs annually to the Legislature or to submit cost allocations to the State Departments of Boating and Waterways, California State Parks, and Fish and Wildlife.

Chapter 14
Financial Analysis

Pyramid Lake and Dam.

Significant Events in 2010

On November 9, the Department of Water Resources (DWR) delivered $97.675 million of Water System Revenue Bonds, Series AH. The proceeds were presold on November 8 to refinance commercial paper and previously issued bonds, finance long-term construction expenditures, and pay bond financing costs.

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 the State Water Project's (SWP) current financial analysis, capital costs and requirements, revenues and expenses, and bond activities for years 2010 through 2020.

The Department of Water Resources (DWR) performs a financial analysis annually to ensure 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, 2010, 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 water contractor Table A amounts due to changes in amounts of water needed, conserved, or reclaimed;
- 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 financial analysis, DWR projected future construction costs through the year 2020 plus reimbursement of $72 million interim financing for prior expenditures will total $1.39 billion. Special capital requirements for revenue bond financing of these construction costs are projected at $133 million for a total capital requirement of $1.52 billion. This projection includes construction and financing costs for the following significant SWP projects planned for completion by 2020:

- Perris Dam remediation;
- Phase II enlargement of the East Branch of the California Aqueduct;
- Phase I improvements to the East Branch Extension;
- Phase II of the East Branch Extension;
- enlargement of and improvement to the South Bay Aqueduct (SBA); and
- a new intake to the North Bay Aqueduct.

Most of these capital requirements will be financed from the projected sale of $1.48 billion of revenue bonds. The remaining $45 million will be financed from capital resources revenues and the transfer of excess revenues not needed for operation costs or debt service.

The analysis of capital requirements and financing presented in Table 14-1 does not include the costs and financing of all facilities needed to develop the remaining yield necessary to meet the total 4.2 million acre-foot 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 2011 through 2020. Right-of-way costs are escalated at 4 percent per year from 2011 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 in the initial construction program, which concluded December 31, 1973 (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. Operational in May 1988, Phase II 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 of the new tanks began in 2007 and was completed in 2010.

Line 3, Delta and Suisun Marsh Facilities, shows historical costs 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 fish screens at Sherman and Twitchell islands.

Line 4, Final Four Units at Banks Pumping Plant, includes costs of the final four 1,067 cubic feet per second units, which became operational in spring 1992.

Line 5, Coastal Branch Aqueduct, includes all costs for the planning, design, and construction of Phase II of the Coastal Branch of the California Aqueduct. Phase II construction began in October 1993 and was completed in 1997. Water deliveries from Phase II facilities began in July 1997.

Line 6, West Branch Aqueduct, shows costs for all facilities on the West Branch except Warne 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, mapping, and preliminary design for Phase II

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

Facilities and Construction Divisions	Expenditures Incurred Through 2010	Future Expenditures	Total	Preliminary Allocation Among Project Purposes			
				Water Supply and Power Generation	*Flood Control*[a]	*Recreation and Fish and Wildlife Enhancement*	*Other*[b]
Project Construction Expenditures							
Upper Feather Division	19,922	3	19,925	1,558	0	18,367	0
Oroville Division (excludes Small Hydro)	640,039	32,103	672,142	574,885	71,690	25,568	0
Delta Facilities Division	415,932	21,833	437,765	423,278	0	14,486	0
North Bay Aqueduct	108,351	377,346	485,697	485,697	0	0	0
South Bay Aqueduct	300,574	42,738	343,311	319,870	8,199	15,243	0
California Aqueduct							
North San Joaquin Division	276,247	25,171	301,418	291,007	0	10,411	0
San Luis Division	273,000	14,153	287,152	274,169	0	12,984	0
South San Joaquin Division	317,292	10,037	327,329	309,476	0	17,852	0
Tehachapi Division	363,569	11,368	374,937	353,910	0	21,027	0
Mojave Division (excludes Small Hydro)	343,663	23,946	367,609	327,380	0	40,230	0
Santa Ana Division	290,523	166,081	456,604	413,449	0	43,155	0
West Branch	557,376	5,560	562,936	530,340	0	32,597	0
Coastal Branch	491,117	15,721	506,838	506,838	0	0	0
Subtotal, California Aqueduct	*2,912,787*	*272,038*	*3,184,825*	*3,006,569*	*0*	*178,256*	*0*
Other Project Facilities							
Small Hydroelectric Power							
Generating Facilities	99,776	0	99,776	99,776	0	0	0
Off-Aqueduct Power							
Generating Facilities	487,123	0	487,123	487,123	0	0	0
East Branch Enlargement	460,517	435,496	896,013	896,013	0	0	0
East Branch Extension	155,044	212,526	367,570	367,570	0	0	0
Coastal Power Allocation	30,708	0	30,708	30,708	0	0	0
Agricultural Drainage Facilities	78,240	12,995	91,235	0	0	0	91,235
Planning and Preoperations	64,291	38,986	103,276	103,276	0	0	0
Unassigned/Miscellaneous	82,000	13,776	95,776	0	0	0	95,776
Subtotal, Project Construction Expenditures	*5,855,304*	*1,459,839*	*7,315,142*	*6,796,324*	*79,888*	*251,920*	*187,011*
Other Capital Requirements							
Davis-Grunsky Act Program	130,000	0	130,000	0	0	0	130,000
Total Capital Expenditures	**5,985,304**	**1,459,839**	**7,445,142**	**6,796,324**	**79,888**	**251,920**	**317,011**

[a] Reflects DWR's allocation to this purpose, irrespective of federal payments.

[b] Includes costs currently unassigned to purpose, planning costs of deleted features of project facilities, initial costs of inventoried items, and costs assigned to the Davis-Grunsky Act Program.

of the enlargement began in March 2007. Construction is projected to be completed in 2020. 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 Phases I and II 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 Gorgonio Pass Water Agency and the San Bernardino Valley Municipal Water District. Construction of Phase I began in February 1999 and was completed in 2003. Phase I improvements include enlargement of the Crafton Hills Reservoir and construction of the Yucaipa Connector Pipeline. Construction of this phase is to be completed in 2012. Phase II will increase the pumping capacity to 100 percent of design capacity. Construction of Phase II is anticipated to begin in 2012. 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 SBA to its original design capacity. Construction began in 2006 and is scheduled to be completed in 2012.

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 2011 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 the Bay Delta Conservation Plan costs. DWR's share of the Bay Delta Conservation Plan expenditures for preliminary planning and environmental impact report preparation are currently financed by participating contractors.

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 36).

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	309.7
Bottle Rock	120.9
South Geysers	49.6
Devil Canyon	36.8
Warne	84.5
Alamo	44.9
Mojave Siphon	40.8
Thermalito Diversion Dam	14.1
Subtotal	*701.3*
Transmission Lines	
Midway–Wheeler Ridge	10.7
Geysers–Lakeville	6.9
Subtotal	*17.6*
Total	**718.9**

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

Activity	Amount (Millions of Dollars)
SWP Future Water Supply	31.7
Other Planning Costs	7.3
Total	**39.0**

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, 2010, 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.

Capital Financing

The SWP was constructed using three general types of financing: Burns-Porter Act, revenue bonds, and capital resources. Lines 21 through 37 of Table 14-1 present specific information about these financing sources.

Burns-Porter Act

Burns-Porter Act 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 27 percent of the expenditures through 2010 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, in accordance with a continuing authorization. The California Water Fund was used to finance $508 million, or approximately 8 percent, of the construction expenditures through 2010.

Table 14-7 Application of Revenue Bond Proceeds (Millions of Dollars)

Bond Series[a]	Construction Expenditures	Other Capital Requirements					Total Principal Amount of Bonds
		Reimbursement of General Fund	Capitalized Interest	Capitalized Operating Costs	Bond Financing and Refunding Costs[b]	Subtotal	
Oroville	218.0	2.6	19.9	1.5	3.0	27.0	245.0
Devil Canyon-Castaic	126.4	0.0	10.0	0.7	2.1	12.8	139.2
Pyramid Series A	74.0	0.0	19.2	1.0	1.6	21.8	95.8
Reid Gardner Series B	146.1	0.0	41.9	0.0	12.0	53.9	200.0
Reid Gardner Series C	91.1	0.0	17.9	7.9	8.1	33.9	125.0
Small Hydro-South Geysers Series D	49.6	0.0	19.9	0.0	5.5	25.4	75.0
Bottle Rock Series E	96.9	0.0	22.0	3.7	2.4	28.1	125.0
Alamo-South Geysers Series F	59.1	0.0	14.2	0.0	1.7	15.9	75.0
Reid Gardner Series G	1.6	0.0	0.0	0.0	237.9	237.9	239.5
Power Facilities Series H	22.2	0.0	0.0	0.0	184.5	184.5	206.7
East Branch Enlargement Series A	108.3	0.0	12.6	0.0	11.1	23.7	132.0
Water System Facilities Series B	97.4	0.0	0.0	0.0	2.6	2.6	100.0
Water System Facilities Series C	0.6	0.0	0.0	0.0	8.4	8.4	9.0
Water System Facilities Series D	95.9	0.0	2.9	0.0	1.2	4.1	100.0
Water System Facilities Series E	0.4	0.0	0.0	0.0	8.6	8.6	9.0
Water System Facilities Series F	0.0	0.0	0.0	0.0	160.0	160.0	160.0
Water System Facilities Series G	86.8	0.0	4.6	0.0	8.6	13.2	100.0
Water System Facilities Series H	85.5	0.0	5.7	0.0	8.8	14.5	100.0
Water System Facilities Series I	158.9	0.0	5.8	0.0	15.3	21.1	180.0
Water System Facilities Series J	0.0	0.0	0.0	0.0	649.8	649.8	649.8
Water System Facilities Series K	88.6	0.0	3.1	0.0	8.3	11.4	100.0
Water System Facilities Series L	0.0	0.0	0.0	0.0	537.8	537.8	537.8
Water System Facilities Series M	166.3	0.0	9.9	0.0	13.8	23.7	190.0
Water System Facilities Series N	137.4	0.0	6.0	0.0	8.6	14.6	152.0
Water System Facilities Series O	156.5	0.0	8.4	0.0	170.1	178.5	335.0
Water System Facilities Series P	141.6	0.0	5.2	0.0	13.2	18.4	160.0
Water System Facilities Series Q	135.0	0.0	8.0	0.0	123.6	131.6	266.6
Water System Facilities Series R	0.0	0.0	0.0	0.0	20.7	20.7	20.7
Water System Facilities Series S	78.2	0.0	5.8	0.0	116.2	122.0	200.2
Water System Facilities Series T	0.0	0.0	0.0	0.0	135.7	135.7	135.7
Water System Facilities Series U	98.7	0.0	5.3	0.0	103.2	108.5	207.2
Water System Facilities Series V	0.0	0.0	0.0	0.0	20.6	20.6	20.6
Water System Facilities Series W	41.0	0.0	1.3	0.0	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
Water System Facilities Series AE	383.9	0.0	9.5	0.0	239.5	249.0	632.9
Water System Facilities Series AF	33.4	0.0	1.3	0.0	253.1	254.4	287.7
Water System Facilities Series AG	9.9	0.0	0.4	0.0	158.8	159.2	169.1
Water System Facilities Series AH	71.7	0.0	3.6	0.0	22.3	26.0	97.7
Subtotal	*3,179.3*	*2.6*	*269.8*	*14.8*	*4,717.3*	*5,004.5*	*8,183.8*[c]
Future East Branch Enlargement Bonds	442.6	0.0	19.3	0.0	24.5	43.8	486.4
Future East Branch Extension Bonds	200.3	0.0	8.7	0.0	11.1	19.8	220.1
Future SBA Enlargement Bonds	20.9	0.0	0.9	0.0	1.1	2.0	22.9
Future Water System Facilities Bonds	679.2	0.0	29.5	0.0	37.6	67.1	746.4
Total	**4,522.2**	**2.6**	**328.3**	**14.8**	**4,791.6**	**5,137.3**	**9,659.5**

[a] Actual bond issue for all except future East Branch Enlargement, 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 $4,291.1 million of refunded principal, leaving a net principal obligation of $3,892.8 million.

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, 2010, DWR had sold $8.2 billion of revenue bonds. That amount includes $4.3 billion of refunded bonds, leaving a total principal obligation of $3.9 billion.

Capital Resources

Capital resources financing is derived from payments and appropriations (including a portion of the State tideland oil revenues) authorized by a variety of special contracts, cost-sharing agreements, and legislative actions concerning the SWP, plus accrued interest on these funds. Capital resources revenues are deposited in the Central Valley Water Project Construction Fund and may be expended for interest on general obligation bonds and costs of constructing SWP facilities.

According to DWR's financial management policy, the capital resources revenues are used first to cover any general obligation bond debt service that exceeds available revenues.

Capital Financing Sources

Capital financing sources include power revenue bonds, East Branch Enlargement bonds, East Branch Extension bonds, SBA 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 Facilities Revenue Bonds through Series H, includes the proceeds applied from power revenue bonds for Oroville, Devil Canyon, Castaic, Warne, Reid Gardner, Bottle Rock, Alamo, South Geysers, and small hydro projects.

No future power revenue bond sales are projected for this financial analysis.

Line 22, East Branch Enlargement, Current Bonds, shows that $474 million of Water System Revenue Bond proceeds has been applied to the East Branch Enlargement project through December 31, 2010. Of this total, $417 million was used for construction expenditures and $57 million was used for bond discounts, interest costs, and debt service reserve requirements.

Line 23, East Branch Enlargement, Future Bonds, shows DWR's estimate of $486 million of bonds required to complete construction of the East Branch Enlargement Phase II.

Line 24, East Branch Extension, Current Bonds, shows that $183 million of Water System Revenue Bond proceeds has been spent through December 31, 2010.

Line 25, East Branch Extension, Future Bonds, shows DWR's estimate of $220 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 26, South Bay Aqueduct Enlargement, Current Bonds, shows that $156 million of Water System Revenue Bond proceeds had been spent through December 31, 2010.

Line 27, South Bay Aqueduct Enlargement, Future Bonds, shows DWR's estimate of $23 million of bonds required to complete construction of the SBA Enlargement and to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Line 28, Water System Facilities, Current Bonds, shows that through December 31, 2010, $1.9 billion of proceeds from Water System Revenue Bonds, Series A through Series AH, was applied to SWP projects other than the East Branch Enlargement, the East Branch Extension, and the SBA Enlargement. Of this total, $1.6 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 29, Water System Facilities, Future Bonds, shows that $746 million of future water revenue bonds is needed to provide $679 million for construction of SWP water system facilities and $67 million for bond discounts, interest costs, and debt service reserve requirements.

Line 30, Subtotal, Water System Revenue Bonds, is the total of Lines 22 through 29.

Line 31, 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 California Water Code Section 12938, the remaining offset bonds could be sold.

Line 32, 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, $102 million originated from bond proceeds while $28 million from the California Water Fund was used for the program in lieu of bond proceeds prior to 1969. Since the final offset in 1994, DWR has accumulated $44.6 million in capital costs through fiscal year 2006–2007.

Line 33, 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, 2010, was used to finance a total of $508 million of SWP costs.

Line 34, 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 $141.5 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 35, Application of Capital Resources Revenues to Construction, presents the Capital Resources Revenues applied for capital expenditures.

Line 36, 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 the years 2011 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 37, Subtotal, Other Capital Financing, is the total of Lines 31 through 36.

Line 38, Total Financing of Capital Requirements, totals Lines 21, 30, and 37.

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 2011 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 primarily consist of SWP water 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 2011 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 fish and wildlife enhancement against the amount the SWP owed to the California Water Fund (see Line 39). Since the final offset in 1994, DWR has accumulated $44.6 million in capital costs through fiscal year 2006–2007.

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(r) of the standard provisions for water supply contracts, is the weighted average of the rates paid on certain securities issued and loans obtained to finance SWP facilities.

According to the original water supply 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 contracts were 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, SBA, 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, which can be found in the back of this bulletin, is based on known conditions and substantiates DWR's

Table 14-8 Revenue Bond Proceeds Affecting Project Interest Rate (Millions of Dollars)

Project	Proceeds Included in Project Interest Rate: Applied to Construction Costs	Less Portion of Proceeds Derived from Interest Earnings Prior to Delivery of Bonds	Plus Bond Financing and Refunding Costs	Subtotal, Proceeds Included in Calculating Project Interest Rate [1] - [2] + [3]	**Total Principal Amount of Bonds**	**Percentage of Total Amount Included in Calculating Project Interest Rate [4] / [5]**
	[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

[a] Amount 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]).
[b] Represents amount of principal used to refund portions of prior bond issuances.

determination of 2012 water charges to be billed on July 1, 2011. 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 2012 charges included in Appendix B are as follows.

- Future capital costs in Appendix B are based on the prevailing prices as of December 31, 2010. Those costs presented in the financial analysis include allowances for price escalation.
- Pre-2011 charges in Appendix B represent charges as they should have been, according to currently known conditions. Pre-2011 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 2011 and thereafter have been adjusted for any apparent overpayments or underpayments of pre-2011 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 AH bonds. Charges in Table 14-2 apply to Series A through Series AH 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 AH bonds. Surcharge values included in Table 14-2 apply to Series B through Series AH 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 the annual debt service for Power Facilities Revenue 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 SBA 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

Table 14-9 Actual Bond Sales and Project Interest Rates, by Date of Sale

Bond Sales	Date of Sale	Dollar-Years[a] (Thousands)	Interest Cost (Thousands)	Issue Interest Rate[b] (Percent)	Project Interest Rate[c] (Percent)
$ 50,000,000 Bond Anticipation Notes	11/21/63	26,944	531	1.971	1.971
$100,000,000 Series A Water Bonds	2/18/64	3,402,000	119,750	3.520	3.508
$ 50,000,000 Series B Water Bonds	5/05/64	1,726,000	60,986	3.533	3.516
$100,000,000 Series C Water Bonds	10/07/64	3,452,000	123,764	3.585	3.544
$100,000,000 Series D Water Bonds	2/16/65	3,497,900	122,403	3.499	3.531
$100,000,000 Series E Water Bonds	11/23/65	3,497,900	130,029	3.717	3.573
$100,000,000 Series F Water Bonds	6/08/66	3,497,900	137,359	3.927	3.638
$100,000,000 Series G Water Bonds	11/22/66	3,497,900	143,788	4.111	3.711
$100,000,000 Series H Water Bonds	3/21/67	3,497,900	129,261	3.695	3.709
$100,000,000 Series J Water Bonds	7/18/67	3,497,900	143,199	4.094	3.754
$100,000,000 Series K Water Bonds	11/14/67	3,497,900	163,887	4.685	3.853
$150,000,000 Revenue Bonds, Oroville Division, Series A	4/03/68	5,228,700	270,289	5.169	
$100,000,000 Series L Water Bonds	7/11/68	3,497,900	166,918	4.772	3.941
$100,000,000 Series M Water Bonds	10/22/68	3,497,900	169,989	4.860	4.021
$ 94,995,000 Revenue Bonds, Oroville Division, Series B	4/01/69	3,423,460	195,902	5.722	
$ 46,761,000 Cumulative 1970 General Fund Borrowing, repaid 7/10/70	—	4,938	346	7.007	
$200,000,000 Series N and P Bond Anticipation Notes	6/16/70	200,000	11,660	5.830	4.030
$100,000,000 Series N Water Bonds	2/02/71	3,447,900	190,292	5.519	4.148
$100,000,000 Series Q Bond Anticipation Notes	3/10/71	100,000	2,349	2.349	4.143
$100,000,000 Series P Water Bonds	4/21/71	3,397,900	193,377	5.691	4.255
$150,000,000 Series Q and R Water Bonds	11/09/71	5,171,850	265,734	5.138	4.342
$ 40,000,000 Series S Water Bonds	3/28/72	1,399,160	76,509	5.468	4.371
$139,165,000 Devil Canyon-Castaic Revenue Bonds	8/08/72	4,776,204	258,839	5.419	4.457
$ 10,000,000 Series T Water Bonds	3/20/73	185,265	9,491	5.123	4.459
$ 10,000,000 Series U Water Bonds	1/13/76	158,750	8,731	5.500	4.462
$ 10,000,000 Series V Water Bonds	11/15/77	158,750	7,573	4.770	4.462
$ 95,800,000 Pyramid Hydroelectric Revenue Bonds	10/23/79	2,260,072	172,495	7.632	4.584
$150,000,000 Reid Gardner Project, Series A Bond Anticipation Notes	7/1/81	347,906	29,572	8.500	
$ 75,600,000 Bottle Rock Project, Bond Anticipation Notes	12/1/81	264,600	25,137	9.500	
$ 24,400,000 Alamo Project, Bond Anticipation Notes	12/1/81	24,266	2,305	9.499	4.589
$200,000,000 Reid Gardner Project, Series B Revenue Bonds	7/07/82	4,623,137	553,793	11.979	
$125,000,000 Reid Gardner Project, Series C Revenue Bonds	11/16/82	2,720,045	255,744	9.402	
$ 37,500,000 Small Hydro Project I, Series D Revenue Bonds	11/16/82	837,769	84,587	10.097	4.666
$ 37,500,000 South Geysers Project, Series D Revenue Bonds	11/16/82	930,325	90,021	9.676	
$125,000,000 Bottle Rock Project, Series E Revenue Bonds	4/27/83	2,624,805	225,102	8.576	
$ 50,000,000 Alamo Project, Series F Revenue Bonds	4/27/83	1,190,763	100,836	8.468	4.727
$ 25,000,000 South Geysers Project, Series F Revenue Bonds	4/27/83	608,550	52,578	8.640	
$239,505,000 Reid Gardner Project, Series G Revenue Bonds	3/15/85	4,524,136	425,840	9.413	
$206,690,000 Power Facilities Series H Revenue Bonds	6/20/86	4,430,520	347,745	7.849	4.713
$132,000,000 East Branch Enlargement, Series A Water System Revenue Bonds	7/15/86	3,427,165	254,915	7.438	

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)
$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	
$112,390,000 Series AD Water System Revenue Bonds	6/14/05	1,827,449	90,461	4.950	
$632,890,000 Series AE Water System Revenue Bonds	5/1/08	8,884,000	436,216	4.910	
$287,735,000 Series AF Water System Revenue Bonds	11/17/09	2,980,895	431,199	14.465	
$169,115,000 Series AG Water System Revenue Bonds	3/10/09	2,907,605	311,889	10.727	
$ 97,675,000 Series AH Water System Revenue Bonds	11/9/2010	1,432,014	72,176	5.040	4.610
Total		**215,526,858**	**12,750,576**		
Portion allocated to Project Interest Rate		**63,903,487**	**2,945,789**	**4.610**	**4.610**

[a] A unit equivalent to one dollar of principal amount outstanding for one year.
[b] The total interest cost (without regard to discounts paid or to premiums received) divided by the total dollar-years, expressed as a percent.
[c] Determined by dividing cumulative interest costs by cumulative dollar-years, expressed as a percent. (Excluding Oroville Division bonds and revenue bonds for Off-Aqueduct Power Facilities, 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 Aqueduct Enlargement Facilities.)

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 2011 through 2020.

Line 17, Appropriations for Operating Costs Allocated to Recreation, shows appropriations made under the Davis-Dolwig Act. In passing the Davis-Dolwig Act, the California Legislature declared its intent that, except for funds provided according to Assembly Bill 12 (1966), DWR's budget will include appropriations of monies from the General Fund necessary for enhancement of fish and wildlife and recreation in connection with State water projects.

Annual OMP&R costs allocated to recreation and fish and wildlife enhancement are to be paid by annual appropriations from the General Fund. Through fiscal year 1982–1983, these appropriations totaled $16.657 million. There have been no additional appropriations since the 1982–1983 fiscal year and none are indicated for 2011 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). Since the final offset in 1994, DWR has accumulated $145 million in OMP&R costs through calendar year 2010.

Line 18, Davis-Grunsky Loan Repayments, shows the repayments by local agencies of $54.2 million of loans disbursed as of December 31, 2010. 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 & Electric Company, Southern California Edison, and San Diego Gas & Electric Company 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 historic amount 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 OMP&R 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.

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 2011. 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, Power Resources. 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, 2010, $119.7 million had been spent for replacement costs; the balance of the replacement reserve as of that date was $39.1 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

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

	Calendar Year												
Feature	**1962–2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021–2035**	**TOTAL**
Project Facility													
Feather River facilities	1,354,286	57,614	64,702	61,229	64,391	64,240	64,084	66,096	64,268	67,299	67,233	1,001,513	2,996,955
North Bay Aqueduct	83,643	5,424	6,366	6,229	5,008	4,986	4,964	5,109	4,958	5,182	5,166	75,796	212,831
Delta facilities	764,040	0	0	0	0	0	0	0	0	0	0	0	764,040
Suisun Marsh	45,071	0	0	0	0	0	0	0	0	0	0	0	45,071
South Bay Aqueduct	330,300	15,235	15,793	15,352	13,695	13,628	13,557	13,944	13,520	14,119	14,067	205,121	678,331
California Aqueduct													
Delta to Edmonston	3,125,819	241,256	220,107	223,771	186,603	185,650	186,876	187,836	191,034	191,259	193,594	2,768,323	7,902,128
Edmonston to Perris	3,400,100	212,243	202,205	217,226	177,016	173,548	181,903	174,717	192,141	179,952	184,483	2,669,752	7,965,286
West Branch	15,243	17,017	16,336	15,210	12,080	12,760	13,788	11,252	16,087	11,785	13,681	236,832	392,071
Coastal Branch	272,212	19,635	19,414	19,501	18,636	18,544	18,453	18,984	18,413	19,233	19,167	280,055	742,247
East Branch Enlargement	109,722	7,246	8,146	7,432	7,615	7,522	7,430	7,587	7,304	7,573	7,491	102,950	288,018
Off-Aqueduct power-generating facilities	1,433,370	65,945	69,283	36,606	122	5	5	5	5	5	5	55	1,605,411
Recreation, planning, and CVP negotiations	6,013	679	679	679	679	679	679	679	679	679	679	10,185	22,988
Water quality monitoring	412,293	12,683	12,683	12,683	12,683	12,683	11,379	11,379	11,379	11,379	11,379	170,685	703,288
Davis-Grunsky Act Program	12,905	600	600	600	600	600	600	600	600	600	600	9,000	27,905
Subtotal	*11,365,017*	*655,577*	*636,314*	*616,518*	*499,128*	*494,845*	*503,718*	*498,188*	*520,388*	*509,065*	*517,545*	*7,530,267*	*24,346,570*
Payments to/credits from PG&E under Comprehensive Agreement	(59,848)	0	0	0	0	0	0	0	0	0	0	0	(59,848)
Total OMP&R Costs	**11,305,169**	**655,577**	**636,314**	**616,518**	**499,128**	**494,845**	**503,718**	**498,188**	**520,388**	**509,065**	**517,545**	**7,530,267**	**24,286,722**
Composition													
Salaries and expenses of headquarters personnel	3,235,144	133,349	144,955	131,800	130,299	127,236	111,185	107,849	115,218	110,811	113,979	1,628,537	6,090,362
Salaries and expenses of field personnel	4,506,515	170,675	186,218	169,716	169,852	165,713	193,405	187,118	200,647	192,161	197,947	2,842,287	9,182,254
Pumping power													
Used by pumping plants	2,841,099	333,028	281,405	322,577	241,147	244,959	241,560	247,475	249,614	250,618	250,597	3,730,489	9,234,568
Produced by generation plants	(542,765)	(47,697)	(45,824)	(44,458)	(42,569)	(43,345)	(42,714)	(44,536)	(45,373)	(44,807)	(45,260)	(675,256)	(1,664,604)
Payments to/credits from PG&E under Comprehensive Agreement	(59,848)	0	0	0	0	0	0	0	0	0	0	0	(59,848)
Off-Aqueduct power generating facilities requirement	1,433,370	65,945	69,283	36,606	122	5	5	5	5	5	5	55	1,605,411
Oroville-Thermalito insurance premiums	12,705	277	277	277	277	277	277	277	277	277	277	4,155	19,630
Less portion of costs incurred during construction	(121,051)	0	0	0	0	0	0	0	0	0	0	0	(121,051)
Total OMP&R Costs	**11,305,169**	**655,577**	**636,314**	**616,518**	**499,128**	**494,845**	**503,718**	**498,188**	**520,388**	**509,065**	**517,545**	**7,530,267**	**24,286,722**
Project Purpose													
Water supply and power generation	5,645,869	325,348	291,514	283,302	163,104	164,120	168,873	162,637	180,695	166,921	171,678	2,342,259	10,066,321
Payments to/credits from PG&E under Comprehensive Agreement	(59,848)	0	0	0	0	0	0	0	0	0	0	0	(59,848)
Recreation and fish and wildlife enhancement	7,564	476	476	476	476	476	476	476	476	476	476	7,143	19,470
Flood control	311,305	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	180,000	611,305
Miscellaneous purposes													
Federal share, San Luis and Delta facilities	13,505	600	600	600	600	600	600	600	600	600	600	9,000	28,505
Other (Davis-Grunsky, drainage, City of Los Angeles)	5,386,774	317,153	331,724	320,140	322,948	317,649	321,768	322,474	326,617	329,067	332,791	4,991,864	13,620,970
Total OMP&R Costs	**11,305,169**	**655,577**	**636,314**	**616,518**	**499,128**	**494,845**	**503,718**	**498,188**	**520,388**	**509,065**	**517,545**	**7,530,267**	**24,286,722**

net of several income and expenditure items. Income items related to revenue bonds are:

- 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 1952–2010 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 include:

- 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 reflects 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 35 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, 2010, show the total principal and interest payments, respectively, 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 AH).

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 23, 25, 27, and 29 of Table 14-1 for the East Branch Enlargement, East Branch Extension, SBA Enlargement, and other water system facilities. Assumptions about the service on these future bonds are that interest costs for the water revenue bonds average 3.5 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. The $508 million includes the $306 million of repayments shown in Line 39 and the $202 million of reimbursement that was 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 estimated costs of water delivery by service area for calendar years 2012 and 2017. The unit rates include costs of existing and future SWP facilities accounted for in Table 14-1 and Table 14-7. The unit water charges are based on the assumption that in 2012 and 2017, the SWP will be able to deliver the entire amount of water requested by each contractor. The unit water charges included in Table 14-12 are listed both as 2012 dollars and as escalated rates reflecting assumed future inflation of 2.5 percent per year through 2017.

Table 14-12 Estimated Unit Water Charges for 2012 and 2017, by Service Area (Dollars per Acre-foot)

Feather River Area		
Capital; Operations, Maintenance, and Replacement (OM&R)	**233**	**264**
North Bay Area		
Capital; OM&R	278	315
Power	52	59
Total	**330**	**374**
South Bay Area		
Capital; OM&R	216	244
Power	71	80
Total	**287**	**324**
Coastal Area		
Capital; OM&R	1,076	1,217
Power	183	207
Total	**1,259**	**1,424**
San Joaquin Area		
Capital; OM&R	126	143
Power	34	38
Total	**160**	**181**
Southern California Area		
Capital; OM&R	283	320
Power	205	232
Total	**488**	**552**

Table 14-1 Capital Requirements and Financing, December 31, 2010 (Thousands of Dollars)

	Calendar Year												
Line Number/Item	**1952–2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2011–2020**	**1952–2020**
Capital Requirements													
1. Initial Project Facilities	2,202,316	0	0	0	0	0	0	0	0	0	0	0	2,202,316
2. North Bay Aqueduct	105,406	4,806	6,307	25,795	60,000	60,000	108,000	112,439	0	0	0	377,346	482,753
3. Delta and Suisun Marsh Facilities	278,577	1,585	8,325	5,752	5,348	824	0	0	0	0	0	21,833	300,410
4. Final 4 Units at Banks Pumping Plant	43,673	0	0	0	0	0	0	0	0	0	0	0	43,673
5. Coastal Branch Aqueduct	507,852	0	0	0	0	0	0	0	0	0	0	0	507,852
6. West Branch Aqueduct	207,846	0	0	0	0	0	0	0	0	0	0	0	207,846
7. East Branch Enlargement	460,517	1,000	1,040	2,040	33,399	77,739	84,255	84,532	84,482	62,243	4,766	435,496	896,013
8. East Branch Improvements	354,656	490	2,008	0	0	0	0	0	0	0	0	2,498	357,154
9. East Branch Extension	155,044	46,636	88,995	64,852	12,043	0	0	0	0	0	0	212,526	367,570
10. South Bay Aqueduct Improvements and Enlargement	189,258	32,858	9,879	0	0	0	0	0	0	0	0	42,738	231,996
11. Power Generation and Transmission Facilities	718,840	0	0	0	0	0	0	0	0	0	0	0	718,840
12. Additional Conservation Facilities	157,832	3,899	3,899	3,899	3,899	3,899	3,899	3,899	3,899	3,899	3,899	38,986	196,818
13. Agricultural Drainage Facilities	78,240	2,181	2,569	2,085	1,617	757	757	757	757	757	757	12,995	91,235
14. Other Costs	395,246	43,276	79,902	107,204	85,040	0	0	0	0	0	0	315,422	710,668
15. Subtotal, Project Construction Expenditures	*5,855,304*	*136,730*	*202,923*	*211,626*	*201,346*	*143,218*	*196,910*	*201,626*	*89,138*	*66,898*	*9,421*	*1,459,839*	*7,315,144*
16. Davis-Grunsky Act Program Costs	130,000	0	0	0	0	0	0	0	0	0	0	0	130,000
17. Special Capital Requirements Under Revenue Bond Financing	606,789	5,988	20,208	19,898	18,012	15,187	18,683	19,824	8,356	6,156	471	132,783	739,572
18. Total Capital Requirements	**6,592,093**	**142,718**	**223,131**	**231,524**	**219,358**	**158,405**	**215,593**	**221,450**	**97,494**	**73,054**	**9,892**	**1,592,622**	**8,184,715**
19. Power Facilities Capital Requirements	718,840	0	0	0	0	0	0	0	0	0	0	0	718,840
20. Water Facilities Capital Requirements	5,873,253	142,718	223,131	231,524	219,358	158,405	215,593	221,450	97,494	73,054	9,892	1,592,622	7,465,875
Financing of Capital Requirements													
Power Facilities Revenue Bond Proceeds													
21. Power Facilities Revenue Bonds through Series H	1,162,458	0	0	0	0	0	0	0	0	0	0	0	1,162,458
Water System Revenue Bond Proceeds													
22. East Branch Enlargement, Current Bonds	473,603	0	0	0	0	0	0	0	0	0	0	0	473,603
23. East Branch Enlargement, Future Bonds	0	8,899	1,143	2,242	36,702	85,427	92,588	92,892	92,838	68,399	5,237	486,367	486,367
24. East Branch Extension, Current Bonds	182,647	0	0	0	0	0	0	0	0	0	0	0	182,647
25. East Branch Extension, Future Bonds	0	37,786	97,797	71,266	13,234	0	0	0	0	0	0	220,083	220,083
26. South Bay Aqueduct Enlargement, Current Bonds	155,733	0	0	0	0	0	0	0	0	0	0	0	155,733
27. South Bay Aqueduct Enlargement, Future Bonds	0	15,933	6,940	0	0	0	0	0	0	0	0	22,873	22,873
28. Water System Facilities, Current Bonds	1,941,848	0	0	0	0	0	0	0	0	0	0	0	1,941,848
29. Water System Facilities, Future Bonds	0	4,104	119,000	147,268	150,200	83,200	115,000	127,564	0	0	0	746,336	746,336
30. Subtotal, Water System Revenue Bonds	*2,753,831*	*66,722*	*224,880*	*220,776*	*200,136*	*168,627*	*207,588*	*220,456*	*92,838*	*68,399*	*5,237*	*1,475,659*	*4,229,490*
Other Capital Financing													
31. Initial Project Facilities Bond Proceeds	1,452,452	0	0	0	0	0	0	0	0	0	0	0	1,452,452
32. Davis-Grunsky Act Program Bond Proceeds	130,000	0	0	0	0	0	0	0	0	0	0	0	130,000
33. Application of CA Water Fund Monies (Tideland Oil Revenues)	508,056	0	0	0	0	0	0	0	0	0	0	0	508,056
34. Interim Financing	(71,963)	71,496	(6,249)	6,249	14,722	(14,722)	3,505	(3,505)	156	155	155	71,963	(0)
35. Application of Capital Resources Revenues to Construction	566,269	0	0	0	0	0	0	0	0	0	0	0	566,269
36. Revenue Transfers Applied	90,990	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	45,000	135,990
37. Subtotal, Other Capital Financing	*2,675,804*	*75,996*	*(1,749)*	*10,749*	*19,222*	*(10,222)*	*8,005*	*995*	*4,656*	*4,655*	*4,655*	*116,963*	*2,792,767*
38. Total Financing of Capital Requirements	**6,592,093**	**142,718**	**223,131**	**231,525**	**219,358**	**158,405**	**215,593**	**221,451**	**97,494**	**73,054**	**9,892**	**1,592,622**	**8,184,715**

Table 14-2 State Water Project Revenues and Expenditures, December 31, 2010 (Thousands of Dollars)

	Calendar Year												
Line Number/Item	**1952-2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2011-2020**	**1952-2020**
PROJECT REVENUES													
1. Capital resources revenues	814,701	0	0	0	0	0	0	0	0	0	0	0	814,701
Water Contractor Payments													
2. Transportation capital	4,301,426	159,435	162,451	165,031	170,084	174,114	171,725	166,666	158,088	148,571	139,513	1,615,677	5,917,103
3. Transportation minimum	3,619,008	196,602	212,096	199,307	199,964	201,964	203,983	206,023	208,083	210,164	212,266	2,050,452	5,669,460
4. Transportation variable	4,937,902	270,864	214,483	258,303	174,223	175,245	179,917	173,556	191,485	177,600	182,250	1,997,926	6,935,827
5. Off-Aqueduct power facilities	2,802,122	133,276	153,917	71,555	24,044	14,137	12,155	11,721	4,876	4,852	5,218	435,751	3,237,873
6. Delta water charge	2,603,184	177,702	183,231	183,312	183,395	183,752	183,757	183,757	183,757	183,757	183,757	1,830,176	4,433,359
7. East Branch Enlargement	816,363	46,439	47,058	46,404	46,836	50,980	58,601	68,003	75,828	86,193	91,418	617,761	1,434,124
8. East Branch Extension	106,941	17,672	19,242	28,633	33,722	35,068	35,114	36,369	35,900	36,040	36,231	313,990	420,932
9. Coastal Extension	40,624	4,010	4,010	4,301	4,852	4,912	4,847	4,605	3,591	2,777	3,776	41,681	82,305
10. South Bay Aqueduct Enlargement	22,969	14,504	15,593	16,153	16,148	16,149	16,151	16,146	16,138	16,145	16,151	159,278	182,247
11. Tehachapi East Afterbay	14,617	6,258	6,328	6,331	6,341	6,335	6,332	6,331	6,328	6,338	6,329	63,251	77,868
12. Water revenue bond surcharge	562,768	67,509	69,650	72,928	75,461	78,829	79,522	78,451	70,230	74,984	69,501	737,065	1,299,834
13. Subtotal, water contractor payments	*19,827,924*	*1,094,271*	*1,088,060*	*1,052,258*	*935,068*	*941,485*	*952,104*	*951,627*	*954,305*	*947,420*	*946,409*	*9,863,009*	*29,690,933*
14. Revenue bond cover adjustments	(733,564)	(53,901)	(55,245)	(52,481)	(51,401)	(52,187)	(53,606)	(55,136)	(52,432)	(56,313)	(55,369)	(538,072)	(1,271,635)
15. Rate management adjustments	(352,800)	(27,880)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(40,470)	(392,110)	(744,910)
Other Revenues													
16. Federal payments for project operating costs	327,894	16,121	19,606	19,606	19,606	19,606	19,606	19,606	19,606	19,606	19,606	192,575	520,469
17. Appropriations for operating costs allocated to recreation	16,657	0	0	0	0	0	0	0	0	0	0	0	16,657
18. Davis-Grunsky loan repayments	67,500	1,839	2,207	1,816	1,522	1,373	1,277	1,273	1,081	984	913	14,285	81,785
19. Revenue bond proceeds	652,977	0	0	0	0	0	0	0	0	0	0	0	652,977
20. Interest earnings on operating revenues	575,508	1,000	1,000	1,500	1,500	1,500	1,500	2,000	2,000	2,000	2,000	16,000	591,508
21. Oroville-Thermalito payments	249,279	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	184,264
23. Subtotal, other revenues	*2,074,079*	*18,960*	*22,813*	*22,922*	*22,628*	*22,479*	*22,383*	*22,879*	*22,687*	*22,590*	*22,519*	*222,860*	*2,296,939*
24. Total operating revenues	**20,815,640**	**1,031,450**	**1,015,157**	**982,230**	**865,825**	**871,307**	**880,411**	**878,900**	**884,090**	**873,227**	**873,089**	**9,155,687**	**29,971,327**
25. Total operating revenues and capital resources revenues	**21,630,341**	**1,031,450**	**1,015,157**	**982,230**	**865,825**	**871,307**	**880,411**	**878,900**	**884,090**	**873,227**	**873,089**	**9,155,687**	**30,786,028**
PROJECT EXPENSES													
26. Project operations, maintenance, power, and replacement costs	11,305,168	655,577	636,314	616,518	499,128	494,845	503,718	498,188	520,388	509,065	517,545	5,451,287	16,756,455
27. Deposits to replacement reserves	126,252	0	0	0	0	0	0	0	0	0	0	0	126,252
28. Deposits to special reserves	737,026	39,618	58,776	46,562	46,185	48,974	47,181	46,281	48,177	43,891	37,692	463,337	1,200,362
29. Capital resources expenditures	686,932	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, 2010 (current bonds)	2,620,766	173,424	182,769	176,358	171,221	172,441	170,896	168,764	141,554	145,950	145,215	1,648,592	4,269,358
31. Interest on bonds sold through December 31, 2010 (current bonds)	5,752,941	137,589	128,775	119,874	111,873	104,011	95,794	87,703	79,420	72,430	65,092	1,002,561	6,755,502
32. Future water bond principal repayments	0	7,781	1,762	8,349	15,444	22,597	29,310	38,213	48,480	54,267	59,427	285,630	285,630
33. Future water bond interest payments	0	12,962	2,261	10,069	17,474	23,939	29,012	35,251	41,571	43,124	43,618	259,281	259,281
34. Total principal	**2,620,766**	**181,205**	**184,531**	**184,707**	**186,665**	**195,038**	**200,206**	**206,977**	**190,034**	**200,217**	**204,642**	**1,934,222**	**4,554,988**
35. Total interest	**5,752,941**	**150,551**	**131,036**	**129,943**	**129,347**	**127,950**	**124,806**	**122,954**	**120,991**	**115,554**	**108,710**	**1,261,842**	**7,014,783**
36. Subtotal, debt service	*8,373,707*	*331,756*	*315,567*	*314,650*	*316,012*	*322,988*	*325,012*	*329,931*	*311,025*	*315,771*	*313,352*	*3,196,064*	*11,569,771*
NET REVENUES													
37. Total Operating Expenses and Debt Service	**21,229,086**	**1,026,950**	**1,010,657**	**977,730**	**861,325**	**866,807**	**875,911**	**874,400**	**879,590**	**868,727**	**868,589**	**9,110,687**	**30,339,772**
38. Net system revenues	401,255	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	45,000	446,255
Application of Net System Revenues													
39. California Water Fund repayment	305,765	0	0	0	0	0	0	0	0	0	0	0	305,765
40. Revenues used for capital expenditures	95,490	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	45,000	140,490

Table 14-11 Annual Debt Service on Bonds Sold through December 31, 2010 (Thousands of Dollars)

Calendar Year	Series A through Y Water Bonds		Oroville Revenue Bonds[a]		Pyramid Project Revenue Bonds[b]		Alamo Project Revenue Bonds[b]		Small Hydro Project Revenue Bonds[b]		Water System Facilities Water System Revenue Bonds[c]		*Subtotal*		Devil Canyon-Castaic Project Revenue Bonds		Reid Gardner Project Revenue Bonds[b,c]		South Geysers Project Revenue Bonds[b]		Bottle Rock Project Revenue Bonds[b]		East Branch Enlargement Project Water System Revenue Bonds[c]		Coastal Extension Facilities Water System Revenue Bonds		East Branch Extension Facilities Water System Revenue Bonds[c]		South Bay Enlargement Facilities Water System Revenue Bonds[c]		Tehachapi East Afterbay Facilities Water System Revenue Bonds[c]		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	0	*1,260*	*82,261*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,260	82,261
1973	1,200	69,347	1,330	13,042	0	0	0	0	0	0	0	0	*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	0	*4,400*	*82,502*	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,400	90,210
1975	5,000	69,366	1,475	12,893	0	0	0	0	0	0	0	0	*6,475*	*82,259*	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,475	89,967
1976	7,000	69,657	1,555	12,811	0	0	0	0	0	0	0	0	*8,555*	*82,468*	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,555	90,176
1977	10,200	69,298	1,635	12,727	0	0	0	0	0	0	0	0	*11,835*	*82,025*	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,835	89,733
1978	12,700	69,286	5,775	12,537	0	0	0	0	0	0	0	0	*18,475*	*81,823*	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,475	89,531
1979	13,650	68,660	11,585	12,275	0	0	0	0	0	0	0	0	*25,235*	*80,935*	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25,235	88,643
1980	16,050	67,941	3,265	11,739	0	7,900	0	0	0	0	0	0	*19,315*	*87,580*	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19,315	95,288
1981	18,050	67,078	4,885	11,444	0	7,292	0	0	0	0	0	0	*22,935*	*85,814*	0	7,708	0	5,312	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22,935	98,834
1982	19,250	66,130	17,920	10,968	0	7,292	0	0	0	0	0	0	*37,170*	*84,390*	0	7,708	0	14,347	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37,170	106,445
1983	20,520	65,111	21,110	10,147	0	7,292	0	2,449	0	3,727	0	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	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	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	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	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	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	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	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	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*	*91,930*	1,205	7,366	5,065	32,295	580	5,521	1,390	10,849	995	9,875	0	0	0	0	0	0	0	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	1,078	10,104	0	0	0	0	0	0	0	0	76,980	154,863
1990	29,385	56,436	10,385	4,301	930	7,305	320	4,279	405	3,304	1,227	19,555	*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	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	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	28,412	*55,603*	*96,537*	1,520	7,010	8,950	27,188	1,934	4,136	4,575	7,942	2,583	22,241	0	0	0	0	0	0	0	0	75,165	165,054
1993	33,390	52,670	13,755	2,237	1,525	5,688	755	3,300	445	2,640	4,576	29,965	*54,446*	*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	0	0	0	72,081	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	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	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	10,460	58,171	*54,490*	*117,348*	1,920	6,561	49,465	18,130	3,043	3,908	3,682	7,974	4,771	23,240	0	0	0	0	0	0	0	0	117,371	177,161
1997	37,215	46,365	0	0	1,695	5,274	875	3,072	585	2,283	14,375	67,909	*54,745*	*124,903*	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	0	0	0	76,281	183,786
1998	37,295	44,736	0	0	1,770	5,237	910	3,059	625	2,258	16,755	68,584	*57,355*	*123,874*	2,155	6,295	5,045	16,144	1,935	3,637	4,030	7,509	6,760	23,966	0	1,829	0	229	0	0	0	0	77,280	183,483
1999	38,220	43,132	0	0	1,845	5,141	960	3,004	680	2,229	18,701	68,086	*60,406*	*121,592*	2,285	6,160	9,310	11,660	2,081	3,549	4,240	7,319	7,518	25,032	0	1,808	65	2,930	0	0	0	0	85,905	180,050
2000	39,510	41,469	0	0	1,925	5,045	1,010	2,955	610	2,197	19,536	66,900	*62,591*	*118,566*	2,420	6,040	9,870	11,194	1,950	3,448	4,470	7,097	8,974	24,651	0	1,808	915	2,928	0	0	0	0	91,190	175,732
2001	40,600	39,751	0	0	2,250	4,949	1,155	2,902	780	2,272	20,945	66,417	*65,730*	*116,291*	2,565	5,912	10,365	10,758	2,045	3,344	4,720	6,855	9,425	24,188	0	2,131	950	2,889	0	0	0	0	95,800	172,368
2002	41,740	37,984	0	0	2,460	4,619	1,280	2,758	950	2,192	23,918	63,126	*70,348*	*110,679*	2,720	5,773	11,185	10,010	2,225	3,074	5,265	6,323	9,817	23,098	335	2,311	1,245	3,481	0	0	0	0	103,140	164,749
2003	43,590	36,159	0	0	2,500	4,429	1,315	2,671	940	2,110	23,441	60,465	*71,786*	*105,834*	2,885	5,626	2,135	9,313	2,335	2,889	5,445	5,939	9,988	18,444	245	2,311	1,105	4,277	0	0	0	0	95,924	154,633
2004	45,730	34,244	0	0	2,500	4,291	1,330	2,598	970	2,059	26,396	58,988	*76,926*	*102,180*	3,055	5,470	2,210	9,214	2,425	2,758	5,610	5,633	9,883	20,583	220	2,299	2,045	4,747	0	91	0	55	102,374	153,030
2005	46,985	32,242	0	0	2,727	4,097	1,461	2,487	1,327	1,987	23,064	58,058	*75,564*	*98,871*	3,240	5,305	8,825	9,112	2,759	2,598	5,959	5,289	3,669	20,047	305	2,163	2,124	5,345	0	435	0	171	102,445	149,336
2006	48,275	30,186	0	0	2,868	3,985	1,527	2,437	1,371	1,924	28,901	59,144	*82,942*	*97,676*	3,435	5,130	9,340	8,617	2,920	2,453	6,326	4,958	11,627	19,185	240	2,235	2,222	5,731	82	669	0	287	119,134	146,940
2007	49,765	28,060	0	0	3,023	3,817	1,622	2,346	1,451	1,846	30,267	58,234	*86,128*	*94,303*	3,640	4,945	9,835	8,079	3,101	2,278	6,731	4,578	12,229	19,666	1,015	2,225	2,305	5,824	239	698	75	306	125,298	142,902
2008	51,755	25,871	0	0	2,794	3,526	1,618	2,147	1,161	1,763	25,352	60,344	*82,680*	*93,651*	3,860	4,749	23,689	8,083	2,765	2,037	5,637	4,097	10,602	18,757	179	2,169	51	7,049	247	2,926	80	1,961	129,790	145,479
2009	54,095	23,583	0	0	2,947	3,392	1,743	2,043	1,168	1,699	33,476	62,123	93,429	92,840	4,090	4,540	25,475	5,581	2,908	1,916	5,981	3,788	12,284	18,011	200	1,944	2,642	7,601	2,604	5,354	1,843	3,160	151,456	144,735
2010	**55,785**	**21,206**	**0**	**0**	**3,525**	**3,251**	**2,078**	**2,001**	**1,399**	**1,610**	**31,000**	**61,880**	**93,787**	**89,948**	**4,335**	**4,319**	**33,202**	**5,547**	**3,221**	**1,750**	**6,611**	**3,441**	**12,647**	**17,750**	**2,790**	**2,061**	**2,816**	**7,803**	**3,334**	**6,045**	**1,911**	**3,094**	**164,654**	**141,758**
2011	57,275	18,749	0	0	2,599	3,090	1,465	1,897	1,045	1,561	40,090	61,927	*102,474*	*87,224*	4,595	4,085	33,105	4,347	2,917	1,584	6,366	3,103	14,115	17,165	1,237	1,970	2,841	7,860	3,782	7,190	1,992	3,061	173,424	137,589
2012	58,615	16,199	0	0	2,761	2,906	1,574	1,793	1,060	1,488	43,154	59,886	*107,164*	*82,272*	4,875	3,837	35,031	2,598	3,116	1,380	6,845	2,655	14,853	16,478	1,294	1,913	2,970	7,716	4,527	6,956	2,094	2,970	182,769	128,775
2013	60,455	13,650	0	0	4,214	2,713	2,601	1,683	2,191	1,415	49,024	57,807	*118,485*	*77,268*	5,165	3,574	8,662	882	4,825	1,162	11,102	2,175	15,274	15,735	1,587	1,853	4,346	7,586	4,727	6,759	2,185	2,880	176,358	119,874
2014	57,985	11,222	0	0	4,836	2,495	3,112	1,558	2,405	1,296	54,907	55,497	*123,245*	*72,068*	5,475	3,303	264	483	4,169	904	8,619	1,607	16,249	14,957	2,106	1,775	3,916	7,400	4,902	6,579	2,276	2,797	171,221	111,873
2015	53,775	8,806	0	0	5,243	2,241	3,099	1,397	2,745	1,166	62,772	52,913	*127,634*	*66,523*	5,805	3,015	864	471	3,816	681	2,527	1,141	17,887	14,139	2,254	1,676	4,218	7,250	5,079	6,404	2,357	2,711	172,441	104,011
2016	46,215	6,588	0	0	5,681	1,960	3,197	1,233	3,110	1,016	66,909	49,758	*125,112*	*60,555*	6,150	2,710	1,074	424	2,221	475	2,939	1,007	18,899	13,214	2,316	1,561	4,428	7,055	5,302	6,182	2,455	2,611	170,896	95,794
2017	38,145	4,652	0	0	6,379	1,655	3,558	1,063	3,298	846	68,348	46,499	*119,728*	*54,715*	6,520	2,388	1,239	367	1,432	355	3,574	848	20,633	12,247	2,238	1,447	5,595	6,867	5,511	5,969	2,564	2,500	169,034	87,703

Table 14-11 Annual Debt Service on Bonds Sold through December 31, 2010 (Thousands of Dollars) *(continued)*

Calendar Year	Series A through Y Water Bonds		Oroville Revenue Bonds[a]		Pyramid Project Revenue Bonds[b]		Alamo Project Revenue Bonds[b]		Small Hydro Project Revenue Bonds[b]		Water System Facilities Water System Revenue Bonds[c]		*Subtotal*		Devil Canyon-Castaic Project Revenue Bonds		Reid Gardner Project Revenue Bonds[b,c]		South Geysers Project Revenue Bonds[b]		Bottle Rock Project Revenue Bonds[b]		East Branch Enlargement Project Water System Revenue Bonds[c]		Coastal Extension Facilities Water System Revenue Bonds		East Branch Extension Facilities Water System Revenue Bonds[c]		South Bay Enlargement Facilities Water System Revenue Bonds[c]		Tehachapi East Afterbay Facilities Water System Revenue Bonds[c]		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*
2018	25,435	3,011	0	0	4,889	1,312	2,848	874	2,563	665	60,530	43,068	*96,265*	*48,930*	6,910	2,045	109	299	688	280	1,220	658	20,916	11,182	1,536	1,337	5,463	6,600	5,763	5,711	2,684	2,378	141,554	79,420
2019	16,975	1,804	0	0	4,602	1,068	2,779	732	2,256	537	71,334	40,075	*97,946*	*44,216*	7,325	1,682	114	295	736	246	1,251	596	22,948	10,104	961	1,261	5,813	6,337	6,035	5,443	2,821	2,250	145,950	72,430
2020	17,405	956	0	0	5,610	827	3,365	588	2,863	416	65,784	36,523	*95,027*	*39,310*	7,765	1,298	119	289	869	210	1,463	533	22,651	8,925	1,810	1,211	6,221	6,057	6,335	5,150	2,955	2,109	145,215	65,092
2021	8,595	318	0	0	2,781	538	1,735	415	1,315	268	72,446	33,269	*86,872*	*34,808*	8,230	890	1,078	283	971	165	2,453	458	24,447	7,795	2,203	1,120	6,752	5,749	6,641	4,838	3,103	1,961	142,750	58,067
2022	1,885	60	0	0	5,475	401	5,120	330	1,375	202	70,542	29,802	*84,397*	*30,795*	8,725	458	1,127	230	907	117	2,413	339	28,389	6,577	3,034	1,009	7,026	5,421	6,968	4,517	3,263	1,806	146,249	51,269
2023	85	7	0	0	1,116	127	591	75	759	133	77,179	26,401	*79,730*	*26,743*	0	0	621	173	587	72	1,999	216	21,291	5,310	2,257	856	7,129	5,069	7,302	4,175	3,424	1,643	124,340	44,257
2024	35	3	0	0	711	71	402	45	529	94	77,764	22,620	*79,441*	*22,833*	0	0	386	142	458	40	1,560	104	23,240	4,269	2,368	743	7,404	4,715	7,666	3,818	3,590	1,476	126,113	38,140
2025	0	0	0	0	144	35	102	25	245	67	73,466	18,702	*73,957*	*18,829*	0	0	148	122	60	15	59	14	28,303	3,120	1,948	624	7,533	4,347	8,043	3,439	3,763	1,297	123,814	31,807
2026	0	0	0	0	151	28	108	20	257	55	69,202	15,051	*69,718*	*15,154*	0	0	263	115	63	12	61	11	9,902	1,715	2,050	527	13,684	3,971	9,476	3,037	4,578	1,109	109,795	25,651
2027	0	0	0	0	405	20	289	14	350	42	80,621	11,622	*81,665*	*11,698*	0	0	337	102	170	8	165	8	10,668	1,232	2,076	423	17,707	3,287	10,525	2,564	5,138	880	128,451	20,202
2028	0	0	0	0	0	0	0	0	227	24	64,189	7,607	*64,416*	*7,631*	0	0	452	85	0	0	0	0	7,521	710	3,088	319	23,590	2,400	11,966	2,035	5,945	623	116,978	13,803
2029	0	0	0	0	0	0	0	0	242	12	73,239	4,415	*73,481*	*4,427*	0	0	472	62	0	0	0	0	2,779	371	3,264	163	24,611	1,220	12,529	1,434	6,228	326	123,364	8,003
2030	0	0	0	0	0	0	0	0	0	0	2,240	804	*2,240*	*804*	0	0	105	38	0	0	0	0	0	0	0	0	0	0	3,525	809	0	0	5,870	1,651
2031	0	0	0	0	0	0	0	0	0	0	2,365	689	*2,365*	*689*	0	0	110	33	0	0	0	0	0	0	0	0	0	0	3,700	635	0	0	6,175	1,357
2032	0	0	0	0	0	0	0	0	0	0	2,485	565	*2,485*	*565*	0	0	120	27	0	0	0	0	0	0	0	0	0	0	3,880	450	0	0	6,485	1,042
2033	0	0	0	0	0	0	0	0	0	0	2,615	434	*2,615*	*434*	0	0	125	21	0	0	0	0	0	0	0	0	0	0	1,535	255	0	0	4,275	710
2034	0	0	0	0	0	0	0	0	0	0	2,760	297	*2,760*	*297*	0	0	130	14	0	0	0	0	0	0	0	0	0	0	1,615	174	0	0	4,505	485
2035	0	0	0	0	0	0	0	0	0	0	2,895	152	*2,895*	*152*	0	0	140	7	0	0	0	0	0	0	0	0	0	0	1,700	89	0	0	4,735	248
Total	**1,582,400**	**2,386,523**	**244,995**	**246,522**	**108,316**	**198,779**	**60,979**	**102,912**	**50,377**	**83,816**	**1,632,319**	**1,826,777**	***3,679,386***	***4,845,329***	**139,165**	**283,872**	**448,776**	**570,978**	**74,529**	**116,780**	**156,887**	**229,267**	**497,032**	**631,040**	**45,156**	**51,063**	**179,732**	**167,818**	**155,540**	**110,829**	**67,324**	**46,422**	**5,443,527**	**7,053,397**

[a] Principal and interest schedule adjusted to reflect early redemption of bonds.
[b] Allocated portions of Power Facilities Revenue Bonds and Water System Revenue Bonds.
[c] Interest includes a minimum fee for Water System Revenue Bonds Series AB.

Chapter 15
SWP Education and Information

A 47-foot viewing tower offers a panoramic view of the lake and surrounding terrain at Lake Oroville Visitors Center.

Significant Events in 2010

California experienced three consecutive drought years. Based on all observed data for water year 2009–2010, the Sacramento Valley Water Hydrologic Classification (Sacramento Valley 40-30-30) was "below normal" and the San Joaquin Valley Water Year Hydrologic Classification was "above normal." Department of Water Resources (DWR) Public Affairs Office (PAO) updated media reports on hydrologic conditions and State Water Project (SWP) water delivery allocation increases. Due to heavy precipitation in late spring, the SWP met 50 percent of SWP water contractors' water delivery requests.

Drought and recent-year Delta pumping restrictions intensified news media focus on California's water issues. During 2010, as drought conditions eased, DWR's PAO provided multiyear media reports and outreach materials to the public on changing water conditions, as well as DWR's programs and activities.

Lester Snow, DWR's Director for 6 years, was appointed by the Governor as Secretary for Natural Resources of the California Natural Resource Agency. Deputy Director Mark W. Cowin was appointed as DWR's Director. Both appointments were effective, February 1, 2010.

DWR published the *California Water Plan Update 2009*. Published in 5-year intervals, this comprehensive report describes California's water conditions, challenges, and water management activities. The report is a resource for water managers, analysts, and scholars for its in-depth factual content and program activities.

DWR issued a press release announcing a multimedia exhibit entitled, "Extreme Engineering: The California State Water Project, Past, Present, and Future." The exhibit was on display at The California Museum and presents film footage on the SWP as well as interviews with SWP operators.

Information for this chapter was provided by the Public Affairs Office.

The Department of Water Resources (DWR) Public Affairs Office (PAO) generates significant news and program information about DWR and California's water resources. PAO describes DWR's missions, programs, and activities. Information is provided in news releases, interviews, websites, and publications. Other informational media include graphics, video, artwork, photography, films, social media, special events, and public meetings.

News Topics

The selected highlights below provide information on PAO 2010 outreach on DWR's water policies, programs, and activities.

Change of Command

On January 5, 2010, the Governor announced the appointment of Lester Snow, DWR's Director since 2004, as Secretary for Natural Resources of the California Natural Resources Agency. Mark W. Cowin was appointed Director of DWR. Both appointments were effective February 1, 2010.

Snow Surveys

DWR encourages media coverage of its monthly snow surveys to help inform water managers and to educate the public about snowpack conditions and water supply prospects. In contrast to the three prior drought years, precipitation increased during 2010 due to unusual late spring storms, which augmented the Northern Sierra snowpack. In 2010, news reports tracked the changing and improving water supply outlook.

SWP Allocations

Weather conditions and precipitation affect SWP supplies. In 2010, DWR announced its SWP allocation estimate at 5 percent of initial requests. The estimated allocation increased gradually to 45 percent in May, due to the late spring storms. In June, DWR adjusted its final 2010 SWP allocation to 50 percent of initial requests.

Over the three-year drought period, in 2007, water deliveries were 60 percent of initial requests. In 2008, deliveries were held at 35 percent, and in 2009, DWR's final 2009 SWP allocation was 40 percent of initial requests. The most recent 100 percent SWP allocation occurred in 2006, when the water year was classified at "wet." Even with adequate precipitation and water supply, meeting 100 percent of delivery requests is difficult because of existing environmental issues and constraints and the protection and restoration of fish and wildlife habitat, including limitations on Delta pumping to protect sensitive fish species.

In announcing the final 50 percent SWP allocation for 2010, information was distributed noting that the average SWP allocation over the past 10 years was 68 percent of SWP water contractors' requests

DWR Program Activities: 2010 Sampling of Outreach Efforts

During Water Awareness Month in May, DWR reminded Californians to manage and conserve their water use. In partnership with the Association of California Water Agencies, DWR continued to sponsor and operate the Save Our Water program, initiated in 2009. The Save Our Water program educated California water users about easy ways to

conserve water both indoors and outdoors. Water Awareness Month was initiated in 1989 during the 1987–1992 drought and reminded Californians to use vital water supplies wisely and to practice conservation.

Delta-Mendota Canal/California Aqueduct Intertie

On October 14, DWR and the Bureau of Reclamation (Reclamation) joined in a ceremonial groundbreaking for the start of the Delta-Mendota Canal/California Aqueduct Intertie, a link between the two major water systems near Bethany Reservoir, south of the federal and State pumps in the South Delta.

Fish Restoration Program Agreement

DWR issued an October 26, 2010 news release stating DWR and the Department of Fish and Wildlife (formerly Fish and Game) signed a Fish Restoration Program agreement. The agreement is intended to mitigate SWP impacts on sensitive fish species in the Delta. A major estuary with vital ecosystems and important fish populations, the Delta is also a hub for water supply in California.

Climate Change

In March 2010, DWR published its *California Water Plan Update,* and the subject of climate change was among California's major water supply issues. The 2009 California Water Plan Update set a blueprint for sustainability and has addressed a new direction for water management. California's water supply is subject to uncertainty and vulnerability due to climate change and changing ecosystem needs. Resulting from collaboration, the California Water Plan Update was guided by a steering committee representing 21 State agencies. A 45-member Public Advisory Committee and nearly 40 regional workshops were involved in producing the report.

Border Governors' Binational Desalination Conference

DWR cosponsored a binational conference on desalination along the United States (U.S.)–Mexico border. Representatives from four U.S. states and six Mexican states gathered to address enhancement of water infrastructure facilities, impacts of climate change on the region's water resources, and examination of desalination of sea water and brackish water. Federal, state, and local agencies from both sides of the border shared information about projects currently underway or in various stages of planning, financing approaches, and new developments in desalination technologies and project design. Other conference sponsors included the Central Arizona Project, The Metropolitan Water District of Southern California, Reclamation (Lower Colorado Region), and the Water Education Foundation.

Climate Change Symposium

DWR and the Water Education Foundation cosponsored a water and climate change adaptation symposium. Presentations highlighted the connection between fresh water and ocean adaptation issues, including effects of climate change on severe weather and coastal flooding. DWR, along with other State and federal agencies, recently initiated a National Research Council study on expected future sea-level rise along the West Coast associated with climate change.

SWP Publications

DWR maintains approximately 40 brochures describing the SWP, its mission, and facilities. The brochures are periodically issued in updated versions and distributed statewide to educate the public about the SWP. In 2010, *California Water Facts, Lake Perris, William E. Warne Powerplant, and SWP 50 Years & Counting* were revised and posted on DWR websites. Spanish translations were completed for the Lake Perris Remediation

Project, Save Our Water campaign, water cycle bracelet, and salmon life cycle poster.

E-News

PAO compiles and electronically distributes news articles and commentaries on water related issues. These news clips inform DWR managers and staff of water issues relevant to DWR and its programs.

DWR—A Magazine from DWR

This magazine (formerly *DWR News/People*) contains articles highlighting DWR programs and employees. The magazine is available in electronic and hardcopy format.

The transition of DWR's directors was featured in the Winter 2009–2010 issue of the magazine. In a farewell column, Lester A. Snow reflected on DWR's achievements and challenges during his 6-year tenure as Director and highlighted the major policy shift from project-by-project environmental mitigation toward a practice of sustainable environmental management. Incoming Director Mark W. Cowin, featured in a companion article, noted that DWR's priorities were to follow the mandates enacted in 2009 as part of the State's groundbreaking water legislation, reach out to DWR's partners, and work collaboratively toward water supply reliability. The issue also profiled the work and people of the Southern Field Division.

The Spring/Summer 2010 magazine's cover story discussed DWR's work with California Tribal governments and communities. Progress was reported on the South Bay Aqueduct Enlargement and Improvement Project, and a brief article announced publication of the California Water Plan Update 2009. San Joaquin Field Division facilities, activities, and staff were featured in the magazine's "In The Spotlight" column.

The Fall 2010 issue was a 50-year SWP anniversary special edition. Articles and photographs described the planning, construction, and early years of the SWP. In a retrospective article, William Gianelli, DWR Director under Governor Ronald Reagan, credited Governor Reagan with actions that assured the SWP's completion. Additionally, in a personal memoir, former Director Ronald Robie recalled the SWP's activities during the first two terms of Governor Edmund G. (Jerry) Brown Jr. In other feature articles, many veterans of DWR's early years contributed stories and anecdotes on the SWP's planners and builders.

The cover story for the Winter 2010–2011 issue focused on scientific efforts to preserve Delta fish species. The recently renamed Central Valley Flood Protection Board's new role and the Giannelli Pumping-Generating Plant Butterfly Valve Removal Project were featured. The winter issue also covered DWR's efforts to safeguard the SWP from invasive quagga and zebra mussels and the renewal of continuous water flow in the San Joaquin River. Delta Field Division facilities, activities, and staff were featured in the magazine's "In The Spotlight" column, and Solano County Water Agency's history and operations were profiled.

DWR Tours Program

During 2010, DWR welcomed 29 foreign tours, with a total of 290 visitors, to DWR Headquarters and SWP facilities. Tour groups came from the U.S. and 16 foreign countries including: Argentina, Australia, Chile, China, Egypt, England, Germany, Israel, Japan, Malaysia, Netherlands, Pakistan, South Africa, South Korea, Uzbekistan, and Vietnam.

Domestic and school tours also visited SWP facilities. The Oroville Field Division hosted 170 groups with 5,041 participants touring the Oroville Facilities. Delta Field Division recorded 21 bus tours, and the Romero Visitors Center hosted 77 tour groups with approximately 2,000 participants. Three bus

tours were provided in the San Joaquin Field Division, and the Southern Region Office hosted three tour groups with 35 visitors. Vista del Lago Visitors Center welcomed 44 tour groups, totaling 4,423 participants. Figure 15-1 shows the SWP visitors center locations.

Delta tours for DWR employees, as part of DWR's training program, consisted of 5 Delta tours and an additional 11 van tours of the Delta and the Oroville Facilities.

Community Relations and Recreation Safety

PAO staff continued to educate the public about water conservation and the Save Our Water program with its water efficient gardens at the California State Fair. Exhibits at the Marin, Fresno, and Yolo county fairs offered educational information on water conservation.

DWR partnered with communities to create and operate nine Aquatic Adventure Camps throughout the summer months, teaching water safety to young people, especially youth from economically challenged communities. The camps utilized SWP facilities at Lake Oroville, Lake Perris, Castaic Lake, and Lake del Valle.

Using many ways to develop relationships with various communities through water recreation, education, conservation, and safety, PAO administers the annual Lakes and Reservoirs Appreciation Week in the summer. Lakes and Reservoirs Appreciation Week was held July 1–7, 2010. This event promotes clean, safe, and nonpolluting forms of recreation at SWP lakes and reservoirs, including those in the SWP system.

DWR focused on water safety at the Patterson Apricot Fiesta held on June 4, 2010.

To reach young people with special needs, DWR also cosponsored "Catch A Special Thrill" (C.A.S.T.) events, which offered fishing and water recreation at SWP reservoirs. During 2010, C.A.S.T. events were held on June 26 at Lake del Valle, September 11 at Lake Oroville, September 18 at Lake Perris, October 2 at Castaic Lake, and October 16 at Silverwood Lake.

For the 16th consecutive year, PAO and Oroville Field Division staff took part in the Oroville Salmon Festival on September 25.

School Education Program

The School Education Program's goal is to provide students and educators with a statewide perspective on water issues and programs. PAO staff develops, promotes, and distributes high-quality materials that are free of charge to schools, educators, and water districts.

Public Events and Outreach

In April, PAO staff provided a display of DWR's Interactive Children's Exhibits at the Sacramento Area Creeks Council's Creek Week event. The exhibits were also on display in May at Get WET, a Reclamation event. Both events were held in Sacramento.

PAO staff represented DWR at the California State Fair and offered information to the public about the SWP and its various public outreach programs and activities.

Publications and Materials

Curriculum materials and children's videos were provided to California teachers and water agencies through the Water Facts and Fun online ordering catalog and during promotional events. During 2010, the following materials were purchased or reprinted:

- 10,000 *California Water Works and Why It Does* booklets for students;

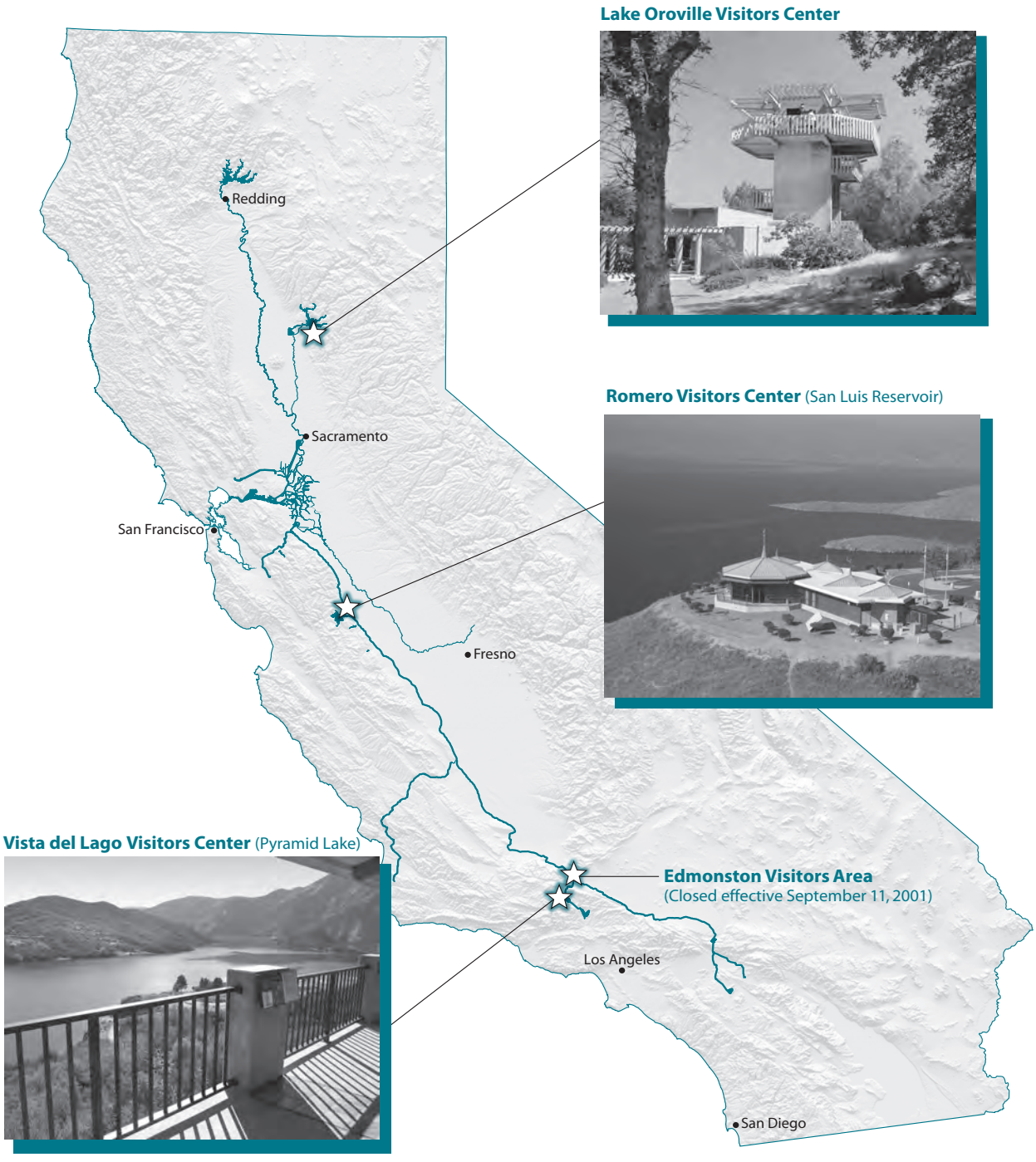

Figure 15-1 **Visitors Centers on the SWP**

- 5,400 *Further Adventures of Captain Hydro* teacher guides;
- 8,500 *Further Adventures of Captain Hydro* student workbooks;
- 5,000 water conservation class pledges;
- 4,200 *Water and Me* student activity booklets;
- 7,500 hamburger activity sheets for students;
- 7,500 *Water Fun* student workbooks;
- 2,500 *Water Fun* teacher guides; and
- 650 *Project WET* (Water Education for Teachers) books, which were provided to pre service teachers who participated in Project WET training workshops.

Collaboration and Partnerships

DWR's School Education Program established partnerships and continued to collaborate with water agencies, schools, and other entities to pool resources for educating California's youth on the significance of water resources. During calendar year 2010, PAO staff participated in the following collaborative activities/meetings:

- DWR's Water Education Committee meeting;
- Project WET Advisory Committee and the California Environmental Education Interagency Network Committee; and
- Creek Week Planning Committee where activity passports, artwork for a poster, brochures, and a Creek Week Celebration bookmark were provided.

Additional collaborative efforts included PAO staff working with the following:

- California Department of Education's California Regional Environmental Education Community Network; and
- Delta Studies Institute for teachers, cosponsored with the San Joaquin County Office of Education.

Glossary

This glossary contains terms used in the text of Bulletin 132-11 as well as additional terms related to water resources.

A

abundance The number of organisms of a particular kind in a population. (*See also* abundance index.)

abundance index (fisheries) A relative measure of the weight or number of fish in a stock, a segment of the stock (e.g. the spawners), or an area. Often available in time series, the information is collected through scientific surveys or inferred from fishery data.

acre-foot The volume of water that would cover one acre to a depth of one foot; equal to 43,560 cubic feet or 325,851 gallons.

adaptive management The process of improving management effectiveness by learning from the results of carefully designed decisions or experiments.

adipose fin A small fleshy fin with no rays on the topside of a fish located between the fin on the back and the tail fin.

afterbay A storage reservoir downstream of a power plant or large reservoir that regulates fluctuating discharges from a hydroelectric power plant or a pumping plant.

agricultural drainage (1) The process of directing excess water away from root zones by natural or artificial means, such as by using a system of drains placed below ground surface level (also called subsurface drainage); (2) the water drained away from irrigated farmland.

alluvium Unconsolidated soil strata deposited over time by flowing water.

anadromous Fish that live the majority of their life cycle in the sea and return to freshwater streams to spawn.

anion An atom or a molecule in which the total number of electrons is greater than the total number of protons, giving it a net negative electrical charge.

aquifer A geologic formation that stores water underground (called groundwater), especially one that yields significant quantities of water to wells or springs.

arid Describes a climate or region in which precipitation is so deficient in quantity or occurs so infrequently that intensive agricultural production is not possible without irrigation.

artificial recharge The addition of surface water to a groundwater basin by human activity, such as putting surface water into spreading basins.

average annual runoff The average value of annual runoff volume calculated for a selected period of record, at a specified location, such as a dam or stream gauge.

average year water demand Demand for water under average hydrologic conditions for a defined level of development.

B

balanced water conditions These exist when upstream reservoir storage releases, plus other inflows, approximately equal the water supply needed to (1) satisfy Sacramento Valley and Sacramento-San Joaquin Delta in-basin needs, including Delta water quality requirements, and (2) meet export needs. DWR and Reclamation jointly decide when balanced or excess water conditions exist.

beneficial use Water quality beneficial use categories for water are designated by State law. Beneficial uses of the waters of the State that may be protected against water quality degradation include, but are not limited to, domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

benthic organisms Aquatic animals without backbones that dwell on or in the bottom sediments of fresh or salt water.

biological assessment A document prepared as part of the Endangered Species Act, Section 7 process to determine whether a proposed major construction activity under the authority of a federal action agency is likely to adversely affect listed species, proposed species, or designated critical habitat.

biological opinion A document required by the Endangered Species Act stating the opinion of the U.S. Fish and Wildlife Service or National Marine Fisheries Service on whether or not a federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.

biota Living organisms of a region, as in a stream or other body of water.

brackish water Water containing dissolved minerals in amounts that exceed normally acceptable standards for municipal, domestic, and irrigation uses. Considerably less saline than sea water.

bromide A salt which naturally occurs in small quantities in sea water; a compound of bromine.

Burns-Porter Act (California Water Code Section 12930 et seq.) Formally known as the California Water Resources Development Bond Act, this act passed the Legislature in 1959 and was approved by voters in 1960. It provided initial funding of $1.75 billion in general obligation bonds and authorized construction of the State Water Project facilities.

bypass As part of a flood management system, a natural overflow area or channel that allows excessive floodwaters to flow or be diverted from a main river channel to prevent water from overflowing the main river channel.

C

CALFED Bay-Delta Program A federal and State multiagency program the goals of which are to develop and implement a long-term comprehensive plan that will restore ecological health and improve water management in the Bay-Delta system.

California Data Exchange Center (CDEC) CDEC installs, maintains, and operates an extensive hydrologic data collection network including automatic snow reporting gauges for the DWR Cooperative Snow Surveys Program and precipitation and river stage sensors for flood forecasting. CDEC provides a centralized location to store and process real-time hydrologic information gathered cooperatively throughout the State.

California Irrigation Management Information System (CIMIS) A network of automated weather stations that are owned and operated cooperatively between the DWR and local agencies. The stations are installed in most of the agricultural and urban areas of the State and provide farm and large landscape irrigation managers and researchers with "real-time" weather data to estimate crop and landscape evapotranspiration rates and make irrigation management decisions.

California Water Resources Simulation Model (CALSIM) A computer model that simulates operations of the SWP and CVP water delivery systems. CALSIM II is a planning tool that was jointly developed by DWR and Reclamation. The model's inputs include hydrologic data for specified study planning years, water demands, infrastructure and regulatory change, and other factors. Outputs include deliveries to water contractors, river flows, reservoir changes, Delta hydrologic parameters, and other data.

cation An atom or a molecule in which the total number of protons is greater than the total number of electrons, giving it a net positive electrical charge.

Central Valley Project deliveries The volume of water imported to a given area through the Central Valley Project.

climate change Any significant change in the measures of climate lasting for an extended period of time. This includes major changes in temperature, precipitation, or wind patterns, among others, that occur over several decades or longer.

coded wire tag A small piece of stainless steel wire injected into the snout of juvenile salmon and steelhead. Each tag is etched with a binary code that identifies a fish release group.

conjunctive use Application of surface and groundwater to meet the demand for a beneficial use. Coordinated and planned management of both surface and groundwater resources in order to maximize the efficient use of the resource; that is, the planned and managed operation of a groundwater basin and a surface water storage system combined through a coordinated conveyance infrastructure. Water is stored in the groundwater basin for later planned use by intentionally recharging the basin during years of above-average surface water supply.

conservation facilities Reservoir facilities which store water and make it available for later use.

consultation The process required of a federal agency under Section 7 of the Endangered Species Act when any activity authorized, carried out, or conducted by that agency may affect a listed species or designated critical habitat; consultation is with the U.S. Fish and Wildlife Service or National Marine Fisheries Service and may be either informal or formal.

conveyance Provides for the movement of water and includes the use of natural watercourses and constructed facilities including open channels, pipelines, diversions, fish screens, distribution systems, and pump lifts.

conveyance facilities Canals, pipelines, pump lifts, ditches, etc., used to move water from one area to another.

D

Davis-Grunsky Act Authorized in 1960 as part of the Burns-Porter Act, this act provides construction loans for local domestic water projects and agricultural water conservation projects.

Decision 1485 operating criteria The standards for operating the CVP and SWP under Water Right Decision 1485 for the Sacramento-San Joaquin Delta and Suisun Marsh, adopted by the State Water Resources Control Board in August 1978.

Delta outflow Freshwater outflow from the Sacramento-San Joaquin Delta to protect the beneficial uses within the Delta from the incursion of saline water.

Delta outflow index A calculated approximation of the seaward freshwater outflow as it passes Chipps Island near Pittsburg, beyond the confluence of the Sacramento and San Joaquin rivers.

Delta Simulation Model 2 (DSM2) A hydrodynamic and water quality simulation model used to simulate water quality conditions in the Sacramento-San Joaquin Delta. The model is frequently used to evaluate potential changes in Delta conditions (salinity, flow, and water level) associated with changes in flow patterns in the Delta.

desalting A process to reduce the salt concentration of sea water or brackish water.

discount rate The interest rate used to calculate the present value of future benefits and future costs or to convert benefits and costs to a common time basis.

dissolved organic compounds Carbon-based substances dissolved in water.

dissolved oxygen The amount of oxygen dissolved in water or wastewater, usually expressed in milligrams per liter, parts per million, or percent of saturation.

distinct population segment A subdivision of a species that is treated as a species for purposes of listing under the Endangered Species Act. The smallest division of a taxonomic species that can be protected under the Endangered Species Act.

drainage area The area of land from which water drains into a river; for example, the Sacramento River Basin, in which all land area drains into the Sacramento River. Also called a watershed, drainage basin, or river basin.

drought condition Hydrologic conditions during a defined period, greater than one dry year, when precipitation and runoff are much less than average.

drought preparedness The magnitude and probability of economic, social, or environmental consequences that would occur as a result of a sustained drought under a given study plan.

drought year supply The average annual supply of a water development system during a defined drought period.

E

ecosystem restoration The activity of improving the condition of natural landscapes and biotic communities.

effluent Wastewater or other liquid, treated or in its natural state, flowing from a treatment plant or process.

electrical conductivity The measure of the ability of water to conduct an electrical current, the magnitude of which depends on the dissolved mineral content of the water.

endangered species An animal or plant species in danger of extinction throughout all or a significant portion of its range.

entrainment The unintended diversion of fish (or other aquatic organisms) into an unsafe passage route. The incidental trapping of any life stage of fish within waterways or structures that carry water being diverted for use elsewhere. Fish are considered "entrained" when they enter a diversion point, which for the SWP is Clifton Court Forebay.

environmental impact report A report done to analyze project or program impacts on a variety of resources under the California Environmental Quality Act.

environmental impact statement A report done to analyze project or program impacts on a variety of resources under National Environmental Policy Act.

environmental water The water for wetlands, for the instream flow in a major river or in the Bay-Delta, or for a designated wild and scenic river.

escapement The portion of an anadromous fish population that escapes commercial and recreational fisheries and reaches its freshwater spawning grounds.

estuary A semi-closed coastal body of water where the lower course of a river enters the sea, influenced by tidal action where the tide meets the river flow, resulting in brackish water.

evapotranspiration The amount of water transpired by plants, retained in plant tissues, and evaporated from plant tissues and surrounding soil surfaces. (*See also* reference evapotranspiration.)

excess water conditions Periods when it is agreed that releases from upstream reservoirs plus unregulated flow exceeds Sacramento Valley in-basin uses plus exports. DWR and Reclamation jointly decide when balanced or excess water conditions exist. During excess water conditions, sufficient water is available to meet all beneficial needs and the CVP and SWP are not required to supplement the supply with water from reservoir storage.

export An amount of water transported from one source or location to another.

F

firm yield The maximum annual supply of a water development project under drought conditions, for some specified level of demand.

floodplain A strip of relatively level land bordering a stream or river that is often inundated during times of high water.

forages Food for animals, especially crops grown to feed horses, cattle, and other livestock.

forebay A reservoir at the intake of a pumping plant or power plant to stabilize water levels; also a storage basin for regulating water for percolation into groundwater basins.

fork length A measurement used frequently for fish length when the tail has a fork shape; projected straight distance between the tip of the snout and the fork of the tail.

freeboard The height of the physical top of a levee above a specified water surface elevation. This serves as a factor of safety for containing water in the stream or reservoir without overtopping the levee or dam.

fry Young, recently hatched fish that are able to swim and catch their own food.

G

greenhouse gas emissions Also referred to as carbon intensity or carbon footprint. Gases that trap heat in the atmosphere are called greenhouse gases. These include carbon dioxide, methane, nitrous oxide, and fluorinated gases.

grilse A term that generally refers to young adult salmonids of a certain length and age. Grilse are often 55–65 centimeters (22–26 inches) in length. They are assumed to be two years old, and adults are assumed to be age three and older.

groundwater Water located beneath the land surface and fills the pore spaces of the alluvium, soil, or rock formation in which it is situated. It excludes soil moisture, which refers to water held by capillary action in the upper unsaturated zones of soil or rock.

groundwater bank Groundwater banking refers to the practice of recharging specific amounts of water in a groundwater basin during wet or above-average years, which can later be withdrawn and used by the depositing entity.

groundwater basin An alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined boundaries in a lateral direction and having a definable bottom.

groundwater recharge The natural or intentional infiltration of surface water into the zone of saturation (i.e., into groundwater).

groundwater storage capacity The volume of void space that can be occupied by water in a given volume of a formation, aquifer, or groundwater basin.

groundwater table The upper surface of the zone of saturation in an unconfined aquifer.

H

habitat The place or environment where a plant or animal naturally lives and grows (a group of particular environmental conditions).

habitat conservation plan A plan that outlines ways of maintaining, enhancing, and protecting a given habitat type needed to protect species; usually includes measures to minimize impacts, and may include provisions for permanently protecting land, restoring habitat, and relocating plants or animals to another area. Required before a federal Endangered Species Act incidental take permit may be issued.

halophyte A plant capable of growing in salty soil.

hydraulic barrier (1) A barrier created by injecting fresh water to control seawater intrusion in an aquifer, or created by water injection to control migration of contaminants in an aquifer; (2) A barrier developed in the estuary by release of fresh water from upstream reservoirs to prevent intrusion of sea water into the body of fresh water.

hydrologic balance An accounting of all water inflow to, water outflow from, and changes in water storage within a hydrologic unit over a specified period of time.

hydrologic basin Where, conceptually, any drop of water that falls in the basin will flow to a stream or groundwater basin within it. It is a larger set of which a subset is the groundwater basin which can be within a hydrologic basin. DWR's hydrologic regions are collections of the larger hydrologic basins.

hydrologic region A geographical division of the State based on the local hydrologic basins. There are 10 hydrologic regions in California.

hydrology The science dealing with the occurrence, circulation, distribution, and properties of the waters of the earth and its atmosphere.

I

in-lieu recharge The practice of providing surplus surface water to historic groundwater users, thereby leaving groundwater in storage for later use.

instream use Use of water within its natural watercourse as specified in an agreement, water rights permit, etc. For example, the use of water for navigation, recreation, fish and wildlife, aesthetics, and scenic enjoyment.

integrated regional water management A comprehensive approach for determining the appropriate mix of demand and supply management options to provide long-term, reliable water supply at the lowest reasonable cost and with the highest possible benefits to customers, economic development, environmental quality, and other social objectives.

ion exchange Processes of purification, separation, and decontamination of aqueous and other ion-containing solutions with solid ion exchangers such as sodium carbonate used for water softening.

J

joint points of diversion The ability of the SWP to use Jones Pumping Plant as a point of diversion and the CVP to use Banks Pumping Plant as a point of diversion. The SWP and CVP may use one another's diversion facilities under certain conditions.

joint powers agreement An agreement entered into by two or more public agencies that allows them to jointly exercise any power common to the contracting parties. This is defined in Chapter 5 (commencing with Section 6500) of Division 7 of Title 1 of the California Government Code.

joint-use facilities Those portions of the SWP which serve both SWP and CVP functions, and in which both State and federal agencies participate in the

construction and use; specifically, the San Luis complex and Reaches 3, 4, 5, 6, and 7 of the California Aqueduct.

jurisdictional dam Artificial barriers, together with appurtenant works, which are 25 feet or more in height or have an impounding capacity of 50 acre-feet or more, which are regulated by the Division of Safety of Dams.

L

land subsidence The lowering of the natural land surface in response to earth movements, lowering of fluid pressure or groundwater level, consolidation of underlying soils, removal of underlying supporting materials by mining (oil and gas extraction), compaction caused by wetting, or oxidation of organic matter in soils (peat soil being converted to gas).

legal Delta The legal geographical boundaries of the Sacramento-San Joaquin Delta, as established by the Delta Protection Act of 1959, and as defined in California Water Code Section 12220.

listed species A species, subspecies, or distinct population segment that has been added to the federal list of endangered and threatened wildlife and plants. The term also applies to a species or subspecies added to the California list of endangered or threatened plants and animals.

M

maximum contaminant level The highest drinking water contaminant concentration allowed under federal and State Safe Drinking Water Act regulations.

mitigation (1) An action or set of actions designed to avoid, minimize, reduce, eliminate, or compensate for adverse environmental impacts due to an agency activity or program; (2) Reduction of human activities that affect global climate change (includes strategies to reduce greenhouse gas emissions).

Monterey Agreement An agreement executed in December 1994 among DWR and the SWP water contractors to address fundamental contract issues by amending the long-term water supply contracts.

Monterey Amendments Amendments to the long-term water supply contracts for the SWP entered into by DWR and most (27 of 29) of the SWP water contractors in 1995 and 1996 as implementation of the terms of the Monterey Agreement.

multipurpose project A project, usually a reservoir, designed to serve more than one purpose, and whose costs are normally allocated among the different functions it provides. For example, a project that provides water supply, flood control, and generates hydroelectricity.

N

natural community conservation planning (NCCP) A process that promotes multispecies and multihabitat management and conservation through cooperative efforts among public agencies, private landowners, and other interests within a plan area. It provides a framework for minimizing impacts on plant communities and wildlife from proposed development projects.

natural recharge Natural replenishment of an aquifer generally from snowmelt and runoff through seepage from the surface.

net groundwater The amount of groundwater extraction in excess of deep percolation.

nonreimbursable costs The part of project costs allocated to general statewide or national beneficial purposes and funded from general revenues, rather than by water users.

normalized demand The process of adjusting actual water use in a given year to account for unusual events such as dry weather conditions, government price support programs for agriculture, rationing programs, or other unusual conditions.

O

operational yield An optimal amount of groundwater that should be withdrawn from an aquifer system or a groundwater basin each year. It is a dynamic quantity that must be determined from a set of alternative groundwater management decisions subject to goals, objectives, and constraints of the management plan.

Operations Criteria and Plan (OCAP) (1) The document titled, "Long-Term Central Valley Project Operations Criteria and Plan," that serves as a baseline description of the facilities and operating environment of the CVP and SWP and identifies factors influencing the physical and institutional conditions and decision-making process under which the project currently operates. Regulatory and legal requirements are explained and alternative operating models and strategies described; (2) The document titled, "Central Valley Project Operations Criteria and Plan" (CVP-OCAP, 2004), that describes the

laws, regulations, and other criteria applicable to operations of the CVP that were in effect from 1991 through 2003.

Operations Criteria and Plan biological opinion (1) The document titled, "Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and the State Water Project" (NOAA Fisheries, 2009); (2) The December 15, 2008, memorandum from USFWS to Reclamation that comprises the USFWS biological opinion on the coordinated operations of the CVP and SWP.

otolith Ear bone of a fish. Otoliths often show seasonal or annual rings that can be used to determine age.

outflow The amount of applied water and conveyance water leaving the service area. Also conveyance outflow.

P

parr The developmental life stage of salmon and trout when the young have developed parr marks (vertical bars or spots on the sides of the fish) and are actively feeding in fresh water.

pelagic Inhabiting the water column as opposed to being associated with the bottom; generally occurring anywhere from the water's surface down to, but not including, the bottom.

pelagic fish Fish that live in open water, often near the surface.

perched groundwater Groundwater supported by a zone of material of low permeability located above an underlying main body of groundwater.

perennial yield The maximum quantity of water that can be annually withdrawn from a groundwater basin over a long period of time without developing an overdraft condition.

permeability The capability of soil or other geologic formations to transmit water.

phytoplankton Minute plants, such as algae, that live suspended in bodies of water and that drift about because they cannot move by themselves or because they are too small or too weak to swim effectively against a current.

precipitation A deposit on the earth of hail, rain, mist, sleet, or snow. It is the common process by which atmospheric water becomes surface or subsurface water.

project yield The water supply attributed to all features of a project, including integrated operation.

proposal solicitation package (PSP) As part of the formal solicitation for grant applications, a PSP provides detailed instructions on the mechanics of submitting proposals and specific information on submittal requirements.

public trust doctrine A legal doctrine recognizing public rights in the beds, banks, and waters of navigable waterways, and the State's power and duty to exercise continued supervision over them as trustee for the benefit of the people.

pump lift (1) The vertical distance that a pump will raise water; (2) The distance between the groundwater table and the overlying land surface.

pumped storage project A hydroelectric power plant and reservoir system using an arrangement whereby water released for generating energy during peak load periods is stored and pumped back into the upper reservoir, usually during periods of reduced power demand.

pumping-generating plant A plant which can either pump water or generate electricity, depending on the direction of water flow.

punch list A list of tasks or "to-do" items necessary for the completion of a construction project.

R

radial gates Gates used to control the flow of water into or from a reservoir, canal, pipeline, or through a channel. Each gate can close under its own weight and is operated independently by remote control.

radio-telemetry Automatic measurement and transmission of data from remote sources via radio to a receiving station for recording and analysis.

rate structure Designates the rate basis for cost recovery (e.g., flat, uniform, tiered, etc.). Block/Tiered rates are assumed to provide cost signals to consumers. Costs can include capital, operation and maintenance, financing, environmental compliance (documentation, permitting, and mitigation), etc.

reach On the California Aqueduct, a specific segment of the canal, identified by a number, which is the smallest unit of the SWP identified in water supply contracts for cost allocation and repayment purposes.

rearing Refers to the amount of time that juvenile fish spend feeding in nursery areas of rivers, lakes, streams, and estuaries before migration.

reasonable and prudent alternatives Alternative actions that can be implemented in a manner consistent with the intended purpose and scope of a project, are economically and technologically feasible, and would avoid the likelihood of jeopardizing the continued existence of listed species or resulting in the destruction or adverse modification of critical habitat.

recharge Water added to an aquifer or the process of adding water to an aquifer. Groundwater recharge occurs either naturally as the net gain from precipitation or artificially as the result of human influence.

recharge basin A surface facility constructed to infiltrate surface water into a groundwater basin.

recreation Water-dependent recreation activities that are consumptive (e.g., parks), flat-water (e.g., boating), or flow-based (e.g., whitewater rafting).

recycled water (1) The application of treated water/reclaimed water to meet a beneficial use, supplanting a potable or potentially potable supply; (2) Treated municipal, industrial, or agricultural wastewater to produce water that can be reused.

redd A shallow nest of fish eggs covered with gravel in a streambed.

reference evapotranspiration (ET_o) The evapotranspiration rate from an extended surface of 3 to 6 inch (8 to 15 centimeter) tall green grass cover of uniform height, actively growing, completely shading the ground, and not short on water (the reference ET reported by CIMIS).

reliability planning Water reliability management planning is done by comparing the costs of taking actions to maintain or increase reliability to the costs of accepting less reliability. On this basis, accepting of the costs of adverse effects of less than 100 percent reliability could be a legitimate planning decision. Providing full water supply to meet 100 percent of projected future water demand is not the planning goal, rather, the goal is to find the justified level of reliability.

reoperation *See* system reoperation.

repayment reach Aqueduct reaches are delineated for the purpose of making project repayment as equitable as possible. The reaches are generally numbered consecutively from the Delta with Reach 1 being first. Repayment reaches vary greatly in length. (*See also* reach.)

required instream flow The amount of water required for instream use by agreement, water rights permit, or State/federal acts.

return flow The portion of withdrawn water not consumed by evapotranspiration or system losses which returns to its source or to another body of water.

reused water The application of previously used water to meet a beneficial use, whether treated or not prior to the subsequent use (cf. recycled water).

reverse osmosis A method to remove salts and other constituents from water by forcing water through membranes.

riparian area The area of land adjacent to a stream, lake, or wetland with vegetation that, due to the presence of water, is distinctly different from the vegetation of adjacent upland areas. Riparian areas provide important wildlife habitat (including fish habitat when sufficient to overhang, extend into, or fall into the water).

riparian [water] right A right to use surface water, such right derived from the fact that the land in question abuts the banks of a stream or other water source (lake or pond). These rights are senior to most appropriative water rights.

run (of fish) A group of fish of the same species whose upstream spawning migration timing is associated with the seasons, e.g., fall, spring, summer, and winter runs. Members of a run may interbreed with fish of another run.

runoff The volume of surface flow from an area during a specified period. Natural runoff is the portion of precipitation that runs off the land and makes up the natural flow in rivers. Incidental runoff is the portion of precipitation that would have been used by natural vegetation but now contributes to runoff. This is a result of roads, paved areas, building roofs, land drainage systems, fields developed for irrigation, and other changes in land use.

S

saline intrusion The movement of salt water into a body of fresh water. It can occur in either surface water or groundwater bodies.

salinity Generally, the concentration of mineral salts dissolved in water. Salinity may be expressed in terms of a concentration, weight (total dissolved solids), electrical conductivity, or osmotic pressure. When describing salinity influenced by seawater, salinity often refers to the concentration of chlorides in the water. (*See also* total dissolved solids.)

salmonid A fish species belonging to the salmon family, including salmon and trout.

salt-water barrier A physical facility or method of operation designed to prevent the intrusion of saltwater into a body of fresh water.

salvage (fish) At the SWP and CVP fish protective facilities, fish are removed from export water, transported, and released away from the influence of the water diversion facilities.

sediment Soil or mineral material transported by water and deposited in streams or other bodies of water.

seepage The gradual movement of water into, through, or from a porous medium. Also, the infiltration of water into the soil from canals, ditches, laterals, watercourses, reservoirs, storage facilities, or other bodies of water or from a field.

service area The geographic area served by a water agency.

smolt A juvenile salmonid fish that has assumed the silvery color of the adult and, while migrating toward the ocean, is undergoing physiological changes that allow it to live in saltwater.

snowpack The annual accumulation of snow in mountain areas.

soluble minerals Naturally occurring substances capable of being dissolved.

special status species Plants or animals legally protected under either the federal or California Endangered Species Act or the California Fish and Game Code; those species not currently protected by statute but considered to be rare or endangered under the California Environmental Quality Act; and species considered by the scientific community to be sufficiently rare to qualify for such listing (e.g., candidate species for listing as threatened or endangered, species of concern to the Department of Fish and Wildlife or U.S. Fish and Wildlife Service, or rare plants identified by the California Native Plant Society).

species of concern An informal term referring to a species that might be in need of conservation action.

spillway The section of a dam designed to permit water to pass over its crest; a weir or channel taking overflow from the dam. The spillway serves as a safety channel to prevent erosion or overtopping of the dam.

sprinkler irrigation A method of irrigation in which the water is sprayed, or sprinkled, through the air to the ground surface.

stakeholder Individuals or groups who can affect or be affected by an organization's activities; individuals or groups with an interest or "stake" in what happens as a result of a decision or action.

State Water Project deliveries The volume of water imported to a given area from the State Water Project.

statewide water management systems These include physical facilities (more than 1,200 State, federal, and local reservoirs, as well as canals, treatment plants, and levees), which make up the backbone of water management in California; and statewide water management programs, which include water-quality standards, monitoring programs, economic incentives, water-pricing policies, and statewide water-efficiency programs such as appliance standards, labeling, and education.

stocking Releasing hatchery-raised fish into water body for the purposes of supplementing existing populations or creating new ones for fishing or to increase a species population. Same as planting.

strategic plan The long-term goals of an organization or program and an outline of how they will be achieved (e.g., adopting specific strategies, approaches, and methodologies).

streamflow The rate of water flow past a specified point in a channel.

subsidence *See* land subsidence.

surface storage Surface storage uses reservoirs to collect water for later release and use.

surface supply Water supply obtained from streams, lakes, and reservoirs.

system reoperation Changes to existing water system operations and management procedures for existing reservoirs and conveyance facilities to increase their water-related benefits.

T

threatened species An animal or plant species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

tidal wetlands The margins of an estuary that are periodically inundated by tides; includes all habitats within the elevation range between the lowest and highest tides: intertidal mudflats, regularly inundated tidal marsh plains, tidal channels within the marsh, and infrequently inundated wetland-upland transition zones at the edge of the upland.

total capital cost The total monetary cost of option required for "turnkey" implementation, including environmental and third-party impact mitigation,

storage, conveyance, energy, capitalized operations and maintenance, administrative costs, planning costs, legal costs, and engineering costs.

total dissolved solids The quantity of the residual minerals dissolved in water that remain after evaporation of a solution.

transpiration An essential physiological process in which plant tissues give off water vapor to the atmosphere.

tributary A stream that flows into a larger stream or other body of water.

turbidity A measure of the cloudiness of water caused by the presence of suspended particles in the water which attenuate or reduce light penetration. Turbidity in natural waters may be composed of organic and/or inorganic constituents and may have direct implications to drinking water treatment.

turnout The point at which water is diverted from a main channel or water delivery facility to a distributing facility; a structure through which a water contractor takes delivery of water.

U

unimpaired flow The flow past a specified point on a natural stream that is unaffected by stream diversion, storage, import, export, return flow, or change in use caused by modifications in land use.

unimpaired runoff A representation of the natural water production of a river basin, unaltered by upstream diversions, storage, or by export or import of water to or from other watersheds.

Urban Water Management Planning Act Sections 10610 through 10657 of the California Water Code. The act requires urban water suppliers to prepare urban water management plans which describe and evaluate sources of water supplies, efficient uses of water, demand management measures, implementation strategies and schedules, and other relevant information and programs within their water service areas. Urban water suppliers (Section 10617) are either publicly or privately owned and provide water for municipal purposes, either directly or indirectly, to more than 3,000 customers or supply more than 3,000 acre-feet of water annually.

urban water use The use of water for urban purposes, including residential, commercial, industrial, recreation, energy production, military, and institutional classes. The term is applied in the sense that it is a kind of use rather than a place of use.

urban water use efficiency Methods or technologies resulting in the same beneficial residential, commercial, industrial, and institutional uses with less water or increased beneficial uses from existing water quantities.

V

vernal pools A type of wetland that occurs in shallow foothill and valley depressions. Water remains in pools and swales until it evaporates, usually within a few days to a few months, mainly in late winter and spring.

volatile organic compound (VOC) A man-made organic compound that readily vaporizes in the atmosphere. These compounds are often highly mobile in the groundwater system and are generally associated with industrial activities.

W

wastewater Domestic or municipal sewage or effluent from an industrial process.

water demand The desired quantity of water that would be used if the water were available and if a number of other factors, such as price, did not change. Demand is not static.

water exchanges Typically water delivered by one water user to another water user; the receiving water user will return the water at a specified time or when the conditions of the parties' agreement are met. (*See also* water transfers.)

water quality Description of the chemical, physical, and biological characteristics of water, usually with regard to its suitability for a particular purpose or use.

water quality objectives Specific, legally enforced levels of water quality desired for identified uses, including drinking, recreation, farming, fish production, propagation of other aquatic life, and agricultural, industrial, and urban use.

water recycling The treatment of urban wastewater to a level rendering it suitable for a specific beneficial use.

water right In water law, the right of a user to use water from a water source (e.g., a river, stream, pond, or source of groundwater).

water service reliability The degree to which a water service system can successfully manage water shortages.

water supply exports The amount of water that a region transfers to another to meet needs.

water table *See* groundwater table.

water transfer A temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer or exchange of water or water rights. A more general definition is that water transfers are a voluntary change in the way water is usually distributed among water users in response to water scarcity.

water year A continuous 12-month period for which hydrologic records are compiled and summarized. Different agencies may use different calendar periods for their water years. For DWR, a water year is October 1 through September 30.

watershed The land area from which water drains into a stream, river, or reservoir. Also called drainage area, drainage basin, or river basin.

watershed management The process of evaluating, planning, managing, restoring, and organizing land and other resource use within an area that has a single common drainage point.

weir (1) Any structure across a watercourse used to control, raise, or measure flows; (2) a barrier constructed to catch upstream migrating adult fish.

wetlands Lands including swamps, marshes, bogs, and similar areas such as wet meadows, river overflows, mud flats, and natural ponds. An area characterized by periodic inundation or saturation, certain types of soils, and vegetation adapted for life in saturated soil conditions.

wheel As applied to water and power, to provide the use of one agency's conveyance facilities for the purpose of transporting another agency's supply.

Wild and Scenic River systems State and federally designated river systems under the 1968 national Wild and Scenic Rivers Act and the 1972 California Wild and Scenic Rivers Act. Seventeen rivers in California, including many forks and tributaries are designated wild, scenic, or recreational.

X

X2 Delta outflow interaction with tides determines the location of the X2 isohaline salinity gradient. X2 is the location in the Bay-Delta Estuary where the tidally averaged bottom salinity is 2 parts per thousand. It is expressed as the distance in kilometers from the Golden Gate Bridge. X2 is used as a primary indicator in managing Delta outflow.

Appendix B

Data and Computations Used to Determine 2012 Water Charges

Appendix B, Data and Computations Used to Determine 2012 Water Charges, was previously printed and distributed under a July 2011 cover letter from Robert Cooke, Chief of SWPAO, to State Water Project water contractors to document and support DWR's calculation of the contractors' annual charges. Appendix B appears on the following pages as it was published in July 2011. However, Table B-7 was not published in the July 2011 version of Appendix B because the data was not available at the time of publication. Table B-7 now appears in its entirety on page B-78.

Appendix B
Data and Computations Used to Determine 2012 Water Charges

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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 2012. The information is based on established data about the SWP, both known and projected, as of June 2011; however, small volumes of water may be reclassified over time pursuant to long-term water supply contract provisions. If research requires more current data than was available at the time of production of Bulletin 132, please contact the State Water Project Analysis Office. Where applicable, the projected data values shown in this appendix are shaded and the bill year data are in **bold** type.

The computational procedures and interrelationships between tabulations in this appendix are outlined on *Figures B-1 and 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. 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

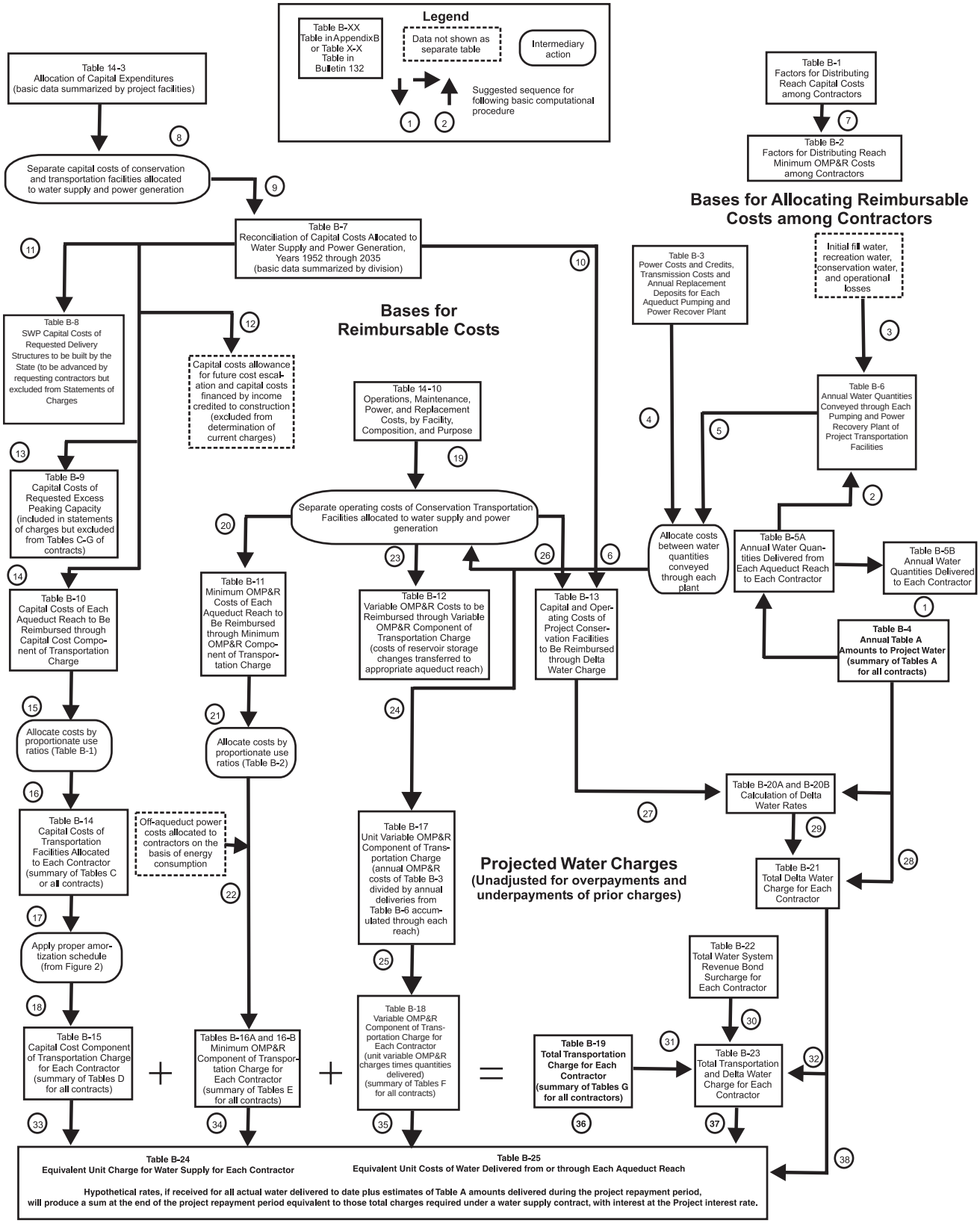

Figure B-1. Relationships of Data Used to Substantiate Statements of Charges

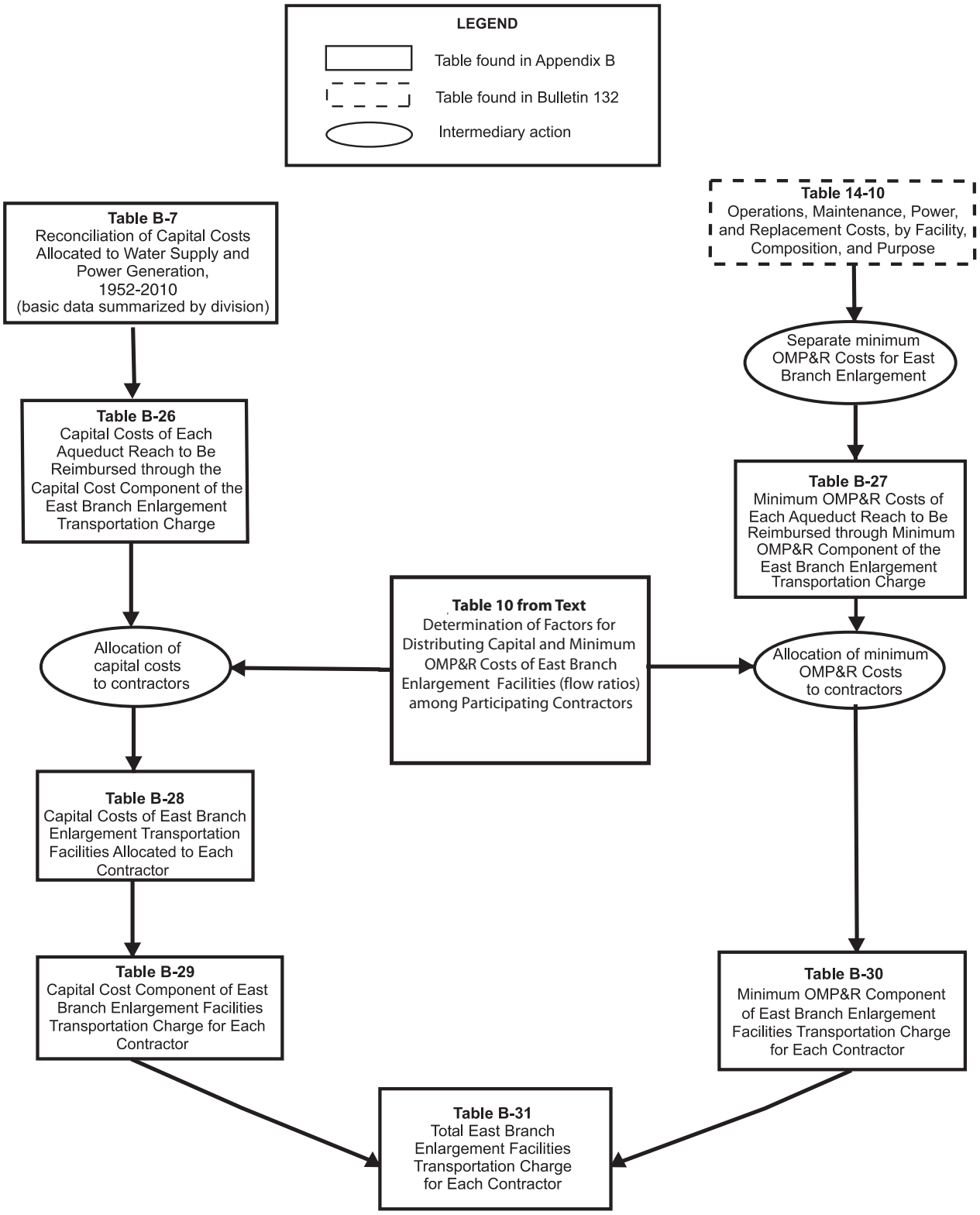

Figure B-2. Relationships of Data Used to Substantiate East Branch Enlargement Charges

- Sisk Dam, San Luis Reservoir, and Gianelli Pumping-Generating Plant

Project Transportation Facilities

- Grizzly Valley Pipeline
- North Bay Aqueduct
- South Bay Aqueduct, including Del Valle Dam and Lake del Valle
- 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
- Off-Aqueduct Power Facilities (Reid Gardner Unit No. 4, Bottlerock Powerplant, and South Geysers Powerplant)

The standard provisions provide for a Delta Water Charge and a Transportation Charge for project water.

The Delta Water Charge is a unit charge applied to each acre-foot of SWP water the contractors are entitled to receive, in accordance with 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(s). 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. 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 (OMP&R) costs of the East Branch Enlargement.

Transportation charges for the Coastal Branch Extension, East Branch Extension, and South Bay Enlargement are being repaid by contractors in their respective service areas.

Transportation charges for the Tehachapi Afterbay are repaid by those contractors using electrical power for delivery of their Table A water downstream of the Tehachapi Afterbay.

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;
2. Conservation and transportation minimum OMP&R components, which

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

will return to the State all reimbursable operating costs that do not depend on or vary with quantities of water actually delivered to the contractors; and

3. A transportation variable OMP&R component, which will return to the State all reimbursable operating costs that depend on, and vary with, quantities of water actually delivered to the contractors.

The formula for computing the Delta Water Rate, Article 22(f) of the Standard Provisions for Water Supply Contract, was designed to ensure that all adjustments for prior overpayments or underpayments of the Delta Water Charge are accounted for in a redetermination of the rate. Since the redetermined rate applies to all future allocations, such adjustments are amortized during the remainder of the project repayment period. This appendix includes a redetermination of the Delta Water Rate for 2012.

Article 28 of the standard provisions stipulates that Transportation Charges be redetermined each year. The tables in Appendix B include the numerical data used in this redetermination. Transportation Charges for prior years through 2011, included in those tables are the redetermined amounts, and do not equal the amounts actually paid by contractors.

As provided under the Water System Revenue Bond Amendment to the water supply contracts, differences between actual payments under the Transportation capital cost component and amounts computed in this redetermination are accumulated with interest and amortized during the remaining years of the contract repayment period. All computations for adjustments are included in the attachments accompanying each contractor's Statement of Charges and are reflected in revised copies of Table C through Table G of the contract, which are also furnished to each long-term water supply contractor in the annual statements of charges.

These redeterminations exclude four charges associated with water service other than the Delta Water Charge and the Transportation Charge. The excluded charges (and the manner in which 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 redetermined

Transportation Charges is included in special attachments to the bills of the six participating contractors.

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 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 "Project Water Charges" section.

Capital and Minimum OMP&R Costs

Figure B-4 includes information about the repayment reaches that form the basis for allocating reimbursable costs of the Project Transportation Facilities among contractors.

Allocations of reimbursable capital costs and minimum OMP&R costs of each reach are based on the proportionate maximum use of that reach by respective contractors under planned conditions of full development.

The derivation of ratios that represent the proportionate maximum use of each aqueduct reach by the respective contractors was first reported in Bulletin 132-70. The ratios in Bulletin 132-70 were subsequently revised for the North Bay Aqueduct, the South Bay Aqueduct, the California Aqueduct from the Delta to Castaic Lake, and the Coastal Branch.

All the revisions reported in previous bulletins regarding the derivation of ratios that represent the proportionate maximum use of each aqueduct reach by the respective contractors were last reported in Tables B-1 and B-2 of Bulletin 132-91. Under Article 53 of the Monterey Amendment, agricultural contractors may sell up to 130,000 acre-feet of aqueduct capacity to municipal and industrial contractors. The first permanent

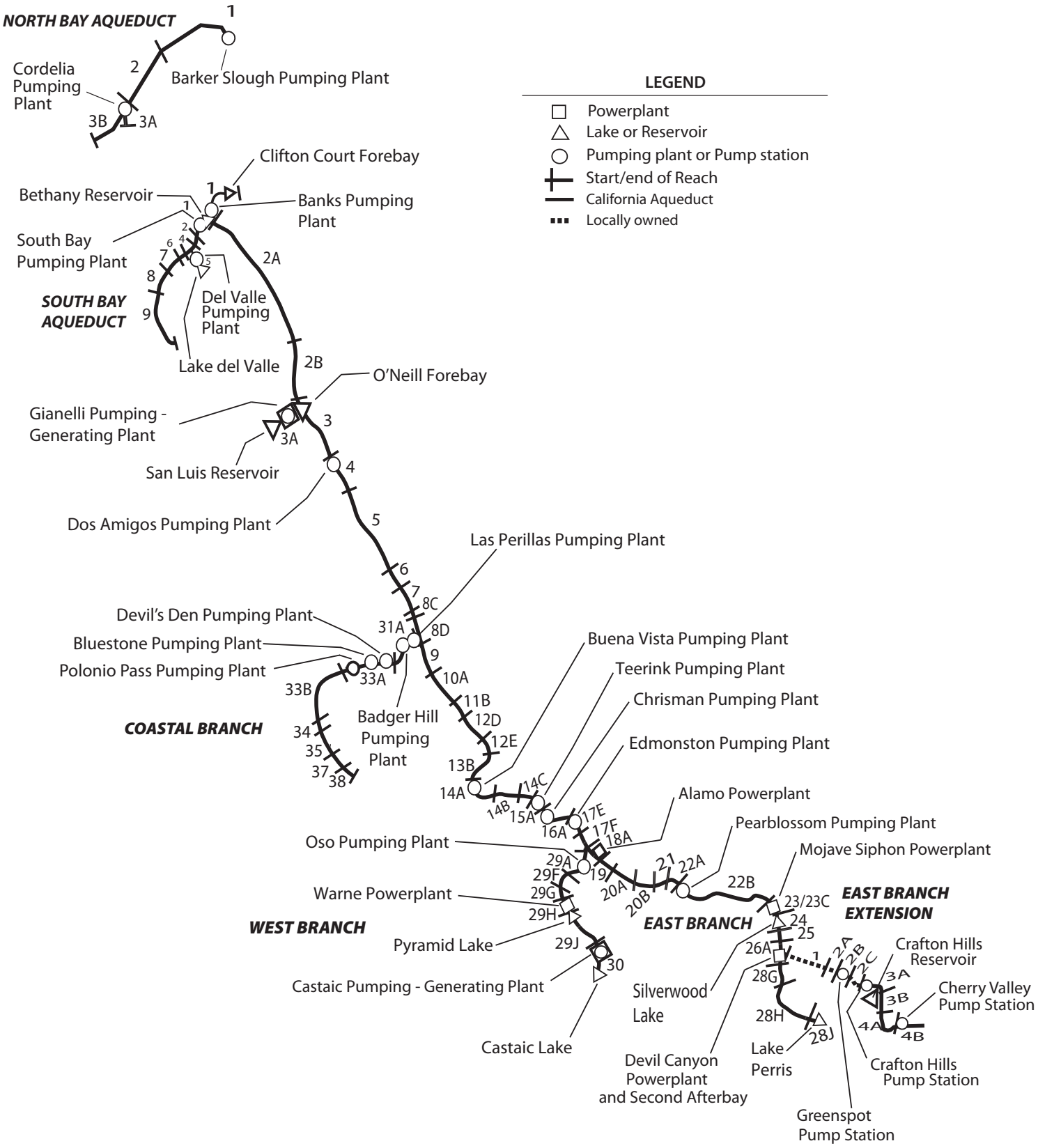

Figure B-4. Repayment Reaches and Descriptions

North Bay Aqueduct

1	Barker Slough through Fairfield /Vacaville Turnout
2	Fairfield/Vacaville Turnout to Cordelia
3A	Forebay 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

Coastal Branch,* California *Aqueduct

31A	Avenal Gap to Devil's Den Pumping Plant
33A	Devil 's Den Pumping Plant through Tank 1
33B	Tank 1 through Chorro Valley Turnout
34	Chorro Valley Turnout through Lopez Turnout
35	Lopez Turnout through Guadalupe Turnout
37	Guadalupe Turnout to SPRR crossing near Casmalia
38	SPRR crossing near Casmalia through terminous at Tank 5 (Outlet Vault)

Tehachapi Division

17E	Edmonston Pumping Plant to Porter Tunnel
17F	Porter Tunnel to Junction, West Branch

Mojave Division

18A	Junction, West Branch through Alamo Powerplant
19	Alamo Powerplant to Fairmont
19C	Buttes Junction through Buttes Reservoir
20A	Fairmont through 70th Street West
20B	70th Street West to Palmdale
21	Palmdale to Littlerock Creek
22A	Littlerock Creek to Pearblossom Pumping Plant
22B	Pearblossom Pumping Plant to West Fork Mojave River
23	West Fork Mojave River to Silverwood Lake
23C	Mojave Siphon Powerplant
24	Cedar Springs Dam and Silverwood Lake

Santa Ana Division

25	Silverwood Lake to South Portal, San Bernardino Tunnel
26A	South Portals San Bernardino Tunnel through Devil Canyon Powerplant and Second Afterbay
28G	Devil Canyon Powerplant and Second Afterbay to Barton Road
28H	Barton Road to Lake Perris
28J	Perris Dam and Lake Perris

East Branch Extension

1	Devil Canyon Powerplant to Junction, Foothill Pipeline near Cone Camp Road
2A	Junction, Foothill Pipeline near Cone Camp Road to Greenspot Pump Station
2B	Greenspot Pump Station to Morton Canyon Valve Vault
2C	Morton Canyon Valve Vault to Crafton Hills Pump Station
3A	Crafton Hills Pump Station to Carter Street Valve Vault
3B	Carter Street Valve Vault to Garden Air Creek, South of San Bernardino/Riverside County Line
4A	Garden Air Creek to Cherry Valley Pump Station
4B	Cherry Valley Pump Station to Terminus at Noble Creek

West Branch, California Aqueduct

29A	Junction, California Aqueduct through Oso Pumping Plant
29F	Oso Pumping Plant through Quail Embankment
29G	Quail Embankment through Warne Powerplant
29H	Pyramid Dam and Lake
29J	Pyramid Lake through Castaic Powerplant
30	Castaic Dam and Lake

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 the Monterey Amendment was implemented in 1995.

Table B-1 presents the reach ratios currently applicable to reimbursable capital costs.

Table B-2 presents corresponding ratios for allocating 2012 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. Variable costs are the following:

- Costs of capacity and energy used exclusive of associated power transmission and station service charges (transmission and station service costs that are independent and vary with power usage are 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 that will depend on and vary with water and power usage. These costs will be included as part of the variable component.

Table B-3 excludes plant capacity and energy costs associated with surplus and unscheduled water service after May 1, 1973. Prior to that date, surplus water service was charged the same unit variable OMP&R component as allocated water service. An amendment to the long-term water supply contracts in 1973 significantly changed the rate structure for surplus water service. Capacity and energy costs for pumping surplus and unscheduled water were allocated directly to those water contractors receiving surplus and unscheduled water service. A contract amendment in 1991 again revised the rate structure to provide for payment of costs through a melded power rate. These revisions to charges for surplus and unscheduled water are effective from the date of the amendments and are not applied to past charges.

An interruptible water program was established in 1994. This program, later renamed to Article 21 program, is based on individual annual contracts; costs for Article 21 water actually delivered are included in *Table B-3*.

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 11B 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
Subtotal under Article 53		*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
Tulare	Desert	1,750	2010	Purchased capacity upstream from Reach 17F
Tulare	Coachella	5,250	2010	Purchased capacity upstream from Reach 17F
Kern	Desert	4,000	2010	Purchased capacity upstream from Reach 17F and Reach 31A
Kern	Coachella	12,000	2010	Purchased capacity upstream from Reach 17F and Reach 31A
Dudley Ridge	Mojave	7,000	2010	Purchased capacity upstream from Reach 8D
Subtotal outside of Article 53		*152,578*		

Water Conveyance

Tables B-4, B-5A, B-5A-Adj, 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 2011 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 Article 21 water deliveries in 1994 and after.

Table B-5A-Adj presents a summary of accou nting adjustments that result from water deliveries not originating from the Sacramento-San Joaquin Delta. The methodologies used to calculate various components are based on cumulative

charges from the Delta through facilities conveying water to a specific repayment reach. When water is introduced to the SWP downstream of the Delta, contractors require an adjustment, or credit, for those facilities not used to convey the water.

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 Article 21 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 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 (following initial fill).

In years of net storage withdrawal from San Luis Reservoir, a portion of the minimum OMP&R cost of the reservoir is transferred to the variable OMP&R cost of Banks Pumping Plant. That transfer is equal to the variable OMP&R cost per acre-foot of delivery through Banks Pumping Plant for that year, multiplied by the acre-feet of deliveries derived from San Luis Reservoir storage for that year. *Table B-6* also includes amounts of nonproject water and surplus water delivered prior to May 1, 1973, and actual deliveries of Article 21 water in 1994 and thereafter.

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 in accordance with the allocation percentages in *Table 2*. Those percentages may be subject to revision in the future.

The redeterminations in this appendix involve only the SWP costs that are allocated to water supply and power generation.

Capital Costs

Capital costs used in the redeterminations in this appendix reflect prices prevailing on December 31, 2010; 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 in accordance with amendments to contracts with Metropolitan Water District of Southern California (Metropolitan), San

Table 2. Project Purpose Cost Allocation Factors (Percentages)

PROJECT FACILITIES	Water Supply and Power Generation		All Other Purposes (Nonreimburseable)	
	Capital Costs	Minimum OMP&R Costs	Capital Costs	Minimum OMP&R Costs
Project Conservation Facilities				
Frenchman Dam and Lake	21.5	0.0	78.5	100.0
Antelope Dam and Lake	0.0	0.0	100.0	100.0
Grizzly Valley Dam and Lake Davis	1.0	1.8	99.0	98.2
Oroville Division[a]	97.1	99.5	2.9	0.5
California Aqueduct, Delta to Dos Amigos Pumping Plant	96.6	96.7	3.4	3.3
Delta Facilities				
Peripheral Canal Related	86.0	86.0	14.0	14.0
Remaining of Delta Facilities	96.6	96.7	3.4	3.3
Transportation Facilities				
Grizzly Valley Pipeline	100.0	100.0	0.0	0.0
North Bay Aqueduct	100.0	100.0	0.0	0.0
South Bay Aqueduct				
Del Valle Dam and Lake Del Valle	25.2	22.0	74.8[b]	78.0[c]
Remainder of South Bay Aqueduct	100.0	100.0	0.0	0.0
California Aqueduct				
Delta to Dos Amigos Pumping Plant	96.6	96.7	3.4	3.3
Dos Amigos Pumping Plant to termini (excluding Coastal Branch)	94.3	96.9	5.7	3.1
Coastal Branch	100.0	100.0	0.0	0.0

[a]Percentages indicated are applicable to the remaining costs of division after excluding costs allocated to flood control that are reimbursed by the federal government (22 percent of capital costs) and excluding specific power costs of Hyatt and Thermalito Powerplants and switchyards.
[b]Percentage indicated consists of 48.0 percent of costs allocated to recreation and 26.8 percent to flood control.
[c]Percentage indicated consists of 44.9 percent of costs allocated to recreation and 33.1 percent to flood control.

Gabriel Valley Municipal Water District, and Antelope Valley-East Kern Water Agency, including the following:

- 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 Powerplant to Barton Road total about $6.7 million (see Bulletin 132-72, page 98).

Table B-10 presents the actual and projected annual capital costs of each aqueduct reach that will eventually be returned to the State, with interest, through contractors' payments of the capital cost component 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 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 2.5 percent per year for 2012 and 2013 plus
8. Escalation of projected operating costs at 1 percent per year for 2014-2035.

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.

To derive Table B-12 costs, the following adjustments are made to Table B-3 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 the 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 in accordance with negotiated settlements concerning incurred planning costs for the period from 1952 through 1978.

Project Water Charges

This section describes the redetermination of past and projected components of the Transportation Charge for annual revision of Tables C through G of each water supply contract. This section also describes the derivation of the unit Delta Water Rates and the Water System Revenue Bond Surcharge.

A summary of equivalent unit charges for each acre-foot of allocated water service is also included for each contractor and each aqueduct reach. A diagram of all calculations may be found on 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 the 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 Castaic Lake Water Agency also prepaid capital costs (see Table B-14 footnotes). Table B-14 includes costs of the East Branch Extension to provide water service to San Bernardino Valley Municipal Water District and San Gorgonio Pass Water Agency.

Both Table B-14 and Table C of the six contractors for project water service below Devil Canyon Powerplant and Castaic Powerplant include the capital costs reimbursable under the Devil Canyon-Castaic contract.

Table B-15 summarizes capital cost components of the Transportation Charge for each contractor for each year of the project repayment period. By the year 2035, the capital cost components shown in Table B-15 will recover the costs shown in Table B-14, with interest at the Project Interest Rate of 4.610 percent per annum and based on the amortization schedules included in *Table 3*.

Those estimated components, subsequently adjusted for prior overpayments or underpayments, are included in Table D of the water supply contracts. Costs of excess capacity are billed separately and are not included in Table B-15.

Table B-15 includes the debt service payments due from the six contractors down-aqueduct from Devil Canyon Powerplant and Castaic Powerplant, in accordance with 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 down-aqueduct from Devil Canyon Powerplant and Castaic Powerplant.

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 2011, the Monterey Amendment litigation costs will be slightly less than $16 million.

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 Gorgonio Pass Water Agency	1963 [d]
San Luis Obispo County Flood Control and Water Conservation District	1964 [f]
Santa Barbara County Flood Control and Water Conservation District	1964
Santa Clara Valley Water District	1963
Solano County Water Agency	1973
Tulare Lake Basin Water Storage District	1968 [e]
Ventura County Watershed Protection District	1964

[a] Allocated capital costs of transportation facilities amortized in equal annual installments unless otherwise noted.
[b] Principal payments on each annual capital cost prior to 1971 delayed until calendar year 1972, except payments for 1963.
[c] For Yuba City and Butte County payments for Delta Water Charge only.
[d] Payment deferred for 1963 and added to 1964 payment with accrued interest.
[e] For Dudley Ridge, Empire, Kern (agricultural use), Oak Flat, and Tulare, according to Article 45 of the contracts for supply of agricultural water, capital costs of transportation facilities allocated to agricultural water supply are amortized by using an equivalent unit rate per acre-foot applied to the annual allocations (Table B-4) through the project repayment period.
[f] For San Luis Obispo and Santa Barbara County, all principal and interest payments for costs of the Coastal Stub were deferred until 1976.

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**

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 2010. The Reid Gardner Powerplant Separation costs are tracked independently from annual Reid Gardner operating costs in anticipation of the Reid Gardner Powerplant contract expiration in 2013.

Table 5. Summary of 2010 Off-Aqueduct Power Facility Charges and Credits

Charges by Item	(Dollars)
Reid Gardner Powerplant	122,583,748
Reid Gardner Separation Costs	789,210
Bottle Rock Powerplant	12,683,810
South Geysers Powerplant	6,216,760
Subtotal	*142,273,527*
Credits by Item	
Power Sales	(1,921,123)
Net Total Charge	**140,352,404**

Table 6 shows projected Off-Aqueduct Power Facility charges and an amount equal to 25 percent of annual bond service for 2011 through 2035.

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)
2011	120,469,142	12,830,559
2012	**141,020,239**	**12,896,901**
2013	64,361,737	7,193,668
2014	20,040,432	4,003,137
2015	11,785,144	2,352,080
2016	10,133,109	2,021,673
2017	9,771,362	1,949,323
2018	4,067,629	808,577
2019	4,047,146	804,480
2020	4,352,865	865,624
2021	6,785,530	1,352,157
2022	6,440,079	1,283,067
2023	4,609,682	916,987
2024	3,386,804	672,412
2025	546,836	104,418
2026	681,116	131,274
2027	1,013,379	197,727
2028	696,214	134,294
2029	692,594	133,570
2030	203,730	35,797
2031	203,261	35,703
2032	208,541	36,759
2033	206,916	36,434
2034	204,964	36,044
2035	208,933	36,838

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 shown 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	kWh per acre-foot[a] Cumulative from Delta
Barker Slough	223	223
Cordelia-Benicia	434	657
Cordelia-Vallejo	178	401
Cordelia-Napa	563	786
Harvey O. Banks (Delta)	296	296
South Bay (including Del Valle)	869	1,165
Dos Amigos	138	434
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

[a] Includes transmission losses.

Table B-17 presents a summary of actual and projected total variable OMP&R costs for each acre-foot conveyed through each aqueduct pumping plant and power plant for each year of the project. Following are 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 water quantities 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-22 and B-23, respectively.

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 and Table B-5A-Adj, 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.

In accordance with 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 powerplants.

Delta Water Charges

Table B-20A presents the calculation of the Delta Water Rate for the initial Conservation Facilities applicable in 2012 in accordance with the amended Article 22(e) and 22(g) of all 29 contracts. The Delta Water Rate was calculated at a Project Interest Rate of 4.610 percent, based on Conservation Facility costs shown in Table B-13. That Delta Water Rate is used to compute projected Delta Water Charges under Article 53(i) for the contractors who have executed the Monterey Amendment. Included in Table B-20A is the Delta Water Rate for the two contractors who have not executed the Monterey Amendment: Plumas County Flood Control and Water Conservation District and Empire West Side Irrigation District.

Table B-20B shows each component of the 2012 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

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
2000–2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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
2000–2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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**

per acre-foot, as shown in Table B-20A, by the amount of allocated water for each contractor, as shown in Table B-4.

The projected Delta Water Charges from 2012-2035 include the following assumptions:

1. *Escalation of projected operating costs at 2.5 percent per year for 2012 and 2013.*
2. *Escalation of projected operating costs at one percent per year for 2014-2035.*

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 Series AE. 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 Article 21 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 presented in Table B-20A because current projections of allocated water service are less for most contractors than the amounts shown in Table A.

Equivalent Water Costs by Reach

Table B-25 presents a summary of the equivalent unit transportation cost of conveying allocated water through respective aqueduct reaches of the Project Transportation Facilities.

Those unit costs provide the basis of charges assessed for extra service (such as 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 Article 21 water deliveries in 1994 and afterwards.

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 redetermined in future bulletins to include the following:

- A reallocation of costs of constructing the present east branch facilities between Alamo Powerplant 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 enlargement construction costs.

These costs will be recovered with interest from the seven Southern California water contractors participating in the enlargement, in accordance with 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 East Branch Enlargement participating contractors. Currently, this table includes only minimum OMP&R costs attributable to the East Branch Enlargement. In accordance with 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, in accordance with 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 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).

East Branch Extension Phase I Facility Charges

The East Branch Extension-Phase I charges recover associated costs for East Branch Extension facilities beginning at Devil Canyon Powerplant Afterbay and extending to the terminus at Noble Creek in the vicinity of Beaumont, Riverside County. These costs will be recovered from two contractors—San Bernardino and San Gorgonio—in accordance with their amended Water Supply contracts. The factors for distributing costs are shown in *Table 11*. *Table 12* shows the debt service for 2012.

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, 2006, 2008 and 2010, 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. Feasibility study costs are included in Table B-16A.

Contractors have agreed to participate in several Delta Improvement programs that started in 2007 and that will possibly extend 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 comprises two elements: fishery costs and consultation costs. These costs were added to the contractors' transportation minimum component for bill years 2007, through 2012.

The second contract pertains to the non-BDCP costs of the MOA, comprising the Delta Vision and pelagic organism decline research costs. These costs were added to the contractors' conservation minimum component for bill years 2007 and 2008.

The third contract pertains to the Delta Habitat Conservation and Conveyance Program (DHCCP), agreed to in funding agreements between the Department and participating contractors to provide funding for the preliminary planning phase of an improved Delta water conveyance facility. This program will assess potential habitat restoration and water conveyance options in the Delta. For bill years 2008 through 2011, nearly $70 million in charges associated with the DHCCP were billed directly to those participating SWP contractors as a separate line item in the Statements of Charges and are not reflected in the tables in this appendix. For bill year 2012, no additional charges associated with DHCCP were billed to participating contractors.

Table 10. Determination of Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities among Participating Contractors

Reach Number	Description
18A	Junction, West Branch, California Aqueduct, through Alamo Powerplant
19	Alamo Powerplant to Fairmont
20A	Fairmont through 70th Street West
20B	70th Street West to Palmdale
21	Palmdale to Littlerock Creek
22A	Littlerock Creek to Pearblossom Pumping Plant
22B	Pearblossom Pumping Plant to West Fork Mojave River
23B	West Fork Mojave River to Silverwood Lake (excluding Mojave Siphon Powerplant facilities)
23C	Mojave Siphon Powerplant facilities
24	Cedar Springs Dam and Silverwood Lake
25	Silverwood Lake to South Portal, San Bernardino Tunnel
26A	South Portal, San Bernardino Tunnel through Devil Canyon Powerplant
26B	Devil Canyon Powerplant Bypass

Share of Enlargement Capacity (cfs)

Reach Number	Antelope Valley-East Kern Water Agency	Coachella Valley Water District	Desert Water Agency	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	Metropolitan Water District of Southern California	Total
18A		151	13	136	6		1,200	1,506
19		151	13	136	6		1,200	1,506
20A	35	151	13	136	6		1,200	1,541
20B	35	151	13	136	6		1,200	1,541
21	35	151	13	136			1,200	1,535
22A	35	151	13	136			1,200	1,535
22B		151	13	136			1,200	1,500
23B		184	67	212			1,200	1,663
23C		184	67				1,200	1,451
24		190	78				1,200	1,468
25		193	83			63	1,200	1,539
26A		193	83			63	1,200	1,539
26B							300	300

Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities (flow ratios)

Reach Number	Antelope Valley-East Kern Water Agency	Coachella Valley Water District	Desert Water Agency	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	Metropolitan Water District of Southern California	Total
18A	0.00000000	0.10026560	0.00863214	0.09030544	0.00398406	0.00000000	0.79681276	1.00000000
19	0.00000000	0.10026560	0.00863214	0.09030544	0.00398406	0.00000000	0.79681276	1.00000000
20A	0.02271252	0.09798832	0.00843608	0.08825438	0.00389358	0.00000000	0.77871512	1.00000000
20B	0.02271252	0.09798832	0.00843608	0.08825438	0.00389358	0.00000000	0.77871512	1.00000000
21	0.02280130	0.09837134	0.00846906	0.08859935	0.00000000	0.00000000	0.78175895	1.00000000
22A	0.02280130	0.09837134	0.00846906	0.08859935	0.00000000	0.00000000	0.78175895	1.00000000
22B	0.00000000	0.10066667	0.00866667	0.09066667	0.00000000	0.00000000	0.79999999	1.00000000
23B	0.00000000	0.11064342	0.04028863	0.12748046	0.00000000	0.00000000	0.72158749	1.00000000
23C	0.00000000	0.12680910	0.04617505	0.00000000	0.00000000	0.00000000	0.82701585	1.00000000
24	0.00000000	0.12942779	0.05313351	0.00000000	0.00000000	0.00000000	0.81743870	1.00000000
25	0.00000000	0.12540611	0.05393112	0.00000000	0.00000000	0.04093567	0.77972710	1.00000000
26A	0.00000000	0.12540611	0.05393112	0.00000000	0.00000000	0.04093567	0.77972710	1.00000000
26B	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	1.00000000	1.00000000

Table 11. Factors for Distributing Capital and Minimum OMP&R Costs of the East Branch Extension Facilities

Reach Number	Reach Description	San Bernardino Municipal Water District	San Gorgonio Pass Water Agency	Total
Capital				
all	Average of the contractors' participation of EBX facilities	0.458417	0.541583	1.000000
Minimum				
1	Devil Canyon Powerplant to Junction, Foothill Pipeline near Cone Camp Road	0.557330	0.442670	1.000000
2A	Junction Foothill Pipeline near Cone Camp Rd to Greenspot Pump Station	0.557330	0.442670	1.000000
2B	Greenspot Pump Station to Morton Canyon Valve Vault	0.777778	0.222222	1.000000
2C	Morton Canyon Valve Vault to Crafton Hills Pump Station	0.777778	0.222222	1.000000
3A	Crafton Hills Pump Station to Carter Street Valve Vault	0.557330	0.442670	1.000000
3B	Carter Street Valve Vault to Garden Air Creek, South of San Bernardino County Line	0.557330	0.442670	1.000000
4A	Garden Air Creek to Cherry Valley Pump Station		1.000000	1.000000
4B	Cherry Valley Pump Station to Terminus at Noble Creek		1.000000	1.000000

Table 12. East Branch Extension Facilities Debt Service for 2012

Contractor	Share of Participation (%)	Total Debt Service Charge (Dollars)
San Bernardino	45.84170	**6,123,120**
San Gorgonio	54.15830	**7,233,976**
Total	100.00000	**13,357,097**

Tables B-1 through B-31

Note: Where applicable, the projected data values shown in this appendix are shaded and the bill year data are in **bold** type.

TABLE B-1. Factors for Distributing Reach Capital Costs among Contractors [a]

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	0.33715573	0.38875806	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout				0.25176680	0.60218448	0.14604872	1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355		1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	CALIFORNIA AQUEDUCT							
1	Delta thru Bethany Reservoir			0.00954737	0.00872917	0.02080118	0.00342507	N/A

Reach No.	Reach Description	CENTRAL COASTAL AREA		SOUTHERN CALIFORNIA AREA				
		San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency
	CALIFORNIA AQUEDUCT							
1	Delta thru Bethany Reservoir	0.00533010	0.00983337	0.02939084	0.01285827	0.00528315	0.00133612	0.00871300
2A	Bethany Reservoir to Orestimba Creek	0.00557213	0.01027988	0.03072531	0.01343201	0.00552068	0.00139620	0.00910474
2B	Orestimba Creek to O'Neill Forebay	0.00557824	0.01029119	0.03075915	0.01345351	0.00552831	0.00139814	0.00911733
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557719	0.01028923	0.03075332	0.01345294	0.00552772	0.00139798	0.00911637
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557607	0.01028717	0.03074719	0.01345233	0.00552710	0.00139784	0.00911536
5	Panoche Creek to Five Points	0.00557467	0.01028462	0.03073954	0.01345157	0.00552633	0.00139763	0.00911409
6	Five Points to Arroyo Pasajero	0.00557257	0.01028074	0.03072799	0.01345042	0.00552517	0.00139733	0.00911216
7	Arroyo Pasajero to Kettleman City	0.00557189	0.01027949	0.03072428	0.01345006	0.00552480	0.00139723	0.00911154
8C	Kettleman City thru Milham Avenue	0.00557103	0.01027792	0.03071961	0.01344960	0.00552432	0.00139712	0.00911076
8D	Milham Avenue thru Avenal Gap	0.00568611	0.01049020	0.03135418	0.01373353	0.00563986	0.00142632	0.00930130
9	Avenal Gap thru Twisselman Road			0.03426625	0.01356094	0.00616886	0.00156011	0.01017373
10A	Twisselman Road thru Lost Hills			0.03481391	0.01377767	0.00626946	0.00158556	0.01033963
11B	Lost Hills to 7th Standard Road			0.03835043	0.01517717	0.00691699	0.00174933	0.01140749
12D	7th Standard Road thru Elk Hills Road			0.04031661	0.01595523	0.00727790	0.00184059	0.01200265
12E	Elk Hills Road thru Tupman Road			0.04037074	0.01597665	0.00728878	0.00184332	0.01202059
13B	Tupman Road to Buena Vista Pumping Plant			0.04379882	0.01733322	0.00791595	0.00200194	0.01305492
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04599268	0.01820137	0.00831952	0.00210399	0.01372049
14B	Santiago Creek thru Old River Road			0.04682530	0.01853084	0.00847388	0.00214303	0.01397505
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04825217	0.01909545	0.00873768	0.00220973	0.01441013
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04905609	0.01941356	0.00888679	0.00224744	0.01465600
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.05089794	0.02014241	0.00922722	0.00233351	0.01521742
17E	Edmonston Pumping Plant to Porter Tunnel			0.05329388	0.02109050	0.00967107	0.00244575	0.01594937
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05340725	0.02113537	0.00969176	0.00245098	0.01598349
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043
19	Alamo Powerplant to Fairmont			0.13237766		0.02399451	0.00606811	0.03957141
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847931		0.02576425	0.00651573	0.04249001
20B	70th Street West to Palmdale			0.02276024		0.02702917	0.00683555	0.04457607
21	Palmdale to Littlerock Creek			0.02318952		0.02754716	0.00696651	0.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608043
22B	Pearblossom Pumping Plant to West Fork Mojave River					0.02827552	0.00715074	0.04663153
23	West Fork Mojave River to Silverwood Lake					0.00324449	0.00818122	0.00535117
24	Cedar Springs Dam and Silverwood Lake					0.01024605	0.01251569	0.01690478
25	Silverwood Lake to South Portal San Bernardino Tunnel							
26A	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					

(a) Proportionate Use Factors do not reflect permanent water transfers as a result of the Monterey Amendment and after.

TABLE B-1. Factors for Distributing Reach Capital Costs among Contractors [a]

	SAN JOAQUIN VALLEY AREA							
				Kern County Water Agency				
Reach No.	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Municipal and Industrial	Agricultural	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
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			

	SOUTHERN CALIFORNIA AREA (continued)								
Reach No.	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Municipal Water District	San Gabriel Valley Municipal Water District	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Watershed Protection District	Total
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
									1.00000000
34									1.00000000
35									1.00000000

(a) Proportionate Use Factors do not reflect permanent water transfers as a result of the Monterey Amendment and after.

TABLE B-2. Factors for Distributing Reach Minimum OMP&R Costs Among Contractors [a]

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				0.00870534	0.02074442		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	0.00531733	0.00980983	0.03025189	0.02543471	0.03261424	0.00133231	0.01285731
2A	Bethany Reservoir to Orestimba Creek	0.00556981	0.01027565	0.03168561	0.02659794	0.03414482	0.00139496	0.01346134
2B	Orestimba Creek to O'Neill Forebay	0.00557591	0.01028692	0.03172214	0.02665525	0.03419372	0.00139688	0.01348022
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557485	0.01028496	0.03171662	0.02665847	0.03419057	0.00139675	0.01347886
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557373	0.01028290	0.03171083	0.02666184	0.03418727	0.00139660	0.01347742
5	Panoche Creek to Five Points	0.00557233	0.01028034	0.03170359	0.02666604	0.03418315	0.00139641	0.01347564
6	Five Points to Arroyo Pasajero	0.00557023	0.01027646	0.03169264	0.02667241	0.03417691	0.00139611	0.01347294
7	Arroyo Pasajero to Kettleman City	0.00556955	0.01027521	0.03168913	0.02667446	0.03417490	0.00139601	0.01347207
8C	Kettleman City thru Milham Avenue	0.00551372	0.01017222	0.03136760	0.02634395	0.03380670	0.00138114	0.01332783
8D	Milham Avenue thru Avenal Gap	0.00562589	0.01037913	0.03200712	0.02690327	0.03450392	0.00140955	0.01360237
9	Avenal Gap thru Twisselman Road			0.03413562	0.02766170	0.03515440	0.00151956	0.01434468
10A	Twisselman Road thru Lost Hills			0.03466441	0.02811523	0.03570083	0.00154355	0.01456988
11B	Lost Hills to 7th Standard Road			0.03795283	0.03090883	0.03909696	0.00169230	0.01596716
12D	7th Standard Road thru Elk Hills Road			0.03977601	0.03247016	0.04098077	0.00177500	0.01674332
12E	Elk Hills Road thru Tupman Road			0.03982615	0.03252493	0.04103348	0.00177748	0.01676607
13B	Tupman Road to Buena Vista Pumping Plant			0.04306127	0.03526355	0.04437384	0.00192363	0.01813953
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04511461	0.03683278	0.04649594	0.00201688	0.01901448
14B	Santiago Creek thru Old River Road			0.04575231	0.03310420	0.04715790	0.00204656	0.01929091
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04691141	0.03188663	0.04835804	0.00209976	0.01978843
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04759011	0.03234784	0.04906060	0.00213087	0.02007944
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.04915945	0.03341432	0.05068375	0.00220245	0.02075015
17E	Edmonston Pumping Plant to Porter Tunnel			0.05111116	0.03474064	0.05270294	0.00229159	0.02158519
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05121281	0.03480973	0.05280785	0.00229617	0.02162824
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13492411		0.11343564	0.00605029	0.05154511
19	Alamo Powerplant to Fairmont			0.13492060		0.11343396	0.00605043	0.05154576
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06855702		0.12212506	0.00651522	0.05550243
20B	70th Street West to Palmdale			0.02284441		0.12811683	0.00683511	0.05822670
21	Palmdale to Littlerock Creek			0.02327543		0.13055246	0.00696606	0.05933989
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01190663		0.13241285	0.00706574	0.06018798
22B	Pearblossom Pumping Plant to West Fork Mojave River			0.00195128		0.13374659	0.00713697	0.06079440
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		0.07351496	0.05400251		0.01800084
33A	Devil's Den Pumping Plant thru Tank 1	0.10101221	0.89898779					
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 throu Guadalupe Turnout		1.00000000					

(a) Proportionate use factors apply to 2012, and reflect permanent capacity water transfers that have been signed as of February 1, 2011

TABLE B-2. Factors for Distributing Reach Minimum OMP&R Costs Among Contractors [a]

	SAN JOAQUIN VALLEY AREA										
							Kern County Water Agency				
Reach No.	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	Municipal and Industrial	Agricultural	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
CA-AQ											
1	0.00101484	0.00145898	0.02319949	0.01615131	0.00088464	0.00254083	0.02734671	0.27097810	0.00247151	0.00166718	0.02623179
2A	0.00106147	0.00152594	0.00868276	0.01687552	0.00092430	0.00266148	0.02862423	0.28311733	0.00258405	0.00174190	0.02740803
2B	0.00106363	0.00152909	0.00869847	0.01692102	0.00092679	0.00266440	0.02866891	0.28388802	0.00258995		0.02748193
3	0.00106373	0.00152923	0.00869862	0.01692574	0.00092704	0.00266388	0.02866737	0.28396935	0.00259035		0.02748959
4	0.00106381	0.00152938	0.00869878	0.01693069	0.00092732	0.00266334	0.02866575	0.28405484	0.00259078		0.02749765
5	0.00106393	0.00152955	0.00869900	0.01693689	0.00092766	0.00266267	0.02866371	0.28416159	0.00259131		0.02750772
6	0.00106411	0.00152984	0.00869933	0.01694627	0.00092817	0.00266166	0.02866064	0.28432311	0.00259212		0.02752293
7	0.00106417	0.00152994	0.00869944	0.01694928	0.00092834	0.00266132	0.02865965	0.28437492	0.00259238		0.02752781
8C	0.00105128	0.00151132	0.00859837	0.01671880	0.00091573	0.00263466	0.02834260	0.28049204	0.00255955		0.02715354
8D	0.00107350	0.00154329	0.00877841	0.01708138		0.00268825	0.02893019	0.28658089	0.00165702		0.00870332
9	0.00079266	0.00109382	0.00780913				0.03120712	0.29062507			
10A	0.00080563	0.00111151	0.00793478				0.03170601	0.27948051			
11B	0.00064541	0.00094507	0.00352004				0.03479195	0.21604857			
12D							0.03651059	0.18337144			
12E							0.03656518	0.18225937			
13B							0.01401068	0.14084192			
14A							0.00594265	0.10835951			
14B							0.00603229	0.09972183			
14C							0.00619161	0.07864417			
15A							0.00628468	0.06513906			
16A							0.00649824	0.03399327			
17E							0.00198956				
31A	0.00628695	0.00977801	0.02617705			0.05037550		0.36716813	0.00176551		

	SOUTHERN CALIFORNIA AREA (continued)								
Reach No.	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Municipal Water District	San Gabriel Valley Municipal Water District	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Watershed Protection District	Total
CA-AQ									
1	0.00049039	0.02026940	0.00458417	0.02356132	0.00648505	0.00397256	0.41534642	0.00427793	1.00000000
2A	0.00051368	0.02120939	0.00480129	0.02466912	0.00679104	0.00415934	0.43503794	0.00448106	1.00000000
2B	0.00051424	0.02124686	0.00480693	0.02470313	0.00679973	0.00416506	0.43553483	0.00448597	1.00000000
3	0.00051415	0.02124700	0.00480611	0.02470048	0.00679880	0.00416461	0.43545774	0.00448513	1.00000000
4	0.00051405	0.02124715	0.00480527	0.02469768	0.00679782	0.00416415	0.43537672	0.00448423	1.00000000
5	0.00051394	0.02124733	0.00480420	0.02469419	0.00679659	0.00416357	0.43527553	0.00448312	1.00000000
6	0.00051373	0.02124760	0.00480260	0.02468892	0.00679474	0.00416268	0.43512243	0.00448142	1.00000000
7	0.00051367	0.02124768	0.00480210	0.02468723	0.00679414	0.00416240	0.43507332	0.00448088	1.00000000
8C	0.00050852	0.02100283	0.00475316	0.02442420	0.00672327	0.00411805	0.44214294	0.00443598	1.00000000
8D	0.00051886	0.02144190	0.00485015	0.02492681	0.00686107	0.00420278	0.45120471	0.00452622	1.00000000
9	0.00055881	0.01994731	0.00522500	0.02687208	0.00739401	0.00453075	0.48625347	0.00487481	1.00000000
10A	0.00056746	0.02025505	0.00530635	0.02729641	0.00750997	0.00460228	0.49387984	0.00495030	1.00000000
11B	0.00062129	0.02217012	0.00581177	0.02992657	0.00822957	0.00504572	0.54120601	0.00541983	1.00000000
12D	0.00065113	0.02323122	0.00600860	0.03138879	0.00862923	0.00529226	0.56749135	0.00568013	1.00000000
12E	0.00065195	0.02325982	0.00601618	0.03143281	0.00864089	0.00529967	0.56825874	0.00568728	1.00000000
13B	0.00070492	0.02514432	0.00650494	0.03401721	0.00934827	0.00573541	0.61478130	0.00614921	1.00000000
14A	0.00073852	0.02633904	0.00681518	0.03566616	0.00979876	0.00601341	0.64440971	0.00644237	1.00000000
14B	0.00074896	0.02670809	0.00691155	0.03619086	0.00994091	0.00610187	0.65375837	0.00653339	1.00000000
14C	0.00076794	0.02738097	0.00708669	0.03713140	0.01019693	0.00626044	0.67059673	0.00669885	1.00000000
15A	0.00077906	0.02777508	0.00718923	0.03768133	0.01034669	0.00635317	0.68044709	0.00679575	1.00000000
16A	0.00080474	0.02868734	0.00742633	0.03894698	0.01069195	0.00656658	0.70315463	0.00701982	1.00000000
17E	0.00083670	0.02982147	0.00772122	0.04052349	0.01112177	0.00683237	0.73142346	0.00729844	1.00000000
17F	0.00083837	0.02988073	0.00773658	0.04060443	0.01114395	0.00684601	0.73288217	0.00731296	1.00000000
18A	0.00220874	0.04945876	0.01657848	0.10699014	0.02936220	0.01803879	0.47140774		1.00000000
19	0.00220870	0.04945751	0.01657804	0.10699277	0.02936239	0.01803923	0.47141061		1.00000000
19C									1.00000000
20A	0.00237787	0.05324421	0.01784728	0.11521174	0.03161525	0.01942494	0.50757898		1.00000000
20B	0.00249455	0.05585607	0.01872278	0.12086783	0.03316690	0.02037859	0.53249023		1.00000000
21	0.00254183	0.05691567		0.12318381	0.03380017	0.02076901	0.54265567		1.00000000
22A		0.05772584		0.12494639	0.03428290	0.02106619	0.55040548		1.00000000
22B		0.05830722		0.12620561	0.03462835	0.02127845	0.55595113		1.00000000
23				0.14467451	0.03969010	0.02439237	0.63721302		1.00000000
24				0.22243002	0.04339445	0.02843498	0.64760747		1.00000000
25				0.11825184	0.03722720	0.01993915	0.71389685		1.00000000
26A				0.14947726	0.03997501	0.02520426	0.64898177		1.00000000
28G				0.05126136			0.60057777		1.00000000
28H							0.63302763		1.00000000
28J							0.63302828		1.00000000
29A							0.92702291	0.01274255	1.00000000
29F							0.92702302	0.01274253	1.00000000
29G							0.92979606	0.01278067	1.00000000
29H							0.95753173	0.00897255	1.00000000
29J							0.92980918	0.01278086	1.00000000
30							0.95895422	0.00855971	1.00000000
31A		0.09301782							1.00000000
33A									1.00000000
33B									1.00000000
34									1.00000000
35									1.00000000

(a) Proportionate use factors apply to 2012, and reflect permanent capacity water transfers that have been signed as of February 1, 2011

TABLE B-3. Power Costs and Credits, Transmission Costs and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant [a]

(in dollars)

	NORTH BAY AQUEDUCT			SOUTH BAY AQUEDUCT	CALIFORNIA AQUEDUCT			
	Reach 1	Reach 3A	Reach 3B	Reach 1 (c)	Reach 1	Reach 4	Reach 14A	Reach 15A
Calendar Year	Barker 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.
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1961	0	0	0	0	0	0	0	0
1962	0	0	0	36,771	0	0	0	0
1963	0	0	0	55,654	0	0	0	0
1964	0	0	0	73,240	0	0	0	0
1965	0	0	0	137,665	0	0	0	0
1966	0	0	0	186,064	0	0	0	0
1967	0	0	0	216,515	15,453	0	0	0
1968	0	0	6,989	336,671	452,630	202,947	0	0
1969	0	0	8,551	257,579	293,741	135,425	0	0
1970	0	0	13,598	396,358	346,215	211,197	1	0
1971	0	0	10,609	381,662	574,015	225,188	115,801	2,564
1972	0	0	14,434	598,702	933,292	492,633	198,914	68,304
1973	0	0	14,449	493,490	688,030	381,232	263,468	236,623
1974	0	0	17,473	565,575	783,562	447,772	315,939	324,966
1975	0	0	14,779	349,758	1,341,019	518,322	508,060	552,952
1976	0	0	20,856	571,361	1,638,453	641,115	712,947	713,875
1977	0	0	22,635	512,996	1,013,307	277,439	265,169	300,985
1978	0	0	21,692	586,355	2,339,502	560,759	689,236	616,104
1979	0	0	16,237	605,136	3,554,256	1,008,564	776,016	749,188
1980	0	0	19,945	523,369	2,083,336	1,129,152	1,051,629	1,047,495
1981	0	0	23,842	567,692	3,952,931	1,939,189	1,336,867	1,319,739
1982	0	0	12,157	605,780	3,082,031	1,363,705	1,200,226	1,213,660
1983	0	0	2,342	82,222	1,001,612	396,086	450,801	432,165
1984	0	0	4,822	271,543	1,856,959	976,773	823,681	770,618
1985	0	0	10,188	451,020	3,186,029	1,621,418	1,409,980	1,411,621
1986	0	0	15,501	807,984	6,601,752	2,627,407	2,405,224	2,432,322
1987	0	0	27,223	886,956	5,820,699	2,555,341	2,295,575	2,286,066
1988	17,813	0	24,020	909,300	6,365,669	2,648,986	2,628,985	2,636,224
1989	29,819	43,846	26,519	1,161,160	9,964,956	4,002,409	4,130,033	4,159,440
1990	52,210	67,109	40,775	1,834,626	10,554,762	4,541,508	5,855,196	6,099,412
1991	10,429	10,118	5,252	378,966	1,994,449	510,781	944,445	1,077,662
1992	13,319	13,070	9,406	311,251	3,385,375	1,235,571	1,366,433	1,441,966
1993	(11,941)	(8,753)	(5,392)	(158,214)	537,591	348,409	(127,617)	(104,923)
1994	46,791	39,624	29,189	799,624	6,013,464	2,450,174	2,778,971	2,823,137
1995	20,014	20,620	11,791	247,645	4,066,595	1,532,502	952,304	877,047
1996	57,320	47,288	23,483	619,160	8,385,766	4,056,188	2,565,655	2,378,677
1997	67,416	52,935	21,955	986,312	7,010,228	2,870,194	2,637,433	2,469,147
1998	(11,427)	(10,141)	(4,879)	(133,721)	204,374	(365,361)	(319,014)	(295,861)
1999	34,881	25,288	11,623	507,549	6,333,906	2,421,869	1,691,167	1,446,775
2000	59,158	41,148	15,113	719,165	7,963,695	3,074,315	2,943,451	3,106,988
2001	374,919	250,132	214,039	4,248,059	27,592,213	10,690,521	15,011,328	15,907,217
2002	192,540	104,564	61,470	2,036,126	17,666,689	7,284,182	8,870,415	9,554,380
2003	198,388	118,373	97,750	2,591,042	24,684,247	9,171,613	10,693,487	11,528,291
2004	261,564	138,880	106,974	2,414,624	22,854,880	9,426,446	12,567,612	13,722,260
2005	290,115	147,306	148,650	2,781,681	33,653,683	12,703,357	11,801,046	12,570,497
2006	235,769	113,361	145,785	2,517,631	23,735,158	10,265,544	11,290,156	12,078,243
2007	455,073	224,308	254,794	4,763,861	23,357,053	11,535,698	17,305,964	18,772,771
2008	411,032	185,201	296,314	3,294,541	14,142,083	6,336,600	11,147,583	12,849,987
2009	243,696	106,485	187,988	2,757,714	14,118,650	4,840,070	7,867,496	8,724,900
2010	280,694	110,869	239,661	2,630,505	28,742,962	10,300,834	11,237,734	11,846,608
2011	818,316	186,788	560,266	5,640,584	43,981,097	18,061,944	18,930,575	19,619,901
2012	**746,736**	**561,259**	**739,610**	**5,097,415**	**33,646,842**	**13,006,536**	**14,933,137**	**17,252,926**
2013	786,468	555,218	753,026	5,113,269	38,277,723	14,708,664	17,135,070	19,793,648
2014	310,468	281,775	333,643	3,640,906	24,244,405	11,789,673	13,295,665	12,947,184
2015	310,468	281,775	333,643	3,644,564	24,628,852	11,887,402	13,462,774	13,119,394
2016	310,468	281,775	333,643	3,644,564	24,954,950	11,767,002	13,262,646	12,913,122
2017	310,468	281,775	333,643	3,644,564	23,915,433	12,007,443	13,667,645	13,330,553
2018	310,468	281,775	333,643	3,644,564	24,915,894	12,035,612	13,732,175	13,397,059
2019	310,468	281,775	333,643	3,644,564	24,286,802	12,111,280	13,853,258	13,521,807
2020	310,468	281,775	333,643	3,644,564	25,365,985	12,063,062	13,774,464	13,440,606
2021	310,468	281,775	333,643	3,644,564	24,394,268	11,896,888	13,484,548	13,141,815
2022	310,468	281,775	333,643	3,644,564	25,008,126	11,985,418	13,637,895	13,299,905
2023	310,468	281,775	333,643	3,644,564	24,541,112	12,239,513	14,075,375	13,750,751
2024	310,468	281,775	333,643	3,644,564	25,052,463	12,008,772	13,676,915	13,340,074
2025	310,468	281,775	333,643	3,644,564	24,571,041	12,149,186	13,916,207	13,586,696
2026	310,468	281,775	333,643	3,644,564	25,120,622	12,123,604	13,877,474	13,546,814
2027	310,468	281,775	333,643	3,644,564	24,614,660	12,029,324	13,712,521	13,376,795
2028	310,468	281,775	333,643	3,644,564	25,128,814	12,272,101	14,129,952	13,806,980
2029	310,468	281,775	333,643	3,644,564	24,425,131	11,871,521	13,436,582	13,092,411
2030	310,468	281,775	333,643	3,644,564	25,024,258	12,167,797	13,950,627	13,622,158
2031	310,468	281,775	333,643	3,644,564	24,348,385	11,860,096	13,423,252	13,078,650
2032	310,468	281,775	333,643	3,644,564	25,120,550	12,324,918	14,226,603	13,906,577
2033	310,468	281,775	333,643	3,644,564	24,886,791	11,947,225	13,566,324	13,226,106
2034	310,468	281,775	333,643	3,644,564	24,599,498	12,066,907	13,774,464	13,440,606
2035	310,468	281,775	333,643	3,644,564	23,410,154	11,476,439	12,752,193	12,387,112
TOTAL	12,511,408	9,343,943	11,653,650	144,804,751	1,003,351,128	449,452,401	512,348,138	520,089,742

(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, Transmission Costs and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant [a]

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)							
	Reach 16A Chrisman Pumping P.	Reach 17E Edmonston Pumping P.	Reach 18A Alamo Powerplant	Reach 22B Pearblossom Pumping Plant	Reach 23 Mojave Siphon Powerplant	Reach 26A Devil Canyon Powerplant	Reach 2B (EBX) Greenspot Pumping Plant	Reach 3A (EBX) Crafton Hills Pumping P.
	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
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	142,902	542,625	0	3,468	0	(3,024)	0	0
1973	387,198	1,548,428	0	202,289	0	(461,268)	0	0
1974	564,464	2,164,223	0	324,993	0	(546,156)	0	0
1975	1,095,331	4,010,395	0	575,061	0	(1,095,523)	0	0
1976	1,506,985	5,443,936	0	889,544	0	(1,566,056)	0	0
1977	652,643	2,345,033	0	315,128	0	(1,222,866)	0	0
1978	1,132,296	4,180,131	0	1,508,115	0	(3,085,094)	0	0
1979	1,526,850	5,475,688	0	1,838,687	0	(3,466,481)	0	0
1980	2,102,439	7,028,235	0	1,762,063	0	(3,318,152)	0	0
1981	2,838,773	9,351,931	0	2,296,771	0	(3,842,971)	0	0
1982	2,424,920	8,352,207	0	1,498,620	0	(2,736,072)	0	0
1983	793,915	2,375,225	0	397,766	0	(5,478,830)	0	0
1984	1,479,784	4,585,198	0	624,213	0	(7,350,989)	0	0
1985	2,812,461	9,365,591	0	1,226,515	0	(10,748,103)	0	0
1986	4,999,949	16,956,023	(1,013,756)	2,359,599	0	(11,484,996)	0	0
1987	4,586,919	15,121,886	(1,064,827)	1,907,854	0	(11,151,140)	0	0
1988	5,284,130	17,342,811	(744,374)	2,375,784	0	(14,495,967)	0	0
1989	8,772,733	29,455,330	(789,392)	4,235,981	0	(18,688,631)	0	0
1990	13,814,150	49,027,449	(841,172)	6,559,548	0	(21,045,321)	0	0
1991	2,535,180	9,033,684	(269,625)	996,352	0	(4,884,013)	0	0
1992	2,907,026	9,754,469	(975,679)	1,225,121	0	(9,782,946)	0	0
1993	(598,008)	(2,721,158)	(58,116)	(260,035)	0	(7,502,549)	0	0
1994	5,941,789	20,657,617	(60,125)	2,644,592	0	(11,998,949)	0	0
1995	1,752,212	5,829,425	(1,324,810)	1,106,460	0	(9,742,248)	0	0
1996	5,050,986	17,658,964	(2,955,178)	2,833,791	(979,429)	(12,358,465)	0	0
1997	5,545,919	19,859,875	(2,572,220)	3,156,995	(1,748,195)	(13,830,356)	0	0
1998	(664,843)	(2,312,472)	(2,016,390)	(443,482)	(1,253,110)	(10,108,555)	0	0
1999	3,616,732	13,967,075	(2,980,122)	1,837,476	(2,587,958)	(15,232,207)	0	0
2000	7,007,466	25,198,988	(5,123,988)	3,687,261	(4,402,610)	(25,758,437)	0	0
2001	35,394,917	129,212,359	(3,383,762)	18,868,242	(3,714,425)	(20,062,834)	0	0
2002	21,173,346	77,461,814	(5,057,760)	10,849,297	(5,371,837)	(25,292,454)	0	0
2003	25,592,971	93,999,681	(3,408,979)	14,571,379	(6,565,620)	(27,777,638)	0	0
2004	30,458,046	111,866,623	(6,431,864)	16,978,585	(7,858,117)	(32,044,505)	78,351	68,735
2005	27,745,055	98,011,689	(5,880,165)	17,428,165	(6,454,740)	(28,818,797)	69,752	49,118
2006	26,409,149	89,303,574	(4,091,143)	16,545,374	(6,391,206)	(34,897,387)	142,288	155,897
2007	40,970,238	141,026,001	(3,029,048)	19,544,178	(5,896,486)	(28,814,592)	271,270	266,858
2008	25,075,552	86,909,367	(3,426,928)	11,423,103	(3,300,797)	(16,968,293)	274,802	351,317
2009	18,264,754	65,725,225	(3,266,008)	8,024,014	(2,288,833)	(13,842,660)	328,738	345,620
2010	26,209,334	95,243,585	(5,115,083)	16,769,537	(5,653,201)	(24,769,829)	329,325	434,081
2011	42,280,008	141,114,471	(6,702,200)	30,541,616	(10,231,500)	(30,195,000)	502,233	547,556
2012	**36,546,473**	**125,747,722**	**(7,593,600)**	**22,163,241**	**(12,150,600)**	**(21,970,000)**	**195,260**	**243,682**
2013	41,908,994	144,713,571	(7,828,800)	26,153,541	(12,397,000)	(21,642,500)	263,350	328,658
2014	30,325,932	113,407,250	(7,478,856)	21,241,475	(9,978,738)	(23,598,200)	285,193	355,919
2015	30,738,980	114,971,987	(7,708,764)	22,015,400	(10,738,420)	(23,664,525)	437,975	546,589
2016	30,244,300	113,098,003	(7,464,660)	21,038,329	(9,916,830)	(23,544,675)	437,975	546,589
2017	31,245,444	116,890,631	(7,850,136)	22,085,319	(10,861,312)	(23,819,300)	437,975	546,589
2018	31,404,936	117,494,825	(7,796,208)	22,319,042	(11,177,012)	(24,449,750)	437,975	546,589
2019	31,704,230	118,628,549	(7,703,556)	21,914,258	(10,408,860)	(23,654,575)	437,975	546,589
2020	31,509,455	117,890,662	(7,712,880)	22,116,147	(11,020,856)	(24,114,450)	437,975	546,589
2021	30,792,802	115,175,852	(7,582,008)	21,522,805	(9,991,366)	(23,482,250)	437,975	546,589
2022	31,171,932	116,612,069	(7,561,680)	21,435,567	(10,192,952)	(23,390,525)	437,975	546,589
2023	32,253,271	120,708,482	(7,775,292)	22,294,179	(11,221,364)	(23,948,925)	437,975	546,589
2024	31,268,331	116,977,294	(7,583,856)	21,606,018	(10,449,516)	(23,889,525)	437,975	546,589
2025	31,859,841	119,218,011	(7,805,280)	22,298,778	(10,472,000)	(24,148,900)	437,975	546,589
2026	31,764,125	118,855,481	(7,581,504)	21,604,113	(10,208,198)	(23,589,300)	437,975	546,589
2027	31,356,359	117,310,793	(7,583,520)	21,526,793	(10,078,222)	(23,957,425)	437,975	546,589
2028	32,388,187	121,219,545	(7,902,384)	22,694,758	(11,194,106)	(24,099,050)	437,975	546,589
2029	30,674,234	114,726,767	(7,521,528)	21,345,815	(9,817,808)	(23,227,225)	437,975	546,589
2030	31,944,923	119,540,300	(7,677,096)	21,910,126	(9,909,592)	(24,356,125)	437,975	546,589
2031	30,641,251	114,601,840	(7,593,600)	21,534,949	(10,248,084)	(23,770,225)	437,975	546,589
2032	32,627,119	122,124,614	(7,862,316)	22,615,354	(11,056,738)	(24,091,700)	437,975	546,589
2033	30,994,943	115,941,585	(7,563,108)	21,473,761	(10,464,608)	(23,628,250)	437,975	546,589
2034	31,509,455	117,890,662	(7,715,148)	21,988,669	(10,989,594)	(23,755,675)	437,975	546,589
2035	28,982,558	108,318,280	(7,424,844)	20,947,032	(10,108,252)	(23,444,400)	437,975	546,589
TOTAL	1,175,444,746	4,283,537,976	(256,453,338)	757,075,489	(329,750,092)	(1,093,707,829)	11,938,045	14,625,815

(a) Starting with 2005 transmission costs that vary and depend on Power usage are included, therefore recovered through the variable component.

TABLE B-3. Power Costs and Credits, Transmission Costs and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant [a]

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)						GRAND TOTAL
	Reach 4B (EBX) Cherry Valley Pumping P.	Reach 29A Oso Pumping Plant	Reach 29G Warne Powerplant	Reach 29J Castaic Powerplant	Reach 31A Las Perillas and Badger Hill Pumping Plants	Reach 33A Devil's Den, Bluestone and Polonio Pass Pumping Plants	
	[17]	[18]	[19]	[20]	[21]	[22]	[23]
1961	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	36.771
1963	0	0	0	0	0	0	55.654
1964	0	0	0	0	0	0	73.240
1965	0	0	0	0	0	0	137.665
1966	0	0	0	0	0	0	186.064
1967	0	0	0	0	0	0	231.968
1968	0	0	0	0	118.676	0	1.117.913
1969	0	0	0	0	78.350	0	773.646
1970	0	0	0	0	136.429	0	1.103.798
1971	0	0	0	0	166.296	0	1.476.135
1972	0	79.315	0	(211.144)	212.938	0	3.073.359
1973	0	122.787	0	(1.057.564)	114.897	0	2.934.059
1974	0	157.511	0	(1.547.884)	111.442	0	3.683.880
1975	0	314.636	0	(2.455.461)	88.451	0	5.817.780
1976	0	326.967	0	(2.827.557)	139.279	0	8.211.705
1977	0	75.335	0	(3.734.462)	63.079	0	886.421
1978	0	89.383	0	(1.542.479)	176.153	0	7.272.153
1979	0	102.584	0	(2.776.030)	188.881	0	9.599.576
1980	0	236.768	0	(3.415.486)	168.458	0	10.419.251
1981	0	444.280	0	(2.834.322)	169.177	0	17.563.899
1982	0	539.245	(783.626)	(3.463.971)	168.390	0	13.477.272
1983	0	214.069	(1.488.439)	(6.649.718)	17.920	0	(7.452.864)
1984	0	484.239	(4.088.209)	(4.710.802)	112.679	0	(4.159.491)
1985	0	874.069	(5.930.176)	(15.698.638)	146.843	0	(9.861.182)
1986	0	1.269.590	(5.579.301)	(11.072.448)	297.886	0	11.622.736
1987	0	1.355.533	(6.445.265)	(11.726.458)	245.082	0	6.701.444
1988	0	1.515.349	(7.457.050)	(13.026.992)	214.519	0	6.239.207
1989	0	2.156.915	(8.822.367)	(15.535.849)	282.180	0	24.585.082
1990	0	2.913.030	(11.225.401)	(20.510.539)	416.832	0	48.154.174
1991	0	576.721	(3.882.595)	(6.579.194)	3.610	0	2.462.222
1992	0	829.862	(6.369.339)	(10.976.538)	101.665	0	(5.509.968)
1993	0	70.836	(4.665.393)	(9.531.404)	(111.306)	0	(24.907.973)
1994	0	1.503.796	(7.249.239)	(13.126.331)	206.086	(1.127)	13.499.083
1995	0	247.869	(1.934.202)	(4.049.615)	243.434	0	(142.957)
1996	0	895.929	(4.248.531)	(8.457.232)	296.170	0	15.870.542
1997	0	902.690	(4.824.488)	(8.776.260)	298.483	208.816	14.336.879
1998	0	(67.399)	(1.811.154)	(4.644.120)	(55.491)	(92.902)	(24.405.948)
1999	0	731.865	(5.831.573)	(9.811.777)	166.036	234.077	(3.417.318)
2000	0	1.272.726	(10.161.472)	(17.729.381)	222.473	368.020	(7.495.921)
2001	0	6.480.791	(7.918.467)	(13.370.061)	1.072.998	2.162.821	219.031.007
2002	0	4.246.409	(11.349.183)	(19.513.997)	547.531	1.344.783	94.808.315
2003	0	4.641.548	(10.436.535)	(17.134.431)	637.860	1.538.771	134.742.198
2004	7.271	5.667.657	(12.281.228)	(21.354.179)	673.974	1.799.785	149.122.374
2005	2.575	3.705.635	(7.106.531)	(13.339.416)	855.239	1.743.858	162.107.772
2006	19.150	2.891.965	(7.208.025)	(11.455.260)	849.220	1.513.877	134.169.120
2007	14.596	7.698.445	(11.444.524)	(21.845.299)	1.325.043	2.320.668	219.076.870
2008	10.987	5.044.905	(7.762.363)	(14.943.326)	1.114.791	1.600.014	134.066.472
2009	9.136	4.029.856	(6.997.502)	(16.308.270)	787.437	1.085.742	94.744.248
2010	22.436	3.806.435	(6.643.531)	(11.641.405)	983.190	1.663.895	157.028.636
2011	16.790	4.738.024	(5.675.000)	(10.847.500)	1.473.548	4.013.997	269.376.514
2012	**0**	**5.711.385**	**(7.102.500)**	**(13.015.000)**	**1.378.030**	**3.434.274**	**219.572.828**
2013	0	6.092.951	(6.612.500)	(11.985.000)	1.635.257	4.357.392	262.111.000
2014	0	4.326.147	(7.109.050)	(10.413.875)	1.079.830	3.282.175	182.568.921
2015	0	4.218.107	(6.982.600)	(10.260.050)	1.079.830	3.282.175	185.605.557
2016	0	4.364.736	(7.190.375)	(10.634.375)	1.079.830	3.282.175	182.809.193
2017	0	4.414.894	(7.267.850)	(10.762.800)	1.079.830	3.282.175	186.912.984
2018	0	4.397.935	(7.241.100)	(10.719.350)	1.079.830	3.282.175	188.231.078
2019	0	4.680.486	(7.613.775)	(11.438.650)	1.079.830	3.282.175	189.798.274
2020	0	4.519.521	(7.403.850)	(11.029.300)	1.079.830	3.282.175	189.315.586
2021	0	4.425.457	(7.273.400)	(10.789.275)	1.079.830	3.282.175	185.633.156
2022	0	4.624.759	(7.547.950)	(11.297.700)	1.079.830	3.282.175	187.701.884
2023	0	4.780.442	(7.763.825)	(11.694.925)	1.079.830	3.282.175	192.155.814
2024	0	4.603.632	(7.522.975)	(11.244.100)	1.079.830	3.282.175	187.760.547
2025	0	4.605.608	(7.523.800)	(11.249.025)	1.079.830	3.282.175	190.923.383
2026	0	4.822.480	(7.811.700)	(11.801.625)	1.079.830	3.282.175	190.639.406
2027	0	4.671.899	(7.619.900)	(11.418.325)	1.079.830	3.282.175	187.858.772
2028	0	4.690.438	(7.642.200)	(11.464.950)	1.079.830	3.282.175	193.945.105
2029	0	4.439.290	(7.292.675)	(10.824.525)	1.079.830	3.282.175	185.245.010
2030	0	4.787.916	(7.773.775)	(11.713.925)	1.079.830	3.282.175	191.434.612
2031	0	4.354.244	(7.175.300)	(10.607.650)	1.079.830	3.282.175	184.364.828
2032	0	4.825.139	(7.817.725)	(11.808.450)	1.079.830	3.282.175	195.050.965
2033	0	4.532.671	(7.418.850)	(11.062.550)	1.079.830	3.282.175	186.349.060
2034	0	4.567.056	(7.463.700)	(11.150.275)	1.079.830	3.282.175	188.679.945
2035	0	3.843.684	(6.400.650)	(9.301.050)	1.079.830	3.282.175	175.355.276
TOTAL	102,941	184,489,047	(374,192,734)	(657,919,550)	42,296,375	101,504,611	6,522,546,664

(a) Starting with 2005 transmission costs that vary and depend on Power usage are included, therefore recovered through the variable component.

Tables B-4 through B-31

Note: Where applicable, the projected data values shown in this appendix are shaded and the bill year data are in **bold** type.

TABLE B-4. Maximum Contractual Table A Amounts

(in acre-feet)

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	29,025	47,506	76,531	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2011	29,025	47,556	76,581	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2012	**29,025**	**47,606**	**76,631**	**80,619**	**42,000**	**100,000**	**222,619**	**25,000**	**45,486**	**70,486**
2013	29,025	47,656	76,681	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2014	29,025	47,706	76,731	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2015	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2016	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2017	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2018	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2019	29,025	47,756	76,781	80,619	42,000	100,000	222,619	25,000	45,486	70,486
2020	29,025	47,756	76,781	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	1,080,965	2,049,856	3,130,821	3,720,815	2,459,248	6,510,783	12,690,846	1,189,430	2,218,494	3,407,924

(a) Table A Amounts 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. Maximum Contractual Table A Amounts

(in acre-feet)

Calendar Year	SAN JOAQUIN VALLEY AREA								
			Kern County Water Agency						
	Dudley Ridge Water District	Empire West Side Irrigation District	Municipal and Industrial	Agricultural	Total	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	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	72,289	460,650
1975	40,555	3,000	52,700	358,120	410,820	1,600	3,576	86,258	545,809
1976	30,921	3,000	56,100	386,050	442,150	1,600	4,039	61,707	543,417
1977	30,400	3,000	60,600	423,000	483,600	1,700	3,700	59,000	581,400
1978	32,500	0	64,100	470,200	534,300	1,900	3,900	63,300	635,900
1979	38,544	3,000	67,600	516,300	583,900	2,000	4,000	71,241	702,685
1980	41,000	3,000	71,100	563,400	634,500	2,200	5,700	71,700	758,100
1981	41,000	3,000	74,800	616,600	691,400	2,300	4,300	76,000	818,000
1982	41,000	3,000	79,600	665,700	745,300	2,500	4,500	80,200	876,500
1983	42,900	3,000	83,500	721,600	805,100	2,800	3,770	9,548	867,118
1984	45,100	3,000	103,600	757,000	860,600	3,100	4,800	62,611	979,211
1985	47,200	3,000	108,900	806,100	915,000	3,400	4,900	45,549	1,019,049
1986	49,300	3,000	113,400	820,246	933,646	3,700	5,100	97,200	1,091,946
1987	51,400	3,000	119,100	904,400	1,023,500	4,000	5,200	101,400	1,188,500
1988	53,500	3,000	123,900	950,700	1,074,600	4,000	5,400	105,600	1,246,100
1989	55,600	3,000	128,200	984,100	1,112,300	4,000	5,600	109,900	1,290,400
1990	28,850	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,313,450
1991	53,411	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,338,011
1992	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1993	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1994	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1995	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1996	53,370	3,000	134,600	982,460	1,117,060	4,000	5,700	118,500	1,301,630
1997	53,370	3,000	134,600	978,130	1,112,730	4,000	5,700	118,500	1,297,300
1998	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
1999	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2000	53,370	3,000	134,600	886,130	1,020,730	4,000	5,700	118,500	1,205,300
2001	53,370	3,000	134,600	866,349	1,000,949	4,000	5,700	118,500	1,185,519
2002	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2003	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,127	1,182,119
2004	57,343	3,000	134,600	864,130	998,730	9,000	5,700	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	50,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,140,000
2011	50,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,140,000
2012	**50,343**	**3,000**	**134,600**	**848,130**	**982,730**	**9,305**	**5,700**	**88,922**	**1,140,000**
2013	50,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,140,000
2014	50,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,140,000
2015	47,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,137,000
2016	47,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,137,000
2017	47,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,137,000
2018	47,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,137,000
2019	47,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,137,000
2020	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2021	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2022	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2023	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2024	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2025	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2026	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2027	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2028	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2029	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2030	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2031	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2032	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2033	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2034	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
2035	43,343	3,000	134,600	848,130	982,730	9,305	5,700	88,922	1,133,000
TOTAL	3,052,478	199,000	7,693,900	51,855,303	59,549,203	403,050	352,822	5,991,823	69,548,376

TABLE B-4. Maximum Contractual Table A Amounts

(in acre-feet)

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	0	9,340	60,000	15,700
1979	63,000	28,000	10,063	2,610	15,000	1,040	24,900	10,260	62,500	16,600
1980	69,200	30,400	10,884	2,900	17,000	1,150	27,200	11,180	65,500	17,400
1981	75,000	32,800	12,105	3,190	19,000	1,270	23,100	11,700	68,500	18,300
1982	81,300	34,800	13,326	3,480	21,000	1,380	22,843	12,320	71,500	19,100
1983	87,700	37,300	14,547	3,770	23,000	1,500	34,300	12,940	74,500	19,900
1984	35,000	39,600	15,768	4,060	25,000	1,610	36,700	13,560	78,000	20,700
1985	40,000	41,800	16,989	4,350	27,000	1,730	39,000	14,180	81,500	21,800
1986	42,000	43,600	18,210	4,640	29,000	1,840	41,400	14,800	85,000	23,200
1987	44,000	45,600	19,431	4,930	31,500	1,960	43,700	15,420	89,000	24,600
1988	46,000	48,000	20,652	5,220	34,000	2,070	46,000	16,040	93,000	26,000
1989	125,700	50,100	21,873	5,510	36,500	2,190	48,500	16,660	97,000	27,400
1990	132,100	52,000	23,100	5,800	38,100	2,300	50,800	17,300	101,500	28,800
1991	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1992	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1993	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1994	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1995	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1996	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1997	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1998	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
1999	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2000	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2001	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2002	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2003	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2004	141,400	95,200	33,000	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2005	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2006	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2007	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2008	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2009	141,400	95,200	121,100	5,800	50,000	2,300	75,800	21,300	102,600	28,800
2010	141,400	95,200	138,350	5,800	55,750	2,300	82,800	21,300	102,600	28,800
2011	141,400	95,200	138,350	5,800	55,750	2,300	82,800	21,300	102,600	28,800
2012	**141,400**	**95,200**	**138,350**	**5,800**	**55,750**	**2,300**	**82,800**	**21,300**	**102,600**	**28,800**
2013	141,400	95,200	138,350	5,800	55,750	2,300	82,800	21,300	102,600	28,800
2014	141,400	95,200	138,350	5,800	55,750	2,300	82,800	21,300	102,600	28,800
2015	141,400	95,200	138,350	5,800	55,750	2,300	85,800	21,300	102,600	28,800
2016	141,400	95,200	138,350	5,800	55,750	2,300	85,800	21,300	102,600	28,800
2017	141,400	95,200	138,350	5,800	55,750	2,300	85,800	21,300	102,600	28,800
2018	141,400	95,200	138,350	5,800	55,750	2,300	85,800	21,300	102,600	28,800
2019	141,400	95,200	138,350	5,800	55,750	2,300	85,800	21,300	102,600	28,800
2020	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2021	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2022	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2023	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2024	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2025	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2026	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2027	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2028	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2029	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2030	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2031	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2032	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2033	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2034	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
2035	141,400	95,200	138,350	5,800	55,750	2,300	89,800	21,300	102,600	28,800
TOTAL	7,432,000	4,545,098	4,782,511	321,556	2,626,000	127,210	4,069,043	1,127,720	5,909,177	1,641,322

TABLE B-4. Maximum Contractual Table A Amounts

(in acre-feet)

Calendar Year	SOUTHERN CALIFORNIA AREA				FEATHER RIVER AREA					
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Watershed Protection District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total	South Bay Area Future Contractor	GRAND 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	680	2,130	0	2,028,088
1980	6,800	1,057,000	1,000	1,317,614	0	1,100	710	1,810	0	2,214,770
1981	7,800	1,157,300	2,000	1,432,065	0	1,200	740	1,940	0	2,392,468
1982	8,800	1,257,600	3,000	1,550,449	0	1,200	770	1,970	0	2,574,545
1983	9,800	1,358,000	4,000	1,681,257	0	1,200	800	2,000	0	2,701,164
1984	10,800	1,458,300	5,000	1,744,098	1,600	1,200	830	3,630	0	2,884,337
1985	11,800	1,558,700	6,000	1,864,849	1,700	1,200	860	3,760	0	3,055,846
1986	12,900	1,659,300	8,000	1,983,890	2,100	1,200	890	4,190	0	3,257,736
1987	14,000	1,759,800	10,000	2,103,941	2,500	1,200	920	4,620	0	3,484,115
1988	15,100	1,860,400	13,000	2,225,482	2,900	1,200	960	5,060	0	3,688,335
1989	16,200	1,961,000	16,000	2,424,633	3,300	1,200	1,000	5,500	0	3,958,190
1990	17,300	2,011,500	20,000	2,500,600	3,800	1,200	1,040	6,040	0	4,079,666
1991	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,080	11,880	0	4,126,567
1992	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,120	11,920	0	4,138,816
1993	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,160	11,960	0	4,146,966
1994	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,200	12,000	0	4,154,201
1995	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,250	12,050	0	4,163,066
1996	0	2,011,500	20,000	2,492,900	9,600	1,200	1,300	12,100	0	4,111,341
1997	0	2,011,500	20,000	2,492,900	9,600	1,200	1,350	12,150	0	4,084,866
1998	0	2,011,500	20,000	2,517,900	9,600	1,200	1,400	12,200	0	4,086,021
1999	2,000	2,011,500	20,000	2,519,900	9,600	2,890	1,450	13,940	0	4,119,646
2000	3,000	2,011,500	20,000	2,565,900	9,600	2,890	1,510	14,000	0	4,121,631
2001	4,000	2,011,500	20,000	2,566,900	9,600	3,500	1,570	14,670	0	4,124,136
2002	4,000	2,011,500	20,000	2,569,900	9,600	3,500	1,630	14,730	0	4,125,031
2003	5,000	2,011,500	20,000	2,570,900	9,600	3,500	1,690	14,790	0	4,126,926
2004	6,000	2,011,500	20,000	2,581,800	9,600	3,500	0	13,100	0	4,127,061
2005	6,500	1,911,500	20,000	2,582,300	9,600	1,200	0	10,800	0	4,125,686
2006	7,000	1,911,500	20,000	2,582,800	9,600	1,200	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	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,020	39,120	0	4,165,931
2009	17,300	1,911,500	20,000	2,593,100	9,600	27,500	2,090	39,190	0	4,166,376
2010	17,300	1,911,500	20,000	2,623,100	9,600	27,500	2,160	39,260	0	4,171,996
2011	17,300	1,911,500	20,000	2,623,100	9,600	27,500	2,240	39,340	0	4,172,126
2012	**17,300**	**1,911,500**	**20,000**	**2,623,100**	**9,600**	**27,500**	**2,320**	**39,420**	**0**	**4,172,256**
2013	17,300	1,911,500	20,000	2,623,100	9,600	27,500	2,410	39,510	0	4,172,396
2014	17,300	1,911,500	20,000	2,623,100	9,600	27,500	2,500	39,600	0	4,172,536
2015	17,300	1,911,500	20,000	2,626,100	9,600	27,500	2,600	39,700	0	4,172,686
2016	17,300	1,911,500	20,000	2,626,100	9,600	27,500	2,700	39,800	0	4,172,786
2017	17,300	1,911,500	20,000	2,626,100	9,600	27,500	2,700	39,800	0	4,172,786
2018	17,300	1,911,500	20,000	2,626,100	9,600	27,500	2,700	39,800	0	4,172,786
2019	17,300	1,911,500	20,000	2,626,100	9,600	27,500	2,700	39,800	0	4,172,786
2020	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2021	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2022	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2023	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2024	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2025	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2026	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2027	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2028	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2029	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2030	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2031	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2032	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2033	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2034	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
2035	17,300	1,911,500	20,000	2,630,100	9,600	27,500	2,700	39,800	0	4,172,786
TOTAL	748,350	109,260,272	988,000	143,578,259	449,900	826,280	106,474	1,382,654	0	233,738,880

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	VUFR BUTTE	Grizzly Valley Pipeline PC FC&WCD	VUFR YUBA	NORTH BAY AQUEDUCT Reach 1 SCWA	Reach 3A NC FC&WCD	Reach 3A SCWA	Reach 3A-T NC FC&WCD	Reach 3A-T SCWA	Reach 3B NC (a) FC&WCD	Reach 3B SCWA	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
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	1,214	0	1,214
1969	0	0	0	0	0	0	0	0	2,687	0	2,687
1970	0	70	0	0	0	0	0	0	3,618	0	3,618
1971	192	64	0	0	0	0	0	0	2,521	0	2,521
1972	186	505	0	0	0	0	0	0	3,647	0	3,647
1973	53	679	0	0	0	0	0	0	3,792	0	3,792
1974	127	648	0	0	0	0	0	0	4,870	0	4,870
1975	253	405	0	0	0	0	0	0	6,840	0	6,840
1976	527	382	0	0	0	0	0	0	7,122	0	7,122
1977	706	303	0	0	0	0	0	0	8,226	0	8,226
1978	579	278	0	0	0	0	0	0	6,034	0	6,034
1979	302	329	0	0	0	0	0	0	6,561	0	6,561
1980	267	295	0	0	0	0	0	0	6,707	0	6,707
1981	221	355	0	0	0	0	0	0	9,001	0	9,001
1982	334	305	0	0	0	0	0	0	1,213	0	1,213
1983	325	262	0	0	0	0	0	0	2,287	0	2,287
1984	177	272	108	0	0	0	0	0	2,923	0	2,923
1985	308	254	62	0	0	0	0	0	4,039	0	4,039
1986	313	317	328	1,400	0	0	0	0	3,519	0	4,919
1987	459	452	88	1,550	0	0	0	0	7,693	0	9,243
1988	385	523	303	1	0	9,725	0	0	5,392	0	15,118
1989	300	486	403	10	0	17,246	0	0	6,195	0	23,451
1990	380	548	494	3,275	0	15,856	0	0	6,940	0	26,071
1991	328	420	265	3,117	0	3,855	0	0	1,380	0	8,352
1992	117	485	642	5,553	0	9,220	0	0	4,001	0	18,774
1993	256	444	746	14,709	0	14,471	0	0	5,286	0	34,466
1994	329	492	1,035	10,343	0	14,913	0	0	6,792	0	32,048
1995	203	308	910	5,452	0	15,893	0	0	5,182	0	26,527
1996	257	360	820	12,930	0	17,069	0	0	4,893	0	34,892
1997	185	231	1,005	16,029	0	17,501	0	0	4,341	0	37,871
1998	527	0	1,054	11,562	0	18,204	0	0	5,359	0	35,125
1999	286	0	1,096	15,191	0	19,562	0	0	5,304	0	40,057
2000	586	0	901	15,490	0	11,290	0	10,235	4,958	0	41,973
2001	513	0	1,065	14,849	0	11,377	0	8,360	9,345	0	43,931
2002	419	0	1,181	18,841	0	11,130	0	8,589	6,875	0	45,435
2003	551	0	1,324	17,260	0	9,682	9	7,009	7,637	0	41,597
2004	1,440	0	1,434	20,951	0	10,691	135	10,860	7,999	500	51,136
2005	527	0	1,894	18,290	160	19,029	0	0	7,509	500	45,488
2006	468	0	5,342	16,573	0	10,865	208	7,578	7,581	500	43,305
2007	956	0	2,327	19,187	0	12,301	180	15,312	10,777	500	58,257
2008	451	243	1,923	21,436	15	11,410	37	7,974	13,240	500	54,612
2009	581	200	2,114	15,004	0	8,651	27	6,795	10,877	500	41,854
2010	807	243	2,331	17,598	0	8,231	70	4,487	12,347	500	43,233
2011	1,706	1,486	7,680	18,760	0	5,775	168	11,183	12,853	500	49,239
2012	**1,562**	**1,344**	**5,760**	**11,847**	**0**	**20,657**	**0**	**0**	**20,984**	**0**	**53,488**
2013	1,633	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2014	1,720	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2015	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2016	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2017	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2018	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2019	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2020	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2021	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2022	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2023	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2024	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2025	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2026	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2027	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2028	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2029	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2030	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2031	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2032	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2033	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2034	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
2035	1,826	1,344	5,760	11,847	0	16,656	0	0	17,414	0	45,917
TOTAL	61,148	44,900	177,115	599,689	175	707,692	834	98,382	689,083	4,000	2,099,855

(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)

Calendar Year	SOUTH BAY AQUEDUCT (b)										
	Reach 1		Reach 2	Reach 4	Reach 5		Reach 6	Reach 7	Reach 8	Reach 9	Total
	AC		AC	AC	AC		AC				
	FC&WCD	ACWD	FC&WCD	FC&WCD	FC&WCD	ACWD	FC&WCD	ACWD	ACWD	SCVWD	
	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
1962	141	8,412	353	0	0	0	0	0	0	0	8,906
1963	814	10,914	917	0	0	0	0	0	0	0	12,645
1964	248	19,238	1,425	0	0	0	0	0	0	0	20,911
1965	637	15,280	1,830	138	0	0	0	1,127	0	15,014	34,026
1966	2,475	0	2,537	499	0	0	0	14,864	0	34,538	54,913
1967	1,527	0	2,391	862	0	0	0	12,882	0	39,101	56,763
1968	1,608	0	3,799	721	5	0	0	24,817	0	70,105	101,055
1969	1,165	0	3,459	1,851	160	0	0	813	0	62,264	69,712
1970	1,345	0	4,558	3,182	164	0	0	0	0	80,311	89,560
1971	546	0	1,908	2,403	160	0	0	5,961	0	87,606	98,584
1972	1,066	0	4,605	2,041	2,777	1,489	0	26,182	0	100,266	138,426
1973	430	0	1,123	1,193	229	0	0	2,521	0	88,582	94,078
1974	177	0	0	975	162	0	0	0	4	88,000	89,318
1975	137	0	1,783	1,864	120	0	714	393	593	88,000	93,604
1976	265	0	7,204	3,384	817	0	5,461	13,774	7,526	88,000	126,431
1977	210	0	4,491	2,213	524	0	5,206	11,284	7,556	76,220	107,704
1978	422	0	2,426	3,754	2,034	0	2,348	854	5,009	95,727	112,574
1979	197	0	4,283	5,567	3,937	0	5,341	3,430	7,444	91,991	122,190
1980	77	0	3,883	6,686	0	1,508	6,144	2,824	6,702	88,000	115,824
1981	1,250	0	4,648	5,273	1,157	5,752	7,262	7,595	8,570	88,000	129,507
1982	473	0	3,043	4,406	630	0	4,571	1,776	4,540	88,000	107,439
1983	179	0	2,712	1,714	50	0	111	0	3,157	86,733	94,656
1984	165	0	4,219	2,219	55	0	126	0	3,338	88,000	98,122
1985	213	0	5,199	2,060	63	0	7,537	11,203	7,813	88,000	122,088
1986	200	0	6,052	2,062	212	0	2,083	5,311	7,068	88,000	110,988
1987	218	0	7,538	2,372	285	0	12,993	15,488	9,902	88,000	136,796
1988	222	0	8,302	4,681	189	0	12,436	24,259	9,205	87,961	147,255
1989	222	0	8,051	6,562	418	0	10,974	17,340	8,702	90,000	142,269
1990	256	0	8,160	8,347	593	0	15,678	22,149	9,554	91,800	156,537
1991	162	0	3,676	3,269	359	0	1,945	9,155	3,493	28,200	50,259
1992	217	0	5,177	2,188	154	0	6,933	12,621	6,532	42,839	76,661
1993	190	0	5,843	8,430	5,964	1,650	13,208	1,792	6,829	62,065	105,971
1994	132	0	4,482	5,427	822	0	9,679	3,379	19,532	57,115	100,568
1995	278	0	6,236	7,195	955	0	15,427	21	17,772	28,756	76,640
1996	277	0	6,151	5,119	388	0	6,968	1,871	11,591	44,850	77,215
1997	138	0	6,647	6,501	1,582	1,323	12,654	1,876	10,864	60,601	102,186
1998	106	0	3,748	2,493	1,277	0	8,347	3,817	11,478	39,610	70,876
1999	148	0	5,048	8,227	1,444	0	13,133	5,326	16,226	52,945	102,497
2000	110	0	7,464	9,761	946	0	16,396	4,498	18,100	78,258	135,533
2001	105	0	7,822	4,879	3,010	0	13,593	0	18,004	47,922	95,335
2002	93	0	7,758	11,619	2,446	0	17,058	5,112	20,616	58,875	123,577
2003	108	0	7,916	11,348	2,887	0	16,684	5,037	12,753	75,981	132,714
2004	72	0	11,754	9,737	3,763	0	21,260	4,968	14,916	59,458	125,928
2005	1,430	0	11,520	10,100	1,826	0	16,597	4,139	10,160	52,364	108,136
2006	830	0	11,546	4,097	2,123	0	19,870	2,708	12,924	64,174	118,272
2007	179	0	10,066	2,563	3,107	0	23,205	8,255	15,107	71,690	134,172
2008	238	0	11,424	2,206	1,899	0	25,363	4,421	18,481	52,530	116,562
2009	211	0	7,054	5,437	1,987	0	16,398	2,551	16,945	66,364	116,947
2010	160	0	7,788	7,528	1,824	0	17,043	330	15,241	45,888	95,802
2011	255	0	11,610	9,368	2,989	0	26,379	2,939	14,572	65,919	134,031
2012	**11,061**	**0**	**5,652**	**5,191**	**1,182**	**0**	**16,319**	**16,037**	**5,798**	**59,880**	**121,120**
2013	11,207	0	5,694	5,191	1,182	0	16,589	9,737	5,798	48,600	103,998
2014	10,895	0	5,832	5,191	1,182	0	16,499	9,737	5,798	48,600	103,734
2015	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2016	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2017	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2018	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2019	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2020	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2021	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2022	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2023	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2024	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2025	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2026	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2027	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2028	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2029	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2030	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2031	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2032	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2033	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2034	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
2035	10,847	0	5,988	5,191	1,182	0	16,499	9,737	5,798	48,600	103,842
TOTAL	283,274	53,844	414,555	339,105	84,861	11,722	813,011	551,651	537,971	4,412,303	7,502,297

(b) For the period June 1962 through November 1967, deliveries were supplied by non-Project water.

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT										
	NORTH SAN JOAQUIN DIVISION							SAN LUIS DIVISION			
	Reach 1	Reach 2A						Reach 3		Reach 3A	
	KCWA	AC	KCWA								
	(AG)	FC&WCD	(M&I)	(AG)	OFWD (c)	SCVWD	TLBWSD	DRWD	MWDSC	AVEK	CLWA
	[23]	[24]	[25]	[26]	[27]	[28]	[29]	[30]	[31]	[32]	[33]
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	3,084	0	0	0	0	0	0
1969	0	0	0	0	3,016	0	0	0	0	0	0
1970	0	0	0	0	5,911	0	0	0	0	0	0
1971	0	0	0	0	7,212	0	0	0	0	0	0
1972	0	0	0	0	8,166	0	0	0	0	0	0
1973	0	0	0	0	3,214	0	0	0	0	0	0
1974	0	0	0	0	3,471	0	0	0	0	0	0
1975	0	0	0	0	3,576	0	0	0	0	0	0
1976	0	0	0	0	4,112	0	0	0	0	0	0
1977	0	0	0	0	1,472	0	0	0	0	0	0
1978	0	0	0	0	3,906	0	0	0	0	0	0
1979	0	0	0	0	6,149	0	0	0	0	0	0
1980	0	0	0	0	5,700	0	0	0	0	0	0
1981	0	0	0	0	4,300	0	0	0	0	0	0
1982	0	0	0	0	3,838	0	0	0	0	0	0
1983	0	0	0	0	3,822	0	0	0	0	0	0
1984	0	0	0	0	5,700	0	0	0	0	0	0
1985	0	0	0	0	5,433	0	0	0	0	0	0
1986	0	0	0	0	5,107	0	0	0	0	0	0
1987	0	0	0	0	5,625	0	0	0	0	0	0
1988	0	0	0	0	4,412	0	0	0	0	0	0
1989	0	0	0	0	6,091	0	300	602	0	0	0
1990	0	0	0	0	2,922	200	0	0	0	0	0
1991	0	0	0	0	141	0	0	0	0	0	0
1992	0	0	0	0	2,239	0	0	0	0	0	0
1993	0	0	0	0	2,858	0	0	0	0	0	0
1994	0	0	0	0	3,071	0	0	0	0	0	0
1995	0	0	0	0	5,169	0	0	0	0	0	0
1996	0	0	0	0	4,904	0	0	0	0	0	0
1997	0	0	0	0	5,238	0	0	0	11,100	0	0
1998	0	0	0	0	4,401	0	0	0	(11,100)	0	0
1999	0	0	0	0	4,871	0	0	0	0	0	0
2000	0	0	0	0	4,508	0	0	0	0	0	0
2001	0	0	0	638	3,592	0	0	0	0	0	0
2002	0	0	0	773	4,885	0	0	0	0	0	0
2003	0	7	0	917	4,266	0	0	0	0	0	0
2004	0	38	0	786	4,629	0	0	0	0	0	0
2005	0	299	0	1,046	4,194	0	0	0	0	0	0
2006	0	321	0	1,103	4,242	0	0	0	0	0	0
2007	0	320	0	1,031	3,567	0	0	0	0	0	0
2008	8,885	56	0	1,744	1,985	0	0	0	0	5,873	0
2009	0	0	0	1,169	1,993	0	0	0	0	0	3,300
2010	0	0	0	1,122	2,906	0	0	0	0	0	0
2011	0	0	959	175	4,141	0	0	0	0	0	0
2012	**0**	**0**	**0**	**3,900**	**3,181**	**0**	**0**	**0**	**0**	**0**	**0**
2013	0	0	0	3,900	3,420	0	0	0	0	0	0
2014	0	0	0	3,900	3,420	0	0	0	0	0	0
2015	0	0	0	3,900	3,420	0	0	0	0	0	0
2016	0	0	0	3,900	3,420	0	0	0	0	0	0
2017	0	0	0	3,900	3,420	0	0	0	0	0	0
2018	0	0	0	3,900	3,420	0	0	0	0	0	0
2019	0	0	0	3,900	3,420	0	0	0	0	0	0
2020	0	0	0	3,900	3,420	0	0	0	0	0	0
2021	0	0	0	3,900	3,420	0	0	0	0	0	0
2022	0	0	0	3,900	3,420	0	0	0	0	0	0
2023	0	0	0	3,900	3,420	0	0	0	0	0	0
2024	0	0	0	3,900	3,420	0	0	0	0	0	0
2025	0	0	0	3,900	3,420	0	0	0	0	0	0
2026	0	0	0	3,900	3,420	0	0	0	0	0	0
2027	0	0	0	3,900	3,420	0	0	0	0	0	0
2028	0	0	0	3,900	3,420	0	0	0	0	0	0
2029	0	0	0	3,900	3,420	0	0	0	0	0	0
2030	0	0	0	3,900	3,420	0	0	0	0	0	0
2031	0	0	0	3,900	3,420	0	0	0	0	0	0
2032	0	0	0	3,900	3,420	0	0	0	0	0	0
2033	0	0	0	3,900	3,420	0	0	0	0	0	0
2034	0	0	0	3,900	3,420	0	0	0	0	0	0
2035	0	0	0	3,900	3,420	0	0	0	0	0	0
TOTAL	8,885	1,041	959	104,104	265,880	200	300	602	0	5,873	3,300

(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)

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SAN LUIS DIVISION (continued)										
	Reach 3A						Reach 4				Reach 5
	KCWA							KCWA			
	(M&I)	(AG)	MWDSC	SGPWA	SCVWD	TLWSD	DRWD	(M&I)	(AG)	TLBWSD	CLWA
	[34]	[35]	[36]	[37]	[38]	[39]	[40]	[41]	[42]	[43]	[44]
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	0	0	0	0	1,898	0	12,647	0	0
1990	0	0	0	0	0	0	0	0	0	1,500	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	0	0	0	0	0	0	0	0	5,095
1994	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	14,446	0	3,500	0	0
1996	0	0	0	0	0	0	0	1,125	4,162	0	0
1997	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	1,300	0
2000	3,320	68,960	0	0	0	0	0	1,517	878	0	0
2001	0	140,242	0	0	30,000	0	0	0	0	0	0
2002	6,000	62,024	0	0	0	0	0	0	0	0	0
2003	0	151,044	29,596	0	0	0	0	0	1,351	0	0
2004	0	44,877	0	0	0	0	0	0	0	0	0
2005	0	109,712	50,000	0	8,804	277	0	0	7,000	0	0
2006	0	19,575	0	0	0	0	0	0	0	0	0
2007	71,567	116,272	0	0	0	0	0	0	0	0	0
2008	0	94,562	0	0	0	0	0	0	10,721	0	0
2009	0	131,232	52,933	0	9,999	0	0	0	0	0	0
2010	0	35,896	118,250	0	19,575	0	0	0	0	0	0
2011	0	0	86,339	0	5,000	0	0	0	0	0	0
2012	**0**	**0**	**0**	**3,600**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2013	0	0	0	1,200	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	80,887	974,396	337,118	4,800	73,378	277	16,344	2,642	40,259	2,800	5,095

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SAN LUIS DIVISION (continued)							SOUTH SAN JOAQUIN DIVISION			
	Reach 5							Reach 6			
			KCWA					KCWA			
	DRWD	EWSID	(M&I)	(AG)	MWDSC	OFWD	TLBWSD	(AG)	(M&I)	CK	MWDSC
	[45]	[46]	[47]	[48]	[49]	[50]	[51]	[52]	[53]	[54]	[55]
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	1,550	0	0	0	0
1989	0	0	0	18,831	0	0	0	0	8,260	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	10,823	0	0	0	0	0	0	0	0	0	0
1993	27,200	0	0	28,200	0	2,000	1,624	0	31,200	0	0
1994	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	21,776	0	0	0	0	3,932	0	0
1996	0	0	1,125	81,507	0	0	4,000	0	0	0	0
1997	0	0	9,080	154,940	0	0	3,500	0	0	0	0
1998	0	0	0	0	0	0	0	20,400	33,340	0	0
1999	0	0	0	0	21,500	0	8,000	0	33,776	0	11,000
2000	0	0	8,130	57,647	0	0	0	1,457	35,847	0	0
2001	0	0	0	0	0	0	2,457	0	0	0	0
2002	0	0	0	0	0	0	3,000	0	0	0	0
2003	0	0	0	0	0	0	3,900	0	0	0	0
2004	0	0	0	0	0	0	3,850	0	0	3,250	0
2005	0	0	0	0	0	0	1,000	0	0	6,954	0
2006	0	0	0	0	0	0	3,000	0	0	2,659	0
2007	0	0	0	0	0	0	3,600	0	0	3,119	0
2008	0	0	0	0	0	0	1,355	0	0	2,159	0
2009	0	870	0	0	0	0	1,490	0	0	1,779	0
2010	0	431	0	0	0	0	0	0	0	2,477	0
2011	0	0	0	0	0	0	0	0	0	5,045	0
2012	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3,120**	**0**
2013	0	0	0	0	0	0	0	0	0	3,120	0
2014	0	0	0	0	0	0	0	0	0	3,121	0
2015	0	0	0	0	0	0	0	0	0	3,121	0
2016	0	0	0	0	0	0	0	0	0	3,121	0
2017	0	0	0	0	0	0	0	0	0	3,121	0
2018	0	0	0	0	0	0	0	0	0	3,121	0
2019	0	0	0	0	0	0	0	0	0	3,121	0
2020	0	0	0	0	0	0	0	0	0	3,121	0
2021	0	0	0	0	0	0	0	0	0	3,121	0
2022	0	0	0	0	0	0	0	0	0	3,121	0
2023	0	0	0	0	0	0	0	0	0	3,121	0
2024	0	0	0	0	0	0	0	0	0	3,121	0
2025	0	0	0	0	0	0	0	0	0	3,121	0
2026	0	0	0	0	0	0	0	0	0	3,121	0
2027	0	0	0	0	0	0	0	0	0	3,121	0
2028	0	0	0	0	0	0	0	0	0	3,121	0
2029	0	0	0	0	0	0	0	0	0	3,121	0
2030	0	0	0	0	0	0	0	0	0	3,121	0
2031	0	0	0	0	0	0	0	0	0	3,121	0
2032	0	0	0	0	0	0	0	0	0	3,121	0
2033	0	0	0	0	0	0	0	0	0	3,121	0
2034	0	0	0	0	0	0	0	0	0	3,121	0
2035	0	0	0	0	0	0	0	0	0	3,121	0
TOTAL	38,023	1,301	18,335	362,901	21,500	2,000	42,326	21,857	146,355	102,344	11,000

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SOUTH SAN JOAQUIN DIVISION (continued)										
	Reach 6	Reach 7						Reach 8C			
				KCWA						KCWA	
	TLBWSD	CLWA	DRWD	(M&I)	(AG)	MWDSC	TLBWSD	DRWD	EWSID	(M&I)	(AG)
	[56]	[57]	[58]	[59]	[60]	[62]	[63]	[64]	[65]	[66]	[67]
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	900	25,100	0	0	0	1,978	0	0
1969	0	0	0	100	7,081	0	0	0	56	0	0
1970	0	0	0	0	0	0	0	0	3.942	0	0
1971	0	0	0	3,700	80,906	0	0	0	5,990	0	0
1972	0	0	0	1,400	144,843	0	0	0	5,795	0	0
1973	0	0	0	1,500	26,317	0	0	0	3,000	0	0
1974	0	0	0	1,500	32,603	0	0	0	3,000	0	0
1975	0	0	0	1,600	41,536	0	0	0	3,000	0	0
1976	0	0	0	1,600	26,595	0	0	0	3,000	0	0
1977	0	0	0	1,530	12,984	0	0	0	738	0	0
1978	0	0	0	2,070	3,934	0	0	0	454	0	0
1979	0	0	0	2,000	74,758	0	0	0	1,739	0	0
1980	0	0	0	2,200	35,140	0	0	0	894	0	0
1981	0	0	0	2,300	50,888	0	0	0	5,859	0	0
1982	0	0	0	1,536	4,405	0	0	0	361	0	0
1983	0	0	0	3,550	1,001	0	0	0	0	0	0
1984	0	0	0	3,100	3,677	0	0	0	0	0	0
1985	0	0	0	3,400	68,638	0	0	0	5,197	0	0
1986	0	0	0	3,700	40,017	0	0	0	1,170	0	0
1987	0	0	0	4,000	30,359	0	0	0	2,525	0	0
1988	0	0	0	4,000	46,281	0	0	0	3,475	0	0
1989	0	0	0	4,000	63,703	0	0	2,391	3,000	0	0
1990	0	0	0	2,000	23,504	0	0	0	1,279	0	0
1991	0	0	0	0	1,697	0	0	0	221	0	0
1992	0	0	0	1,806	15,982	0	0	280	1,354	0	0
1993	0	0	0	4,000	57,112	0	0	0	2,741	0	0
1994	0	0	0	2.116	21.510	0	0	0	1.666	0	0
1995	0	989	10,527	4,000	40,934	0	0	0	1,631	989	10,527
1996	0	0	1,500	4,000	84,130	0	0	95	1,868	0	1,500
1997	0	0	1.500	0	9.467	0	0	0	0	0	1.500
1998	3,000	0	1,000	15	8,956	0	0	90	542	0	1,000
1999	23,000	0	400	4,000	90,334	500	4.470	86	3.176	0	400
2000	3,000	0	400	3,600	63,842	20,000	20,500	166	1,799	0	400
2001	600	0	0	1,560	23,300	0	0	14	1,360	0	0
2002	0	0	0	2.854	34,009	0	12,067	0	1.405	0	0
2003	0	0	0	3.692	25.317	0	15.103	0	1.436	0	0
2004	0	0	0	5,803	30,546	0	0	0	3,562	0	0
2005	0	0	0	4,057	42,450	0	4,000	0	3,834	0	0
2006	0	0	0	1.105	34.367	0	6.000	0	3.282	0	0
2007	0	0	0	657	31,305	0	2,545	0	2,084	0	0
2008	0	0	0	240	14,146	0	1,500	0	947	0	0
2009	2,100	0	0	1,612	13,522	0	600	0	164	0	0
2010	0	0	0	26	14,005	0	3,850	0	2,828	0	0
2011	0	0	0	3,168	36,648	0	0	0	2,209	0	0
2012	**0**	**0**	**0**	**2.282**	**21.356**	**0**	**0**	**0**	**1.800**	**0**	**0**
2013	0	0	0	2,282	21,356	0	0	0	1,800	0	0
2014	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2015	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2016	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2017	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2018	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2019	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2020	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2021	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2022	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2023	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2024	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2025	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2026	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2027	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2028	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2029	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2030	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2031	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2032	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2033	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2034	0	0	0	2,282	21,359	0	0	0	1,800	0	0
2035	0	0	0	2,282	21,359	0	0	0	1,800	0	0
TOTAL	31,700	989	15,327	154,765	2,050,459	20,500	70,635	3,122	137,761	989	15,327

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SOUTH SAN JOAQUIN DIVISION (continued)								
	Reach 8C	Reach 8D							Reach 9
				KCWA			SLOC		
	CK	TLBWSD	DRWD	(M&I)	(AG)	CK	FC&WCD	TLBWSD	DRWD
	[68]	[69]	[70]	[71]	[72]	[73]	[74]	[75]	[76]
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	900	25,100	26,360	0	0	0	0	0	0
1969	100	7,081	31,375	0	0	0	0	0	0
1970	0	0	40,407	0	0	0	0	3,408	0
1971	3,700	80,906	41,053	0	0	0	0	41,579	0
1972	1,400	144,843	42,443	0	0	0	0	113,550	0
1973	1,500	26,317	22,057	0	1,500	0	0	24,147	0
1974	1,500	32,603	33,390	0	0	0	0	39,686	0
1975	1,600	41,536	40,555	0	0	0	0	44,722	0
1976	1,600	26,595	41,421	0	0	0	0	32,216	0
1977	1,530	12,984	11,153	0	0	0	0	5,097	0
1978	2,070	3,934	51,747	0	0	0	0	8,119	0
1979	2,000	74,758	38,544	0	0	0	0	80,363	0
1980	2,200	35,140	41,000	0	0	0	0	40,304	0
1981	2,300	50,888	41,000	0	0	0	0	32,550	0
1982	1,536	4,405	41,000	0	0	214	0	14,146	0
1983	3,550	1,001	42,900	0	0	0	0	5	0
1984	3,100	3,677	45,100	0	0	0	0	2,066	0
1985	3,400	68,638	46,251	0	0	0	0	41,153	0
1986	3,700	40,017	50,249	0	0	0	0	39,338	0
1987	4,000	30,359	46,288	0	0	0	0	62,725	0
1988	4,000	46,281	47,994	0	0	0	0	48,035	0
1989	4,000	63,703	52,158	0	0	0	0	63,947	0
1990	2,000	23,504	36,296	0	161	0	0	32,066	0
1991	0	1,697	927	0	0	0	0	483	0
1992	1,806	15,982	12,667	0	0	0	0	30,746	0
1993	4,000	57,112	23,221	0	0	0	0	65,732	197
1994	2,116	21,510	28,793	0	1,726	0	0	40,852	0
1995	4,000	40,934	45,240	2,959	27,270	0	0	57,435	0
1996	4,000	84,130	52,722	0	1,455	0	100	148,745	0
1997	0	9,467	57,496	0	0	0	100	9,402	4,900
1998	15	8,956	49,435	0	20,000	0	0	8,721	0
1999	4,000	90,334	58,290	0	9,000	0	0	162,631	0
2000	3,600	63,842	57,920	0	0	0	0	113,952	0
2001	1,560	23,300	40,155	0	6,089	0	0	58,369	0
2002	2,854	34,009	48,179	0	7,522	0	0	47,426	0
2003	3,692	25,317	45,732	0	8,350	0	0	61,521	0
2004	5,803	30,546	45,823	0	4,979	0	0	55,625	0
2005	4,057	42,450	58,627	0	0	1,891	0	92,552	0
2006	1,105	34,367	61,410	0	0	3,266	0	64,840	0
2007	657	31,305	39,974	0	7,740	1,921	0	49,633	0
2008	240	14,146	18,974	0	21,242	107	0	16,903	0
2009	1,612	13,522	12,037	0	19,684	0	0	16,794	5,500
2010	26	14,005	17,346	0	14,094	1,900	0	40,609	0
2011	3,168	36,648	39,697	0	0	0	0	48,847	0
2012	**2,282**	**21,356**	**30,206**	**0**	**0**	**0**	**0**	**31,997**	**0**
2013	2,282	21,356	30,206	0	0	0	0	31,997	0
2014	2,282	21,359	30,206	0	0	0	0	31,994	0
2015	2,282	21,359	30,206	0	0	0	0	31,994	0
2016	2,282	21,359	30,206	0	0	0	0	31,994	0
2017	2,282	21,359	30,206	0	0	0	0	31,994	0
2018	2,282	21,359	30,206	0	0	0	0	31,994	0
2019	2,282	21,359	30,206	0	0	0	0	31,994	0
2020	2,282	21,359	30,206	0	0	0	0	31,994	0
2021	2,282	21,359	30,206	0	0	0	0	31,994	0
2022	2,282	21,359	30,206	0	0	0	0	31,994	0
2023	2,282	21,359	30,206	0	0	0	0	31,994	0
2024	2,282	21,359	30,206	0	0	0	0	31,994	0
2025	2,282	21,359	30,206	0	0	0	0	31,994	0
2026	2,282	21,359	30,206	0	0	0	0	31,994	0
2027	2,282	21,359	30,206	0	0	0	0	31,994	0
2028	2,282	21,359	30,206	0	0	0	0	31,994	0
2029	2,282	21,359	30,206	0	0	0	0	31,994	0
2030	2,282	21,359	30,206	0	0	0	0	31,994	0
2031	2,282	21,359	30,206	0	0	0	0	31,994	0
2032	2,282	21,359	30,206	0	0	0	0	31,994	0
2033	2,282	21,359	30,206	0	0	0	0	31,994	0
2034	2,282	21,359	30,206	0	0	0	0	31,994	0
2035	2,282	21,359	30,206	0	0	0	0	31,994	0
TOTAL	154,765	2,050,459	2,450,350	2,959	150,812	9,299	200	2,728,902	10,597

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	SOUTH SAN JOAQUIN DIVISION (continued)											
	Reach 9			Reach 10A								
	KCWA			AC				KCWA				
	(M&I)	(AG)	TLBWSD	FC&WCD	ACWD	CLWA	DRWD	(M&I)	(AG)	MWDSC	SCVWD	TLBWSD
	[77]	[78]	[79]	[80]	[81]	[82]	[83]	[84]	[85]	[86]	[87]	[88]
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	30,951	0	0	0	0	0	0	0	0	0	0
1969	0	24,489	0	0	0	0	0	0	0	0	0	2,842
1970	0	46,114	1,855	0	0	0	0	0	158	0	0	4,315
1971	0	58,356	0	0	0	0	0	0	9,973	0	0	0
1972	0	75,464	0	0	0	0	0	0	5,876	0	0	0
1973	0	54,583	0	0	0	0	0	0	22,948	0	0	0
1974	0	63,814	0	0	0	0	0	10,019	22,719	0	0	0
1975	0	50,021	0	0	0	0	0	2,791	72,121	0	0	0
1976	0	53,465	0	0	0	0	0	74	50,444	0	0	0
1977	0	24,668	0	0	0	0	0	201	34,451	0	0	0
1978	0	72,231	0	0	0	0	0	0	161,889	0	0	0
1979	0	74,524	0	0	0	0	0	285	153,245	0	0	0
1980	0	79,946	0	0	0	0	0	3,780	131,836	0	0	0
1981	0	76,508	0	0	0	0	0	341	133,500	0	0	0
1982	0	76,877	0	0	0	0	0	4,700	164,832	0	0	0
1983	2,217	84,573	0	0	0	0	0	0	146,493	0	0	0
1984	4,100	85,732	0	0	0	0	0	6,910	150,302	0	0	0
1985	0	67,696	0	0	0	0	0	6,495	153,473	0	0	0
1986	0	79,943	0	0	0	0	0	5,065	198,099	0	0	0
1987	0	97,732	0	0	0	0	0	900	226,521	0	0	0
1988	1,100	83,858	0	0	0	0	0	9,529	212,495	0	0	0
1989	0	91,134	0	0	0	0	0	21,038	251,979	0	0	0
1990	0	83,108	0	0	0	0	0	25,189	47,472	0	0	0
1991	13,683	601	0	0	0	0	0	1,142	6,820	0	0	0
1992	28	40,183	0	0	0	0	0	3,685	89,390	0	0	0
1993	5,945	53,597	0	0	0	0	0	775	233,862	44,496	0	0
1994	0	44,994	0	0	0	0	0	5,227	126,792	0	0	0
1995	0	64,076	0	0	0	0	0	366	229,448	50,000	0	0
1996	2,236	89,291	0	0	6,200	0	0	6,666	199,854	95,000	45,000	0
1997	0	72,013	0	0	10,000	0	900	3,577	157,385	125,000	35,000	0
1998	0	57,530	0	1,970	3,780	0	0	2,603	163,587	39,500	23,800	0
1999	0	72,734	0	22,910	16,100	0	0	1,657	190,787	75,850	30,000	0
2000	0	73,562	0	23,940	13,380	0	0	7,672	283,208	0	23,730	0
2001	0	54,198	0	5,000	0	0	0	160	98,175	0	0	0
2002	0	60,957	0	14,287	2,083	24,000	0	145	171,498	0	3,311	0
2003	0	54,724	0	6,500	18,800	0	0	217	174,674	70,940	33,000	0
2004	0	54,330	0	5,740	8,000	32,522	0	65,751	117,286	0	0	0
2005	0	53,206	0	0	28,422	0	0	22,087	210,578	31,210	55,448	0
2006	0	56,909	0	5,740	27,447	0	5,000	0	237,623	0	64,036	0
2007	0	66,018	0	717	1,029	0	3,000	0	203,794	0	3,692	0
2008	0	63,315	0	0	0	0	2,800	1,702	103,176	0	4,306	0
2009	0	64,007	2,330	0	0	0	2,000	690	95,798	0	0	0
2010	0	76,357	0	3,000	7,000	0	2,000	14	102,773	74,000	51,990	800
2011	0	78,776	0	7,745	17,300	0	0	2	167,753	157,221	27,832	0
2012	**0**	**91,987**	**0**	**1,620**	**9,665**	**0**	**0**	**0**	**120,930**	**166,665**	**11,400**	**0**
2013	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2014	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2015	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2016	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2017	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2018	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2019	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2020	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2021	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2022	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2023	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2024	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2025	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2026	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2027	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2028	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2029	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2030	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2031	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2032	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2033	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2034	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
2035	0	43,414	0	1,620	9,665	0	0	0	120,930	166,665	11,400	0
TOTAL	29,309	3,877,674	4,185	136,429	391,501	56,522	15,700	221,455	8,617,407	4,763,177	674,745	7,957

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	SOUTH SAN JOAQUIN DIVISION (continued)											
	Reach 11B				Reach 12D		Reach 12E					
		KCWA			KCWA		AC				KCWA	
	DRWD	(M&I)	(AG)	TLBWSD	(M&I)	(AG)	FC&WCD	ACWD	CLWA	DRWD	(M&I)	(AG)
	[89]	[90]	[91]	[92]	[93]	[94]	[95]	[96]	[97]	[98]	[99]	[100]
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	24,776	0	0	0	0	0	0	0	0	0
1969	0	0	64,682	0	0	0	0	0	0	0	0	0
1970	0	0	72,279	0	0	0	0	0	0	0	0	9,279
1971	0	0	63,773	0	0	0	0	0	0	0	0	28,056
1972	0	0	72,358	0	0	0	0	0	0	0	0	62,342
1973	0	0	67,544	0	0	0	0	0	0	0	0	13,082
1974	0	0	87,476	0	0	0	0	0	0	0	2,651	4,248
1975	0	0	85,675	0	0	0	0	0	0	0	0	10,787
1976	0	0	85,067	0	0	0	0	0	0	0	37,519	20,555
1977	0	3,981	29,603	0	0	0	0	0	0	0	20,280	1,737
1978	0	0	88,753	0	0	0	0	0	0	0	47,133	15,011
1979	0	484	108,379	0	0	0	0	0	0	0	50,740	61,567
1980	0	3,112	103,207	0	0	0	0	0	0	0	32,039	22,252
1981	0	494	104,395	0	0	0	0	0	0	0	59,917	58,470
1982	0	798	99,081	0	0	0	0	0	0	0	36,139	75,587
1983	0	2,069	94,117	0	0	0	0	0	0	0	0	10,950
1984	0	2,349	124,819	0	0	0	0	0	0	0	63,941	39,929
1985	0	10,666	118,646	0	0	0	0	0	0	0	69,839	84,117
1986	0	8,673	124,836	0	0	0	0	0	0	0	62,109	51,540
1987	0	13,074	111,877	0	0	0	0	0	0	0	95,297	86,223
1988	0	13,509	114,031	0	0	0	0	0	0	0	86,390	123,249
1989	0	9,986	127,058	0	0	0	0	0	0	0	83,965	146,544
1990	0	9,319	104,107	0	0	0	0	0	0	0	82,164	38,973
1991	0	6,099	118	0	0	0	0	0	0	0	8,842	303
1992	0	7,419	35,093	0	0	0	0	0	0	0	47,181	57,048
1993	0	2,696	72,645	0	0	0	0	0	0	0	84,822	285,554
1994	0	3,506	71,202	0	0	0	0	0	0	0	66,188	77,839
1995	0	1,154	97,072	0	0	0	0	0	0	1,000	107,130	181,097
1996	0	1,185	96,250	0	0	0	0	0	0	4,131	89,257	134,138
1997	0	1,111	104,823	0	0	0	0	0	0	8,012	32,061	128,329
1998	0	1,311	72,646	0	0	0	0	0	0	5,925	28,258	88,998
1999	0	2,127	92,262	0	0	0	0	0	0	1,321	110,161	255,343
2000	1,500	3,793	89,622	0	21	0	0	0	0	953	11,772	156,215
2001	0	636	73,105	0	41	0	0	0	0	0	385	51,076
2002	0	1,457	91,123	0	760	6	0	0	0	0	0	135,335
2003	0	1,379	87,174	0	2,431	152	0	0	0	0	39,479	112,056
2004	0	1,299	97,722	0	3,419	768	0	0	0	1,600	52,303	95,893
2005	0	824	93,554	0	2,841	644	3,419	1,878	20,000	1,154	43,835	340,281
2006	0	0	98,417	0	2,513	1,556	10,000	0	20,000	0	82,207	296,230
2007	0	4,030	94,334	0	2,164	2,284	0	0	8,200	0	1,179	87,764
2008	0	263	93,417	0	1,514	3,000	0	0	0	0	0	76,351
2009	300	127	96,776	0	564	4,274	0	0	0	0	0	82,434
2010	5,350	381	92,220	974	1,904	2,206	10,000	0	24,006	0	9,631	67,860
2011	0	12,089	111,131	0	14,402	70	13,716	0	13,632	0	24,274	255,546
2012	**0**	**9,000**	**33,420**	**0**	**3,900**	**0**	**7,200**	**0**	**0**	**0**	**60,318**	**70,154**
2013	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2014	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2015	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2016	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2017	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2018	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2019	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2020	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2021	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2022	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2023	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2024	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2025	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2026	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2027	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2028	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2029	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2030	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2031	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2032	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2033	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2034	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
2035	0	9,000	33,420	0	3,900	0	7,200	0	0	0	60,318	70,154
TOTAL	7,150	347,400	4,639,325	974	126,174	14,960	209,935	1,878	85,838	24,096	3,116,720	5,613,884

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SOUTH SAN JOAQUIN DIVISION (continued)										
	Reach 12E			Reach 13B							
				AC		KCWA					
	MWDSC	PWD	SCVWD	FC&WCD	DRWD	(M&I)	(AG)	MWDSC	PWD	SCVWD	TLBWSD
	[101]	[102]	[103]	[104]	[105]	[106]	[107]	[108]	[109]	[110]	[111]
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	4.891	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	17,388	0	0	0	0
1973	0	0	0	0	0	0	9,297	0	0	0	0
1974	0	0	0	0	0	8,038	4,246	0	0	0	0
1975	0	0	0	0	0	8,538	7,059	0	0	0	0
1976	0	0	0	0	0	5,626	8,855	0	0	0	0
1977	0	0	0	0	0	0	5,024	0	0	0	0
1978	0	0	0	0	0	21,773	7,601	0	0	0	0
1979	0	0	0	0	0	5,663	17,766	0	0	0	0
1980	0	0	0	0	0	0	22,515	0	0	0	0
1981	0	0	0	0	0	7,844	14,037	0	0	0	0
1982	0	0	0	0	0	0	25,553	0	0	0	0
1983	0	0	0	0	0	0	3,491	0	0	0	0
1984	0	0	0	0	0	12,117	26,178	0	0	0	0
1985	0	0	0	0	0	0	67,711	0	0	0	0
1986	0	0	0	0	0	0	66,551	0	0	0	0
1987	0	0	0	0	0	5,609	40,374	0	0	0	0
1988	0	0	0	0	0	9,298	47,167	0	0	0	0
1989	0	0	0	0	0	5,504	57,114	0	0	0	0
1990	0	0	0	0	0	7,645	20,423	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	789	17,449	0	0	0	0
1993	5,504	0	0	0	0	12,798	88,157	0	0	0	0
1994	0	0	0	0	0	2,494	33,148	0	0	0	0
1995	0	0	0	0	0	8,751	110,685	0	0	0	3,500
1996	0	0	0	0	0	28,063	64,849	0	0	0	0
1997	1,486	0	0	0	0	43,803	49,312	0	0	0	0
1998	24,234	0	0	0	0	29,444	40,085	5,500	0	0	0
1999	62,162	0	0	0	0	12,969	92,998	0	0	0	0
2000	149,731	0	0	0	0	0	102,202	0	0	0	0
2001	0	0	0	0	1,733	0	33,925	0	0	0	0
2002	0	0	0	0	736	0	71,444	0	0	0	0
2003	45,989	0	0	0	350	2,396	124,582	1,865	0	0	0
2004	0	0	0	0	1,657	1,922	73,801	0	0	0	0
2005	15,384	0	2,619	2,321	14,540	21,781	269,631	192	0	9,014	0
2006	5,065	0	0	0	5,670	11,787	196,116	0	0	0	0
2007	0	0	0	0	2,161	0	72,240	0	0	0	0
2008	0	0	0	0	0	200	9,785	0	0	2,324	0
2009	0	0	0	0	0	0	12,060	0	0	0	0
2010	136,862	0	0	0	304	0	63,966	22,000	0	0	10,000
2011	73,884	776	0	0	12,716	10,000	165,957	0	5,972	0	0
2012	**0**	**0**	**0**	**0**	**0**	**0**	**50,345**	**0**	**0**	**0**	**0**
2013	0	0	0	0	0	0	50,345	0		0	0
2014	0	0	0	0	0	0	50,345	0		0	0
2015	0	0	0	0	0	0	50,345	0		0	0
2016	0	0	0	0	0	0	50,345	0		0	0
2017	0	0	0	0	0	0	50,345	0		0	0
2018	0	0	0	0	0	0	50,345	0		0	0
2019	0	0	0	0	0	0	50,345	0		0	0
2020	0	0	0	0	0	0	50,345	0		0	0
2021	0	0	0	0	0	0	50,345	0		0	0
2022	0	0	0	0	0	0	50,345	0		0	0
2023	0	0	0	0	0	0	50,345	0		0	0
2024	0	0	0	0	0	0	50,345	0		0	0
2025	0	0	0	0	0	0	50,345	0		0	0
2026	0	0	0	0	0	0	50,345	0		0	0
2027	0	0	0	0	0	0	50,345	0		0	0
2028	0	0	0	0	0	0	50,345	0		0	0
2029	0	0	0	0	0	0	50,345	0		0	0
2030	0	0	0	0	0	0	50,345	0		0	0
2031	0	0	0	0	0	0	50,345	0		0	0
2032	0	0	0	0	0	0	50,345	0		0	0
2033	0	0	0	0	0	0	50,345	0		0	0
2034	0	0	0	0	0	0	50,345	0		0	0
2035	0	0	0	0	0	0	50,345	0		0	0
TOTAL	520,301	776	2,619	2,321	39,867	284,852	3,373,913	29,557	5,972	11,338	13,500

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	SOUTH SAN JOAQUIN DIVISION (continued)											
	Reach 14A		Reach 14B		Reach 14C			Reach 15A		Reach 16A		
	KCWA		KCWA		KCWA			KCWA			KCWA	
	(M&I)	(AG)	(M&I)	(AG)	(M&I)	(AG)	MWDSC	(M&I)	(AG)	AVEKWA	(M&I)	(AG)
	[112]	[113]	[114]	[115]	[116]	[117]	[118]	[119]	[120]	[121]	[122]	[123]
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	3		0	0	0	0	0	0	0
1971	0	23,844	0	49,929		24,187	0	0	3,552	0	0	0
1972	0	26,621	0	77,034		35,016	0	0	6,064	0	0	4,768
1973	0	15,328	0	47,040		19,043	0	0	19,916	0	0	1,961
1974	0	7,794	0	32,356		12,601	0	0	18,000	0	3,000	1,564
1975	0	10,306	0	27,736		12,783	0	0	35,420	0	3,200	9,867
1976	0	268	0	35,296		9,005	0	0	39,551	0	3,500	11,667
1977	0	8,299	0	13,539		3,757	0	0	6,158	0	3,420	685
1978	0	34,029	0	72,351		24,542	0	0	31,148	0	7,989	1,655
1979	3,012	27,356	0	59,413		22,372	0	0	38,602	0	2,813	15,808
1980	4,312	16,876	0	40,513		19,953	0	0	37,817	0	2,700	16,145
1981	4,511	13,007	8	42,753	7	18,729	0	0	39,033	0	2,636	18,156
1982	3,735	24,240	184	57,739	0	26,479	0	0	47,782	0	1,921	16,577
1983	1,168	20,302	0	57,922	0	26,613	0	0	37,426	0	1,400	17,907
1984	137	35,369	10	79,179	2	34,996	0	0	49,848	0	1,338	24,246
1985	206	33,103	0	72,855	0	31,758	0	0	44,078	0	1,309	16,820
1986	180	26,384	0	70,864	0	34,566	0	0	42,461	0	1,213	15,559
1987	610	30,098	9	67,710	10	31,019	0	0	34,748	0	1,665	10,170
1988	622	32,778	19	75,968	1	37,165	0	16	41,978	0	1,925	8,987
1989	721	29,292	7	82,201	5	37,800	0	2	43,239	0	2,668	8,649
1990	673	26,800	13	81,076	9	34,174	0	6	36,347	0	2,819	8,608
1991	768	0	0	0	0	0	0	0	0	2,000	2,588	343
1992	673	16,238	464	41,143	0	18,084	0	0	24,243	0	2,087	8,275
1993	629	17,832	0	62,493	0	28,103	0	0	27,997	0	2,494	9,167
1994	2,513	16,760	3,000	54,011	1,000	22,624	0	0	29,511	0	3,011	13,877
1995	3	21,234	0	67,391	0	31,285	0	0	26,134	0	3,188	15,042
1996	0	26,978	0	85,936	0	38,879	0	0	36,186	0	2,573	18,142
1997	0	23,035	0	79,790	0	33,512	0	0	36,281	0	3,997	17,048
1998	0	15,706	0	58,132	0	23,097	0	0	28,712	0	3,751	17,032
1999	0	21,153	0	67,576	0	31,489	0	0	36,801	0	3,316	24,071
2000	0	19,264	0	70,585	0	33,716	0	0	40,063	0	3,015	20,919
2001	0	12,452	0	49,602	0	23,557	0	0	31,192	0	1,894	13,476
2002	0	11,161	0	52,762	0	27,138	0	0	41,552	0	4,227	14,520
2003	0	13,685	0	44,576	0	24,783	12,911	0	36,602	0	1,168	16,799
2004	0	13,030	0	52,012	0	30,313	0	0	40,184	0	2,239	19,714
2005	0	15,663	0	56,739	0	21,979	0	0	39,870	0	167	18,353
2006	0	17,779	0	65,142	1,413	20,193	5,440	0	46,244	0	279	22,570
2007	0	21,435	0	67,955	0	24,947	1,881	0	47,390	0	204	26,229
2008	0	20,087	0	63,497	0	27,847	0	0	33,029	0	3,834	18,426
2009	0	22,281	0	60,726	0	27,185	0	0	26,007	0	1,531	19,517
2010	0	21,964	0	58,110	0	25,477	29,818	0	22,045	0	1,033	19,829
2011	0	55,868	0	57,118	0	26,122	120,000	0	6,228	0	15,104	45,952
2012	**0**	**14,640**	**0**	**42,653**	**0**	**19,980**	**0**	**0**	**30,420**	**0**	**2,744**	**12,390**
2013	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2014	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2015	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2016	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2017	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2018	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2019	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2020	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2021	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2022	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2023	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2024	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2025	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2026	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2027	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2028	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2029	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2030	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2031	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2032	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2033	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2034	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
2035	0	14,640	0	42,653	0	19,980	0	0	30,420	0	2,744	12,390
TOTAL	24,473	1,197,059	3,714	3,382,445	2,447	1,516,408	170,050	24	2,039,519	2,000	173,072	886,460

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	MOJAVE DIVISION									
	Reach 18A	Reach 19		Reach 20A			Reach 20B			Reach 21
	AVEKWA	AVEKWA	MWA	AVEKWA	MWA	PWD	AVEKWA	LCID	PWD	AVEKWA
	[124]	[125]	[126]	[127]	[128]	[129]	[130]	[131]	[132]	[133]
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	1,223	0	0	0	0	0	0	0	0
1975	0	7,622	0	420	0	0	0	0	0	0
1976	3,808	23,063	0	471	0	0	416	0	0	0
1977	1,231	8,927	0	773	0	0	271	0	0	0
1978	1,321	36,333	0	5,549	0	0	934	0	0	0
1979	2,098	49,910	0	7,555	0	0	930	0	0	0
1980	2,610	61,534	0	7,605	0	0	655	0	0	0
1981	2,340	65,690	0	10,333	0	0	966	0	0	0
1982	1,669	41,127	0	7,313	0	0	8	0	0	0
1983	43	26,377	0	6,253	0	0	20	0	0	0
1984	90	22,462	0	9,558	0	0	2	0	0	0
1985	8	23,440	0	11,613	0	1,510	217	0	32	0
1986	8	16,898	0	13,808	0	3,041	0	0	45	0
1987	0	15,958	0	15,493	0	2,389	151	0	1,624	0
1988	0	13,471	0	17,117	0	366	281	0	1,261	0
1989	0	18,007	0	23,481	0	381	112	0	7,848	0
1990	0	17,281	0	25,843	0	282	84	0	8,292	0
1991	0	728	0	4,282	1,391	84	131	0	3,830	0
1992	0	7,238	0	18,518	1,310	185	650	0	3,850	0
1993	0	13,340	0	23,662	1,514	164	996	0	7,597	0
1994	0	19,122	0	25,250	1,399	299	124	0	8,119	0
1995	0	20,222	0	22,385	1,227	328	0	0	6,633	0
1996	0	23,919	0	26,979	1,316	354	0	0	11,080	0
1997	0	28,834	64	27,999	1,272	313	0	0	11,548	0
1998	0	22,466	1,345	25,985	0	195	0	0	8,557	0
1999	0	30,944	1,439	32,409	0	377	36	0	12,901	0
2000	0	34,786	1,361	37,819	0	0	80	0	9,060	5,002
2001	0	24,370	1,385	33,216	0	0	282	0	10,427	0
2002	0	14,297	1,370	36,311	0	0	1,662	0	18,496	0
2003	0	12,145	1,285	39,532	0	0	2,289	0	11,547	0
2004	0	11,201	1,223	40,408	0	0	1,774	0	12,139	0
2005	11	11,804	1,051	41,496	0	0	1,336	0	11,678	0
2006	0	18,438	1,021	53,878	0	0	1,415	0	12,487	0
2007	0	22,916	1,176	47,639	0	0	1,349	0	19,609	0
2008	0	9,096	1,238	33,919	0	0	792	25	14,255	0
2009	0	5,717	1,345	35,402	0	0	366	42	15,339	0
2010	0	10,825	1,181	43,122	0	0	643	0	10,969	0
2011	0	10,039	1,245	25,010	0	202	168	0	13,015	0
2012	**0**	**46,010**	**6,985**	**26,586**	**0**	**12,780**	**897**	**0**	**0**	**0**
2013	0	46,326	21,600	27,383	0	12,780	924	0	0	0
2014	0	46,648	2,700	28,204	0	12,780	949	0	0	0
2015	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2016	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2017	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2018	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2019	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2020	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2021	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2022	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2023	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2024	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2025	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2026	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2027	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2028	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2029	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2030	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2031	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2032	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2033	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2034	0	46,983	1,498	29,050	0	12,780	980	0	0	0
2035	0	46,983	1,498	29,050	0	12,780	980	0	0	0
TOTAL	15,237	1,927,397	80,472	1,530,629	9,429	317,190	42,490	67	252,238	5,002

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	MOJAVE DIVISION										
	Reach 21		Reach 22A		Reach 22B					Reach 23	Reach 24
	LCID	PWD	AVEKWA	LCID	AVEKWA (d)	CVWD (e)	DWA (e)	MWDSC (e)	MWA	MWA	CLAWA
	[134]	[135]	[136]	[137]	[138]	[139]	[140]	[141]	[142]	[143]	[144]
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	338	0	0	0	0	0	0	0	55	0	464
1973	290	0	0	0	0	5,800	9,000	(14,800)	0	0	389
1974	400	0	0	0	0	6,400	10,000	(16,400)	0	14	627
1975	520	0	0	0	0	7,000	11,000	(18,000)	0	0	825
1976	589	0	0	0	0	7,600	12,000	(19,600)	0	0	1,002
1977	111	0	0	0	0	0	0	0	22	58	1,109
1978	208	0	0	0	0	10,084	15,300	(25,384)	0	0	1,209
1979	133	0	0	0	0	10,063	15,000	(25,063)	4,000	0	1,260
1980	191	0	3	0	0	10,884	17,000	(27,884)	4,000	0	1,239
1981	1,270	0	46	0	0	12,105	19,000	(31,105)	4,000	0	1,485
1982	0	0	174	0	0	13,326	21,000	(34,326)	10,500	0	1,238
1983	38	0	268	0	0	14,547	23,000	(37,547)	0	0	911
1984	1	0	550	0	0	15,768	25,000	(40,768)	0	0	1,128
1985	0	16	1,786	0	0	16,989	27,000	(43,989)	0	0	1,422
1986	163	10	1,735	0	0	18,210	29,000	(47,210)	0	0	1,506
1987	1,080	1,366	2,273	5	214	19,431	31,500	(50,931)	17	0	1,849
1988	419	143	3,210	0	0	20,652	34,000	(54,652)	9	0	2,006
1989	971	780	3,591	0	89	21,873	36,500	(58,373)	0	200	2,170
1990	1,747	34	3,988	0	10	23,100	38,100	(61,200)	0	0	1,827
1991	522	0	2,427	0	0	6,930	11,430	(18,360)	0	0	849
1992	251	0	3,859	0	0	10,427	17,197	(27,624)	42	0	519
1993	734	0	5,098	0	0	0	0	0	0	0	439
1994	1,098	0	4,657	0	0	0	0	0	14,634	0	785
1995	480	0	4,679	0	0	0	0	0	7,495	0	409
1996	494	0	5,458	0	0	0	0	0	6,111	0	485
1997	444	0	5,549	0	0	0	0	0	9,038	0	651
1998	404	0	4,468	0	0	0	0	0	2,580	0	187
1999	342	0	5,684	0	0	0	0	0	6,705	0	1,132
2000	0	0	5,890	0	0	0	0	0	10,019	0	1,194
2001	0	0	4,989	0	0	0	0	0	3,048	0	1,057
2002	0	0	5,404	0	497	0	0	0	2,976	0	2,189
2003	0	0	6,063	0	0	0	0	7,625	13,150	0	1,563
2004	0	23	6,095	0	253	0	0	0	11,953	0	2,006
2005	0	34	5,184	0	0	0	0	5,942	12,169	0	807
2006	0	5	6,653	0	0	0	0	0	32,993	0	641
2007	0	25	7,711	0	588	0	0	0	27,684	0	1,768
2008	0	0	4,756	0	0	0	0	0	20,479	0	848
2009	0	0	4,185	0	0	0	0	0	20,214	0	894
2010	0	0	3,899	0	0	0	0	0	27,640	0	296
2011	1,453	0	2,116	0	0	0	0	0	7,271	0	2,891
2012	**1,380**	**0**	**3,612**	**0**	**0**	**0**	**0**	**0**	**23,412**	**0**	**2,040**
2013	1,380	0	3,720	0	0	0	0	0	46,980	0	3,541
2014	1,380	0	3,833	0	0	0	0	0	48,182	0	3,540
2015	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2016	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2017	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2018	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2019	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2020	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2021	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2022	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2023	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2024	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2025	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2026	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2027	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2028	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2029	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2030	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2031	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2032	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2033	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2034	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
2035	1,380	0	3,949	0	0	0	0	0	48,182	0	3,541
TOTAL	47,811	2,436	216,542	5	1,651	251,189	402,027	(639,649)	1,389,200	272	128,758

(d) 1988 advance allocation.

(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.

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	MOJAVE DIVISION (cont)			SANTA ANA DIVISION							
	Reach 24			Reach 26A					Reach 28G	Reach 28H	
	MWDSC (e)	MWA	SBVMWD	CVWD(e)	DWA(e)	MWDSC (e)	SBVMWD (f)	SGVMWD	MWDSC	CVWD	DWA
	[145]	[146]	[147]	[148]	[149]	[150]	[151]	[152]	[153]	[154]	[155]
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	464	0	0	0	0
1973	0	0	0	0	0	444	389	0	0	0	0
1974	0	0	0	0	0	84,981	627	0	0	0	0
1975	0	0	0	0	0	169,960	825	0	0	0	0
1976	0	0	0	0	0	215,312	1,002	0	0	0	0
1977	0	0	0	0	0	64,823	1,109	0	0	0	0
1978	0	0	0	0	0	297,708	1,209	0	0	0	0
1979	0	0	0	0	0	260,903	1,260	0	0	0	0
1980	0	0	0	0	0	300,345	1,239	0	0	0	0
1981	0	0	0	0	0	395,678	1,485	0	0	0	0
1982	0	0	0	0	0	214,566	1,238	0	0	0	0
1983	0	0	0	0	0	175,288	911	0	0	0	0
1984	0	0	0	0	0	122,311	1,128	0	0	0	0
1985	0	0	0	0	0	147,599	1,422	0	0	0	0
1986	0	0	0	0	0	215,265	1,506	0	0	0	0
1987	0	0	0	0	0	175,012	1,849	0	0	0	0
1988	0	0	0	0	0	247,101	2,006	0	0	0	0
1989	0	0	0	0	0	326,217	2,170	0	0	0	0
1990	0	0	0	0	0	399,387	1,827	0	0	0	0
1991	0	2,032	0	0	0	107,182	849	0	2,032	0	0
1992	0	9,334	0	0	0	219,524	519	0	9,334	0	0
1993	0	10,000	0	23,100	38,100	98,291	439	0	10,000	0	0
1994	0	819	0	14,102	23,257	192,979	785	0	819	0	0
1995	0	0	0	23,100	38,100	107,299	409	0	0	0	0
1996	0	0	0	62,219	102,622	73,438	485	0	0	0	0
1997	0	0	0	58,100	53,100	157,215	651	0	0	0	0
1998	0	0	0	78,100	58,100	36,770	187	0	0	6,582	7,708
1999	0	0	0	50,480	58,100	139,752	1,132	0	0	0	0
2000	0	0	0	42,323	58,234	326,647	1,194	0	0	0	0
2001	0	0	0	9,100	15,010	284,007	1,057	0	0	0	0
2002	0	0	0	16,755	27,640	301,700	2,189	0	0	0	0
2003	17,249	0	0	14,443	23,819	464,719	1,563	17,249	0	0	0
2004	0	0	0	15,465	21,190	428,316	2,006	0	0	0	0
2005	14,058	341	0	34,356	49,089	361,976	807	14,058	341	0	0
2006	0	0	0	121,100	50,000	404,594	641	0	0	0	0
2007	0	17,249	710	66,007	27,253	370,971	1,768	0	17,249	7,221	2,981
2008	0	3,679	411	40,171	24,643	210,520	848	0	3,679	6,620	1,785
2009	0	7,488	149	45,074	17,872	138,216	894	0	7,488	948	391
2010	0	9,331	26	53,866	18,398	463,654	296	0	9,331	30,415	12,257
2011	0	14,288	384	42,101	16,965	697,552	2,891	0	14,288	0	0
2012	**0**	**0**	**360**	**83,010**	**45,694**	**358,454**	**2,040**	**0**	**0**	**0**	**0**
2013	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2014	0	0	360	83,010	33,450	358,448	3,540	0	0	0	0
2015	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2016	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2017	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2018	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2019	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2020	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2021	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2022	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2023	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2024	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2025	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2026	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2027	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2028	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2029	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2030	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2031	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2032	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2033	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2034	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
2035	0	0	360	83,010	33,450	358,448	3,541	0	0	0	0
TOTAL	31,307	74,561	10,320	2,802,202	1,536,536	18,000,980	128,758	31,307	74,561	51,786	25,122

(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) Includes 1,650 AF recaptured from ground water storage in 1982, 10,000 AF in 1987, and 8,749 AF in 1988. This was water stored under DWR's Ground Water Demonstation Program.

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	SANTA ANA DIVISION (continued)									
	Reach 28H	Reach 28J			Reach EBX1				Reach EBX2C	Reach EBX3A
	MWDSC	CVWD	DWA	MWDSC	CVWD	MWDSC	SBVMWD	SGVMWD	SBVMWD	SBVMWD
	[156]	[157]	[158]	[159]	[160]	[161]	[162]	[163]	[164]	[165]
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	251	0	0	0	0	0	0
1976	55	0	0	2,000	0	0	0	0	0	0
1977	43	0	0	2,442	0	0	0	0	0	0
1978	48	0	0	64,054	0	0	0	0	0	0
1979	1,290	0	0	94,353	0	0	0	0	0	0
1980	3,013	0	0	91,532	0	0	0	0	0	0
1981	4,365	0	0	149,405	0	0	0	0	0	0
1982	3,961	0	0	155,629	0	0	0	0	0	0
1983	6,645	0	0	41,616	0	0	0	0	0	0
1984	109,743	0	0	5,672	0	0	0	0	0	0
1985	182,781	0	0	6,538	0	0	0	0	0	0
1986	131,439	0	0	30,071	0	0	0	0	0	0
1987	144,743	0	0	26,315	0	0	0	0	0	0
1988	199,641	0	0	22,209	0	0	0	0	0	0
1989	247,430	0	0	51,462	0	0	0	0	0	0
1990	257,796	0	0	36,060	0	0	0	0	0	0
1991	38,832	0	0	5,958	0	0	0	0	0	0
1992	85,341	0	0	12,223	0	0	0	0	0	0
1993	61,841	0	0	4,588	0	0	0	0	0	0
1994	134,262	0	0	4,725	0	0	0	0	0	0
1995	117,762	0	0	21,099	0	0	0	0	0	0
1996	144,906	0	0	12,418	0	0	0	0	0	0
1997	107,853	0	0	47,777	0	0	0	0	0	0
1998	77,473	1,027	4,839	50,411	0	0	0	0	0	0
1999	206,689	0	0	8,163	0	0	0	0	0	0
2000	379,713	0	0	7,864	0	5,466	18,399	15,140	0	0
2001	260,984	0	0	33,414	0	0	26,488	2,360	0	0
2002	340,635	0	0	41,552	0	1,427	37,069	24,851	0	0
2003	246,485	0	0	50,776	0	74,496	16,703	21,934	1,793	2,617
2004	357,995	0	0	20,437	0	120,338	13,229	12,541	1,430	2,371
2005	242,245	0	0	114,499	8,163	153,700	12,715	13,984	966	2,035
2006	342,734	0	0	32,242	0	147,432	11,832	16,284	885	2,614
2007	271,874	0	0	48,923	0	94,208	38,151	4,024	3,130	5,103
2008	175,460	0	0	10,432	0	16,745	25,038	7,212	686	8,823
2009	126,265	0	0	5,849	0	18,314	25,041	11,520	4,090	10,066
2010	129,145	1,311	528	65,439	0	0	19,190	4,896	617	9,538
2011	107,035	0	0	133,480	0	0	8,857	0	95	2,007
2012	**73,540**	**0**	**0**	**142,710**	**0**	**0**	**61,200**	**0**	**0**	**0**
2013	73,540	0	0	142,710	0	0	61,200	0	0	0
2014	73,540	0	0	142,710	0	0	61,200	0	0	0
2015	73,540	0	0	142,710	0	0	61,200	0	0	0
2016	73,540	0	0	142,710	0	0	61,200	0	0	0
2017	73,540	0	0	142,710	0	0	61,200	0	0	0
2018	73,540	0	0	142,710	0	0	61,200	0	0	0
2019	73,540	0	0	142,710	0	0	61,200	0	0	0
2020	73,540	0	0	142,710	0	0	61,200	0	0	0
2021	73,540	0	0	142,710	0	0	61,200	0	0	0
2022	73,540	0	0	142,710	0	0	61,200	0	0	0
2023	73,540	0	0	142,710	0	0	61,200	0	0	0
2024	73,540	0	0	142,710	0	0	61,200	0	0	0
2025	73,540	0	0	142,710	0	0	61,200	0	0	0
2026	73,540	0	0	142,710	0	0	61,200	0	0	0
2027	73,540	0	0	142,710	0	0	61,200	0	0	0
2028	73,540	0	0	142,710	0	0	61,200	0	0	0
2029	73,540	0	0	142,710	0	0	61,200	0	0	0
2030	73,540	0	0	142,710	0	0	61,200	0	0	0
2031	73,540	0	0	142,710	0	0	61,200	0	0	0
2032	73,540	0	0	142,710	0	0	61,200	0	0	0
2033	73,540	0	0	142,710	0	0	61,200	0	0	0
2034	73,540	0	0	142,710	0	0	61,200	0	0	0
2035	73,540	0	0	142,710	0	0	61,200	0	0	0
TOTAL	7,013,482	2,338	5,367	4,936,918	8,163	632,126	1,721,512	134,746	13,692	45,174

TABLE B-5A. Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	SANTA ANA DIVISION (continued)		WEST BRANCH							
	Reach EBX4B-G	Reach EBX4B	Reach 29F	Reach 29H		Reach 30				
	SGPWD	SGPWD	AVEKWA	CLWA	VCFCD	CLWA	CVWD	DWA	MWDSC (g)	SBVMWD
	[166]	[167]	[168]	[169]	[170]	[171]	[172]	[173]	[174]	[175]
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	53	0	0	0	0	0	71,938	0
1973	0	0	20	0	0	0	0	0	155,297	0
1974	0	0	36	0	0	0	0	0	209,136	0
1975	0	0	26	0	0	0	0	0	374,280	0
1976	0	0	24	0	0	0	0	0	420,684	0
1977	0	0	0	0	0	0	0	0	122,447	0
1978	0	0	0	0	0	0	0	0	171,139	0
1979	0	0	0	0	0	7	0	0	145,591	0
1980	0	0	0	0	0	1,210	0	0	164,721	0
1981	0	0	0	0	0	5,761	0	0	277,503	0
1982	0	0	0	0	0	9,516	0	0	351,362	0
1983	0	0	0	0	0	9,476	0	0	157,519	0
1984	0	0	0	0	0	11,477	0	0	260,624	0
1985	0	0	0	0	0	12,401	0	0	390,696	0
1986	0	0	0	0	0	13,928	0	0	379,275	0
1987	0	0	0	0	0	16,167	0	0	417,285	0
1988	0	0	0	0	0	18,904	0	0	488,265	0
1989	0	0	0	0	0	21,719	0	0	589,962	0
1990	0	0	0	0	4,836	22,139	0	0	764,380	0
1991	0	0	0	0	988	3,846	0	0	257,835	0
1992	0	0	0	0	0	14,812	0	0	420,849	0
1993	0	0	6	0	0	13,787	0	0	437,470	0
1994	0	0	0	0	0	14,919	0	0	475,900	0
1995	0	0	0	0	0	17,747	0	0	139,882	0
1996	0	0	0	0	0	18,448	0	0	267,618	0
1997	0	0	11	0	0	22,842	10,240	16,890	271,379	0
1998	0	0	7	0	0	19,782	0	0	187,277	0
1999	0	0	0	0	0	28,813	0	0	327,001	0
2000	0	0	0	0	2,200	31,085	0	0	632,991	0
2001	0	0	0	0	0	30,701	0	0	444,764	0
2002	0	0	0	0	3,148	42,080	0	0	723,605	8,601
2003	0	116	0	6,768	3,150	44,967	0	0	678,964	0
2004	0	841	0	0	4,047	47,463	0	0	797,294	0
2005	0	692	0	0	0	36,747	0	0	538,839	0
2006	3,471	807	0	0	0	40,017	0	0	574,679	0
2007	3,758	177	0	0	1,890	45,919	0	0	711,831	0
2008	3,863	1,042	0	0	1,980	42,878	0	0	485,156	0
2009	4,499	1,898	0	0	3,150	38,784	0	0	589,294	0
2010	2,555	5,685	0	0	3,150	31,288	0	0	376,890	0
2011	11,807	2,064	0	0	2,527	39,838	0	0	380,515	0
2012	**6,264**	**0**	**0**	**0**	**7,889**	**40,480**	**30,381**	**0**	**405,537**	**0**
2013	7,200	0	0	0	7,894	40,780	0	0	405,537	0
2014	8,400	0	0	0	7,894	41,860	0	0	405,537	0
2015	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2016	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2017	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2018	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2019	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2020	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2021	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2022	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2023	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2024	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2025	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2026	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2027	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2028	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2029	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2030	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2031	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2032	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2033	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2034	12,900	0	0	0	7,894	42,580	0	0	405,537	0
2035	12,900	0	0	0	7,894	42,580	0	0	405,537	0
TOTAL	322,717	13,322	183	6,768	220,517	1,786,768	40,621	16,890	25,365,025	8,601

(g) 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)

Calendar Year	CALIFORNIA AQUEDUCT (continued)									TOTAL	GRAND TOTAL
	WEST BRANCH (continued)		COASTAL BRANCH								
	Reach 30		Reach 31A					Reach 33A			
					KCWA						
	SBC FC&WCD	VCFCD	CLWA	DRWD	(M&I)	(AG)	CK	SLOC FC&WCD	SBC FC&WCD		
	[176]	[177]	[178]	[179]	[180]	[181]	[182]	[183]	[184]	[185]	[186]
1962	0	0	0	0	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	0	0	0	0	56,763
1968	0	0	7,382	0	0	71,657	0	0	0	192,188	294,457
1969	0	0	9,970	0	0	52,094	0	0	0	195,705	268,104
1970	0	0	11,739	0	0	71,910	0	0	0	276,211	369,459
1971	0	0	12,490	0	0	98,481	0	0	0	553,081	654,442
1972	0	0	13,905	0	0	107,850	0	0	0	895,006	1,037,770
1973	0	0	9,418	0	0	69,227	0	0	0	638,930	737,532
1974	0	0	9,700	0	0	68,474	0	0	0	783,984	878,947
1975	0	0	10,700	0	0	74,516	0	0	0	1,129,728	1,230,830
1976	0	0	11,700	0	0	78,358	0	0	0	1,245,662	1,380,124
1977	0	0	5,075	0	0	35,504	0	0	0	465,442	582,381
1978	0	0	11,362	0	0	81,242	0	0	0	1,339,268	1,458,733
1979	0	0	19,138	0	0	104,017	0	0	0	1,537,075	1,666,457
1980	0	0	13,882	0	0	97,497	0	0	0	1,413,363	1,536,456
1981	0	0	12,700	0	0	97,054	0	0	0	1,779,479	1,918,563
1982	0	0	12,700	0	0	83,076	0	0	0	1,641,571	1,750,862
1983	0	0	12,659	0	0	87,859	0	0	0	1,089,626	1,187,156
1984	0	0	12,741	0	0	119,098	0	0	0	1,489,814	1,591,416
1985	0	0	12,099	0	0	110,124	0	0	0	1,863,544	1,990,295
1986	0	0	13,301	0	0	118,298	0	0	0	1,882,290	1,999,155
1987	0	0	11,821	0	0	116,259	0	0	0	1,984,570	2,131,608
1988	0	0	11,534	0	0	109,435	0	0	0	2,221,538	2,385,122
1989	0	0	14,645	0	0	102,156	0	0	0	2,686,838	2,853,747
1990	0	0	6,440	0	0	103,362	0	0	0	2,398,121	2,582,151
1991	1,240	0	716	0	0	780	0	0	0	489,489	549,113
1992	0	0	5,887	0	0	73,748	0	0	0	1,374,775	1,471,454
1993	0	0	4,157	0	0	90,764	0	0	0	2,173,352	2,315,235
1994	0	0	9,422	0	200	77,536	0	0	0	1,727,504	1,861,976
1995	0	0	9,486	0	0	85,050	0	0	0	1,926,835	2,031,423
1996	0	0	14,052	0	0	100,578	0	0	0	2,429,928	2,543,472
1997	0	1,850	4,870	0	0	97,020	0	1,099	7,439	2,263,966	2,405,444
1998	0	1,850	311	0	0	86,879	0	3,592	18,618	1,657,381	1,764,963
1999	0	1,850	4,086	0	0	92,095	0	3,743	20,137	2,755,025	2,898,961
2000	0	1,850	8,395	0	0	85,215	0	3,962	22,741	3,390,079	3,569,072
2001	0	1,850	1,238	0	0	63,448	0	4,283	18,946	2,034,350	2,175,194
2002	0	1,850	2,737	0	0	65,055	0	4,355	27,636	2,738,943	2,909,555
2003	0	1,850	4,001	0	0	65,691	0	4,453	26,968	3,151,625	3,327,811
2004	0	1,203	3,776	0	0	66,498	0	4,165	29,705	3,050,652	3,230,590
2005	0	1,665	2,709	4,684	0	68,190	0	4,251	23,344	3,597,829	3,753,874
2006	0	1,850	2,735	0	0	85,214	0	4,209	23,275	3,526,551	3,693,938
2007	0	1,110	6,071	0	0	93,954	49	3,776	27,740	3,088,763	3,284,475
2008	0	1,818	0	0	17,059	68,385	0	3,402	18,393	1,995,796	2,169,587
2009	0	741	1	0	0	83,255	0	3,801	15,452	2,032,447	2,194,143
2010	0	925	768	2,967	0	81,047	276	3,757	17,775	2,697,750	2,840,166
2011	0	4,495	2,237	0	0	68,983	481	8,321	30,434	3,452,920	3,647,062
2012	**0**	**4,106**	**960**	**0**	**0**	**71,430**	**182**	**10,782**	**27,292**	**2,372,126**	**2,555,400**
2013	0	4,106	960	0	0	71,430	182	15,000	27,292	2,325,152	2,483,804
2014	0	4,106	960	0	0	71,430	181	15,000	27,292	2,309,814	2,468,289
2015	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2016	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2017	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2018	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2019	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2020	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2021	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2022	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2023	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2024	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2025	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2026	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2027	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2028	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2029	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2030	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2031	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2032	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2033	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2034	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
2035	0	4,106	960	0	0	71,430	181	15,000	27,292	2,315,161	2,473,850
TOTAL	1,240	125,301	377,796	7,651	17,259	5,371,253	5,152	416,951	983,611	136,884,467	146,769,782

Tables B-5A-Adj through B-31

Note: Where applicable, the projected data values shown in this appendix are shaded and the bill year data are in **bold** type.

TABLE B-5A-Adj. Annual Water Quantity Adjustments to Water Delivered from Each Aqueduct Reach to Each Contractor

Calendar Year	CALIFORNIA AQUEDUCT											
	SAN LUIS DIVISION											
	Reach 3A											
	AVEK	CLWA	CLAWA	DRWD	KCWA (AG)	MWDSC	MWA	PWD	SBVMWD	SGVMWD	SGPWD	SLOC FC&WCD
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
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	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	(11,135)	0	0	0	0	0	0	0
2001	0	0	0	0	(11,487)	0	0	0	0	0	0	0
2002	0	0	0	0	(9,332)	0	0	0	0	0	0	0
2003	0	0	0	0	(18,428)	0	0	0	0	0	0	0
2004	0	0	0	0	(866)	0	0	0	0	0	0	0
2005	0	0	0	(576)	(20,082)	0	0	0	0	0	0	0
2006	0	0	0	0	(20,239)	0	0	0	0	0	0	0
2007	0	0	0	0	(9,867)	0	0	0	0	0	0	0
2008	0	0	0	0	(99,439)	0	0	0	0	0	0	0
2009	(5,926)	(38)	(1)	(28)	(82,636)	(815)	(5)	(15)	(21)	(4)	(4)	(2)
2010	0	(3,300)		0	(87,403)	(177,476)	0	0	0	0	0	0
2011	0	0	0	0	(39,018)	(104,399)	0	0	0	0	0	0
2012	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2013	0	0	0	0	0	0	0	0	0	0	0	0
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
2016	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	(5,926)	(3,338)	(1)	(604)	(409,932)	(282,690)	(5)	(15)	(21)	(4)	(4)	(2)

Year 2011 includes adjustments to match projected 2011 water delivieries used for the SOC 2012.

TABLE B-5A-Adj. Annual Water Quantity Adjustments to Water Delivered from Each Aqueduct Reach to Each Contractor

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	SAN LUIS DIVISION (continued)						SOUTH SAN JOAQUIN DIVISION					
	Reach 3A				Reach 4		Reach 7		Reach 10A			
	SBC FC&WCD	SCVWD	TLBWSD	VCFCD	KCWA (AG)	TLBWSD	KCWA (AG)	TLBWSD	AC FC&WCD	ACWD	CLWA	DWA
	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]
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	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	(12,806)	0	(24,167)	(2,981)	0	0	0	0
2001	0	0	0	0	0	0	0	(25,164)	(1,807)	0	0	0
2002	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
2004	0	0	(4,000)	0		(6,020)	0	0	0	0	0	0
2005	0	(20,000)	(277)	0	0	0	0	0	0	0	0	0
2006	0	(53,573)	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	(5,000)	0	
2008	0	(3,681)	0	0	0	0	0	0	(7,000)	(10,000)	0	(4,864)
2009	(19)	(1,000)	(49)	(1)	0	0	0	0	0	(3,083)	(4,950)	0
2010	0	(43,378)	(17,551)	0	0	0	0	0	0	0		0
2011	0	(9,993)	(2,539)	0	0	0	0	0	0	0	0	0
2012	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2013	0	0	0	0	0	0	0	0	0	0	0	0
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
2016	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	(19)	(131,625)	(24,416)	(1)	(12,806)	(6,020)	(24,167)	(28,145)	(8,807)	(18,083)	(4,950)	(4,864)

Year 2011 includes adjustments to match projected 2011 water delivieries used for the SOC 2012.

TABLE B-5A-Adj. Annual Water Quantity Adjustments to Water Delivered from Each Aqueduct Reach to Each Contractor

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	SOUTH SAN JOAQUIN DIVISION (continued)											
	Reach 10A			Reach 12E							Reach 13B	
	KCWA (AG)	MWDSC	SCVWD	AVEK	CLWA	CVWD	DWA	KCWA (AG)	MWDSC	SCVWD	KCWA (AG)	OFWD
	[25]	[26]	[27]	[28]	[29]	[30]	[31]	[32]	[33]	[34]	[35]	[36]
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	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0
2001	(1,813)	(31,500)	(30,000)	0	0	0	0	0	(20,800)	0	(132,228)	0
2002	0	0	0	0	0	0	0	(14,638)	0	0	(22,161)	0
2003	0	(10,000)	0	0	0	0	0	(5,170)	(5,073)	0	(15,316)	0
2004	(3)	(93,555)	0	0	0	0	0	0	(17,765)	0	(43,985)	0
2005	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
2007	(12,469)	(93,986)	(20,000)		(11,000)	0		(16,618)	(5,000)	0	(257,750)	(4,926)
2008	0	(99,024)	(18,885)	(8,393)	(11,000)	(3,000)	(3,486)	(114,331)	(8,402)	0	(228,579)	0
2009	(7,733)	(65,499)	(27,319)	(6,393)	(11,000)	(3,000)	0	(105,145)	(14,516)	(6,134)	(186,044)	0
2010	(56)	0	0	0	(2,750)	(8,393)	0	(43,820)	(52,426)		(59,451)	0
2011	0	0	0	0	(2,200)	0	0	0	(17,997)	0	(56)	0
2012	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2013	0	0	0	0	0	0	0	0	0	0	0	0
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
2016	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	(22,074)	(393,564)	(96,204)	(14,786)	(37,950)	(14,393)	(3,486)	(299,722)	(141,979)	(6,134)	(945,570)	(4,926)

Year 2011 includes adjustments to match projected 2011 water delivieries used for the SOC 2012.

TABLE B-5A-Adj. Annual Water Quantity Adjustments to Water Delivered from Each Aqueduct Reach to Each Contractor

Calendar Year	CALIFORNIA AQUEDUCT (continued)										GRAND TOTAL
	SOUTH SAN JOAQUIN DIVISION (continued)						MOJAVE DIVISION			SANTA ANA DIVISION	
	Reach 13B	Reach 14B	Reach 14C		Reach 15A	Reach 16A	Reach 22B		Reach 24	Reach EBX2C	
	MWDSC	KCWA (AG)	KCWA (AG)	MWDSC	KCWA (AG)	KCWA (AG)	AC FC&WCD	MWDSC	MWD	SBVMWD	
	[37]	[38]	[39]	[40]	[41]	[42]	[43]	[44]	[45]	[46]	[47]
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	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	(51,089)
2001	0	(396)	(242)	0	0	0	(152)	0	0	0	(255,589)
2002	0	0	0	0	0	0	0	0	0	0	(46,131)
2003	(24,523)	0	0	(12,380)	0	0	0	0	0	0	(90,890)
2004	(4,813)	0	0	(25,512)	0	0	0	0	0	(844)	(197,363)
2005	0	0	0	0	0	0	0	0	0	(7)	(40,942)
2006	0	0	0	0	0	0	0	0	0	(2)	(73,814)
2007	0	0	0	(24,225)	0	0	0	(8,751)	(17,249)	0	(486,841)
2008	(25,721)	0	0	(37,602)	0	0	0	(4,816)	(3,679)	(6)	(691,908)
2009	0	(1,706)	(5,168)	(54,948)	(2,788)	(444)	0	0	(7,488)	(11)	(603,933)
2010	0	(1,867)	(4,761)	(32,758)	(2,913)		0	0	(2,891)	0	(541,194)
2011	0	0	0	(4,987)	0	0	0	0	0	0	(181,189)
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
					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
					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
					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
					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	(55,057)	(3,969)	(10,171)	(192,412)	(5,701)	(444)	(152)	(13,567)	(31,307)	(870)	(3,260,883)

Year 2011 includes adjustments to match projected 2011 water delivieries used for the SOC 2012.

TABLE B-5B. Annual Water Quantities Delivered to Each Contractor

(in acre-feet)

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	27,636	31,991
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	54,527	43,079	128,210	225,816	4,209	23,275	27,484
2007	10,957	47,300	58,257	40,157	24,391	75,382	139,930	3,776	27,740	31,516
2008	13,292	41,320	54,612	41,186	22,902	59,160	123,248	3,402	18,393	21,795
2009	10,904	30,950	41,854	31,087	19,496	76,363	126,946	3,801	15,452	19,253
2010	12,417	30,816	43,233	47,343	22,571	117,453	187,367	3,757	17,775	21,532
2011	13,021	36,218	49,239	72,062	34,811	98,751	205,624	8,321	30,434	38,755
2012	**20,984**	**32,504**	**53,488**	**48,225**	**31,500**	**71,280**	**151,005**	**10,782**	**27,292**	**38,074**
2013	17,414	28,503	45,917	48,683	25,200	60,000	133,883	15,000	27,292	42,292
2014	17,414	28,503	45,917	48,419	25,200	60,000	133,619	15,000	27,292	42,292
2015	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2016	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2017	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2018	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2019	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2020	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2021	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2022	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2023	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2024	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2025	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2026	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2027	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2028	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2029	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2030	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2031	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2032	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2033	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2034	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
2035	17,414	28,503	45,917	48,527	25,200	60,000	133,727	15,000	27,292	42,292
TOTAL	690,092	1,409,763	2,099,855	2,284,532	1,548,567	5,174,583	9,007,682	417,151	984,851	1,402,002

(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)

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	71,308	0	120,708	987,451	1,108,159	0	5,238	22,369	1,207,074
1998	55,650	542	89,765	768,825	858,590	15	4,401	20,677	939,875
1999	59,697	3,176	138,153	1,039,985	1,178,138	4,000	4,871	289,735	1,539,617
2000	60,539	1,799	40,697	1,183,440	1,224,137	3,600	4,508	201,294	1,495,877
2001	41,902	1,360	3,116	651,175	654,291	1,560	3,592	84,726	787,431
2002	48,915	1,405	12,589	812,870	825,459	2,854	4,885	96,502	980,020
2003	46,082	1,436	47,070	917,160	964,230	3,692	4,266	105,841	1,125,547
2004	49,080	3,562	126,933	712,193	839,126	9,053	4,629	90,021	995,471
2005	79,005	3,834	91,535	1,306,446	1,397,981	19,806	4,194	140,279	1,645,099
2006	72,080	3,282	98,199	1,164,671	1,262,870	9,530	4,242	108,207	1,460,211
2007	45,135	2,084	79,144	949,601	1,028,745	5,746	3,567	87,083	1,172,360
2008	22,174	947	24,572	719,467	744,039	3,836	1,985	33,904	806,885
2009	21,237	1,034	2,912	746,405	749,317	3,391	1,993	36,836	813,808
2010	27,967	3,259	12,963	684,966	697,929	4,679	2,906	70,238	806,978
2011	52,413	2,209	76,830	1,039,679	1,116,509	8,694	4,141	85,495	1,269,461
2012	**30,206**	**1,800**	**75,962**	**562,249**	**638,211**	**5,584**	**3,181**	**53,353**	**732,335**
2013	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2014	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2015	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2016	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2017	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2018	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2019	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2020	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2021	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2022	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2023	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2024	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2025	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2026	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2027	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2028	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2029	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2030	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2031	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2032	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2033	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2034	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
2035	30,206	1,800	75,962	513,676	589,638	5,584	3,420	53,353	684,001
TOTAL	2,615,502	139,062	4,546,983	42,616,343	47,163,326	282,294	267,880	4,954,015	55,422,079

TABLE B-5B. Annual Water Quantities Delivered to Each Contractor

(in acre-feet)

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	22,216	13,326	1,238	21,000	0	10,500	0	8,409	12,599
1983	32,961	22,135	14,547	911	23,000	38	0	0	5,994	734
1984	32,662	24,218	15,768	1,128	25,000	1	0	0	5,556	7,656
1985	37,064	24,500	16,989	1,422	27,000	0	0	1,558	7,390	5,028
1986	32,449	27,229	18,210	1,506	29,000	163	0	3,096	6,421	9,454
1987	34,089	27,988	19,431	1,849	31,500	1,085	17	5,379	18,751	10,630
1988	34,079	30,438	20,652	2,006	34,000	419	9	1,770	21,386	8,948
1989	45,280	36,364	21,873	2,170	36,500	971	200	9,009	20,782	12,839
1990	47,206	28,579	23,100	1,827	38,100	1,747	0	8,608	18,831	16,649
1991	9,568	4,562	6,930	849	11,430	522	3,423	3,914	3,661	5,399
1992	30,265	20,699	10,427	519	17,197	251	10,686	4,035	3,358	7,908
1993	43,102	23,039	23,100	439	38,100	734	11,514	7,761	4,361	14,397
1994	49,153	26,441	14,102	785	23,257	1,098	16,852	8,418	9,135	15,230
1995	47,286	27,233	23,100	409	38,100	480	8,722	6,961	696	12,922
1996	56,356	32,500	62,219	485	102,622	494	7,427	11,434	6,064	15,989
1997	62,393	27,712	68,340	651	69,990	444	10,374	11,861	9,654	18,175
1998	52,926	20,093	85,709	187	70,647	404	3,925	8,752	1,878	9,310
1999	69,073	32,899	50,480	1,132	58,100	342	8,144	13,278	12,874	21,729
2000	83,577	40,680	42,323	1,194	58,234	0	11,380	9,060	18,399	15,140
2001	62,857	31,939	9,100	1,057	15,010	0	4,433	10,427	26,488	2,360
2002	58,171	68,817	16,755	2,189	27,640	0	4,346	18,496	72,069	24,851
2003	60,029	55,736	14,443	1,563	23,819	0	14,435	11,547	26,113	21,934
2004	59,731	83,761	15,465	2,006	21,190	0	13,176	12,162	57,030	12,541
2005	59,831	59,456	42,519	807	49,089	0	13,561	11,712	31,550	13,984
2006	80,384	62,752	121,100	641	50,000	0	34,014	12,492	35,331	16,284
2007	80,203	60,190	73,228	1,768	30,234	0	46,109	19,634	57,116	4,024
2008	54,436	42,878	46,791	848	26,428	25	25,396	14,255	35,145	7,212
2009	45,670	42,085	46,022	894	18,263	42	29,047	15,339	39,346	11,520
2010	58,489	56,062	85,592	296	31,183	0	38,152	10,969	49,379	19,180
2011	37,333	55,707	42,101	2,891	16,965	1,453	22,804	19,965	73,933	23,040
2012	**77,105**	**41,440**	**113,391**	**2,040**	**45,694**	**1,380**	**30,397**	**12,780**	**61,560**	**17,280**
2013	78,353	41,740	83,010	3,541	33,450	1,380	68,580	12,780	61,560	17,280
2014	79,634	42,820	83,010	3,540	33,450	1,380	50,882	12,780	61,560	17,280
2015	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2016	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2017	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2018	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2019	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2020	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2021	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2022	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2023	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2024	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2025	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2026	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2027	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2028	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2029	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2030	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2031	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2032	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2033	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2034	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
2035	80,962	43,540	83,010	3,541	33,450	1,380	49,680	12,780	61,560	17,280
TOTAL	3,747,004	2,325,387	3,156,299	128,758	1,985,942	47,883	1,553,934	578,612	2,285,911	826,280

(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)

Calendar Year	SOUTHERN CALIFORNIA AREA (contd.)				FEATHER RIVER AREA				South Bay Area Future Contractor	GRAND TOTAL
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Watershed Protection 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	192	64	256	0	654,442
1972	0	71,938	0	88,028	0	186	505	691	0	1,037,770
1973	0	159,883	0	217,226	0	53	679	732	0	737,532
1974	0	277,717	0	323,334	0	127	648	775	0	878,947
1975	0	526,491	0	583,919	0	253	405	658	0	1,230,830
1976	0	618,451	0	697,468	0	527	382	909	0	1,380,124
1977	0	189,755	0	241,161	0	706	303	1,009	0	582,381
1978	0	507,565	0	601,691	0	579	278	857	0	1,458,733
1979	0	477,074	0	587,476	0	302	329	631	0	1,666,457
1980	0	531,727	0	653,625	0	267	295	562	0	1,536,456
1981	0	795,846	0	951,182	0	221	355	576	0	1,918,563
1982	0	691,192	0	830,771	0	334	305	639	0	1,750,862
1983	0	343,521	0	443,841	0	325	262	587	0	1,187,156
1984	0	457,582	0	569,571	108	177	272	557	0	1,591,416
1985	0	683,625	0	804,576	62	308	254	624	0	1,990,295
1986	0	708,840	0	836,368	328	313	317	958	0	1,999,155
1987	0	712,424	0	863,143	88	459	452	999	0	2,131,608
1988	0	902,564	0	1,056,271	303	385	523	1,211	0	2,385,122
1989	0	1,156,698	0	1,342,686	403	300	486	1,189	0	2,853,747
1990	0	1,396,423	4,836	1,585,906	494	380	548	1,422	0	2,582,151
1991	0	391,447	988	442,693	265	328	420	1,013	0	549,113
1992	0	710,313	0	815,658	642	117	485	1,244	0	1,471,454
1993	0	652,190	0	818,737	746	256	444	1,446	0	2,315,235
1994	0	807,866	0	972,337	1,035	329	492	1,856	0	1,861,976
1995	0	436,042	0	601,951	910	203	308	1,421	0	2,031,423
1996	0	593,380	0	888,970	820	257	360	1,437	0	2,543,472
1997	0	721,810	1,850	1,003,254	1,005	185	231	1,421	0	2,405,444
1998	0	410,065	1,850	665,746	1,054	527	0	1,581	0	1,764,963
1999	0	852,617	1,850	1,122,518	1,096	286	0	1,382	0	2,898,961
2000	0	1,522,412	4,050	1,806,449	901	586	0	1,487	0	3,569,072
2001	0	1,023,169	1,850	1,188,690	1,065	513	0	1,578	0	2,175,194
2002	0	1,408,919	4,998	1,707,251	1,181	419	0	1,600	0	2,909,555
2003	116	1,701,615	5,000	1,936,350	1,324	551	0	1,875	0	3,327,811
2004	841	1,724,380	5,250	2,007,533	1,434	1,440	0	2,874	0	3,230,590
2005	692	1,528,045	1,665	1,812,911	1,894	527	0	2,421	0	3,753,874
2006	4,278	1,512,186	1,850	1,931,312	5,342	468	0	5,810	0	3,693,938
2007	3,935	1,499,688	3,000	1,879,129	2,327	956	0	3,283	0	3,284,475
2008	4,905	898,313	3,798	1,160,430	1,923	451	243	2,617	0	2,169,587
2009	6,397	930,871	3,891	1,189,387	2,114	581	200	2,895	0	2,194,143
2010	8,240	1,416,058	4,075	1,777,675	2,331	807	243	3,381	0	2,840,166
2011	13,871	1,756,026	7,022	2,073,111	7,680	1,706	1,486	10,872	0	3,647,062
2012	**9,864**	**1,146,906**	**11,995**	**1,571,832**	**5,760**	**1,562**	**1,344**	**8,666**	**0**	**2,555,400**
2013	8,400	1,146,900	12,000	1,568,974	5,760	1,633	1,344	8,737	0	2,483,804
2014	8,400	1,146,900	12,000	1,553,636	5,760	1,720	1,344	8,824	0	2,468,289
2015	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2016	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2017	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2018	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2019	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2020	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2021	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2022	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2023	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2024	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2025	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2026	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2027	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2028	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2029	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2030	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2031	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2032	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2033	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2034	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
2035	12,900	1,146,900	12,000	1,558,983	5,760	1,826	1,344	8,930	0	2,473,850
TOTAL	340,839	61,232,334	345,818	78,555,001	177,115	61,148	44,900	283,163	0	146,769,782

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

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	31,738	33,591	0	4	21,525	21,529	0	180	4,958	5,138
2001	0	1,760	35,571	37,331	0	0	19,737	19,737	0	0	9,345	9,345
2002	0	496	36,846	37,342	0	0	19,719	19,719	0	0	6,875	6,875
2003	0	3,991	34,579	38,570	0	0	16,700	16,700	0	0	7,637	7,637
2004	0	2,181	40,141	42,322	0	0	21,686	21,686	0	0	8,499	8,499
2005	0	935	45,488	46,423	0	0	19,189	19,189	0	0	8,009	8,009
2006	0	1,005	35,519	36,524	0	0	18,651	18,651	0	0	8,081	8,081
2007	0	1,189	42,765	43,954	0	0	27,793	27,793	0	0	11,277	11,277
2008	0	845	46,601	47,446	0	0	19,436	19,436	0	255	13,740	13,995
2009	0	537	35,032	35,569	0	0	15,473	15,473	0	130	11,377	11,507
2010	0	809	38,676	39,485	0	0	12,788	12,788	0	254	12,847	13,101
2011	0	51	37,888	37,939	0	0	17,126	17,126	0	5	13,353	13,358
2012	**0**	**51**	**53,488**	**53,539**	**0**	**0**	**20,657**	**20,657**	**0**	**5**	**20,984**	**20,989**
2013	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2014	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2015	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2016	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2017	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2018	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2019	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2020	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2021	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2022	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2023	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2024	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2025	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2026	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2027	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2028	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2029	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2030	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2031	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2032	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2033	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2034	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419
2035	0	51	45,917	45,968	0	0	16,656	16,656	0	5	17,414	17,419

(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)

Calendar Year	SOUTH BAY AQUEDUCT						CALIFORNIA AQUEDUCT							
	South Bay Pumping Plant						North San Joaquin Division Banks Pumping Plant Transportation Water							
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply (b)	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total	Conservation Water	Total
	[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	60,958	(32,307)	1,659,265	1,398	1,706,711	(112,053)	1,594,658
1980	0	1,758	(6,563)	115,824	123	111,142	3,159	58,484	(275,538)	1,529,187	2,131	1,317,423	186,601	1,504,024
1981	0	2,627	13,742	129,507	121	145,997	46,060	85,350	40,536	1,908,986	4,974	2,085,906	(931,878)	1,154,028
1982	0	2,344	(23,928)	107,439	129	85,984	5,979	61,556	99,897	1,743,145	4,646	1,915,223	347,983	2,263,206
1983	0	2,151	(22,886)	94,656	132	74,053	6,071	47,022	(310,477)	1,184,282	7,853	934,751	835,771	1,770,522
1984	0	2,088	8,442	98,122	158	108,810	38,649	97,143	(108,548)	1,587,936	5,874	1,621,054	21,875	1,642,929
1985	0	2,817	(1,607)	122,088	152	123,450	0	110,469	137,783	1,985,632	5,452	2,239,336	(110,569)	2,128,767
1986	0	2,299	(1,850)	110,988	130	111,567	0	90,799	20,177	1,993,278	3,865	2,108,119	200,298	2,308,417
1987	0	2,625	(584)	136,796	137	138,974	0	91,427	(23,116)	2,121,366	7,672	2,197,349	(458,725)	1,738,624
1988	0	2,884	(698)	147,255	142	149,583	0	107,249	(35,484)	2,368,793	4,889	2,445,447	(303,583)	2,141,864
1989	0	2,673	3,296	142,269	152	148,390	0	117,603	(38,058)	2,829,107	8,135	2,916,787	421,131	3,337,918
1990	0	894	1,982	156,537	168	159,581	0	99,059	(290,965)	2,554,658	9,262	2,372,014	(374,027)	1,997,987
1991	0	2,637	(4,532)	50,259	150	48,514	0	80,106	(79,038)	539,748	4,879	545,695	554,904	1,100,599
1992	0	2,881	756	76,661	147	80,445	0	91,391	(218,170)	1,451,436	2,605	1,327,262	61,343	1,388,605
1993	0	1,940	(20,051)	105,971	143	88,003	0	149,372	(273,789)	2,279,323	2,609	2,157,515	849,249	3,006,764
1994	0	1,981	1,714	100,568	168	104,431	0	148,712	(120,985)	1,828,072	3,803	1,859,602	(324,640)	1,534,962
1995	0	1,188	(12,333)	76,640	146	65,641	0	173,074	(397,605)	2,003,475	2,575	1,781,519	293,159	2,074,678
1996	0	981	(1,990)	77,215	150	76,356	0	123,502	78,123	2,507,143	3,902	2,712,670	288,576	3,001,246
1997	0	1,575	5,016	102,186	155	108,932	527	135,106	(98,334)	2,366,152	2,594	2,406,045	(50,000)	2,356,045
1998	0	1,551	3,595	70,876	114	76,136	0	91,319	(346,039)	1,728,257	2,107	1,475,644	120,886	1,596,530
1999	0	2,166	12,313	100,497	139	115,115	0	135,809	(17,569)	2,855,522	4,301	2,978,063	(307,839)	2,670,224
2000	0	2,346	(20,958)	135,533	145	117,066	0	115,895	(13,232)	3,474,523	5,182	3,582,368	(15,487)	3,566,881
2001	0	2,784	1,301	95,335	196	99,616	0	222,144	(17,529)	1,874,096	1,978	2,080,689	86,928	2,167,617
2002	0	2,534	(13,938)	123,577	146	112,319	0	225,032	36,404	2,816,389	4,672	3,082,497	(151,719)	2,930,778
2003	0	2,920	(1,399)	132,714	131	134,366	0	329,699	(49,580)	3,193,449	11,362	3,484,930	225,348	3,710,278
2004	0	2,982	(7,240)	125,928	150	121,820	0	83,788	(4,079)	2,979,217	1,337	3,060,263	103,811	3,164,074
2005	0	2,823	(3,565)	108,136	154	107,548	0	151,931	(163,243)	3,666,023	1,270	3,655,981	535,754	4,191,735
2006	0	2,989	(9,645)	118,272	169	111,785	0	67,040	(129,767)	3,571,009	1,208	3,509,490	43,481	3,552,971
2007	0	2,840	14,928	134,172	146	152,086	0	73,956	133,124	2,736,094	830	2,944,004	(398,297)	2,545,707
2008	0	2,215	880	116,562	166	119,823	0	130,066	(3,350)	1,420,450	1,082	1,548,248	(397,949)	1,150,299
2009	0	1,999	(1,134)	116,947	108	117,920	0	111,805	(1,860)	1,545,461	2,023	1,657,429	928,666	2,586,095
2010	0	1,717	3,436	95,802	117	101,072	0	203,757	51,667	2,252,358	1,163	2,508,945	37,606	2,546,551
2011	0	2,812	(5,984)	134,031	400	131,259	0	86,522	(72,351)	3,405,762	8,660	3,428,593	(297,764)	3,130,829
2012	**0**	**2,998**	**(2,813)**	**121,120**	**400**	**121,705**	**0**	**86,754**	**(18,507)**	**2,493,246**	**8,660**	**2,570,153**	**(29,982)**	**2,540,171**
2013	0	3,351	(2,901)	103,998	400	104,848	0	84,178	(30,594)	2,429,150	8,660	2,491,394	45,216	2,536,610
2014	0	3,351	0	103,734	400	107,485	0	130,280	16,625	2,413,548	8,660	2,569,113	(186,678)	2,382,435
2015	0	3,351	0	103,842	400	107,593	0	130,445	32,003	2,419,003	8,660	2,590,111	(31,516)	2,558,595
2016	0	3,351	0	103,842	400	107,593	0	128,415	(28,401)	2,419,003	8,660	2,527,677	205,134	2,732,811
2017	0	3,351	0	103,842	400	107,593	0	128,602	61,309	2,419,003	8,660	2,617,574	119,885	2,737,459
2018	0	3,351	0	103,842	400	107,593	0	128,369	(80,817)	2,419,003	8,660	2,475,215	(194,534)	2,280,681
2019	0	3,351	0	103,842	400	107,593	0	128,613	50,179	2,419,003	8,660	2,606,455	77,224	2,683,679
2020	0	3,351	0	103,842	400	107,593	0	128,690	(366)	2,419,003	8,660	2,555,987	(8,687)	2,547,300
2021	0	3,351	0	103,842	400	107,593	0	128,769	10,725	2,419,003	8,660	2,567,157	(1,095)	2,566,062
2022	0	3,351	0	103,842	400	107,593	0	128,846	(3,483)	2,419,003	8,660	2,553,026	(185,907)	2,367,119
2023	0	3,351	0	103,842	400	107,593	0	128,818	(18,971)	2,419,003	8,660	2,537,510	115,791	2,653,301
2024	0	3,351	0	103,842	400	107,593	0	128,625	11,289	2,419,003	8,660	2,567,577	79,858	2,647,435
2025	0	3,351	0	103,842	400	107,593	0	130,380	(12,518)	2,419,003	8,660	2,545,525	(247,205)	2,298,320
2026	0	3,351	0	103,842	400	107,593	0	128,700	24,308	2,419,003	8,660	2,580,671	246,850	2,827,521
2027	0	3,351	0	103,842	400	107,593	0	128,692	(17,799)	2,419,003	8,660	2,538,556	(12,304)	2,526,252
2028	0	3,351	0	103,842	400	107,593	0	128,783	12,291	2,419,003	8,660	2,568,737	15,430	2,584,167
2029	0	3,351	0	103,842	400	107,593	0	128,671	(9,046)	2,419,003	8,660	2,547,288	(10,778)	2,536,510
2030	0	3,351	0	103,842	400	107,593	0	128,777	20,756	2,419,003	8,660	2,577,196	124,586	2,701,782
2031	0	3,351	0	103,842	400	107,593	0	128,134	(97,726)	2,419,003	8,660	2,458,071	(259,831)	2,198,240
2032	0	3,351	0	103,842	400	107,593	0	128,005	84,999	2,419,003	8,660	2,640,667	138,527	2,779,194
2033	0	3,351	0	103,842	400	107,593	0	127,876	(94,652)	2,419,003	8,660	2,460,887	(184,372)	2,276,515
2034	0	3,351	0	103,842	400	107,593	0	127,725	69,593	2,419,003	8,660	2,624,981	120,375	2,745,356
2035	0	3,351	0	103,842	400	107,593	0	127,379	(242,659)	2,419,003	8,660	2,312,383	(587,531)	1,724,852

(b) For the period June 1962 through November 1967, deliveries were supplied by non-SWP water.

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	San Luis Division						South San Joaquin Division					
	Dos Amigos Pumping Plant						Buena Vista Pumping Plant					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	[27]	[28]	[29]	[30]	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	11,079	25,126	0	189,104	0	225,309	0	0	0	0	0	0
1969	3,887	9,922	0	192,689	0	206,498	0	0	0	0	0	0
1970	7,668	1,901	0	270,300	0	279,869	4,779	1,012	0	3	0	5,794
1971	23,207	(12,030)	0	545,869	0	557,046	7,853	8,399	0	101,512	0	117,764
1972	145,066	(6,635)	(6,558)	886,840	6,481	1,025,194	100,274	20,044	(6,558)	223,626	6,481	343,867
1973	214,941	(6,778)	1,329	635,716	1,147	846,355	204,638	35,695	1,329	311,096	1,147	553,905
1974	247,894	(16,765)	(15,295)	780,513	2,108	998,455	237,554	19,672	(15,295)	388,949	2,108	632,988
1975	110,149	(12,144)	(693)	1,126,152	3,358	0	103,352	26,342	(693)	672,531	3,358	804,890
1976	67,834	(456)	(152,171)	1,241,550	1,581	1,158,338	61,122	29,428	(152,171)	785,055	1,581	725,015
1977	0	26,359	(116,219)	463,970	737	374,847	0	25,173	(116,219)	271,944	560	181,458
1978	67,457	1,905	79,308	1,335,362	680	1,484,712	65,027	17,751	121,904	762,043	674	967,399
1979	17,397	33,884	(51,299)	1,530,926	685	1,531,593	12,302	46,157	(51,299)	737,714	502	745,376
1980	3,159	34,391	(272,825)	1,407,663	1,514	1,173,902	0	49,025	(134,009)	778,059	1,262	694,337
1981	46,060	36,962	23,359	1,775,179	4,348	1,885,908	0	38,942	23,359	1,077,322	4,112	1,143,735
1982	5,979	57,146	116,086	1,631,868	4,205	1,815,284	0	29,059	117,174	990,863	4,045	1,141,141
1983	6,071	63,583	(101,155)	1,085,804	7,475	1,061,778	0	40,205	(101,155)	593,920	7,291	540,261
1984	38,649	109,263	(112,744)	1,484,114	5,391	1,524,673	0	38,487	(114,984)	781,955	5,244	710,702
1985	0	86,772	138,898	1,858,111	4,936	2,088,717	0	42,838	139,689	992,606	4,804	1,179,937
1986	0	51,963	19,989	1,877,183	3,426	1,952,561	0	36,751	37,546	1,014,294	3,285	1,091,876
1987	0	64,827	(25,707)	1,978,945	7,121	2,025,186	0	30,495	(25,522)	1,027,361	6,937	1,039,271
1988	0	72,679	(34,592)	2,217,126	4,490	2,259,703	0	38,804	(29,747)	1,244,196	4,360	1,257,613
1989	0	90,090	(29,411)	2,679,845	7,652	2,748,176	0	29,594	(60,826)	1,532,625	7,490	1,508,883
1990	0	115,074	(11,323)	2,394,999	8,922	2,507,672	0	46,865	(15,092)	1,769,991	8,879	1,810,643
1991	0	92,227	9,325	489,348	4,605	595,505	0	39,274	96,506	446,916	4,560	587,256
1992	0	118,796	(225,603)	1,372,536	2,079	1,267,808	0	28,138	(98,271)	920,978	1,995	852,840
1993	0	136,432	(220,537)	2,170,494	1,864	2,088,253	0	14,186	(128,363)	908,200	1,676	795,699
1994	0	152,414	(78,957)	1,724,433	3,098	1,800,988	0	35,083	(88,211)	1,107,122	2,918	1,056,912
1995	0	137,937	(12,473)	1,921,666	1,711	2,048,841	0	33,963	(16,431)	706,742	1,669	725,943
1996	0	45,591	14,927	2,425,024	2,998	2,488,540	0	31,304	15,438	988,612	2,928	1,038,282
1997	527	107,033	(66,814)	2,247,628	2,090	2,290,464	0	42,670	40,852	1,054,461	2,076	1,140,059
1998	0	95,185	(338,076)	1,664,080	1,589	1,422,778	0	41,910	(106,487)	753,731	1,585	690,739
1999	0	95,262	(2,778)	2,750,154	3,285	2,845,923	0	48,502	(2,807)	1,131,826	3,279	1,180,800
2000	0	134,231	7,726	3,273,337	4,222	3,419,516	0	37,514	7,726	1,814,685	4,216	1,864,141
2001	0	150,830	(18,830)	1,615,776	1,218	1,748,994	0	31,361	(18,830)	1,318,835	1,211	1,332,577
2002	0	92,905	50,342	2,628,462	3,968	2,775,677	0	41,565	50,342	1,831,874	3,961	1,927,742
2003	0	85,360	(48,181)	2,893,333	10,656	2,941,168	0	43,352	(48,181)	1,909,192	10,645	1,915,008
2004	0	25,865	3,161	2,807,825	652	2,837,503	0	41,551	3,161	2,102,371	649	2,147,732
2005	0	62,569	(159,678)	3,423,490	581	3,326,962	0	35,019	(159,678)	1,846,180	559	1,722,080
2006	0	(12,341)	(120,122)	3,501,308	504	3,369,349	0	30,271	(120,122)	2,077,130	504	1,987,783
2007	0	47,736	118,196	2,419,032	312	2,585,276	0	43,400	118,196	2,002,793	305	2,164,694
2008	0	103,375	(4,230)	1,293,903	361	1,393,409	0	39,056	(4,230)	1,275,174	327	1,310,327
2009	0	76,206	(726)	1,318,452	1,367	1,395,299	0	32,900	(726)	1,217,847	1,295	1,251,316
2010	0	76,447	48,231	2,307,915	636	2,433,229	0	43,377	48,231	1,505,057	603	1,597,268
2011	0	73,100	(66,367)	3,331,066	7,210	3,345,009	0	43,638	(66,367)	1,934,455	7,010	1,918,736
2012	**0**	**73,146**	**(15,694)**	**2,361,445**	**7,210**	**2,426,107**	**0**	**43,684**	**(15,694)**	**1,523,434**	**7,010**	**1,558,434**
2013	0	70,217	(27,693)	2,316,632	7,210	2,366,366	0	40,755	(27,693)	1,522,976	7,010	1,543,048
2014	0	70,525	16,625	2,302,494	7,210	2,396,854	0	41,063	16,625	1,508,838	7,010	1,573,536
2015	0	70,654	32,003	2,307,841	7,210	2,417,708	0	41,192	32,003	1,514,185	7,010	1,594,390
2016	0	70,354	(28,401)	2,307,841	7,210	2,357,004	0	40,892	(28,401)	1,514,185	7,010	1,533,686
2017	0	70,586	61,309	2,307,841	7,210	2,446,946	0	41,124	61,309	1,514,185	7,010	1,623,628
2018	0	70,740	(80,817)	2,307,841	7,210	2,304,974	0	41,278	(80,817)	1,514,185	7,010	1,481,656
2019	0	70,564	50,179	2,307,841	7,210	2,435,794	0	41,102	50,179	1,514,185	7,010	1,612,476
2020	0	70,628	(366)	2,307,841	7,210	2,385,313	0	41,166	(366)	1,514,185	7,010	1,561,995
2021	0	70,711	10,725	2,307,841	7,210	2,396,487	0	41,249	10,725	1,514,185	7,010	1,573,169
2022	0	70,705	(3,483)	2,307,841	7,210	2,382,273	0	41,243	(3,483)	1,514,185	7,010	1,558,955
2023	0	70,696	(18,971)	2,307,841	7,210	2,366,776	0	41,234	(18,971)	1,514,185	7,010	1,543,458
2024	0	70,575	11,289	2,307,841	7,210	2,396,915	0	41,113	11,289	1,514,185	7,010	1,573,597
2025	0	70,638	(12,518)	2,307,841	7,210	2,373,171	0	41,176	(12,518)	1,514,185	7,010	1,549,853
2026	0	70,650	24,308	2,307,841	7,210	2,410,009	0	41,188	24,308	1,514,185	7,010	1,586,691
2027	0	70,563	(17,799)	2,307,841	7,210	2,367,815	0	41,101	(17,799)	1,514,185	7,010	1,544,497
2028	0	70,703	12,291	2,307,841	7,210	2,398,045	0	41,241	12,291	1,514,185	7,010	1,574,727
2029	0	70,630	(9,046)	2,307,841	7,210	2,376,635	0	41,168	(9,046)	1,514,185	7,010	1,553,317
2030	0	70,694	20,756	2,307,841	7,210	2,406,501	0	41,232	20,756	1,514,185	7,010	1,583,183
2031	0	70,566	(97,726)	2,307,841	7,210	2,287,891	0	41,104	(97,726)	1,514,185	7,010	1,464,573
2032	0	70,168	84,999	2,307,841	7,210	2,470,218	0	40,706	84,999	1,514,185	7,010	1,646,900
2033	0	70,373	(94,652)	2,307,841	7,210	2,290,772	0	40,911	(94,652)	1,514,185	7,010	1,467,454
2034	0	69,865	69,593	2,307,841	7,210	2,454,509	0	40,403	69,593	1,514,185	7,010	1,631,191
2035	0	69,205	(242,659)	2,307,841	7,210	2,141,597	0	39,743	(242,659)	1,514,185	7,010	1,318,279

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

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: Water Supply	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	[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)	487,915	7,291	438,012	0	34,698	(101,155)	450,489	7,291	391,323
1984	0	45,999	(115,088)	632,262	5,244	568,417	0	33,132	(115,092)	582,414	5,244	505,698
1985	0	50,106	139,973	854,684	4,804	1,049,567	0	54,831	139,954	810,606	4,804	1,010,195
1986	0	38,747	37,546	882,300	3,285	961,878	0	41,421	37,546	839,839	3,285	922,091
1987	0	47,815	(25,522)	897,905	6,937	927,135	0	33,195	(25,522)	863,157	6,937	877,767
1988	0	53,815	(29,747)	1,097,643	4,360	1,126,071	0	39,775	(29,747)	1,055,649	4,360	1,070,037
1989	0	49,088	(60,826)	1,382,599	7,490	1,378,351	0	42,307	(60,826)	1,339,358	7,490	1,328,329
1990	0	66,868	(15,092)	1,627,246	8,879	1,687,901	0	56,663	(15,092)	1,590,893	8,879	1,641,343
1991	0	40,564	105,176	446,148	4,560	596,448	0	34,016	105,176	446,148	4,560	589,900
1992	0	31,820	(92,123)	844,376	1,995	786,068	0	34,477	(92,123)	820,133	1,995	764,482
1993	0	27,158	(127,738)	799,143	1,676	700,239	0	28,614	(127,738)	771,146	1,676	673,698
1994	0	50,802	(88,211)	1,007,214	2,918	972,723	0	57,203	(88,211)	977,703	2,918	949,613
1995	0	48,705	(16,431)	586,829	1,669	620,772	0	36,309	(16,431)	560,695	1,669	582,242
1996	0	58,437	15,438	836,819	2,928	913,622	0	43,710	15,438	800,633	2,928	862,709
1997	0	73,656	40,852	918,124	2,076	1,034,708	0	62,275	40,852	881,843	2,076	987,046
1998	0	61,137	(106,487)	656,796	1,585	613,031	0	47,523	(106,487)	628,084	1,585	570,705
1999	0	77,334	(2,807)	1,011,608	3,279	1,089,414	0	55,514	(2,807)	974,807	3,279	1,030,793
2000	0	87,084	7,726	1,691,120	4,216	1,790,146	0	49,690	7,726	1,651,057	4,216	1,712,689
2001	0	71,588	(18,830)	1,233,862	1,211	1,287,831	0	54,742	(18,830)	1,202,670	1,211	1,239,793
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)	1,825,617	10,645	1,895,054	0	57,291	(48,181)	1,789,015	10,645	1,808,770
2004	0	122,559	3,161	2,032,528	649	2,158,897	0	60,847	3,161	1,992,344	649	2,057,001
2005	0	99,523	(159,678)	1,751,799	559	1,692,203	0	53,502	(159,678)	1,711,929	559	1,606,312
2006	0	128,022	(120,122)	1,967,163	504	1,975,567	0	46,463	(120,122)	1,920,919	504	1,847,764
2007	0	139,502	118,196	1,910,800	305	2,168,803	0	59,454	118,196	1,863,410	305	2,041,365
2008	0	97,209	(4,230)	1,201,345	327	1,294,651	0	51,709	(4,230)	1,168,316	327	1,216,122
2009	0	88,574	(726)	1,169,477	1,295	1,258,620	0	43,229	(726)	1,146,258	1,295	1,190,056
2010	0	92,345	48,231	1,409,074	603	1,550,253	0	59,808	48,231	1,389,942	603	1,498,584
2011	0	40,008	(66,367)	1,680,334	7,010	1,660,985	0	39,758	(66,367)	1,674,106	7,010	1,654,507
2012	**0**	**40,054**	**(15,694)**	**1,446,161**	**7,010**	**1,477,531**	**0**	**39,804**	**(15,694)**	**1,415,741**	**7,010**	**1,446,861**
2013	0	37,125	(27,693)	1,445,703	7,010	1,462,145	0	36,875	(27,693)	1,415,283	7,010	1,431,475
2014	0	37,433	16,625	1,431,565	7,010	1,492,633	0	37,183	16,625	1,401,145	7,010	1,461,963
2015	0	37,562	32,003	1,436,912	7,010	1,513,487	0	37,312	32,003	1,406,492	7,010	1,482,817
2016	0	37,262	(28,401)	1,436,912	7,010	1,452,783	0	37,012	(28,401)	1,406,492	7,010	1,422,113
2017	0	37,494	61,309	1,436,912	7,010	1,542,725	0	37,244	61,309	1,406,492	7,010	1,512,055
2018	0	37,648	(80,817)	1,436,912	7,010	1,400,753	0	37,398	(80,817)	1,406,492	7,010	1,370,083
2019	0	37,472	50,179	1,436,912	7,010	1,531,573	0	37,222	50,179	1,406,492	7,010	1,500,903
2020	0	37,536	(366)	1,436,912	7,010	1,481,092	0	37,286	(366)	1,406,492	7,010	1,450,422
2021	0	37,619	10,725	1,436,912	7,010	1,492,266	0	37,369	10,725	1,406,492	7,010	1,461,596
2022	0	37,613	(3,483)	1,436,912	7,010	1,478,052	0	37,363	(3,483)	1,406,492	7,010	1,447,382
2023	0	37,604	(18,971)	1,436,912	7,010	1,462,555	0	37,354	(18,971)	1,406,492	7,010	1,431,885
2024	0	37,483	11,289	1,436,912	7,010	1,492,694	0	37,233	11,289	1,406,492	7,010	1,462,024
2025	0	37,546	(12,518)	1,436,912	7,010	1,468,950	0	37,296	(12,518)	1,406,492	7,010	1,438,280
2026	0	37,558	24,308	1,436,912	7,010	1,505,788	0	37,308	24,308	1,406,492	7,010	1,475,118
2027	0	37,471	(17,799)	1,436,912	7,010	1,463,594	0	37,221	(17,799)	1,406,492	7,010	1,432,924
2028	0	37,611	12,291	1,436,912	7,010	1,493,824	0	37,361	12,291	1,406,492	7,010	1,463,154
2029	0	37,538	(9,046)	1,436,912	7,010	1,472,414	0	37,288	(9,046)	1,406,492	7,010	1,441,744
2030	0	37,602	20,756	1,436,912	7,010	1,502,280	0	37,352	20,756	1,406,492	7,010	1,471,610
2031	0	37,474	(97,726)	1,436,912	7,010	1,383,670	0	37,224	(97,726)	1,406,492	7,010	1,353,000
2032	0	37,076	84,999	1,436,912	7,010	1,565,997	0	36,826	84,999	1,406,492	7,010	1,535,327
2033	0	37,281	(94,652)	1,436,912	7,010	1,386,551	0	37,031	(94,652)	1,406,492	7,010	1,355,881
2034	0	36,773	69,593	1,436,912	7,010	1,550,288	0	36,523	69,593	1,406,492	7,010	1,519,618
2035	0	36,113	(242,659)	1,436,912	7,010	1,237,376	0	35,863	(242,659)	1,406,492	7,010	1,206,706

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	Tehachapi Division						Mojave Divsion					
	Edmonston Pumping Plant						Alamo Powerplant					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	[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	1,627,123	4,216	1,682,137	0	8,983	(10,472)	958,997	449	957,957
2001	0	39,544	(18,830)	1,187,300	1,211	1,209,225	0	14,526	3,478	709,985	452	728,441
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)	1,771,048	10,645	1,786,832	0	13,676	(20,787)	1,035,349	355	1,028,593
2004	0	57,962	3,161	1,970,391	649	2,032,163	0	15,581	17,207	1,120,384	171	1,153,343
2005	0	40,949	(159,678)	1,693,409	559	1,575,239	0	2,561	(50,014)	1,116,158	84	1,068,789
2006	0	52,291	(120,122)	1,898,070	504	1,830,743	0	13,170	8,653	1,281,524	98	1,303,445
2007	0	65,423	118,196	1,836,977	305	2,020,901	0	17,957	(5,091)	1,076,227	103	1,089,196
2008	0	50,959	(4,230)	1,146,056	327	1,193,112	0	14,592	5,383	614,224	80	634,279
2009	0	59,186	(726)	1,125,654	1,295	1,185,409	0	25,599	(5,619)	493,685	1,100	514,765
2010	0	61,816	48,231	1,369,080	603	1,479,730	0	33,660	6,964	956,827	363	997,814
2011	0	38,208	(66,367)	1,613,050	7,010	1,591,901	0	20,820	(11,907)	1,185,675	1,630	1,196,218
2012	**0**	**38,254**	**(15,694)**	**1,400,607**	**7,010**	**1,430,177**	**0**	**20,866**	**(12,411)**	**912,214**	**1,630**	**922,299**
2013	0	35,325	(27,693)	1,400,149	7,010	1,414,791	0	20,835	(12,409)	941,832	1,630	951,888
2014	0	35,633	16,625	1,386,011	7,010	1,445,279	0	21,002	2,759	926,614	1,630	952,005
2015	0	35,762	32,003	1,391,358	7,010	1,466,133	0	21,066	22,604	931,241	1,630	976,541
2016	0	35,462	(28,401)	1,391,358	7,010	1,405,429	0	20,829	(21,084)	931,241	1,630	932,616
2017	0	35,694	61,309	1,391,358	7,010	1,495,371	0	20,895	33,266	931,241	1,630	987,032
2018	0	35,848	(80,817)	1,391,358	7,010	1,353,399	0	20,998	(50,078)	931,241	1,630	903,791
2019	0	35,672	50,179	1,391,358	7,010	1,484,219	0	20,924	31,508	931,241	1,630	985,303
2020	0	35,736	(366)	1,391,358	7,010	1,433,738	0	20,947	(3,398)	931,241	1,630	950,420
2021	0	35,819	10,725	1,391,358	7,010	1,444,912	0	20,946	(1,117)	931,241	1,630	952,700
2022	0	35,813	(3,483)	1,391,358	7,010	1,430,698	0	20,940	(3,434)	931,241	1,630	950,377
2023	0	35,804	(18,971)	1,391,358	7,010	1,415,201	0	20,939	(18,638)	931,241	1,630	935,172
2024	0	35,683	11,289	1,391,358	7,010	1,445,340	0	20,881	21,309	931,241	1,630	975,061
2025	0	35,746	(12,518)	1,391,358	7,010	1,421,596	0	20,965	(11,624)	931,241	1,630	942,212
2026	0	35,758	24,308	1,391,358	7,010	1,458,434	0	20,930	13,030	931,241	1,630	966,831
2027	0	35,671	(17,799)	1,391,358	7,010	1,416,240	0	20,861	(6,161)	931,241	1,630	947,571
2028	0	35,811	12,291	1,391,358	7,010	1,446,470	0	20,961	4,006	931,241	1,630	957,838
2029	0	35,738	(9,046)	1,391,358	7,010	1,425,060	0	20,955	(913)	931,241	1,630	952,913
2030	0	35,802	20,756	1,391,358	7,010	1,454,926	0	20,930	8,528	931,241	1,630	962,329
2031	0	35,674	(97,726)	1,391,358	7,010	1,336,316	0	20,956	(31,057)	931,241	1,630	922,770
2032	0	35,276	84,999	1,391,358	7,010	1,518,643	0	20,865	43,953	931,241	1,630	997,689
2033	0	35,481	(94,652)	1,391,358	7,010	1,339,197	0	20,854	(37,929)	931,241	1,630	915,796
2034	0	34,973	69,593	1,391,358	7,010	1,502,934	0	20,769	28,588	931,241	1,630	982,228
2035	0	34,313	(242,659)	1,391,358	7,010	1,190,022	0	20,892	(49,219)	931,241	1,630	904,544

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	Mojave Division (continued)											
	Pearblossom Pumping Plant						Mojave Siphon Powerplant					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	[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)	321,387	427	302,990
1996	0	9,514	(11,410)	424,252	565	422,921	0	(5,577)	(11,410)	418,141	565	401,719
1997	0	(1,124)	38,960	461,563	507	499,906	0	5,171	38,960	452,525	507	497,163
1998	0	(2,087)	16,361	334,965	363	349,602	0	11,496	16,361	332,385	363	360,605
1999	0	(1,154)	(8,486)	505,624	396	496,380	0	11,065	(8,486)	498,919	396	501,894
2000	0	(23,296)	(10,472)	864,999	449	831,680	0	4,896	(10,472)	854,980	449	849,853
2001	0	(9,304)	3,478	635,316	452	629,942	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)	962,488	355	944,870	0	(6,586)	(20,787)	941,713	355	914,695
2004	0	(15,558)	17,207	1,047,521	171	1,049,341	0	5,034	17,207	1,035,315	171	1,057,727
2005	0	(18,967)	(50,014)	1,043,564	84	974,667	0	827	(50,014)	1,025,453	84	976,350
2006	0	(21,986)	8,653	1,187,627	98	1,174,392	0	(845)	8,653	1,154,634	98	1,162,540
2007	0	(13,055)	(5,091)	975,802	103	957,759	0	3,060	(5,091)	956,281	103	954,353
2008	0	723	5,383	550,143	80	556,329	0	8,380	5,383	534,480	80	548,323
2009	0	3,807	(5,619)	431,289	1,100	430,577	0	10,520	(5,619)	411,075	1,100	417,076
2010	0	3,489	6,964	886,188	363	897,004	0	11,912	6,964	858,548	363	877,787
2011	0	15,470	(11,907)	1,132,427	1,430	1,137,420	0	12,000	(11,907)	1,125,156	1,430	1,126,679
2012	**0**	**15,516**	**(12,411)**	**813,964**	**1,430**	**818,499**	**0**	**12,046**	**(12,411)**	**790,552**	**1,430**	**791,617**
2013	0	15,485	(12,409)	827,719	1,430	832,225	0	12,015	(12,409)	780,739	1,430	781,775
2014	0	15,652	2,759	830,120	1,430	849,961	0	12,182	2,759	781,938	1,430	798,309
2015	0	15,716	22,604	834,621	1,430	874,371	0	12,246	22,604	786,439	1,430	822,719
2016	0	15,479	(21,084)	834,621	1,430	830,446	0	12,009	(21,084)	786,439	1,430	778,794
2017	0	15,545	33,266	834,621	1,430	884,862	0	12,075	33,266	786,439	1,430	833,210
2018	0	15,648	(50,078)	834,621	1,430	801,621	0	12,178	(50,078)	786,439	1,430	749,969
2019	0	15,574	31,508	834,621	1,430	883,133	0	12,104	31,508	786,439	1,430	831,481
2020	0	15,597	(3,398)	834,621	1,430	848,250	0	12,127	(3,398)	786,439	1,430	796,598
2021	0	15,596	(1,117)	834,621	1,430	850,530	0	12,126	(1,117)	786,439	1,430	798,878
2022	0	15,590	(3,434)	834,621	1,430	848,207	0	12,120	(3,434)	786,439	1,430	796,555
2023	0	15,589	(18,638)	834,621	1,430	833,002	0	12,119	(18,638)	786,439	1,430	781,350
2024	0	15,531	21,309	834,621	1,430	872,891	0	12,061	21,309	786,439	1,430	821,239
2025	0	15,615	(11,624)	834,621	1,430	840,042	0	12,145	(11,624)	786,439	1,430	788,390
2026	0	15,580	13,030	834,621	1,430	864,661	0	12,110	13,030	786,439	1,430	813,009
2027	0	15,511	(6,161)	834,621	1,430	845,401	0	12,041	(6,161)	786,439	1,430	793,749
2028	0	15,611	4,006	834,621	1,430	855,668	0	12,141	4,006	786,439	1,430	804,016
2029	0	15,605	(913)	834,621	1,430	850,743	0	12,135	(913)	786,439	1,430	799,091
2030	0	15,580	8,528	834,621	1,430	860,159	0	12,110	8,528	786,439	1,430	808,507
2031	0	15,606	(31,057)	834,621	1,430	820,600	0	12,136	(31,057)	786,439	1,430	768,948
2032	0	15,515	43,953	834,621	1,430	895,519	0	12,045	43,953	786,439	1,430	843,867
2033	0	15,504	(37,929)	834,621	1,430	813,626	0	12,034	(37,929)	786,439	1,430	761,974
2034	0	15,419	28,588	834,621	1,430	880,058	0	11,949	28,588	786,439	1,430	828,406
2035	0	15,542	(49,219)	834,621	1,430	802,374	0	12,072	(49,219)	786,439	1,430	750,722

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)									
	Santa Ana Division									
	Devil Canyon Powerplant						Greenspot Pumping Plant			
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Water Supply Delivery	Total
	[75]	[76]	[77]	[78]	[79]	[80]	[81]	[82]	[83]	[84]
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	37	0	0	1,275	0	1,312	0	0	0	0
1973	40,848	14,745	0	51,812	0	107,405	0	0	0	0
1974	74,666	8,367	(4,925)	102,198	0	180,306	0	0	0	0
1975	10,000	1,995	(6,719)	189,526	0	194,802	0	0	0	0
1976	4,168	5,180	(9,182)	235,711	23	235,900	0	0	0	0
1977	0	8,082	(5,235)	101,137	469	104,453	0	0	0	0
1978	14,820	3,754	21,686	373,636	481	414,377	0	0	0	0
1979	12,302	5,620	(27,107)	356,854	485	348,154	0	0	0	0
1980	0	9,468	12,714	395,975	742	418,899	0	0	0	0
1981	0	8,401	(23,448)	569,088	807	554,848	0	0	0	0
1982	0	6,012	44,469	399,799	1,798	452,078	0	0	0	0
1983	0	8,597	5,188	230,277	1,078	245,140	0	0	0	0
1984	0	12,861	(850)	250,938	1,414	264,363	0	0	0	0
1985	0	14,325	(8,791)	349,336	956	355,826	0	0	0	0
1986	0	9,486	8,339	392,650	1,378	411,853	0	0	0	0
1987	0	7,923	(11,335)	375,451	1,118	373,157	0	0	0	0
1988	0	11,090	2,238	499,285	861	513,474	0	0	0	0
1989	0	13,116	(5,487)	658,730	1,301	667,660	0	0	0	0
1990	0	13,439	(4,622)	728,723	1,281	738,821	0	0	0	0
1991	0	10,836	18,308	161,032	340	190,516	0	0	0	0
1992	0	9,157	(9,084)	328,354	371	328,798	0	0	0	0
1993	0	5,602	5,593	244,678	364	256,237	0	0	0	0
1994	0	10,915	(11,045)	393,690	357	393,917	0	0	0	0
1995	0	11,268	2,331	320,978	358	334,935	0	0	0	0
1996	0	9,496	13,015	417,656	494	440,661	0	0	0	0
1997	0	8,087	(19,685)	451,874	416	440,692	0	0	0	0
1998	0	6,700	16,643	332,198	310	355,851	0	0	0	0
1999	0	9,784	(4,177)	497,787	341	503,735	0	0	0	0
2000	0	7,407	(11,040)	853,786	375	850,528	0	0	0	0
2001	0	9,324	8,183	631,363	374	649,244	0	0	0	0
2002	0	10,315	9,682	818,028	413	838,438	0	0	0	0
2003	0	9,198	(18,298)	922,901	260	914,061	0	0	4,526	4,526
2004	0	11,166	15,150	1,033,309	85	1,059,710	0	0	3,798	3,798
2005	0	4,500	(63,441)	1,010,247	0	951,306	0	0	3,686	3,686
2006	0	8,208	7,571	1,153,993	0	1,169,772	0	0	7,775	7,775
2007	0	8,216	(5,872)	953,803	0	956,147	0	0	12,168	12,168
2008	0	10,599	7,759	533,221	0	551,579	0	0	14,408	14,408
2009	0	10,035	(5,600)	410,032	1,025	415,492	0	0	20,542	20,542
2010	0	6,275	5,344	851,786	307	863,712	0	0	18,395	18,395
2011	0	7,761	(7,677)	1,107,593	1,250	1,108,927	0	0	15,973	15,973
2012	**0**	**7,807**	**(8,229)**	**788,152**	**1,250**	**788,980**	**0**	**0**	**6,264**	**6,264**
2013	0	8,499	(8,227)	776,838	1,250	778,360	0	0	7,200	7,200
2014	0	8,522	(4,585)	778,038	1,250	783,225	0	0	8,400	8,400
2015	0	8,499	2,964	782,538	1,250	795,251	0	0	12,900	12,900
2016	0	8,483	(1,269)	782,538	1,250	791,002	0	0	12,900	12,900
2017	0	8,502	9,828	782,538	1,250	802,118	0	0	12,900	12,900
2018	0	8,484	(19,777)	782,538	1,250	772,495	0	0	12,900	12,900
2019	0	8,492	17,408	782,538	1,250	809,688	0	0	12,900	12,900
2020	0	8,483	(17,305)	782,538	1,250	774,966	0	0	12,900	12,900
2021	0	8,486	(398)	782,538	1,250	791,876	0	0	12,900	12,900
2022	0	8,486	13,735	782,538	1,250	806,009	0	0	12,900	12,900
2023	0	8,482	(8,417)	782,538	1,250	783,853	0	0	12,900	12,900
2024	0	8,462	689	782,538	1,250	792,939	0	0	12,900	12,900
2025	0	8,489	4,591	782,538	1,250	796,868	0	0	12,900	12,900
2026	0	8,475	(3,819)	782,538	1,250	788,444	0	0	12,900	12,900
2027	0	8,479	745	782,538	1,250	793,012	0	0	12,900	12,900
2028	0	8,481	(5,355)	782,538	1,250	786,914	0	0	12,900	12,900
2029	0	8,481	2,909	782,538	1,250	795,178	0	0	12,900	12,900
2030	0	8,480	296	782,538	1,250	792,564	0	0	12,900	12,900
2031	0	8,475	(1,976)	782,538	1,250	790,287	0	0	12,900	12,900
2032	0	8,449	18,821	782,538	1,250	811,058	0	0	12,900	12,900
2033	0	8,449	(23,419)	782,538	1,250	768,818	0	0	12,900	12,900
2034	0	8,443	21,651	782,538	1,250	813,882	0	0	12,900	12,900
2035	0	8,451	(31,434)	782,538	1,250	760,805	0	0	12,900	12,900

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (contiued)													
	Santa Ana Division (continued)								West Branch, California Aqueduct					
	Crafton Hills Pumping Plant				Cherry Valley Pumping Plant				Oso Pumping Plant					
	Initial Fill Water	Opera-tional Losses	Water Supply Delivery	Total	Initial Fill Water	Opera-tional Losses	Water Supply Delivery	Total	Initial Fill Water	Opera-tional Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recrea-tion	Total
	[85]	[86]	[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	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	2,444	133	0	0	0	2,577
1972	0	0	0	0	0	0	0	0	63,883	6,557	(6,405)	71,991	6,481	142,507
1973	0	0	0	0	0	0	0	0	124,461	16,995	4,029	155,317	1,075	301,877
1974	0	0	0	0	0	0	0	0	160,860	12,702	(4,146)	209,172	2,064	380,652
1975	0	0	0	0	0	0	0	0	93,352	23,008	7,704	374,306	3,288	501,658
1976	0	0	0	0	0	0	0	0	56,954	15,845	(136,116)	420,708	1,429	358,820
1977	0	0	0	0	0	0	0	0	0	4,407	(98,685)	122,447	(20)	28,149
1978	0	0	0	0	0	0	0	0	45,105	9,061	52,774	171,139	176	278,255
1979	0	0	0	0	0	0	0	0	0	25,355	(18,781)	145,598	0	152,172
1980	0	0	0	0	0	0	0	0	0	24,576	(140,168)	165,931	481	50,820
1981	0	0	0	0	0	0	0	0	0	15,254	59,637	283,264	3,179	361,334
1982	0	0	0	0	0	0	0	0	0	23,824	61,685	360,878	2,126	448,513
1983	0	0	0	0	0	0	0	0	0	23,601	(74,308)	166,995	6,111	122,399
1984	0	0	0	0	0	0	0	0	0	12,461	(138,146)	272,101	3,750	150,166
1985	0	0	0	0	0	0	0	0	0	28,257	142,219	403,097	3,728	577,301
1986	0	0	0	0	0	0	0	0	0	22,387	25,288	393,203	1,777	442,655
1987	0	0	0	0	0	0	0	0	0	18,164	(10,252)	433,452	5,698	447,062
1988	0	0	0	0	0	0	0	0	0	20,461	(30,848)	507,169	3,389	500,171
1989	0	0	0	0	0	0	0	0	0	27,914	(40,463)	611,681	6,083	605,215
1990	0	0	0	0	0	0	0	0	0	33,666	(9,176)	791,355	7,491	823,336
1991	0	0	0	0	0	0	0	0	0	16,460	70,754	263,909	4,166	355,289
1992	0	0	0	0	0	0	0	0	0	8,238	(75,008)	435,661	1,572	370,463
1993	0	0	0	0	0	0	0	0	0	2,674	(124,283)	451,263	1,233	330,887
1994	0	0	0	0	0	0	0	0	0	18,688	(91,606)	490,819	2,488	420,389
1995	0	0	0	0	0	0	0	0	0	21,775	14,330	157,629	1,242	194,976
1996	0	0	0	0	0	0	0	0	0	30,121	26,848	286,066	2,363	345,398
1997	0	0	0	0	0	0	0	0	0	30,468	1,892	323,212	1,569	357,141
1998	0	0	0	0	0	0	0	0	0	26,851	(122,848)	208,916	1,222	114,141
1999	0	0	0	0	0	0	0	0	0	25,690	5,679	357,664	2,883	391,916
2000	0	0	0	0	0	0	0	0	0	33,658	18,198	668,126	3,767	723,749
2001	0	0	0	0	0	0	0	0	0	24,551	(22,308)	477,315	759	480,317
2002	0	0	0	0	0	0	0	0	0	44,692	41,944	779,284	3,471	869,391
2003	0	0	2,733	2,733	0	0	116	116	0	39,495	(27,394)	735,699	10,290	758,090
2004	0	0	3,212	3,212	0	0	841	841	0	41,947	(14,046)	850,007	478	878,386
2005	0	0	2,727	2,727	0	0	692	692	0	38,154	(109,664)	577,251	475	506,216
2006	0	0	6,892	6,892	0	0	807	807	0	38,534	(128,775)	616,546	406	526,711
2007	0	0	9,038	9,038	0	0	177	177	0	46,921	123,287	760,750	202	931,160
2008	0	0	13,728	13,728	0	0	1,042	1,042	0	36,204	(9,613)	531,832	247	558,670
2009	0	0	16,463	16,463	0	0	1,898	1,898	0	33,295	4,893	631,969	195	670,352
2010	0	0	17,778	17,778	0	0	5,685	5,685	0	27,788	41,267	412,253	240	481,548
2011	0	0	15,878	15,878	0	0	2,064	2,064	0	17,338	(54,460)	427,375	5,380	395,633
2012	**0**	**0**	**6,264**	**6,264**	**0**	**0**	**0**	**0**	**0**	**17,338**	**(3,283)**	**488,393**	**5,380**	**507,828**
2013	0	0	7,200	7,200	0	0	0	0	0	14,440	(15,284)	458,317	5,380	462,853
2014	0	0	8,400	8,400	0	0	0	0	0	14,581	13,866	459,397	5,380	493,224
2015	0	0	12,900	12,900	0	0	0	0	0	14,646	9,399	460,117	5,380	489,542
2016	0	0	12,900	12,900	0	0	0	0	0	14,583	(7,317)	460,117	5,380	472,763
2017	0	0	12,900	12,900	0	0	0	0	0	14,749	28,043	460,117	5,380	508,289
2018	0	0	12,900	12,900	0	0	0	0	0	14,800	(30,739)	460,117	5,380	449,558
2019	0	0	12,900	12,900	0	0	0	0	0	14,698	18,671	460,117	5,380	498,866
2020	0	0	12,900	12,900	0	0	0	0	0	14,739	3,032	460,117	5,380	483,268
2021	0	0	12,900	12,900	0	0	0	0	0	14,823	11,842	460,117	5,380	492,162
2022	0	0	12,900	12,900	0	0	0	0	0	14,823	(49)	460,117	5,380	480,271
2023	0	0	12,900	12,900	0	0	0	0	0	14,815	(333)	460,117	5,380	479,979
2024	0	0	12,900	12,900	0	0	0	0	0	14,752	(10,020)	460,117	5,380	470,229
2025	0	0	12,900	12,900	0	0	0	0	0	14,731	(894)	460,117	5,380	479,334
2026	0	0	12,900	12,900	0	0	0	0	0	14,778	11,278	460,117	5,380	491,553
2027	0	0	12,900	12,900	0	0	0	0	0	14,760	(11,638)	460,117	5,380	468,619
2028	0	0	12,900	12,900	0	0	0	0	0	14,800	8,285	460,117	5,380	488,582
2029	0	0	12,900	12,900	0	0	0	0	0	14,733	(8,133)	460,117	5,380	472,097
2030	0	0	12,900	12,900	0	0	0	0	0	14,822	12,228	460,117	5,380	492,547
2031	0	0	12,900	12,900	0	0	0	0	0	14,668	(66,669)	460,117	5,380	413,496
2032	0	0	12,900	12,900	0	0	0	0	0	14,361	41,046	460,117	5,380	520,904
2033	0	0	12,900	12,900	0	0	0	0	0	14,577	(56,723)	460,117	5,380	423,351
2034	0	0	12,900	12,900	0	0	0	0	0	14,154	41,005	460,117	5,380	520,656
2035	0	0	12,900	12,900	0	0	0	0	0	13,371	(193,440)	460,117	5,380	285,428

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)											
	West Branch, California Aqueduct (continued)											
	Warne Powerplant						Castaic Powerplant					
	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total	Initial Fill Water	Operational Losses	Reservoir Storage Changes	Deliveries: Water Supply	Deliveries: Recreation	Total
	[99]	[100]	[101]	[102]	[103]	[104]	[105]	[106]	[107]	[108]	[109]	[110]
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	57,364	1,788	(6,162)	71,938	6,481	131,409
1973	0	0	0	0	0	0	37,198	6,430	4,542	155,297	1,075	204,542
1974	0	0	0	0	0	0	82,364	1,772	(950)	209,136	541	292,863
1975	0	0	0	0	0	0	90,460	5,002	(1,534)	374,280	1,563	469,771
1976	0	0	0	0	0	0	55,990	(7,695)	(132,036)	420,684	1,429	338,372
1977	0	0	0	0	0	0	0	(1,485)	(102,532)	122,447	(20)	18,410
1978	0	0	0	0	0	0	45,105	(2,264)	129,523	171,139	176	343,679
1979	0	0	0	0	0	0	0	(2,339)	(20,400)	145,598	0	122,859
1980	0	0	0	0	0	0	0	991	(118,026)	165,931	481	49,377
1981	0	0	0	0	0	0	0	(44,416)	47,244	283,264	2,704	288,796
1982	0	24,468	61,169	360,878	2,126	448,641	0	(60,135)	59,069	360,878	1,187	360,999
1983	0	20,780	(74,308)	166,995	6,111	119,578	0	(33,418)	(46,904)	166,995	2,618	89,291
1984	0	13,572	(139,219)	275,212	2,208	151,773	0	(29,618)	(139,545)	275,212	2,201	108,250
1985	0	29,286	141,492	403,097	874	574,749	0	(4,622)	135,007	403,097	844	534,326
1986	0	21,579	25,288	393,203	1,777	441,847	0	(6,664)	21,520	393,203	623	408,682
1987	0	20,885	(10,252)	433,452	5,698	449,783	0	(519)	(6,241)	433,452	2,734	429,426
1988	0	23,253	(31,453)	507,169	3,389	502,358	0	12,650	(28,498)	507,169	1,359	492,680
1989	0	27,131	(40,463)	611,681	6,083	604,432	0	634	(40,154)	611,681	3,161	575,322
1990	0	34,208	(9,176)	791,355	7,491	823,878	0	(14,012)	(15,101)	786,519	3,419	760,825
1991	0	16,908	70,754	263,909	4,166	355,737	0	(871)	89,637	262,921	2,283	353,970
1992	0	9,638	(75,008)	435,661	1,572	371,863	0	(609)	(71,795)	435,661	1,543	364,800
1993	0	1,922	(124,283)	451,257	1,233	330,129	0	21,959	(77,428)	451,257	1,211	396,999
1994	0	23,151	(91,606)	490,819	2,488	424,852	0	5,205	(95,738)	490,819	2,465	402,751
1995	0	15,860	14,330	157,629	1,242	189,061	0	20,400	75,863	157,629	1,223	255,115
1996	0	21,191	26,848	286,066	2,363	336,468	0	(5,621)	19,088	286,066	2,362	301,895
1997	0	23,437	1,892	323,201	1,569	350,099	0	11,119	(1,802)	323,201	1,566	334,084
1998	0	26,864	(122,848)	208,909	1,222	114,147	0	24,544	(57,726)	208,909	1,222	176,949
1999	0	21,822	8,120	357,664	2,883	390,489	0	(3,670)	6,280	357,664	2,865	363,139
2000	0	27,237	18,198	668,126	3,767	717,328	0	(19,645)	9,320	665,926	1,556	657,157
2001	0	17,404	(22,308)	477,315	759	473,170	0	(5,949)	(16,588)	477,315	746	455,524
2002	0	35,058	41,944	779,284	3,471	859,757	0	10,071	35,623	776,136	305	822,135
2003	0	28,167	(27,394)	735,699	10,290	746,762	0	9,075	(17,034)	725,781	356	718,178
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	23,453	(128,775)	616,546	406	511,630	0	4,173	(121,607)	616,546	396	499,508
2007	0	29,978	123,287	760,750	202	914,217	0	(1,664)	117,880	758,860	196	875,272
2008	0	36,744	(9,613)	531,832	247	559,210	0	498	(14,279)	529,852	211	516,282
2009	0	30,564	4,893	631,969	195	667,621	0	(2,825)	9,194	628,819	164	635,352
2010	0	26,930	41,267	412,253	240	480,690	0	(4,135)	40,284	409,103	207	445,459
2011	0	15,428	(54,460)	427,375	5,380	393,723	0	9,696	(50,800)	424,848	2,330	386,074
2012	**0**	**15,428**	**(3,283)**	**488,393**	**5,380**	**505,918**	**0**	**9,696**	**2,378**	**480,504**	**2,330**	**494,908**
2013	0	12,530	(15,284)	458,317	5,380	460,943	0	6,245	(9,623)	450,423	2,330	449,375
2014	0	12,671	13,866	459,397	5,380	491,314	0	6,386	13,866	451,503	2,330	474,085
2015	0	12,736	9,399	460,117	5,380	487,632	0	6,451	9,399	452,223	2,330	470,403
2016	0	12,673	(7,317)	460,117	5,380	470,853	0	6,388	(7,317)	452,223	2,330	453,624
2017	0	12,839	28,043	460,117	5,380	506,379	0	6,554	28,043	452,223	2,330	489,150
2018	0	12,890	(30,739)	460,117	5,380	447,648	0	6,605	(30,739)	452,223	2,330	430,419
2019	0	12,788	18,671	460,117	5,380	496,956	0	6,503	18,671	452,223	2,330	479,727
2020	0	12,829	3,032	460,117	5,380	481,358	0	6,544	3,032	452,223	2,330	464,129
2021	0	12,913	11,842	460,117	5,380	490,252	0	6,628	11,842	452,223	2,330	473,023
2022	0	12,913	(49)	460,117	5,380	478,361	0	6,628	(49)	452,223	2,330	461,132
2023	0	12,905	(333)	460,117	5,380	478,069	0	6,620	(333)	452,223	2,330	460,840
2024	0	12,842	(10,020)	460,117	5,380	468,319	0	6,557	(10,020)	452,223	2,330	451,090
2025	0	12,821	(894)	460,117	5,380	477,424	0	6,536	(894)	452,223	2,330	460,195
2026	0	12,868	11,278	460,117	5,380	489,643	0	6,583	11,278	452,223	2,330	472,414
2027	0	12,850	(11,638)	460,117	5,380	466,709	0	6,565	(11,638)	452,223	2,330	449,480
2028	0	12,890	8,285	460,117	5,380	486,672	0	6,605	8,285	452,223	2,330	469,443
2029	0	12,823	(8,133)	460,117	5,380	470,187	0	6,538	(8,133)	452,223	2,330	452,958
2030	0	12,912	12,228	460,117	5,380	490,637	0	6,627	12,228	452,223	2,330	473,408
2031	0	12,758	(66,669)	460,117	5,380	411,586	0	6,473	(66,669)	452,223	2,330	394,357
2032	0	12,451	41,046	460,117	5,380	518,994	0	6,166	41,046	452,223	2,330	501,765
2033	0	12,667	(56,723)	460,117	5,380	421,441	0	6,382	(56,723)	452,223	2,330	404,212
2034	0	12,244	41,005	460,117	5,380	518,746	0	5,959	41,005	452,223	2,330	501,517
2035	0	11,461	(193,440)	460,117	5,380	283,518	0	5,176	(193,440)	452,223	2,330	266,289

TABLE B-6. Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(in acre-feet)

Calendar Year	CALIFORNIA AQUEDUCT (continued)							
	Coastal Branch, California Aqueduct							
	Las Perillas and Badger Hill Pumping Plants				Devil's Den, Bluestone, and Polonio Pass Pumping Plants			
	Initial Fill Water	Operational Losses	Water Supply Delivery	Total	Initial Fill Water	Operational Losses	Water Supply Delivery	Total
	[111]	[112]	[113]	[114]	[115]	[116]	[117]	[118]
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	210	873	79,039	80,122	0	0	0	0
1969	0	1,042	62,064	63,106	0	0	0	0
1970	0	638	83,649	84,287	0	0	0	0
1971	0	3,455	110,971	114,426	0	0	0	0
1972	0	1,745	121,755	123,500	0	0	0	0
1973	0	5,479	78,645	84,124	0	0	0	0
1974	0	7,344	78,174	85,518	0	0	0	0
1975	0	5,819	85,216	91,035	0	0	0	0
1976	0	6,562	90,058	96,620	0	0	0	0
1977	0	5,777	40,579	46,356	0	0	0	0
1978	0	9,085	92,604	101,689	0	0	0	0
1979	0	10,896	123,155	134,051	0	0	0	0
1980	0	9,449	111,379	120,828	0	0	0	0
1981	0	13,232	109,754	122,986	0	0	0	0
1982	0	7,984	95,776	103,760	0	0	0	0
1983	0	5,710	100,518	106,228	0	0	0	0
1984	0	5,740	126,387	132,127	0	0	0	0
1985	0	7,563	120,823	128,386	0	0	0	0
1986	0	8,719	131,599	140,318	0	0	0	0
1987	0	11,363	128,080	139,443	0	0	0	0
1988	0	12,831	120,969	133,800	0	0	0	0
1989	0	11,454	116,801	128,255	0	0	0	0
1990	0	13,022	109,802	122,824	0	0	0	0
1991	0	5,802	1,496	7,298	0	0	0	0
1992	0	7,893	79,635	87,528	0	0	0	0
1993	0	9,282	94,921	104,203	0	0	0	0
1994	0	8,515	87,158	95,673	0	0	0	0
1995	0	6,986	94,536	101,522	0	0	0	0
1996	0	9,663	114,630	124,293	0	0	0	0
1997	527	8,343	110,428	119,298	527	0	8,538	9,065
1998	0	8,415	109,400	117,815	0	0	22,210	22,210
1999	0	2,453	120,061	122,514	0	303	23,880	24,183
2000	0	(429)	120,313	119,884	0	0	26,703	26,703
2001	0	(742)	87,915	87,173	0	0	23,229	23,229
2002	0	638	99,783	100,421	0	(151)	31,991	31,840
2003	0	161	101,113	101,274	0	284	31,421	31,705
2004	0	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	1,994	115,433	117,427	0	2,034	27,484	29,518
2007	0	3,355	131,590	134,945	0	293	31,516	31,809
2008	0	3,696	107,239	110,935	0	(30)	21,795	21,765
2009	0	2,242	102,509	104,751	0	(3,078)	19,253	16,175
2010	0	4,050	106,590	110,640	0	272	21,532	21,804
2011	0	802	110,456	111,258	0	212	38,755	38,967
2012	**0**	**802**	**110,646**	**111,448**	0	212	38,074	38,286
2013	0	802	114,864	115,666	0	212	42,292	42,504
2014	0	802	114,863	115,665	0	212	42,292	42,504
2015	0	802	114,863	115,665	0	212	42,292	42,504
2016	0	802	114,863	115,665	0	212	42,292	42,504
2017	0	802	114,863	115,665	0	212	42,292	42,504
2018	0	802	114,863	115,665	0	212	42,292	42,504
2019	0	802	114,863	115,665	0	212	42,292	42,504
2020	0	802	114,863	115,665	0	212	42,292	42,504
2021	0	802	114,863	115,665	0	212	42,292	42,504
2022	0	802	114,863	115,665	0	212	42,292	42,504
2023	0	802	114,863	115,665	0	212	42,292	42,504
2024	0	802	114,863	115,665	0	212	42,292	42,504
2025	0	802	114,863	115,665	0	212	42,292	42,504
2026	0	802	114,863	115,665	0	212	42,292	42,504
2027	0	802	114,863	115,665	0	212	42,292	42,504
2028	0	802	114,863	115,665	0	212	42,292	42,504
2029	0	802	114,863	115,665	0	212	42,292	42,504
2030	0	802	114,863	115,665	0	212	42,292	42,504
2031	0	802	114,863	115,665	0	212	42,292	42,504
2032	0	802	114,863	115,665	0	212	42,292	42,504
2033	0	802	114,863	115,665	0	212	42,292	42,504
2034	0	802	114,863	115,665	0	212	42,292	42,504
2035	0	802	114,863	115,665	0	212	42,292	42,504

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
	Miscellaneous 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[f]	Water Supply and Power Total		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
CONSERVATION FACILITIES									
Upper Feather Division									
Frenchman Dam & Lake	180	0	0	0	602	0	782	2,876	3,658
Grizzly Valley Dam & Lake Davis	65	0	0	0	54	0	119	8,871	8,991
Antelope Dam & Lake	1	0	0	0	0	0	1	5,863	5,864
Abbey Bridge Dam & Reservoir	0	0	0	0	0	0	0	520	520
Dixie Refuge Dam & Reservoir	0	0	0	0	0	0	0	236	236
Total, Upper Feather Division	246	0	0	0	656	0	902	18,367	19,269
Oroville Division									
Multipurpose Facilities	35,328	0	0	0	433,384	0	468,712	98,266	566,978
Specific Power Facilities	230	0	0	0	105,943	0	106,173	(1,009)	105,164
Total, Oroville Division	35,558	0	0	0	539,327	0	574,885	97,257	672,142
California Aqueduct									
North San Joaquin Division	1,210	0	0	0	81,413	0	82,623	3,228	85,851
San Luis Division	13,152	0	0	0	105,857	0	119,009	4,618	123,627
Total, California Aqueduct	14,362	0	0	0	187,270	0	201,632	7,846	209,478
Delta Facilities	37,311	0	0	0	330,611	0	367,922	14,486	382,409
Planning and Pre-Operation	5,302	0	0	0	65,507	0	70,809	0	70,809
TOTAL, CONSERVATION FACILIITES	**92,779**	**0**	**0**	**0**	**1,123,371**	**0**	**1,216,150**	**137,956**	**1,354,106**
TRANSPORTATION FACILITIES									
Upper Feather Division									
Grizzly Valley Pipeline	(7)	0	320	0	0	344	656	0	656
North Bay Aqueduct	374,832	0	676	0	0	110,190	485,697	0	485,697
South Bay Aqueduct	173,892	0	3,600	0	0	142,377	319,870	23,442	343,311
California Aqueduct									
North San Joaquin Division	10,052	0	108	0	0	198,224	208,384	7,183	215,567
San Luis Division	8,906	0	0	0	0	146,254	155,160	8,365	163,526
South San Joaquin Division	3,488	0	4,095	2,093	0	299,800	309,476	17,852	327,329
Tehachapi Division	(498)	0	0	5,230	0	349,178	353,910	21,027	374,937
Mojave Division	(677)	0	1,228	0	0	326,829	327,380	40,230	367,609
Santa Ana Division	(8,313)	0	6,053	5,331	0	410,378	413,449	43,155	456,604
West Branch	40,013	0	461	37	0	489,828	530,340	32,597	562,936
Coastal Branch	371	0	176	0	0	506,291	506,838	0	506,838
Total, California Aqueduct	53,343	0	12,120	12,691	0	2,726,783	2,804,937	170,410	2,975,347
TOTAL, TRANSPORTATION FACILITIES	**602,059**	**0**	**16,716**	**12,691**	**0**	**2,979,694**	**3,611,160**	**193,852**	**3,805,012**
East Branch Enlargement	0	0	0	0	0	896,013	896,013	0	896,013
East Branch Extention	0	0	0	0	0	367,570	367,570	0	367,570
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	91,235	91,235
Off-Aqueduct Power Generation Facilities	0	0	0	0	0	487,123	487,123	0	487,123
Small Hydro Power Generation Facilities	0	0	0	0	14,095	85,681	99,776	0	99,776
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	95,777	95,777
Davis-Grunsky	0	0	0	0	0	0	0	130,000	130,000
TOTAL THROUGH 2020	**694,838**	**0**	**16,716**	**12,691**	**1,172,152**	**4,846,789**	**6,743,186**	**648,820**	**7,392,006**

[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 $85,681,000 for costs included in "Small Hydro Power Generation Facilities" line.

TABLE B-8. SWP Capital Costs of Requested Delivery Structures

(in dollars)

Project Service Area and Water Supply Contractor	Calendar Year Capital Costs (a)						
	1952-2008	2009	2010	2011	2012	2013	Total
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
FEATHER RIVER AREA							
County of Butte	224,440	7,857	26,618	8,000	0	0	266,915
Plumas County Flood Control and Water Conservation District	8,723	0	0	0	0	0	8,723
Thermalito Irrigation District (b)	43,939	0	0	0	0	0	43,939
Subtotal	277,102	7,857	26,618	8,000	0	0	319,577
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 (d)	415,483	0	0	1,112,422	352,717	0	1,880,622
Alameda County Water District (d)	239,579	0	0	373,997	18,000	0	631,576
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	1,743,242	0	0	1,486,419	370,717	0	3,600,378
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
County of Kings	0	0	17,206	20,000	20,000	0	57,206
Dudley Ridge Water District	304,541	0	0	0	0	0	304,541
Empire West Side Irrigation District	6,358	0	0	0	0	0	6,358
Green Valley Water District (c)	5,292	0	0	0	0	0	5,292
Kern County Water Agency	3,255,339	22,341	7,030	90,000	75,000	0	3,449,710
Oak Flat Water District	97,643	0	0	0	0	0	97,643
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	4,039,497	22,341	24,236	110,000	95,000	0	4,291,074
SOUTHERN CALIFORNIA AREA							
Antelope Valley-East Kern Water Agency	479,430	76,710	81,990	90,000	75,000	0	803,130
Castaic Lake Water Agency	375,593	0	0	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	8,310	18,818	45,000	20,000	0	303,893
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	131,052
San Gorgonio Pass Water Agency	99,527	2,648	14,565	5,000	25,000	0	146,740
The Metropolitan Water District of Southern California	4,814,078	0	0	0	0	0	4,814,078
Ventura County Watershed Protection District	79,699	0	0	0	0	0	79,699
Subtotal	7,272,676	87,668	115,373	140,000	120,000	0	7,735,717
TOTAL	14,101,482	117,866	166,228	1,744,419	585,717	0	16,715,712

(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.

(d) South Bay Aqueduct Enlargement and Improvement projected costs for 2011 and 2012.

TABLE B-9. Capital Costs of Requested Excess Peaking Capacity

(in dollars unless otherwise indicated)

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	
	[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-9. Capital Costs of Requested Excess Peaking Capacity

(in dollars)

Reach Number	ANNUAL REQUIRED ADVANCE OF FUNDS Incremental Costs and Advance Payments by Calendar Year 1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1981	Reach Total
	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
	THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA													
	Incremental Costs													
8C		1,000	1,000											2,000
8D		43,500	43,500											87,000
9		27,000	27,000	13,500										67,500
10A		29,700	29,700	14,800										74,200
11B	10,100	18,300	18,300	9,200										55,900
12D	1,800		19,300	25,800	12,900									59,800
12E	1,800		12,400	18,800	10,800									43,800
13B			12,600	37,800	31,600									82,000
14A	2,500	500	11,100	80,216	107,504	124,069	37,519	6,413	381	87				370,289
14B	1,200	1,800		19,100	19,100	12,800								54,000
14C	1,800	900		13,500	13,500	9,000								38,700
15A	700		14,000	66,947	133,357	128,099	54,821	5,327	946	2,076				406,273
16A	700		18,900	137,894	182,000	211,608	133,927	26,203	5,767	6,156				723,155
17E		51,500	444,600	537,247	860,024	998,985	699,281	193,286	17,947	29,456	2,085			3,834,411
17F	109,100	261,600	261,600	261,600	261,600	239,500								1,395,000
25			964,270	1,650,947	1,426,925	673,041	221,100	256,165						5,192,448
28J		304,612	13,706	296,668	65,966	230,169	1,209,586	2,017,134	235,900	4,900				4,378,641
Total	129,700	740,412	1,891,976	3,184,019	3,125,276	2,627,271	2,356,234	2,504,528	260,941	42,675	2,085			16,865,117
	Current Adjustment													
8C through 25	1. Advance Payments Applied to Incremental Costs Amendment 2 (d) 0	8,056,000	9,094,963	1,523,252	8,310,651	3,426,736	1,086,045	(4,244,807)	(14,381,396)				(356,668)	12,514,776
28J	2. Interest Credits-Amendment 2 (e)								(1,532,433)				(10,104,646)	(11,637,079)
	3. Advance Payments Applied to Incremental Costs Amendment 5 (f) 0	1,240,000	1,483,180	2,469,325	(927,035)	1,729,160	3,215,258	2,967,475	1,690,000	(9,488,722)				4,378,641
	4. Interest Credits-Amendment 5 (g)									(2,721,803)				(2,721,803)
	5. Net Required Advance of Funds 0	9,296,000	10,578,143	3,992,577	7,383,616	5,155,896	4,301,303	(1,277,332)	(14,233,829)	(12,210,525)			(h) (10,461,314)	2,524,535
	SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT													
	Incremental Costs													
25			25,730	44,053	38,075	17,959	5,900	6,835						138,552
	Total Unadjusted Incremental Costs for Past Payments													
			25,730	44,053	38,075	17,959	5,900	6,835						138,552
	Current Adjustments													
	1. Advance Payments Applied to Incremental Costs (d)		0	184,422	49,052	44,911	61,588	(20,263)	(174,133)				(7,025)	138,552
	2. Interest Credit								(6,332)				(79,108)	(85,440)
	3. Net Required Advance of Funds		0	184,422	49,052	44,911	61,588	(20,263)	(180,465)				(h) (86,133)	53,112
	ANTELOPE VALLEY-EAST KERN WATER AGENCY													
	Incremental Costs													
29A				1,645	6,326	13,376	10,048	2,018	308	96		190		34,007
29F						1,700	1,700							3,400
	Total Unadjusted Incremental Costs for Past Payments													
				1,645	6,326	15,076	11,748	2,018	308	96		190		37,407
	Current Adjustment													
	1. Advance Payments Applied to Incremental Costs (d)			85,495	52,625	101,648	34,062	(12,794)	(189,120)	0		0	(34,509)	37,407
	2. Interest Credit								(16,234)				(100,360)	(116,594)
	3. Net Required Advance of Funds			85,495	52,625	101,648	34,062	(12,794)	(205,354)	0		0	(h) (134,869)	(79,187)

(d) Actual payments are shown for 1965 through 1976 with 1981 adjusted to reflect overpayments and underpayments without interest for prior years.
(e) Interest for overpayments and underpayments under provisions of Amendment 2 of the contract.
(f) Actual payments are shown for 1965 through 1973 with 1974 adjusted to reflect overpayments and underpayments without interest for prior years.
(g) Interest for overpayments and underpayments under provisions of Amendment 5 of the contract.
(h) Amounts in excess of incremental costs, under the provisions of the contract, reduce the Transportation Charge capital cost component of the Agency's Statement of Charges for January 1981.

TABLE B-10. Capital Costs of Each Aqueduct Reach to be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

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	11,710	4,156	54,185	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	9,243	4,658	46,313	74,947	4,465,569	200,125	199,457	360,387
2004	0	23,929	2,214	2,341	145,290	173,774	1,257,335	120,340	131,702	99,547
2005	0	89,369	216	9	33,947	123,541	1,224,486	119,298	260,893	(81)
2006	5	28,341	304	145	879,442	908,232	2,840,726	68,417	259,637	573
2007	0	61,402	40	35	3,219,048	3,280,525	3,069,791	15,211	70,835	1,915
2008	4	75,166	6,097	5,347	7,878,430	7,965,040	5,592,562	35,913	169,940	5,124
2009	13	27,617	866	463	1,188,847	1,217,793	9,803,255	1,029,805	1,545,796	2,406
2010	0	5,236	259	240	395,413	401,148	6,234,944	104,404	441,736	14,866,232
2011	303	321,924	14,422	5,690	150,163	492,199	4,892,400	732,882	3,937,800	117,992
2012	**303**	**539,230**	**13,360**	**4,742**	**256,311**	**813,643**	**308,373**	**509,040**	**2,776,314**	**21,477**
2013	303	536,348	8,052	0	258,696	803,096	193,251	41,822	166,607	17,300
2014	303	353,360	8,052	0	169,949	531,361	129,375	27,423	109,012	13,671
2015	303	19,206	8,052	0	7,887	35,145	12,729	1,128	3,837	7,045
2016	303	19,206	8,052	0	7,887	35,145	12,729	1,128	3,837	7,045
2017	303	19,206	8,052	0	7,887	35,145	12,729	1,128	3,837	7,045
2018	303	19,206	8,052	0	7,887	35,145	12,729	1,128	3,837	7,045
2019	303	19,206	8,052	0	7,887	35,145	12,729	1,128	3,837	7,045
2020	303	19,206	8,052	0	7,887	35,145	12,729	1,128	3,837	7,045
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	344,177	44,031,725	33,152,838	4,628,008	28,377,250	110,189,821	62,582,976	4,804,480	15,848,393	26,828,647

TABLE B-10. Capital Costs of Each Aqueduct Reach to be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

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	2,250	35,464	609,067	6,260,482	241,456	239,437	6,741,375
1993	3,618	6,028	8,873	42,200	548,316	2,542,869	257,330	200,072	3,000,271
1994	2,897	4,781	5,346	89,991	319,255	1,145,666	148,396	88,357	1,382,419
1995	11,556	3,635	14,769	24,750	432,602	1,462,211	217,940	131,995	1,812,146
1996	3,092	2,271	2,699	12,522	209,634	874,227	74,153	41,215	989,595
1997	1,454	4,141	3,655	20,589	318,342	2,064,446	146,851	84,303	2,295,600
1998	363	1,134	(6,005)	5,776	94,709	729,475	33,695	16,670	779,840
1999	1,533	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	1,409,228	7,689,872	178,162	22,779	13,565	214,506
2004	3,193	3,100	39,326	3,276,907	4,931,450	892,410	15,333	77,640	985,383
2005	5,341	5,271	4,848	731,512	2,351,568	294,112	40,135	98,505	432,752
2006	1,298	1,356	1,365	15,428	3,188,800	315,146	15,235	178,094	508,475
2007	7,478	7,479	7,478	10,751	3,190,938	298,687	58,266	122,056	479,009
2008	8,421	8,737	8,938	12,436	5,842,071	767,885	39,837	85,661	893,383
2009	3,153	3,389	3,470	5,076	12,396,350	424,939	42,671	30,960	498,570
2010	786	792	782	1,186	21,650,862	96,910	9,126	2,869	108,905
2011	24,603	27,819	28,425	45,110	9,807,031	1,259,316	176,209	89,851	1,525,376
2012	**41,655**	**44,833**	**45,473**	**69,336**	**3,816,501**	**3,290,218**	**265,071**	**2,800,112**	**6,355,401**
2013	41,183	44,177	44,984	67,342	616,666	4,510,184	252,280	125,903	4,888,367
2014	26,784	29,778	30,585	46,661	413,289	3,622,550	175,502	87,514	3,885,566
2015	489	3,483	4,290	8,895	41,896	66,221	35,295	17,411	118,927
2016	489	3,483	4,290	8,895	41,896	66,221	35,295	17,411	118,927
2017	489	3,483	4,290	8,895	41,896	66,221	35,295	17,411	118,927
2018	489	3,483	4,290	8,895	41,896	66,221	35,295	17,411	118,927
2019	489	3,483	4,290	8,895	41,896	66,221	35,295	17,411	118,927
2020	489	3,483	4,290	8,895	41,896	66,221	35,295	17,411	118,927
2021	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
TOTAL	1,120,688	5,115,012	7,154,009	18,922,721	142,376,926	127,053,576	43,936,524	27,234,165	198,224,265

TABLE B-10. Capital Costs of Each Aqueduct Reach to be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

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	6,770	42,455	40,696
1995	285,776	441,479	130,761	58,640	1,914,186	2,830,842	12,548	49,963	43,251
1996	31,942	(110,471)	34,529	12,219	588,712	556,931	6,444	29,863	27,050
1997	73,224	513,793	(277,781)	42,881	5,016,215	5,368,332	11,497	49,111	43,799
1998	19,692	304,115	34,319	16,542	2,819,556	3,194,224	2,562	11,115	8,955
1999	18,187	158,902	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	8,864	79,647	(5,372,495)	7,923	2,183,795	(3,092,266)	2,130	18,793	16,716
2004	(16,126)	(14,365)	(50,563)	(2,487)	(459,225)	(542,766)	22,520	5,980	3,879
2005	261	11,360	129,470	3,529	995,531	1,140,151	26,301	11,593	6,323
2006	1,421	27,660	(10,636)	1,445	(366,921)	(347,031)	6,106	2,944	1,622
2007	2	87,855	39,476	7,718	(120,681)	14,370	13,352	21,920	11,909
2008	15,001	17,438	47,110	14,052	1,126,116	1,219,717	9,017	13,020	7,277
2009	934	216,920	45,727	5,164	(42,304)	226,441	2,380	16,160	8,894
2010	(16)	1,560,571	131,104	692	(347,516)	1,344,835	(1)	1,824	989
2011	15,068	1,318,869	652,536	38,374	347,113	2,371,960	788	167,804	88,152
2012	**15,068**	**775,428**	**2,474,073**	**58,787**	**3,541,331**	**6,864,687**	**788**	**209,146**	**110,451**
2013	13,501	361,275	1,930,284	58,766	1,467,738	3,831,564	713	105,928	58,625
2014	13,501	131,955	127,700	41,732	86,217	401,105	713	68,919	38,762
2015	13,501	31,422	34,381	10,626	24,004	113,934	713	11,667	7,655
2016	13,501	31,422	34,381	10,626	24,004	113,934	713	11,667	7,655
2017	13,501	31,422	34,381	10,626	24,004	113,934	713	11,667	7,655
2018	13,501	31,422	34,381	10,626	24,004	113,934	713	11,667	7,655
2019	13,501	31,422	34,381	10,626	24,004	113,934	713	11,667	7,655
2020	13,501	31,422	34,381	10,626	24,004	113,934	713	11,667	7,655
2021	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
TOTAL	20,974,685	36,064,745	29,199,724	6,236,279	53,778,523	146,253,956	950,035	13,769,703	11,507,677

TABLE B-10. Capital Costs of Each Aqueduct Reach to be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

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	34,995	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	18,115	15,308	136,433	6,671	9,686	110,492
2004	5,493	3,291	4,188	7,001	5,787	52,563	5,588	1,490	50,520
2005	7,316	6,332	12,579	6,307	6,354	21,617	12,567	44	9,079
2006	1,874	1,682	3,147	1,619	1,737	5,946	3,110	107	2,699
2007	13,807	11,909	23,818	11,909	11,910	40,392	23,818	1	16,745
2008	8,919	6,999	12,960	8,044	8,187	35,363	13,537	568	22,711
2009	10,504	8,926	16,976	9,236	9,565	35,656	17,158	450	18,753
2010	1,148	985	1,985	990	981	3,325	1,988	(7)	1,362
2011	93,469	91,220	116,803	219,024	94,622	413,855	165,682	6,529	238,889
2012	**119,020**	**113,519**	**159,515**	**246,980**	**116,921**	**773,525**	**211,223**	**6,529**	**553,313**
2013	67,088	62,003	108,825	63,128	65,202	513,357	109,563	6,193	367,576
2014	44,510	42,139	71,928	38,549	45,339	156,658	69,837	6,193	78,459
2015	8,447	11,033	9,715	7,443	14,233	51,168	7,624	6,193	34,732
2016	8,447	11,033	9,715	7,443	14,233	51,168	7,624	6,193	34,732
2017	8,447	11,033	9,715	7,443	14,233	51,168	7,624	6,193	34,732
2018	8,447	11,033	9,715	7,443	14,233	51,168	7,624	6,193	34,732
2019	8,447	11,033	9,715	7,443	14,233	51,168	7,624	6,193	34,732
2020	8,447	11,033	9,715	7,443	14,233	51,168	7,624	6,193	34,732
2021	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
TOTAL	10,828,977	12,990,726	11,816,914	9,017,874	16,584,947	68,486,411	9,774,046	7,246,756	48,449,265

TABLE B-10. Capital Costs of Each Aqueduct Reach to be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

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	477,837	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	(111,675)
2003	159,978	535,483	189,022	12,339	201,361	84,434	(19,049)	0	(11,367)
2004	322,068	490,368	372,622	4,637	377,259	19,723	17,430	0	18,763
2005	43,887	170,299	2,264,602	6,587	2,271,189	27,020	18,910	0	25,134
2006	11,302	43,895	5,855,389	2,358	5,857,747	7,070	4,981	0	6,376
2007	82,675	284,165	3,829,554	11,915	3,841,469	49,382	35,729	0	47,637
2008	63,596	210,198	640,715	7,591	648,306	20,474	19,644	0	28,901
2009	67,633	222,291	9,987,899	10,348	9,998,247	23,685	25,891	0	33,870
2010	6,865	22,434	11,126,864	940	11,127,804	25,049	2,960	0	3,965
2011	405,742	2,102,579	6,163,663	76,928	6,240,591	107,438	111,019	0	132,883
2012	**1,098,350**	**3,719,280**	**1,824,606**	**97,341**	**1,921,947**	**160,096**	**172,257**	**0**	**214,535**
2013	397,166	1,925,367	1,170,689	97,682	1,268,371	186,232	173,773	0	216,601
2014	271,370	933,376	255,551	80,648	336,199	113,245	122,670	0	148,464
2015	55,429	226,052	217,230	49,541	266,771	33,000	29,351	0	24,038
2016	55,429	226,052	217,230	49,541	266,771	33,000	29,351	0	24,038
2017	55,429	226,052	217,230	49,541	266,771	33,000	29,351	0	24,038
2018	55,429	226,052	217,230	49,541	266,771	33,000	29,351	0	24,038
2019	55,429	226,052	217,230	49,541	266,771	33,000	29,351	0	24,038
2020	55,429	226,052	217,230	49,541	266,771	33,000	29,351	0	24,038
2021	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
TOTAL	78,376,878	299,800,209	293,884,304	55,293,252	349,177,556	51,749,381	24,496,693	759,941	19,309,907

TABLE B-10. Capital Costs of Each Aqueduct Reach to be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

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	8,717,975	9,224	159,280
1983	58,714	25,900	10,363	451,428	2,029,405	58,989	13,652,234	4,304	528,764
1984	35,378	845,423	6,052	(83,811)	1,290,740	34,764	10,799,037	3,850	270,455
1985	(232,549)	(481,017)	1,945,477	608,583	966,160	51,634	8,422,737	5,555	62,571
1986	(2,046,222)	(1,334,975)	3,260,280	1,097,122	230,510	51,994	7,713,451	9,927	114,561
1987	(344,829)	55,519	64,264	3,631,282	146,850	91,223	5,552,802	4,908	27,208
1988	(147,290)	(70,564)	351,489	552,546	558,557	197,761	2,039,009	7,358	161,957
1989	60,657	30,217	534,658	4,161,037	1,496,776	433,072	7,382,673	8,092	(2,297,399)
1990	(403,413)	(635,623)	(97,841)	8,794,258	1,394,698	344,367	8,620,068	176,854	(1,657,576)
1991	(18,809)	(147,369)	(17,234)	7,985,326	3,624,824	139,105	11,753,895	202,286	(1,316,160)
1992	338,098	(263,897)	75,210	4,849,560	8,364,426	127,829	14,808,798	333,934	(1,878,502)
1993	180,598	133,941	49,144	2,094,764	15,390,366	159,211	19,571,092	1,506,787	3,979,221
1994	114,273	65,260	26,546	933,021	8,082,401	81,869	10,577,079	2,104,588	2,493,097
1995	121,499	66,503	30,918	1,096,953	5,924,175	123,653	8,050,530	3,310,564	500,791
1996	48,699	44,953	17,787	1,736,686	2,181,669	96,339	4,344,851	19,019,751	(100,474)
1997	39,973	55,881	27,865	809,666	(342,563)	102,390	1,000,244	7,645,602	(662,524)
1998	27,626	20,285	12,816	273,139	3,392,776	36,135	3,880,497	993,619	1,613,505
1999	58,392	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	342,964	26,780	1,773,370	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	(7,564)	(3,238)	(3,009)	382,025	146,659	30,255	599,146	86,731	350,997
2004	12,619	13,744	5,414	262,810	48,570	12,285	411,358	13,577	275,709
2005	18,874	25,074	6,335	62,967	104,838	144,149	433,301	16,962	120,279
2006	4,514	5,984	1,492	15,148	294,327	577,842	917,734	21,941	16,671
2007	35,725	47,634	11,908	151,063	919,040	69,935	1,368,053	12,905	55,918
2008	19,526	25,456	6,313	346,638	3,113,899	2,019,852	5,600,703	2,481	82,555
2009	24,745	32,909	8,241	940,452	448,164	1,834,401	3,372,358	2,972	260,999
2010	2,992	3,992	997	2,207,142	26,737	1,373,264	3,647,098	(3)	119,968
2011	84,536	110,502	28,111	7,104,104	1,455,035	15,021	9,148,649	2,945	182,933
2012	**145,774**	**192,154**	**48,524**	**6,840,453**	**1,616,584**	**5,591**	**9,395,968**	**2,945**	**1,808,520**
2013	147,242	194,357	48,931	2,509,065	196,305	4,466	3,676,972	2,738	1,290,505
2014	96,140	126,220	31,897	325,462	71,153	4,466	1,039,717	2,738	149,643
2015	2,821	1,794	790	16,201	1,726	4,466	114,187	2,738	3,579
2016	2,821	1,794	790	16,201	1,726	4,466	114,187	2,738	3,579
2017	2,821	1,794	790	16,201	1,726	4,466	114,187	2,738	3,579
2018	2,821	1,794	790	16,201	1,726	4,466	114,187	2,738	3,579
2019	2,821	1,794	790	16,201	1,726	4,466	114,187	2,738	3,579
2020	2,821	1,794	790	16,201	1,726	4,466	114,187	2,738	3,579
2021	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
TOTAL	18,280,907	9,144,443	13,088,557	145,965,107	71,964,126	57,750,870	412,509,932	60,740,716	48,839,273

TABLE B-10. Capital Costs of Each Aqueduct Reach to be Reimbursed through Capital Cost Component of Transportation Charge

(in dollars)

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	1,117,243	891,607	31,088,491
1968	871,337	266,295	780,587	11,450,539	3,899,363	300,921	396,190	1,104,832	36,157,768
1969	1,117,873	1,444,654	756,442	11,895,208	6,592,580	336,480	693,348	1,184,454	9,655,871
1970	1,843,621	1,013,468	2,829,523	15,085,092	7,986,733	6,089,401	2,624,747	3,002,968	8,463,475
1971	16,095,702	6,401,303	12,111,623	45,555,612	4,247,037	3,768,699	1,120,231	8,244,651	5,844,024
1972	1,537,880	11,960,791	21,542,747	41,666,145	1,871,831	426,932	985,512	18,787,722	(23,015,734)
1973	209,664	247,769	3,673,344	6,078,500	775,824	168,064	399,856	9,408,706	1,821,206
1974	162,178	101,638	1,980,991	4,235,986	560,657	168,878	169,717	3,901,261	(3,454,239)
1975	157,365	124,399	1,626,274	5,862,488	353,670	421,176	925,693	664,113	609,891
1976	178,287	118,748	1,497,465	3,764,426	396,809	650,417	1,274,484	706,244	650,209
1977	127,106	89,036	323,091	1,391,573	390,637	3,018,637	2,152,961	196,012	1,135,148
1978	147,112	153,867	347,482	837,000	1,427,190	2,219,135	6,694,615	57,817	149,932
1979	29,723	19,225	225,947	385,337	940,013	2,168,382	19,813,742	597,858	331,313
1980	137,833	154,821	1,077,900	1,583,654	1,276,793	4,108,143	24,537,814	550,337	204,751
1981	28,815	22,654	61,349	187,713	(711,751)	2,699,873	19,806,531	94,944	28,852
1982	16,069	58,900	55,841	299,314	(465,217)	351,251	17,964,617	215,678	42,587
1983	18,213	89,581	(264,804)	376,058	100,394	180,971	6,751,649	220,029	24,295
1984	14,462	12,259	49,547	350,573	71,759	68,930	2,870,259	335,942	17,285
1985	17,816	11,481	54,070	151,493	142,244	25,386	2,126,670	102,366	21,971
1986	31,564	25,037	86,794	267,883	133,914	62,294	274,660	141,894	36,149
1987	17,141	8,005	45,528	102,790	13,936	453,949	711,773	192,511	27,931
1988	41,892	21,113	90,784	323,104	427,544	118,010	1,660,959	203,130	95,930
1989	28,708	12,619	51,556	(2,196,424)	207,067	430,662	584,186	241,811	97,472
1990	27,478	12,817	55,408	(1,385,019)	197,428	355,480	386,882	813,211	54,269
1991	142,139	15,524	62,794	(893,417)	219,321	344,386	453,336	1,132,520	55,176
1992	34,185	13,422	69,479	(1,427,482)	541,026	295,312	464,421	4,402,524	47,182
1993	44,300	27,047	162,854	5,720,209	464,987	320,182	643,189	3,361,457	74,198
1994	16,351	11,673	54,581	4,680,290	203,666	231,527	362,717	306,148	33,758
1995	35,402	28,202	164,254	4,039,213	344,358	392,647	536,253	468,656	34,007
1996	76,723	73,629	344,747	19,414,376	150,901	161,394	427,223	203,201	15,357
1997	50,662	20,720	268,293	7,322,753	298,002	71,310	432,940	276,180	50,095
1998	10,268	8,970	479,138	3,105,500	346,973	21,003	2,028,979	181,951	49,377
1999	84,683	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	2,482,179	179,466	4,196,038	50,519	9,141	103,160	57,712	51,000
2004	1,736,308	856,587	24,559	2,906,740	47,768	6,780	27,718	107,695	215,925
2005	2,049,655	410,021	270,894	2,867,811	273,482	12,718	54,409	6,642	52,413
2006	2,302,264	406,074	2,571,781	5,318,731	660,670	3,073	115,837	1,566	2,299,575
2007	(246)	1,099,958	3,664,358	4,832,893	107,460	25,257	1,958,512	269,569	347
2008	835,530	899,508	682,829	2,502,903	2,090,139	14,503	103,704	1,001,788	2,089
2009	4,202,648	976,867	2,819,145	8,262,631	1,931,429	17,722	22,988	1,463,563	631
2010	43,408	930,165	3,865,738	4,959,276	864,340	2,114	24,691	231,970	(12)
2011	1,396,341	2,374	1,147,754	2,732,347	773,759	492,743	72,762	34,596	10,151
2012	**3,280,455**	**2,374**	**19,682,419**	**24,776,713**	**583,903**	**965,463**	**401,222**	**55,009**	**10,151**
2013	6,893	2,093	66,958,772	68,261,001	294,655	98,894	174,892	52,629	9,860
2014	6,893	2,093	70,023,522	70,184,889	41,314	64,826	78,784	35,594	9,860
2015	6,893	2,093	5,772	21,075	2,994	2,613	9,357	4,488	9,860
2016	6,893	2,093	5,772	21,075	2,994	2,613	9,357	4,488	9,860
2017	6,893	2,093	5,772	21,075	2,994	2,613	9,357	4,488	9,860
2018	6,893	2,093	5,772	21,075	2,994	2,613	9,357	4,488	9,860
2019	6,893	2,093	5,772	21,075	2,994	2,613	9,357	4,488	9,860
2020	6,893	2,093	5,772	21,075	2,994	2,613	9,357	4,488	9,860
2021	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
TOTAL	41,398,468	31,792,504	227,607,506	410,378,467	44,668,288	33,642,143	128,453,582	66,827,975	77,866,354

(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)

Calendar Year	CALIFORNIA AQUEDUCT (continued)											GRAND TOTAL
	WEST BRANCH (cont.)		COASTAL BRANCH									
	Reach 30	Subtotal	Reach 31A	Reach 33A	Reach 33B	Reach 34	Reach 35	Reach 37	Reach 38	Subtotal	Total	
	[65]	[66]	[67]	[68]	[69]	[70]	[71]	[72]	[73]	[74]	[75]	[76]
1952	1,408	5,655	0	0	0	0	0	0	0	0	98,857	99,353
1953	4,346	17,457	0	0	0	0	0	0	0	0	309,387	311,812
1954	5,743	23,074	0	0	0	0	0	0	0	0	394,688	402,143
1955	1,943	7,809	0	0	0	0	0	0	0	0	159,842	169,342
1956	2,077	8,348	0	0	0	0	0	0	0	0	255,679	351,551
1957	7,684	30,877	0	0	0	0	0	0	0	0	708,753	1,464,452
1958	13,931	55,142	0	0	0	0	0	0	0	0	1,331,616	2,286,623
1959	44,384	134,727	28,046	49,114	0	7,441	8,236	0	0	92,837	2,096,392	2,967,412
1960	84,703	255,409	34,404	70,450	0	8,507	14,265	0	0	127,626	2,937,049	4,660,833
1961	123,330	239,953	13,801	17,868	0	1,501	3,931	0	0	37,101	4,650,264	8,545,244
1962	348,366	671,447	10,121	7,798	0	524	1,689	0	0	20,132	5,827,774	8,875,171
1963	521,491	1,167,566	20,470	14,299	0	880	2,943	0	0	38,592	18,981,487	24,610,278
1964	1,372,464	2,232,275	315,418	26,963	0	1,687	5,639	0	0	349,707	31,550,813	41,736,060
1965	3,383,950	4,943,858	747,023	36,178	0	2,118	7,060	0	0	792,379	57,936,405	62,664,743
1966	9,364,753	14,872,117	2,258,915	35,864	0	1,736	5,764	0	0	2,302,279	124,748,128	129,110,330
1967	17,618,827	53,187,979	6,310,419	38,331	0	1,891	6,213	0	0	6,356,854	187,465,580	194,146,365
1968	15,736,691	57,595,765	2,707,580	30,784	0	1,324	4,369	0	0	2,744,057	192,593,079	197,978,911
1969	16,228,175	34,690,908	423,797	26,549	0	907	2,905	0	0	454,158	182,530,023	184,473,490
1970	22,330,328	50,497,652	269,194	24,368	0	851	2,787	0	0	297,200	206,720,774	207,082,650
1971	16,890,503	40,115,145	164,446	32,230	0	1,315	3,804	0	0	201,795	158,414,033	158,624,739
1972	3,818,001	2,874,264	131,332	17,601	0	522	1,660	0	0	151,115	68,228,670	68,362,291
1973	13,426,222	25,999,878	182,493	16,154	0	542	1,758	0	0	200,947	45,110,823	45,263,853
1974	2,988,318	4,334,592	190,866	18,799	0	463	1,405	0	0	211,533	24,036,199	24,402,166
1975	1,808,235	4,782,778	64,582	36,012	0	2,255	6,656	0	0	109,505	21,065,768	21,318,838
1976	1,253,067	4,931,230	198,266	68,898	0	5,088	14,988	0	0	287,240	17,183,961	17,492,910
1977	345,023	7,238,418	918,473	81,305	0	1,834	5,387	0	0	1,006,999	15,165,801	15,544,382
1978	763,445	11,312,134	52,994	83,300	0	1,302	3,852	0	0	141,448	18,661,117	19,119,151
1979	282,145	24,133,453	38,182	108,951	0	1,505	4,433	0	0	153,071	31,202,118	31,857,362
1980	2,055,206	32,733,044	189,070	376,036	0	1,152	3,449	0	0	569,707	73,891,101	74,986,833
1981	275,460	22,193,909	19,897	(157,537)	0	1,427	4,261	0	0	(131,952)	15,246,649	15,742,773
1982	351,376	18,460,292	(16,381)	(96,449)	0	588	1,787	0	0	(110,455)	38,256,580	39,705,931
1983	566,545	7,843,883	85,496	67,106	0	794	2,398	0	0	155,794	34,705,281	38,044,649
1984	1,118,954	4,483,129	28,568	54,074	0	986	2,959	0	0	86,587	24,454,091	30,382,250
1985	284,243	2,702,880	36,834	54,314	0	2,111	6,263	0	0	99,522	14,914,930	28,537,556
1986	213,353	862,264	82,358	223,134	0	17,458	51,279	0	0	374,229	13,435,351	43,155,828
1987	158,313	1,558,413	53,817	1,061,939	0	92,506	272,968	0	0	1,481,230	11,711,428	34,331,982
1988	222,068	2,727,641	183,853	1,141,272	0	99,456	293,612	0	0	1,718,193	11,026,370	18,123,243
1989	148,674	1,709,872	84,678	893,765	0	77,283	228,038	0	0	1,283,764	30,302,112	33,130,497
1990	119,438	1,926,708	133,868	1,100,167	0	103,785	277,889	0	0	1,615,709	32,589,619	34,435,721
1991	229,315	2,434,054	164,610	1,635,283	0	123,603	363,889	0	0	2,287,385	38,320,942	39,811,664
1992	206,495	5,956,960	183,240	1,220,510	1,495,646	566,230	240,553	102,051	74,162	3,882,392	34,312,996	35,041,233
1993	296,349	5,160,362	344,928	5,274,657	5,052,431	1,345,211	688,935	268,937	358,367	13,333,466	53,122,384	53,921,787
1994	168,426	1,306,242	282,150	15,905,886	21,341,196	8,915,445	2,363,238	678,753	1,315,559	50,802,227	73,751,564	74,225,377
1995	304,983	2,080,904	1,196,326	45,172,271	62,947,362	23,975,738	20,849,939	7,029,108	7,117,197	168,287,941	191,033,090	191,525,571
1996	98,522	1,056,598	948,730	42,987,442	54,300,990	26,475,298	18,790,572	7,213,823	6,616,310	157,333,165	187,776,347	188,025,325
1997	233,956	1,362,483	562,583	11,209,633	13,893,576	10,456,863	4,149,105	545,378	798,606	41,615,744	62,137,369	62,583,537
1998	67,874	2,696,157	248,671	2,355,322	4,159,441	3,368,320	952,615	192,567	280,779	11,557,715	27,083,446	27,217,157
1999	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	13,742,555
2001	23,847	299,290	103,281	(7,057)	568,968	3,960	(1,112)	0	0	668,040	5,130,620	7,470,507
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	34,282	305,814	42,075	43,753	31,706	25,734	6,272	0	0	149,540	3,109,622	10,874,441
2004	16,535	422,421	26,667	13,644	21,479	3,142	1,942	0	0	66,874	5,117,637	10,222,861
2005	594,136	993,800	29,337	(261,476)	38,618	526	327	0	0	(192,668)	8,116,635	10,591,744
2006	164,760	3,245,481	7,049	6,035	37,612	(31)	17,974	0	0	68,639	15,613,671	19,710,708
2007	31,047	2,392,192	37,460	32,702	42,774	0	152	0	0	113,088	13,325,239	19,796,702
2008	60,186	3,272,409	41,227	34,997	10,865	24	14,163	0	0	101,276	14,448,895	28,256,010
2009	47,211	3,483,544	19,458	17,409	2,357	43	44,176	0	0	83,443	26,147,525	39,761,681
2010	17,025	1,140,128	3,631	3,158	0	(1)	(1,210)	0	0	5,578	22,356,058	44,408,068
2011	68,033	1,452,044	2,425,444	783,046	0	1,004	1,022,254	0	0	4,231,748	29,805,294	40,104,827
2012	**108,859**	**2,124,607**	**578,756**	**878,117**	**0**	**1,004**	**1,022,254**	**0**	**0**	**2,480,131**	**57,638,734**	**62,269,181**
2013	794,613	1,425,543	236,772	221,464	0	1,004	1,022,254	0	0	1,481,494	86,758,679	88,178,744
2014	74,984	305,362	148,402	139,309	0	1,004	1,022,254	0	0	1,310,969	78,397,183	79,342,136
2015	12,771	42,083	1,636	11,197	0	1,004	1,022,254	0	0	1,036,091	1,939,120	2,016,464
2016	12,771	42,083	1,636	11,197	0	1,004	1,022,254	0	0	1,036,091	1,939,120	2,016,464
2017	12,771	42,083	1,636	11,197	0	1,004	1,022,254	0	0	1,036,091	1,939,120	2,016,464
2018	12,771	42,083	1,636	11,197	0	1,004	1,022,254	0	0	1,036,091	1,939,120	2,016,464
2019	12,771	42,083	1,636	11,197	0	1,004	1,022,254	0	0	1,036,091	1,939,120	2,016,464
2020	12,771	42,083	1,636	11,197	0	1,004	1,022,254	0	0	1,036,091	1,939,120	2,016,464
2021	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	138,369,870	489,828,212	24,122,185	136,575,662	171,415,864	81,151,844	60,345,984	16,067,297	16,612,628	506,291,464	2,812,464,061	3,065,374,985

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

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]
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	404,834	227,562	204,821	251,154	1,088,371	2,965,219	426,872	532,042	303,263
1999	416	680,206	333,478	298,434	290,508	1,602,626	3,760,568	480,519	439,758	468,562
2000	505	924,221	257,164	658,779	415,633	2,255,797	3,836,031	545,068	445,451	560,311
2001	319	1,072,914	232,889	455,912	181,531	1,943,246	2,909,790	272,885	290,370	391,531
2002	3,627	1,587,083	416,416	411,471	399,018	2,813,988	3,858,106	342,137	467,256	539,273
2003	3,393	1,783,857	551,099	572,442	357,563	3,264,961	2,389,867	371,064	585,185	973,289
2004	3,455	1,610,031	640,791	743,771	822,223	3,816,816	3,390,359	516,670	758,452	710,717
2005	3,452	1,063,279	321,905	769,091	413,961	2,568,236	3,331,833	265,792	433,479	810,895
2006	3,867	816,718	259,871	599,698	441,002	2,117,289	3,455,827	377,663	749,610	603,690
2007	3,168	1,068,795	1,060,988	734,277	248,219	3,112,279	5,232,177	487,584	847,661	864,269
2008	3,724	898,978	285,724	536,972	655,004	2,376,678	5,062,718	633,627	763,636	966,609
2009	563	1,005,747	295,485	588,453	812,933	2,702,618	4,353,910	581,393	706,256	1,154,806
2010	640	1,484,581	340,556	801,985	758,674	3,385,796	4,820,809	624,900	834,766	1,001,908
2011	1,680	1,685,037	321,814	675,836	730,538	3,413,225	5,060,478	669,023	832,442	739,986
2012	**1.771**	**1,754,122**	**340,715**	**715,770**	**773,794**	**3,584,401**	**5,367,315**	**710,118**	**882,590**	**961,243**
2013	1,816	1,784,359	348,892	732,907	792,294	3,658,452	5,493,926	726,660	903,230	983,631
2014	1,774	1,758,585	340,512	715,253	773,197	3,587,547	5,360,311	708,952	881,482	903,903
2015	1,791	1,776,171	343,918	722,405	780,929	3,623,423	5,413,915	716,042	890,296	912,942
2016	1,809	1,793,932	347,357	729,629	788,739	3,659,657	5,468,054	723,202	899,199	922,071
2017	1,827	1,811,872	350,830	736,926	796,626	3,696,254	5,522,734	730,434	908,191	931,292
2018	1,846	1,829,990	354,339	744,295	804,592	3,733,216	5,577,962	737,739	917,273	940,605
2019	1,864	1,848,290	357,882	751,738	812,638	3,770,548	5,633,741	745,116	926,446	950,011
2020	1,883	1,866,773	361,461	759,255	820,765	3,808,254	5,690,079	752,567	935,710	959,511
2021	1,901	1,885,441	365,075	766,848	828,972	3,846,336	5,746,979	760,093	945,068	969,106
2022	1,921	1,904,295	368,726	774,516	837,262	3,884,799	5,804,449	767,694	954,518	978,797
2023	1,940	1,923,338	372,413	782,261	845,635	3,923,647	5,862,494	775,371	964,063	988,585
2024	1,959	1,942,572	376,138	790,084	854,091	3,962,885	5,921,119	783,124	973,704	998,471
2025	1,979	1,961,997	379,899	797,985	862,632	4,002,513	5,980,330	790,956	983,441	1,008,455
2026	1,998	1,981,617	383,698	805,965	871,258	4,042,538	6,040,133	798,865	993,275	1,018,540
2027	2,018	2,001,433	387,535	814,024	879,971	4,082,963	6,100,534	806,854	1,003,208	1,028,725
2028	2,039	2,021,448	391,410	822,165	888,770	4,123,793	6,161,540	814,922	1,013,240	1,039,013
2029	2,059	2,041,662	395,324	830,386	897,658	4,165,030	6,223,155	823,072	1,023,373	1,049,403
2030	2,080	2,062,079	399,278	838,690	906,635	4,206,682	6,285,387	831,302	1,033,606	1,059,897
2031	2,100	2,082,700	403,270	847,077	915,701	4,248,748	6,348,241	839,615	1,043,942	1,070,496
2032	2,121	2,103,527	407,303	855,548	924,858	4,291,236	6,411,723	848,012	1,054,382	1,081,201
2033	2,143	2,124,562	411,376	864,103	934,107	4,334,148	6,475,840	856,492	1,064,926	1,092,013
2034	2,164	2,145,808	415,490	872,744	943,448	4,377,490	6,540,599	865,057	1,075,575	1,102,933
2035	2,186	2,167,266	419,645	881,472	952,882	4,421,265	6,606,005	873,707	1,086,331	1,113,962
TOTAL	143,007	67,380,024	16,741,899	28,860,471	32,670,826	145,653,220	245,418,534	30,340,960	40,131,944	39,873,846

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

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	5,577,354	11,409,135	1,449,411	5,364,368	18,222,914
1999	50,754	36,944	431,026	2,037,263	7,705,394	11,643,735	1,450,708	1,344,328	14,438,771
2000	136,131	88,416	187,111	643,313	6,441,832	12,694,426	910,612	654,929	14,259,967
2001	112,973	189,025	197,746	1,048,216	5,412,536	17,560,172	1,387,257	756,176	19,703,605
2002	143,906	171,249	500,977	2,780,544	8,803,448	14,409,553	862,631	620,163	15,892,347
2003	80,247	99,526	249,003	991,378	5,739,559	16,699,087	1,769,019	770,079	19,238,185
2004	159,263	181,127	206,706	458,743	6,382,037	14,105,174	1,242,406	699,065	16,046,645
2005	143,913	203,035	136,107	225,974	5,551,028	12,529,907	1,956,535	883,048	15,369,490
2006	143,602	123,959	80,313	390,518	5,925,182	13,934,576	1,946,907	1,279,826	17,161,309
2007	65,922	133,009	67,893	261,458	7,959,973	10,601,665	2,085,130	946,462	13,633,257
2008	164,122	154,337	230,007	267,747	8,242,803	16,282,478	1,621,260	898,928	18,802,666
2009	142,898	141,817	180,218	541,097	7,802,395	14,381,247	1,237,036	829,674	16,447,957
2010	138,767	272,511	181,857	379,523	8,255,041	13,732,333	2,292,589	1,376,183	17,401,105
2011	164,152	204,035	216,822	334,000	8,220,938	15,555,416	1,696,552	1,226,402	18,478,370
2012	**174,501**	**216,386**	**230,453**	**353,616**	**8,896,222**	**17,466,306**	**1,798,347**	**1,745,772**	**21,010,425**
2013	178,528	221,499	235,780	362,110	9,105,364	17,595,461	1,838,852	4,447,625	23,881,938
2014	174,117	216,113	229,962	353,408	8,828,248	17,041,119	1,795,696	2,497,999	21,334,814
2015	175,858	218,274	232,261	356,942	8,916,530	17,211,530	1,813,653	2,522,979	21,548,162
2016	177,617	220,457	234,584	360,512	9,005,696	17,383,645	1,831,790	2,548,208	21,763,643
2017	179,393	222,661	236,930	364,117	9,095,752	17,557,482	1,850,108	2,573,691	21,981,281
2018	181,187	224,888	239,299	367,758	9,186,711	17,733,057	1,868,609	2,599,427	22,201,093
2019	182,999	227,137	241,692	371,435	9,278,577	17,910,387	1,887,295	2,625,422	22,423,104
2020	184,829	229,408	244,109	375,150	9,371,363	18,089,491	1,906,168	2,651,676	22,647,335
2021	186,677	231,702	246,550	378,901	9,465,076	18,270,386	1,925,229	2,678,193	22,873,808
2022	188,544	234,019	249,016	382,690	9,559,727	18,453,090	1,944,482	2,704,975	23,102,547
2023	190,429	236,359	251,506	386,517	9,655,324	18,637,621	1,963,926	2,732,024	23,333,571
2024	192,333	238,723	254,021	390,382	9,751,877	18,823,997	1,983,566	2,759,345	23,566,908
2025	194,257	241,110	256,561	394,286	9,849,396	19,012,237	2,003,401	2,786,938	23,802,576
2026	196,199	243,521	259,127	398,229	9,947,889	19,202,359	2,023,435	2,814,807	24,040,601
2027	198,161	245,956	261,718	402,211	10,047,367	19,394,383	2,043,670	2,842,955	24,281,008
2028	200,143	248,416	264,335	406,233	10,147,842	19,588,327	2,064,106	2,871,385	24,523,818
2029	202,144	250,900	266,979	410,296	10,249,322	19,784,210	2,084,748	2,900,099	24,769,057
2030	204,166	253,409	269,648	414,399	10,351,814	19,982,052	2,105,595	2,929,100	25,016,747
2031	206,207	255,943	272,345	418,543	10,455,332	20,181,873	2,126,651	2,958,391	25,266,915
2032	208,270	258,503	275,068	422,728	10,559,887	20,383,691	2,147,917	2,987,975	25,519,583
2033	210,352	261,088	277,819	426,955	10,665,485	20,587,528	2,169,397	3,017,855	25,774,780
2034	212,456	263,699	280,597	431,225	10,772,141	20,793,404	2,191,091	3,048,033	26,032,528
2035	214,580	266,336	283,403	435,537	10,879,861	21,001,338	2,213,001	3,078,513	26,292,852
TOTAL	6,627,883	9,181,276	10,734,900	26,213,884	408,523,227	779,685,966	92,417,478	97,948,948	970,052,392

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

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	3.792.401	795.587	363.134	815.590	6.068.733	118.315	511.982	417.871
1993	439.725	4,337.616	1.008.394	551.849	734.796	7.072.380	230.338	745.885	490.159
1994	282.579	4,376.461	816.129	396.768	492.860	6,364.797	125.398	602.404	572.557
1995	107.995	5.026.076	1,066.971	440.006	1,356.668	7,997.716	185.681	657.282	432.072
1996	1.003.229	4,738.221	931.944	683.323	1.034.376	8.391.093	112.062	416.294	472.350
1997	859.665	5.761.996	924.289	254.934	646.209	8.447.093	128.190	449.316	728.436
1998	690.845	5.520.206	1.242.589	534.931	654.538	8.643.109	115.748	457.845	429.433
1999	606.554	5.825.181	1.227.696	544.839	685.070	8.889.340	108.267	428.344	443.434
2000	718.867	5.895.416	1.043.908	534.924	884.007	9.077.122	105.235	468.879	516.146
2001	(576.733)	7.167.410	851.525	372.868	679.636	8.494.706	58.460	554.872	604.663
2002	1.077.005	5.172.734	666.115	251.336	733.490	7.900.680	54.750	730.828	418.004
2003	1.053.813	6.142.402	764.734	315.555	633.421	8.909.925	63.209	687.532	662.411
2004	641.491	6.985.733	702.501	353.209	596.353	9.279.287	36.392	487.060	354.247
2005	550.271	5.982.989	985.337	402.033	799.832	8.720.462	29.045	408.563	303.527
2006	(79.642)	6.083.458	1.590.315	630.979	923.546	9.148.656	48.925	544.993	801.570
2007	1.112.178	7.309.734	2.040.917	776.330	840.983	12.080.142	205.882	1.034.525	546.567
2008	887.607	10.947.313	2.352.954	725.952	1.137.936	16.051.762	79.383	490.784	702.819
2009	1.004.554	7.868.142	1.296.415	581.886	1.133.506	11.884.503	67.705	560.215	606.963
2010	1.058.365	9.222.903	1.636.693	647.271	1.368.298	13.933.530	83.101	569.907	628.792
2011	1.661.044	11.853.994	3.950.666	1.339.250	2.140.711	20.945.665	95.051	630.076	794.207
2012	**1.410.396**	**9.194.009**	**2.474.481**	**1.926.143**	**2.839.132**	**17.844.161**	**91.566**	**622.799**	**766.540**
2013	1.221.338	8.501.811	1.960.532	735.527	1.362.212	13.781.420	87.649	608.973	735.239
2014	1.445.235	9.948.437	2.823.179	1.346.976	2.135.158	17.698.985	92.336	626.822	772.982
2015	1.459.688	10.047.922	2.851.411	1.360.446	2.156.510	17.875.977	93.260	633.090	780.712
2016	1.474.284	10.148.401	2.879.925	1.374.051	2.178.075	18.054.736	94.192	639.421	788.519
2017	1.489.027	10.249.885	2.908.724	1.387.791	2.199.856	18.235.283	95.134	645.815	796.404
2018	1.503.918	10.352.384	2.937.812	1.401.669	2.221.854	18.417.637	96.085	652.274	804.368
2019	1.518.957	10.455.908	2.967.190	1.415.686	2.244.073	18.601.814	97.046	658.796	812.412
2020	1.534.146	10.560.467	2.996.862	1.429.843	2.266.513	18.787.831	98.017	665.384	820.536
2021	1.549.488	10.666.071	3.026.830	1.444.141	2.289.179	18.975.709	98.997	672.038	828.742
2022	1.564.983	10.772.732	3.057.099	1.458.582	2.312.070	19.165.466	99.987	678.759	837.029
2023	1.580.633	10.880.459	3.087.670	1.473.168	2.335.191	19.357.121	100.987	685.546	845.399
2024	1.596.439	10.989.264	3.118.546	1.487.900	2.358.543	19.550.692	101.997	692.402	853.853
2025	1.612.403	11.099.157	3.149.732	1.502.779	2.382.128	19.746.199	103.017	699.326	862.392
2026	1.628.527	11.210.148	3.181.229	1.517.807	2.405.950	19.943.661	104.047	706.319	871.016
2027	1.644.813	11.322.250	3.213.041	1.532.985	2.430.009	20.143.098	105.087	713.382	879.726
2028	1.661.261	11.435.472	3.245.172	1.548.315	2.454.309	20.344.529	106.138	720.516	888.523
2029	1.677.873	11.549.827	3.277.623	1.563.798	2.478.852	20.547.973	107.199	727.721	897.408
2030	1.694.652	11.665.325	3.310.400	1.579.436	2.503.641	20.753.454	108.271	734.998	906.383
2031	1,711,599	11,781,978	3,343,504	1,595,230	2,528,677	20,960,988	109,354	742,348	915,446
2032	1,728,715	11,899,798	3,376,939	1,611,182	2,553,964	21,170,598	110,448	749,772	924,601
2033	1,746,002	12,018,796	3,410,708	1,627,294	2,579,504	21,382,304	111,552	757,269	933,847
2034	1,763,462	12,138,984	3,444,815	1,643,567	2,605,299	21,596,127	112,668	764,842	943,185
2035	1,781,096	12,260,374	3,479,263	1,660,003	2,631,352	21,812,088	113,794	772,491	952,617
TOTAL	56,312,716	430,771,690	106,166,598	50,259,151	89,799,330	733,309,485	5,910,648	34,611,338	36,929,739

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

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
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	83.706	59.077	0	0	0	0	0	0	0
1970	118.046	85.758	94.171	123.374	152.424	0	0	0	0
1971	129.811	80.282	95.075	91.389	167.142	691.791	151.979	111.623	529.723
1972	117.625	84.287	98.647	115.592	146.096	877.535	124.831	101.479	609.058
1973	117.706	92.257	74.238	114.843	221.385	961.855	120.106	99.429	692.748
1974	141.658	98.103	74.914	193.523	141.540	898.272	143.866	115.649	853.098
1975	207.908	124.105	61.799	117.194	108.154	1.156.757	180.614	119.889	988.045
1976	139.134	69.715	33.655	147.908	134.063	1.124.051	177.086	114.133	1.037.799
1977	194.086	108.644	91.547	175.039	137.975	1.397.006	203.837	119.467	1.339.196
1978	168.634	106.702	72.585	170.578	151.120	1.254.043	139.662	132.224	1.265.813
1979	175.107	85.942	56.331	174.147	150.029	1.490.461	201.935	260.981	1.216.126
1980	284.207	120.896	123.120	167.249	164.749	1.988.619	189.132	238.607	1.437.614
1981	199.927	76.965	33.322	113.202	171.669	1.741.488	163.934	161.182	1.799.832
1982	264.947	158.178	142.631	224.170	224.051	1.793.867	195.086	15.768	1.933.859
1983	308.801	136.350	124.724	203.733	217.324	2.421.794	199.708	181.879	2.550.842
1984	396.448	163.331	108.212	188.724	245.764	3.312.127	329.490	204.332	3.215.901
1985	298.337	198.368	154.995	194.327	360.308	3.463.178	237.127	180.068	3.427.049
1986	422.493	248.170	242.660	346.410	349.369	3.781.427	320.984	360.156	3.574.451
1987	488.226	334.059	325.697	469.378	322.824	3.731.912	463.757	238.813	4.080.465
1988	532.489	290.881	220.658	374.653	318.253	3.451.893	411.110	313.806	3.746.920
1989	733.030	268.025	207.487	595.433	380.883	3.512.884	333.996	220.978	3.751.081
1990	651.465	363.652	225.171	480.738	677.729	4.021.727	439.953	212.851	4.381.643
1991	716.328	328.683	269.873	371.312	433.313	4.309.082	424.704	273.169	4.566.702
1992	574.145	334.579	270.768	409.314	423.717	4.734.368	729.211	571.412	4.270.793
1993	723.450	413.722	278.375	496.851	594.201	5.182.830	664.063	423.780	5.266.124
1994	703.493	346.600	239.873	482.301	445.909	4.012.614	414.899	254.393	3.727.019
1995	881.902	405.045	242.253	622.654	507.102	4.607.154	309.283	315.905	3.973.757
1996	984.784	367.570	238.622	519.560	604.736	4.892.967	214.773	187.784	4.331.630
1997	1.864.113	309.696	254.080	516.115	429.771	5.094.202	261.221	275.610	4.011.366
1998	1.011.284	295.927	170.556	384.226	484.072	4.752.549	309.440	248.178	4.694.822
1999	1.164.599	396.923	196.320	425.633	546.106	5.125.184	345.662	223.518	4.912.931
2000	927.389	408.963	329.822	654.357	572.041	5.991.755	350.169	144.987	5.405.108
2001	872.418	416.397	896.787	522.179	662.015	4.697.433	(137.404)	(97.117)	6.012.655
2002	1.309.338	380.972	296.995	959.902	861.795	5.951.342	32.538	251.678	5.601.627
2003	827.704	344.147	238.354	705.532	626.023	6.249.912	(129.679)	21.981	7.102.972
2004	615.288	250.322	178.822	641.809	600.590	7.343.320	(129.273)	(160.424)	9.047.775
2005	902.991	213.905	119.883	855.944	473.296	6.286.548	(170.264)	(183.953)	5.940.923
2006	496.660	204.104	65.246	772.807	522.391	5.173.759	(157.311)	(166.009)	8.393.867
2007	611.951	390.661	313.374	758.644	509.919	5.594.420	145.720	(377.599)	12.343.118
2008	1.002.444	462.314	260.668	463.390	770.788	11.205.391	(202.920)	(163.723)	13.193.884
2009	983.193	445.186	222.986	539.740	688.044	8.260.876	238.837	(39.792)	8.815.036
2010	869.430	469.659	165.678	467.039	754.329	7.397.081	(119.173)	(71.088)	7.990.504
2011	1.148.880	546.851	245.486	579.223	794.387	9.756.643	418.782	205.857	8.785.940
2012	**1.118.256**	**533.416**	**242.179**	**566.316**	**855.891**	**11.516.823**	**443.083**	**220.111**	**11.988.003**
2013	1.079.793	515.990	236.673	548.836	823.134	10.675.929	391.146	213.669	9.863.736
2014	1.126.799	537.407	243.860	570.440	832.716	10.756.296	421.847	215.344	10.314.686
2015	1.138.067	542.781	246.299	576.144	841.043	10.863.859	426.065	217.498	10.417.832
2016	1.149.448	548.209	248.762	581.906	849.453	10.972.498	430.326	219.673	10.522.011
2017	1.160.943	553.691	251.250	587.725	857.948	11.082.223	434.629	221.869	10.627.231
2018	1.172.552	559.228	253.762	593.602	866.527	11.193.045	438.975	224.088	10.733.503
2019	1.184.278	564.820	256.300	599.538	875.193	11.304.975	443.365	226.329	10.840.838
2020	1.196.120	570.468	258.863	605.533	883.945	11.418.025	447.799	228.592	10.949.247
2021	1.208.082	576.173	261.451	611.589	892.784	11.532.205	452.277	230.878	11.058.739
2022	1.220.162	581.935	264.066	617.705	901.712	11.647.527	456.800	233.187	11.169.326
2023	1.232.364	587.754	266.707	623.882	910.729	11.764.003	461.368	235.519	11.281.020
2024	1.244.688	593.632	269.374	630.121	919.836	11.881.643	465.981	237.874	11.393.830
2025	1.257.134	599.568	272.067	636.422	929.035	12.000.459	470.641	240.253	11.507.768
2026	1.269.706	605.564	274.788	642.786	938.325	12.120.464	475.347	242.655	11.622.846
2027	1.282.403	611.619	277.536	649.214	947.708	12.241.668	480.101	245.082	11.739.074
2028	1.295.227	617.735	280.311	655.706	957.185	12.364.085	484.902	247.533	11.856.465
2029	1.308.179	623.913	283.114	662.263	966.757	12.487.726	489.751	250.008	11.975.030
2030	1.321.261	630.152	285.946	668.886	976.425	12.612.603	494.648	252.508	12.094.780
2031	1.334.474	636.453	288.805	675.575	986.189	12.738.729	499.595	255.033	12.215.728
2032	1.347.818	642.818	291.693	682.330	996.051	12.866.116	504.591	257.583	12.337.885
2033	1.361.296	649.246	294.610	689.154	1.006.011	12.994.777	509.637	260.159	12.461.264
2034	1.374.909	655.738	297.556	696.045	1.016.071	13.124.725	514.733	262.761	12.585.877
2035	1.388.659	662.296	300.532	703.006	1.026.232	13.255.972	519.880	265.388	12.711.735
TOTAL	55,138,193	25,286,579	14,602,964	32,004,860	39,304,296	455,108,492	19,698,958	11,345,455	455,088,270

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

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 20A	Reach 20B
	[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	130.711	120.271
1973	1.243.941	4.142.935	1.777.260	49.949	1.827.209	36.207	146.739	161.838	148.631
1974	1.343.972	4,369,772	2.298.091	16.259	2.314.350	30.525	90.404	115.571	88.200
1975	1.537.862	5.090.233	2.403.430	35.193	2.438.623	40.588	122.584	137.684	118.898
1976	1.727.428	5.001.677	2.776.194	126.653	2.902.847	118.610	201.215	182.927	151.555
1977	1.961.081	6.065.390	3.845.464	83.936	3.929.400	93.565	226.906	180.884	112.589
1978	1.922.950	5.738.596	2.954.313	42.637	2.996.950	91.815	200.759	215.673	120.584
1979	1.798.566	5.960.033	3.539.402	45.997	3.585.399	99.670	307.386	261.205	194.104
1980	2,231.456	7.463.378	4.749.245	54.806	4.804.051	116.487	446.175	290.719	237.250
1981	2.762.773	7.646.858	5.485.957	64.886	5.550.843	316.590	585.003	325.112	292.081
1982	2.961.383	8.475.944	6.349.080	55.997	6.405.077	447.739	638.615	275.763	330.502
1983	4.302.165	11.303.322	14.153.033	96.397	14.249.430	345.229	564.698	368.139	326.767
1984	5.077.824	14.043.628	18.448.383	77.201	18.525.584	267.497	563.588	413.443	329.933
1985	5.683.454	14.964.899	18.134.698	137.928	18.272.626	298.932	475.028	450.444	388.327
1986	5.780.666	16.593.102	19.297.129	109.938	19.407.067	703.413	350.906	347.690	315.566
1987	5.636.043	17.063.245	17.398.908	98.355	17.497.263	1.261.056	558.996	818.475	357.971
1988	5.150.238	15.704.693	17.697.838	138.405	17.836.243	1.242.139	560.911	585.014	400.005
1989	5.458.633	16.336.263	17.641.151	88.488	17.729.639	1.049.615	283.065	366.590	345.614
1990	6.440.643	18.959.051	19.995.760	99.868	20.095.628	1.298.537	229.083	469.502	202.412
1991	5.805.189	18.565.503	19.903.346	131.558	20.034.904	1.432.360	665.443	1.025.089	516.257
1992	6.471.964	19.838.439	18.194.788	279.610	18.474.398	1.167.898	738.238	666.181	696.623
1993	7.583.165	23.092.943	19.051.939	199.640	19.251.579	1.868.745	606.763	1.232.409	818.675
1994	7.142.378	19.069.838	17.354.702	204.963	17.559.665	1.699.479	763.493	1.145.700	957.350
1995	6.540.575	19.680.665	19.360.033	191.516	19.551.549	1.284.146	614.314	1.941.939	2.411.412
1996	7.065.052	20.408.184	19.041.451	237.846	19.279.297	1.163.708	576.674	1.335.804	1.713.145
1997	7.387.904	21.710.020	19.724.881	176.120	19.901.001	1.330.450	730.628	1.401.562	2.043.179
1998	7.530.927	20.885.007	23.227.152	182.754	23.409.906	1.513.656	309.052	7.568.901	508.030
1999	8.861.513	23.178.434	19.993.981	161.263	20.155.244	3.161.222	735.182	5.402.619	1.669.455
2000	12.520.262	28.395.113	23.354.261	245.658	23.599.919	1.885.138	738.122	1.382.651	1.435.128
2001	15.792.805	30.856.163	24.057.353	618.702	24.676.055	2.441.906	2.555.966	1.848.018	1.531.757
2002	11.469.741	28.319.510	20.749.651	472.725	21.222.376	1.406.393	802.084	758.769	585.111
2003	11.665.729	29.065.827	21.009.930	286.409	21.296.339	3.807.069	688.454	723.308	631.997
2004	14.831.045	34.096.973	26.803.612	249.698	27.053.310	1.910.337	1.386.867	1.336.967	1.052.461
2005	13.935.205	29.115.613	16.471.071	1.501.875	17.972.946	2.881.955	1.560.479	1.588.672	926.134
2006	13.825.884	30.526.886	15.035.328	312.136	15.347.464	4.484.386	1.344.688	1.228.368	2.947.148
2007	7.824.484	29.901.666	14.768.728	1.148.413	15.917.141	4.464.248	1.534.287	1.579.015	2.120.947
2008	11.326.011	39.591.233	23.875.226	407.929	24.283.155	2.409.999	1.407.869	1.371.560	957.367
2009	13.982.258	35.371.247	21.906.686	338.896	22.245.582	2.544.687	1.441.695	1.386.969	1.068.921
2010	9.940.994	29.146.253	13.374.250	417.756	13.792.006	3.263.122	1.819.580	2.238.648	1.769.835
2011	14.581.347	38.582.730	18.620.572	395.542	19.016.114	2.968.051	1.274.164	1.461.027	1.365.111
2012	**14.326.008**	**43.290.991**	**23.864.567**	**1.461.238**	**25.325.805**	**2.853.172**	**1.314.434**	**1.512.894**	**1.039.725**
2013	13.556.363	39.337.130	21.964.377	411.266	22.375.643	2.851.293	2.579.742	2.581.183	1.044.624
2014	14.296.119	40.807.654	21.698.004	763.576	22.461.580	2.919.747	1.740.008	1.870.218	1.161.318
2015	14.439.080	41.215.730	21.914.984	771.212	22.686.196	2.948.945	1.757.408	1.888.920	1.172.931
2016	14.583.471	41.627.889	22.134.134	778.924	22.913.058	2.978.434	1.774.982	1.907.809	1.184.661
2017	14.729.305	42.044.167	22.355.475	786.713	23.142.188	3.008.219	1.792.732	1.926.887	1.196.507
2018	14.876.598	42.464.607	22.579.030	794.580	23.373.610	3.038.301	1.810.659	1.946.156	1.208.472
2019	15.025.364	42.889.254	22.804.820	802.526	23.607.346	3.068.684	1.828.766	1.965.618	1.220.557
2020	15.175.618	43.318.147	23.032.868	810.551	23.843.419	3.099.371	1.847.053	1.985.274	1.232.763
2021	15.327.374	43.751.329	23.263.197	818.657	24.081.854	3.130.364	1.865.524	2.005.127	1.245.090
2022	15.480.648	44.188.843	23.495.829	826.844	24.322.673	3.161.668	1.884.179	2.025.178	1.257.541
2023	15.635.455	44.630.733	23.730.787	835.112	24.565.899	3.193.285	1.903.021	2.045.430	1.270.117
2024	15.791.809	45.077.040	23.968.095	843.463	24.811.558	3.225.218	1.922.051	2.065.884	1.282.818
2025	15.949.727	45.527.809	24.207.776	851.898	25.059.674	3.257.470	1.941.272	2.086.543	1.295.646
2026	16.109.224	45.983.087	24.449.854	860.417	25.310.271	3.290.044	1.960.684	2.107.408	1.308.602
2027	16.270.317	46.442.917	24.694.352	869.021	25.563.373	3.322.945	1.980.291	2.128.483	1.321.688
2028	16.433.020	46.907.346	24.941.296	877.711	25.819.007	3.356.174	2.000.094	2.149.767	1.334.905
2029	16.597.350	47.376.419	25.190.709	886.488	26.077.197	3.389.736	2.020.095	2.171.265	1.348.254
2030	16.763.324	47.850.185	25.442.616	895.353	26.337.969	3.423.633	2.040.296	2.192.978	1.361.737
2031	16.930.957	48.328.686	25.697.042	904.307	26.601.349	3.457.870	2.060.699	2.214.907	1.375.354
2032	17.100.266	48.811.972	25.954.012	913.350	26.867.362	3.492.448	2.081.306	2.237.057	1.389.108
2033	17.271.269	49.300.091	26.213.553	922.483	27.136.036	3.527.373	2.102.119	2.259.427	1.402.999
2034	17.443.982	49.793.092	26.475.688	931.708	27.407.396	3.562.647	2.123.140	2.282.021	1.417.029
2035	17.618.422	50.291.024	26.740.445	941.025	27.681.470	3.598.273	2.144.372	2.304.842	1.431.199
TOTAL	657,953,755	1,842,983,547	1,173,066,040	30,170,452	1,203,236,492	134,139,182	75,456,705	94,582,836	62,810,948

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to be Reimbursed through Minimum OMP&R Component of Transportation Charge

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	MOJAVE DIVISION (continued)						SANTA ANA DIVISION		
	Reach 21	Reach 22A	Reach 22B	Reach 23	Reach 24	Subtotal	Reach 25	Reach 26A	Reach 28G
	[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	75.768	80.436	1,036.831	51.520	362.153	2,030.064	26	578	109
1973	60.641	66.539	1,283.816	65.475	353.262	2,323.148	20.541	679.328	136.352
1974	65.007	77.667	1,477.946	96.340	334.302	2,375.962	24.380	799.400	155.262
1975	135.462	77.825	1,630.554	111.141	419.450	2,794.186	29.337	885.021	110.729
1976	106.314	131.007	1,598.071	107.787	304.638	2,902.124	51.356	1,103.139	138.575
1977	98.757	86.279	1,882.080	71.228	48.359	2,800.647	62.584	1,412.740	127.543
1978	109.271	71.763	2,211.965	72.179	637.401	3,731.410	67.186	1,159.950	166.919
1979	203.078	121.586	2,104.832	76.960	202.566	3,571.387	84.462	1,235.189	142.586
1980	156.794	117.274	2,670.387	147.009	688.605	4,870.700	72.651	1,532.535	158.340
1981	181.062	119.602	3,030.407	134.895	47.750	5,032.502	35.662	1,575.444	160.053
1982	186.109	125.429	3,248.883	299.712	623.755	6,176.507	26.852	1,822.250	205.350
1983	219.943	140.523	3,899.769	223.626	384.292	6,472.986	19.017	1,663.599	244.720
1984	266.919	146.866	4,783.997	59.337	1,104.149	7,935.729	11.319	2,325.661	240.496
1985	799.514	125.780	5,330.501	261.135	811.346	8,941.007	17.764	2,707.662	451.600
1986	242.158	178.847	6,190.812	156.053	515.945	9,001.390	31.012	2,768.728	439.048
1987	298.190	236.263	5,731.239	151.796	732.607	10,146.593	19.362	2,847.390	278.094
1988	331.099	149.876	6,910.472	253.833	970.052	11,403.401	36.576	3,087.873	271.868
1989	194.047	138.825	5,963.386	349.544	1,242.144	9,932.830	30.881	3,190.809	230.953
1990	273.748	49.174	6,905.442	436.785	1,891.053	11,755.736	25.518	3,330.913	437.812
1991	478.555	231.223	7,488.366	263.723	1,561.051	13,662.067	32.172	3,847.589	843.388
1992	585.072	168.251	7,076.997	317.042	622.116	12,038.418	55.819	4,043.878	281.864
1993	509.309	207.818	7,765.751	359.632	1,708.915	15,078.017	72.464	5,638.325	382.195
1994	873.215	241.679	7,691.548	1,220.795	1,245.936	15,839.195	105.373	5,139.991	617.136
1995	355.198	179.930	6,994.639	842.041	746.371	15,369.990	96.781	4,357.648	1,308.828
1996	790.618	136.397	8,590.347	889.842	(78.782)	15,117.753	156.395	4,051.744	1,001.063
1997	640.177	189.241	8,138.580	1,586.227	3,355.446	19,415.490	177.217	4,585.198	493.841
1998	297.621	115.100	8,887.728	1,924.868	1,134.837	22,259.793	142.703	4,856.225	379.997
1999	1,397.331	188.734	9,546.515	2,035.924	1,230.967	25,367.949	190.409	6,055.156	505.937
2000	974.367	163.709	9,601.944	1,713.681	1,533.412	19,428.152	353.790	4,225.269	848.093
2001	1,074.186	478.469	7,668.816	1,893.242	18.322	19,510.682	298.329	2,425.692	1,668.195
2002	1,157.882	283.269	11,265.536	1,697.344	937.539	18,893.927	509.391	3,410.163	1,251.757
2003	482.423	289.505	13,524.465	2,134.205	(431.228)	21,850.198	371.353	3,844.968	558.498
2004	1,069.610	424.190	10,714.489	2,173.944	1,114.224	21,183.089	431.159	5,575.628	1,254.255
2005	707.208	374.395	7,413.765	2,428.022	2,382.414	20,263.044	453.656	5,631.485	1,524.316
2006	976.295	766.477	10,144.194	1,937.233	604.963	24,433.752	342.062	5,179.475	654.893
2007	1,236.724	745.931	9,999.485	3,299.827	868.084	25,848.548	317.332	6,985.899	879.494
2008	613.999	796.168	14,905.749	2,466.631	886.098	25,815.440	494.535	6,821.633	713.411
2009	726.736	701.548	13,148.073	3,082.845	1,550.335	25,651.809	538.800	7,932.873	657.555
2010	844.320	876.328	13,004.672	2,986.035	2,745.362	29,547.902	680.802	7,233.527	651.417
2011	579.790	1,372.589	16,157.679	3,265.966	2,980.670	31,425.047	603.657	9,138.104	727.684
2012	**599.546**	**1,766.869**	**17,850.737**	**3,345.672**	**1,289.433**	**31,572.482**	**632.353**	**10,011.701**	**758.113**
2013	600.562	741.405	17,736.149	3,318.918	1,301.322	32,755.198	641.556	9,067.134	762.544
2014	599.232	1,306.557	17,420.670	3,343.287	1,875.713	32,236.750	632.114	9,499.702	756.941
2015	605.224	1,319.623	17,594.877	3,376.720	1,894.471	32,559.119	638.435	9,594.699	764.511
2016	611.277	1,332.819	17,770.825	3,410.487	1,913.415	32,884.709	644.819	9,690.646	772.156
2017	617.389	1,346.147	17,948.534	3,444.592	1,932.549	33,213.556	651.267	9,787.553	779.878
2018	623.563	1,359.609	18,128.019	3,479.038	1,951.875	33,545.692	657.780	9,885.428	787.676
2019	629.799	1,373.205	18,309.299	3,513.828	1,971.394	33,881.150	664.358	9,984.283	795.553
2020	636.097	1,386.937	18,492.392	3,548.966	1,991.108	34,219.961	671.001	10,084.126	803.509
2021	642.458	1,400.806	18,677.316	3,584.456	2,011.019	34,562.160	677.711	10,184.967	811.544
2022	648.882	1,414.814	18,864.089	3,620.301	2,031.129	34,907.781	684.488	10,286.817	819.659
2023	655.371	1,428.962	19,052.730	3,656.504	2,051.440	35,256.860	691.333	10,389.685	827.856
2024	661.925	1,443.252	19,243.257	3,693.069	2,071.955	35,609.429	698.247	10,493.582	836.134
2025	668.544	1,457.685	19,435.690	3,729.999	2,092.674	35,965.523	705.229	10,598.517	844.496
2026	675.230	1,472.261	19,630.047	3,767.299	2,113.601	36,325.176	712.281	10,704.503	852.941
2027	681.982	1,486.984	19,826.347	3,804.972	2,134.737	36,688.429	719.404	10,811.548	861.470
2028	688.802	1,501.854	20,024.611	3,843.022	2,156.084	37,055.313	726.598	10,919.663	870.085
2029	695.690	1,516.872	20,224.857	3,881.452	2,177.645	37,425.866	733.864	11,028.860	878.786
2030	702.647	1,532.041	20,427.105	3,920.267	2,199.422	37,800.126	741.203	11,139.148	887.573
2031	709.673	1,547.361	20,631.377	3,959.469	2,221.416	38,178.126	748.615	11,250.540	896.449
2032	716.770	1,562.835	20,837.690	3,999.064	2,243.630	38,559.908	756.101	11,363.045	905.414
2033	723.938	1,578.463	21,046.067	4,039.055	2,266.066	38,945.507	763.662	11,476.676	914.468
2034	731.177	1,594.248	21,256.528	4,079.445	2,288.727	39,334.962	771.299	11,591.442	923.612
2035	738.489	1,610.191	21,469.093	4,120.240	2,311.614	39,728.313	779.012	11,707.357	932.849
TOTAL	36,238,784	45,654,312	739,519,034	130,125,546	86,883,320	1,405,410,667	23,833,415	396,660,301	41,344,443

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to be Reimbursed through Minimum OMP&R Component of Transportation Charge

Calendar Year	CALIFORNIA AQUEDUCT (continued)								
	SANTA ANA DIVISION (continued)			SANTA ANA DIVISION - EAST BRANCH EXTENSION					
	Reach 28H	Reach 28J	Subtotal	Reach 1	Reach 2A	Reach 2B	Reach 2C	Reach 2D	Reach 3A
	[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	30	0	743	0	0	0	0	0	0
1973	79	0	836.300	0	0	0	0	0	0
1974	34.693	854.637	1.868.372	0	0	0	0	0	0
1975	69.082	723.814	1.817.983	0	0	0	0	0	0
1976	100.400	635.853	2.029.323	0	0	0	0	0	0
1977	92.647	825.880	2.521.394	0	0	0	0	0	0
1978	68.363	835.082	2.297.500	0	0	0	0	0	0
1979	92.812	265.525	1.820.574	0	0	0	0	0	0
1980	129.897	1.120.131	3.013.554	0	0	0	0	0	0
1981	111.722	333.550	2.216.431	0	0	0	0	0	0
1982	135.463	1.518.759	3.708.674	0	0	0	0	0	0
1983	124.651	412.806	2.464.793	0	0	0	0	0	0
1984	190.924	769.068	3.537.468	0	0	0	0	0	0
1985	182.242	871.492	4.230.760	0	0	0	0	0	0
1986	256.526	982.332	4.477.646	0	0	0	0	0	0
1987	218.717	1.118.529	4.482.092	0	0	0	0	0	0
1988	200.811	1.176.659	4.773.787	0	0	0	0	0	0
1989	281.861	1.130.035	4.864.539	0	0	0	0	0	0
1990	308.144	1.538.449	5.640.836	0	0	0	0	0	0
1991	632.912	1.630.321	6.986.382	0	0	0	0	0	0
1992	5.636.464	1.102.519	11.120.544	0	0	0	0	0	0
1993	570.563	994.721	7.658.268	0	0	0	0	0	0
1994	415.603	1.022.412	7.300.515	0	0	0	0	0	0
1995	704.154	894.338	7.361.749	0	0	0	0	0	0
1996	1.041.697	1.316.493	7.567.392	0	0	0	0	0	0
1997	949.188	953.590	7.159.034	0	0	0	0	0	0
1998	991.426	(67.444)	6.302.907	0	0	0	0	0	0
1999	1.972.630	1.091.945	9.816.077	0	0	0	0	0	0
2000	1.006.982	1.137.624	7.571.758	0	0	0	0	0	0
2001	811.163	5.720.804	10.924.183	0	0	0	0	0	0
2002	423.326	2.245.240	7.839.877	0	0	0	0	0	0
2003	381.499	1.366.976	6.523.294	1.022	84.351	375.153	2.329	0	627.038
2004	447.022	3.672.449	11.380.513	10.740	40.841	509.089	2.039	0	276.019
2005	686.731	(1.989.399)	6.306.789	9.849	15.079	526.273	4.153	0	496.547
2006	339.566	5.277.854	11.793.850	9.948	10.190	532.526	9.248	44.735	394.360
2007	706.950	3.240.629	12.130.304	181.064	13.105	1.191.371	7.294	100.509	721.546
2008	694.145	4.507.905	13.231.629	74.557	34.231	836.429	1.379	173.607	1.177.367
2009	627.109	2.367.734	12.124.071	75.381	23.909	928.706	1.240	182.577	954.448
2010	578.058	3.632.757	12.776.561	69.364	9.984	837.901	7.102	236.288	1.041.790
2011	691.011	1.126.459	12.286.915	83.202	16.258	939.982	3.481	202.442	1.156.755
2012	**718.474**	**1.148.356**	**13.268.997**	**85.843**	**16.810**	**979.749**	**3.631**	**213.467**	**1.200.930**
2013	720.390	1.161.477	12.353.101	85.008	16.704	986.212	3.658	218.796	1.201.262
2014	717.058	1.156.885	12.762.700	85.531	16.757	978.334	3.626	213.684	1.198.179
2015	724.228	1.168.454	12.890.327	86.386	16.924	988.118	3.662	215.821	1.210.161
2016	731.470	1.180.139	13.019.230	87.250	17.094	997.999	3.699	217.979	1.222.263
2017	738.785	1.191.940	13.149.423	88.123	17.265	1.007.979	3.736	220.159	1.234.485
2018	746.173	1.203.859	13.280.916	89.004	17.437	1.018.059	3.773	222.360	1.246.830
2019	753.635	1.215.898	13.413.727	89.894	17.612	1.028.239	3.811	224.584	1.259.298
2020	761.171	1.228.057	13.547.864	90.793	17.788	1.038.522	3.849	226.830	1.271.891
2021	768.783	1.240.338	13.683.343	91.701	17.966	1.048.907	3.887	229.098	1.284.610
2022	776.471	1.252.741	13.820.176	92.618	18.145	1.059.396	3.926	231.389	1.297.456
2023	784.235	1.265.268	13.958.377	93.544	18.327	1.069.990	3.966	233.703	1.310.431
2024	792.078	1.277.921	14.097.962	94.479	18.510	1.080.690	4.005	236.040	1.323.535
2025	799.998	1.290.700	14.238.940	95.424	18.695	1.091.497	4.045	238.400	1.336.771
2026	807.998	1.303.607	14.381.330	96.378	18.882	1.102.412	4.086	240.784	1.350.138
2027	816.078	1.316.643	14.525.143	97.342	19.071	1.113.436	4.127	243.192	1.363.640
2028	824.239	1.329.810	14.670.395	98.315	19.262	1.124.570	4.168	245.624	1.377.276
2029	832.482	1.343.108	14.817.100	99.299	19.454	1.135.816	4.210	248.080	1.391.049
2030	840.806	1.356.539	14.965.269	100.292	19.649	1.147.174	4.252	250.561	1.404.959
2031	849.214	1.370.104	15.114.922	101.295	19.845	1.158.646	4.294	253.067	1.419.009
2032	857.707	1.383.805	15.266.072	102.307	20.044	1.170.232	4.337	255.597	1.433.199
2033	866.284	1.397.643	15.418.733	103.331	20.244	1.181.935	4.380	258.153	1.447.531
2034	874.947	1.411.620	15.572.920	104.364	20.447	1.193.754	4.424	260.735	1.462.006
2035	883,696	1,425,736	15,728,650	105,408	20,651	1,205,692	4,469	263,342	1,476,626
TOTAL	41,893,663	86,979,176	590,710,998	2,779,056	691,531	32,584,788	134,286	6,601,603	38,569,405

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to be Reimbursed through Minimum OMP&R Component of Transportation Charge

(in dollars)

Calendar Year	CALIFORNIA AQUEDUCT (continued)										
	SANTA ANA DIVISION - EAST BRANCH EXTENSION (cont)				WEST BRANCH						
	Reach 3B	Reach 4A	Reach 4B	Subtotal	Reach 29A	Reach 29F	Reach 29G	Reach 29H	Reach 29J	Reach 30	Subtotal
	[65]	[66]	[67]	[68]	[69]	[70]	[71]	[72]	[73]	[74]	[75]
1961	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	719,255	159,249	199,145	234,196	88,198	420,789	1,820,832
1973	0	0	0	0	779,949	339,363	122,664	264,850	119,743	621,431	2,248,000
1974	0	0	0	0	883,312	158,366	112,458	350,160	(4,525)	723,949	2,223,720
1975	0	0	0	0	1,049,990	176,676	194,724	801,457	75,870	841,991	3,140,708
1976	0	0	0	0	1,220,429	215,588	202,591	624,614	98,268	(650,944)	1,710,546
1977	0	0	0	0	1,268,813	116,939	218,129	684,679	184	634,581	2,923,325
1978	0	0	0	0	1,174,708	342,479	267,308	415,641	17,764	3,088,954	5,306,854
1979	0	0	0	0	1,366,942	285,575	284,188	972,584	29,850	958,068	3,897,207
1980	0	0	0	0	1,698,215	224,472	455,619	874,259	288,303	222,549	3,763,417
1981	0	0	0	0	1,783,405	123,264	615,047	2,305,110	8,794	1,093,897	5,929,517
1982	0	0	0	0	1,919,979	190,500	702,265	2,208,264	414,230	978,624	6,413,862
1983	0	0	0	0	2,739,814	149,333	888,475	745,939	579,882	3,698,681	8,802,124
1984	0	0	0	0	3,463,038	81,260	2,358,495	537,207	719,282	755,136	7,914,418
1985	0	0	0	0	3,866,946	295,836	3,047,591	975,729	614,735	1,753,355	10,554,192
1986	0	0	0	0	3,791,427	457,604	2,893,171	1,480,015	1,032,216	1,338,657	10,993,090
1987	0	0	0	0	3,423,494	213,106	2,933,342	944,604	459,398	1,406,519	9,380,463
1988	0	0	0	0	3,447,403	255,113	3,017,463	883,714	446,468	1,452,589	9,502,750
1989	0	0	0	0	4,025,641	405,583	2,738,143	1,398,165	865,738	1,505,029	10,938,299
1990	0	0	0	0	4,088,481	383,655	3,232,445	3,153,869	777,713	847,500	12,483,663
1991	0	0	0	0	3,862,056	304,143	3,550,063	639,527	763,037	1,191,090	10,309,916
1992	0	0	0	0	4,286,050	327,802	3,892,480	1,014,551	872,953	2,259,032	12,652,868
1993	0	0	0	0	3,969,075	343,304	4,515,385	1,670,952	852,208	1,157,876	12,508,800
1994	0	0	0	0	3,649,861	293,376	3,359,381	1,879,417	872,624	1,674,576	11,729,235
1995	0	0	0	0	4,137,046	883,315	4,750,275	1,588,080	754,904	(421,879)	11,691,741
1996	0	0	0	0	4,511,858	966,044	3,593,671	4,208,195	877,111	1,574,098	15,730,977
1997	0	0	0	0	4,543,506	1,030,809	2,429,066	3,755,901	1,597,361	1,521,491	14,878,134
1998	0	0	0	0	4,871,761	464,376	3,473,405	2,398,630	1,996,114	1,291,185	14,495,471
1999	0	0	0	0	4,877,840	4,252,041	5,005,853	1,770,699	1,006,873	1,918,917	18,832,223
2000	0	0	0	0	5,485,857	782,014	4,301,519	2,322,906	173,108	1,548,792	14,614,196
2001	0	0	0	0	5,909,768	1,539,736	5,138,147	4,411,852	240,853	(965,548)	16,274,808
2002	0	0	0	0	5,337,368	1,491,192	4,078,059	4,482,867	(48,511)	3,473,975	18,814,950
2003	360	93,305	33,614	1,217,172	4,589,260	1,325,525	3,837,744	3,401,543	(581,700)	974,656	13,547,028
2004	337	13,434	71,444	923,943	9,074,729	1,388,321	3,621,361	5,177,823	(560,699)	1,534,831	20,236,366
2005	9,036	27,330	216,418	1,304,685	5,847,349	2,973,307	7,432,338	877,101	2,664,966	3,705,798	23,500,859
2006	989	14,574	69,398	1,085,968	6,943,183	2,344,279	5,199,837	3,615,603	(517,408)	(4,393,887)	13,191,607
2007	82,544	39,874	197,028	2,534,335	6,812,948	3,011,549	11,554,981	7,392,979	451,790	12,104,240	41,328,487
2008	84,774	77,105	214,172	2,673,621	8,427,472	727,606	17,261,603	7,885,358	162,800	687,938	35,152,777
2009	52,630	103,778	207,413	2,530,082	8,030,238	875,100	9,086,984	6,243,165	318,896	2,554,493	27,108,876
2010	50,013	115,225	240,543	2,608,210	9,317,941	794,603	10,183,355	7,134,348	510,639	5,265,399	33,206,285
2011	72,464	109,807	243,937	2,828,328	8,936,207	2,001,754	8,532,163	4,584,549	321,796	(2,613,847)	21,762,622
2012	**74,469**	**113,814**	**252,825**	**2,941,538**	**9,275,773**	**1,115,108**	**9,721,012**	**4,512,479**	**333,432**	**2,936,863**	**27,894,667**
2013	73,271	113,548	252,210	2,950,669	9,276,406	1,118,205	7,459,297	4,481,449	332,478	1,489,969	24,157,804
2014	74,135	113,514	252,154	2,935,914	9,254,423	1,425,806	8,656,532	4,571,421	332,527	610,371	24,851,080
2015	74,876	114,649	254,675	2,965,272	9,346,967	1,440,064	8,743,098	4,617,135	335,853	616,475	25,099,592
2016	75,625	115,796	257,222	2,994,927	9,440,437	1,454,465	8,830,529	4,663,306	339,211	622,640	25,350,588
2017	76,381	116,953	259,794	3,024,875	9,534,841	1,469,009	8,918,834	4,709,939	342,603	628,866	25,604,092
2018	77,145	118,123	262,392	3,055,123	9,630,190	1,483,699	9,008,022	4,757,039	346,029	635,155	25,860,134
2019	77,917	119,304	265,016	3,085,675	9,726,492	1,498,536	9,098,102	4,804,609	349,490	641,506	26,118,735
2020	78,696	120,497	267,666	3,116,532	9,823,756	1,513,522	9,189,083	4,852,655	352,984	647,921	26,379,921
2021	79,483	121,702	270,343	3,147,697	9,921,994	1,528,657	9,280,974	4,901,182	356,514	654,401	26,643,722
2022	80,278	122,919	273,046	3,179,173	10,021,214	1,543,943	9,373,784	4,950,193	360,079	660,945	26,910,158
2023	81,080	124,148	275,777	3,210,966	10,121,426	1,559,383	9,467,522	4,999,695	363,680	667,554	27,179,260
2024	81,891	125,390	278,534	3,243,074	10,222,640	1,574,977	9,562,197	5,049,692	367,317	674,230	27,451,053
2025	82,710	126,644	281,320	3,275,506	10,324,867	1,590,726	9,657,819	5,100,189	370,990	680,972	27,725,563
2026	83,537	127,910	284,133	3,308,260	10,428,115	1,606,634	9,754,397	5,151,191	374,700	687,782	28,002,819
2027	84,373	129,189	286,974	3,341,344	10,532,397	1,622,700	9,851,941	5,202,703	378,447	694,659	28,282,847
2028	85,216	130,481	289,844	3,374,756	10,637,721	1,638,927	9,950,461	5,254,730	382,232	701,606	28,565,677
2029	86,068	131,786	292,742	3,408,504	10,744,098	1,655,316	10,049,965	5,307,277	386,054	708,622	28,851,332
2030	86,929	133,104	295,670	3,442,590	10,851,539	1,671,870	10,150,465	5,360,350	389,914	715,708	29,139,846
2031	87,798	134,435	298,627	3,477,016	10,960,054	1,688,588	10,251,969	5,413,954	393,814	722,865	29,431,244
2032	88,676	135,779	301,613	3,511,784	11,069,655	1,705,474	10,354,489	5,468,093	397,752	730,094	29,725,557
2033	89,563	137,137	304,629	3,546,903	11,180,351	1,722,529	10,458,034	5,522,774	401,729	737,395	30,022,812
2034	90,459	138,509	307,675	3,582,373	11,292,155	1,739,754	10,562,614	5,578,002	405,747	744,769	30,323,041
2035	91,363	139,894	310,752	3,618,197	11,405,076	1,757,152	10,668,241	5,633,782	409,804	752,217	30,626,272
TOTAL	2,315,086	3,599,657	8,169,600	95,445,012	411,155,201	69,819,201	378,300,314	217,174,941	28,165,206	77,098,166	1,181,713,029

TABLE B-11. Minimum OMP&R Costs of Each Aqueduct Reach to be Reimbursed through Minimum OMP&R Component of Transportation Charge

Calendar Year	CALIFORNIA AQUEDUCT (continued)							GRAND TOTAL
	COASTAL BRANCH						Total	
	Reach 31A (a)	Reach 33A	Reach 33B	Reach 34	Reach 35	Subtotal		
	[76]	[77]	[78]	[79]	[80]	[81]	[82]	[83]
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	42,918
1963	0	0	0	0	0	0	0	168,358
1964	0	0	0	0	0	0	0	184,729
1965	0	0	0	0	0	0	0	378,874
1966	0	0	0	0	0	0	0	408,397
1967	0	0	0	0	0	0	0	634,505
1968	0	0	0	0	0	0	2,160,548	2,745,160
1969	509,728	0	0	0	0	509,728	3,324,718	4,074,939
1970	609,988	0	0	0	0	609,988	3,983,062	4,676,282
1971	699.052	0	0	0	0	699.052	5,614.013	6,185.714
1972	697,576	0	0	0	0	697,576	12,353,356	12,998,869
1973	641,626	0	0	0	0	641,626	14,590,688	15,194,233
1974	669,279	0	0	0	0	669,279	16,598,762	17,372,561
1975	806.429	0	0	0	0	806.429	19,569,999	20,517,423
1976	840,927	0	0	0	0	840,927	19,002,859	20,027,213
1977	872,169	0	0	0	0	872,169	23,267,885	24,213,489
1978	934,119	0	0	0	0	934,119	24,818,739	26,012,786
1979	871,688	0	0	0	0	871,688	23,421,881	24,675,598
1980	1,047,396	4,790	0	30	75	1,052,291	30,105,348	32,038,398
1981	1,037,469	4,790	0	30	75	1,042,364	33,884,524	35,516,366
1982	1,015,555	4,790	0	30	75	1,020,450	39,515,188	41,611,655
1983	1,146,269	4,957	0	30	77	1,151,333	54,543,263	56,802,781
1984	1,427,192	5,051	0	31	78	1,432,352	63,947,633	67,105,188
1985	1,849,827	5,051	0	31	78	1,854,987	69,700,009	73,272,898
1986	1,714,723	5,051	0	31	78	1,719,883	73,437,761	76,707,917
1987	1,689,141	4,324	0	26	67	1,693,558	71,443,424	75,217,576
1988	1,964,428	4,509	0	28	70	1,969,035	72,349,117	76,060,618
1989	1,768,942	4,509	0	28	70	1,773,549	73,894,076	78,662,348
1990	2,274,772	0	0	0	0	2,274,772	86,130,115	91,361,385
1991	2,187,841	0	0	0	0	2,187,841	86,877,284	90,982,870
1992	2,465,364	0	0	0	0	2,465,364	94,167,321	99,235,524
1993	2,811,441	0	0	0	0	2,811,441	100,019,568	107,299,130
1994	3,894,639	0	0	0	0	3,894,639	92,336,811	99,944,106
1995	3,481,049	0	0	0	0	3,481,049	98,887,435	105,659,504
1996	5,144,684	0	0	0	0	5,144,684	105,119,193	112,018,784
1997	2,523,741	(33)	0	0	0	2,523,708	107,647,058	113,385,326
1998	4,302,712	1,878,365	1,386	160,400	88,026	6,430,889	120,649,996	127,316,519
1999	4,247,118	1,957,943	16,646	184,325	87,373	6,493,405	127,171,443	136,479,879
2000	2,903,841	2,533,780	20,786	253,538	109,328	5,821,273	122,767,500	131,465,634
2001	3,116,648	2,241,988	14,426	153,879	58,875	5,585,816	136,026,018	143,382,119
2002	3,178,461	2,690,064	49,511	189,458	81,857	6,189,351	125,073,018	136,694,081
2003	3,368,380	2,817,400	44,211	200,986	85,015	6,515,992	128,163,960	137,171,873
2004	3,578,779	2,717,353	69,895	240,426	109,830	6,716,283	146,916,409	157,118,717
2005	3,867,567	3,144,402	120,379	292,354	137,878	7,562,580	130,116,468	138,239,184
2006	2,543,452	3,237,509	110,280	203,484	112,691	6,207,416	128,896,908	136,943,246
2007	3,482,974	3,597,277	128,889	117,474	83,237	7,409,851	160,783,731	171,859,151
2008	5,634,604	4,517,350	158,215	127,350	86,286	10,523,805	186,126,088	196,749,293
2009	5,371,174	4,341,429	133,385	119,495	77,867	10,043,350	163,407,477	173,913,053
2010	6,619,020	6,041,536	203,619	168,652	110,769	13,143,596	165,555,448	177,196,925
2011	6,703,090	5,860,123	0	0	0	12,563,213	177,889,004	189,524,847
2012	**6,637,054**	**5,752,254**	**0**	**0**	**0**	**12,389,308**	**195,538,374**	**208,020,768**
2013	6,458,639	5,589,761	0	0	0	12,048,400	183,641,303	196,406,935
2014	6,665,590	5,791,386	0	0	0	12,456,976	187,546,453	199,964,022
2015	6,732,246	5,849,300	0	0	0	12,581,546	189,421,921	201,963,665
2016	6,799,568	5,907,793	0	0	0	12,707,361	191,316,141	203,983,303
2017	6,867,564	5,966,871	0	0	0	12,834,435	193,229,300	206,023,133
2018	6,936,240	6,026,540	0	0	0	12,962,780	195,161,592	208,083,365
2019	7,005,602	6,086,805	0	0	0	13,092,407	197,113,212	210,164,201
2020	7,075,658	6,147,673	0	0	0	13,223,331	199,084,341	212,265,841
2021	7,146,415	6,209,150	0	0	0	13,355,565	201,075,187	214,388,500
2022	7,217,879	6,271,242	0	0	0	13,489,121	203,085,938	216,532,385
2023	7,290.058	6,333.954	0	0	0	13,624,012	205,116,799	218,697,710
2024	7,362.958	6,397.294	0	0	0	13,760.252	207,167,968	220,884,689
2025	7,436.588	6,461.267	0	0	0	13,897.855	209,239,645	223,093,533
2026	7,510.954	6,525.879	0	0	0	14,036.833	211,332.038	225,324.463
2027	7,586.063	6,591,138	0	0	0	14,177,201	213,445,360	227,577,708
2028	7,661,924	6,657,049	0	0	0	14,318,973	215,579,814	229,853,488
2029	7,738,543	6,723,620	0	0	0	14,462,163	217,735,611	232,152,022
2030	7,815,928	6,790,856	0	0	0	14,606,784	219,912,970	234,473,546
2031	7,894,088	6,858,765	0	0	0	14,752,853	222,112,099	236,818,279
2032	7,973,029	6,927,352	0	0	0	14,900,381	224,333,217	239,186,461
2033	8,052,759	6,996,626	0	0	0	15,049,385	226,576,551	241,578,327
2034	8,133,286	7,066,592	0	0	0	15,199,878	228,842,317	243,994,112
2035	8,214,619	7,137,258	0	0	0	15,351,877	231,130,743	246,434,055
TOTAL	282,728,126	200,690,733	1,071,628	2,412,116	1,229,775	488,132,378	8,510,994,000	9,065,313,454

(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."

Tables B-12 through B-31

Note: Where applicable, the projected data values shown in this appendix are shaded and the bill year data are in **bold** type.

TABLE B-12. Variable OMP&R Costs to be Reimbursed through Variable OMP&R Component of Transportation Charge[a]

(in dollars)

Calendar Year	NORTH BAY AQUEDUCT				SOUTH BAY AQUEDUCT	CALIFORNIA AQUEDUCT		
	Reach 1 Barker Slough Pumping Plant	Reach 3A Cordelia Pumping Plant (Solano)	Reach 3B Cordelia Pumping Plant (Napa) (b)	Total	Reach 1 South Bay & Del Valle Pumping Plants (c)	Reach 1 Banks Pumping Plant	Reach 4 Dos Amigos Pumping Plant	Reach 14A Buena Vista Pumping Plant
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1962	0	0	0	0	36,970	0	0	0
1963	0	0	0	0	57,711	0	0	0
1964	0	0	0	0	74,134	0	0	0
1965	0	0	0	0	142,609	0	0	0
1966	0	0	0	0	192,605	0	0	0
1967	0	0	0	0	223,117	13,881	0	0
1968	0	0	6,989	6,989	336,671	452,630	202,947	0
1969	0	0	8,551	8,551	257,579	293,741	135,425	0
1970	0	0	13,598	13,598	396,358	346,215	211,197	1
1971	0	0	10,609	10,609	381,662	574,015	225,188	115,801
1972	0	0	14,434	14,434	598,702	933,292	502,196	198,914
1973	0	0	14,449	14,449	493,490	688,030	381,232	263,468
1974	0	0	17,473	17,473	565,575	783,562	447,772	315,939
1975	0	0	14,779	14,779	349,758	1,341,019	518,816	508,060
1976	0	0	20,856	20,856	571,361	1,638,453	641,115	712,947
1977	0	0	22,635	22,635	512,996	1,013,307	284,828	267,467
1978	0	0	21,692	21,692	586,355	2,339,502	607,042	689,236
1979	0	0	16,237	16,237	605,136	3,554,256	1,008,564	776,016
1980	0	0	19,945	19,945	523,369	2,083,336	1,129,152	1,051,629
1981	0	0	23,842	23,842	567,692	3,952,931	1,939,189	1,336,867
1982	0	0	12,157	12,157	605,780	3,082,031	1,363,705	1,200,226
1983	0	0	2,342	2,342	82,222	1,001,612	396,086	450,801
1984	0	0	4,822	4,822	271,543	1,856,959	976,773	823,681
1985	0	0	10,188	10,188	451,020	3,186,029	1,621,418	1,409,980
1986	0	0	15,501	15,501	814,111	6,595,625	2,627,407	2,405,224
1987	0	0	27,223	27,223	888,558	5,740,403	2,518,308	2,231,491
1988	17,813	0	24,020	41,833	911,176	6,276,214	2,610,048	2,560,122
1989	29,819	43,846	26,519	100,184	1,163,619	9,847,706	3,953,735	4,042,211
1990	52,210	67,109	40,775	160,094	1,834,626	10,460,533	4,498,260	5,779,750
1991	10,429	10,118	5,252	25,799	420,688	1,882,952	491,071	904,541
1992	13,319	13,070	9,406	35,795	339,021	3,129,419	1,147,502	1,221,282
1993	(11,941)	(8,753)	(5,392)	(26,086)	(150,856)	497,455	326,100	(108,089)
1994	46,791	39,624	29,189	115,604	801,374	5,677,009	2,305,603	2,523,572
1995	20,014	20,620	11,791	52,425	302,558	3,805,713	1,451,578	815,572
1996	57,320	47,288	23,483	128,091	718,807	8,192,821	4,009,531	2,493,264
1997	67,416	52,935	21,955	142,306	1,038,568	6,900,694	2,845,506	2,589,077
1998	(11,427)	(10,141)	(4,879)	(26,447)	(133,721)	204,374	(365,361)	(319,014)
1999	31,419	25,288	11,623	68,330	408,566	6,771,253	2,313,698	1,592,645
2000	55,895	41,141	14,583	111,618	832,487	7,803,838	2,942,892	2,865,359
2001	357,243	250,132	214,039	821,415	4,065,497	24,117,220	9,876,233	14,856,524
2002	189,982	104,564	61,470	356,016	2,240,212	17,117,913	6,897,481	8,429,278
2003	177,858	118,373	97,750	393,981	2,559,183	21,475,008	9,022,344	10,661,008
2004	248,084	138,880	106,974	493,938	2,496,050	21,614,303	9,327,851	12,302,175
2005	284,272	147,306	148,650	580,227	2,796,889	29,633,738	13,071,930	12,651,476
2006	229,255	113,361	145,688	488,304	2,663,731	23,850,331	10,666,923	11,797,131
2007	442,724	224,308	254,681	921,713	4,202,733	24,916,529	10,792,934	16,010,918
2008	403,712	185,201	290,915	879,828	3,204,879	16,752,355	5,886,758	10,848,520
2009	240,017	106,485	185,864	532,366	2,734,959	9,419,967	4,573,370	7,657,063
2010	274,943	110,869	235,015	620,826	2,493,347	25,624,830	9,770,001	10,588,975
2011	817,216	186,788	560,056	1,564,060	5,759,705	43,688,227	17,986,656	19,085,661
2012	**746,025**	**561,259**	**739,434**	**2,046,717**	**5,072,913**	**32,640,024**	**12,659,878**	**14,597,762**
2013	785,596	555,218	752,810	2,093,623	5,071,816	37,321,408	14,399,531	16,912,177
2014	310,124	281,775	333,547	925,446	3,513,846	22,776,357	11,325,534	12,748,996
2015	310,124	281,775	333,547	925,446	3,517,504	23,001,820	11,347,207	12,785,536
2016	310,124	281,775	333,547	925,446	3,517,504	23,882,046	11,521,563	13,094,010
2017	310,124	281,775	333,547	925,446	3,517,504	22,101,191	11,324,839	12,746,358
2018	310,124	281,775	333,547	925,446	3,517,504	24,350,056	12,050,582	14,033,658
2019	310,124	281,775	333,547	925,446	3,517,504	22,540,135	11,475,071	13,008,811
2020	310,124	281,775	333,547	925,446	3,517,504	24,006,536	11,671,269	13,352,851
2021	310,124	281,775	333,547	925,446	3,517,504	22,986,443	11,456,822	12,978,962
2022	310,124	281,775	333,547	925,446	3,517,504	23,695,306	11,610,944	13,246,243
2023	310,124	281,775	333,547	925,446	3,517,504	23,394,991	11,934,737	13,808,424
2024	310,124	281,775	333,547	925,446	3,517,504	23,602,791	11,562,503	13,160,536
2025	310,124	281,775	333,547	925,446	3,517,504	23,349,769	11,814,736	13,595,942
2026	310,124	281,775	333,547	925,446	3,517,504	23,546,923	11,609,646	13,243,324
2027	310,124	281,775	333,547	925,446	3,517,504	23,455,435	11,724,635	13,443,402
2028	310,124	281,775	333,547	925,446	3,517,504	23,664,033	11,810,478	13,586,711
2029	310,124	281,775	333,547	925,446	3,517,504	23,195,047	11,527,888	13,098,080
2030	310,124	281,775	333,547	925,446	3,517,504	23,488,223	11,668,950	13,342,633
2031	310,124	281,775	333,547	925,446	3,517,504	23,961,397	11,963,514	13,877,961
2032	310,124	281,775	333,547	925,446	3,517,504	23,011,870	11,514,753	13,080,156
2033	310,124	281,775	333,547	925,446	3,517,504	24,463,221	12,036,246	13,998,343
2034	310,124	281,775	333,547	925,446	3,517,504	22,669,215	11,345,855	12,786,416
2035	310,124	281,775	333,547	925,446	3,517,504	24,489,556	12,367,311	14,647,263
TOTAL	12,398,721	9,343,938	11,638,032	33,380,691	141,817,344	956,725,025	437,865,499	501,781,322

(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)

Calendar Year	CALIFORNIA AQUEDUCT (continued)						
	Reach 15A Wheeler Ridge Pumping Plant	Reach 16A Chrisman Pumping Plant	Reach 17E Edmonston Pumping Plant	Reach 18A Alamo Powerplant	Reach 22B Pearblossom Pumping Plant	Reach 23 Mojave Siphon Powerplant	Reach 24 Silverwood Lake (d)
	[9]	[10]	[11]	[12]	[13]	[14]	[15]
1962	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0
1971	2,564	0	0	0	0	0	0
1972	68,304	142,902	542,625	0	3,468	0	0
1973	236,623	387,198	1,548,428	0	202,289	0	0
1974	324,966	564,464	2,164,223	0	324,993	0	0
1975	552,952	1,095,331	4,010,395	0	575,061	0	0
1976	713,875	1,506,985	5,443,936	0	889,544	0	0
1977	303,107	657,108	2,360,624	0	315,128	0	0
1978	616,104	1,132,296	4,180,131	0	1,508,115	0	0
1979	749,188	1,526,850	5,475,688	0	1,838,687	0	0
1980	1,047,495	2,102,439	7,028,235	0	1,762,063	0	0
1981	1,319,739	2,838,773	9,351,931	0	2,296,771	0	0
1982	1,213,660	2,424,920	8,352,207	0	1,498,620	0	0
1983	432,165	793,915	2,375,225	0	397,766	0	0
1984	770,618	1,479,784	4,585,198	0	624,213	0	0
1985	1,411,621	2,812,461	9,365,591	0	1,226,515	0	0
1986	2,432,322	4,999,949	16,956,023	(1,013,756)	2,359,599	0	0
1987	2,213,047	4,434,510	14,612,448	(1,017,868)	1,814,728	0	243,983
1988	2,557,952	5,120,998	16,801,811	(742,800)	2,370,395	0	37,927
1989	4,061,396	8,559,270	28,732,499	(788,139)	4,228,697	0	50,884
1990	6,013,924	13,616,111	48,319,508	(832,947)	6,490,357	0	187,259
1991	1,032,050	2,427,880	8,647,065	(269,625)	996,352	0	0
1992	1,274,895	2,560,253	8,575,989	(916,154)	1,142,454	0	317,172
1993	(86,676)	(490,235)	(2,223,221)	(55,346)	(245,059)	0	(79,954)
1994	2,537,943	5,323,430	18,470,003	(59,356)	2,605,813	0	0
1995	725,389	1,435,098	4,738,967	(1,187,312)	972,086	0	777,343
1996	2,299,388	4,875,010	17,027,386	(2,788,262)	2,647,473	(914,092)	1,053,254
1997	2,417,154	5,424,334	19,413,834	(2,488,338)	3,037,087	(1,680,469)	0
1998	(295,861)	(664,843)	(2,312,472)	(2,016,390)	(443,482)	(1,253,110)	(149,186)
1999	1,298,081	3,342,541	12,958,476	(2,889,226)	1,889,956	(2,572,618)	71,918
2000	2,935,116	6,755,295	24,374,849	(5,129,551)	3,834,983	(4,429,170)	(11,039)
2001	15,240,588	34,335,079	126,869,528	(3,298,030)	19,029,208	(3,649,034)	929,424
2002	8,738,126	19,736,096	72,525,697	(4,926,149)	10,684,580	(5,255,303)	95,264
2003	11,105,857	25,313,434	93,169,287	(3,431,370)	14,843,092	(6,759,553)	231,965
2004	12,919,026	29,500,652	108,466,133	(6,248,061)	16,949,136	(7,691,613)	(197,090)
2005	13,013,205	29,569,326	105,364,250	(6,140,775)	18,660,122	(6,779,365)	(1,496,358)
2006	12,026,301	27,453,457	92,583,485	(4,022,339)	16,731,835	(6,347,742)	(97,423)
2007	16,538,744	37,396,892	128,184,872	(2,992,981)	19,912,367	(5,908,398)	(102,712)
2008	11,923,883	24,089,827	83,481,686	(3,318,573)	11,296,086	(3,217,465)	326,340
2009	8,106,951	17,592,550	62,412,098	(3,132,263)	8,037,282	(2,255,901)	1,907
2010	10,767,757	24,309,250	88,121,540	(4,904,972)	16,567,332	(5,529,296)	(193,219)
2011	19,848,455	42,780,850	142,989,230	(6,643,129)	30,407,546	(10,217,669)	703,336
2012	**16,886,623**	**35,760,408**	**123,147,792**	**(7,510,567)**	**22,040,443**	**(12,134,253)**	**654,026**
2013	19,571,066	41,434,944	143,215,897	(7,746,094)	26,011,935	(12,380,572)	774,209
2014	12,417,477	29,064,366	108,756,646	(7,279,387)	20,745,626	(9,774,103)	(993,829)
2015	12,455,617	29,156,753	109,108,242	(7,351,168)	21,014,552	(10,264,881)	(2,649,803)
2016	12,772,052	29,912,086	111,965,678	(7,453,655)	21,144,098	(10,014,178)	2,749,068
2017	12,416,232	29,064,066	108,760,110	(7,406,415)	20,831,351	(10,251,628)	(3,138,472)
2018	13,742,890	32,239,500	120,790,221	(8,032,995)	23,237,841	(11,720,535)	4,489,686
2019	12,686,073	29,709,945	111,206,487	(7,280,874)	20,710,470	(9,845,004)	(1,935,048)
2020	13,039,682	30,555,105	114,405,920	(7,557,238)	21,760,802	(10,880,307)	(1,960,159)
2021	12,654,334	29,631,875	110,906,992	(7,411,228)	21,120,225	(9,835,795)	98,837
2022	12,929,716	30,291,294	113,405,579	(7,409,424)	21,092,227	(10,063,505)	2,405,989
2023	13,509,659	31,681,293	118,674,812	(7,742,609)	22,337,509	(11,294,450)	1,484,816
2024	12,841,555	30,080,667	112,608,309	(7,243,032)	20,658,749	(10,006,718)	(2,865,504)
2025	13,290,368	31,155,694	116,682,189	(7,714,396)	22,154,878	(10,446,085)	2,334,828
2026	12,927,171	30,286,382	113,389,104	(7,302,421)	20,853,544	(9,874,583)	(2,360,947)
2027	13,132,930	30,777,953	115,249,753	(7,452,829)	21,252,297	(9,985,407)	982,540
2028	13,280,959	31,133,924	116,600,955	(7,682,953)	22,136,532	(10,949,386)	(1,342,416)
2029	12,776,734	29,924,220	112,013,533	(7,350,467)	20,941,301	(9,662,363)	530,569
2030	13,029,423	30,531,376	114,317,397	(7,429,088)	21,259,617	(9,639,112)	(1,166,914)
2031	13,581,901	31,852,679	119,322,216	(7,663,309)	21,902,901	(10,481,194)	4,269,079
2032	12,760,259	29,889,256	111,888,745	(7,338,671)	21,077,442	(10,304,290)	(3,467,208)
2033	13,706,492	32,151,892	120,457,447	(7,690,661)	22,027,875	(10,800,599)	2,146,721
2034	12,457,665	29,163,774	109,138,602	(7,314,658)	20,853,404	(10,432,862)	(932,624)
2035	14,384,625	33,781,001	126,644,302	(7,643,983)	21,788,882	(10,589,171)	2,750,273
TOTAL	504,659,497	1,148,492,896	4,188,702,335	(251,261,833)	749,237,760	(326,091,777)	5,558,709

(a) Excludes extra peaking costs assigned directly to contractors. Refer to Appendix B text discussion of Table B-17 under "Project Water Charges."

(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)

Calendar Year	CALIFORNIA AQUEDUCT (continued)						
	Reach 26A Devil Canyon Powerplant	EBX Reach 2B Greenspot Pumping Plant	EBX Reach 3A Crafton Hills Pumping Plant	EBX Reach 4B Cherry Valley Pumping Plant	Reach 28J Lake Perris (d	Reach 29A Oso Pumping Plant	Reach 29G Warne Powerplant
	[16]	[17]	[18]	[19]	[20]	[21]	[22]
1962	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0
1972	(3,024)	0	0	0	0	79,315	0
1973	(461,268)	0	0	0	0	122,787	0
1974	(546,156)	0	0	0	0	157,511	0
1975	(1,095,523)	0	0	0	0	314,636	0
1976	(1,566,056)	0	0	0	0	326,967	0
1977	(1,222,866)	0	0	0	0	75,335	0
1978	(3,085,094)	0	0	0	0	89,383	0
1979	(3,466,481)	0	0	0	0	102,584	0
1980	(3,318,152)	0	0	0	0	236,768	0
1981	(3,842,971)	0	0	0	0	444,280	0
1982	(2,736,072)	0	0	0	0	539,245	(783,626)
1983	(5,478,830)	0	0	0	0	214,069	(1,488,439)
1984	(7,350,989)	0	0	0	0	484,239	(4,088,209)
1985	(10,748,103)	0	0	0	0	874,069	(5,930,176)
1986	(11,484,996)	0	0	0	0	1,269,590	(5,579,301)
1987	(10,814,483)	0	0	0	53,242	1,323,472	(6,292,822)
1988	(14,495,967)	0	0	0	0	1,421,372	(6,994,588)
1989	(18,688,631)	0	0	0	0	2,046,005	(8,368,716)
1990	(20,911,839)	0	0	0	147,163	2,857,442	(11,011,193)
1991	(4,884,013)	0	0	0	0	535,456	(3,604,791)
1992	(9,513,281)	0	0	0	(61,233)	686,984	(5,272,726)
1993	(7,502,549)	0	0	0	0	51,327	(3,380,473)
1994	(11,815,745)	0	0	0	80,824	1,210,469	(5,835,219)
1995	(9,742,248)	0	0	0	0	151,109	(1,179,155)
1996	(12,358,465)	0	0	0	0	895,929	(4,248,531)
1997	(13,293,791)	0	0	0	111,776	897,657	(4,797,589)
1998	(10,108,555)	0	0	0	772,669	(67,399)	(1,811,154)
1999	(15,052,348)	0	0	0	(44,587)	655,690	(5,341,364)
2000	(25,857,106)	0	0	0	(119,779)	1,174,910	(9,464,490)
2001	(19,510,278)	0	0	0	(1,363,597)	6,440,286	(7,987,833)
2002	(24,676,763)	0	0	0	(426,267)	3,806,290	(10,286,903)
2003	(28,046,279)	0	0	0	1,149,239	4,504,446	(10,281,921)
2004	(31,246,167)	78,351	68,735	7,271	(993,464)	5,484,542	(12,033,954)
2005	(30,604,351)	69,752	49,118	2,575	5,148,241	4,225,630	(8,251,156)
2006	(34,389,659)	142,288	155,897	19,150	(456,074)	3,384,755	(8,684,978)
2007	(28,705,769)	271,270	266,858	14,596	595,526	6,288,815	(9,522,236)
2008	(16,403,544)	274,802	351,317	10,987	(826,995)	4,802,553	(7,382,331)
2009	(13,660,753)	328,738	345,620	9,136	375,554	3,799,114	(6,623,825)
2010	(24,427,811)	329,325	434,081	22,436	(484,126)	3,258,687	(5,697,675)
2011	(30,158,676)	502,233	547,556	16,790	1,067,442	5,118,160	(6,160,049)
2012	**(21,946,943)**	**195,260**	**243,682**	**0**	**1,057,793**	**5,492,806**	**(6,856,469)**
2013	(21,600,180)	263,350	328,658	0	1,294,301	6,033,240	(6,574,828)
2014	(23,441,918)	285,193	355,919	0	482,323	4,029,445	(6,647,228)
2015	(23,286,220)	437,875	546,589	0	(311,698)	3,964,568	(6,588,602)
2016	(23,292,739)	437,875	546,589	0	138,284	4,247,983	(7,026,426)
2017	(23,237,862)	437,875	546,589	0	(1,024,174)	3,996,482	(6,603,871)
2018	(24,767,615)	437,875	546,589	0	2,304,400	4,501,232	(7,442,797)
2019	(22,861,403)	437,875	546,589	0	(1,880,465)	4,316,933	(7,049,371)
2020	(24,350,066)	437,875	546,589	0	1,900,623	4,303,013	(7,077,139)
2021	(23,205,341)	437,875	546,589	0	42,908	4,137,313	(6,826,316)
2022	(22,709,392)	437,875	546,589	0	(1,526,171)	4,430,686	(7,260,082)
2023	(23,908,748)	437,875	546,589	0	965,584	4,582,623	(7,472,285)
2024	(23,576,165)	437,875	546,589	0	(74,990)	4,504,634	(7,391,220)
2025	(23,714,633)	437,875	546,589	0	(521,937)	4,420,964	(7,251,056)
2026	(23,412,600)	437,875	546,589	0	420,873	4,514,071	(7,340,646)
2027	(23,640,998)	437,875	546,589	0	(83,487)	4,587,138	(7,512,273)
2028	(23,965,036)	437,875	546,589	0	603,939	4,417,171	(7,225,207)
2029	(22,858,009)	437,875	546,589	0	(318,854)	4,326,638	(7,136,488)
2030	(24,048,018)	437,875	546,589	0	(32,863)	4,472,673	(7,290,209)
2031	(23,537,151)	437,875	546,589	0	230,642	4,845,178	(8,021,355)
2032	(23,244,541)	437,875	546,589	0	(2,037,483)	4,262,068	(6,930,847)
2033	(24,049,910)	437,875	546,589	0	2,745,045	4,926,312	(8,099,684)
2034	(22,840,803)	437,875	546,589	0	(2,278,851)	4,036,024	(6,620,148)
2035	(24,114,108)	437,875	546,589	0	3,892,308	6,196,114	(10,387,516)
TOTAL	(1,084,886,055)	11,935,938	14,625,810	102,941	10,713,604	179,829,789	(363,017,486)

(a) Excludes extra peaking costs assigned directly to contractors. Refer to Appendix B text discussion of Table B-17 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)

Calendar Year	CALIFORNIA AQUEDUCT (continued)						GRAND TOTAL
	Reach 29H Pyramid Lake (d	Reach 29J Castaic Powerplant	Reach 30 Castaic Lake (d	Reach 31A Las Perillas & Badger Hill Pumping Plants	Reach 33A Devil's Den, Bluestone & Polonio Pumping Plants	Total	
	[23]	[24]	[25]	[26]	[27]	[28]	[29]
1962	0	0	0	0	0	0	36,970
1963	0	0	0	0	0	0	57,711
1964	0	0	0	0	0	0	74,134
1965	0	0	0	0	0	0	142,609
1966	0	0	0	0	0	0	192,605
1967	0	0	0	0	0	13,881	236,998
1968	0	0	0	118,676	0	774,253	1,117,913
1969	0	0	0	78,350	0	507,516	773,646
1970	0	0	0	136,429	0	693,842	1,103,798
1971	0	0	0	166,296	0	1,083,864	1,476,135
1972	0	(211,144)	0	237,638	0	2,494,486	3,107,622
1973	0	(1,057,564)	0	120,913	0	2,432,136	2,940,075
1974	0	(1,547,884)	0	118,582	0	3,107,972	3,691,020
1975	0	(2,455,461)	0	94,848	0	5,460,134	5,824,671
1976	0	(2,827,557)	0	141,260	0	7,621,469	8,213,686
1977	0	(3,734,462)	0	71,311	0	390,887	926,518
1978	0	(1,542,479)	0	179,925	0	6,714,161	7,322,208
1979	0	(2,773,323)	0	192,126	0	8,984,155	9,605,528
1980	0	(3,408,863)	0	168,458	0	9,882,560	10,425,874
1981	0	(2,834,322)	0	169,177	0	16,972,365	17,563,899
1982	0	(3,463,971)	0	168,390	0	12,859,335	13,477,272
1983	0	(6,649,626)	0	17,920	0	(7,537,336)	(7,452,772)
1984	0	(4,710,802)	0	112,679	0	(4,435,856)	(4,159,491)
1985	0	(15,698,638)	0	146,843	0	(10,322,390)	(9,861,182)
1986	0	(11,072,448)	0	297,886	0	10,793,124	11,622,736
1987	80,822	(11,557,616)	(43,085)	245,082	0	5,785,662	6,701,443
1988	54,038	(12,295,001)	(210,845)	214,519	0	5,286,195	6,239,204
1989	84,370	(14,812,039)	89,852	282,180	0	23,321,280	24,585,083
1990	0	(20,116,741)	245,034	416,832	0	46,159,453	48,154,173
1991	432,382	(6,579,194)	0	3,610	0	2,015,736	2,462,223
1992	29,879	(9,167,653)	(1,141,229)	101,665	0	(5,884,782)	(5,509,966)
1993	(675,438)	(7,895,978)	(2,751,590)	(111,306)	0	(24,731,032)	(24,907,974)
1994	0	(10,565,940)	(81,262)	206,086	(1,127)	12,582,103	13,499,081
1995	544,099	(4,049,615)	0	243,434	0	(497,942)	(142,959)
1996	757,227	(8,457,232)	0	296,170	0	15,023,644	15,870,542
1997	0	(8,727,328)	(897)	298,483	208,816	13,156,006	14,336,880
1998	(965,988)	(4,644,120)	(2,139,549)	(55,491)	(92,902)	(26,727,834)	(26,888,002)
1999	(18,229)	(9,672,802)	107,622	160,203	228,670	(4,200,420)	(3,723,524)
2000	(116,517)	(17,958,033)	129,014	223,269	368,020	(9,678,141)	(8,734,035)
2001	999,629	(13,981,232)	2,413,037	1,082,131	2,162,821	208,561,703	213,448,615
2002	(409,464)	(18,455,025)	(1,460,554)	544,053	1,351,161	84,029,512	86,625,740
2003	833,085	(17,309,610)	963,511	636,846	1,524,988	129,605,376	132,558,541
2004	221,340	(21,400,039)	682,259	670,805	1,774,635	140,256,828	143,246,816
2005	4,754,871	(14,285,372)	4,547,479	843,113	1,708,384	175,755,833	179,132,949
2006	544,706	(14,139,396)	6,452,242	833,780	1,401,932	139,906,604	143,058,640
2007	(626,223)	(19,017,327)	(10,698,397)	1,290,719	2,289,202	187,196,196	192,320,641
2008	(575,725)	(15,322,207)	1,348,929	1,077,217	1,600,407	127,024,827	131,109,535
2009	383,248	(16,146,570)	(583,168)	770,198	1,290,998	82,701,316	85,968,642
2010	(104,420)	(10,738,836)	(3,221,771)	945,945	1,639,152	137,077,184	140,191,358
2011	555,103	(11,936,931)	6,277,390	1,462,926	3,992,159	271,913,264	279,237,029
2012	**849,733**	**(12,636,206)**	**(294,409)**	**1,368,113**	**3,415,257**	**209,630,753**	**216,750,384**
2013	999,750	(12,012,951)	1,442,802	1,623,919	4,335,658	255,648,219	262,813,658
2014	0	(9,917,833)	(1,428,550)	1,072,343	3,265,804	167,843,180	172,282,472
2015	0	(9,863,523)	(969,716)	1,072,343	3,265,804	166,871,297	171,314,247
2016	0	(10,601,531)	765,789	1,072,343	3,265,804	179,126,739	183,569,689
2017	0	(9,950,293)	(2,867,822)	1,072,343	3,265,804	162,082,704	166,525,653
2018	0	(11,262,367)	3,459,953	1,072,343	3,265,804	197,296,321	201,739,271
2019	0	(10,782,842)	(1,922,693)	1,072,343	3,265,804	167,418,835	171,861,784
2020	0	(10,746,373)	(324,522)	1,072,343	3,265,804	177,422,608	181,865,558
2021	0	(10,314,844)	(1,231,223)	1,072,343	3,265,804	172,512,575	176,955,525
2022	0	(11,079,430)	5,143	1,072,343	3,265,804	178,387,734	182,830,684
2023	0	(11,476,248)	36,472	1,072,343	3,265,804	185,839,190	190,282,140
2024	0	(11,272,342)	1,037,238	1,072,343	3,265,804	172,949,623	177,392,572
2025	0	(11,054,157)	96,927	1,072,343	3,265,804	183,516,642	187,959,592
2026	0	(11,297,223)	(1,177,549)	1,072,343	3,265,804	173,347,679	177,790,629
2027	0	(11,488,007)	1,230,710	1,072,343	3,265,804	180,996,403	185,439,353
2028	0	(11,044,395)	(899,171)	1,072,343	3,265,804	179,448,749	183,891,699
2029	0	(10,806,960)	845,051	1,072,343	3,265,804	176,368,532	180,811,482
2030	0	(11,189,727)	(1,291,865)	1,072,343	3,265,804	175,345,110	179,788,060
2031	0	(12,164,164)	7,221,029	1,072,343	3,265,804	196,483,936	200,926,886
2032	0	(10,642,537)	(4,283,352)	1,072,343	3,265,804	164,558,231	169,001,181
2033	0	(12,376,524)	6,198,802	1,072,343	3,265,804	197,163,628	201,606,578
2034	0	(10,054,317)	(4,212,355)	1,072,343	3,265,804	163,086,949	167,529,899
2035	0	(15,795,428)	20,537,324	1,072,343	3,265,804	218,271,363	222,714,312
TOTAL	8,632,278	(653,050,600)	22,898,035	42,003,744	101,045,926	6,205,746,130	6,380,944,165

(a) Excludes extra peaking costs assigned directly to contractors. Refer to Appendix B text discussion of Table B-17 under "Project Water Charges."

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
				Application of Oroville Power Revenues to:			
	Capital Costs (a)	Capital Cost Credits (b)	Operating Costs (c)	Capital Costs (d)	Operating Costs (e)		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
1952	171,322	0	0	0	0	0	171,322
1953	312,190	0	0	0	0	0	312,190
1954	308,624	0	0	0	0	0	308,624
1955	194,645	0	0	0	0	0	194,645
1956	1,357,077	0	0	0	0	0	1,357,077
1957	6,210,709	0	0	0	0	0	6,210,709
1958	9,510,916	0	0	0	0	0	9,510,916
1959	11,390,586	0	0	0	0	0	11,390,586
1960	14,463,274	(4,850,000)	0	0	0	0	9,613,274
1961	18,729,965	(431,527)	0	0	0	0	18,298,438
1962	9,099,967	(479,280)	0	0	0	0	8,620,687
1963	73,098,107	(478,743)	(14,000)	0	0	0	72,605,364
1964	62,629,003	(751,330)	(14,000)	0	0	107,780	61,971,453
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	125,694,915
1967	94,481,603	(812,145)	(13,446)	0	0	1,189,212	94,845,224
1968	39,986,145	(431,574)	1,303,821	(951,000)	0	793,399	40,700,791
1969	5,367,865	(259,015)	2,890,772	(11,007,000)	0	601,867	(2,405,511)
1970	4,208,411	(203,733)	4,818,634	(14,650,000)	(1,500,000)	516,659	(6,810,029)
1971	3,956,703	(193,631)	6,026,480	(14,650,000)	(1,500,000)	408,754	(5,951,694)
1972	4,662,254	(196,361)	5,393,011	(14,650,000)	(1,500,000)	287,374	(6,003,722)
1973	4,090,078	(136,997)	6,135,774	(14,650,000)	(1,500,000)	203,384	(5,857,761)
1974	6,852,718	(137,503)	6,944,723	(17,950,000)	(1,500,000)	201,907	(5,588,155)
1975	8,343,833	(234,567)	7,697,390	(14,650,000)	(1,500,000)	146,188	(197,156)
1976	6,189,617	(204,944)	7,067,037	(14,650,000)	(1,500,000)	205,234	(2,893,056)
1977	21,554,452	(150,214)	10,547,977	(14,650,000)	(1,500,000)	857,419	16,659,634
1978	8,031,393	(64,566)	12,851,158	(14,650,000)	(1,500,000)	2,131,286	6,799,271
1979	9,751,861	0	9,547,014	(14,650,000)	(1,500,000)	2,131,884	5,280,759
1980	11,345,574	0	13,258,298	(14,650,000)	(1,500,000)	3,638,851	12,092,723
1981	11,921,267	0	10,326,538	(14,650,000)	(1,500,000)	4,597,474	10,695,279
1982	17,479,060	0	16,154,872	(14,650,000)	(1,500,000)	4,594,682	22,078,614
1983	12,763,378	0	22,251,331	(34,705,000)	(8,735,000)	3,751,993	(4,673,298)
1984	9,367,268	0	22,700,224	(14,650,000)	(10,348,000)	2,979,126	10,048,618
1985	12,538,173	0	23,462,283	(14,650,000)	(8,198,000)	2,069,024	15,221,480
1986	21,586,489	0	26,479,379	(14,650,000)	(9,107,000)	1,602,419	25,911,287
1987	32,734,633	0	23,479,839	(14,650,000)	(9,451,000)	1,762,179	33,875,651
1988	33,028,679	0	25,832,491	(14,650,000)	(8,677,000)	1,808,899	37,343,069
1989	11,075,132	0	28,442,946	(14,650,000)	(8,102,000)	2,678,007	19,444,085
1990	28,764,328	0	37,430,776	(14,650,000)	(8,498,000)	1,436,712	44,483,816
1991	37,462,303	0	76,586,450	(14,650,000)	(9,487,000)	1,727,664	91,639,417
1992	29,169,134	0	32,280,228	(14,650,000)	(8,526,000)	1,707,822	39,981,184
1993	22,366,872	0	36,884,103	(14,650,000)	(8,768,000)	1,708,490	37,541,465
1994	14,709,626	0	41,193,693	(14,650,000)	(7,484,000)	2,134,392	35,903,711
1995	15,120,857	0	46,162,374	(14,650,000)	(4,976,939)	2,042,481	43,698,773
1996	10,992,789	0	50,885,567	(14,650,000)	(5,503,289)	2,448,692	44,173,759
1997	15,267,689	0	51,788,497	(14,650,000)	(5,740,515)	1,699,730	48,365,401
1998	3,853,875	0	54,726,293	(14,650,000)	(8,155,000)	1,193,198	36,968,366
1999	7,472,767	0	56,455,442	(14,650,000)	(9,198,000)	9,686	40,089,895
2000	10,099,412	0	56,856,544	(14,688,338)	(10,297,482)	13,491	41,983,627
2001	10,290,325	0	76,259,064	(16,223,803)	(14,328,482)	23,866	56,020,970
2002	19,499,904	0	68,348,633	(19,498,891)	(20,826,560)	24,426	47,547,512
2003	22,829,518	0	78,571,004	(20,605,664)	(29,982,088)	9,833	50,822,603
2004	20,899,252	0	92,046,351	(17,530,688)	(35,845,422)	7,548	59,577,041
2005	5,905,639	0	104,183,906	(15,354,462)	(22,004,805)	0	72,730,278
2006	10,783,850	0	102,345,576	(15,210,585)	(21,005,765)	0	76,913,076
2007	7,626,458	0	85,833,561	(14,734,855)	(16,759,447)	215,235	62,180,952
2008	5,930,359	0	104,605,703	(14,665,045)	(19,295,181)	594,918	77,170,754
2009	5,045,947	0	119,753,981	(15,908,666)	(20,877,805)	606,860	88,620,317
2010	4,282,338	0	125,120,267	(15,953,842)	(20,222,025)	553,843	93,780,581
2011	23,399,419	0	129,608,989	(15,953,762)	(20,866,150)	1,000,000	117,188,495
2012	**35,657,498**	**0**	**126,258,966**	**(16,008,012)**	**(21,387,804)**	**1,000,000**	**125,520,648**
2013	23,447,501	0	129,241,803	(16,007,481)	(21,922,499)	4,450,000	119,209,324
2014	14,861,159	0	128,559,786	(16,009,268)	(21,606,073)	0	105,805,604
2015	9,219,843	0	121,557,373	(16,008,943)	(21,822,134)	0	92,946,139
2016	8,423,859	0	123,956,642	(16,037,107)	(22,040,355)	0	94,303,039
2017	1,271,112	0	122,925,315	(16,025,327)	(22,260,758)	0	85,910,342
2018	1,271,112	0	125,312,925	(16,010,144)	(22,483,366)	0	88,090,527
2019	1,271,112	0	125,991,245	(16,012,315)	(22,708,200)	0	88,541,842
2020	1,271,112	0	127,924,886	(16,021,195)	(22,935,282)	0	90,239,521
2021	399,997	0	121,692,168	(16,064,624)	(23,164,635)	0	82,862,906
2022	399,997	0	123,584,878	(16,065,534)	(23,396,281)	0	84,523,060
2023	399,997	0	123,445,236	(16,034,932)	(23,630,244)	0	84,180,057
2024	399,997	0	124,932,735	(16,017,142)	(23,866,546)	0	85,449,044
2025	399,997	0	125,123,732	(15,998,691)	(24,105,212)	0	85,419,826
2026	399,997	0	127,464,037	(15,997,502)	(24,346,264)	0	87,520,268
2027	399,997	0	128,557,201	(15,995,425)	(24,589,726)	0	88,372,047
2028	399,997	0	129,460,307	(15,993,220)	(24,835,624)	0	89,031,460
2029	399,997	0	130,868,857	(15,991,376)	(25,083,980)	0	90,193,498
2030	399,997	0	132,043,198	(14,671,167)	(25,334,820)	0	92,437,208
2031	399,997	0	133,219,602	(14,668,144)	(25,588,168)	0	93,363,287
2032	399,997	0	134,180,110	(14,664,873)	(25,844,050)	0	94,071,184
2033	399,997	0	135,233,322	(14,661,437)	(26,102,490)	0	94,869,392
2034	399,997	0	135,898,239	(14,657,820)	(26,363,515)	0	95,276,901
2035	399,997	0	137,597,728	(14,654,004)	(26,627,150)	0	96,716,571
TOTAL	1,229,685,313	(11,528,320)	4,996,499,838	(1,047,417,285)	(982,811,132)	65,506,761	4,249,935,175

(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 2010 reflected in the Delta Water Charge.

Tables B-14 through B-31

Note: Where applicable, the projected data values shown in this appendix are shaded and the bill year data are in **bold** type.

TABLE B-14. Capital Costs of Transportation Facilities Allocated to Each Contractor

(in dollars)

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	549,164	870,611	1,419,775	7,876	8,321	27,065	43,262	4,102	(58,882)	(54,780)
1983	1,254,900	1,433,061	2,687,961	138,413	131,515	339,246	609,174	32,196	110,287	142,483
1984	2,547,878	2,750,040	5,297,918	152,992	140,971	351,921	645,884	35,448	107,723	143,171
1985	7,143,123	6,443,613	13,586,736	19,776	19,245	53,491	92,512	17,424	78,896	96,320
1986	10,565,937	16,926,630	27,492,567	32,034	31,581	88,070	151,685	44,135	306,452	350,587
1987	7,979,832	12,599,507	20,579,339	50,153	48,675	138,959	237,787	126,995	1,342,116	1,469,111
1988	2,312,909	4,343,513	6,656,422	116,181	112,294	302,461	530,936	156,473	1,479,545	1,636,018
1989	1,224,538	1,553,352	2,777,890	108,320	102,804	260,092	471,216	152,173	1,210,940	1,363,113
1990	443,002	824,055	1,267,057	224,283	224,188	625,213	1,073,684	222,208	1,559,457	1,781,665
1991	99,848	89,269	189,117	413,426	383,368	946,246	1,743,040	298,398	2,184,088	2,482,486
1992	57,045	62,083	119,128	182,231	169,968	442,055	794,254	361,210	3,504,755	3,865,965
1993	122,423	128,634	251,057	129,344	125,312	342,416	597,072	1,170,649	11,997,953	13,168,602
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	155,255,850	167,524,637
1996	20,275	19,069	39,344	49,854	48,056	127,493	225,403	11,284,548	145,409,410	156,693,958
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	54,235	20,712	74,947	1,156,874	1,331,274	4,619,175	7,107,323	(2,558)	77,220	74,662
2004	153,240	20,534	173,774	360,395	346,064	4,106,508	4,812,967	8,906	46,169	55,075
2005	60,543	62,997	123,540	358,153	339,995	1,541,971	2,240,119	(10,551)	(177,303)	(187,854)
2006	887,967	20,265	908,232	711,378	660,632	1,589,738	2,961,748	5,956	60,241	66,197
2007	3,237,280	43,244	3,280,524	715,234	661,058	1,586,475	2,962,767	14,376	80,691	95,067
2008	7,903,072	61,968	7,965,040	1,314,460	1,213,310	2,904,291	5,432,061	20,681	85,078	105,759
2009	1,197,373	20,419	1,217,792	2,754,599	2,576,522	6,144,919	11,476,040	8,093	73,241	81,334
2010	397,066	4,083	401,149	3,666,012	3,334,569	8,364,010	15,364,591	8,796	17,268	26,064
2011	251,211	240,988	492,199	2,072,001	2,053,458	4,943,264	9,068,723	357,664	2,240,973	2,598,637
2012	**421,421**	**392,222**	**813,643**	**766,842**	**828,727**	**2,047,393**	**3,642,962**	**223,961**	**2,062,057**	**2,286,018**
2013	420,912	382,184	803,096	137,193	158,321	447,744	743,258	95,540	1,357,183	1,452,723
2014	277,877	253,484	531,361	97,168	110,882	313,066	521,116	53,205	1,220,534	1,273,739
2015	16,678	18,467	35,145	5,601	7,357	26,868	39,826	2,711	1,036,082	1,038,793
2016	16,678	18,467	35,145	5,601	7,357	26,868	39,826	2,711	1,036,082	1,038,793
2017	16,678	18,467	35,145	5,601	7,357	26,868	39,826	2,711	1,036,082	1,038,793
2018	16,678	18,467	35,145	5,601	7,357	26,868	39,826	2,711	1,036,082	1,038,793
2019	16,678	18,467	35,145	5,601	7,357	26,868	39,826	2,711	1,036,082	1,038,793
2020	16,678	18,467	35,145	5,601	7,357	26,868	39,826	2,711	1,036,082	1,038,793
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	54,500,175	52,087,571	106,587,746	23,570,232	25,436,326	80,694,210	129,700,768	39,754,899	455,273,719	495,028,618

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)

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	15,080,557
1966	1,107,757	52,586	279,172	2,218,832	339,222	24,857,487	53,789	38,891	2,173,090	31,120,826
1967	852,537	39,537	445,562	2,012,744	286,990	23,629,026	40,444	34,775	1,653,429	28,995,044
1968	198,739	9,739	166,267	1,104,132	70,086	11,544,942	9,962	12,238	396,075	13,512,180
1969	94,436	4,793	35,473	616,516	27,216	6,416,147	4,903	7,302	191,574	7,398,360
1970	54,344	2,720	21,686	414,659	15,520	4,145,046	2,782	3,999	109,470	4,770,226
1971	25,462	1,291	12,094	190,552	7,114	1,622,274	1,320	540	51,618	1,912,265
1972	11,589	589	8,354	82,886	3,409	723,623	602	343	23,526	854,921
1973	6,657	335	10,201	39,973	1,980	458,527	343	221	13,448	531,685
1974	9,478	469	11,044	45,420	2,766	483,866	479	326	18,979	572,827
1975	13,329	677	5,246	36,467	3,710	382,743	692	425	27,048	470,337
1976	17,506	837	12,615	53,085	5,621	654,026	856	1,152	34,455	780,153
1977	9,672	436	47,790	36,478	3,753	886,672	446	494	18,497	1,004,238
1978	23,499	(30,406)	6,178	54,219	6,579	575,169	1,209	1,402	47,446	685,295
1979	25,051	1,295	5,664	53,866	6,610	559,746	1,325	1,862	51,293	706,712
1980	144,980	(4,617)	31,160	321,890	38,126	3,211,810	7,682	7,144	297,215	4,055,390
1981	(5,427)	(15,464)	200	(44,773)	(1,223)	(385,275)	(296)	1,752	(11,324)	(461,830)
1982	49,916	2,584	6,600	83,283	13,142	654,692	2,638	1,252	102,287	916,394
1983	52,429	(35,295)	12,125	110,465	13,872	1,073,500	2,769	1,327	107,337	1,338,529
1984	86,345	4,474	14,303	154,799	22,764	1,617,225	4,572	2,678	177,020	2,084,180
1985	25,435	1,311	5,649	47,055	6,766	484,485	1,341	1,176	52,013	625,231
1986	38,309	(41,067)	9,862	71,661	10,320	796,097	2,009	778	78,142	966,111
1987	28,769	1,476	7,004	55,537	7,969	616,845	1,509	1,491	58,679	779,279
1988	52,329	2,831	17,078	70,572	12,049	909,046	2,894	4,620	109,713	1,181,132
1989	156,099	8,019	27,551	352,103	42,943	3,834,481	8,201	12,134	318,604	4,760,135
1990	292,361	15,142	50,360	553,394	87,199	6,094,021	15,487	22,729	599,233	7,729,926
1991	349,413	18,103	60,419	580,572	91,765	6,447,565	18,515	23,486	716,292	8,306,130
1992	125,891	6,439	28,019	241,559	34,559	2,711,639	6,585	10,883	256,370	3,421,944
1993	86,113	4,375	30,245	174,630	23,840	2,059,168	4,474	4,698	174,772	2,562,315
1994	64,762	3,323	23,894	124,518	17,633	1,488,418	3,398	2,173	132,095	1,860,214
1995	82,969	(1,000)	72,734	167,698	24,390	2,472,332	4,355	2,824	169,318	2,995,620
1996	27,611	(61,913)	51,990	68,870	8,812	1,233,548	1,437	1,590	56,092	1,388,037
1997	136,503	7,041	48,721	241,400	36,417	2,951,687	7,195	3,706	279,205	3,711,875
1998	70,737	(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	(51,174)	(2,675)	(5,510)	(76,110)	(13,086)	(822,789)	(2,736)	337	(105,392)	(1,079,135)
2004	7,704	394	2,497	17,036	2,079	183,122	404	1,518	15,697	230,451
2005	28,573	1,473	5,736	52,697	7,564	539,512	1,505	561	58,418	696,039
2006	2,789	142	774	17,471	756	57,964	146	553	5,666	86,261
2007	9,213	458	3,265	26,805	2,610	217,560	468	601	18,485	279,465
2008	37,570	1,938	7,678	64,222	9,929	710,893	1,981	1,353	76,855	912,419
2009	12,954	657	2,914	45,028	3,535	266,406	672	785	26,274	359,225
2010	25,926	1,345	4,051	65,599	6,781	463,083	1,375	178	53,175	621,513
2011	71,727	3,565	133,087	159,521	20,214	2,937,774	3,646	2,412	143,968	3,475,914
2012	**237,504**	**12,134**	**64,607**	**431,065**	**63,850**	**4,948,773**	**12,406**	**5,961**	**483,404**	**6,259,704**
2013	154,222	7,908	34,937	272,853	41,268	3,088,729	8,085	7,977	314,474	3,930,453
2014	74,997	3,829	18,673	133,845	20,257	1,524,366	3,916	6,360	152,590	1,938,833
2015	4,333	214	729	10,211	1,281	104,321	219	172	8,668	130,148
2016	4,333	214	729	10,211	1,281	104,321	219	172	8,668	130,148
2017	4,333	214	729	10,211	1,281	104,321	219	172	8,668	130,148
2018	4,333	214	729	10,211	1,281	104,321	219	172	8,668	130,148
2019	4,333	214	729	10,211	1,281	104,321	219	172	8,668	130,148
2020	4,333	214	729	10,211	1,281	104,321	219	172	8,668	130,148
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	6,322,078	(17,964)	2,159,943	14,388,629	1,844,403	160,631,244	322,370	288,906	12,709,142	198,648,751

(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)

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	17,599	11,581	3,290	19,099	991	23,360	6,414	72,708	18,898
1959	70,247	29,740	15,869	4,616	26,171	1,347	31,759	9,030	98,596	25,519
1960	84,552	38,760	22,068	6,797	36,395	1,547	43,260	10,772	147,170	37,469
1961	126,542	54,262	34,613	12,530	57,086	2,245	63,709	16,437	236,164	57,707
1962	198,558	85,352	43,719	13,861	72,102	3,344	84,709	24,943	253,435	64,330
1963	580,138	255,252	116,797	33,149	192,624	9,828	234,926	73,256	610,277	160,624
1964	1.094.365	501.858	209.462	55.445	345.446	18.442	429.605	137.769	1.026.066	276.118
1965	1,908,076	947.523	385.533	103.757	635,825	32,819	786.986	244.587	1,913,090	512,862
1966	3,960,302	2,150,972	812,655	215,858	1,340,235	69,325	1,664,584	517,269	3,943,586	1,062,417
1967	4,976,538	4,100.531	1,077,422	296,069	1,776,892	88,301	2,182,240	653,250	5,821,681	1,550,239
1968	5,924,474	3,998,942	1,350,742	368,156	2,227,646	107,350	2,738,009	783,940	7,982,824	2,122,940
1969	5,822,708	3,079,426	1,690,259	539,851	2,787,631	121,303	3,256,507	865,455	10,898,185	2,769,647
1970	5.032.959	3.277.778	2.050.788	695.345	3.382.251	106.381	3.872.367	736.775	13.795.809	3.457.109
1971	2,577,507	2,146,954	1,071,523	338,581	1,767,179	48,337	2,087,223	347,057	8,137,053	1,987,120
1972	973,436	283,257	331,759	92,079	547,138	19,134	668,550	134,360	2,691,137	697,957
1973	354.407	914.303	158.579	82.223	261.557	6.304	238.094	46.102	1.760.570	403.582
1974	451.450	280.861	259.175	74.113	427.433	8.143	518.453	59.145	1.617.394	425.927
1975	253.438	246.492	193.632	52.821	319.337	4.954	392.110	33.995	1.533.664	407.913
1976	237.539	255.238	136.751	37.235	225.529	4.245	277.807	31.002	962.280	255.901
1977	199.554	371.469	91.384	25.858	150.711	3.757	183.609	26.834	591.445	155.537
1978	302.111	470.176	78.573	22.226	129.584	5.233	157.815	38.654	428.989	111.769
1979	357.678	938.985	81.807	21.795	134.915	5.965	166.931	44.410	403.569	108.408
1980	1,867.517	1,777.294	423.755	113.166	698.855	32.435	864.104	240.899	2,040.757	548.085
1981	(158.728)	610.795	(47.102)	(8.865)	(77.678)	(2.576)	(102.568)	(19.588)	(143.875)	(43.557)
1982	1.557.934	861.928	298.770	78.903	492.728	26.237	613.587	196.672	1.421.407	388.261
1983	2,062,512	521.349	396.033	115.678	653.134	34.699	803.945	259.939	2,126.313	581.672
1984	1,518,361	295.783	297.559	85.097	490.731	27.272	606.124	188.562	1,546.628	423.408
1985	896.226	158.810	217.115	62.532	358.064	13.104	441.299	107.533	1,116.949	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	1.960.099	530.656
1996	299.764	206.742	110.520	44.965	182.270	4.885	211.872	35.808	4.024.655	972.829
1997	438.898	249.699	103.382	24.640	170.497	7.397	214.534	54.452	2.892.626	397.103
1998	234.379	202.650	62.492	41.136	103.063	3.989	106.009	29.551	3.683.353	303.255
1999	268.224	175.939	89.312	40.069	147.294	4.812	167.592	35.399	5.733.586	235.054
2000	139.035	77.889	54.795	23.903	90.369	2.665	103.194	19.150	14.346.200	171.107
2001	130.754	44.790	50.816	15.641	83.805	2.989	102.254	20.949	20.292.397	96.254
2002	167.056	107.515	34.405	11.395	56.741	2.453	68.208	18.551	9.841.901	126.427
2003	(45.645)	(11.439)	2.965	2.129	4.890	(800)	4.231	(5.944)	3.944.813	27.247
2004	63.046	38.831	20.124	5.569	33.188	1.133	41.043	8.244	2.148.313	38.381
2005	185.058	105.447	38.609	11.966	63.674	3.220	76.154	23.692	990.923	61.078
2006	320.886	240.800	65.890	24.564	108.669	5.400	121.883	40.414	2.027.147	110.705
2007	248.491	177.829	55.899	21.595	92.189	4.393	107.875	32.061	2.126.689	106.321
2008	116.213	156.738	63.164	58.941	104.186	2.075	67.080	15.089	3.336.249	254.401
2009	574.764	338.277	153.096	60.222	252.497	9.781	274.446	72.787	4.777.843	270.948
2010	642.763	293.471	193.368	62.727	318.909	10.776	370.291	80.801	5.457.805	285.357
2011	585.771	449.442	318.791	91.480	525.746	10.377	649.015	75.778	1.717.094	451.122
2012	**740.634**	**400.513**	**344.275**	**99.021**	**567.776**	**13.370**	**701.802**	**96.686**	**2.190.014**	**553.074**
2013	487.620	238.675	171.671	44.904	283.118	9.147	354.212	64.943	987.755	269.698
2014	233.253	100.172	59.509	15.618	98.141	4.555	122.843	31.779	299.320	81.891
2015	41.524	14.281	8.473	2.200	13.973	734	17.431	5.476	40.202	10.855
2016	41,524	14,281	8,473	2,200	13,973	734	17,431	5,476	40,202	10,855
2017	41,524	14,281	8,473	2,200	13,973	734	17,431	5,476	40,202	10,855
2018	41,524	14,281	8,473	2,200	13,973	734	17,431	5,476	40,202	10,855
2019	41,524	14,281	8,473	2,200	13,973	734	17,431	5,476	40,202	10,855
2020	41,524	14,281	8,473	2,200	13,973	734	17,431	5,476	40,202	10,855
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	55,611,665	35,117,907	16,106,124	5,176,033	26,562,469	997,417	31,617,025	7,311,772	181,582,373	28,503,219

(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)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA					
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California (e)	Ventura County Watershed Protection District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total	South Bay Area Future Contractor	GRAND 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	130,599,417	1,279,076	155,360,062	0	0	47	47	1,479,421	194,146,365
1968	1,314,841	147,502,290	1,360,687	177,782,841	0	0	51,573	51,573	1,254,192	197,978,910
1969	1,726,891	140,096,646	1,085,026	174,739,535	0	0	234,232	234,232	398,183	184,473,488
1970	2,160,122	161,983,078	1,147,609	201,698,371	0	0	16,227	16,227	74,028	207,082,650
1971	1,237,573	133,903,316	738,822	156,388,245	0	0	27,204	27,204	12,457	158,624,741
1972	434,507	43,931,880	66,878	50,872,072	0	0	9	9	13,182	51,936,917
1973	256,711	39,723,010	290,020	44,495,462	0	0	25	25	8,099	45,263,853
1974	264,349	18,896,593	86,362	23,369,398	0	0	45	45	28,570	24,402,165
1975	253,838	16,732,939	83,975	20,509,108	0	0	21	21	8,226	21,318,836
1976	158,850	13,545,451	84,623	16,212,451	0	0	51	51	16,486	17,492,912
1977	96,517	11,769,352	110,833	13,776,860	0	0	28	28	21,181	15,544,384
1978	69,152	15,781,696	174,876	17,770,854	0	0	38	38	28,876	19,073,476
1979	66,847	27,627,424	343,361	30,302,095	0	0	23	23	26,668	31,857,364
1980	337,811	59,493,774	641,586	69,080,038	0	0	26	26	59,169	74,974,703
1981	(26,356)	15,661,179	224,257	15,865,338	0	0	34	34	(6,746)	15,727,601
1982	238,792	30,873,857	316,107	37,365,183	0	0	11	11	16,086	39,705,931
1983	357,812	25,056,047	187,121	33,156,254	0	0	19	19	72,225	38,006,645
1984	260,327	16,317,441	103,160	22,160,453	0	0	26	26	83,252	30,414,884
1985	187,699	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	53,921,790
1994	394,936	16,392,019	50,941	21,180,325	0	0	14	14	34,208	74,225,376
1995	331,286	16,078,395	72,214	20,450,220	0	0	3	3	42,395	191,525,106
1996	1,079,630	23,237,696	49,282	30,460,918	0	0	0	0	21,388	188,829,048
1997	1,914,804	13,530,777	72,335	20,071,144	0	0	3	3	34,976	65,660,156
1998	3,219,136	11,284,364	65,745	19,339,122	0	0	7	7	11,234	32,689,230
1999	5,888,075	9,063,618	54,504	21,903,478	0	0	2	2	34,616	35,159,764
2000	16,301,848	5,393,221	24,010	36,747,386	0	0	24	24	16,912	43,646,872
2001	23,613,432	2,988,800	13,047	47,455,928	0	0	20	20	68,013	50,961,384
2002	11,145,573	5,297,703	34,824	26,912,752	0	0	14	14	380,629	37,572,525
2003	4,489,351	3,956,604	(4,162)	12,364,240	0	0	0	0	590,121	19,132,158
2004	2,289,249	4,276,877	13,219	8,977,217	0	0	0	0	156,413	14,405,897
2005	809,998	6,615,802	36,038	9,021,659	0	0	0	0	123,949	12,017,452
2006	1,803,791	13,692,480	88,228	18,650,857	0	0	5	5	240,448	22,913,748
2007	2,114,612	11,569,692	63,926	16,721,572	0	0	0	0	240,866	23,580,261
2008	2,801,808	11,245,956	54,233	18,276,133	0	0	4	4	442,647	33,134,063
2009	4,252,877	22,068,434	121,873	33,227,845	0	0	13	13	938,370	47,300,619
2010	5,289,703	18,029,952	107,156	31,143,079	0	0	0	0	6,290,391	53,846,787
2011	277,302	18,427,467	97,832	23,677,217	0	0	303	303	791,832	40,104,825
2012	**340,843**	**42,779,714**	**125,446**	**48,953,168**	**0**	**0**	**303**	**303**	**313,383**	**62,269,181**
2013	166,441	78,029,897	75,727	81,183,808	0	0	303	303	65,104	88,178,745
2014	50,367	73,902,467	30,730	75,030,645	0	0	303	303	46,142	79,342,139
2015	6,678	600,462	5,076	767,365	0	0	303	303	4,885	2,016,465
2016	6,678	600,462	5,076	767,365	0	0	303	303	4,885	2,016,465
2017	6,678	600,462	5,076	767,365	0	0	303	303	4,885	2,016,465
2018	6,678	600,462	5,076	767,365	0	0	303	303	4,885	2,016,465
2019	6,678	600,462	5,076	767,365	0	0	303	303	4,885	2,016,465
2020	6,678	600,462	5,076	767,365	0	0	303	303	4,885	2,016,465
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	102,540,508	1,750,428,008	11,746,206	2,253,300,726	0	0	344,177	344,177	18,076,292	3,201,687,078

(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)

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	153,778	105,673	364,827	624,278	0	0	0
1964	0	0	0	216,203	170,929	530,036	917,168	6,696	21,667	28,363
1965	0	0	0	284,369	259,943	899,371	1,443,684	13,756	36,029	49,785
1966	18,064	0	18,064	320,384	290,808	1,073,270	1,684,462	26,524	61,349	87,873
1967	41,574	0	41,574	391,262	320,989	1,187,619	1,899,870	56,469	118,263	174,732
1968	121,509	0	121,509	507,837	361,935	1,309,946	2,179,717	104,160	208,037	312,197
1969	165,289	0	165,289	610,012	397,386	1,411,700	2,419,098	122,043	242,426	364,469
1970	169,077	0	169,077	644,352	412,322	1,450,659	2,507,334	125,963	250,808	376,772
1971	171,286	0	171,286	651,193	415,439	1,457,564	2,524,196	128,402	256,371	384,773
1972	172,649	0	172,649	652,547	416,368	1,461,847	2,530,761	129,861	260,482	390,343
1973	173,649	31,366	205,015	653,900	417,018	1,465,086	2,536,004	130,843	263,040	393,883
1974	176,527	32,938	209,466	654,902	417,636	1,467,092	2,539,629	132,015	265,901	397,917
1975	184,973	36,291	221,264	657,232	418,879	1,470,816	2,546,926	133,290	269,028	402,318
1976	189,650	40,836	230,485	658,569	419,684	1,472,924	2,551,176	134,041	272,155	406,197
1977	192,592	45,096	237,688	661,253	421,449	1,478,506	2,561,208	135,754	278,799	414,553
1978	195,860	49,178	245,038	664,851	423,747	1,485,299	2,573,897	141,271	292,281	433,552
1979	199,390	53,340	252,730	670,171	427,108	1,494,207	2,591,487	142,362	297,569	439,931
1980	209,132	67,748	276,880	673,982	429,296	1,499,843	2,603,120	143,530	303,969	447,499
1981	222,599	87,408	310,007	684,154	435,629	1,515,357	2,635,140	148,789	327,544	476,334
1982	234,191	106,918	341,110	682,056	434,108	1,512,014	2,628,178	148,004	320,657	468,661
1983	262,160	151,259	413,419	683,322	434,532	1,513,393	2,631,247	148,213	317,658	465,871
1984	326,072	224,245	550,317	694,433	441,230	1,530,670	2,666,334	149,853	323,275	473,127
1985	455,836	364,305	820,141	706,869	448,410	1,548,594	2,703,872	151,658	328,761	480,419
1986	819,636	692,479	1,512,115	708,784	449,390	1,551,318	2,709,492	152,545	332,779	485,325
1987	1,360,688	1,559,243	2,919,931	711,384	451,007	1,555,828	2,718,219	154,806	348,472	503,277
1988	1,771,651	2,208,121	3,979,773	715,622	453,514	1,562,984	2,732,120	161,346	417,591	578,937
1989	1,891,484	2,433,160	4,324,645	724,523	459,332	1,578,655	2,762,510	169,453	494,247	663,700
1990	1,955,330	2,514,151	4,469,481	732,587	464,692	1,592,216	2,789,494	177,387	557,384	734,771
1991	1,978,582	2,557,403	4,535,985	749,695	476,459	1,625,032	2,851,186	189,050	639,235	828,285
1992	1,983,860	2,562,121	4,545,981	780,294	496,722	1,675,047	2,952,063	204,822	754,678	959,500
1993	1,986,897	2,565,427	4,552,325	794,653	505,773	1,698,585	2,999,011	224,056	941,300	1,165,356
1994	1,993,467	2,572,330	4,565,797	805,084	512,498	1,716,961	3,034,543	286,878	1,585,162	1,872,040
1995	1,997,323	2,576,836	4,574,159	809,559	515,639	1,729,386	3,054,584	517,412	4,095,799	4,613,211
1996	1,998,994	2,578,433	4,577,427	817,464	520,936	1,743,439	3,081,839	1,187,010	12,569,247	13,756,257
1997	2,000,111	2,579,484	4,579,594	821,514	523,583	1,750,461	3,095,558	1,808,546	20,578,178	22,386,724
1998	2,001,225	2,585,478	4,586,703	828,244	527,976	1,762,113	3,118,333	1,985,645	22,700,288	24,685,933
1999	2,002,204	2,586,690	4,588,893	830,473	529,331	1,765,656	3,125,459	2,035,260	23,293,767	25,329,027
2000	2,006,043	2,592,730	4,598,773	989,548	533,508	1,777,485	3,300,541	2,088,005	23,838,744	25,926,749
2001	2,325,822	2,781,364	5,107,186	1,122,588	535,165	1,782,101	3,439,854	2,116,046	24,156,352	26,272,399
2002	2,326,261	2,782,204	5,108,465	1,136,990	550,866	1,890,059	3,577,915	2,120,253	24,187,702	26,307,955
2003	2,327,606	2,785,013	5,112,619	1,221,695	620,921	2,236,138	4,078,755	2,123,974	24,209,864	26,333,838
2004	2,331,289	2,786,307	5,117,596	1,355,339	700,388	2,511,867	4,567,594	2,123,821	24,214,474	26,338,295
2005	2,341,837	2,787,645	5,129,482	1,392,132	721,344	2,760,542	4,874,018	2,124,361	24,217,270	26,341,630
2006	2,346,089	2,791,878	5,137,967	1,427,649	742,250	2,855,355	5,025,253	2,123,712	24,206,368	26,330,079
2007	2,409,130	2,793,260	5,202,390	1,498,819	783,535	2,954,702	5,237,056	2,124,084	24,210,132	26,334,216
2008	2,642,947	2,796,264	5,439,212	1,571,447	825,565	3,055,572	5,452,584	2,124,998	24,215,263	26,340,261
2009	3,224,325	2,800,595	6,024,920	1,707,406	904,139	3,243,653	5,855,198	2,126,337	24,220,772	26,347,110
2010	3,314,155	2,802,063	6,116,218	1,999,497	1,074,294	3,649,468	6,723,259	2,126,872	24,225,609	26,352,481
2011	3,344,572	2,802,361	6,146,933	2,697,805	1,299,165	4,213,505	8,210,475	2,127,465	24,226,774	26,354,239
2012	**3,364,349**	**2,820,430**	**6,184,780**	**2,934,799**	**1,440,773**	**4,554,395**	**8,929,967**	**2,152,130**	**24,381,312**	**26,533,442**
2013	3,398,327	2,850,622	6,248,948	2,851,780	1,393,633	4,334,177	8,579,590	2,167,948	24,526,957	26,694,905
2014	3,433,142	2,880,857	6,313,999	2,798,899	1,339,851	4,201,415	8,340,165	2,168,176	24,603,641	26,771,817
2015	3,456,770	2,901,459	6,358,229	2,736,064	1,259,096	3,855,401	7,850,561	2,165,079	24,680,199	26,845,278
2016	3,437,660	2,902,972	6,340,633	2,697,771	1,228,796	3,683,564	7,610,130	2,152,519	24,734,384	26,886,903
2017	3,412,449	2,904,535	6,316,984	2,624,085	1,199,197	3,571,344	7,394,626	2,122,789	24,759,562	26,882,351
2018	3,323,202	2,906,153	6,229,355	2,505,355	1,158,856	3,451,220	7,115,431	2,075,320	24,754,772	26,830,092
2019	3,275,076	2,907,832	6,182,908	2,400,828	1,124,031	3,351,754	6,876,613	2,057,668	24,808,620	26,866,288
2020	3,272,444	2,909,582	6,182,026	2,366,069	1,109,747	3,315,179	6,790,995	2,053,988	24,892,154	26,946,142
2021	3,271,681	2,911,411	6,183,092	2,359,956	1,107,313	3,310,767	6,778,035	2,051,801	24,982,700	27,034,501
2022	3,270,120	2,911,411	6,181,532	2,358,580	1,106,384	3,306,484	6,771,448	2,050,342	24,978,590	27,028,932
2023	3,268,977	2,877,879	6,146,856	2,357,171	1,105,734	3,303,244	6,766,150	2,049,360	24,976,031	27,025,391
2024	3,265,697	2,876,245	6,141,942	2,356,109	1,105,116	3,301,239	6,762,463	2,048,188	24,973,170	27,021,358
2025	3,256,082	2,872,668	6,128,750	2,353,773	1,103,873	3,297,515	6,755,161	2,046,913	24,970,044	27,016,957
2026	3,250,738	2,867,914	6,118,652	2,352,299	1,103,068	3,295,406	6,750,774	2,046,162	24,966,916	27,013,078
2027	3,247,367	2,863,479	6,110,846	2,349,312	1,101,303	3,289,824	6,740,439	2,044,449	24,960,273	27,004,722
2028	3,243,627	2,859,220	6,102,847	2,345,303	1,099,005	3,283,031	6,727,339	2,038,932	24,946,791	26,985,723
2029	3,239,589	2,854,852	6,094,442	2,339,305	1,095,643	3,274,124	6,709,072	2,037,841	24,941,503	26,979,344
2030	3,228,433	2,839,390	6,067,823	2,335,109	1,093,456	3,268,487	6,697,052	2,036,673	24,935,103	26,971,775
2031	3,213,016	2,818,324	6,031,340	2,323,626	1,087,123	3,252,973	6,663,723	2,031,414	24,911,527	26,942,941
2032	3,199,720	2,797,379	5,997,099	2,326,143	1,088,644	3,256,316	6,671,103	2,032,199	24,918,415	26,950,614
2033	3,167,660	2,749,928	5,917,588	2,324,901	1,088,220	3,254,938	6,668,059	2,031,990	24,921,414	26,953,404
2034	3,094,563	2,673,312	5,767,875	2,312,479	1,081,522	3,237,660	6,631,660	2,030,350	24,915,797	26,946,147
2035	2,946,420	2,527,010	5,473,430	2,298,632	1,074,342	3,219,737	6,592,711	2,028,545	24,910,311	26,938,856
TOTAL	139,100,717	135,448,836	274,549,553	101,136,771	52,593,236	170,308,962	324,038,969	86,978,420	981,103,705	1,068,082,125

(a) Unadjusted for prior overpayments or underpayments of charges.

(b) Determined at the current Project Interest Rate of 4.610 percent per annum.

(c) Reflects the transfers of permanent acqueduct capacity amoung contractors.

TABLE B-15. Capital Cost Component of Transportation Charge for Each Contractor[a b c d]

(in dollars)

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	Agricultural				
	[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	2,725	0	0	0	0	0	0	2,725
1965	0	0	6,029	64,284	9,284	0	0	0	0	79,598
1966	0	0	12,039	120,256	17,073	0	0	0	0	149,368
1967	0	0	26,257	233,262	34,350	0	0	0	0	293,869
1968	78,264	1,788	48,950	335,771	48,966	427,659	9,407	4,778	66,115	1,021,698
1969	78,401	5,363	57,418	392,005	52,536	878,259	10,158	5,194	250,174	1,729,507
1970	85,926	5,363	59,224	423,404	53,922	1,068,227	10,446	5,401	185,135	1,897,048
1971	97,967	5,363	60,329	444,522	54,712	1,418,794	10,612	5,817	197,007	2,295,123
1972	109,460	5,363	60,945	454,227	55,075	2,124,519	10,694	11,148	607,754	3,439,184
1973	120,406	5,363	61,370	458,449	55,248	2,450,312	10,736	6,440	235,071	3,403,395
1974	182,745	5,363	61,890	460,485	55,349	2,743,981	10,770	7,211	390,176	3,917,970
1975	221,959	5,363	62,452	462,798	55,490	3,286,535	10,812	7,429	465,575	4,578,413
1976	169,231	5,363	62,719	464,655	55,679	3,542,855	10,853	8,391	333,061	4,652,807
1977	166,380	5,363	63,362	467,359	55,965	3,881,955	10,914	7,687	318,448	4,977,433
1978	177,873	0	65,796	469,216	56,156	4,315,114	11,020	8,102	341,659	5,444,936
1979	210,952	5,363	66,111	471,978	56,491	4,738,184	11,086	8,310	384,523	5,952,998
1980	224,393	5,363	66,399	474,721	56,828	5,170,428	11,157	11,841	387,000	6,408,130
1981	224,393	5,363	67,986	491,115	58,770	5,658,656	11,565	8,933	410,205	6,936,986
1982	224,393	5,363	67,996	488,835	58,707	6,109,255	11,552	9,348	432,880	7,408,330
1983	234,793	5,363	68,332	493,076	59,377	6,622,262	11,685	7,832	51,533	7,554,254
1984	246,833	5,363	68,950	498,702	60,083	6,947,134	11,834	9,972	337,942	8,186,813
1985	258,327	5,363	69,678	506,586	61,243	7,397,734	12,069	10,179	245,849	8,567,029
1986	269,819	5,363	69,966	508,983	61,587	7,527,584	12,141	10,595	524,636	8,990,674
1987	281,314	5,363	70,471	512,652	62,116	8,299,853	12,251	10,803	547,302	9,802,126
1988	292,807	5,363	70,832	515,513	62,526	8,724,756	12,334	11,218	569,970	10,265,318
1989	304,299	5,363	71,717	519,169	63,150	9,031,275	12,501	11,634	593,180	10,612,288
1990	157,896	5,363	73,153	537,527	65,389	9,349,722	12,936	11,841	639,602	10,853,430
1991	292,319	5,363	75,796	566,573	69,966	9,349,722	13,762	11,841	639,602	11,024,945
1992	315,793	5,363	78,990	597,260	74,817	9,349,722	14,757	11,841	639,602	11,088,144
1993	315,793	5,363	80,482	610,123	76,657	9,349,722	15,125	11,841	639,602	11,104,707
1994	315,793	5,363	82,105	619,494	77,936	9,349,722	15,398	11,841	639,602	11,117,254
1995	315,793	5,363	83,398	626,231	78,890	9,349,722	15,608	11,841	639,602	11,126,449
1996	292,114	5,363	87,367	635,384	80,221	9,029,302	15,962	11,841	639,602	10,797,156
1997	292,114	5,363	90,231	639,177	80,707	8,963,378	16,133	11,841	639,602	10,738,546
1998	292,113	5,363	92,940	652,602	82,732	8,700,079	16,589	11,841	639,602	10,493,861
1999	292,113	5,363	94,237	659,509	83,778	8,700,079	16,824	11,841	639,602	10,503,346
2000	292,113	5,363	95,750	667,629	85,008	8,051,131	17,096	11,841	639,602	9,865,534
2001	292,113	5,363	96,315	670,255	85,354	7,919,404	17,172	11,841	639,602	9,737,418
2002	314,258	5,363	96,772	672,352	85,648	7,919,404	17,237	11,841	600,738	9,723,613
2003	314,258	5,363	97,715	680,183	86,829	7,919,404	17,477	11,841	598,478	9,731,547
2004	314,258	5,363	97,386	675,640	86,048	7,907,155	44,982	11,841	514,556	9,657,228
2005	314,258	5,363	97,537	676,671	86,174	7,907,155	45,009	11,841	514,556	9,658,564
2006	314,258	5,363	97,890	679,912	86,639	7,907,155	46,792	11,841	512,844	9,662,693
2007	314,258	5,363	97,938	681,003	86,686	7,907,155	46,802	11,841	512,844	9,663,890
2008	314,258	5,363	98,146	682,708	86,852	7,907,155	46,836	11,841	512,844	9,666,002
2009	314,258	5,363	98,643	686,867	87,495	7,907,155	46,969	11,841	512,844	9,671,434
2010	275,727	5,363	98,835	689,840	87,728	7,735,282	47,016	11,841	473,860	9,425,492
2011	275,727	5,363	99,109	694,264	88,186	7,735,282	47,109	11,841	473,860	9,430,740
2012	**299,407**	**5,363**	**108,286**	**705,265**	**89,580**	**8,111,599**	**47,656**	**11,841**	**473,860**	**9,852,856**
2013	299,407	5,363	112,850	735,711	94,089	8,111,599	48,604	11,841	473,860	9,893,324
2014	299,407	5,363	112,657	755,484	97,080	8,111,599	49,221	11,841	473,860	9,916,511
2015	283,002	5,363	110,743	701,170	89,304	8,111,599	49,532	11,841	473,860	9,836,415
2016	283,002	5,363	104,789	645,982	81,614	8,111,599	49,549	11,841	473,860	9,767,599
2017	283,002	5,363	90,629	533,785	64,439	8,111,599	49,567	11,841	473,860	9,624,085
2018	283,002	5,363	67,996	432,113	49,928	8,111,599	40,178	11,841	473,860	9,475,880
2019	283,002	5,363	59,590	376,750	46,467	8,111,599	39,446	11,841	473,860	9,407,918
2020	261,126	5,363	57,848	346,256	45,195	8,111,599	39,178	11,841	473,860	9,352,266
2021	261,126	5,363	56,811	326,085	44,523	8,111,599	39,033	11,841	473,860	9,330,241
2022	261,126	5,363	56,195	316,380	44,161	8,111,599	38,950	11,841	473,860	9,319,475
2023	261,126	5,363	55,770	312,158	43,987	8,111,599	38,908	11,841	473,860	9,314,613
2024	261,126	5,363	55,250	310,123	43,886	8,111,599	38,874	11,841	473,860	9,311,922
2025	261,126	5,363	54,688	307,809	43,745	8,111,599	38,833	11,841	473,860	9,308,864
2026	261,126	5,363	54,421	305,952	43,556	8,111,599	38,792	11,841	473,860	9,306,510
2027	261,126	5,363	53,778	303,249	43,270	8,111,599	38,730	11,841	473,860	9,302,816
2028	261,126	5,363	51,344	301,391	43,079	8,111,599	38,625	11,841	473,860	9,298,228
2029	261,126	5,363	51,030	298,629	42,744	8,111,599	38,558	11,841	473,860	9,294,750
2030	261,126	5,363	50,741	295,886	42,407	8,111,599	38,487	11,841	473,860	9,291,311
2031	261,126	5,363	49,154	279,492	40,466	8,111,599	38,079	11,841	473,860	9,270,980
2032	261,126	5,363	49,144	281,772	40,528	8,111,599	38,092	11,841	473,860	9,273,325
2033	261,126	5,363	48,808	277,531	39,859	8,111,599	37,959	11,841	473,860	9,267,945
2034	261,126	5,363	48,190	271,905	39,152	8,111,599	37,811	11,841	473,860	9,260,847
2035	261,126	5,363	47,462	264,021	37,993	8,111,599	37,575	11,841	473,860	9,250,839
TOTAL	17,283,767	355,746	5,088,850	34,718,128	4,421,473	483,257,714	1,830,422	732,949	32,150,483	579,839,532

(a) Unadjusted for prior overpayments or underpayments of charges.

(b) Determined at the current Project Interest Rate of 4.610 percent per annum.

(c) Reflects the transfers of permanent acqueduct capacity amoung contractors.

(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[a b c]

(in dollars)

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	33,853	0	0	0	726	0	0	0	51,729	0
1964	63,658	27,447	19,542	4,370	38,211	1,143	29,757	8,205	82,811	34,987
1965	119,982	53,007	34,348	7,194	42,701	2,082	52,705	15,222	135,068	35,344
1966	218,279	101,265	62,476	12,478	76,887	3,753	94,978	27,679	232,502	61,465
1967	422,318	210,814	121,269	23,472	148,839	7,284	184,247	54,023	433,350	115,574
1968	679,706	419,676	206,952	38,551	245,877	11,781	304,008	87,293	729,849	194,527
1969	987,488	623,365	318,583	57,301	368,426	17,249	455,200	127,220	1,136,415	302,649
1970	1,290,148	780,210	451,031	84,796	520,243	23,427	633,315	171,297	1,691,461	443,708
1971	1,553,528	947,165	595,102	120,210	700,914	28,845	841,311	208,821	2,394,083	619,779
1972	1,689,004	1,056,546	671,099	137,454	795,465	31,306	954,236	226,497	2,808,504	720,983
1973	1,739,896	1,070,988	696,065	142,143	825,044	32,281	990,871	233,340	2,945,564	756,530
1974	1,758,456	1,117,569	707,278	146,331	839,031	32,602	1,004,258	235,688	3,035,230	777,084
1975	1,782,456	1,131,901	724,296	150,105	861,611	33,017	1,032,492	238,700	3,117,604	798,777
1976	1,796,065	1,144,467	736,112	152,796	878,290	33,269	1,053,359	240,432	3,195,714	819,552
1977	1,808,676	1,157,484	744,719	154,692	890,124	33,485	1,068,460	242,010	3,244,723	832,585
1978	1,819,175	1,176,424	750,463	156,009	898,032	33,676	1,078,759	243,377	3,274,845	840,506
1979	1,834,894	1,200,392	756,140	157,141	904,987	33,943	1,087,882	245,346	3,296,693	846,199
1980	1,853,483	1,248,236	762,012	158,251	912,220	34,247	1,097,495	247,608	3,317,247	851,720
1981	1,950,494	1,338,779	796,385	164,014	950,529	35,899	1,145,568	259,877	3,421,183	879,634
1982	1,942,165	1,369,909	789,720	163,563	945,667	35,768	1,139,931	258,879	3,413,856	877,416
1983	2,023,096	1,413,833	809,320	167,581	971,692	37,104	1,173,108	268,896	3,486,248	897,190
1984	2,130,256	1,440,402	834,564	173,473	1,006,034	38,871	1,212,059	282,134	3,594,542	926,815
1985	2,208,999	1,455,489	851,720	177,807	1,031,452	40,260	1,244,146	291,738	3,673,311	948,379
1986	2,255,588	1,463,600	863,875	180,992	1,049,921	40,927	1,276,374	297,214	3,730,198	963,927
1987	2,299,485	1,468,993	876,262	183,969	1,068,826	41,390	1,291,856	301,992	3,783,895	978,588
1988	2,317,266	1,474,454	885,510	186,235	1,083,081	41,677	1,310,226	304,089	3,824,257	989,568
1989	2,330,935	1,483,492	889,632	187,412	1,088,857	41,852	1,317,538	305,475	3,846,509	995,456
1990	2,386,678	1,506,157	912,986	192,472	1,118,024	42,727	1,353,574	312,010	3,918,238	1,014,854
1991	2,423,381	1,525,803	932,659	197,604	1,147,282	43,112	1,389,436	315,536	3,997,480	1,036,359
1992	2,468,365	1,547,049	953,475	203,996	1,179,589	43,744	1,428,566	320,432	4,102,102	1,064,912
1993	2,502,941	1,566,056	969,784	210,989	1,203,773	44,253	1,455,765	324,519	4,213,571	1,095,444
1994	2,537,646	1,583,878	983,986	220,171	1,223,934	44,800	1,475,319	328,488	4,420,076	1,151,617
1995	2,563,361	1,592,838	992,587	225,248	1,236,069	45,193	1,487,510	331,367	4,547,097	1,186,123
1996	2,588,882	1,608,846	1,001,843	229,526	1,248,440	45,599	1,500,712	334,344	4,654,074	1,215,084
1997	2,605,838	1,620,233	1,010,119	232,003	1,258,944	45,868	1,512,946	336,316	4,875,746	1,268,666
1998	2,630,554	1,634,120	1,017,568	233,373	1,268,787	46,279	2,038,238	339,344	5,036,613	1,290,750
1999	2,643,878	1,645,505	1,022,130	235,684	1,274,800	46,503	2,045,396	341,005	5,243,554	1,307,788
2000	2,659,357	2,803,931	1,028,194	237,960	1,283,376	46,776	2,056,041	404,990	5,569,174	1,321,137
2001	2,667,537	2,809,873	1,032,076	239,333	1,288,723	46,930	2,062,801	406,193	6,393,264	1,330,966
2002	2,691,940	2,813,165	1,035,440	240,242	1,293,682	47,103	2,069,206	407,467	7,573,077	1,336,562
2003	2,701,872	2,820,807	1,038,199	240,913	1,297,179	47,248	2,074,046	408,659	8,152,654	1,344,008
2004	2,699,243	2,820,727	1,093,538	241,041	1,297,553	47,200	2,074,735	408,360	8,388,128	1,345,634
2005	2,703,152	2,824,145	6,707,026	241,378	2,057,678	47,269	2,077,801	408,933	8,518,222	1,347,958
2006	2,714,710	2,833,581	6,773,530	242,114	2,070,374	47,467	2,084,232	410,614	8,579,152	1,351,714
2007	2,735,172	2,858,810	6,902,634	243,649	2,094,341	47,804	2,096,215	413,704	8,705,835	1,358,632
2008	2,751,290	2,877,175	7,026,862	245,022	2,116,709	48,083	2,106,131	416,136	8,841,051	1,365,392
2009	2,758,927	2,891,746	7,116,271	248,839	2,135,023	48,218	2,111,111	417,194	9,057,106	1,381,867
2010	2,797,756	2,928,056	7,496,026	252,816	2,233,107	48,864	2,175,491	423,029	9,372,638	1,399,761
2011	2,842,227	2,961,140	7,670,194	257,046	2,276,978	49,590	2,209,391	429,632	9,740,692	1,419,004
2012	**2,884,224**	**3,001,708**	**7,847,688**	**263,354**	**2,334,675**	**50,306**	**2,260,588**	**435,674**	**9,859,104**	**1,450,114**
2013	2,904,096	3,037,077	8,453,349	270,348	2,439,500	51,250	2,314,394	443,028	9,962,057	1,476,076
2014	2,910,293	3,023,746	10,027,787	269,232	2,663,678	50,771	2,308,335	439,141	10,002,555	1,487,440
2015	2,871,536	3,001,601	11,678,181	267,572	2,876,915	50,171	2,343,241	434,030	9,972,594	1,479,478
2016	2,776,479	2,946,022	11,572,634	262,456	2,833,284	48,556	2,294,419	420,909	9,878,245	1,454,190
2017	2,575,786	2,813,729	11,341,147	251,637	2,739,050	45,083	2,190,332	392,956	9,680,583	1,400,941
2018	2,321,862	2,527,578	11,008,164	236,739	2,609,690	40,646	2,043,302	356,238	9,387,382	1,322,878
2019	2,017,676	2,233,263	10,556,492	218,176	2,442,334	35,241	1,852,156	310,654	8,984,239	1,215,681
2020	1,718,763	2,004,350	10,011,339	190,876	2,235,941	29,128	1,677,244	260,267	8,432,760	1,075,585
2021	1,459,300	1,759,150	9,343,793	155,666	1,985,786	23,778	1,426,519	217,447	7,733,867	900,521
2022	1,323,823	1,599,615	8,435,854	138,422	1,778,860	21,317	1,290,083	196,597	7,319,446	799,317
2023	1,272,932	1,591,890	7,732,094	133,733	1,657,592	20,342	1,244,686	188,560	7,182,386	763,770
2024	1,254,371	1,533,016	7,615,526	129,545	1,629,374	20,021	1,228,150	185,749	7,092,720	743,216
2025	1,230,372	1,515,152	7,500,272	125,771	1,593,525	19,606	1,196,380	182,173	7,010,346	721,523
2026	1,216,763	1,496,904	7,396,403	123,080	1,564,412	19,354	1,173,663	180,154	6,932,236	700,748
2027	1,204,152	1,478,393	7,320,052	121,184	1,543,427	19,138	1,157,224	178,342	6,883,227	687,715
2028	1,193,652	1,450,557	7,282,834	119,867	1,531,269	18,946	1,146,364	176,825	6,853,105	679,793
2029	1,177,934	1,412,244	7,250,504	118,735	1,520,713	18,680	1,135,978	174,612	6,831,256	674,101
2030	1,159,345	1,335,030	7,223,917	117,625	1,510,682	18,376	1,125,078	172,098	6,810,702	668,580
2031	1,062,334	1,191,977	7,085,306	111,862	1,458,293	16,724	1,063,082	157,936	6,706,767	640,666
2032	1,070,663	1,140,472	7,098,109	112,313	1,463,984	16,855	1,074,311	159,568	6,714,094	642,884
2033	989,731	1,067,921	7,016,578	108,295	1,429,593	15,519	1,036,900	148,903	6,641,702	623,110
2034	882,572	1,025,684	6,904,022	102,403	1,383,458	13,752	988,821	134,914	6,533,408	593,485
2035	803,829	1,003,963	6,820,096	98,069	1,349,022	12,363	955,138	125,017	6,454,638	571,921
TOTAL	139,266,543	121,640,586	285,193,745	12,446,718	99,323,106	2,443,688	100,485,191	19,733,117	401,656,351	68,216,907

(a) Unadjusted for prior overpayments or underpayments of charges.

(b) Determined at the current Project Interest Rate of 4.610 percent per annum.

(c) Reflects the transfers of permanent acqueduct capacity amoung contractors.

TABLE B-15. Capital Cost Component of Transportation Charge for Each Contractor[a b c]

(in dollars)

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 Watershed Protection District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total		
	[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	690,812	0	777,120	0	0	0	0	0	1,401,398
1964	21,736	1,260,513	9,378	1,601,758	0	0	0	0	0	2,550,013
1965	21,866	2,180,589	17,766	2,717,874	0	0	405	405	0	4,291,346
1966	37,965	3,900,172	33,426	4,863,325	0	0	565	565	0	6,803,657
1967	71,283	7,693,704	68,155	9,554,331	0	0	562	562	0	11,964,937
1968	120,094	14,345,147	133,299	17,516,761	0	0	564	564	0	21,152,446
1969	187,059	21,857,456	202,599	26,641,009	0	0	3,191	3,191	0	31,322,563
1970	275,010	28,992,595	257,859	35,615,099	0	0	15,121	15,121	0	40,580,450
1971	385,025	37,242,412	316,307	45,953,502	0	0	15,947	15,947	0	51,344,828
1972	448,055	44,062,124	353,935	53,955,208	0	0	17,332	17,332	0	60,505,477
1973	470,185	46,299,579	357,342	56,559,826	0	0	17,333	17,333	0	63,115,457
1974	483,259	48,322,677	372,112	58,831,575	0	0	17,334	17,334	0	65,913,890
1975	496,722	49,285,083	376,511	60,029,274	0	0	17,337	17,337	0	67,795,531
1976	509,650	50,137,294	380,788	61,077,786	0	0	17,338	17,338	0	68,935,789
1977	517,741	50,827,166	385,097	61,906,961	0	0	17,340	17,340	0	70,115,183
1978	522,656	51,426,581	390,742	62,611,246	0	0	17,342	17,342	0	71,326,011
1979	526,178	52,230,345	399,649	63,519,789	0	0	17,344	17,344	0	72,774,277
1980	529,583	53,637,413	417,136	65,066,651	0	0	17,345	17,345	0	74,819,626
1981	546,787	56,667,438	449,812	68,606,397	0	0	17,346	17,346	0	78,982,210
1982	545,445	57,465,063	461,234	69,408,615	0	0	17,348	17,348	0	80,272,241
1983	557,607	59,037,473	477,333	71,320,481	0	0	17,348	17,348	0	82,402,619
1984	575,830	60,313,582	486,863	73,015,423	0	0	17,349	17,349	0	84,909,364
1985	589,089	61,144,631	492,117	74,149,137	0	0	17,351	17,351	0	86,737,949
1986	598,648	61,666,347	494,977	74,882,591	0	0	17,352	17,352	0	88,597,548
1987	607,664	62,094,711	496,758	75,494,389	0	0	17,354	17,354	0	91,455,296
1988	614,419	62,452,915	498,619	75,982,314	0	0	17,355	17,355	0	93,555,818
1989	618,059	62,796,239	501,579	76,403,034	0	0	17,358	17,358	0	94,783,534
1990	629,935	63,762,461	509,566	77,659,681	0	0	17,360	17,360	0	96,524,218
1991	643,119	64,677,357	516,147	78,845,276	0	0	17,364	17,364	0	98,103,040
1992	660,626	65,776,355	523,154	80,272,368	0	0	17,367	17,367	0	99,835,423
1993	679,343	66,905,044	529,383	81,700,867	0	0	17,369	17,369	0	101,539,634
1994	714,062	68,486,625	535,055	83,705,658	0	0	17,370	17,370	0	104,312,662
1995	735,431	69,373,544	537,812	84,854,179	0	0	17,371	17,371	0	108,239,953
1996	753,512	70,251,060	541,753	85,973,675	0	0	17,371	17,371	0	118,203,726
1997	812,976	71,530,956	544,467	87,655,078	0	0	17,371	17,371	0	128,472,871
1998	919,464	72,283,441	548,490	89,287,020	0	0	17,372	17,372	0	132,189,221
1999	1,100,324	72,917,428	552,184	90,376,178	0	0	17,372	17,372	0	133,940,276
2000	1,434,718	73,432,183	555,279	92,833,115	0	0	17,372	17,372	0	136,542,084
2001	2,371,146	73,742,016	556,658	94,947,516	0	0	17,373	17,373	0	139,521,746
2002	3,744,046	73,915,850	557,417	97,725,199	0	0	17,375	17,375	0	142,460,522
2003	4,400,395	74,232,444	559,468	99,317,892	0	0	17,375	17,375	0	144,592,026
2004	4,668,374	74,468,950	559,219	100,112,701	0	0	17,375	17,375	0	145,810,789
2005	4,807,002	68,353,111	560,020	100,653,695	0	0	17,375	17,375	0	146,674,765
2006	4,856,807	68,688,841	562,236	101,215,370	0	0	17,375	17,375	0	147,388,737
2007	4,969,532	69,406,976	567,749	102,401,052	0	0	17,376	17,376	0	148,855,980
2008	5,103,981	70,008,639	571,814	103,478,284	0	0	17,376	17,376	0	150,393,718
2009	5,285,425	70,640,713	575,326	104,667,765	0	0	17,376	17,376	0	152,583,803
2010	5,566,288	71,863,591	583,374	107,140,797	0	0	17,377	17,377	0	155,775,625
2011	5,923,006	72,905,400	590,601	109,274,899	0	0	17,377	17,377	0	159,434,663
2012	**5,942,129**	**74,006,055**	**597,347**	**110,932,965**	**0**	**0**	**17,398**	**17,398**	**0**	**162,451,408**
2013	5,958,051	75,681,168	606,208	113,596,601	0	0	17,419	17,419	0	165,030,789
2014	5,965,056	78,973,360	602,317	118,723,712	0	0	17,441	17,441	0	170,083,645
2015	5,960,150	81,674,332	596,218	123,206,018	0	0	17,059	17,059	0	174,113,560
2016	5,944,564	80,089,848	580,948	121,102,554	0	0	16,922	16,922	0	171,724,741
2017	5,911,775	76,541,099	546,621	116,430,739	0	0	16,949	16,949	0	166,665,735
2018	5,863,511	70,220,837	481,894	108,420,719	0	0	16,971	16,971	0	158,088,449
2019	5,797,115	63,146,909	413,026	99,222,961	0	0	14,371	14,371	0	148,571,059
2020	5,709,756	56,534,817	358,216	90,239,042	0	0	2,468	2,468	0	139,512,940
2021	5,600,360	48,936,269	300,239	79,842,695	0	0	1,670	1,670	0	129,170,234
2022	5,537,331	43,060,874	262,610	71,764,149	0	0	284	284	0	121,065,821
2023	5,515,201	41,593,901	259,204	69,156,291	0	0	284	284	0	118,409,585
2024	5,502,127	39,690,389	244,434	66,868,638	0	0	282	282	0	116,106,607
2025	5,488,664	38,839,489	240,035	65,663,308	0	0	280	280	0	114,873,320
2026	5,475,736	38,091,764	235,758	64,606,976	0	0	279	279	0	113,796,270
2027	5,467,645	37,478,789	231,448	63,770,736	0	0	276	276	0	112,929,835
2028	5,462,730	36,915,099	225,804	63,056,845	0	0	275	275	0	112,171,256
2029	5,459,208	36,141,588	216,897	62,132,450	0	0	273	273	0	111,210,332
2030	5,455,803	34,758,033	199,410	60,554,679	0	0	272	272	0	109,582,913
2031	5,438,598	31,846,327	166,734	56,946,606	0	0	271	271	0	105,855,860
2032	5,439,941	31,041,734	155,312	56,130,240	0	0	269	269	0	105,022,650
2033	5,427,779	29,539,621	139,213	54,184,865	0	0	268	268	0	102,992,130
2034	5,409,556	28,362,619	129,683	52,464,377	0	0	267	267	0	101,071,174
2035	5,396,297	27,607,358	124,429	51,322,139	0	0	266	266	0	99,578,241
TOTAL	206,786,207	3,856,425,322	28,882,570	5,342,500,050	0	0	873,265	873,265	0	7,589,883,494

(a) Unadjusted for prior overpayments or underpayments of charges.

(b) Determined at the current Project Interest Rate of 4.610 percent per annum.

(c) Reflects the transfers of permanent acqueduct capacity amoung contractors.

TABLE B-16A. Minimum OMP&R Component of Transportation Charge for Each Contractor

(in dollars)

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	179,869	169,065	500,101	849,035	102,945	189,922	292,867
1978	56,318	0	56,318	239,301	228,855	647,828	1,115,984	104,060	191,978	296,038
1979	73,852	0	73,852	236,986	232,105	666,742	1,135,833	100,748	185,868	286,616
1980	81,769	0	81,769	389,575	372,185	1,010,830	1,772,590	126,328	233,105	359,433
1981	101,340	0	101,340	317,408	302,272	834,257	1,453,937	140,208	258,712	398,920
1982	191,987	0	191,987	386,742	369,633	1,098,844	1,855,219	142,045	262,101	404,146
1983	80,215	0	80,215	438,536	428,973	1,269,373	2,136,882	171,001	315,523	486,524
1984	106,485	0	106,485	591,243	565,721	1,817,629	2,974,593	201,768	372,284	574,052
1985	215,341	0	215,341	674,975	655,490	1,840,211	3,170,676	242,935	448,233	691,168
1986	203,704	0	203,704	613,273	583,077	1,784,056	2,980,406	233,000	429,904	662,904
1987	295,505	0	295,505	687,629	652,468	2,000,817	3,340,914	230,484	463,838	694,322
1988	312,677	(58)	312,619	676,847	655,274	1,910,092	3,242,213	258,807	561,030	819,837
1989	403,330	688,185	1,091,515	716,831	712,354	1,897,149	3,326,334	244,772	668,476	913,248
1990	658,942	674,944	1,333,886	782,589	780,305	2,129,966	3,692,860	310,222	677,025	987,247
1991	726,717	860,903	1,587,620	543,178	524,741	1,520,569	2,588,488	302,369	673,858	976,227
1992	483,580	712,313	1,195,893	796,058	855,050	2,253,496	3,904,604	346,220	736,477	1,082,697
1993	524,000	708,129	1,232,129	1,280,736	1,261,431	3,338,742	5,880,909	386,060	734,138	1,120,198
1994	573,814	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	461,844	661,193	1,123,037	1,064,729	1,174,897	3,502,733	5,742,359	810,087	3,051,492	3,861,579
1999	614,991	1,009,121	1,624,112	1,248,430	1,289,931	5,148,028	7,686,389	797,663	3,104,794	3,902,457
2000	779,355	1,498,380	2,277,735	2,191,987	1,304,689	3,779,203	7,275,879	718,495	3,165,371	3,883,866
2001	652,604	1,445,588	2,098,192	4,195,273	1,038,457	3,545,508	8,779,238	734,104	2,958,675	3,692,779
2002	1,097,576	1,872,253	2,969,829	8,258,786	1,357,138	6,058,171	15,674,095	770,581	3,349,800	4,120,381
2003	1,177,363	2,262,630	3,439,993	4,933,885	1,072,713	3,589,302	9,595,900	828,318	3,530,104	4,358,422
2004	1,628,416	2,363,722	3,992,138	2,614,185	1,295,492	3,578,272	7,487,949	830,593	3,464,506	4,295,099
2005	919,987	1,803,236	2,723,223	2,406,740	1,137,626	2,968,480	6,512,846	896,974	3,910,339	4,807,313
2006	849,081	1,426,626	2,275,707	2,492,941	1,208,478	3,292,808	6,994,227	779,905	3,620,653	4,400,558
2007	1,096,114	2,262,032	3,358,146	3,338,251	1,627,189	4,168,036	9,133,476	939,232	3,996,168	4,935,400
2008	1,161,923	1,540,410	2,702,333	3,628,307	1,747,745	4,473,834	9,849,886	1,313,818	5,269,359	6,583,177
2009	1,328,685	1,627,605	2,956,290	3,295,513	1,545,011	4,266,637	9,107,161	1,187,367	4,693,038	5,880,405
2010	1,427,419	2,188,717	3,616,136	3,441,667	1,650,479	4,446,355	9,538,501	1,414,519	5,943,599	7,358,118
2011	1,508,817	2,288,547	3,797,364	3,633,532	1,755,389	4,550,155	9,939,076	1,573,700	7,078,000	8,651,700
2012	**1,558,168**	**2,352,402**	**3,910,570**	**3,853,188**	**1,857,543**	**4,820,251**	**10,530,982**	**1,534,139**	**6,928,601**	**8,462,740**
2013	1,572,552	2,369,156	3,941,708	3,869,772	1,877,125	4,876,387	10,623,284	1,480,177	6,713,554	8,193,731
2014	1,515,862	2,284,298	3,800,160	3,695,261	1,781,587	4,637,535	10,114,383	1,504,911	6,903,515	8,408,426
2015	1,531,019	2,307,139	3,838,158	3,732,200	1,799,403	4,683,910	10,215,513	1,519,960	6,972,550	8,492,510
2016	1,546,330	2,330,210	3,876,540	3,769,522	1,817,397	4,730,750	10,317,669	1,535,159	7,042,276	8,577,435
2017	1,561,793	2,353,513	3,915,306	3,807,217	1,835,571	4,778,057	10,420,845	1,550,511	7,112,699	8,663,210
2018	1,577,411	2,377,047	3,954,458	3,845,290	1,853,927	4,825,838	10,525,055	1,566,016	7,183,826	8,749,842
2019	1,593,185	2,400,818	3,994,003	3,883,743	1,872,466	4,874,096	10,630,305	1,581,676	7,255,664	8,837,340
2020	1,609,115	2,424,822	4,033,937	3,922,562	1,891,191	4,922,837	10,736,590	1,597,493	7,328,220	8,925,713
2021	1,625,206	2,449,071	4,074,277	3,961,788	1,910,103	4,972,065	10,843,956	1,613,468	7,401,503	9,014,971
2022	1,641,458	2,473,561	4,115,019	4,001,406	1,929,204	5,021,786	10,952,396	1,629,603	7,475,518	9,105,121
2023	1,657,873	2,498,296	4,156,169	4,041,420	1,948,496	5,072,004	11,061,920	1,645,899	7,550,273	9,196,172
2024	1,674,452	2,523,280	4,197,732	4,081,834	1,967,981	5,122,724	11,172,539	1,662,358	7,625,776	9,288,134
2025	1,691,196	2,548,513	4,239,709	4,122,652	1,987,661	5,173,951	11,284,264	1,678,981	7,702,034	9,381,015
2026	1,708,108	2,573,998	4,282,106	4,163,878	2,007,537	5,225,690	11,397,105	1,695,771	7,779,054	9,474,825
2027	1,725,189	2,599,737	4,324,926	4,205,517	2,027,612	5,277,946	11,511,075	1,712,729	7,856,844	9,569,573
2028	1,742,440	2,625,736	4,368,176	4,247,573	2,047,889	5,330,726	11,626,188	1,729,856	7,935,413	9,665,269
2029	1,759,865	2,651,992	4,411,857	4,290,049	2,068,368	5,384,035	11,742,452	1,747,155	8,014,767	9,761,922
2030	1,777,464	2,678,513	4,455,977	4,332,949	2,089,051	5,437,875	11,859,875	1,764,626	8,094,915	9,859,541
2031	1,795,238	2,705,298	4,500,536	4,376,278	2,109,942	5,492,253	11,978,473	1,782,272	8,175,864	9,958,136
2032	1,813,191	2,732,351	4,545,542	4,420,042	2,131,041	5,547,176	12,098,259	1,800,095	8,257,622	10,057,717
2033	1,831,323	2,759,674	4,590,997	4,464,242	2,152,352	5,602,648	12,219,242	1,818,096	8,340,199	10,158,295
2034	1,849,637	2,787,271	4,636,908	4,508,885	2,173,875	5,658,675	12,341,435	1,836,277	8,423,601	10,259,878
2035	1,868,132	2,815,144	4,683,276	4,553,973	2,195,614	5,715,261	12,464,848	1,854,640	8,507,837	10,362,477
TOTAL	62,243,671	91,588,539	153,832,210	160,943,495	82,085,047	223,893,934	466,922,476	59,738,051	252,021,670	311,759,722

TABLE B-16A. Minimum OMP&R Component of Transportation Charge for Each Contractor

(in dollars)

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	362,623	19,968	301,835	902,162	11,872,821	20,424	21,664	796,711	14,298,208
1997	366,476	20,154	186,450	942,987	10,558,144	20,613	19,344	806,084	12,920,252
1998	453,033	24,560	288,906	1,098,213	12,207,920	25,122	21,594	995,194	15,114,542
1999	385,900	21,263	276,543	984,711	11,152,356	21,747	21,989	848,107	13,712,616
2000	387,205	21,293	208,747	1,028,885	10,023,886	21,776	22,855	849,999	12,564,646
2001	463,484	25,498	231,882	1,211,016	11,264,915	26,077	31,737	1,017,810	14,272,419
2002	426,030	21,560	224,116	1,080,257	10,230,940	22,052	25,580	813,275	12,843,810
2003	500,747	25,504	244,924	1,191,373	11,413,121	26,087	30,973	956,048	14,388,777
2004	449,008	22,985	247,729	1,139,907	10,806,949	62,636	25,742	743,055	13,498,011
2005	427,236	21,921	258,970	1,014,784	10,343,391	59,647	24,376	707,987	12,858,312
2006	468,404	23,944	198,090	1,119,736	10,435,014	72,310	26,706	771,884	13,116,088
2007	514,038	25,870	245,968	1,259,628	11,668,115	80,839	25,542	838,823	14,658,823
2008	660,054	34,000	376,215	1,596,605	15,732,146	106,456	34,194	1,093,040	19,632,710
2009	526,217	26,944	345,961	1,292,664	13,093,510	86,060	28,302	868,072	16,267,730
2010	514,496	30,056	416,953	1,359,934	13,595,916	97,074	29,684	896,397	16,940,510
2011	675,088	39,575	442,699	1,783,304	17,069,749	124,551	35,720	1,178,963	21,349,649
2012	**628,470**	**36,806**	**437,592**	**1,704,916**	**16,596,450**	**116,019**	**34,984**	**1,096,791**	**20,652,028**
2013	635,719	34,250	425,377	1,574,004	16,239,439	108,103	32,538	1,020,895	20,070,325
2014	659,786	35,551	439,575	1,505,784	16,820,996	112,131	31,539	1,059,644	20,665,006
2015	629,838	35,908	443,971	1,520,477	16,986,267	113,252	31,854	1,070,240	20,831,807
2016	636,136	36,267	448,410	1,535,681	17,156,129	114,384	32,172	1,080,943	21,040,122
2017	642,498	36,629	452,895	1,551,038	17,327,691	115,528	32,494	1,091,752	21,250,525
2018	648,923	36,996	457,424	1,566,548	17,500,968	116,684	32,819	1,102,670	21,463,032
2019	655,412	37,366	461,998	1,582,214	17,675,978	117,850	33,147	1,113,696	21,677,661
2020	610,752	37,738	466,617	1,597,527	17,848,623	119,029	33,479	1,124,833	21,838,598
2021	616,859	38,116	471,283	1,613,502	18,027,110	120,220	33,814	1,136,082	22,056,986
2022	623,028	38,497	475,996	1,629,637	18,207,381	121,422	34,152	1,147,443	22,277,556
2023	629,258	38,882	480,756	1,645,933	18,389,455	122,636	34,493	1,158,917	22,500,330
2024	635,551	39,271	485,564	1,662,393	18,573,349	123,862	34,838	1,170,506	22,725,334
2025	641,906	39,663	490,419	1,679,016	18,759,082	125,101	35,187	1,182,211	22,952,585
2026	648,325	40,060	495,323	1,695,807	18,946,673	126,352	35,538	1,194,033	23,182,111
2027	654,808	40,461	500,277	1,712,765	19,136,140	127,615	35,894	1,205,974	23,413,934
2028	661,356	40,865	505,279	1,729,892	19,327,501	128,892	36,253	1,218,033	23,648,071
2029	667,970	41,274	510,332	1,747,191	19,520,776	130,181	36,615	1,230,214	23,884,553
2030	674,650	41,687	515,436	1,764,663	19,715,984	131,482	36,981	1,242,516	24,123,399
2031	681,396	42,103	520,590	1,782,310	19,913,144	132,797	37,351	1,254,941	24,364,632
2032	688,210	42,524	525,796	1,800,133	20,112,275	134,125	37,725	1,267,490	24,608,278
2033	695,092	42,950	531,054	1,818,134	20,313,398	135,466	38,102	1,280,165	24,854,361
2034	702,043	43,379	536,364	1,836,316	20,516,532	136,821	38,483	1,292,967	25,102,905
2035	709,064	43,813	541,728	1,854,679	20,721,697	138,189	38,868	1,305,897	25,353,935
TOTAL	27,633,794	1,564,878	18,598,171	69,608,079	767,475,290	4,065,310	1,484,993	51,039,172	941,469,687

TABLE B-16A. Minimum OMP&R Component of Transportation Charge for Each Contractor

(in dollars)

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	89,560	529,292	20,193	649,204	148,012	1,870,559	497,871
1983	1,744,932	832,687	450,049	119,275	742,218	30,643	922,072	225,793	2,373,149	639,682
1984	2,105,780	943,524	548,784	150,179	905,055	36,810	1,112,196	271,187	3,018,294	803,394
1985	2,157,936	1,055,744	584,697	157,841	964,282	38,972	1,191,309	277,250	3,230,403	860,780
1986	2,311,841	1,102,466	618,750	162,748	1,020,438	40,051	1,268,806	295,987	3,318,638	893,069
1987	2,366,343	1,032,918	628,222	167,262	1,036,061	41,773	1,283,836	307,844	3,400,838	913,933
1988	2,303,274	1,042,113	649,276	175,694	1,070,784	40,604	1,321,553	298,438	3,587,873	960,968
1989	2,280,051	1,088,176	613,266	169,993	1,011,401	39,501	1,240,888	292,775	3,499,964	932,519
1990	2,636,186	1,275,150	708,829	201,242	1,169,006	45,472	1,424,445	336,069	4,084,211	1,078,392
1991	2,737,441	1,454,172	763,989	210,644	1,259,974	48,936	1,546,583	358,165	4,348,900	1,150,633
1992	2,781,586	1,579,025	750,248	198,232	1,237,307	49,829	1,538,733	362,844	4,131,745	1,115,632
1993	3,109,819	1,689,775	850,589	234,719	1,402,796	56,125	1,722,415	411,539	5,023,595	1,338,111
1994	2,825,193	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	3,876,512	2,050,254	1,070,517	299,639	1,765,491	73,835	3,207,848	561,246	6,076,375	1,634,942
1999	3,844,435	2,115,519	1,117,470	312,071	1,842,926	76,123	3,236,412	551,446	6,473,569	1,743,108
2000	3,775,826	3,403,164	1,042,288	293,577	1,718,941	68,852	3,019,452	598,344	5,913,042	1,581,762
2001	4,465,084	3,774,730	1,112,216	298,229	1,834,253	80,968	3,289,299	700,826	5,759,007	1,556,528
2002	3,643,974	3,500,194	1,018,976	282,748	1,680,496	62,632	3,003,252	550,071	5,637,788	1,512,805
2003	4,120,181	3,445,603	1,138,894	302,900	1,878,254	68,969	3,337,545	616,387	6,699,406	1,629,932
2004	4,508,317	4,095,941	1,464,344	328,316	1,939,809	77,900	3,477,411	686,216	7,342,899	1,796,437
2005	3,870,427	3,803,671	5,894,029	292,289	2,254,957	67,630	2,923,979	587,517	6,861,929	1,612,680
2006	4,128,288	3,280,322	8,519,115	311,551	2,842,690	75,557	3,184,829	647,572	7,055,148	1,707,492
2007	4,268,975	4,540,299	8,464,318	328,531	2,851,172	76,445	3,315,709	657,012	8,514,965	1,849,567
2008	5,123,605	5,516,317	9,956,537	384,413	3,403,751	85,907	4,250,506	777,694	9,477,773	2,115,523
2009	4,580,249	4,570,547	8,753,174	360,727	3,050,348	77,887	3,803,947	692,307	9,159,414	2,044,191
2010	4,194,379	4,419,339	9,586,511	364,623	3,267,202	73,646	3,837,739	625,548	9,049,982	2,012,149
2011	5,091,490	4,896,140	10,396,052	427,783	3,743,249	85,451	4,649,297	771,260	10,674,513	2,385,245
2012	**5,504,617**	**5,400,543**	**11,165,606**	**439,165**	**4,017,518**	**91,542**	**4,989,854**	**828,369**	**11,076,565**	**2,505,347**
2013	5,293,982	4,897,304	10,716,001	426,158	3,870,850	89,664	4,765,588	801,698	10,714,868	2,404,247
2014	5,125,001	4,964,050	10,788,664	426,130	3,884,487	88,475	4,725,207	774,604	10,767,186	2,439,661
2015	5,173,225	5,011,564	10,893,436	430,256	3,922,061	89,314	4,869,491	781,892	10,872,475	2,463,402
2016	5,224,957	5,061,680	11,002,370	434,559	3,961,282	90,207	4,918,186	789,711	10,981,200	2,488,036
2017	5,277,206	5,112,297	11,112,394	438,904	4,000,895	91,110	4,967,367	797,608	11,091,012	2,512,916
2018	5,329,978	5,163,420	11,223,518	443,294	4,040,904	92,021	5,017,041	805,584	11,201,921	2,538,046
2019	5,383,278	5,215,054	11,335,753	447,727	4,081,313	92,941	5,067,212	813,640	11,313,942	2,563,426
2020	5,432,883	5,264,235	11,444,752	452,015	4,120,349	93,799	5,253,668	821,136	11,423,749	2,588,144
2021	5,487,212	5,316,877	11,559,200	456,535	4,161,552	94,737	5,306,205	829,347	11,537,986	2,614,026
2022	5,542,084	5,370,046	11,674,792	461,100	4,203,168	95,685	5,359,267	837,640	11,653,365	2,640,166
2023	5,597,505	5,423,746	11,791,539	465,711	4,245,199	96,642	5,412,860	846,017	11,769,900	2,666,568
2024	5,653,480	5,477,984	11,909,455	470,368	4,287,651	97,608	5,466,988	854,477	11,887,598	2,693,233
2025	5,710,015	5,532,764	12,028,549	475,072	4,330,528	98,584	5,521,658	863,022	12,006,474	2,720,166
2026	5,767,115	5,588,091	12,148,835	479,822	4,373,833	99,570	5,576,875	871,652	12,126,539	2,747,367
2027	5,824,786	5,643,972	12,270,323	484,621	4,417,571	100,566	5,632,644	880,369	12,247,805	2,774,841
2028	5,883,034	5,700,412	12,393,026	489,467	4,461,747	101,571	5,688,970	889,172	12,370,282	2,802,589
2029	5,941,864	5,757,416	12,516,957	494,362	4,506,364	102,587	5,745,860	898,064	12,493,985	2,830,615
2030	6,001,283	5,814,990	12,642,126	499,305	4,551,428	103,613	5,803,318	907,045	12,618,926	2,858,922
2031	6,061,296	5,873,140	12,768,547	504,298	4,596,942	104,649	5,861,351	916,115	12,745,115	2,887,511
2032	6,121,909	5,931,871	12,896,233	509,341	4,642,912	105,696	5,919,965	925,276	12,872,565	2,916,386
2033	6,183,128	5,991,190	13,025,195	514,435	4,689,341	106,753	5,979,165	934,529	13,001,291	2,945,550
2034	6,244,959	6,051,102	13,155,447	519,579	4,736,234	107,820	6,038,956	943,874	13,131,304	2,975,005
2035	6,307,409	6,111,613	13,287,002	524,775	4,783,597	108,898	6,099,346	953,313	13,262,618	3,004,755
TOTAL	242,019,925	209,337,198	368,051,467	19,387,534	#########	4,227,403	##########	35,714,191	462,480,358	109,070,990

TABLE B-16A. Minimum OMP&R Component of Transportation Charge for Each Contractor

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA					
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Watershed Protection District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total	South Bay Area Future Contractor	GRAND 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	41,611,654
1983	394,524	38,953,367	326,258	47,754,649	0	0	1,928	1,928	220,926	56,802,779
1984	496,808	45,597,671	382,104	56,371,786	0	0	3,765	3,765	225,959	67,072,552
1985	531,765	50,064,444	416,652	61,532,075	0	0	2,888	2,888	340,322	73,228,724
1986	551,066	52,858,915	442,334	64,885,109	0	0	2,787	2,787	279,227	76,682,112
1987	564,352	50,737,631	411,276	62,892,289	0	0	2,388	2,388	345,116	75,240,983
1988	593,787	51,262,231	406,248	63,712,843	0	0	545	545	365,207	76,126,694
1989	576,852	52,638,942	431,020	64,815,348	0	0	1,800	1,800	422,329	78,708,338
1990	667,687	61,053,824	494,721	75,175,234	0	0	788	788	474,284	91,448,066
1991	711,803	60,874,529	470,139	75,935,908	0	0	3,654	3,654	214,683	91,098,893
1992	688,558	67,460,598	502,131	82,396,468	0	0	647	647	443,676	100,077,318
1993	828,208	68,749,547	538,751	85,955,989	0	0	3,630	3,630	599,571	107,321,034
1994	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	113,585,947
1997	917,372	75,655,465	564,455	94,454,556	0	0	7,449	7,449	428,638	114,939,130
1998	1,000,558	80,540,695	608,294	102,766,206	0	0	0	0	465,095	129,072,818
1999	1,069,968	86,588,229	639,739	109,611,015	0	0	0	0	587,326	137,123,915
2000	970,573	82,987,467	639,794	106,013,082	0	0	0	0	0	132,015,208
2001	949,985	93,021,412	709,366	117,551,903	0	0	0	0	0	146,394,531
2002	923,874	85,536,695	658,323	108,011,828	0	0	0	0	0	143,619,943
2003	1,532,670	83,746,739	631,629	109,149,109	0	0	3,393	3,393	0	140,935,594
2004	1,457,387	101,196,674	774,008	129,145,659	0	0	3,455	3,455	0	158,422,311
2005	1,598,345	81,153,282	717,024	111,637,759	0	0	3,452	3,452	0	138,542,905
2006	1,457,333	77,325,790	609,001	111,144,688	0	0	3,867	3,867	0	137,935,135
2007	2,112,799	106,623,230	894,024	144,497,046	0	0	3,691	3,691	0	176,586,582
2008	2,448,545	118,528,338	1,029,541	163,098,450	0	0	5,179	5,179	0	201,871,735
2009	2,326,239	101,997,669	846,747	142,263,446	0	0	1,315	1,315	0	176,476,347
2010	2,376,308	101,309,357	815,788	141,932,571	0	0	1,675	1,675	0	179,387,511
2011	2,687,891	106,189,476	862,028	152,859,875	0	0	4,368	4,368	0	196,602,032
2012	**2,805,503**	**118,734,423**	**977,440**	**168,536,492**	**0**	**0**	**2,883**	**2,883**	**0**	**212,095,695**
2013	2,743,936	108,878,848	872,929	156,476,073	0	0	1,815	1,815	0	199,306,936
2014	2,745,748	109,343,184	901,876	156,974,273	0	0	1,775	1,775	0	199,964,023
2015	2,772,802	110,393,507	910,461	158,583,886	0	0	1,792	1,792	0	201,963,666
2016	2,800,532	111,497,442	919,565	160,169,727	0	0	1,810	1,810	0	203,983,303
2017	2,828,536	112,612,415	928,761	161,771,421	0	0	1,828	1,828	0	206,023,135
2018	2,856,821	113,738,539	938,049	163,389,136	0	0	1,847	1,847	0	208,083,370
2019	2,885,390	114,875,926	947,429	165,023,031	0	0	1,865	1,865	0	210,164,205
2020	2,913,681	115,964,408	956,300	166,729,119	0	0	1,884	1,884	0	212,265,841
2021	2,942,818	117,124,054	965,863	168,396,412	0	0	1,903	1,903	0	214,388,505
2022	2,972,245	118,295,294	975,522	170,080,374	0	0	1,922	1,922	0	216,532,388
2023	3,001,968	119,478,248	985,277	171,781,180	0	0	1,941	1,941	0	218,697,712
2024	3,031,987	120,673,032	995,130	173,498,991	0	0	1,960	1,960	0	220,884,690
2025	3,062,308	121,879,759	1,005,081	175,233,980	0	0	1,980	1,980	0	223,093,533
2026	3,092,930	123,098,556	1,015,132	176,986,317	0	0	2,000	2,000	0	225,324,464
2027	3,123,860	124,329,542	1,025,283	178,756,183	0	0	2,020	2,020	0	227,577,711
2028	3,155,098	125,572,839	1,035,536	180,543,743	0	0	2,040	2,040	0	229,853,487
2029	3,186,649	126,828,566	1,045,891	182,349,180	0	0	2,060	2,060	0	232,152,024
2030	3,218,517	128,096,853	1,056,350	184,172,676	0	0	2,081	2,081	0	234,473,549
2031	3,250,702	129,377,821	1,066,914	186,014,401	0	0	2,102	2,102	0	236,818,280
2032	3,283,208	130,671,599	1,077,583	187,874,544	0	0	2,123	2,123	0	239,186,463
2033	3,316,041	131,978,315	1,088,359	189,753,292	0	0	2,144	2,144	0	241,578,331
2034	3,349,201	133,298,098	1,099,242	191,650,821	0	0	2,165	2,165	0	243,994,112
2035	3,382,694	134,631,081	1,110,235	193,567,336	0	0	2,187	2,187	0	246,434,059
TOTAL	107,569,503	5,274,408,913	42,701,903	7,237,568,695	0	0	144,933	144,933	8,751,583	9,120,449,306

TABLE B-16B. Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(in dollars)

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	40,236	127,750	167,986	383,365	229,280	519,819	1,132,464	91,639	583,933	675,572
2003	37,618	92,735	130,353	301,657	180,804	643,729	1,126,190	78,771	477,048	555,819
2004	50,289	128,180	178,469	447,802	210,093	546,342	1,204,237	92,836	662,110	754,946
2005	53,455	149,328	202,783	452,896	265,252	772,420	1,490,568	106,901	587,036	693,937
2006	59,239	127,708	186,947	476,295	277,304	798,098	1,551,697	109,498	605,502	715,000
2007	82,724	182,954	265,678	445,250	246,862	740,211	1,432,323	103,331	759,114	862,445
2008	200,185	304,502	504,687	861,568	428,737	1,074,975	2,365,280	184,501	997,507	1,182,008
2009	167,534	238,061	405,595	709,873	419,319	1,284,770	2,413,963	210,122	854,918	1,065,040
2010	184,826	219,507	404,333	868,236	403,916	1,315,879	2,588,031	201,592	954,474	1,156,066
2011	161,752	207,248	369,000	1,085,136	450,081	1,412,864	2,948,081	369,825	1,359,643	1,729,468
2012	**366,145**	**361,568**	**727,713**	**1,109,205**	**661,930**	**1,674,433**	**3,445,567**	**675,254**	**1,714,046**	**2,389,299**
2013	143,354	142,280	285,634	526,481	233,483	644,813	1,404,777	443,969	807,786	1,251,755
2014	48,529	48,165	96,694	177,137	79,040	218,286	474,463	150,295	273,456	423,751
2015	28,397	28,184	56,581	103,912	46,250	127,729	277,891	87,945	160,012	247,957
2016	24,415	24,232	48,647	89,341	39,764	109,818	238,923	75,612	137,574	213,186
2017	23,543	23,366	46,909	86,150	38,344	105,896	230,390	72,912	132,661	205,573
2018	9,795	9,721	19,516	35,841	15,953	44,056	95,850	30,334	55,191	85,525
2019	9,745	9,672	19,417	35,661	15,872	43,834	95,367	30,181	54,913	85,094
2020	10,482	10,404	20,886	38,357	17,072	47,149	102,578	32,463	59,065	91,528
2021	16,346	16,223	32,569	59,814	26,622	73,524	159,960	50,623	92,106	142,729
2022	15,513	15,397	30,910	56,767	25,266	69,778	151,811	48,044	87,414	135,458
2023	11,101	11,018	22,119	40,622	18,081	49,933	108,636	34,380	62,554	96,934
2024	8,154	8,092	16,246	29,836	13,280	36,675	79,791	25,251	45,944	71,195
2025	1,308	1,298	2,606	4,787	2,131	5,884	12,802	4,051	7,371	11,422
2026	1,632	1,620	3,252	5,971	2,658	7,340	15,969	5,054	9,195	14,249
2027	2,433	2,414	4,847	8,902	3,962	10,942	23,806	7,534	13,708	21,242
2028	1,668	1,656	3,324	6,104	2,717	7,504	16,325	5,166	9,400	14,566
2029	1,659	1,647	3,306	6,073	2,703	7,464	16,240	5,139	9,351	14,490
2030	481	478	959	1,761	784	2,164	4,709	1,490	2,711	4,201
2031	480	476	956	1,756	782	2,159	4,697	1,487	2,705	4,192
2032	493	489	982	1,803	803	2,216	4,822	1,526	2,776	4,302
2033	489	485	974	1,789	796	2,199	4,784	1,514	2,754	4,268
2034	484	480	964	1,771	788	2,178	4,737	1,499	2,728	4,227
2035	494	490	984	1,806	804	2,221	4,831	1,529	2,782	4,311
TOTAL	3,024,411	5,209,183	8,233,593	17,093,020	12,020,620	39,874,105	68,987,745	3,950,549	14,944,236	18,894,785

TABLE B-16B. Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA							
			Kern County Water Agency					
	Dudley Ridge Water District	Empire West Side Irrigation District	Municipal and Industrial	Agricultural	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
	[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	911,938	13,104,938
1988	425,261	31,146	1,130,988	9,910,050	35,851	26,779	850,225	12,410,300
1989	331,852	17,226	607,908	7,400,983	22,959	24,306	754,007	9,159,241
1990	219,381	7,731	428,482	5,216,562	12,089	12,046	344,943	6,241,234
1991	13,048	3,111	570,942	146,276	0	1,354	30,685	765,416
1992	244,630	13,395	706,155	5,788,599	18,587	15,716	480,903	7,267,985
1993	471,706	25,543	1,202,455	11,405,212	37,276	36,803	1,159,908	14,338,903
1994	262,029	15,161	901,463	6,786,208	19,257	19,061	567,521	8,570,700
1995	626,214	16,830	1,486,494	12,489,555	41,275	36,377	1,051,178	15,747,923
1996	407,919	13,446	1,226,968	9,219,091	28,668	24,001	1,691,135	12,611,228
1997	423,144	(6)	794,476	7,471,645	(31)	22,025	137,304	8,848,557
1998	471,993	4,597	837,228	8,366,817	127	25,458	175,371	9,881,591
1999	360,554	19,182	874,948	7,723,883	24,159	20,065	1,749,925	10,772,716
2000	193,895	5,762	392,659	4,215,772	11,530	9,847	667,127	5,496,592
2001	200,485	6,563	113,854	2,948,087	7,528	11,821	287,409	3,575,747
2002	153,306	4,540	308,554	2,797,916	9,223	10,767	299,940	3,584,246
2003	125,188	3,901	301,142	2,626,386	10,030	7,904	287,531	3,362,082
2004	168,005	12,193	457,106	2,914,113	30,989	10,807	278,204	3,871,417
2005	315,142	14,807	358,007	5,609,958	76,490	11,047	540,681	6,926,132
2006	287,977	13,112	401,503	5,488,668	38,075	11,559	432,313	6,673,207
2007	189,684	8,758	242,253	3,662,405	24,280	10,224	365,975	4,503,579
2008	184,682	7,887	381,864	3,930,067	31,949	11,276	282,379	4,830,104
2009	211,301	8,835	63,186	4,531,417	28,888	11,619	315,254	5,170,498
2010	247,980	26,873	134,598	5,687,463	40,112	16,433	483,777	6,637,235
2011	367,505	15,480	818,217	9,040,394	62,027	19,843	603,150	10,926,616
2012	**295,635**	**17,512**	**810,891**	**7,047,813**	**55,214**	**21,148**	**523,021**	**8,771,234**
2013	137,300	8,182	379,080	3,056,037	25,910	10,602	242,514	3,859,625
2014	46,480	2,770	128,328	1,034,546	8,770	3,589	82,097	1,306,580
2015	27,197	1,621	75,091	605,362	5,132	2,100	48,039	764,542
2016	23,384	1,393	64,561	520,473	4,412	1,806	41,303	657,332
2017	22,548	1,344	62,255	501,885	4,255	1,741	39,827	633,855
2018	9,381	559	25,900	208,801	1,770	724	16,570	263,705
2019	9,334	556	25,770	207,749	1,761	721	16,486	262,377
2020	10,039	598	27,718	223,458	1,894	775	17,733	282,215
2021	15,655	933	43,224	348,459	2,954	1,209	27,652	440,086
2022	14,858	885	41,022	330,708	2,804	1,147	26,244	417,668
2023	10,632	634	29,355	236,654	2,006	821	18,780	298,882
2024	7,809	465	21,561	173,817	1,474	603	13,793	219,522
2025	1,253	75	3,459	27,887	236	97	2,213	35,220
2026	1,563	93	4,315	34,787	295	121	2,761	43,935
2027	2,330	139	6,433	51,860	440	180	4,115	65,497
2028	1,598	95	4,411	35,563	301	123	2,822	44,913
2029	1,589	95	4,388	35,377	300	123	2,807	44,679
2030	461	27	1,272	10,257	87	36	814	12,954
2031	460	27	1,269	10,233	87	36	812	12,924
2032	472	28	1,303	10,504	89	36	834	13,266
2033	468	28	1,293	10,420	88	36	827	13,160
2034	464	28	1,280	10,320	87	36	819	13,034
2035	473	28	1,305	10,524	89	37	835	13,291
TOTAL	9,624,037	431,304	20,489,736	206,395,537	890,343	616,343	18,061,100	256,508,401

TABLE B-16B. Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(in dollars)

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
	[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	1,668,457	1,384,832	567,521	74,145	936,215	0	140,035	529,674	2,414,011	841,746
2003	1,445,146	1,353,956	411,258	44,506	678,236	0	405,376	277,984	780,631	624,561
2004	1,813,317	1,677,090	554,874	71,974	760,283	0	465,965	368,929	2,072,770	449,963
2005	2,047,638	1,443,555	1,721,141	32,667	1,987,091	0	542,366	400,828	1,568,493	566,063
2006	2,845,985	1,617,750	5,071,235	26,843	2,093,821	0	1,417,777	442,278	1,533,665	681,916
2007	2,990,954	1,864,667	3,225,680	77,880	1,331,802	0	2,023,088	710,515	2,639,102	177,256
2008	3,547,772	3,303,503	4,059,802	74,029	2,237,582	1,845	2,200,333	1,052,126	3,410,480	629,597
2009	3,357,450	3,017,191	4,075,516	79,835	1,636,639	3,269	2,565,027	1,154,433	3,955,088	932,736
2010	4,282,488	2,624,142	7,319,367	26,192	2,706,685	179	3,274,431	802,844	4,626,817	1,619,098
2011	2,363,183	2,735,950	3,090,200	208,224	1,310,540	87,889	1,635,442	859,890	5,368,205	1,669,053
2012	**6,612,499**	**3,740,251**	**11,167,948**	**206,659**	**4,643,665**	**117,719**	**2,963,357**	**1,096,625**	**6,220,979**	**1,754,009**
2013	3,156,122	1,769,390	3,954,898	168,706	1,593,679	55,588	3,108,363	514,789	2,932,942	823,282
2014	1,085,895	614,782	1,338,833	57,095	539,501	18,818	813,924	174,269	992,875	278,702
2015	646,005	365,902	783,415	33,419	315,688	11,011	466,675	101,973	580,979	163,082
2016	555,417	314,592	673,558	28,732	271,419	9,467	401,234	87,674	499,509	140,213
2017	535,581	303,356	649,502	27,706	261,726	9,129	386,904	84,542	481,669	135,205
2018	222,820	126,207	270,215	11,527	108,887	3,798	160,965	35,173	200,391	56,250
2019	221,697	125,570	268,853	11,469	108,338	3,779	160,154	34,995	199,381	55,967
2020	238,461	135,066	289,183	12,336	116,530	4,065	172,264	37,641	214,457	60,199
2021	371,854	210,621	450,950	19,236	181,717	6,338	268,628	58,698	334,424	93,873
2022	352,912	199,892	427,979	18,257	172,460	6,015	254,944	55,708	317,388	89,091
2023	252,543	143,042	306,261	13,064	123,412	4,305	182,437	39,864	227,122	63,754
2024	185,487	105,061	224,942	9,595	90,643	3,162	133,996	29,280	166,816	46,826
2025	29,759	16,856	36,089	1,539	14,543	507	21,498	4,698	26,764	7,513
2026	37,122	21,026	45,019	1,920	18,141	633	26,817	5,860	33,386	9,371
2027	55,342	31,346	67,114	2,863	27,044	943	39,979	8,736	49,771	13,971
2028	37,950	21,495	46,023	1,963	18,545	647	27,415	5,991	34,130	9,580
2029	37,752	21,383	45,782	1,953	18,448	643	27,272	5,959	33,952	9,530
2030	10,945	6,199	13,273	566	5,349	187	7,907	1,728	9,844	2,763
2031	10,920	6,185	13,242	565	5,336	186	7,888	1,724	9,820	2,757
2032	11,209	6,349	13,593	580	5,478	191	8,097	1,769	10,081	2,830
2033	11,120	6,298	13,485	575	5,434	190	8,033	1,755	10,001	2,807
2034	11,013	6,238	13,355	570	5,382	188	7,956	1,738	9,904	2,780
2035	11,231	6,361	13,619	581	5,488	191	8,113	1,773	10,100	2,835
TOTAL	97,667,366	55,728,843	93,895,772	3,085,244	83,282,878	1,041,834	32,558,771	17,132,034	57,036,448	29,324,140

TABLE B-16B. Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(in dollars)

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 Watershed Protection 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	45,412,974	153,549	54,123,159	0	0	0	0	59,683,427
2003	3,303	41,917,356	129,134	48,071,447	0	0	0	0	53,245,891
2004	44,648	58,676,035	170,851	67,126,699	0	0	0	0	73,135,768
2005	41,448	56,220,579	61,131	66,633,000	0	0	0	0	75,946,420
2006	265,078	60,701,335	70,268	76,767,951	0	0	0	0	85,894,802
2007	248,328	61,354,857	119,861	76,763,990	0	0	0	0	83,828,015
2008	616,986	72,144,765	300,729	93,579,549	0	0	0	0	102,461,628
2009	821,311	71,527,080	314,011	93,439,585	0	0	0	0	102,494,682
2010	1,039,321	87,480,564	319,104	116,121,232	0	0	0	0	126,906,897
2011	1,417,872	96,099,855	456,251	117,302,554	0	0	0	0	133,275,720
2012	**1,421,187**	**97,541,976**	**1,096,454**	**138,583,327**	**0**	**0**	**0**	**0**	**153,917,140**
2013	494,405	45,662,889	518,560	64,753,613	0	0	0	0	71,555,404
2014	193,794	15,458,046	175,546	21,742,080	0	0	0	0	24,043,568
2015	174,147	9,045,238	102,720	12,790,254	0	0	0	0	14,137,225
2016	149,727	7,776,838	88,316	10,996,696	0	0	0	0	12,154,784
2017	144,379	7,499,095	85,162	10,603,956	0	0	0	0	11,720,683
2018	60,067	3,119,880	35,430	4,411,610	0	0	0	0	4,876,206
2019	59,764	3,104,153	35,252	4,389,372	0	0	0	0	4,851,627
2020	64,283	3,338,879	37,917	4,721,281	0	0	0	0	5,218,488
2021	100,243	5,206,631	59,128	7,362,341	0	0	0	0	8,137,685
2022	95,136	4,941,401	56,116	6,987,299	0	0	0	0	7,723,146
2023	68,079	3,536,057	40,156	5,000,096	0	0	0	0	5,526,667
2024	50,003	2,597,156	29,494	3,672,461	0	0	0	0	4,059,215
2025	8,022	416,684	4,732	589,204	0	0	0	0	651,254
2026	10,007	519,781	5,903	734,986	0	0	0	0	812,391
2027	14,919	774,886	8,800	1,095,714	0	0	0	0	1,211,106
2028	10,230	531,373	6,034	751,376	0	0	0	0	830,504
2029	10,177	528,594	6,003	747,448	0	0	0	0	826,163
2030	2,951	153,253	1,740	216,705	0	0	0	0	239,528
2031	2,944	152,893	1,736	216,196	0	0	0	0	238,965
2032	3,022	156,947	1,782	221,928	0	0	0	0	245,300
2033	2,998	155,700	1,768	220,164	0	0	0	0	243,350
2034	2,969	154,201	1,751	218,045	0	0	0	0	241,007
2035	3,027	157,248	1,786	222,353	0	0	0	0	245,770
TOTAL	7,644,775	1,907,534,705	5,479,811	2,391,412,622	0	0	0	0	2,744,037,147

(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)

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	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate	Unit Rate	Cumulative Unit Rate
	[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	0
1968	0	0	0	0	5.7570017	5.7570017	3.3315620	4.8750942	1.5435322	1.5435322
1969	0	0	0	0	3.1823595	3.1823595	3.6949019	4.8016170	1.1067151	1.1067151
1970	0	0	0	0	3.7584301	3.7584301	4.4256141	5.3721490	0.9465349	0.9465349
1971	0	0	0	0	4.2082507	4.2082507	3.8714396	4.7522833	0.8808437	0.8808437
1972	0	0	0	0	3.9577735	3.9577735	4.3250690	5.2281686	0.9030996	0.9030996
1973	0	0	0	0	3.8103903	3.8103903	5.2455409	6.1841801	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	6.8200210	1.6114026	1.6114026
1979	0	0	0	0	2.4747752	2.4747752	4.9524184	7.0944849	2.1420665	2.1420665
1980	0	0	0	0	2.9737588	2.9737588	4.5186576	5.8810391	1.3623815	1.3623815
1981	0	0	0	0	2.6488168	2.6488168	4.3834851	6.4541818	2.0706967	2.0706967
1982	0	0	0	0	10.0222589	10.0222589	5.6383622	7.4005197	1.7621575	1.7621575
1983	0	0	0	0	1.0240490	1.0240490	0.8686401	1.7143948	0.8457546	0.8457546
1984	0	0	0	0	1.6496750	1.6496750	2.7674018	3.9368186	1.1694168	1.1694168
1985	0	0	0	0	2.5224065	2.5224065	3.6942206	5.2987621	1.6045415	1.6045415
1986	0	0	0	0	4.4049446	4.4049446	7.2799222	10.5919298	3.3120077	3.3120077
1987	0	0	0	0	3.5386715	3.5386715	6.4837861	9.2276309	2.7438448	2.7438448
1988	1.1782643	1.1782643	0	1.1782643	4.4547478	5.6330121	6.1750026	8.8623074	2.6873049	2.6873049
1989	1.2715449	1.2715449	2.5423866	3.8139316	4.2807103	5.5522552	8.1617218	11.6840191	3.5222973	3.5222973
1990	2.0026083	2.0026083	4.2324041	6.2350124	5.8753602	7.8779685	11.7200790	15.8516543	4.1315753	4.1315753
1991	1.2486830	1.2486830	2.6246433	3.8733263	3.8057971	5.0544801	7.5402615	11.2354099	3.6951485	3.6951485
1992	0.7094386	0.7094386	1.4175705	2.1270091	2.3509123	3.0603509	4.0600958	6.3925272	2.3324315	2.3324315
1993	-0.3464574	-0.3464574	-0.6048649	-0.9513223	-1.0200530	-1.3665104	-1.4929934	-1.2571378	0.2358556	0.2358556
1994	1.4600287	1.4600287	2.6570107	4.1170394	4.2975560	5.7575847	7.9510779	11.2405895	3.2895116	3.2895116
1995	0.7544766	0.7544766	1.2974265	2.0519031	2.2753763	3.0298529	3.2312761	5.2610469	2.0297708	2.0297708
1996	1.6427835	1.6427835	2.7704025	4.4131859	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	12.6148370	2.9627125	2.9627125
1998	-0.3253238	-0.3253238	-0.5570754	-0.8823992	-0.9104311	-1.2357549	-1.8866894	-1.7684350	0.1182544	0.1182544
1999	0.7843563	0.7843563	1.2927037	2.0770600	2.1913971	2.9757534	3.9861234	6.3557474	2.3696240	2.3696240
2000	1.7611296	1.7611296	1.9112948	3.6724243	2.9413272	4.7024567	6.1423217	8.3883388	2.2460172	2.2460172
2001	10.0431000	10.0431000	12.6732715	22.7163715	22.9041445	32.9472445	42.6443270	55.5130485	12.8687216	12.8687216
2002	5.1561098	5.1561098	5.3026984	10.4588082	8.9411156	14.0972254	18.1280636	24.2060285	6.0779649	6.0779649
2003	5.1435282	5.1435282	7.0881976	12.2317258	12.7995247	17.9430528	19.2834477	26.0081545	6.7247067	6.7247067
2004	6.1803231	6.1803231	6.4041451	12.5844682	12.5865996	18.7669227	19.8212463	27.0762745	7.2550282	7.2550282
2005	6.2493750	6.2493750	7.6765647	13.9259397	18.5603496	24.8097246	25.8645498	33.9478974	8.0833476	8.0833476
2006	6.4544210	6.4544210	6.0780157	12.5324367	18.0285163	24.4829373	22.5220800	29.2009575	6.6788774	6.6788774
2007	10.3524833	10.3524833	8.0706473	18.4231306	22.5841465	32.9366298	31.3234699	40.4300755	9.1066056	9.1066056
2008	8.6631632	8.6631632	9.5287796	18.1919428	21.1728188	29.8359820	27.4950627	39.2887586	11.7936959	11.7936959
2009	6.8513650	6.8513650	6.8820100	13.7333750	16.3368102	23.1881753	23.3863154	29.4815626	6.0952472	6.0952472
2010	7.1088691	7.1088691	8.6697717	15.7786407	18.2933533	25.4022224	26.0260478	37.4029380	11.3768902	11.3768902
2011	21.5692559	21.5692559	10.9066916	32.4759475	41.9423566	63.5116126	42.9729314	55.8006706	12.8277393	12.8277393
2012	**13.9475218**	**13.9475218**	**27.1703863**	**41.1179081**	**35.2379799**	**49.1855017**	**41.8833655**	**54.9747426**	**13.0913771**	**13.0913771**
2013	17.1090415	17.1090415	33.3344008	50.4434423	43.2301395	60.3391810	48.7683981	64.1323762	15.3639782	15.3639782
2014	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736196	43.3104972	9.4368776	9.4368776
2015	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.3824181	9.5088018	9.5088018
2016	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.7462978	9.8726815	9.8726815
2017	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.0101041	9.1364878	9.1364878
2018	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.9397698	10.0661535	10.0661535
2019	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.1915604	9.3179441	9.3179441
2020	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.7977611	9.9241448	9.9241448
2021	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.3760612	9.5024449	9.5024449
2022	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.6691006	9.7954843	9.7954843
2023	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.5449524	9.6713361	9.6713361
2024	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.6308555	9.7572392	9.7572392
2025	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.5262581	9.6526418	9.6526418
2026	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.6077599	9.7341436	9.7341436
2027	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.5699397	9.6963234	9.6963234
2028	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.6561725	9.7825562	9.7825562
2029	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.4622969	9.5886806	9.5886806
2030	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.5834940	9.7098777	9.7098777
2031	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.7791011	9.9054848	9.9054848
2032	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.3865727	9.5129564	9.5129564
2033	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.9865516	10.1129353	10.1129353
2034	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.2449215	9.3713052	9.3713052
2035	6.7540028	6.7540028	16.9173271	23.6713299	19.1539698	25.9079726	33.8736163	43.9974384	10.1238221	10.1238221

(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)

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	1.0732031	2.6167353	0	2.6167353	0	2.6167353	0	2.6167353	0	2.6167353
1969	0.7028165	1.8095316	0	1.8095316	0	1.8095316	0	1.8095316	0	1.8095316
1970	0.7813430	1.7278778	0.3333333	2.0612111	0	2.0612111	0	2.0612111	0	2.0612111
1971	0.4125312	1.2933749	1.1407617	2.4341366	0.7218469	3.1559834	0	3.1559834	0	3.1559834
1972	0.5662758	1.4693754	0.8894941	2.3588694	0.8040021	3.1628715	1.8113853	4.9742569	7.3206022	12.2948591
1973	0.5996892	1.5383283	0.8469026	2.3852309	1.0302066	3.4154375	1.8458304	5.2612679	7.4512435	12.7125113
1974	0.5736894	1.4709300	0.8122890	2.2832190	0.9665911	3.2498101	1.7739395	5.0237496	6.9004732	11.9242227
1975	0.4606980	1.5569000	0.7554447	2.3123448	0.8894108	3.2017555	1.8682537	5.0700092	6.9962702	12.0662794
1976	0.5163828	1.7105095	0.9081491	2.6186586	0.9640628	3.5827214	2.1499640	5.7326854	7.9384515	13.6711369
1977	0.6138931	2.3818668	0.9835371	3.3654038	1.2303967	4.5958005	2.7357728	7.3315733	9.9990004	17.3305737
1978	0.4545898	2.0659925	0.9044582	2.9704506	0.9762058	3.9466564	1.8872449	5.8339014	7.0810192	12.9149206
1979	0.6587934	2.8008600	1.0519199	3.8527798	1.1976258	5.0504056	2.6012890	7.6516946	9.6345625	17.2862572
1980	0.8021465	2.1645280	1.3516057	3.5161337	1.5041463	5.0202800	3.1923433	8.2126233	10.9860288	19.1986521
1981	1.0923907	3.1630874	1.2409168	4.4040042	1.3219771	5.7259813	2.9592932	8.6852745	9.9649551	18.6502296
1982	0.8326785	2.5948359	1.2041660	3.7990019	1.3723736	5.1713756	2.8986491	8.0700247	10.2096358	18.2796606
1983	0.3647859	1.2105406	0.7590265	1.9695670	0.8857383	2.8553053	1.7623405	4.6176458	5.5086367	10.1262825
1984	0.6581523	1.8275691	1.0533611	2.8809302	1.2188270	4.0997572	2.5407768	6.6405340	8.2344665	14.8750006
1985	0.8726163	2.4771579	1.4204831	3.8976409	1.6516291	5.5492701	3.4695783	9.0188484	11.8181234	20.8369718
1986	1.3996542	4.7116618	2.3713282	7.0829901	2.7567970	9.8397871	5.9534613	15.7932484	20.6010240	36.3942724
1987	1.2912643	4.0351091	2.2344385	6.2695476	2.5459999	8.8155474	5.3141190	14.1296664	17.7628277	31.8924941
1988	1.1947837	3.8820886	2.1129991	5.9950877	2.4017135	8.3968012	5.0055748	13.4023759	16.6001692	30.0025452
1989	1.4935226	5.0158199	2.6947446	7.7105645	3.0084211	10.7189856	6.5499538	17.2689394	22.1795336	39.4484730
1990	1.8962463	6.0278216	3.3080372	9.3358588	3.7483036	13.0841624	8.6832678	21.7674302	31.0405219	52.8079521
1991	1.0437991	4.7389476	2.1132495	6.8521971	2.4154810	9.2676780	5.6823745	14.9500525	20.4744695	35.4245220
1992	0.9002103	3.2326417	1.4836761	4.7163178	1.7077297	6.4240475	3.5445788	9.9686263	12.0459599	22.0145862
1993	0.1605206	0.3963762	-0.1405164	0.2558598	-0.1312944	0.1245654	-0.7754796	-0.6509143	-3.5828989	-4.2338132
1994	1.4208578	4.7103693	2.5100856	7.2204549	2.8029168	10.0233717	6.0772944	16.1006661	21.5000984	37.6007645
1995	0.7974861	2.8272569	1.3474564	4.1747133	1.4945529	5.6692662	3.1250716	8.7943378	10.7461772	19.5405149
1996	1.6726383	5.0173881	2.5952092	7.6125973	2.8425227	10.4551200	6.3087407	16.7638607	22.6420778	39.4059385
1997	1.2769880	4.2397005	2.5012144	6.7409148	2.6893394	9.4302542	6.2890095	15.7192637	23.0714697	38.7907334
1998	-0.2195574	-0.1013030	-0.4232465	-0.5245494	-0.4504610	-0.9750105	-1.0585256	-2.0335361	-3.8077856	-5.8413217
1999	0.8412976	3.2109216	1.4071463	4.6180679	1.2831855	5.9012534	3.4289262	9.3301795	13.6776471	23.0078267
2000	0.8990494	3.1450666	1.5789844	4.7240510	1.7356046	6.4596555	4.0914973	10.5511529	14.9803356	25.5314884
2001	6.1123778	18.9810994	11.2648844	30.2459837	12.3519389	42.5979227	28.5490444	71.1469671	106.8554939	178.0024610
2002	2.6241510	8.7021160	4.6014508	13.3035668	5.0195661	18.3231329	11.6145173	29.9376502	43.1568537	73.0945038
2003	3.1183220	9.8430287	5.5840419	15.4270706	6.0833443	21.5104149	14.1493695	35.6597844	52.6068671	88.2666515
2004	3.3220914	10.5771196	5.8515717	16.4286912	6.3561368	22.7848281	14.8070070	37.5918351	55.0480248	92.6398599
2005	3.8183053	11.9016529	6.8527860	18.7544389	7.4284805	26.1829194	17.2725190	43.4554384	62.2202022	105.6756406
2006	3.0465538	9.7254312	5.6795341	15.4049653	6.1135254	21.5184907	14.2918348	35.8103255	48.7776979	84.5880234
2007	4.4616747	13.5682803	7.9942948	21.5625752	8.6554029	30.2179780	20.0690627	50.2870407	69.7803357	120.0673764
2008	4.5496127	16.3433087	8.5074820	24.8507906	9.9254447	34.7762354	20.6192732	55.3955085	72.8425890	128.2380976
2009	3.4687418	9.5639889	6.2873772	15.8513661	6.9321163	22.7834824	15.3478104	38.1312928	55.4451880	93.5764808
2010	4.2332587	15.6101490	7.0355970	22.6457460	7.6417255	30.2874715	17.4893990	47.7768705	64.3655158	112.1423863
2011	5.3996698	18.2274090	9.8661697	28.0935787	11.8122084	39.9057872	25.5544449	65.4602321	88.6452556	154.1054877
2012	**5.3610727**	**18.4524498**	**9.5821427**	**28.0345925**	**11.6768623**	**39.7114548**	**25.2591458**	**64.9706006**	**87.9245870**	**152.8951875**
2013	6.2157181	21.5796963	11.1046902	32.6843865	13.5374043	46.2217908	29.2767907	75.4985815	102.2861829	177.7847644
2014	4.9188115	14.3556891	8.4495461	22.8052352	8.6740572	31.4792924	20.7432965	52.2225889	78.4673755	130.6899644
2015	4.9168063	14.4256081	8.4438400	22.8694480	8.6683229	31.5377709	20.7301238	52.2678947	78.4185248	130.6864195
2016	4.9923556	14.8650371	8.6475628	23.5125999	8.8885415	32.4011414	21.2671567	53.6682981	80.4722281	134.1405261
2017	4.9071140	14.0436018	8.4179658	22.4615677	8.6409133	31.1024810	20.6642245	51.7667055	78.1683148	129.9350202
2018	5.2215825	15.2877360	9.2681263	24.5558623	9.5641837	34.1200460	22.9219223	57.0419683	86.8146238	143.8565920
2019	4.9722103	14.2901544	8.5912956	22.8814500	8.8287055	31.7101555	21.1234370	52.8335926	79.9265802	132.7601728
2020	5.0572239	14.9813687	8.8185071	23.7998758	9.0747948	32.8746706	21.7243361	54.5990067	82.2260845	136.8250912
2021	4.9643032	14.4667481	8.5715826	23.0383307	8.8066169	31.8449476	21.0679299	52.9128774	79.7113264	132.6242038
2022	5.0310850	14.8265693	8.7481005	23.5746698	8.9982660	32.5729357	21.5367692	54.1097049	81.5071168	135.6168217
2023	5.1713863	14.8427224	9.1193768	23.9620991	9.4018693	33.3639685	22.5250429	55.8890113	85.2942317	141.1832430
2024	5.0100951	14.7673343	8.6914979	23.4588322	8.9369114	32.3957436	21.3870162	53.7827598	80.9341013	134.7168611
2025	5.1193892	14.7720310	8.9790496	23.7510806	9.2492570	33.0003376	22.1513481	55.1516857	83.8620895	139.0137752
2026	5.0305223	14.7646659	8.7461730	23.5108389	8.9964949	32.5073337	21.5332773	54.0406111	81.4952758	135.5358868
2027	5.0803479	14.7766713	8.8783086	23.6549799	9.1396897	32.7946696	21.8827789	54.6774485	82.8325658	137.5100143
2028	5.1175441	14.9001003	8.9729534	23.8730537	9.2427087	33.1157623	22.1358702	55.2516325	83.8037049	139.0553374
2029	4.9950964	14.5837770	8.6502510	23.2340281	8.8918001	32.1258282	21.2757841	53.4016122	80.5066222	133.9082344
2030	5.0562194	14.7660971	8.8117590	23.5778561	9.0676558	32.6455119	21.7074653	54.3529772	82.1624605	136.5154377
2031	5.1838554	15.0893402	9.1653007	24.2546409	9.4521454	33.7067863	22.6468965	56.3536828	85.7595359	142.1132188
2032	4.9894050	14.5023614	8.6384134	23.1407748	8.8803344	32.0211091	21.2509251	53.2720342	80.4169341	133.6889683
2033	5.2153706	15.3283059	9.2448036	24.5731095	9.5388529	34.1119624	22.8596337	56.9715961	86.5754516	143.5470477
2034	4.9162203	14.2875255	8.4444213	22.7319468	8.6697478	31.4016946	20.7351157	52.1368102	78.4403454	130.5771556
2035	5.3588229	15.4826449	9.6733643	25.1560092	10.0107906	35.1667998	24.0179116	59.1847114	91.0220819	150.2067933

TABLE B-17. Unit Variable OMP&R Component of Transportation Charge

(in dollars per acre-foot)

Calendar Year	CALIFORNIA AQUEDUCT (continued)							
	Reach 18A Alamo Powerplant		Reach 22B Pearblossom Pumping Plant		Reach 23 Mojave Siphon Powerplant		Reach 26A Devil Canyon Powerplant	
	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]
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	2.6167353	0	2.6167353	0	2.6167353	0	2.6167353
1969	0	1.8095316	0	1.8095316	0	1.8095316	0	1.8095316
1970	0	2.0612111	0	2.0612111	0	2.0612111	0	2.0612111
1971	0	3.1559834	0	3.1559834	0	3.1559834	0	3.1559834
1972	0	12.2948591	1.9331104	14.2279695	0	14.2279695	-2.3717647	11.8562048
1973	0	12.7125113	3.8751940	16.5877053	0	16.5877053	-8.9027252	7.6849801
1974	0	11.9242227	3.1602116	15.0844343	0	15.0844343	-5.3440968	9.7403376
1975	0	12.0662794	3.0210558	15.0873353	0	15.0873353	-5.7803309	9.3070043
1976	0	13.6711369	3.7579009	17.4290378	0	17.4290378	-6.6439666	10.7850713
1977	0	17.3305737	3.0796474	20.4102211	0	20.4102211	-12.0911833	8.3190378
1978	0	12.9149206	4.0233030	16.9382236	0	16.9382236	-8.2569506	8.6812730
1979	0	17.2862572	5.0776468	22.3639040	0	22.3639040	-9.7140035	12.6499005
1980	0	19.1986521	4.3918283	23.5904804	0	23.5904804	-8.3797007	15.2107797
1981	0	18.6502296	3.9973528	22.6475824	0	22.6475824	-6.7528590	15.8947235
1982	0	18.2796606	3.6829998	21.9626604	0	21.9626604	-6.9238898	15.0387706
1983	0	10.1262825	1.7205305	11.8468130	0	11.8468130	-23.7923457	-11.9455328
1984	0	14.8750006	2.4763871	17.3513877	0	17.3513877	-29.2940447	-11.9426570
1985	0	20.8369718	3.4967556	24.3337274	0	24.3337274	-30.7672356	-6.4335082
1986	-2.3583180	34.0359544	5.9864597	40.0224141	0	40.0224141	-29.2499580	10.7724561
1987	-2.5482255	29.3442686	5.0535029	34.3977715	0	34.3977715	-29.7006534	4.6971181
1988	-1.3847067	28.6178385	4.7392460	33.3570844	0	33.3570844	-29.0334518	4.3236326
1989	-1.1019487	38.3465243	6.4066114	44.7531357	0	44.7531357	-28.3706997	16.3824360
1990	-1.0673268	51.7406253	8.9787944	60.7194197	0	60.7194197	-28.8797266	31.8396931
1991	-1.5206590	33.9038630	6.0785417	39.9824047	0	39.9824047	-30.3294563	9.6529484
1992	-2.6080003	19.4065859	3.6219501	23.0285360	0	23.0285360	-29.7938993	-6.7653633
1993	-0.1885524	-4.4223656	-1.0192774	-5.4416430	0	-5.4416430	-30.6629489	-36.1045919
1994	-0.1279266	37.4728379	6.4513573	43.9241952	0	43.9241952	-30.4781656	13.4460296
1995	-3.4425314	16.0979836	3.3643070	19.4622905	0	19.4622905	-30.3517624	-10.8894719
1996	-5.9839345	33.4220040	6.6794995	40.1015035	-2.3423415	37.7591620	-29.5900574	8.1691046
1997	-4.7847600	34.0059734	6.8397922	40.8457656	-3.8632009	36.9825646	-30.6066647	6.3758999
1998	-5.0614104	-10.9027321	-1.3239652	-12.2266973	-3.7700558	-15.9967531	-30.4293072	-46.4260603
1999	-4.8990186	18.1088081	3.7378677	21.8466757	-5.1563836	16.6902921	-30.2385322	-13.5482400
2000	-5.3488706	20.1826178	4.4335111	24.6161290	-5.1804371	19.4356919	-30.2852311	-10.8495392
2001	-4.6452108	173.3572502	29.9523513	203.3096015	-5.7699537	197.5396478	-30.9018397	166.6378081
2002	-5.4660286	67.6284752	12.9716035	80.6000788	-6.4072101	74.1928686	-30.1661590	44.0267096
2003	-3.3142156	84.9524359	15.4215861	100.3740220	-7.1779336	93.1960883	-30.3892607	62.8068277
2004	-5.5767140	87.0631459	16.1802355	103.2433815	-7.4292488	95.8141327	-30.2389380	65.5751947
2005	-5.5017080	100.1739326	17.8811480	118.0550806	-6.6110924	111.4439882	-30.2939296	81.1500586
2006	-3.1387155	81.4493079	14.0884597	95.5377676	-5.4976224	90.0401452	-29.8005787	60.2395665
2007	-2.7809944	117.2863820	20.4061547	137.6925367	-6.1785168	131.5140199	-30.0961198	101.4179002
2008	-5.4028716	122.8352260	20.5329988	143.3682247	-6.0198040	137.3484207	-30.7631237	106.5852970
2009	-6.3446583	87.2318226	18.6354912	105.8673138	-5.4878080	100.3795058	-33.3163093	67.0631965
2010	-5.1262891	107.0160973	18.6950530	125.7111502	-6.4402879	119.2708623	-28.6783430	90.5925193
2011	-5.6028249	148.5026628	26.8516608	175.3543235	-9.0811136	166.2732099	-27.2290241	139.0441858
2012	**-8.2333387**	**144.6618489**	**27.0779085**	**171.7397574**	**-15.3490893**	**156.3906681**	**-27.8460798**	**128.5445883**
2013	-8.2244970	169.5602674	31.4260458	200.9863132	-15.8575038	185.1288095	-27.8052572	157.3235523
2014	-7.8558999	122.8340645	24.9911172	147.8251818	-12.4998441	135.3253377	-30.1295286	105.1958092
2015	-7.8939481	122.7924714	25.1785569	147.9710283	-13.0523545	134.9186739	-29.7573030	105.1613708
2016	-8.0040017	126.1365245	25.3337713	151.4702957	-12.7335727	138.7367230	-29.7656327	108.9710903
2017	-7.9532741	121.9817462	24.9590546	146.9408008	-13.0355037	133.9052972	-29.6955062	104.2097910
2018	-8.6261182	135.2304738	27.8423869	163.0728607	-14.9032987	148.1695620	-31.6503667	116.5191954
2019	-7.8184640	124.9417088	24.8142216	149.7559305	-12.5184580	137.2374724	-29.2144320	108.0230405
2020	-8.1152333	128.7098580	26.0726755	154.7825335	-13.8349029	140.9476306	-31.1167845	109.8308461
2021	-7.9584423	124.6657615	25.3051685	149.9709300	-12.5067482	137.4641818	-29.6539484	107.8102335
2022	-7.9565057	127.6603160	25.2716224	152.9319384	-12.7962940	140.1356444	-29.0201784	111.1154659
2023	-8.3142909	132.8689522	26.7636560	159.6326082	-14.3615077	145.2711006	-30.5528269	114.7182737
2024	-7.7778272	126.9390339	24.7522520	151.6912859	-12.7240864	138.9671995	-30.1278219	108.8393775
2025	-8.2839955	130.7297797	26.5448370	157.2746167	-13.2827661	143.9918506	-30.3047682	113.6870824
2026	-7.8416021	127.6942847	24.9856452	152.6799300	-12.5560701	140.1238598	-29.9188021	110.2050577
2027	-8.0031153	129.5068990	25.4634109	154.9703098	-12.6969886	142.2733212	-30.2106715	112.0626498
2028	-8.2502302	130.8051072	26.5228547	157.3279618	-13.9227403	143.4052215	-30.6247570	112.7804645
2029	-7.8931949	126.0150396	25.0907912	151.1058308	-12.2862202	138.8196106	-29.2100951	109.6095155
2030	-7.9776210	128.5378167	25.4721813	154.0099980	-12.2566558	141.7533422	-30.7307990	111.0225432
2031	-8.2291362	133.8840826	26.2429308	160.1270133	-13.3274084	146.7996050	-30.0779654	116.7216396
2032	-7.8805279	125.8084404	25.2539075	151.0623479	-13.1024652	137.9598827	-29.7040409	108.2558418
2033	-8.2585074	135.2885403	26.3926681	161.6812084	-13.7335500	147.9476585	-30.7332164	117.2144420
2034	-7.8547425	122.7224131	24.9854771	147.7078902	-13.2659517	134.4419385	-29.1881071	105.2538314
2035	-8.2083835	141.9984099	26.1063195	168.1047294	-13.4647073	154.6400221	-30.8152549	123.8247672

TABLE B-17. Unit Variable OMP&R Component of Transportation Charge

(in dollars per acre-foot)

Calendar Year	CALIFORNIA AQUEDUCT (continued)							
	Reach 2B (EBX) Greenspot Pumping Plant		Reach 3A (EBX) Crafton Hills Pumping Plant		Reach 4B (EBX) Cherry Valley Pumping Plant		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
	[29]	[30]	[31]	[32]	[33]	[34]	[35]	[36]
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	2.6167353	0	2.6167353	0	2.6167353	0	2.6167353
1969	0	1.8095316	0	1.8095316	0	1.8095316	0	1.8095316
1970	0	2.0612111	0	2.0612111	0	2.0612111	0	2.0612111
1971	0	3.1559834	0	3.1559834	0	3.1559834	0	3.1559834
1972	0	11.8562048	0	11.8562048	0	11.8562048	1.1017349	13.3965941
1973	0	7.6849801	0	7.6849801	0	7.6849801	0.7905574	13.5030687
1974	0	9.7403376	0	9.7403376	0	9.7403376	0.7530214	12.6772442
1975	0	9.3070043	0	9.3070043	0	9.3070043	0.8405850	12.9068644
1976	0	10.7850713	0	10.7850713	0	10.7850713	0.7771828	14.4483197
1977	0	8.3190378	0	8.3190378	0	8.3190378	0.6152458	17.9458194
1978	0	8.6812730	0	8.6812730	0	8.6812730	0.5222831	13.4372037
1979	0	12.6499005	0	12.6499005	0	12.6499005	0.7045701	17.9908273
1980	0	15.2107797	0	15.2107797	0	15.2107797	1.4269064	20.6255585
1981	0	15.8947235	0	15.8947235	0	15.8947235	1.5684309	20.2186605
1982	0	15.0387706	0	15.0387706	0	15.0387706	1.4942585	19.7739190
1983	0	-11.9455328	0	-11.9455328	0	-11.9455328	1.2818887	11.4081712
1984	0	-11.9426570	0	-11.9426570	0	-11.9426570	1.7796296	16.6546302
1985	0	-6.4335082	0	-6.4335082	0	-6.4335082	2.1683838	23.0053556
1986	0	10.7724561	0	10.7724561	0	10.7724561	3.2288411	39.6231134
1987	0	4.6971181	0	4.6971181	0	4.6971181	3.1272967	35.0197908
1988	0	4.3236326	0	4.3236326	0	4.3236326	2.9878581	32.9904032
1989	0	16.3824360	0	16.3824360	0	16.3824360	3.5262089	42.9746819
1990	0	31.8396931	0	31.8396931	0	31.8396931	3.6810660	56.4890182
1991	0	9.6529484	0	9.6529484	0	9.6529484	2.1853025	37.6098245
1992	0	-6.7653633	0	-6.7653633	0	-6.7653633	1.9048343	23.9194204
1993	0	-36.1045919	0	-36.1045919	0	-36.1045919	0.1569728	-4.0768404
1994	0	13.4460296	0	13.4460296	0	13.4460296	3.0638504	40.6646149
1995	0	-10.8894719	0	-10.8894719	0	-10.8894719	1.5724835	21.1129984
1996	0	8.1691046	0	8.1691046	0	8.1691046	3.1318961	42.5378346
1997	0	6.3758999	0	6.3758999	0	6.3758999	2.7928728	41.5836062
1998	0	-46.4260603	0	-46.4260603	0	-46.4260603	-0.3226129	-6.1639346
1999	0	-13.5482400	0	-13.5482400	0	-13.5482400	1.8332567	24.8410833
2000	0	-10.8495392	0	-10.8495392	0	-10.8495392	1.7585161	27.2900045
2001	0	166.6378081	0	166.6378081	0	166.6378081	13.4927370	191.4951981
2002	0	44.0267096	0	44.0267096	0	44.0267096	4.8843428	77.9788467
2003	0	62.8068277	0	62.8068277	0	62.8068277	6.1226755	94.3893270
2004	20.6296577	86.2048524	21.3995735	107.6044259	8.6460880	116.2505139	6.4523495	99.0922093
2005	18.9235296	100.0735882	18.0116428	118.0852310	3.7205636	121.8057946	7.3202651	112.9959057
2006	18.3007460	78.5403125	22.6199826	101.1602951	23.7304213	124.8907164	5.4898668	90.0778902
2007	22.2937147	123.7116149	29.5262326	153.2378474	82.4639548	235.7018022	8.2665991	128.3339755
2008	19.0729053	125.6582024	25.5913090	151.2495114	10.5437908	161.7933021	9.0302063	137.2683038
2009	16.0032222	83.0664186	20.9937138	104.0601324	4.8135037	108.8736361	6.0115518	99.5880326
2010	17.9029590	108.4954782	24.4167612	132.9122394	3.9464890	136.8587284	7.9045814	120.0469677
2011	31.4426219	170.4868078	34.4851997	204.9720074	8.1346899	213.1066973	11.9758059	166.0812935
2012	**31.1717752**	**159.7163636**	**38.9019796**	**198.6183431**	**0**	**198.6183431**	**11.2466918**	**164.1418793**
2013	36.5763889	193.8999412	45.6469444	239.5468856	0	239.5468856	13.1639009	190.9486652
2014	34	139.1473568	42	181.5186663	0	181.5186663	8.7711608	139.4611252
2015	34	139.1051692	42	181.4764096	0	181.4764096	8.6164354	139.3028549
2016	34	142.9148887	42	185.2861291	0	185.2861291	9.2323976	143.3729238
2017	34	138.1535894	42	180.5248298	0	180.5248298	8.6857949	138.6208151
2018	34	150.4629938	42	192.8342342	0	192.8342342	9.7827978	153.6393898
2019	34	141.9668389	42	184.3380793	0	184.3380793	9.3822510	142.1424237
2020	34	143.7746445	42	186.1458849	0	186.1458849	9.3519972	146.1770885
2021	34	141.7540319	42	184.1252723	0	184.1252723	8.9918706	141.6160744
2022	34	145.0592643	42	187.4305047	0	187.4305047	9.6294779	145.2462996
2023	34	148.6620721	42	191.0333125	0	191.0333125	9.9596899	151.1429329
2024	34	142.7831759	42	185.1544163	0	185.1544163	9.7901916	144.5070527
2025	34	147.6308808	42	190.0021212	0	190.0021212	9.6083483	148.6221235
2026	34	144.1488561	42	186.5200965	0	186.5200965	9.8107020	145.3465888
2027	34	146.0064482	42	188.3776886	0	188.3776886	9.9695040	147.4795183
2028	34	146.7242629	42	189.0955033	0	189.0955033	9.6001040	148.6554413
2029	34	143.5533139	42	185.9245543	0	185.9245543	9.4033430	143.3115774
2030	34	144.9663416	42	187.3375820	0	187.3375820	9.7207292	146.2361669
2031	34	150.6654380	42	193.0366784	0	193.0366784	10.5303171	152.6435359
2032	34	142.1996402	42	184.5708806	0	184.5708806	9.2630101	142.9519783
2033	34	151.1582404	42	193.5294808	0	193.5294808	10.7066500	154.2536977
2034	34	139.1976298	42	181.5688702	0	181.5688702	8.7717341	139.3488897
2035	34	157.7685656	42	200.1398060	0	200.1398060	13.4663873	163.6731806

TABLE B-17. Unit Variable OMP&R Component of Transportation Charge

(in dollars per acre-foot)

Calendar Year	CALIFORNIA AQUEDUCT (continued)							
	Reach 29G Warne Powerplant		Reach 29J Castaic Powerplant		Reach 31A Las Perillas & Badger Hill Pumping Plants		Reach 33A 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
	[37]	[38]	[39]	[40]	[41]	[42]	[43]	[44]
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	2.6167353	0	2.6167353	1.5014866	4.1182219	0	4.1182219
1969	0	1.8095316	0	1.8095316	1.2624066	3.0719381	0	3.0719381
1970	0	2.0612111	0	2.0612111	1.6309699	3.3588477	0	3.3588477
1971	0	3.1559834	0	3.1559834	1.4985537	2.7919286	0	2.7919286
1972	0	13.3965941	-2.9350830	10.4615111	1.9517720	3.4211474	0	3.4211474
1973	0	13.5030687	-6.8099448	6.6931239	1.5374531	3.0757814	0	3.0757814
1974	0	12.6772442	-7.4013274	5.2759168	1.5168982	2.9878282	0	2.9878282
1975	0	12.9068644	-6.5604921	6.3463723	1.1130304	2.6699305	0	2.6699305
1976	0	14.4483197	-6.7213324	7.7269873	1.5685447	3.2790543	0	3.2790543
1977	0	17.9458194	-30.4985994	-12.5527800	1.7573375	4.1392043	0	4.1392043
1978	0	13.4372037	-9.0130187	4.4241850	1.9429506	4.0089431	0	4.0089431
1979	0	17.9908273	-19.0478097	-1.0569824	1.5600341	4.3608941	0	4.3608941
1980	0	20.6255585	-20.5438586	0.0816999	1.5124754	3.6770034	0	3.6770034
1981	0	20.2186605	-10.0059379	10.2127225	1.5414199	4.7045073	0	4.7045073
1982	-2.1714430	17.6024760	-9.5987314	8.0037446	1.7581649	4.3530008	0	4.3530008
1983	-8.9130752	2.4950960	-39.8193120	-37.3242160	0.1782765	1.3888171	0	1.3888171
1984	-15.0246012	1.6300290	-17.3126964	-15.6826674	0.8546712	2.6822403	0	2.6822403
1985	-14.7115359	8.2938197	-38.9450629	-30.6512432	1.2014351	3.6785929	0	3.6785929
1986	-14.1893653	25.4337481	-28.1596224	-2.7258742	2.2635886	6.9752505	0	6.9752505
1987	-14.8696165	20.1501743	-27.0536484	-6.9034741	1.9135072	5.9486162	0	5.9486162
1988	-14.7032843	18.2871189	-25.6857024	-7.3985835	1.7733386	5.6554272	0	5.6554272
1989	-14.4231503	28.5515316	-25.3986130	3.1529186	2.4159040	7.4317239	0	7.4317239
1990	-14.1850383	42.3039798	-26.0776142	16.2263657	3.7962150	9.8240367	0	9.8240367
1991	-14.7118704	22.8979541	-25.0234633	-2.1255092	2.4131016	7.1520492	0	7.1520492
1992	-14.6199430	9.2994774	-25.1951357	-15.8956583	1.2766372	4.5092789	0	4.5092789
1993	-10.3386607	-14.4155011	-21.1218973	-35.5373984	-1.1726172	-0.7762411	0	-0.7762411
1994	-14.7696788	25.8949361	-26.7437304	-0.8487943	2.3645104	7.0748798	0	7.0748798
1995	-12.2705974	8.8424010	-25.6907993	-16.8483983	2.5750402	5.4022971	0	5.4022971
1996	-14.8515762	27.6862584	-29.5639188	-1.8776604	2.5837041	7.6010922	0	7.6010922
1997	-14.9272063	26.6563999	-27.1541858	-0.4977859	2.7029648	6.9426653	24.4572499	31.3999152
1998	-8.6695834	-14.8335180	-22.2303491	-37.0638671	-0.5072304	-0.6085333	-4.1828906	-4.7914239
1999	-14.9340263	9.9070570	-27.0443818	-17.1373248	1.3343489	4.5452705	9.5757906	14.1210611
2000	-14.1657261	13.1242783	-26.9670096	-13.8427313	1.8557316	5.0007982	13.7819792	18.7827773
2001	-16.7349304	174.7602677	-29.2914159	145.4688518	12.3088319	31.2899313	93.1086646	124.3985959
2002	-13.2004543	64.7783923	-23.7780808	41.0003115	5.4523570	14.1544730	42.2356453	56.3901183
2003	-13.9757172	80.4136097	-23.8496317	56.5639781	6.2983545	16.1413832	48.5340327	64.6754159
2004	-14.1574758	84.9347335	-25.2967499	59.6379837	6.4411290	17.0182486	52.3954777	69.4137263
2005	-14.2938796	98.7020261	-24.7472457	73.9547805	8.1714371	20.0730900	61.9092006	81.9822906
2006	-14.0865037	75.9913866	-22.9332382	53.0581484	7.2230639	16.9484951	51.0090413	67.9575363
2007	-12.5169061	115.8170694	-25.0603889	90.7566805	9.8086387	23.3769190	72.6361699	96.0130889
2008	-13.8809446	123.3873593	-28.9178988	94.4694605	10.0450080	26.3883166	73.4300060	99.8183226
2009	-10.4812491	89.1067835	-25.6776114	63.4291721	7.5134706	17.0774595	67.0543832	84.1318428
2010	-13.8208222	106.2261455	-26.2497118	79.9764337	8.8746114	24.4847604	76.1263278	100.6110882
2011	-14.4136868	151.6676067	-28.0969452	123.5706616	13.2444229	31.4718319	103.0101625	134.4819944
2012	**-14.0388363**	**150.1030430**	**-26.2978170**	**123.8052260**	**12.3647800**	**30.8172297**	**89.7005172**	**120.5177469**
2013	-14.3455915	176.6030737	-26.6703755	149.9326982	14.1377501	35.7174463	102.5172219	138.2346683
2014	-14.4694635	124.9916617	-21.9662613	103.0254004	9.3358406	23.6915297	77.2203793	100.9119090
2015	-14.3194048	124.9834501	-21.8111917	103.1722584	9.3358406	23.7614487	77.2203793	100.9818279
2016	-15.2709551	128.1019687	-23.4431490	104.6588198	9.3358406	24.2008776	77.2203793	101.4212569
2017	-14.3525897	124.2682255	-22.0030665	102.2651589	9.3358406	23.3794424	77.2203793	100.5998217
2018	-16.1758793	137.4635106	-24.9044536	112.5590570	9.3358406	24.6235766	77.2203793	101.8439558
2019	-15.3208232	126.8216006	-23.8440822	102.9775184	9.3358406	23.6259950	77.2203793	100.8463742
2020	-15.3811716	130.7959169	-23.7634365	107.0324804	9.3358406	24.3172093	77.2203793	101.5375885
2021	-14.8360435	126.7800309	-22.8091974	103.9708334	9.3358406	23.8025887	77.2203793	101.0229679
2022	-15.7787738	129.4675259	-24.4999263	104.9675996	9.3358406	24.1624099	77.2203793	101.3827891
2023	-16.2399675	134.9029655	-25.3774087	109.5255568	9.3358406	24.1785630	77.2203793	101.3989422
2024	-16.0637835	128.4432692	-24.9265113	103.5167579	9.3358406	24.1031749	77.2203793	101.3235541
2025	-15.7591575	132.8629660	-24.4440400	108.4189260	9.3358406	24.1078716	77.2203793	101.3282508
2026	-15.9538684	129.3927204	-24.9815310	104.4111894	9.3358406	24.1005064	77.2203793	101.3208857
2027	-16.3268761	131.1526423	-25.4034106	105.7492316	9.3358406	24.1125119	77.2203793	101.3328912
2028	-15.7029786	132.9524627	-24.4224538	108.5300089	9.3358406	24.2359408	77.2203793	101.4563201
2029	-15.5101587	127.8014187	-23.8974143	103.9040043	9.3358406	23.9196176	77.2203793	101.1399969
2030	-15.8442494	130.3919175	-24.7438256	105.6480918	9.3358406	24.1019377	77.2203793	101.3223169
2031	-17.4332946	135.2102412	-26.8985970	108.3116443	9.3358406	24.4251808	77.2203793	101.6455600
2032	-15.0632281	127.8887502	-23.5338256	104.3549246	9.3358406	23.8382019	77.2203793	101.0585812
2033	-17.6035317	136.6501660	-27.3681880	109.2819780	9.3358406	24.6641465	77.2203793	101.8845258
2034	-14.3879664	124.9609233	-22.2330948	102.7278285	9.3358406	23.6233660	77.2203793	100.8437453
2035	-22.5758153	141.0973653	-34.9284049	106.1689605	9.3358406	24.8184855	77.2203793	102.0388648

Tables B-18 through B-31

Note: Where applicable, the projected data values shown in this appendix are shaded and the bill year data are in **bold** type.

TABLE B-18. Variable OMP&R Component of Transportation Charge for Each Contractor [a]

(in dollars)

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	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	(6,622)	(19,825)	(26,447)	(8,777)	(18,989)	(72,459)	(100,225)	(17,211)	(89,207)	(106,418)
1999	15,783	52,547	68,330	251,523	188,675	432,833	873,031	52,855	284,356	337,211
2000	23,315	106,329	129,644	366,175	231,641	731,087	1,328,903	74,417	427,139	501,556
2001	307,892	597,483	905,375	1,693,190	999,457	2,476,925	5,169,572	532,799	2,356,856	2,889,655
2002	96,918	303,383	400,301	1,067,733	640,899	1,453,943	3,162,575	245,579	1,558,397	1,803,976
2003	137,141	292,937	430,078	1,076,862	647,734	2,300,946	4,025,542	288,000	1,744,167	2,032,167
2004	151,816	410,075	561,891	1,322,364	623,002	1,609,901	3,555,267	289,108	2,061,935	2,351,043
2005	188,524	391,703	580,227	1,478,654	846,041	2,485,521	4,810,216	348,507	1,913,795	2,262,302
2006	188,212	350,346	538,558	1,278,466	723,403	2,138,912	4,140,781	286,033	1,581,712	1,867,745
2007	358,274	723,819	1,082,093	1,594,267	890,648	2,677,161	5,162,076	362,545	2,663,403	3,025,948
2008	395,974	553,254	949,228	1,502,204	736,358	1,820,139	4,058,701	339,582	1,835,958	2,175,540
2009	252,589	326,518	579,107	916,493	545,287	1,691,421	3,153,201	319,773	1,299,889	1,619,662
2010	314,746	338,476	653,222	1,487,461	691,672	2,257,114	4,436,247	377,996	1,788,362	2,166,358
2011	821,771	987,122	1,808,893	3,214,748	1,292,460	4,121,581	8,628,789	1,119,025	4,092,825	5,211,850
2012	**1,032,109**	**1,014,609**	**2,046,718**	**2,329,030**	**1,378,716**	**3,502,246**	**7,209,992**	**1,299,422**	**3,289,170**	**4,588,592**
2013	1,050,747	1,042,877	2,093,624	2,746,842	1,204,864	3,362,842	7,314,548	2,073,520	3,772,701	5,846,221
2014	451,161	474,284	925,445	1,841,670	811,576	2,268,545	4,921,791	1,513,679	2,754,088	4,267,767
2015	451,161	474,284	925,445	1,849,820	813,369	2,272,837	4,936,026	1,514,727	2,755,996	4,270,723
2016	451,161	474,284	925,445	1,868,144	823,269	2,295,531	4,986,945	1,521,319	2,767,989	4,289,308
2017	451,161	474,284	925,445	1,831,667	803,893	2,250,388	4,885,948	1,508,997	2,745,570	4,254,567
2018	451,161	474,284	925,445	1,879,554	830,360	2,309,753	5,019,668	1,527,659	2,779,525	4,307,184
2019	451,161	474,284	925,445	1,841,046	809,095	2,262,018	4,912,159	1,512,696	2,752,299	4,264,995
2020	451,161	474,284	925,445	1,871,213	825,193	2,299,359	4,995,765	1,523,064	2,771,164	4,294,228
2021	451,161	474,284	925,445	1,849,930	813,668	2,272,998	4,936,596	1,515,345	2,757,119	4,272,464
2022	451,161	474,284	925,445	1,864,739	821,698	2,291,341	4,977,779	1,520,742	2,766,939	4,287,681
2023	451,161	474,284	925,445	1,859,952	819,926	2,285,492	4,965,370	1,520,984	2,767,380	4,288,364
2024	451,161	474,284	925,445	1,862,698	820,532	2,288,807	4,972,037	1,519,853	2,765,322	4,285,175
2025	451,161	474,284	925,445	1,858,586	818,952	2,283,777	4,961,316	1,519,924	2,765,451	4,285,375
2026	451,161	474,284	925,445	1,861,758	820,147	2,287,654	4,969,559	1,519,813	2,765,250	4,285,063
2027	451,161	474,284	925,445	1,860,362	819,676	2,285,953	4,965,991	1,519,993	2,765,577	4,285,570
2028	451,161	474,284	925,445	1,864,875	822,208	2,291,551	4,978,634	1,521,845	2,768,946	4,290,791
2029	451,161	474,284	925,445	1,854,386	816,139	2,278,523	4,949,048	1,517,100	2,760,313	4,277,413
2030	451,161	474,284	925,445	1,860,807	819,784	2,286,491	4,967,082	1,519,835	2,765,289	4,285,124
2031	451,161	474,284	925,445	1,871,425	825,947	2,299,683	4,997,054	1,524,683	2,774,111	4,298,794
2032	451,161	474,284	925,445	1,850,661	814,176	2,273,914	4,938,752	1,515,879	2,758,091	4,273,970
2033	451,161	474,284	925,445	1,881,770	831,479	2,312,489	5,025,738	1,528,268	2,780,632	4,308,900
2034	451,161	474,284	925,445	1,843,142	809,899	2,264,581	4,917,622	1,512,656	2,752,228	4,264,884
2035	451,161	474,284	925,445	1,883,563	833,140	2,314,778	5,031,481	1,530,583	2,784,845	4,315,428
TOTAL	15,806,395	18,442,158	34,248,553	66,875,616	33,506,805	100,229,112	200,611,533	41,457,028	91,636,530	133,093,558

(a) 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 [a]

(in dollars)

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	68,977	5,176	0	0	440,922	2,355	4,760	65,680	587,870
1969	56,774	101	0	0	321,387	181	3,338	17,956	399,737
1970	69,818	6,811	0	0	470,867	0	5,595	16,550	569,641
1971	53,097	7,747	0	0	731,754	4,785	6,353	158,419	962,155
1972	62,365	8,515	0	0	1,117,237	2,057	7,375	379,686	1,577,235
1973	33,931	4,615	0	0	751,373	2,307	3,017	77,630	872,873
1974	49,114	4,413	0	45,531	666,973	2,206	3,114	106,332	877,683
1975	63,140	4,671	0	33,862	838,135	2,491	3,920	134,295	1,080,514
1976	70,851	5,132	0	93,991	957,767	2,737	4,910	100,597	1,235,985
1977	26,565	1,758	0	83,339	493,847	3,644	2,602	43,067	654,822
1978	108,944	938	0	188,966	1,605,431	4,319	6,294	24,901	1,939,793
1979	107,956	4,871	0	193,260	2,356,542	5,602	13,172	434,472	3,115,875
1980	88,746	1,935	0	121,603	1,731,588	4,762	7,766	163,301	2,119,701
1981	129,687	18,533	0	259,802	2,401,614	7,275	8,904	263,922	3,089,737
1982	108,561	937	0	138,432	2,382,218	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	172,730	2,039,966	5,946	7,475	10,496	2,319,036
1985	114,571	12,938	0	228,121	2,581,708	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	491,023	4,244,094	16,140	15,529	375,604	5,339,753
1988	188,170	14,894	0	494,958	4,280,201	15,528	11,928	374,528	5,380,207
1989	285,261	15,450	0	656,118	6,183,768	20,063	21,693	649,604	7,831,957
1990	218,786	7,710	0	817,290	4,806,772	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	217,223	1,709,933	6,059	5,222	151,055	2,170,758
1993	20,064	4,843	0	48,161	371,012	2,090	1,467	123,913	571,550
1994	135,626	7,854	0	461,574	3,427,557	9,967	10,102	293,748	4,346,428
1995	181,772	4,611	0	401,880	3,445,511	11,619	10,492	288,010	4,343,895
1996	286,064	9,577	0	710,852	6,333,517	21,039	16,403	1,196,303	8,573,755
1997	308,515	0	0	557,650	5,720,501	0	15,559	94,838	6,697,063
1998	16,993	(54)	0	(16,341)	91,651	(2)	1,171	(2,095)	91,323
1999	191,682	10,198	0	463,890	3,954,090	12,844	11,542	937,238	5,581,484
2000	190,399	5,658	0	147,339	4,159,671	11,322	10,125	623,708	5,148,222
2001	795,346	25,814	0	157,947	11,972,552	29,611	46,224	1,130,552	14,158,046
2002	425,664	12,226	0	183,569	8,013,780	24,836	29,691	839,772	9,529,538
2003	453,586	14,135	0	493,465	9,966,413	36,340	28,688	1,041,796	12,034,423
2004	519,125	37,676	0	1,403,071	8,919,126	95,755	33,584	859,469	11,867,806
2005	973,909	45,631	0	1,094,687	17,316,113	235,724	33,902	1,674,339	21,374,305
2006	701,009	31,919	0	970,330	13,463,997	92,683	28,332	1,052,360	16,340,630
2007	612,404	28,276	0	762,030	11,967,075	78,444	(34,354)	1,181,567	14,595,442
2008	362,397	15,477	0	722,672	7,466,178	62,693	23,410	554,104	9,206,931
2009	202,940	9,889	0	71,587	5,347,058	32,431	12,148	352,000	6,028,053
2010	462,900	50,873	0	235,583	10,113,337	75,489	33,061	896,750	11,867,993
2011	955,353	40,264	0	2,108,638	23,039,735	164,840	53,120	1,525,783	27,887,733
2012	**557,375**	**33,214**	**0**	**1,529,331**	**13,200,679**	**105,289**	**41,644**	**984,494**	**16,452,026**
2013	651,836	38,843	0	1,787,190	14,346,350	123,074	52,545	1,151,342	18,151,180
2014	433,628	25,840	0	1,194,394	9,664,841	81,852	32,274	765,919	12,198,748
2015	435,740	25,966	0	1,199,637	9,699,671	82,242	32,520	769,649	12,245,425
2016	449,013	26,757	0	1,235,654	9,965,646	84,696	33,765	793,094	12,588,625
2017	424,201	25,278	0	1,170,292	9,498,384	80,109	31,247	749,268	11,978,779
2018	461,781	27,518	0	1,275,861	10,305,828	87,057	34,426	815,647	13,008,118
2019	431,648	25,722	0	1,191,272	9,659,322	81,486	31,867	762,423	12,183,740
2020	452,527	26,966	0	1,246,726	10,059,315	85,346	33,941	799,301	12,704,122
2021	436,983	26,040	0	1,204,419	9,746,064	82,472	32,498	771,844	12,300,320
2022	447,851	26,688	0	1,234,049	9,965,845	84,481	33,501	791,042	12,583,457
2023	448,339	26,717	0	1,240,114	10,047,702	84,572	33,076	791,904	12,672,424
2024	446,062	26,581	0	1,228,815	9,924,220	84,151	33,370	787,882	12,531,081
2025	446,204	26,590	0	1,232,915	9,983,578	84,177	33,012	788,132	12,594,608
2026	445,982	26,576	0	1,229,327	9,933,698	84,136	33,291	787,739	12,540,749
2027	446,344	26,598	0	1,231,953	9,965,999	84,203	33,161	788,380	12,576,638
2028	450,072	26,820	0	1,242,566	10,048,168	84,892	33,456	794,965	12,680,939
2029	440,518	26,251	0	1,214,329	9,821,727	83,126	32,793	778,088	12,396,832
2030	446,025	26,579	0	1,230,289	9,947,414	84,144	33,208	787,816	12,555,475
2031	455,789	27,161	0	1,259,446	10,183,512	85,949	33,877	805,062	12,850,796
2032	438,058	26,104	0	1,208,012	9,777,708	82,671	32,534	773,744	12,338,831
2033	463,007	27,591	0	1,278,638	10,322,035	87,283	34,586	817,811	13,030,951
2034	431,569	25,718	0	1,189,167	9,628,936	81,471	32,050	762,282	12,151,193
2035	467,669	27,869	0	1,296,011	10,486,773	88,145	34,623	826,046	13,227,136
TOTAL	21,358,228	1,159,258	0	46,142,005	450,240,398	3,231,320	1,379,229	38,707,876	562,218,314

(a) 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 [a]

(in dollars)

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	0	30,401	0	0	0	0	0	0	0	0
1969	0	30,627	0	0	0	0	0	0	0	0
1970	0	39,430	0	0	0	0	0	0	0	0
1971	0	34,871	0	0	0	0	0	0	0	0
1972	710	47,571	0	6,602	0	4,156	783	0	15,117	0
1973	270	28,968	96,209	6,453	149,289	3,687	0	0	249,193	0
1974	15,040	28,982	96,540	9,458	150,844	4,770	211	0	161,738	5,961
1975	97,373	28,568	105,611	12,447	165,961	6,274	0	0	129,042	50,723
1976	379,830	38,365	132,461	17,464	209,148	8,052	0	0	132,365	65,476
1977	194,137	21,006	0	22,635	0	1,924	1,633	0	206,587	74,838
1978	572,290	45,550	170,805	20,478	259,155	2,686	0	0	35,203	67,462
1979	1,045,698	83,936	225,048	28,179	335,459	2,299	89,456	0	228	3,668
1980	1,390,117	51,143	256,759	29,229	401,038	3,667	94,362	0	0	16,504
1981	1,480,362	118,583	274,149	33,632	430,304	23,861	90,590	0	254,649	57,523
1982	923,973	132,575	292,674	27,190	461,216	0	230,608	0	126,461	189,895
1983	333,772	(335,712)	172,336	10,792	272,477	385	0	0	(71,602)	(8,768)
1984	485,847	(142,910)	273,597	19,572	433,785	15	0	0	(66,353)	(91,433)
1985	821,069	(335,343)	413,406	34,603	657,011	0	0	32,464	(47,544)	(32,348)
1986	1,109,047	54,812	728,808	60,274	1,160,650	5,548	0	105,375	69,170	101,843
1987	1,019,605	(40,745)	668,383	63,601	1,083,530	32,651	585	157,843	88,076	49,930
1988	1,019,793	(74,006)	688,891	66,914	1,134,141	11,991	300	50,654	92,465	38,688
1989	1,736,901	178,359	978,885	97,114	1,633,489	38,269	8,951	350,953	340,460	210,334
1990	2,442,558	422,502	1,402,619	110,934	2,313,410	90,472	0	446,408	599,573	530,099
1991	286,485	(3,054)	277,078	33,945	456,999	17,978	128,405	132,700	35,339	52,116
1992	587,340	(208,900)	240,119	11,952	396,022	4,871	241,338	78,306	(22,718)	(53,500)
1993	(190,611)	(491,161)	(809,033)	(2,389)	(1,334,429)	(3,246)	(61,112)	(29,466)	(157,452)	(519,798)
1994	1,841,902	66,338	189,616	34,480	312,714	41,201	731,185	315,446	122,829	204,783
1995	761,209	(247,735)	(251,547)	7,960	(414,889)	7,727	165,622	114,342	(7,579)	(140,714)
1996	1,883,530	72,171	508,274	18,313	838,330	16,510	289,044	385,745	49,537	133,848
1997	2,121,818	22,440	365,342	24,076	330,153	15,099	414,596	438,212	61,553	115,882
1998	(577,005)	(733,387)	(3,979,131)	(2,991)	(3,279,862)	(4,405)	(46,209)	(84,367)	(87,188)	(432,227)
1999	1,250,830	(475,206)	(683,915)	18,893	(787,153)	6,193	172,541	252,025	(174,420)	(244,303)
2000	1,686,803	(384,546)	(459,185)	23,206	(631,812)	0	274,098	182,855	(199,621)	(164,262)
2001	10,865,814	4,504,776	1,516,404	208,799	2,501,234	0	859,787	1,807,596	4,413,902	393,265
2002	3,940,463	2,181,837	737,668	162,408	1,216,898	0	332,517	1,250,856	3,146,931	1,094,108
2003	5,099,610	3,152,333	907,119	145,665	1,495,996	0	1,429,082	980,946	1,640,075	1,377,605
2004	5,204,462	3,583,602	1,014,120	192,203	1,389,538	0	1,340,546	1,058,862	3,796,148	822,379
2005	5,993,507	3,010,027	3,450,419	89,935	3,983,575	0	1,579,897	1,173,237	2,653,027	1,134,802
2006	6,547,221	2,364,091	7,295,012	57,716	3,011,978	0	3,235,237	1,017,465	2,251,330	980,941
2007	9,418,719	4,271,386	7,426,630	232,517	3,066,269	0	6,218,294	2,302,801	6,148,170	408,106
2008	5,897,342	3,870,885	4,938,203	116,471	2,680,370	3,071	3,593,413	1,751,016	4,164,986	768,693
2009	3,886,614	2,327,391	3,057,690	89,733	1,224,775	3,664	3,008,940	1,337,958	3,080,455	772,544
2010	6,259,265	2,815,373	7,622,979	35,304	2,824,947	0	4,713,959	1,173,860	4,888,805	1,737,565
2011	5,544,050	5,201,586	5,853,899	480,696	2,358,885	215,774	3,835,599	2,071,614	10,425,714	3,203,578
2012	**11,154,152**	**5,041,220**	**14,431,813**	**319,037**	**5,873,716**	**199,633**	**5,031,234**	**1,848,778**	**7,923,229**	**2,221,250**
2013	13,285,556	6,148,544	13,059,428	655,541	5,262,473	233,993	13,104,839	2,166,980	9,694,848	2,718,551
2014	9,781,768	4,335,387	8,732,304	479,052	3,518,800	169,511	7,454,165	1,569,819	6,486,701	1,817,784
2015	9,941,524	4,415,886	8,729,445	477,747	3,517,648	169,454	7,313,483	1,569,288	6,484,447	1,817,188
2016	10,212,265	4,479,605	9,045,690	491,267	3,645,083	174,068	7,487,094	1,612,025	6,718,976	1,883,020
2017	9,875,886	4,376,895	8,650,455	474,159	3,485,818	168,335	7,262,630	1,558,927	6,425,845	1,800,745
2018	10,948,530	4,816,403	9,672,258	524,668	3,897,567	186,618	8,059,752	1,728,245	7,184,316	2,013,452
2019	10,115,531	4,407,464	8,966,993	485,958	3,613,371	172,420	7,402,703	1,596,755	6,660,416	1,866,638
2020	10,420,608	4,580,788	9,117,059	499,096	3,673,842	177,620	7,650,539	1,644,912	6,772,389	1,897,877
2021	10,093,189	4,449,929	8,949,327	486,761	3,606,252	172,039	7,412,649	1,593,228	6,647,473	1,862,961
2022	10,335,635	4,492,716	9,223,695	496,220	3,716,812	176,171	7,559,802	1,631,499	6,850,715	1,920,075
2023	10,757,336	4,686,810	9,522,764	514,405	3,837,326	183,359	7,890,456	1,698,065	7,073,056	1,982,332
2024	10,277,238	4,430,883	9,034,757	492,083	3,640,677	175,176	7,498,944	1,622,281	6,710,998	1,880,744
2025	10,584,144	4,639,621	9,437,165	509,875	3,802,833	180,407	7,773,639	1,670,727	7,009,487	1,964,513
2026	10,338,385	4,468,965	9,148,122	496,179	3,686,359	176,218	7,547,710	1,631,933	6,794,994	1,904,343
2027	10,485,138	4,525,950	9,302,321	503,790	3,748,496	178,720	7,660,781	1,655,098	6,909,453	1,936,443
2028	10,590,243	4,644,474	9,361,906	507,798	3,772,507	180,511	7,776,322	1,671,689	6,953,790	1,948,846
2029	10,202,430	4,447,195	9,098,686	491,560	3,666,438	173,901	7,469,352	1,610,472	6,758,077	1,894,052
2030	10,406,679	4,521,634	9,215,981	501,949	3,713,704	177,382	7,613,059	1,642,713	6,845,611	1,918,470
2031	10,839,523	4,635,358	9,689,063	519,817	3,904,339	184,760	7,915,798	1,711,039	7,196,212	2,016,950
2032	10,185,703	4,466,317	8,986,317	488,516	3,621,158	173,616	7,466,947	1,607,832	6,674,923	1,870,661
2033	10,953,231	4,676,904	9,729,971	523,883	3,920,823	186,698	7,992,786	1,728,988	7,226,785	2,025,466
2034	9,935,852	4,396,829	8,737,121	476,059	3,520,741	169,357	7,300,700	1,568,392	6,489,934	1,818,786
2035	11,496,475	4,544,500	10,278,694	547,580	4,141,938	195,958	8,312,336	1,814,740	7,633,746	2,139,692
TOTAL	346,594,781	146,018,057	276,316,277	14,619,463	125,680,166	4,901,069	218,931,978	59,010,131	216,671,072	60,096,645

(a) 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 [a]

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA					
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Watershed Protection District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total	South Bay Area Future Contractor	GRAND 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	1,476,134
1972	0	752,580	0	827,519	0	0	0	0	0	3,142,903
1973	0	942,905	0	1,476,974	0	0	0	0	0	2,946,091
1974	0	1,683,743	0	2,157,287	0	0	0	0	0	3,698,157
1975	0	3,687,903	0	4,283,902	0	0	0	0	0	5,831,562
1976	0	5,253,329	0	6,236,490	0	0	0	0	0	8,215,667
1977	0	(977,112)	0	(454,352)	0	0	0	0	0	926,519
1978	0	3,468,162	0	4,641,791	0	0	0	0	0	7,371,033
1979	0	3,795,878	0	5,609,849	0	0	0	0	0	9,608,836
1980	0	5,362,245	0	7,605,064	0	0	0	0	0	10,425,875
1981	0	10,862,932	0	13,626,585	0	0	0	0	0	17,576,025
1982	0	7,685,168	0	10,069,760	0	0	0	0	0	13,566,611
1983	0	(8,994,497)	0	(8,620,817)	0	0	0	0	0	(7,441,457)
1984	0	(7,633,741)	0	(6,721,621)	0	0	0	0	0	(4,008,601)
1985	0	(15,213,299)	0	(13,669,981)	0	0	0	0	0	(9,784,304)
1986	0	1,135,478	0	4,531,005	0	0	0	0	0	11,629,559
1987	0	(3,007,097)	0	116,362	0	0	0	0	0	6,746,470
1988	0	(3,407,929)	0	(378,098)	0	0	0	0	0	6,351,151
1989	0	9,488,536	0	15,062,251	0	0	0	0	0	24,661,302
1990	0	30,759,725	204,582	39,322,882	0	0	0	0	0	48,184,400
1991	0	184,870	22,623	1,625,484	0	0	0	0	0	2,463,685
1992	0	(9,471,028)	0	(8,196,198)	0	0	0	0	0	(5,499,060)
1993	0	(21,473,875)	0	(25,072,572)	0	0	0	0	0	(24,652,636)
1994	0	4,059,683	0	7,920,177	0	0	0	0	0	13,514,307
1995	0	(4,895,977)	0	(4,901,581)	0	0	0	0	0	(99,701)
1996	0	1,859,275	0	6,054,577	0	0	0	0	0	15,893,938
1997	0	2,428,729	(921)	6,336,979	0	0	0	0	0	14,932,641
1998	0	(14,593,773)	(68,568)	(23,889,113)	0	0	0	0	0	(24,030,880)
1999	0	(9,859,076)	(31,704)	(10,555,295)	0	0	0	0	0	(3,695,239)
2000	0	(16,036,814)	3,264	(15,706,014)	0	0	0	0	0	(8,597,689)
2001	0	160,090,738	269,117	187,431,432	0	0	0	0	0	210,554,080
2002	0	59,840,151	279,773	74,183,610	0	0	0	0	0	89,080,000
2003	7,286	94,300,964	357,946	110,894,627	0	0	0	0	0	129,416,837
2004	97,767	106,695,370	415,475	125,610,472	0	0	0	0	0	143,946,479
2005	84,290	113,875,815	123,135	137,151,666	0	0	0	0	0	166,178,716
2006	451,914	86,466,665	98,158	113,777,728	0	0	0	0	0	136,665,442
2007	617,587	139,017,157	319,634	179,447,270	0	0	0	0	0	203,312,829
2008	752,865	85,562,619	416,052	114,515,986	0	0	0	0	0	130,906,386
2009	674,784	54,665,587	327,681	74,457,816	0	0	0	0	0	85,837,839
2010	1,117,633	91,505,191	408,591	125,103,472	0	0	0	0	0	144,227,292
2011	2,859,957	184,337,117	938,714	227,327,183	0	0	0	0	0	270,864,448
2012	**1,291,274**	**127,158,067**	**1,692,507**	**184,185,910**	**0**	**0**	**0**	**0**	**0**	**214,483,238**
2013	1,743,174	154,813,368	2,009,728	224,897,023	0	0	0	0	0	258,302,596
2014	1,524,757	104,629,024	1,409,706	151,908,778	0	0	0	0	0	174,222,529
2015	2,341,046	104,680,442	1,410,245	152,867,843	0	0	0	0	0	175,245,462
2016	2,390,191	107,545,973	1,440,966	157,126,223	0	0	0	0	0	179,916,546
2017	2,328,770	103,702,041	1,400,874	151,511,380	0	0	0	0	0	173,556,120
2018	2,487,562	115,158,141	1,547,304	168,224,816	0	0	0	0	0	191,485,231
2019	2,377,961	106,223,488	1,423,955	155,313,653	0	0	0	0	0	177,599,993
2020	2,401,282	109,022,068	1,471,978	159,330,058	0	0	0	0	0	182,249,619
2021	2,375,216	106,533,446	1,427,706	155,610,176	0	0	0	0	0	178,045,001
2022	2,417,854	108,897,152	1,453,014	159,171,360	0	0	0	0	0	181,945,722
2023	2,464,330	112,818,791	1,514,636	164,943,666	0	0	0	0	0	187,795,269
2024	2,388,492	106,990,846	1,438,971	156,582,090	0	0	0	0	0	179,295,828
2025	2,451,027	111,765,605	1,493,988	163,283,031	0	0	0	0	0	186,049,776
2026	2,406,109	108,137,980	1,450,138	158,187,435	0	0	0	0	0	180,908,252
2027	2,430,072	109,750,161	1,469,525	160,555,948	0	0	0	0	0	183,309,592
2028	2,439,332	111,310,967	1,495,151	162,653,536	0	0	0	0	0	185,529,345
2029	2,398,427	107,559,893	1,435,494	157,205,977	0	0	0	0	0	179,754,715
2030	2,416,655	109,109,635	1,463,105	159,546,577	0	0	0	0	0	182,279,703
2031	2,490,173	113,518,937	1,512,077	166,134,046	0	0	0	0	0	189,206,136
2032	2,380,964	106,951,235	1,438,035	156,312,224	0	0	0	0	0	178,789,222
2033	2,496,530	114,235,483	1,527,428	167,224,976	0	0	0	0	0	190,516,011
2034	2,342,238	104,530,332	1,408,242	152,694,583	0	0	0	0	0	174,953,728
2035	2,581,803	116,797,703	1,549,752	172,034,917	0	0	0	0	0	195,534,408
TOTAL	62,029,323	3,836,045,075	39,968,077	5,406,882,114	0	0	0	0	0	6,337,054,072

(a) B-18 includes Extra Peaking Charges for additional power shown in Table 9.

TABLE B-19. Total Transportation Charge for Each Contractor

(in dollars)

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	199,726	190,272	447,723	837,721	0	0	0
1964	0	0	0	263,282	277,455	621,356	1,162,093	6,696	21,667	28,363
1965	0	0	0	373,816	404,324	1,158,090	1,936,231	13,756	36,029	49,785
1966	18,064	0	18,064	419,467	421,722	1,412,954	2,254,143	26,524	61,349	87,873
1967	41,574	0	41,574	539,116	498,441	1,686,098	2,723,655	56,469	118,263	174,732
1968	128,628	0	128,628	663,794	603,483	1,985,220	3,252,496	115,960	229,807	345,767
1969	254,715	0	254,715	787,282	539,340	2,083,253	3,409,875	185,156	358,861	544,017
1970	277,547	0	277,547	823,032	532,567	2,202,766	3,558,366	200,150	387,675	587,826
1971	227,474	0	227,474	788,106	552,113	2,169,897	3,510,116	202,413	392,912	595,325
1972	224,978	0	224,978	829,792	678,520	2,320,421	3,828,732	209,057	406,589	615,646
1973	221,091	31,366	252,457	795,036	549,393	2,338,619	3,683,048	206,557	402,723	609,280
1974	240,498	32,938	273,437	818,836	564,594	2,506,358	3,889,787	208,545	407,090	615,636
1975	237,459	36,291	273,750	868,725	605,731	2,409,923	3,884,378	225,895	439,873	665,768
1976	271,292	40,836	312,127	959,507	734,812	2,500,506	4,194,824	228,976	447,299	676,276
1977	293,627	45,096	338,723	923,700	713,558	2,476,399	4,113,657	238,699	468,721	707,420
1978	273,870	49,178	323,048	979,063	692,588	2,785,987	4,457,638	245,331	484,259	729,590
1979	289,479	53,340	342,819	1,044,258	736,358	2,813,578	4,594,195	243,110	483,437	726,547
1980	310,846	67,748	378,594	1,162,300	866,372	3,028,204	5,056,875	269,858	537,074	806,932
1981	347,781	87,408	435,189	1,127,999	879,357	2,917,582	4,924,938	288,997	586,256	875,254
1982	438,335	106,918	545,254	1,165,915	850,483	3,262,104	5,278,502	290,049	582,758	872,807
1983	354,787	151,259	506,046	1,177,502	900,363	3,795,446	5,873,311	319,214	633,181	952,395
1984	467,336	224,245	691,581	1,469,663	1,097,480	5,737,801	8,304,945	351,621	695,559	1,047,179
1985	736,074	364,305	1,100,379	1,920,134	1,789,369	6,551,546	10,261,048	394,593	776,994	1,171,587
1986	1,084,728	692,479	1,777,207	1,747,365	1,528,732	6,863,229	10,139,326	385,545	762,683	1,148,229
1987	1,773,801	1,559,243	3,333,044	2,237,253	2,011,876	6,675,355	10,924,484	385,290	812,310	1,197,599
1988	2,231,563	2,333,792	4,565,356	2,238,912	2,210,523	6,368,849	10,818,284	420,153	978,621	1,398,774
1989	2,397,272	3,326,435	5,723,708	2,155,240	1,872,030	5,916,713	9,943,983	414,225	1,162,723	1,576,948
1990	2,746,134	3,433,321	6,179,455	2,574,559	2,261,914	6,668,440	11,504,912	487,609	1,234,409	1,722,018
1991	2,748,636	3,682,311	6,430,947	1,754,187	1,621,188	4,527,928	7,903,303	491,419	1,476,387	1,967,806
1992	2,554,528	3,528,958	6,083,486	2,075,368	2,003,327	5,385,858	9,464,553	551,042	1,491,155	2,042,197
1993	2,592,888	3,504,240	6,097,129	2,880,610	2,011,222	6,511,865	11,403,697	610,116	1,675,438	2,285,554
1994	2,718,329	3,537,459	6,255,788	2,907,361	2,642,460	7,314,515	12,864,336	767,900	2,473,449	3,241,349
1995	2,649,273	3,509,935	6,159,208	3,035,721	2,289,028	5,893,667	11,218,416	995,341	4,977,122	5,972,463
1996	2,699,210	3,891,715	6,590,925	2,584,864	2,137,443	6,675,491	11,397,798	1,837,384	13,766,531	15,603,915
1997	2,641,891	3,631,175	6,273,065	2,658,120	2,007,332	6,551,468	11,216,920	2,294,918	21,860,553	24,155,471
1998	2,538,764	3,478,063	6,016,827	2,264,517	2,064,166	6,296,049	10,624,732	2,976,897	26,690,793	29,667,690
1999	2,690,995	3,843,920	6,534,914	2,890,326	2,454,592	8,386,089	13,731,006	3,032,982	27,474,863	30,507,845
2000	2,837,472	4,325,832	7,163,304	3,922,518	2,306,976	7,036,595	13,266,089	2,963,545	27,905,522	30,869,067
2001	3,367,984	4,981,631	8,349,615	7,407,391	2,806,284	8,477,965	18,691,640	3,517,523	30,067,177	33,584,701
2002	3,560,991	5,085,590	8,646,581	10,846,874	2,778,183	9,921,992	23,547,049	3,228,052	29,679,832	32,907,884
2003	3,679,728	5,433,315	9,113,043	7,534,099	2,522,172	8,770,115	18,826,387	3,319,063	29,961,183	33,280,246
2004	4,161,810	5,688,284	9,850,094	5,739,690	2,828,975	8,246,382	16,815,047	3,336,358	30,403,025	33,739,383
2005	3,503,803	5,131,912	8,635,715	5,730,422	2,970,263	8,986,963	17,687,648	3,476,743	30,628,440	34,105,182
2006	3,442,621	4,696,558	8,139,179	5,675,351	2,951,435	9,085,173	17,711,958	3,299,148	30,014,235	33,313,382
2007	3,946,242	5,962,065	9,908,307	6,876,587	3,548,234	10,540,110	20,964,931	3,529,192	31,628,817	35,158,009
2008	4,401,029	5,194,430	9,595,460	7,563,526	3,738,405	10,424,520	21,726,451	3,962,899	32,318,087	36,280,986
2009	4,973,133	4,992,779	9,965,913	6,629,286	3,413,756	10,486,481	20,529,523	3,843,599	31,068,617	34,912,217
2010	5,241,146	5,548,763	10,789,909	7,796,861	3,820,362	11,668,816	23,286,039	4,120,980	32,912,044	37,033,023
2011	5,836,941	6,285,315	12,122,256	10,631,418	4,797,176	14,298,357	29,726,951	5,190,083	36,757,490	41,947,573
2012	**6,320,772**	**6,549,009**	**12,869,781**	**10,226,222**	**5,338,961**	**14,551,325**	**30,116,508**	**5,660,944**	**36,313,129**	**41,974,073**
2013	6,164,980	6,404,935	12,569,914	9,994,875	4,709,105	13,218,219	27,922,199	6,165,614	35,820,998	41,986,612
2014	5,448,694	5,687,604	11,136,299	8,512,967	4,012,054	11,325,781	23,850,802	5,337,061	34,534,700	39,871,761
2015	5,467,347	5,711,066	11,178,414	8,421,995	3,918,118	10,939,877	23,279,991	5,287,711	34,568,757	39,856,468
2016	5,459,566	5,731,699	11,191,265	8,424,777	3,909,226	10,819,663	23,153,667	5,284,609	34,682,223	39,966,832
2017	5,448,946	5,755,698	11,204,645	8,349,119	3,877,006	10,705,685	22,931,809	5,255,209	34,750,492	40,005,701
2018	5,361,569	5,767,205	11,128,774	8,266,040	3,859,096	10,630,867	22,756,003	5,199,329	34,773,314	39,972,643
2019	5,329,167	5,792,607	11,121,773	8,161,279	3,821,464	10,531,702	22,514,445	5,182,221	34,871,496	40,053,717
2020	5,343,202	5,819,092	11,162,294	8,198,202	3,843,203	10,584,524	22,625,929	5,207,008	35,050,603	40,257,611
2021	5,364,394	5,850,990	11,215,384	8,231,488	3,857,706	10,629,353	22,718,547	5,231,237	35,233,428	40,464,665
2022	5,378,252	5,874,654	11,252,906	8,281,493	3,882,553	10,689,389	22,853,434	5,248,731	35,308,461	40,557,192
2023	5,389,112	5,861,477	11,250,590	8,299,165	3,892,237	10,710,673	22,902,075	5,250,623	35,356,238	40,606,861
2024	5,399,464	5,881,901	11,281,366	8,330,477	3,906,909	10,749,445	22,986,831	5,255,650	35,410,212	40,665,862
2025	5,399,747	5,896,763	11,296,510	8,339,798	3,912,617	10,761,127	23,013,543	5,249,869	35,444,900	40,694,769
2026	5,411,639	5,917,817	11,329,456	8,383,906	3,933,410	10,816,091	23,133,407	5,266,800	35,520,415	40,787,215
2027	5,426,150	5,939,915	11,366,064	8,424,093	3,952,553	10,864,665	23,241,310	5,284,705	35,596,402	40,881,107
2028	5,438,896	5,960,897	11,399,792	8,463,854	3,971,819	10,912,812	23,348,486	5,295,799	35,660,550	40,956,349
2029	5,452,274	5,982,776	11,435,050	8,489,814	3,982,853	10,944,145	23,416,812	5,307,235	35,725,934	41,033,169
2030	5,457,539	5,992,666	11,450,205	8,530,625	4,003,075	10,995,018	23,528,718	5,322,624	35,798,018	41,120,641
2031	5,459,895	5,998,382	11,458,278	8,573,085	4,023,794	11,047,068	23,643,947	5,339,856	35,864,207	41,204,063
2032	5,464,565	6,004,504	11,469,068	8,598,649	4,034,663	11,079,623	23,712,935	5,349,699	35,936,904	41,286,603
2033	5,450,633	5,984,372	11,435,005	8,672,702	4,072,847	11,172,274	23,917,823	5,379,868	36,044,999	41,424,867
2034	5,395,845	5,935,347	11,331,193	8,666,277	4,066,084	11,163,094	23,895,454	5,380,782	36,094,354	41,475,136
2035	5,266,207	5,816,928	11,083,135	8,737,974	4,103,900	11,251,996	24,093,870	5,415,297	36,205,775	41,621,072
TOTAL	220,175,223	250,688,752	470,863,975	346,049,099	180,205,789	534,306,365	1,060,561,254	192,124,116	1,339,706,389	1,531,830,505

TABLE B-19. Total Transportation Charge for Each Contractor

(in dollars)

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	2,725	0	0	0	0	0	2,725
1965	0	0	6,029	73,569	0	0	0	0	79,598
1966	0	0	12,039	137,330	0	0	0	0	149,368
1967	0	0	26,257	267,612	0	0	0	0	293,869
1968	185,047	8,927	54,589	445,438	1,546,667	13,770	11,611	209,386	2,475,435
1969	180,654	7,699	87,576	525,094	2,396,772	12,625	10,617	358,903	3,579,940
1970	202,713	14,466	94,674	573,999	2,920,587	12,790	13,154	295,093	4,127,476
1971	199,061	15,424	95,695	605,889	3,793,711	17,763	14,458	450,300	5,192,300
1972	221,691	16,292	98,789	631,615	4,970,925	15,220	20,777	1,086,217	7,061,525
1973	204,343	12,363	97,550	639,250	4,921,558	15,483	11,767	411,031	6,313,345
1974	284,677	12,332	98,460	697,026	5,234,019	15,590	12,854	601,117	6,956,075
1975	352,062	13,277	106,703	714,888	6,359,912	16,620	14,540	732,533	8,310,535
1976	306,586	13,823	108,083	773,628	6,716,621	16,994	16,220	567,598	8,519,553
1977	268,540	10,933	112,554	796,324	6,898,092	18,456	13,997	514,353	8,633,249
1978	357,505	4,441	115,521	889,236	8,347,708	18,922	18,040	508,232	10,259,604
1979	387,787	13,670	114,253	895,406	9,473,041	20,202	24,974	957,488	11,886,821
1980	409,037	12,020	125,950	888,893	10,048,586	20,749	24,384	741,883	12,271,502
1981	472,528	29,861	134,169	1,076,040	11,500,827	24,939	23,024	913,450	14,174,838
1982	467,037	13,011	135,057	997,853	12,340,395	22,955	22,493	751,078	14,749,880
1983	640,329	14,605	149,201	1,027,258	15,545,661	39,971	29,231	428,666	17,874,923
1984	913,002	15,019	164,505	2,019,473	23,718,743	54,428	59,742	787,931	27,732,842
1985	1,101,544	87,580	184,905	2,336,069	28,000,081	69,483	70,273	2,173,533	34,023,469
1986	1,265,775	34,036	180,445	2,365,159	30,565,968	80,769	76,138	2,188,508	36,756,798
1987	1,124,347	50,831	179,872	2,791,630	29,370,447	78,018	74,387	2,247,733	35,917,266
1988	1,109,949	61,626	193,735	2,720,417	29,303,504	74,168	60,266	2,205,591	35,729,255
1989	1,145,461	49,308	187,914	2,410,514	29,363,072	67,049	68,735	2,449,197	35,741,250
1990	867,114	34,470	221,391	2,512,729	27,484,672	51,057	49,165	1,876,527	33,097,125
1991	585,508	23,375	220,282	2,055,250	17,655,477	27,930	26,934	1,237,092	21,831,848
1992	955,152	39,211	241,456	2,359,679	25,963,707	55,796	50,988	1,914,232	31,580,220
1993	1,167,442	53,738	264,959	2,769,058	31,498,191	72,890	69,671	2,647,820	38,543,768
1994	1,022,532	43,864	306,359	2,799,086	29,353,320	60,461	57,438	2,123,750	35,766,810
1995	1,519,220	46,722	304,297	3,491,835	36,474,909	88,875	80,261	2,777,860	44,783,979
1996	1,348,720	48,354	389,202	3,555,587	36,454,731	86,093	73,909	4,323,751	46,280,347
1997	1,390,249	25,511	276,681	3,014,997	32,713,668	36,715	68,769	1,677,828	39,204,418
1998	1,234,132	34,466	381,846	2,654,434	29,366,467	41,836	60,064	1,808,072	35,581,317
1999	1,230,249	56,006	370,780	3,066,836	31,530,408	75,574	65,437	4,174,872	40,570,162
2000	1,063,612	38,076	304,497	2,321,521	26,450,460	61,724	54,668	2,780,436	33,074,994
2001	1,751,428	63,238	328,197	2,238,425	34,104,958	80,388	101,623	3,075,373	41,743,630
2002	1,319,258	43,689	320,888	2,330,380	28,962,040	73,348	77,879	2,553,725	35,681,207
2003	1,393,779	48,903	342,639	2,752,992	31,925,324	89,934	79,406	2,883,853	39,516,829
2004	1,450,396	78,217	345,115	3,761,771	30,547,343	234,362	81,974	2,395,284	38,894,462
2005	2,030,545	87,722	356,507	3,230,323	41,176,617	416,870	81,166	3,437,563	50,817,313
2006	1,771,648	74,338	295,980	3,258,119	37,294,834	249,860	78,438	2,769,401	45,792,618
2007	1,630,384	68,267	343,906	3,031,600	35,204,750	230,365	13,253	2,899,209	43,421,734
2008	1,521,391	62,727	474,361	3,470,700	35,035,546	247,934	80,721	2,442,367	43,335,747
2009	1,254,716	51,031	444,604	2,201,798	30,879,140	194,347	63,910	2,048,170	37,137,716
2010	1,501,103	113,165	515,788	2,507,684	37,131,998	259,690	91,019	2,750,784	44,871,230
2011	2,273,738	100,685	541,808	5,492,756	56,886,778	398,538	120,528	3,781,863	69,596,693
2012	**1,780,887**	**92,895**	**545,878**	**4,839,982**	**44,956,541**	**324,177**	**109,617**	**3,078,166**	**55,728,144**
2013	1,724,262	86,638	538,227	4,570,074	41,753,425	305,691	107,526	2,888,611	51,974,454
2014	1,439,301	69,524	552,232	3,681,070	35,631,982	251,974	79,243	2,381,520	44,086,845
2015	1,375,777	68,858	554,714	3,585,680	35,402,899	250,158	78,315	2,361,788	43,678,189
2016	1,391,535	69,780	553,199	3,563,492	35,753,847	253,041	79,584	2,389,200	44,053,678
2017	1,372,249	68,614	543,524	3,381,809	35,439,559	249,459	77,323	2,354,707	43,487,244
2018	1,403,087	70,436	525,420	3,350,350	36,127,196	245,689	79,810	2,408,747	44,210,735
2019	1,379,396	69,007	521,588	3,222,473	35,654,648	240,543	77,576	2,366,465	43,531,696
2020	1,334,444	70,665	524,465	3,263,422	36,242,995	245,447	80,036	2,415,727	44,177,201
2021	1,330,623	70,452	528,094	3,231,753	36,233,232	244,679	79,362	2,409,438	44,127,633
2022	1,346,863	71,433	532,191	3,265,249	36,615,533	247,657	80,641	2,438,589	44,598,156
2023	1,349,355	71,596	536,526	3,271,548	36,785,410	248,122	80,231	2,443,461	44,786,249
2024	1,350,548	71,680	540,814	3,266,778	36,782,985	248,361	80,652	2,446,041	44,787,859
2025	1,350,489	71,691	545,107	3,266,945	36,882,146	248,347	80,137	2,446,416	44,891,277
2026	1,356,996	72,092	549,744	3,278,958	37,026,757	249,575	80,791	2,458,393	45,073,305
2027	1,364,608	72,561	554,055	3,297,670	37,265,598	250,988	81,076	2,472,329	45,358,885
2028	1,374,152	73,143	556,623	3,321,339	37,522,831	252,710	81,673	2,489,680	45,672,151
2029	1,371,203	72,983	561,362	3,307,281	37,489,479	252,165	81,372	2,484,969	45,620,814
2030	1,382,262	73,656	566,177	3,334,517	37,785,254	254,200	82,066	2,505,006	45,983,139
2031	1,398,771	74,654	569,744	3,362,983	38,218,488	256,912	83,105	2,534,675	46,499,332
2032	1,387,866	74,019	574,940	3,331,748	38,012,086	254,977	82,136	2,515,928	46,233,700
2033	1,419,693	75,932	579,862	3,415,454	38,757,452	260,796	84,565	2,572,663	47,166,417
2034	1,395,202	74,488	584,554	3,337,820	38,267,387	256,190	82,410	2,529,928	46,527,979
2035	1,438,332	77,073	589,190	3,454,008	39,330,593	263,998	85,369	2,606,638	47,845,201
TOTAL	75,899,891	3,511,189	23,687,021	175,379,568	1,907,370,557	10,017,406	4,213,518	139,958,738	2,340,037,889

TABLE B-19. Total Transportation Charge for Each Contractor

(in dollars)

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	33,853	0	0	0	726	0	0	0	51,729	0
1964	63,658	27,447	19,542	4,370	38,211	1,143	29,757	8,205	82,811	34,987
1965	119,982	53,007	34,348	7,194	42,701	2,082	52,705	15,222	135,068	35,344
1966	218,279	101,265	62,476	12,478	76,887	3,753	94,978	27,679	232,502	61,465
1967	422,318	210,814	121,269	23,472	148,839	7,284	184,247	54,023	433,350	115,574
1968	744,780	478,162	218,649	41,509	265,168	12,870	328,388	95,466	782,164	208,926
1969	1,073,827	724,334	334,105	61,226	394,024	18,694	487,548	138,064	1,205,834	321,755
1970	1,397,955	904,217	470,423	89,700	552,224	25,231	673,706	184,837	1,778,188	467,573
1971	1,732,348	1,088,015	627,330	128,360	754,065	31,837	908,310	231,280	2,538,219	659,415
1972	2,053,269	1,306,742	777,839	175,023	971,502	42,063	1,168,051	274,599	3,371,744	865,096
1973	2,144,827	1,322,721	913,615	183,270	1,174,449	43,314	1,234,191	287,315	3,919,292	946,686
1974	2,208,364	1,382,079	934,445	192,851	1,205,307	45,049	1,267,204	292,071	3,983,075	990,064
1975	2,384,620	1,449,970	980,938	205,728	1,276,654	48,373	1,335,600	304,280	4,152,070	1,088,342
1976	2,734,908	1,445,252	1,029,259	214,714	1,352,442	51,351	1,378,871	313,685	4,292,603	1,141,598
1977	2,678,317	1,514,239	929,532	225,070	1,194,916	47,299	1,451,254	329,365	4,520,756	1,197,216
1978	2,991,808	1,598,920	1,108,296	230,643	1,465,636	47,073	1,451,951	321,681	4,458,327	1,208,719
1979	3,541,715	1,633,400	1,177,452	237,531	1,564,123	48,366	1,578,807	332,472	4,422,373	1,152,375
1980	4,101,639	1,714,950	1,271,861	259,401	1,730,656	53,349	1,700,236	360,461	4,835,652	1,269,447
1981	4,432,359	1,968,449	1,355,504	271,180	1,850,803	77,806	1,824,182	391,869	5,224,182	1,357,680
1982	3,994,781	2,059,978	1,403,332	280,313	1,936,175	55,961	2,019,743	406,891	5,410,876	1,565,182
1983	5,185,681	2,322,055	1,997,503	333,080	2,880,959	69,382	2,095,180	494,689	6,020,929	1,556,652
1984	7,221,731	3,363,656	3,084,373	445,338	4,608,046	75,773	2,324,255	553,321	7,049,450	2,331,850
1985	8,937,261	3,747,915	3,882,495	540,388	5,883,196	79,232	2,435,455	759,053	7,740,358	2,378,394
1986	8,836,333	4,315,365	4,308,841	577,474	6,571,197	102,399	2,545,180	1,000,062	7,857,569	3,047,740
1987	8,853,192	4,155,864	4,164,708	604,981	6,418,841	211,808	2,578,063	1,026,398	9,224,608	3,034,142
1988	8,328,446	4,219,032	4,163,833	615,999	6,482,143	124,667	2,632,925	779,820	9,505,259	2,828,998
1989	8,705,556	4,098,833	3,808,646	586,595	5,952,263	170,570	2,580,583	1,442,627	8,944,265	2,930,396
1990	9,994,047	4,539,150	4,487,886	620,394	7,014,185	289,349	2,778,019	1,639,829	9,795,019	3,678,107
1991	6,495,721	3,508,081	2,996,131	567,449	4,550,559	175,137	3,537,715	1,294,608	8,921,838	3,035,639
1992	8,597,490	4,465,646	3,068,617	470,165	4,667,983	121,335	4,339,513	1,129,578	8,573,361	2,980,091
1993	8,981,636	4,097,062	3,267,678	472,817	4,993,632	157,747	4,218,867	1,347,511	9,505,683	3,320,012
1994	11,168,723	4,709,275	3,313,738	554,651	5,066,159	225,809	5,212,506	1,698,990	10,209,083	4,076,706
1995	10,770,019	4,967,113	4,087,603	509,163	6,340,703	155,561	4,300,575	1,527,248	9,443,228	3,715,377
1996	11,138,946	5,155,193	7,025,782	553,231	11,183,947	150,613	4,367,946	1,867,203	9,869,330	3,807,422
1997	11,389,429	4,921,914	6,588,592	579,281	7,422,990	144,833	4,671,957	1,869,307	11,268,380	4,037,861
1998	9,908,049	4,550,381	5,663,864	546,645	5,928,447	146,074	5,708,125	1,474,029	11,192,752	3,321,115
1999	11,436,116	4,980,669	4,651,370	638,310	6,008,649	147,124	5,955,835	1,855,150	12,357,704	4,182,168
2000	10,494,116	6,816,945	3,032,103	594,826	4,325,452	115,628	5,724,563	1,443,335	11,900,259	3,246,895
2001	20,679,330	12,507,558	4,120,952	799,821	6,383,379	127,898	6,425,272	3,360,487	17,905,872	3,400,122
2002	11,944,834	9,880,028	3,359,605	759,543	5,127,291	109,735	5,545,010	2,738,068	18,771,807	4,785,221
2003	13,366,809	10,772,699	3,495,470	733,984	5,349,665	116,217	7,246,049	2,283,976	17,272,766	4,976,106
2004	14,225,339	12,177,360	4,126,876	833,534	5,387,183	125,100	7,358,657	2,522,367	21,599,945	4,414,413
2005	14,614,724	11,081,398	17,772,615	656,269	10,283,301	114,899	7,124,043	2,570,515	19,601,671	4,661,503
2006	16,236,204	10,095,744	27,658,892	638,224	10,018,863	123,024	9,922,075	2,517,929	19,419,295	4,722,063
2007	19,413,820	13,535,162	26,019,262	882,577	9,343,584	124,249	13,653,306	4,084,032	26,008,072	3,793,561
2008	17,320,009	15,567,880	25,981,404	819,935	10,438,412	138,906	12,150,383	3,996,972	25,894,290	4,879,205
2009	14,583,240	12,806,874	23,002,651	779,134	8,046,785	133,037	11,489,025	3,601,892	25,252,063	5,131,338
2010	17,533,888	12,786,910	32,024,883	678,935	11,031,941	122,689	14,001,620	3,025,282	27,938,242	6,768,573
2011	15,841,364	15,795,309	27,010,897	1,373,786	9,689,874	438,720	12,330,026	4,132,551	36,210,105	8,677,182
2012	**26,155,492**	**17,183,722**	**44,613,054**	**1,228,215**	**16,869,574**	**459,200**	**15,245,033**	**4,209,447**	**35,079,876**	**7,930,720**
2013	24,639,756	15,852,315	36,183,676	1,520,753	13,166,502	430,495	23,293,184	3,926,495	33,304,715	7,422,156
2014	18,902,957	12,937,965	30,887,588	1,231,509	10,606,466	327,575	15,301,631	2,957,833	28,249,317	6,023,587
2015	18,632,290	12,794,953	32,084,477	1,208,994	10,632,312	319,950	14,992,890	2,887,183	27,910,495	5,923,150
2016	18,769,118	12,801,899	32,294,252	1,217,014	10,711,068	322,298	15,100,933	2,910,319	28,077,930	5,965,459
2017	18,264,459	12,606,277	31,753,498	1,192,406	10,487,489	313,657	14,807,233	2,834,033	27,679,109	5,849,807
2018	18,823,190	12,633,608	32,174,155	1,216,228	10,657,048	323,083	15,281,060	2,925,240	27,974,010	5,930,626
2019	17,738,182	11,981,351	31,128,091	1,163,330	10,245,356	304,381	14,482,225	2,756,044	27,157,978	5,701,712
2020	17,810,715	11,984,439	30,862,333	1,154,323	10,146,662	304,612	14,753,715	2,763,956	26,843,355	5,621,805
2021	17,411,555	11,736,577	30,303,270	1,118,198	9,935,307	296,892	14,414,001	2,698,720	26,253,750	5,471,381
2022	17,554,454	11,662,269	29,762,320	1,113,999	9,871,300	299,188	14,464,096	2,721,444	26,140,914	5,448,649
2023	17,880,316	11,845,488	29,352,658	1,126,913	9,863,529	304,648	14,730,439	2,772,506	26,252,464	5,476,424
2024	17,370,576	11,546,944	28,784,680	1,101,591	9,648,345	295,967	14,328,078	2,691,787	25,858,132	5,364,019
2025	17,554,290	11,704,393	29,002,075	1,112,257	9,741,429	299,104	14,513,175	2,720,620	26,053,071	5,413,715
2026	17,359,385	11,574,986	28,738,379	1,101,001	9,642,745	295,775	14,325,065	2,689,599	25,887,155	5,361,829
2027	17,569,418	11,679,661	28,959,810	1,112,458	9,736,538	299,367	14,490,628	2,722,545	26,090,256	5,412,970
2028	17,704,879	11,816,938	29,083,789	1,119,095	9,784,068	301,675	14,639,071	2,743,677	26,211,307	5,440,808
2029	17,359,980	11,638,238	28,911,929	1,106,610	9,711,963	295,811	14,378,462	2,689,107	26,117,270	5,408,298
2030	17,578,252	11,677,853	29,095,297	1,119,445	9,781,163	299,558	14,549,362	2,723,584	26,285,083	5,448,735
2031	17,974,073	11,706,660	29,556,158	1,136,542	9,964,910	306,319	14,848,119	2,786,814	26,657,914	5,547,884
2032	17,389,484	11,545,009	28,994,252	1,110,750	9,733,532	296,358	14,469,320	2,694,445	26,271,663	5,432,761
2033	18,137,210	11,742,313	29,785,229	1,147,188	10,045,191	309,160	15,016,884	2,814,175	26,879,779	5,596,933
2034	17,074,396	11,479,853	28,809,945	1,098,611	9,645,815	291,117	14,336,433	2,648,918	26,164,550	5,390,056
2035	18,618,944	11,666,437	30,399,411	1,171,005	10,280,045	317,410	15,374,933	2,894,843	27,361,102	5,719,203
TOTAL	825,549,029	532,725,176	1,023,457,813	49,538,996	466,303,491	12,614,011	556,558,428	131,589,628	1,137,845,210	266,708,983

TABLE B-19. Total Transportation Charge for Each Contractor

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA					
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Watershed Protection District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total	South Bay Area Future Contractor	GRAND 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	690,812	0	777,120	0	0	0	0	12,626	1,627,467
1964	21,736	1,260,513	9,378	1,601,758	0	0	0	0	13,938	2,808,876
1965	21,866	2,180,589	17,766	2,717,874	0	0	405	405	28,937	4,812,830
1966	37,965	3,900,172	33,426	4,863,325	0	0	565	565	31,321	7,404,659
1967	71,283	7,693,704	68,155	9,554,331	0	0	562	562	47,718	12,836,440
1968	128,915	15,317,881	142,803	18,765,682	0	0	564	564	46,945	25,015,517
1969	198,763	23,153,063	215,209	28,326,445	0	0	3,191	3,191	52,963	36,171,146
1970	289,633	30,617,164	273,605	37,724,455	0	0	15,121	15,121	69,744	46,360,534
1971	409,327	39,958,996	342,425	49,409,927	0	0	16,001	16,001	55,532	59,006,676
1972	537,186	52,853,167	422,304	64,818,585	0	0	17,372	17,372	80,412	76,647,250
1973	587,964	57,132,800	435,655	70,326,097	0	0	17,334	17,334	54,219	81,255,781
1974	611,428	61,587,911	455,565	75,155,413	0	0	17,477	17,477	76,783	86,984,607
1975	644,621	66,557,534	478,404	80,907,133	0	0	18,406	18,406	84,547	94,144,516
1976	668,314	68,253,112	475,587	83,351,694	0	0	17,477	17,477	106,717	97,178,668
1977	696,515	66,053,753	507,063	81,345,294	0	0	18,232	18,232	98,618	95,255,193
1978	709,040	72,706,513	523,177	88,821,785	0	0	17,381	17,381	100,786	104,709,832
1979	712,866	72,440,512	526,405	89,368,397	0	0	20,579	20,579	119,352	107,058,708
1980	777,982	79,926,556	571,232	98,573,422	0	0	17,761	17,761	178,812	117,283,899
1981	806,031	91,261,394	636,404	111,457,841	0	0	21,193	21,193	185,347	132,074,600
1982	853,400	93,144,741	670,375	113,801,747	0	0	28,423	28,423	173,894	135,450,506
1983	952,131	101,787,701	803,591	126,499,533	0	0	19,276	19,276	220,926	151,946,409
1984	1,072,638	137,507,079	868,967	170,506,475	0	0	21,114	21,114	225,959	208,530,096
1985	1,120,854	173,442,299	908,769	211,855,668	0	0	20,239	20,239	340,322	258,772,712
1986	1,149,714	193,242,027	937,311	234,491,215	0	0	20,139	20,139	279,227	284,612,140
1987	1,172,016	178,764,440	908,034	221,117,095	0	0	19,742	19,742	345,116	272,854,346
1988	1,208,206	190,243,526	904,867	232,037,719	0	0	17,900	17,900	365,207	284,932,496
1989	1,194,911	193,235,263	932,599	234,583,106	0	0	19,158	19,158	422,329	288,010,481
1990	1,297,622	239,540,419	1,486,754	287,160,779	0	0	18,148	18,148	474,284	340,156,722
1991	1,354,922	179,950,985	1,141,118	217,529,904	0	0	21,018	21,018	214,683	255,899,508
1992	1,349,184	196,166,979	1,025,285	236,955,230	0	0	18,014	18,014	443,676	286,587,376
1993	1,507,551	169,493,331	1,068,134	212,431,663	0	0	20,999	20,999	599,571	271,382,380
1994	1,497,753	209,282,958	1,008,952	258,025,304	0	0	19,649	19,649	609,966	316,783,202
1995	1,520,622	173,420,268	1,061,324	221,818,803	0	0	20,277	20,277	534,971	290,508,117
1996	1,527,165	181,404,033	1,103,254	239,154,065	0	0	25,378	25,378	571,857	319,624,286
1997	1,730,348	186,736,529	1,216,560	242,577,981	0	0	24,820	24,820	428,638	323,881,313
1998	1,920,022	168,571,972	1,237,386	220,168,860	0	0	17,372	17,372	465,095	302,541,892
1999	2,170,292	191,904,161	1,266,445	247,553,992	0	0	17,372	17,372	587,326	339,502,618
2000	2,405,291	184,360,713	1,321,655	235,781,780	0	0	17,372	17,372	0	320,172,606
2001	3,321,131	376,259,442	1,620,009	456,911,273	0	0	17,373	17,373	0	559,298,232
2002	4,667,920	264,705,670	1,649,062	334,043,796	0	0	17,375	17,375	0	434,843,892
2003	5,943,654	294,197,503	1,678,177	367,433,075	0	0	20,768	20,768	0	468,190,348
2004	6,268,176	341,037,029	1,919,553	421,995,531	0	0	20,830	20,830	0	521,315,347
2005	6,531,085	319,602,787	1,461,310	416,076,120	0	0	20,827	20,827	0	527,342,806
2006	7,031,132	293,182,631	1,339,663	402,905,737	0	0	21,242	21,242	0	507,884,116
2007	7,948,246	376,402,220	1,901,268	503,109,358	0	0	21,067	21,067	0	612,583,406
2008	8,922,377	346,244,361	2,318,136	474,672,269	0	0	22,555	22,555	0	585,633,467
2009	9,107,759	298,831,049	2,063,765	414,828,612	0	0	18,691	18,691	0	517,392,671
2010	10,099,550	352,158,703	2,126,857	490,298,072	0	0	19,052	19,052	0	606,297,325
2011	12,888,987	459,549,149	2,847,677	606,785,626	0	0	21,745	21,745	0	760,200,844
2012	**11,460,092**	**417,440,521**	**4,363,749**	**602,238,694**	**0**	**0**	**20,281**	**20,281**	**0**	**742,947,481**
2013	10,939,566	385,036,273	4,007,425	559,723,310	0	0	19,234	19,234	0	694,195,725
2014	10,429,355	308,403,614	3,089,445	449,348,842	0	0	19,216	19,216	0	568,313,765
2015	11,248,144	305,793,519	3,019,644	447,448,001	0	0	18,851	18,851	0	565,459,914
2016	11,285,014	306,910,101	3,029,795	449,395,200	0	0	18,732	18,732	0	567,779,374
2017	11,213,460	300,354,650	2,961,418	440,317,496	0	0	18,777	18,777	0	557,965,672
2018	11,267,960	302,237,397	3,002,677	444,446,281	0	0	18,818	18,818	0	562,533,255
2019	11,120,230	287,350,476	2,819,662	423,949,017	0	0	16,236	16,236	0	541,186,883
2020	11,089,002	284,860,172	2,824,411	421,019,500	0	0	4,352	4,352	0	539,246,888
2021	11,018,637	277,800,400	2,752,936	411,211,624	0	0	3,573	3,573	0	529,741,425
2022	11,022,565	275,194,721	2,747,262	408,003,182	0	0	2,206	2,206	0	527,267,077
2023	11,049,578	277,426,997	2,799,273	410,881,233	0	0	2,225	2,225	0	530,429,232
2024	10,972,609	269,951,423	2,708,029	400,622,180	0	0	2,242	2,242	0	520,346,340
2025	11,010,021	272,901,537	2,743,836	404,769,523	0	0	2,260	2,260	0	524,667,882
2026	10,984,782	269,848,081	2,706,931	400,515,715	0	0	2,279	2,279	0	520,841,376
2027	11,036,496	272,333,378	2,735,056	404,178,581	0	0	2,296	2,296	0	525,028,244
2028	11,067,390	274,330,278	2,762,525	407,005,500	0	0	2,315	2,315	0	528,384,593
2029	11,054,461	271,058,641	2,704,285	402,435,055	0	0	2,333	2,333	0	523,943,234
2030	11,093,926	272,117,774	2,720,605	404,490,637	0	0	2,353	2,353	0	526,575,694
2031	11,182,418	274,895,978	2,747,461	409,311,249	0	0	2,373	2,373	0	532,119,241
2032	11,107,135	268,821,515	2,672,712	400,538,937	0	0	2,392	2,392	0	523,243,635
2033	11,243,348	275,909,119	2,756,768	411,383,297	0	0	2,412	2,412	0	535,329,821
2034	11,103,964	266,345,250	2,638,918	397,027,827	0	0	2,432	2,432	0	520,260,021
2035	11,363,822	279,193,390	2,786,202	417,146,746	0	0	2,453	2,453	0	541,792,478
TOTAL	384,030,069	14,874,431,316	117,032,445	20,378,384,595	0	0	1,018,198	1,018,198	8,751,583	25,791,447,999

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 2011 at 4.610 percent per annum)

Procedure	Capital Cost Component	Minimum Operation, Maintenance, Power and Replacement Component (a)	Total Delta Water Rate
	[1]	[2]	[3]
Commencing in 2012			
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Project Water Table A Amounts during the Project Repayment Period	$6,235.30 (b) 372.12 AF	$5,363.00 (c) 372.12 AF	$11,598.30 372.12 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period.	(3,076.14)	(2,469.08)	($5,545.22)
Less, Delta Water Charges Paid and Project Water Table A Amounts, Prior to 2012	(2,312.33) (d) (312.30) AF	(1,113.56) (312.30) AF	($3,425.89) (312.30) AF
TOTAL	$846.83 59.83 AF	$1,780.36 59.83 AF	$2,627.19 59.83 AF
Rate Applicable in 2012	$14.15 per acre-foot	$29.76 per acre-foot	$43.91 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 2012			
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Project Water Table A Amounts during the Project Repayment Period	6,220.49 (b) 372.12 AF	5,338.47 (c) 372.12 AF	11,558.96 372.12 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period.	(3,076.14)	(2,469.08)	(5,545.22)
Less, Delta Water Charges Paid and Project Water Table A Amounts, Prior to 2012	(2,312.33) (d) (312.30) AF	(1,113.56) (312.30) AF	(3,425.89) (312.30) AF
TOTAL	832.01 59.83 AF	1,755.83 59.83 AF	2,587.85 59.83 AF
Rate Applicable in 2012	$13.91 per acre-foot	$29.35 per acre-foot	$43.26 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) A1 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)	62.30	41.71	104.01
Less, Oroville Power Revenues	-37.02	-18.61	-55.63
Subtotal	25.29	23.10	48.38
Delta Facilities (b)	18.05	27.82	45.87
California Aqueduct, portion			
Reach 1	3.95	6.79	10.74
Reach 2A	2.32	0.93	3.25
Reach 2B	1.20	0.77	1.97
Reach 3	0.83	0.36	1.19
Subtotal	8.30	8.85	17.15
San Luis Facilities	11.81	10.86	22.66
Planning and preoperating costs through 2009	3.52	0.00	3.52
45,000 AF relinquished costs	0.25	0.41	0.66
Less, Capital Cost Credits	-1.64	0.00	-1.64
Less, Delta Water Charges paid prior to 2011	-51.42	-41.27	-92.69
Rate applicable in 2012	14.15	29.76	43.91

(a) Includes revenue received from non-SWP 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)

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	569,615	1,230,627	1,800,242	2,033,406	1,094,911	2,606,931	5,735,248	651,732	1,185,788	1,837,520
2005	573,729	1,219,893	1,793,622	2,081,144	1,084,212	2,581,456	5,746,812	645,364	1,174,201	1,819,565
2006	606,343	1,272,001	1,878,344	2,167,748	1,129,330	2,688,880	5,985,958	672,220	1,223,064	1,895,284
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	717,087	1,446,549	2,163,636	2,457,420	1,280,240	3,048,190	6,785,850	762,047	1,386,499	2,148,546
2010	1,105,529	1,809,450	2,914,979	3,070,686	1,599,732	3,808,886	8,479,304	952,222	1,732,510	2,684,732
2011	1,216,921	1,993,865	3,210,786	3,380,086	1,760,920	4,192,667	9,333,673	1,048,167	1,907,076	2,955,243
2012	**1,274,581**	**2,090,532**	**3,365,113**	**3,540,239**	**1,844,355**	**4,391,321**	**9,775,915**	**1,097,830**	**1,997,436**	**3,095,266**
2013	1,274,581	2,092,728	3,367,309	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2014	1,274,581	2,094,924	3,369,505	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2015	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2016	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2017	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2018	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2019	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2020	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2021	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2022	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2023	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2024	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2025	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2026	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2027	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2028	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2029	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2030	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2031	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2032	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2033	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2034	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
2035	1,274,581	2,097,119	3,371,700	3,540,239	1,844,355	4,391,321	9,775,915	1,097,830	1,997,436	3,095,266
TOTAL	40,764,866	73,301,617	114,066,483	125,723,468	73,507,832	181,438,741	380,670,041	40,729,621	74,723,874	115,453,495

TABLE B-21. Total Delta Water Charge for Each Contractor

(in dollars)

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]
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	40,695	10,469	0	0	165,522	3,177	8,073	98,608	326,544
1969	61,267	3,281	0	0	337,686	4,200	8,805	102,478	517,717
1970	104,405	19,950	0	0	964,915	8,645	17,290	228,095	1,343,300
1971	129,596	21,720	0	0	1,377,772	9,412	20,272	264,260	1,823,032
1972	160,756	24,113	0	0	2,175,835	11,253	43,131	905,057	3,320,145
1973	195,541	26,664	0	386,638	2,373,167	13,333	27,553	373,307	3,396,203
1974	224,202	27,909	0	446,545	2,781,595	13,954	29,770	445,138	3,969,113
1975	329,688	27,413	0	481,560	3,041,048	14,620	33,702	827,591	4,755,622
1976	414,245	29,388	0	549,549	3,931,785	15,673	35,966	877,151	5,853,757
1977	312,532	28,195	0	569,545	4,071,218	15,977	40,289	626,210	5,663,966
1978	342,208	31,588	0	674,939	4,950,959	20,006	41,065	666,516	6,727,281
1979	395,523	34,294	0	772,757	5,901,986	22,863	45,725	771,613	7,944,761
1980	555,341	37,679	0	881,371	6,984,026	27,272	70,658	933,481	9,489,828
1981	740,789	54,204	0	1,351,487	11,140,730	41,556	77,692	1,373,168	14,779,626
1982	782,396	57,248	0	1,518,993	12,703,436	47,707	85,873	1,530,443	16,726,096
1983	543,462	38,004	0	1,057,789	9,141,315	35,471	58,273	78,506	10,952,820
1984	580,379	13,572	0	1,333,200	9,741,623	39,893	61,770	756,132	12,526,569
1985	667,740	42,441	0	1,540,611	11,403,920	48,100	69,320	644,383	14,416,515
1986	745,447	45,362	0	1,714,679	12,925,113	55,946	77,115	1,469,725	17,033,387
1987	762,180	44,485	0	1,766,065	13,410,817	59,314	77,108	1,503,601	17,623,570
1988	827,669	46,411	0	1,916,790	14,707,763	61,882	83,540	1,633,680	19,277,735
1989	921,621	49,728	0	2,125,033	16,312,361	66,304	92,825	1,821,693	21,389,565
1990	964,288	50,136	0	1,998,766	17,276,959	66,848	95,259	1,980,383	22,432,639
1991	1,023,374	53,208	0	2,121,239	18,335,590	70,944	101,096	2,101,729	23,807,180
1992	1,169,299	60,795	0	2,727,688	20,646,125	81,061	115,511	2,401,419	27,201,898
1993	1,172,060	60,939	0	2,734,129	20,694,874	81,252	115,784	2,407,089	27,266,127
1994	1,123,198	58,398	0	2,156,809	20,295,455	77,865	110,957	2,306,739	26,129,421
1995	1,202,009	62,497	0	2,803,995	21,223,694	83,328	118,743	2,468,598	27,962,864
1996	534,818	69,191	0	2,756,635	19,492,814	81,921	102,219	2,426,904	25,464,502
1997	1,208,521	67,162	0	3,047,908	22,148,973	90,576	129,072	2,683,338	29,375,550
1998	1,216,671	77,807	0	2,726,511	22,070,376	91,188	129,942	2,820,148	29,132,643
1999	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2000	1,278,056	70,943	0	3,223,279	21,220,235	95,788	136,498	2,837,730	28,862,529
2001	1,278,336	71,058	0	2,864,700	21,110,372	95,809	136,528	2,838,352	28,395,155
2002	1,393,975	72,121	0	3,272,056	21,060,431	97,237	138,564	2,711,156	28,745,540
2003	1,364,640	70,550	0	3,203,191	20,617,243	95,192	135,648	2,654,103	28,140,567
2004	1,494,892	77,810	0	3,508,929	22,585,122	104,277	148,595	2,897,005	30,816,630
2005	1,480,284	77,153	0	3,474,640	22,307,136	232,331	147,143	2,739,621	30,458,308
2006	1,541,884	80,380	0	3,619,232	23,235,418	242,000	153,266	2,587,428	31,459,608
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	1,747,923	90,846	0	4,102,863	26,340,321	283,634	173,747	2,923,885	35,663,219
2010	1,917,507	113,466	0	5,126,760	32,304,300	354,417	217,107	3,386,937	43,420,494
2011	2,110,714	123,965	0	5,643,329	35,559,263	390,128	238,982	3,728,203	47,794,584
2012	**2,210,723**	**129,767**	**0**	**5,910,718**	**37,244,109**	**408,612**	**250,305**	**3,904,850**	**50,059,084**
2013	2,210,723	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	50,059,084
2014	2,210,723	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	50,059,084
2015	2,078,983	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,927,344
2016	2,078,983	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,927,344
2017	2,078,983	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,927,344
2018	2,078,983	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,927,344
2019	2,078,983	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,927,344
2020	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2021	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2022	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2023	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2024	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2025	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2026	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2027	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2028	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2029	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2030	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2031	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2032	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2033	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2034	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
2035	1,903,330	129,767	0	5,910,718	37,244,109	408,612	250,305	3,904,850	49,751,691
TOTAL	86,961,688	5,471,595	0	232,301,439	1,543,416,419	13,766,595	10,206,581	170,632,643	2,062,756,960

TABLE B-21. Total Delta Water Charge for Each Contractor

(in dollars)

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	171,470	11,889	284,640	117,285	714,457	189,760
1980	857,818	376,845	134,920	35,949	210,736	14,256	337,177	138,590	811,952	215,694
1981	1,355,100	592,631	218,713	57,637	343,292	22,946	534,813	211,396	1,237,658	330,644
1982	1,551,434	664,082	254,298	66,408	400,739	26,335	313,057	235,100	1,341,923	364,482
1983	1,110,994	472,521	184,283	47,759	291,367	19,002	434,517	163,925	943,775	252,096
1984	450,405	509,602	202,914	52,247	321,718	20,719	472,282	174,500	1,003,760	266,383
1985	565,881	591,346	240,344	61,540	381,970	24,474	551,734	200,605	1,152,983	308,405
1986	635,066	659,259	275,347	70,160	438,498	27,822	625,994	223,785	1,285,253	350,799
1987	652,450	676,176	288,131	73,104	467,095	29,064	648,002	228,654	1,319,729	364,779
1988	711,641	742,582	319,496	80,756	525,996	32,024	711,641	248,146	1,438,752	402,232
1989	2,083,593	830,453	362,565	91,333	605,021	36,301	803,932	276,155	1,607,864	454,180
1990	2,207,667	869,029	386,049	96,930	636,731	38,438	848,974	289,119	1,696,277	481,308
1991	2,454,678	961,298	409,704	102,869	675,746	40,793	900,994	306,835	1,819,725	510,800
1992	2,804,695	1,098,371	468,125	117,538	772,102	46,610	1,029,469	350,587	2,079,203	583,636
1993	2,811,318	1,100,964	469,230	117,815	773,925	46,720	1,031,900	351,415	2,084,113	585,014
1994	2,694,116	1,055,065	449,668	112,905	741,661	44,772	988,880	336,766	1,997,227	560,625
1995	2,883,156	1,129,097	481,220	120,826	793,702	47,914	1,058,269	360,394	2,137,369	599,963
1996	2,834,460	1,110,027	473,093	118,785	780,296	47,104	1,040,394	354,307	2,101,269	589,830
1997	3,133,957	1,227,316	523,081	131,336	862,744	52,082	1,150,325	391,745	2,323,295	652,153
1998	3,155,093	1,235,593	526,609	132,222	868,562	52,433	1,728,006	394,387	2,338,963	656,551
1999	3,262,870	1,277,800	544,598	136,739	898,233	54,224	1,787,034	407,859	2,418,863	678,979
2000	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	510,073	2,456,972	689,676
2001	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2002	3,437,351	2,314,256	561,548	140,995	926,188	55,912	1,842,654	517,791	2,494,146	700,112
2003	3,365,016	2,265,555	549,731	138,028	906,698	54,735	1,803,877	506,894	2,441,659	685,379
2004	3,686,201	2,481,798	602,201	151,202	993,241	59,960	1,976,053	555,277	2,674,711	750,797
2005	3,650,179	2,457,547	596,316	149,725	983,535	59,374	1,956,744	549,850	2,648,574	743,459
2006	3,802,076	2,559,814	3,256,234	155,955	1,344,440	61,844	2,038,171	572,732	2,758,791	774,397
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	4,310,140	2,901,877	3,691,358	176,795	1,524,095	70,109	2,310,528	649,264	3,127,443	877,878
2010	5,385,764	3,626,059	5,269,593	220,916	2,123,453	87,605	3,153,757	811,293	3,907,916	1,096,959
2011	5,928,431	3,991,419	5,800,554	243,175	2,337,412	96,431	3,471,528	893,038	4,301,676	1,207,488
2012	**6,209,328**	**4,180,537**	**6,075,392**	**254,697**	**2,448,161**	**101,000**	**3,636,014**	**935,351**	**4,505,495**	**1,264,700**
2013	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,636,014	935,351	4,505,495	1,264,700
2014	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,636,014	935,351	4,505,495	1,264,700
2015	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,767,753	935,351	4,505,495	1,264,700
2016	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,767,753	935,351	4,505,495	1,264,700
2017	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,767,753	935,351	4,505,495	1,264,700
2018	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,767,753	935,351	4,505,495	1,264,700
2019	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,767,753	935,351	4,505,495	1,264,700
2020	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2021	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2022	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2023	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2024	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2025	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2026	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2027	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2028	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2029	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2030	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2031	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2032	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2033	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2034	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
2035	6,209,328	4,180,537	6,075,392	254,697	2,448,161	101,000	3,943,406	935,351	4,505,495	1,264,700
TOTAL	238,437,300	151,560,230	181,718,307	10,038,485	87,164,413	3,978,159	137,514,788	35,834,218	179,995,442	50,330,877

TABLE B-21. Total Delta Water Charge for Each Contractor

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA					
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Watershed Protection District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total	South Bay Area Future Contractor	GRAND 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	288,438	0	96,994,387
2000	71,841	48,169,576	478,942	61,445,844	229,892	69,207	35,708	334,807	0	98,699,723
2001	95,809	48,180,135	479,047	61,483,264	229,942	83,833	37,187	350,962	0	98,781,493
2002	97,237	48,898,394	486,188	62,472,772	233,371	85,083	39,185	357,639	0	100,275,854
2003	118,989	47,869,376	475,957	61,181,894	228,460	83,293	39,743	351,496	0	98,210,650
2004	156,416	52,438,419	521,386	67,047,662	250,266	92,048	0	342,314	0	107,579,616
2005	167,795	51,925,988	516,291	66,405,377	247,820	717,290	0	965,110	0	107,188,794
2006	188,222	51,397,939	537,776	69,448,391	258,133	32,606	8,699	299,438	0	110,967,023
2007	204,501	52,120,469	545,336	70,438,299	268,738	33,950	19,600	322,288	0	112,569,420
2008	482,528	53,315,217	557,836	72,326,282	274,736	794,785	56,138	1,125,659	0	116,229,450
2009	527,337	58,266,144	609,638	79,042,606	292,626	844,842	63,417	1,200,885	0	127,004,742
2010	658,937	72,806,845	761,778	99,910,875	365,653	1,054,033	81,825	1,501,511	0	158,911,895
2011	725,331	80,142,822	838,533	109,977,838	414,001	1,185,940	92,561	1,692,502	0	174,964,626
2012	**759,699**	**83,940,098**	**878,264**	**115,188,736**	**426,169**	**1,220,796**	**100,353**	**1,747,318**	**0**	**183,231,432**
2013	759,699	83,940,098	878,264	115,188,736	426,169	1,220,796	104,246	1,751,211	0	183,237,521
2014	759,699	83,940,098	878,264	115,188,736	426,169	1,220,796	108,139	1,755,104	0	183,243,610
2015	759,699	83,940,098	878,264	115,320,475	426,169	1,220,796	112,465	1,759,430	0	183,250,130
2016	759,699	83,940,098	878,264	115,320,475	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2017	759,699	83,940,098	878,264	115,320,475	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2018	759,699	83,940,098	878,264	115,320,475	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2019	759,699	83,940,098	878,264	115,320,475	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2020	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2021	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2022	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2023	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2024	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2025	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2026	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2027	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2028	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2029	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2030	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2031	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2032	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2033	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2034	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
2035	759,699	83,940,098	878,264	115,496,128	426,169	1,220,796	116,790	1,763,755	0	183,254,455
TOTAL	25,497,993	3,367,739,998	33,009,163	4,502,819,373	15,498,563	34,894,989	3,669,318	54,062,870	0	7,229,829,222

TABLE B-22. Water System Revenue Bond Surcharge for Each Contractor

(in dollars)

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	177,891	270,066	447,957	441,730	197,505	550,975	1,190,210	152,478	975,872	1,128,350
2008	254,590	386,862	641,452	773,686	288,283	803,089	1,865,058	223,659	1,369,892	1,593,551
2009	285,324	434,158	719,482	687,665	320,178	893,215	1,901,058	245,418	1,533,052	1,778,470
2010	273,015	415,428	688,443	657,998	306,365	854,681	1,819,044	234,831	1,466,914	1,701,745
2011	504,606	767,825	1,272,431	1,216,162	566,246	1,579,684	3,362,092	434,031	2,711,258	3,145,289
2012	**650,644**	**774,442**	**1,425,086**	**1,279,346**	**561,077**	**1,584,692**	**3,425,115**	**389,462**	**2,472,960**	**2,862,422**
2013	681,265	810,889	1,492,154	1,339,555	587,483	1,659,272	3,586,310	407,791	2,589,344	2,997,135
2014	704,922	839,048	1,543,970	1,386,072	607,884	1,716,891	3,710,847	421,951	2,679,260	3,101,211
2015	736,387	876,499	1,612,886	1,447,940	635,017	1,793,525	3,876,482	440,785	2,798,850	3,239,635
2016	742,856	884,199	1,627,055	1,460,661	640,596	1,809,282	3,910,539	444,658	2,823,440	3,268,098
2017	732,856	872,296	1,605,152	1,440,997	631,972	1,784,924	3,857,893	438,672	2,785,429	3,224,101
2018	656,056	780,884	1,436,940	1,289,988	565,744	1,597,874	3,453,606	392,701	2,493,531	2,886,232
2019	700,469	833,747	1,534,216	1,377,316	604,043	1,706,045	3,687,404	419,286	2,662,335	3,081,621
2020	649,247	772,779	1,422,026	1,276,599	559,872	1,581,289	3,417,760	388,625	2,467,650	2,856,275
2021	653,975	778,406	1,432,381	1,285,895	563,949	1,592,804	3,442,648	391,455	2,485,619	2,877,074
2022	634,434	755,147	1,389,581	1,247,472	547,098	1,545,211	3,339,781	379,758	2,411,349	2,791,107
2023	629,637	749,437	1,379,074	1,238,040	542,962	1,533,527	3,314,529	376,887	2,393,116	2,770,003
2024	607,588	723,194	1,330,782	1,194,686	523,948	1,479,826	3,198,460	363,689	2,309,314	2,673,003
2025	554,727	660,274	1,215,001	1,090,746	478,364	1,351,078	2,920,188	332,047	2,108,398	2,440,445
2026	506,759	603,179	1,109,938	996,427	436,999	1,234,248	2,667,674	303,335	1,926,082	2,229,417
2027	556,113	661,924	1,218,037	1,093,471	479,559	1,354,454	2,927,484	332,877	2,113,666	2,446,543
2028	430,289	512,160	942,449	846,068	371,056	1,048,002	2,265,126	257,562	1,635,439	1,893,001
2029	465,577	554,163	1,019,740	915,454	401,487	1,133,948	2,450,889	278,685	1,769,561	2,048,246
2030	18,404	21,906	40,310	36,187	15,871	44,824	96,882	11,016	69,950	80,966
2031	18,466	21,979	40,445	36,309	15,924	44,975	97,208	11,053	70,185	81,238
2032	18,441	21,949	40,390	36,259	15,902	44,914	97,075	11,038	70,089	81,127
2033	18,438	21,946	40,384	36,254	15,900	44,907	97,061	11,036	70,078	81,114
2034	18,484	22,001	40,485	36,346	15,940	45,020	97,306	11,064	70,256	81,320
2035	18,425	21,930	40,355	36,228	15,888	44,874	96,990	11,029	70,028	81,057
TOTAL	15,832,728	20,447,271	36,279,999	31,484,553	15,088,471	42,491,579	89,064,603	10,851,403	65,410,175	76,261,578

TABLE B-22. Water System Revenue Bond Surcharge for Each Contractor

(in dollars)

Calendar Year	SAN JOAQUIN VALLEY AREA								
				Kern County Water Agency					
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Municipal and Industrial	Agri-cultural	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District	Total
	[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	187,144	8,113	0	383,463	2,314,841	34,088	15,230	285,915	3,228,794
2008	271,383	11,832	0	563,171	3,478,837	41,080	22,094	445,805	4,834,202
2009	303,076	13,189	0	626,357	3,864,004	46,037	24,715	497,108	5,374,486
2010	257,209	12,620	0	599,335	3,631,924	44,051	23,648	440,950	5,009,737
2011	475,392	23,325	0	1,107,736	6,712,791	81,419	43,709	814,997	9,259,369
2012	**460,593**	**21,585**	**0**	**1,131,967**	**9,257,111**	**68,149**	**40,700**	**867,581**	**11,847,686**
2013	482,270	22,601	0	1,185,240	9,692,776	71,357	42,616	908,411	12,405,271
2014	499,017	23,386	0	1,226,398	10,029,361	73,834	44,095	939,956	12,836,047
2015	521,291	24,429	0	1,281,139	10,477,026	77,130	46,064	981,912	13,408,991
2016	525,871	24,644	0	1,292,394	10,569,072	77,808	46,468	990,538	13,526,795
2017	518,791	24,312	0	1,274,995	10,426,786	76,760	45,843	977,203	13,344,690
2018	464,424	21,764	0	1,141,383	9,334,114	68,716	41,039	874,797	11,946,237
2019	495,865	23,238	0	1,218,651	9,966,004	73,368	43,817	934,018	12,754,961
2020	459,604	21,539	0	1,129,536	9,237,232	68,003	40,613	865,718	11,822,245
2021	462,951	21,695	0	1,137,761	9,304,498	68,498	40,909	872,022	11,908,334
2022	449,118	21,047	0	1,103,765	9,026,480	66,451	39,686	845,966	11,552,513
2023	445,722	20,888	0	1,095,419	8,958,226	65,949	39,386	839,569	11,465,159
2024	430,114	20,157	0	1,057,060	8,644,530	63,640	38,007	810,169	11,063,677
2025	392,693	18,403	0	965,093	7,892,434	58,103	34,700	739,683	10,101,109
2026	358,736	16,812	0	881,640	7,209,964	53,079	31,700	675,721	9,227,652
2027	393,674	18,449	0	967,505	7,912,155	58,248	34,787	741,531	10,126,349
2028	304,603	14,275	0	748,602	6,121,991	45,069	26,916	573,756	7,835,212
2029	329,584	15,445	0	809,994	6,624,054	48,765	29,124	620,809	8,477,775
2030	13,028	611	0	32,019	261,846	1,928	1,151	24,540	335,123
2031	13,072	613	0	32,126	262,724	1,934	1,155	24,623	336,247
2032	13,054	612	0	32,082	262,366	1,931	1,154	24,589	335,788
2033	13,052	612	0	32,077	262,326	1,931	1,153	24,585	335,736
2034	13,085	613	0	32,159	262,990	1,936	1,156	24,648	336,587
2035	13,043	611	0	32,054	262,138	1,930	1,153	24,568	335,497
TOTAL	12,901,175	598,423	0	30,805,962	233,121,697	1,698,274	1,121,775	24,388,654	304,635,960

TABLE B-22. Water System Revenue Bond Surcharge for Each Contractor

(in dollars)

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	1,213,645	65,040	501,286	17,809	795,182	148,089	1,287,074	342,266
2007	666,215	820,799	1,036,396	41,723	354,543	11,413	520,847	95,550	825,932	219,727
2008	999,433	1,167,531	1,157,440	61,924	478,719	17,175	757,686	144,009	1,367,672	325,069
2009	1,080,062	1,293,596	1,262,793	67,674	521,586	18,529	827,383	154,087	1,339,196	356,126
2010	1,033,467	1,237,788	1,283,384	64,754	524,108	17,731	824,481	147,438	1,281,421	340,762
2011	1,910,130	2,287,771	2,372,046	119,684	968,694	32,770	1,523,867	272,507	2,368,417	629,822
2012	**1,852,845**	**1,555,482**	**1,822,656**	**114,240**	**889,871**	**31,340**	**1,242,300**	**262,799**	**2,248,384**	**597,709**
2013	1,940,045	1,628,687	1,908,435	119,617	931,751	32,815	1,300,766	275,167	2,354,199	625,838
2014	2,007,414	1,685,244	1,974,707	123,771	964,106	33,955	1,345,935	284,723	2,435,950	647,571
2015	2,097,015	1,760,466	2,062,848	129,295	1,007,140	35,470	1,406,012	297,431	2,544,679	676,475
2016	2,115,439	1,775,932	2,080,972	130,431	1,015,988	35,782	1,418,364	300,044	2,567,036	682,419
2017	2,086,960	1,752,024	2,052,956	128,675	1,002,310	35,300	1,399,270	296,005	2,532,477	673,232
2018	1,868,257	1,568,421	1,837,818	115,191	897,273	31,601	1,252,633	264,985	2,267,087	602,680
2019	1,994,733	1,674,598	1,962,232	122,989	958,016	33,740	1,337,433	282,924	2,420,561	643,480
2020	1,848,866	1,552,142	1,818,742	113,995	887,960	31,273	1,239,632	262,235	2,243,556	596,425
2021	1,862,330	1,563,445	1,831,986	114,825	894,426	31,501	1,248,659	264,144	2,259,894	600,768
2022	1,806,683	1,516,729	1,777,247	111,394	867,701	30,560	1,211,349	256,252	2,192,368	582,817
2023	1,793,022	1,505,260	1,763,808	110,552	861,140	30,328	1,202,190	254,314	2,175,790	578,410
2024	1,730,234	1,452,549	1,702,044	106,681	830,985	29,266	1,160,092	245,409	2,099,599	558,156
2025	1,579,700	1,326,174	1,553,962	97,399	758,687	26,720	1,059,161	224,058	1,916,929	509,595
2026	1,443,101	1,211,498	1,419,588	88,977	693,082	24,410	967,574	204,683	1,751,169	465,529
2027	1,583,647	1,329,488	1,557,845	97,643	760,583	26,787	1,061,807	224,617	1,921,719	510,868
2028	1,225,339	1,028,685	1,205,374	75,550	588,497	20,726	821,568	173,797	1,486,920	395,282
2029	1,325,829	1,113,047	1,304,227	81,746	636,760	22,426	888,945	188,050	1,608,862	427,699
2030	52,409	43,998	51,555	3,231	25,171	886	35,140	7,434	63,598	16,907
2031	52,585	44,146	51,728	3,242	25,255	889	35,257	7,458	63,811	16,963
2032	52,514	44,086	51,658	3,238	25,221	888	35,209	7,448	63,724	16,940
2033	52,506	44,079	51,650	3,237	25,217	888	35,204	7,447	63,714	16,938
2034	52,638	44,190	51,781	3,246	25,281	890	35,293	7,466	63,875	16,981
2035	52,468	44,047	51,613	3,235	25,199	887	35,179	7,442	63,669	16,926
TOTAL	50,198,349	45,295,875	42,724,781	3,122,294	22,988,379	857,358	34,183,097	7,070,960	61,711,933	16,352,215

TABLE B-22. Water System Revenue Bond Surcharge for Each Contractor

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA					
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Watershed Protection District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total	South Bay Area Future Contractor	GRAND 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	45,192	12,752,863	116,415	17,507,615	22,362	7,007	5,579	34,948	0	23,537,874
2008	250,631	19,303,204	173,561	26,204,054	32,180	9,751	7,973	49,904	0	35,188,221
2009	78,805	21,153,536	189,110	28,342,483	36,270	11,008	8,988	56,266	0	38,172,245
2010	75,405	20,240,944	180,952	27,252,635	34,705	10,532	8,600	53,837	0	36,525,441
2011	139,370	37,410,810	334,448	50,370,336	64,144	19,467	15,895	99,506	0	67,509,023
2012	**365,251**	**38,530,015**	**324,481**	**49,837,373**	**59,975**	**171,804**	**20,966**	**252,745**	**0**	**69,650,427**
2013	382,441	40,343,341	339,752	52,182,854	62,798	179,889	21,952	264,639	0	72,928,363
2014	395,721	41,744,280	351,551	53,994,928	64,978	186,136	22,715	273,829	0	75,460,832
2015	413,384	43,607,555	367,242	56,405,012	67,879	194,444	23,728	286,051	0	78,829,057
2016	417,016	43,990,667	370,469	56,900,559	68,475	196,152	23,937	288,564	0	79,521,610
2017	411,402	43,398,442	365,481	56,134,534	67,553	193,512	23,615	284,680	0	78,451,050
2018	368,289	38,850,516	327,181	50,251,932	60,474	173,233	21,140	254,847	0	70,229,794
2019	393,221	41,480,576	349,330	53,653,833	64,568	184,960	22,571	272,099	0	74,984,134
2020	364,467	38,447,272	323,785	49,730,350	59,846	171,435	20,920	252,201	0	69,500,857
2021	367,121	38,727,248	326,142	50,092,489	60,282	172,683	21,073	254,038	0	70,006,964
2022	356,151	37,570,078	316,397	48,595,726	58,481	167,523	20,443	246,447	0	67,915,155
2023	353,458	37,285,994	314,005	48,228,271	58,039	166,257	20,289	244,585	0	67,401,621
2024	341,081	35,980,324	303,009	46,539,429	56,006	160,435	19,578	236,019	0	65,041,370
2025	311,406	32,849,947	276,647	42,490,385	51,134	146,476	17,875	215,485	0	59,382,613
2026	284,478	30,009,366	252,725	38,816,180	46,712	133,810	16,329	196,851	0	54,247,712
2027	312,184	32,932,031	277,338	42,596,557	51,261	146,842	17,919	216,022	0	59,530,992
2028	241,551	25,480,994	214,589	32,958,872	39,663	113,619	13,865	167,147	0	46,061,807
2029	261,361	27,570,686	232,187	35,661,825	42,916	122,936	15,002	180,854	0	49,839,329
2030	10,331	1,089,856	9,178	1,409,694	1,696	4,860	593	7,149	0	1,970,124
2031	10,366	1,093,513	9,209	1,414,422	1,702	4,876	595	7,173	0	1,976,733
2032	10,352	1,092,022	9,196	1,412,496	1,700	4,869	594	7,163	0	1,974,039
2033	10,350	1,091,856	9,195	1,412,281	1,700	4,869	594	7,163	0	1,973,739
2034	10,377	1,094,618	9,218	1,415,854	1,704	4,881	596	7,181	0	1,978,733
2035	10,343	1,091,073	9,189	1,411,270	1,698	4,865	594	7,157	0	1,972,326
TOTAL	8,243,928	1,037,974,048	8,831,108	1,339,554,325	1,637,337	3,161,892	511,184	5,310,413	0	1,851,106,878

TABLE B-23. Total Transportation and Delta Water Charge for Each Contractor

(in dollars)

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	199,726	190,272	447,723	837,721	0	0	0
1964	0	0	0	263,282	277,455	621,356	1,162,093	6,696	21,667	28,363
1965	0	0	0	373,816	404,324	1,158,090	1,936,231	13,756	36,029	49,785
1966	18,064	0	18,064	419,467	421,722	1,412,954	2,254,143	26,524	61,349	87,873
1967	41,574	0	41,574	553,116	548,491	1,863,198	2,964,805	56,469	118,263	174,732
1968	128,628	0	128,628	682,950	633,184	2,178,465	3,494,598	115,960	229,807	345,767
1969	254,715	0	254,715	817,606	583,436	2,298,736	3,699,778	185,156	358,861	544,017
1970	277,547	0	277,547	903,940	640,297	2,787,966	4,332,204	200,150	387,675	587,826
1971	227,474	0	227,474	845,426	675,193	2,807,017	4,327,636	202,413	392,912	595,325
1972	224,978	0	224,978	929,460	822,397	3,027,749	4,779,605	209,057	406,589	615,646
1973	221,091	31,366	252,457	915,916	716,492	3,120,786	4,753,194	206,557	402,723	609,280
1974	240,498	32,938	273,437	956,520	746,933	3,325,022	5,028,474	208,545	407,090	615,636
1975	237,459	36,291	273,750	1,014,929	793,055	3,214,046	5,022,029	225,895	439,873	665,768
1976	271,292	40,836	312,127	1,127,996	943,464	3,362,542	5,434,001	228,976	447,299	676,276
1977	293,627	45,096	338,723	1,096,631	922,203	3,303,461	5,322,295	238,699	468,721	707,420
1978	273,870	49,178	323,048	1,185,441	935,819	3,712,581	5,833,841	245,331	484,259	729,590
1979	289,479	53,340	342,819	1,282,029	1,009,566	3,819,533	6,111,129	243,110	483,437	726,547
1980	310,846	86,073	396,919	1,435,017	1,173,798	4,119,071	6,727,885	282,254	540,553	822,807
1981	347,781	112,848	460,629	1,543,563	1,349,125	4,507,566	7,400,254	307,065	596,670	903,736
1982	438,335	141,835	580,171	1,623,903	1,369,536	4,941,393	7,934,832	328,215	682,546	1,010,761
1983	354,787	163,294	518,081	1,494,205	1,260,138	4,910,241	7,664,584	357,218	702,083	1,059,301
1984	467,336	246,698	714,034	1,804,250	1,478,394	6,870,249	10,152,894	409,530	801,057	1,210,586
1985	736,074	386,306	1,122,380	2,302,104	2,225,097	7,796,485	12,323,685	500,696	969,931	1,470,627
1986	1,120,086	714,246	1,834,332	2,170,743	2,014,104	8,193,844	12,378,691	536,751	1,038,030	1,574,782
1987	1,773,801	1,582,227	3,356,028	2,667,277	2,505,662	7,980,255	13,153,194	570,645	1,148,974	1,719,618
1988	2,349,572	2,524,763	4,874,336	2,728,462	2,774,430	7,830,284	13,333,176	673,071	1,439,620	2,112,691
1989	2,548,764	3,701,384	6,250,149	2,712,436	2,515,471	7,578,849	12,806,756	772,571	1,814,759	2,587,330
1990	2,900,023	3,848,935	6,748,958	3,147,753	2,929,775	8,355,392	14,432,919	933,367	2,046,370	2,979,737
1991	2,941,321	4,170,227	7,111,548	2,419,685	2,384,246	6,430,834	11,234,765	979,709	2,366,841	3,346,550
1992	2,797,727	4,144,993	6,942,720	2,894,160	2,927,114	7,656,940	13,478,214	1,118,807	2,526,860	3,645,667
1993	2,855,497	4,172,491	7,027,989	3,750,936	2,977,354	8,849,995	15,578,285	1,185,666	2,726,057	3,911,723
1994	2,987,938	4,225,291	7,213,229	3,788,029	3,586,255	9,613,545	16,987,829	1,335,974	3,518,042	4,854,016
1995	2,961,322	4,405,219	7,366,541	4,036,667	3,313,352	8,393,827	15,743,846	1,647,816	6,195,416	7,843,232
1996	3,045,020	4,898,210	7,943,230	3,644,507	3,178,398	9,228,554	16,051,459	2,592,043	15,232,541	17,824,584
1997	3,028,005	4,734,808	7,762,812	3,871,016	3,145,550	9,338,015	16,354,581	3,002,833	23,737,163	26,739,996
1998	2,936,062	4,588,898	7,524,960	3,477,857	3,201,607	9,077,805	15,757,269	3,254,941	28,393,640	31,648,581
1999	3,164,190	5,083,795	8,247,984	4,201,878	3,692,801	11,435,485	19,330,163	3,811,208	29,671,335	33,482,543
2000	3,466,979	5,639,034	9,106,013	5,811,686	3,597,629	10,226,034	19,635,349	3,780,581	30,358,798	34,139,379
2001	4,099,169	6,438,127	10,537,296	9,837,639	4,092,623	11,655,277	25,585,539	4,331,215	32,498,977	36,830,193
2002	4,331,439	6,602,870	10,934,309	13,353,238	4,088,156	13,159,108	30,600,502	4,057,291	32,169,231	36,226,522
2003	4,458,938	6,954,034	11,412,972	10,025,753	3,822,589	11,989,355	25,837,698	4,144,656	32,484,434	36,629,090
2004	4,999,850	7,327,355	12,327,205	8,409,166	4,225,100	11,693,625	24,327,891	4,218,973	33,031,065	37,250,038
2005	4,330,945	6,737,407	11,068,352	8,422,322	4,338,844	12,361,737	25,122,903	4,340,077	33,164,235	37,504,311
2006	4,323,183	6,385,820	10,709,003	8,503,999	4,388,481	12,632,504	25,524,983	4,207,234	32,710,684	36,917,917
2007	4,747,861	7,523,378	12,271,239	9,516,539	4,890,945	13,817,764	28,225,248	4,363,341	33,844,946	38,208,287
2008	5,302,709	6,903,532	12,206,242	10,585,823	5,198,145	14,016,791	29,800,759	4,883,854	34,956,666	39,840,520
2009	5,975,544	6,873,486	12,849,031	9,774,371	5,014,174	14,427,886	29,216,431	4,851,064	33,988,168	38,839,233
2010	6,619,690	7,773,641	14,393,331	11,525,545	5,726,459	16,332,383	33,584,387	5,308,033	36,111,468	41,419,500
2011	7,558,468	9,047,005	16,605,473	15,227,666	7,124,342	20,070,708	42,422,716	6,672,281	41,375,824	48,048,105
2012	**8,245,997**	**9,413,983**	**17,659,980**	**15,045,807**	**7,744,393**	**20,527,338**	**43,317,538**	**7,148,236**	**40,783,525**	**47,931,761**
2013	8,120,826	9,308,552	17,429,377	14,874,669	7,140,943	19,268,812	41,284,424	7,671,235	40,407,778	48,079,013
2014	7,428,197	8,621,576	16,049,774	13,439,278	6,464,293	17,433,993	37,337,564	6,856,842	39,211,396	46,068,238
2015	7,478,315	8,684,684	16,163,000	13,410,174	6,397,490	17,124,723	36,932,388	6,826,326	39,365,043	46,191,369
2016	7,477,003	8,713,017	16,190,020	13,425,677	6,394,177	17,020,266	36,840,121	6,827,097	39,503,099	46,330,196
2017	7,456,383	8,725,113	16,181,497	13,330,355	6,353,333	16,881,930	36,565,617	6,791,711	39,533,357	46,325,068
2018	7,292,206	8,645,208	15,937,414	13,096,267	6,269,195	16,620,062	35,985,524	6,689,860	39,264,281	45,954,141
2019	7,304,217	8,723,473	16,027,689	13,078,834	6,269,862	16,629,068	35,977,764	6,699,337	39,531,267	46,230,604
2020	7,267,030	8,688,990	15,956,020	13,015,040	6,247,430	16,557,134	35,819,604	6,693,463	39,515,689	46,209,152
2021	7,292,950	8,726,515	16,019,465	13,057,622	6,266,010	16,613,478	35,937,110	6,720,522	39,716,483	46,437,005
2022	7,287,267	8,726,920	16,014,187	13,069,204	6,274,006	16,625,921	35,969,130	6,726,319	39,717,246	46,443,565
2023	7,293,330	8,708,033	16,001,364	13,077,444	6,279,554	16,635,521	35,992,519	6,725,340	39,746,790	46,472,130
2024	7,281,633	8,702,214	15,983,848	13,065,402	6,275,212	16,620,592	35,961,206	6,717,169	39,716,962	46,434,131
2025	7,229,055	8,654,156	15,883,211	12,970,783	6,235,336	16,503,526	35,709,646	6,679,746	39,550,734	46,230,480
2026	7,192,979	8,618,115	15,811,094	12,920,572	6,214,764	16,441,660	35,576,996	6,667,965	39,443,933	46,111,898
2027	7,256,844	8,698,958	15,955,801	13,057,803	6,276,467	16,610,440	35,944,709	6,715,412	39,707,504	46,422,916
2028	7,143,766	8,570,176	15,713,941	12,850,161	6,187,230	16,352,135	35,389,527	6,651,191	39,293,425	45,944,616
2029	7,192,432	8,634,058	15,826,490	12,945,507	6,228,695	16,469,414	35,643,616	6,683,750	39,492,931	46,176,681
2030	6,750,524	8,111,691	14,862,215	12,107,051	5,863,301	15,431,163	33,401,515	6,431,470	37,865,404	44,296,873
2031	6,752,942	8,117,480	14,870,423	12,149,633	5,884,073	15,483,364	33,517,070	6,448,739	37,931,828	44,380,567
2032	6,757,587	8,123,572	14,881,158	12,175,147	5,894,920	15,515,858	33,585,925	6,458,567	38,004,429	44,462,996
2033	6,743,652	8,103,437	14,847,089	12,249,195	5,933,102	15,608,502	33,790,799	6,488,734	38,112,513	44,601,247
2034	6,688,910	8,054,467	14,743,378	12,242,862	5,926,379	15,599,435	33,768,675	6,489,676	38,162,046	44,651,722
2035	6,559,213	7,935,977	14,495,190	12,314,441	5,964,143	15,688,191	33,966,775	6,524,156	38,273,239	44,797,395
TOTAL	276,772,817	344,437,640	621,210,457	503,257,120	268,802,092	758,236,685	1,530,295,898	243,705,140	1,479,840,438	1,723,545,578

TABLE B-23. Total Transportation and Delta Water Charge for Each Contractor

(in dollars)

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	2,725	0	0	0	0	0	2,725
1965	0	0	6,029	73,569	0	0	0	0	79,598
1966	0	0	12,039	137,330	0	0	0	0	149,368
1967	0	0	26,257	267,612	0	0	0	0	293,869
1968	225,742	19,396	54,589	445,438	1,712,189	16,947	19,684	307,994	2,801,979
1969	241,921	10,980	87,576	525,094	2,734,458	16,825	19,422	461,381	4,097,657
1970	307,118	34,416	94,674	573,999	3,885,502	21,435	30,444	523,188	5,470,776
1971	328,657	37,144	95,695	605,889	5,171,483	27,175	34,730	714,560	7,015,332
1972	382,447	40,405	98,789	631,615	7,146,760	26,473	63,908	1,991,274	10,381,670
1973	399,884	39,027	97,550	1,025,888	7,294,725	28,816	39,320	784,338	9,709,548
1974	508,879	40,241	98,460	1,143,571	8,015,614	29,544	42,624	1,046,255	10,925,188
1975	681,750	40,690	106,703	1,196,448	9,400,960	31,240	48,242	1,560,124	13,066,157
1976	720,831	43,211	108,083	1,323,177	10,648,406	32,667	52,186	1,444,749	14,373,310
1977	581,072	39,128	112,554	1,365,869	10,969,310	34,433	54,286	1,140,563	14,297,215
1978	699,713	36,029	115,521	1,564,175	13,298,667	38,928	59,105	1,174,748	16,986,885
1979	783,310	47,964	114,253	1,668,163	15,375,027	43,065	70,699	1,729,101	19,831,582
1980	964,378	49,699	125,950	1,770,264	17,032,612	48,021	95,042	1,675,364	21,761,330
1981	1,213,317	84,065	134,169	2,427,527	22,641,557	66,495	100,716	2,286,618	28,954,464
1982	1,249,433	70,259	135,057	2,516,846	25,043,831	70,662	108,366	2,281,521	31,475,976
1983	1,183,791	52,609	149,201	2,085,047	24,686,976	75,442	87,504	507,172	28,827,743
1984	1,493,381	28,591	164,505	3,352,673	33,460,366	94,321	121,512	1,544,063	40,259,411
1985	1,769,284	130,021	184,905	3,876,680	39,404,001	117,583	139,593	2,817,916	48,439,984
1986	2,011,222	79,398	180,445	4,079,838	43,491,081	136,715	153,253	3,658,233	53,790,185
1987	1,886,527	95,316	179,872	4,557,695	42,781,264	137,332	151,495	3,751,334	53,540,836
1988	1,971,604	109,694	193,735	4,704,495	44,737,768	138,278	146,657	3,906,019	55,908,249
1989	2,126,355	101,821	187,914	4,652,236	46,926,885	137,086	166,487	4,387,626	58,686,410
1990	1,884,751	87,025	221,391	4,799,306	45,708,982	121,153	148,791	3,966,028	56,937,427
1991	1,691,134	80,314	220,282	4,535,869	37,556,050	103,909	134,801	3,507,038	47,829,397
1992	2,237,017	105,133	241,456	5,540,058	48,763,255	143,784	175,784	4,545,868	61,752,354
1993	2,459,172	120,136	264,959	5,775,636	54,684,737	161,523	195,349	5,299,722	68,961,233
1994	2,263,995	107,641	306,359	5,200,566	52,134,595	145,626	178,161	4,672,422	65,009,365
1995	2,860,456	115,558	304,297	6,613,715	60,592,785	180,801	210,494	5,531,256	76,409,362
1996	2,052,871	125,248	389,202	6,666,563	58,669,786	178,474	190,106	7,097,021	75,369,271
1997	2,764,134	100,653	276,681	6,429,190	57,536,488	138,117	212,306	4,719,152	72,176,721
1998	2,609,814	119,945	381,846	5,733,156	54,007,953	143,434	203,915	4,972,452	68,172,515
1999	2,707,266	136,353	370,780	6,372,381	57,725,822	184,253	218,984	7,444,604	75,160,443
2000	2,593,007	120,754	304,497	6,102,096	51,291,043	174,012	213,156	6,164,572	66,963,137
2001	3,277,102	145,843	328,197	5,651,549	58,676,488	192,435	259,791	6,451,432	74,982,837
2002	2,986,775	127,714	320,888	6,167,757	53,518,494	187,322	238,749	5,786,540	69,334,239
2003	3,043,253	131,848	342,639	6,544,842	56,182,913	202,554	238,281	6,081,149	72,767,478
2004	3,230,413	168,435	345,115	7,859,959	56,776,524	356,085	253,820	5,836,037	74,826,388
2005	3,780,008	176,589	356,507	7,261,268	66,915,604	688,686	250,260	6,665,667	86,094,589
2006	3,604,811	167,394	295,980	7,479,330	64,243,866	534,586	255,457	5,885,418	82,466,842
2007	3,381,087	157,859	343,906	7,085,173	61,081,642	518,170	183,904	5,800,610	78,552,351
2008	3,392,175	157,750	474,361	7,788,110	62,616,543	548,547	261,798	5,563,611	80,802,895
2009	3,305,715	155,066	444,604	6,931,018	61,083,465	524,018	262,372	5,469,163	78,175,421
2010	3,675,819	239,251	515,788	8,233,779	73,068,222	658,158	331,774	6,578,671	93,301,461
2011	4,859,844	247,975	541,808	12,243,821	99,158,832	870,085	403,219	8,325,063	126,650,646
2012	**4,452,203**	**244,247**	**545,878**	**11,882,667**	**91,457,761**	**800,938**	**400,622**	**7,850,597**	**117,634,914**
2013	4,417,255	239,006	538,227	11,666,032	88,690,310	785,660	400,447	7,701,872	114,438,809
2014	4,149,041	222,677	552,232	10,818,186	82,905,452	734,420	373,643	7,226,326	106,981,976
2015	3,976,051	223,054	554,714	10,777,537	83,124,034	735,900	374,684	7,248,550	107,014,524
2016	3,996,389	224,191	553,199	10,766,604	83,567,028	739,461	376,357	7,284,588	107,507,817
2017	3,970,023	222,693	543,524	10,567,522	83,110,454	734,831	373,471	7,236,760	106,759,278
2018	3,946,494	221,967	525,420	10,402,451	82,705,419	723,017	371,154	7,188,394	106,084,316
2019	3,954,244	222,012	521,588	10,351,842	82,864,761	722,523	371,698	7,205,333	106,214,001
2020	3,697,378	221,971	524,465	10,303,676	82,724,336	722,062	370,954	7,186,295	105,751,137
2021	3,696,904	221,914	528,094	10,280,232	82,781,839	721,789	370,576	7,186,310	105,787,658
2022	3,699,311	222,247	532,191	10,279,732	82,886,122	722,720	370,632	7,189,405	105,902,360
2023	3,698,407	222,251	536,526	10,277,685	82,987,745	722,683	369,922	7,187,880	106,003,099
2024	3,683,992	221,604	540,814	10,234,556	82,671,624	720,613	368,964	7,161,060	105,603,227
2025	3,646,512	219,861	545,107	10,142,756	82,018,689	715,062	365,142	7,090,949	104,744,077
2026	3,619,062	218,671	549,744	10,071,316	81,480,830	711,266	362,796	7,038,964	104,052,648
2027	3,661,612	220,777	554,055	10,175,893	82,421,862	717,848	366,168	7,118,710	105,236,925
2028	3,582,085	217,185	556,623	9,980,659	80,888,931	706,391	358,894	6,968,286	103,259,054
2029	3,604,117	218,195	561,362	10,027,993	81,357,642	709,542	360,801	7,010,628	103,850,280
2030	3,298,620	204,034	566,177	9,277,254	75,291,209	664,740	333,522	6,434,396	96,069,953
2031	3,315,173	205,034	569,744	9,305,827	75,725,321	667,458	334,565	6,464,148	96,587,270
2032	3,304,250	204,398	574,940	9,274,548	75,518,561	665,520	333,595	6,445,367	96,321,179
2033	3,336,075	206,311	579,862	9,358,249	76,263,887	671,339	336,023	6,502,098	97,253,844
2034	3,311,617	204,868	584,554	9,280,697	75,774,486	666,738	333,871	6,459,426	96,616,257
2035	3,354,705	207,451	589,190	9,396,780	76,836,840	674,540	336,827	6,536,056	97,932,389
TOTAL	175,762,754	9,581,207	23,687,021	438,486,969	3,683,908,673	25,482,275	15,541,874	334,980,035	4,707,430,809

TABLE B-23. Total Transportation and Delta Water Charge for Each Contractor

(in dollars)

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	33,853	0	0	0	726	0	0	0	51,729	0
1964	63,658	27,447	19,542	4,370	38,211	1,143	29,757	8,205	82,811	34,987
1965	119,982	53,007	34,348	7,194	42,701	2,082	52,705	15,222	135,068	35,344
1966	218,279	101,265	62,476	12,478	76,887	3,753	94,978	27,679	232,502	61,465
1967	422,318	210,814	121,269	23,472	148,839	7,284	184,247	54,023	433,350	115,574
1968	744,780	491,222	218,649	41,509	265,168	12,870	328,388	95,466	782,164	208,926
1969	1,073,827	742,138	334,105	61,226	394,024	18,694	487,548	138,064	1,205,834	321,755
1970	1,397,955	942,122	470,423	89,700	552,224	25,231	673,706	184,837	1,778,188	467,573
1971	1,732,348	1,136,523	627,330	128,360	754,065	31,837	908,310	231,280	2,538,219	659,415
1972	2,214,025	1,381,493	819,636	179,685	1,035,805	43,430	1,235,569	287,620	3,741,483	950,298
1973	2,367,034	1,429,884	965,167	190,549	1,254,443	45,891	1,329,295	313,446	3,974,200	961,024
1974	2,487,454	1,525,345	993,984	203,642	1,298,337	48,770	1,389,073	331,702	4,448,225	1,104,491
1975	2,704,442	1,616,277	1,044,902	218,978	1,377,169	53,125	1,476,322	355,269	4,631,803	1,208,047
1976	3,165,926	1,652,925	1,103,708	231,759	1,469,992	57,620	1,553,237	381,276	4,831,375	1,278,740
1977	3,148,239	1,740,741	1,008,676	244,149	1,317,096	54,160	1,641,102	406,620	5,061,166	1,336,313
1978	3,591,988	1,873,739	1,205,609	255,071	1,613,049	56,760	1,688,864	420,026	5,090,095	1,374,032
1979	4,261,888	1,953,477	1,292,485	267,367	1,735,593	60,255	1,863,447	449,757	5,136,830	1,342,135
1980	4,959,457	2,091,795	1,406,781	295,350	1,941,392	67,605	2,037,413	499,051	5,647,604	1,485,141
1981	5,787,459	2,561,080	1,574,217	328,817	2,194,095	100,752	2,358,995	603,265	6,461,840	1,688,324
1982	5,546,215	2,724,060	1,657,630	346,721	2,336,914	82,296	2,332,800	641,991	6,752,799	1,929,664
1983	6,296,675	2,794,576	2,181,786	380,839	3,172,326	88,384	2,529,697	658,614	6,964,704	1,808,748
1984	7,672,136	3,873,258	3,287,287	497,585	4,929,764	96,492	2,796,537	727,821	8,053,210	2,598,233
1985	9,503,142	4,339,261	4,122,839	601,928	6,265,166	103,706	2,987,189	959,658	8,893,341	2,686,799
1986	9,471,399	4,974,624	4,584,188	647,634	7,009,695	130,221	3,171,174	1,223,847	9,142,822	3,398,539
1987	9,505,642	4,832,040	4,452,839	678,085	6,885,936	240,872	3,226,065	1,255,052	10,544,337	3,398,921
1988	9,104,353	5,018,725	4,510,361	704,411	7,052,631	158,845	3,400,562	1,044,206	11,095,193	3,271,137
1989	10,994,817	5,028,006	4,218,204	691,191	6,635,388	210,634	3,481,653	1,746,763	10,811,989	3,453,680
1990	12,386,724	5,495,987	4,916,384	729,229	7,720,886	331,172	3,714,320	1,953,904	11,722,946	4,221,266
1991	9,247,253	4,609,750	3,471,782	688,866	5,335,009	221,166	4,574,332	1,640,084	11,104,873	3,642,611
1992	11,804,200	5,798,438	3,626,100	612,895	5,587,382	174,998	5,552,795	1,532,325	11,144,101	3,694,099
1993	12,217,825	5,445,102	3,830,889	617,198	5,922,476	211,904	5,444,128	1,753,971	12,107,175	4,042,324
1994	14,286,862	6,011,562	3,857,908	694,421	5,963,596	278,012	6,395,577	2,090,724	12,731,704	4,776,753
1995	14,153,258	6,387,209	4,680,552	661,812	7,318,574	212,244	5,588,374	1,952,494	12,204,445	4,480,934
1996	14,579,793	6,618,351	7,634,303	710,651	12,187,479	208,357	5,686,518	2,300,206	12,730,932	4,599,073
1997	15,149,537	6,512,006	7,251,238	750,419	8,515,792	207,887	6,109,061	2,342,198	14,400,157	4,897,486
1998	13,665,233	6,134,812	6,324,675	717,140	7,018,227	209,057	7,711,892	1,946,444	14,309,133	4,177,167
1999	15,525,094	6,737,939	5,380,492	827,699	7,211,048	215,823	8,385,684	2,370,069	15,818,133	5,138,347
2000	14,748,719	10,247,673	3,795,734	793,931	5,584,742	187,192	8,275,910	2,075,306	15,548,769	4,253,431
2001	24,919,689	15,920,463	4,881,353	997,999	7,637,347	199,212	8,965,297	4,006,253	21,535,950	4,401,765
2002	16,356,999	13,361,823	4,134,636	961,617	6,405,381	182,371	8,134,422	3,394,930	22,474,649	5,806,756
2003	17,746,881	14,253,992	4,267,497	935,613	6,622,792	188,367	9,827,512	2,935,682	20,973,018	5,996,177
2004	18,927,632	15,876,136	4,951,600	1,048,402	6,747,227	202,492	10,113,089	3,222,604	25,534,533	5,500,243
2005	19,224,171	14,687,865	18,579,009	866,099	11,613,126	190,730	9,815,636	3,257,218	23,439,665	5,721,259
2006	21,076,306	13,898,806	32,128,771	859,219	11,864,589	202,677	12,755,428	3,238,750	23,465,160	5,838,726
2007	23,935,559	16,951,759	30,357,666	1,082,448	11,061,466	198,376	16,240,975	4,760,365	29,631,577	4,798,572
2008	22,263,346	19,390,712	30,516,544	1,043,632	12,311,722	220,232	15,022,269	4,735,077	30,123,663	6,007,558
2009	19,973,442	17,002,347	27,956,802	1,023,603	10,092,466	221,675	14,626,936	4,405,243	29,718,702	6,365,342
2010	23,953,119	17,650,757	38,577,860	964,605	13,679,502	228,025	17,979,858	3,984,013	33,127,579	8,206,294
2011	23,679,925	22,074,499	35,183,497	1,736,645	12,995,980	567,921	17,325,421	5,298,096	42,880,198	10,514,492
2012	**34,217,665**	**22,919,741**	**52,511,102**	**1,597,152**	**20,207,606**	**591,540**	**20,123,347**	**5,407,597**	**41,833,755**	**9,793,129**
2013	32,789,129	21,661,539	44,167,503	1,895,067	16,546,414	564,310	28,229,964	5,137,013	40,164,409	9,312,694
2014	27,119,699	18,803,746	38,937,687	1,609,977	14,018,733	462,530	20,283,580	4,177,907	35,190,762	7,935,858
2015	26,938,633	18,735,956	40,222,717	1,592,986	14,087,613	456,420	20,166,655	4,119,965	34,960,669	7,864,325
2016	27,093,885	18,758,368	40,450,616	1,602,142	14,175,217	459,080	20,287,050	4,145,714	35,150,461	7,912,578
2017	26,560,747	18,538,838	39,881,846	1,575,778	13,937,960	449,957	19,974,256	4,065,389	34,717,081	7,787,739
2018	26,900,775	18,382,566	40,087,365	1,586,116	14,002,482	455,684	20,301,446	4,125,576	34,746,592	7,798,006
2019	25,942,243	17,836,486	39,165,715	1,541,016	13,651,533	439,121	19,587,411	3,974,319	34,084,034	7,609,892
2020	25,868,909	17,717,118	38,756,467	1,523,015	13,482,783	436,885	19,936,753	3,961,542	33,592,406	7,482,930
2021	25,483,213	17,480,559	38,210,648	1,487,720	13,277,894	429,393	19,606,066	3,898,215	33,019,139	7,336,849
2022	25,570,465	17,359,535	37,614,959	1,480,090	13,187,162	430,748	19,618,851	3,913,047	32,838,777	7,296,166
2023	25,882,666	17,531,285	37,191,858	1,492,162	13,172,830	435,976	19,876,035	3,962,171	32,933,749	7,319,534
2024	25,310,138	17,180,030	36,562,116	1,462,969	12,927,491	426,233	19,431,576	3,872,547	32,463,226	7,186,875
2025	25,343,318	17,211,104	36,631,429	1,464,353	12,948,277	426,824	19,515,742	3,880,029	32,475,495	7,188,010
2026	25,011,814	16,967,021	36,233,359	1,444,675	12,783,988	421,185	19,236,045	3,829,633	32,143,819	7,092,058
2027	25,362,393	17,189,686	36,593,047	1,464,798	12,945,282	427,154	19,495,841	3,882,513	32,517,470	7,188,538
2028	25,139,546	17,026,160	36,364,555	1,449,342	12,820,726	423,401	19,404,045	3,852,825	32,203,722	7,100,790
2029	24,895,137	16,931,822	36,291,548	1,443,053	12,796,884	419,237	19,210,813	3,812,508	32,231,627	7,100,697
2030	23,839,989	15,902,388	35,222,244	1,377,373	12,254,495	401,444	18,527,908	3,666,369	30,854,176	6,730,342
2031	24,235,986	15,931,343	35,683,278	1,394,481	12,438,326	408,208	18,826,782	3,729,623	31,227,220	6,829,547
2032	23,651,326	15,769,632	35,121,302	1,368,685	12,206,914	398,246	18,447,935	3,637,244	30,840,882	6,714,401
2033	24,399,044	15,966,929	35,912,271	1,405,122	12,518,569	411,048	18,995,494	3,756,973	31,448,988	6,878,571
2034	23,336,362	15,704,580	34,937,118	1,356,554	12,119,257	393,007	18,315,132	3,591,735	30,733,920	6,671,737
2035	24,880,740	15,891,021	36,526,416	1,428,937	12,753,405	419,297	19,353,518	3,837,636	31,930,266	7,000,829
TOTAL	1,114,184,678	729,581,281	1,247,900,901	62,699,775	576,456,283	17,449,528	728,256,313	174,494,806	1,379,552,585	333,392,075

TABLE B-23. Total Transportation and Delta Water Charge for Each Contractor

(in dollars)

Calendar Year	SOUTHERN CALIFORNIA AREA (continued)				FEATHER RIVER AREA					
	San Gorgonio Pass Water Agency	The Metropolitan Water District of Southern California	Ventura County Watershed Protection District	Total	City of Yuba City	County of Butte	Plumas County FC&WCD	Total	South Bay Area Future Contractor	GRAND 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	690,812	0	777,120	0	0	0	0	12,626	1,627,467
1964	21,736	1,260,513	9,378	1,601,758	0	0	0	0	13,938	2,808,876
1965	21,866	2,180,589	17,766	2,717,874	0	0	405	405	28,937	4,812,830
1966	37,965	3,900,172	33,426	4,863,325	0	0	565	565	31,321	7,404,659
1967	71,283	7,693,704	68,155	9,554,331	0	0	562	562	47,718	13,077,590
1968	128,915	15,317,881	142,803	18,778,742	0	1,050	1,439	2,489	46,945	25,599,148
1969	198,763	23,153,063	215,209	28,344,249	0	1,225	4,120	5,345	52,963	36,998,724
1970	289,633	30,617,164	273,605	37,762,360	0	3,848	17,116	20,964	69,744	48,521,420
1971	409,327	39,958,996	342,425	49,458,435	0	4,546	19,187	23,733	55,532	61,703,468
1972	537,186	54,896,378	422,304	67,744,912	0	4,929	21,150	26,079	80,412	83,853,302
1973	587,964	59,450,693	435,655	73,305,243	0	7,059	21,778	28,837	54,219	88,712,779
1974	611,428	65,819,844	455,565	80,717,860	0	8,336	22,408	30,744	76,783	97,668,121
1975	644,621	71,630,820	478,404	87,440,178	0	9,416	23,523	32,939	84,547	106,585,367
1976	668,314	74,675,279	475,587	91,545,736	0	7,004	23,257	30,261	106,717	112,478,428
1977	696,515	73,158,031	507,063	90,319,870	0	16,917	24,059	40,976	98,618	111,125,117
1978	709,040	81,722,902	523,177	100,124,353	0	12,635	24,225	36,860	100,786	124,135,363
1979	712,866	83,375,704	526,405	102,978,209	0	16,575	28,352	44,927	119,352	130,154,563
1980	862,276	93,029,352	583,628	114,906,845	0	19,834	26,562	46,396	178,812	144,840,995
1981	946,961	112,171,493	672,540	137,449,836	0	21,682	34,563	56,245	185,347	175,410,511
1982	1,021,329	117,143,301	727,623	143,243,342	0	16,117	43,117	59,234	173,894	184,478,209
1983	1,076,279	118,991,008	854,263	147,797,899	0	15,202	29,410	44,612	220,926	186,133,145
1984	1,211,620	156,273,537	933,311	192,950,789	20,590	15,442	31,795	67,827	225,959	245,581,501
1985	1,287,789	195,493,273	993,651	238,237,741	24,050	16,976	32,405	73,431	340,322	302,008,170
1986	1,344,770	218,331,685	1,058,276	264,488,877	31,753	18,145	33,596	83,494	279,227	334,429,587
1987	1,379,614	204,859,483	1,056,318	252,315,204	37,071	17,794	33,384	88,249	345,116	324,518,245
1988	1,465,829	221,667,118	1,124,101	269,617,470	48,058	19,117	33,605	100,780	365,207	346,311,910
1989	1,505,481	230,328,280	1,232,379	280,338,464	61,184	20,809	37,188	119,181	422,329	361,210,618
1990	1,624,764	277,194,768	1,855,990	333,868,339	66,041	20,855	36,812	123,708	474,284	415,565,373
1991	1,720,879	221,887,063	1,549,955	269,693,624	180,212	22,526	42,200	244,938	214,683	339,675,504
1992	1,779,902	245,365,620	1,503,480	298,176,338	208,216	26,028	43,517	277,761	443,676	384,716,730
1993	1,943,337	219,238,183	1,551,252	274,325,766	209,613	26,203	47,588	283,404	599,571	370,687,970
1994	1,920,217	257,365,886	1,475,069	317,848,292	201,284	25,161	46,079	272,524	609,966	412,795,221
1995	1,982,808	225,863,375	1,568,401	287,054,479	216,944	27,118	50,021	294,083	534,971	395,246,514
1996	1,651,239	235,410,317	1,622,641	305,939,860	217,250	27,156	56,623	301,029	571,857	424,001,291
1997	1,758,607	245,453,569	1,777,266	315,125,223	236,300	29,847	59,915	326,062	428,638	438,914,033
1998	1,947,196	227,090,232	1,796,534	293,047,741	128,021	29,927	53,594	211,542	465,095	416,827,702
1999	2,270,989	256,781,242	1,882,059	328,544,617	254,675	31,834	57,957	344,466	587,326	465,697,543
2000	2,547,249	252,336,089	1,968,856	322,363,600	262,163	79,001	61,076	402,240	0	452,609,718
2001	3,485,941	443,930,076	2,264,636	543,145,981	261,699	93,471	62,429	417,599	0	691,499,445
2002	4,836,283	333,695,068	2,305,932	422,050,869	266,107	95,018	64,672	425,797	0	569,572,238
2003	6,136,706	362,987,282	2,331,862	455,203,381	262,547	93,638	68,957	425,142	0	602,275,761
2004	6,498,730	414,417,191	2,618,849	515,658,727	284,387	102,404	29,286	416,077	0	664,806,326
2005	6,768,872	391,299,368	2,145,561	507,608,579	280,033	727,066	28,810	1,035,909	0	668,434,644
2006	7,295,092	364,910,798	2,059,189	499,593,509	292,991	43,185	38,579	374,755	0	655,587,009
2007	8,197,939	441,275,552	2,563,019	591,055,272	291,100	40,957	46,246	378,303	0	748,690,700
2008	9,655,536	418,862,782	3,049,533	573,202,605	306,916	804,536	86,666	1,198,118	0	737,051,138
2009	9,713,901	378,250,729	2,862,513	522,213,701	328,896	855,850	91,096	1,275,842	0	682,569,658
2010	10,833,892	445,206,492	3,069,587	617,461,582	400,358	1,064,565	109,477	1,574,400	0	801,734,661
2011	13,753,688	577,102,781	4,020,658	767,133,800	478,145	1,205,407	130,201	1,813,753	0	1,002,674,493
2012	**12,585,042**	**539,910,634**	**5,566,494**	**767,264,803**	**486,144**	**1,392,600**	**141,600**	**2,020,344**	**0**	**995,829,340**
2013	12,081,706	509,319,712	5,225,441	727,094,900	488,967	1,400,685	145,432	2,035,084	0	950,361,609
2014	11,584,775	434,087,992	4,319,260	618,532,506	491,147	1,406,932	150,070	2,048,149	0	827,018,207
2015	12,421,227	433,341,172	4,265,150	619,173,488	494,048	1,415,240	155,044	2,064,332	0	827,539,101
2016	12,461,729	434,840,866	4,278,528	621,616,234	494,644	1,416,948	159,459	2,071,051	0	830,555,439
2017	12,384,561	427,693,190	4,205,163	611,772,505	493,722	1,414,308	159,182	2,067,212	0	819,671,177
2018	12,395,948	425,028,011	4,208,122	610,018,688	486,643	1,394,029	156,748	2,037,420	0	816,017,504
2019	12,273,150	412,771,150	4,047,256	592,923,325	490,737	1,405,756	155,597	2,052,090	0	799,425,472
2020	12,213,168	407,247,542	4,026,460	586,245,978	486,015	1,392,231	142,062	2,020,308	0	792,002,200
2021	12,145,457	400,467,746	3,957,342	576,800,241	486,451	1,393,479	141,436	2,021,366	0	783,002,844
2022	12,138,415	396,704,897	3,941,923	572,095,036	484,650	1,388,319	139,439	2,012,408	0	778,436,687
2023	12,162,735	398,653,089	3,991,542	574,605,632	484,208	1,387,053	139,304	2,010,565	0	781,085,308
2024	12,073,389	389,871,845	3,889,302	562,657,737	482,175	1,381,231	138,610	2,002,016	0	768,642,165
2025	12,081,126	389,691,582	3,898,747	562,756,036	477,303	1,367,272	136,925	1,981,500	0	767,304,950
2026	12,028,959	383,797,545	3,837,920	554,828,023	472,881	1,354,606	135,398	1,962,885	0	758,343,543
2027	12,108,379	389,205,507	3,890,658	562,271,266	477,430	1,367,638	137,005	1,982,073	0	767,813,691
2028	12,068,640	383,751,370	3,855,378	555,460,500	465,832	1,334,415	132,970	1,933,217	0	757,700,855
2029	12,075,521	382,569,425	3,814,736	553,593,008	469,085	1,343,732	134,125	1,946,942	0	757,037,018
2030	11,863,956	357,147,728	3,608,047	521,396,459	427,865	1,225,656	119,736	1,773,257	0	711,800,273
2031	11,952,483	359,929,589	3,634,934	526,221,799	427,871	1,225,672	119,758	1,773,301	0	717,350,429
2032	11,877,186	353,853,635	3,560,172	517,447,561	427,869	1,225,665	119,776	1,773,310	0	708,472,129
2033	12,013,397	360,941,073	3,644,227	528,291,706	427,869	1,225,665	119,796	1,773,330	0	720,558,015
2034	11,874,040	351,379,966	3,526,400	513,939,809	427,873	1,225,677	119,818	1,773,368	0	705,493,209
2035	12,133,864	364,224,561	3,673,655	534,054,144	427,867	1,225,661	119,837	1,773,365	0	727,019,259
TOTAL	417,771,990	19,280,145,362	158,872,716	26,220,758,293	17,135,900	38,056,881	5,198,700	60,391,481	8,751,583	34,872,384,098

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	105.53	11.50	117.02
County of Butte	0.00	0.00	0.00	0.00	0.00	369.33	33.76	403.09
Plumas County Flood Control and Water Conservation District	37.99	4.40	0.00	0.00	42.39	57.76	7.85	108.00
Feather River Area	8.50	0.98	0.00	0.00	9.49	161.86	16.34	187.68
NORTH BAY AREA								
Napa County Flood Control and Water Conservation District	170.85	65.72	5.02	14.03	255.62	34.33	15.01	304.97
Solano County Water Agency	103.33	52.40	5.39	10.02	171.14	41.30	12.36	224.80
North Bay Area	128.82	57.43	5.25	11.53	203.03	38.67	13.36	255.06
SOUTH BAY AREA								
Alameda County Flood Control and Water Conservation District, Zone 7	47.55	53.17	9.25	19.18	129.16	38.56	8.73	176.45
Alameda County Water District	28.98	32.43	7.55	12.25	81.21	28.12	4.72	114.05
Santa Clara Valley Water District	24.57	22.67	6.82	10.61	64.67	19.05	3.31	87.02
South Bay Area	29.20	29.46	7.35	12.33	78.35	23.86	4.46	106.66
SAN JOAQUIN VALLEY AREA								
County of Kings	6.09	8.42	3.82	7.30	25.63	30.75	3.57	59.96
Dudley Ridge Water District	5.44	5.70	3.36	4.59	19.09	19.14	2.18	40.41
Empire West Side Irrigation District	2.18	5.18	2.54	4.21	14.11	21.23	1.71	37.06
Kern County Water Agency	10.19	11.50	5.27	6.50	33.45	24.00	2.84	60.29
Oak Flat Water District	2.20	2.76	2.06	2.74	9.76	19.97	1.73	31.46
Tulare Lake Basin Water Storage District	5.61	5.79	3.27	4.49	19.16	19.96	2.22	41.34
San Joaquin Valley Area	9.37	10.51	4.93	4.50	29.30	20.33	2.24	51.87
CENTRAL COASTAL AREA								
San Luis Obispo County Flood Control and Water Conservation District	318.43	203.53	14.94	94.73	631.63	136.03	36.29	803.95
Santa Barbara County Flood Control and Water Conservation District	1095.79	257.64	21.93	84.15	1,459.52	87.44	71.61	1,618.56
Central Coastal Area	895.06	243.67	20.13	86.88	1,245.74	99.98	62.49	1,408.21
SOUTHERN CALIFORNIA AREA								
Antelope Valley-East Kern Water Agency	56.46	55.35	33.53	58.31	203.65	48.52	9.22	261.39
Castaic Lake Water Agency	63.86	62.73	27.62	32.27	186.47	44.07	12.74	243.28
Coachella Valley Water District	83.58	85.17	44.42	61.17	274.34	41.66	10.51	326.52
Crestline-Lake Arrowhead Water Agency	149.08	135.96	35.63	71.27	391.93	67.28	18.23	477.44
Desert Water Agency	52.81	53.12	52.74	37.79	196.46	28.34	6.91	231.71
Littlerock Creek Irrigation District	86.14	83.16	31.94	61.12	262.35	71.68	13.51	347.55
Mojave Water Agency	146.60	168.48	32.87	120.06	468.00	106.13	25.56	599.70
Palmdale Water District	64.91	66.37	43.95	80.62	255.85	62.32	10.87	329.03
San Bernardino Valley Municipal Water District	243.19	199.00	32.07	64.35	538.61	81.75	23.50	643.86
San Gabriel Valley Municipal Water District	119.99	112.90	47.89	40.94	321.72	51.91	14.27	387.90
San Gorgonio Pass Water Agency	947.41	479.11	34.17	177.57	1,638.25	113.59	33.37	1,785.20
The Metropolitan Water District of Southern California	91.08	73.79	40.12	35.42	240.42	43.80	11.46	295.67
Ventura County Watershed Protection District	246.15	203.39	25.65	104.67	579.86	128.44	33.72	742.02
Southern California Area	85.70	71.33	36.34	36.54	229.91	43.36	10.93	284.21
ALL AREAS	54.98	44.42	21.08	22.45	142.93	34.28	7.43	184.65

(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, 4.610 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]
NBA												
1	34.61	11.80	12.37	2.49	0.92	62.19	34.61	11.80	12.37	2.49	0.92	62.19
2	36.83	12.56	5.40	0.00	0.00	54.79	71.44	24.36	17.77	2.49	0.92	116.98
3A	6.56	2.24	10.75	4.85	1.50	25.90	78.00	26.60	28.52	7.34	2.42	142.88
3B	42.23	14.40	24.30	3.84	3.32	88.09	113.67	38.76	42.07	6.33	4.24	205.07
SBA												
1	6.05	2.06	14.50	5.67	3.46	31.74	7.74	2.64	17.35	8.40	5.08	41.21
2	0.57	0.19	1.64	0.00	0.00	2.40	8.31	2.83	18.99	8.40	5.08	43.61
4	1.90	0.65	2.79	0.00	0.00	5.34	10.21	3.48	21.78	8.40	5.08	48.95
5	3.99	1.36	2.19	0.00	0.00	7.54	14.20	4.84	23.97	8.40	5.08	56.49
6	0.23	0.08	0.23	0.00	0.00	0.54	14.43	4.92	24.20	8.40	5.08	57.03
7	1.77	0.60	0.42	0.00	0.00	2.79	16.20	5.52	24.62	8.40	5.08	59.82
8	2.40	0.82	0.70	0.00	0.00	3.92	18.60	6.34	25.32	8.40	5.08	63.74
9	4.96	1.69	2.63	0.00	0.00	9.28	23.56	8.03	27.95	8.40	5.08	73.02
CA												
1	1.69	0.58	2.85	2.73	1.62	9.47	1.69	0.58	2.85	2.73	1.62	9.47
2A	1.08	0.37	0.56	0.00	0.00	2.01	2.77	0.95	3.41	2.73	1.62	11.48
2B	0.55	0.19	0.28	0.00	0.00	1.02	3.32	1.14	3.69	2.73	1.62	12.50
3	0.48	0.16	0.21	0.00	0.00	0.85	3.80	1.30	3.90	2.73	1.62	13.35
4	0.76	0.26	1.42	1.30	0.73	4.47	4.56	1.56	5.32	4.03	2.35	17.82
5	0.59	0.20	0.28	0.00	0.00	1.07	5.15	1.76	5.60	4.03	2.35	18.89
6	0.15	0.05	0.14	0.00	0.00	0.34	5.30	1.81	5.74	4.03	2.35	19.23
7	0.88	0.30	0.34	0.00	0.00	1.52	6.18	2.11	6.08	4.03	2.35	20.75
8C	0.02	0.01	0.06	0.00	0.00	0.09	6.20	2.12	6.14	4.03	2.35	20.84
8D	0.34	0.12	0.27	0.00	0.00	0.73	6.54	2.24	6.41	4.03	2.35	21.57
9	0.28	0.10	0.25	0.00	0.00	0.63	6.82	2.34	6.66	4.03	2.35	22.20
10A	0.30	0.10	0.33	0.00	0.00	0.73	7.12	2.44	6.99	4.03	2.35	22.93
11B	0.44	0.15	0.21	0.00	0.00	0.80	7.56	2.59	7.20	4.03	2.35	23.73
12D	0.42	0.14	0.19	0.00	0.00	0.75	7.98	2.73	7.39	4.03	2.35	24.48
12E	0.29	0.10	0.32	0.00	0.00	0.71	8.27	2.83	7.71	4.03	2.35	25.19
13B	0.63	0.21	0.37	0.00	0.00	1.21	8.90	3.04	8.08	4.03	2.35	26.40
14A	2.44	0.83	2.86	2.31	1.38	9.82	11.34	3.87	10.94	6.34	3.73	36.22
14B	0.38	0.13	0.35	0.00	0.00	0.86	11.72	4.00	11.29	6.34	3.73	37.08
14C	0.32	0.11	0.26	0.00	0.00	0.69	12.04	4.11	11.55	6.34	3.73	37.77
15A	1.81	0.62	2.98	2.83	1.50	9.74	13.85	4.73	14.53	9.17	5.23	47.51
16A	2.99	1.02	4.62	6.13	3.49	18.25	16.84	5.75	19.15	15.30	8.72	65.76
17E	10.09	3.44	12.98	21.46	12.88	60.85	26.93	9.19	32.13	36.76	21.60	126.61
17F	2.62	0.89	0.16	0.00	0.00	3.67	29.55	10.08	32.29	36.76	21.60	130.28
18A	2.35	0.80	1.56	0.00	-1.35	3.36	31.90	10.88	33.85	36.76	20.25	133.64
19	1.73	0.59	0.94	0.00	0.00	3.26	33.63	11.47	34.79	36.76	20.25	136.90
19C	1.89	0.64	0.00	0.00	0.00	2.53	35.52	12.11	34.79	36.76	20.25	139.43
20A	1.38	0.47	1.56	0.00	0.00	3.41	36.90	12.58	36.35	36.76	20.25	142.84
20B	1.67	0.57	1.02	0.00	0.00	3.26	38.57	13.15	37.37	0.00	20.25	109.34
21	0.85	0.29	0.71	0.00	0.00	1.85	39.42	13.44	38.08	0.00	20.25	111.19
22A	0.88	0.30	0.37	0.00	0.00	1.55	40.30	13.74	38.45	0.00	20.25	112.74
22B	8.65	2.95	10.05	6.46	4.25	32.36	48.95	16.69	48.50	6.46	24.50	145.10
23	2.37	0.81	0.69	0.00	-1.73	2.14	51.32	17.50	49.19	6.46	22.77	147.24
24	4.61	1.57	1.95	0.00	0.00	8.13	55.93	19.07	51.14	6.46	22.77	155.37
25	3.36	1.15	0.11	0.00	0.00	4.62	59.29	20.22	51.25	6.46	22.77	159.99
26A	3.67	1.25	6.51	0.00	-11.78	(0.35)	62.96	21.47	57.76	6.46	10.99	159.64
28G	6.84	2.33	2.46	0.00	0.00	11.63	69.80	23.80	60.22	6.46	10.99	171.27
28H	6.58	2.24	2.58	0.00	0.00	11.40	76.38	26.04	62.80	6.46	10.99	182.67
28J	73.84	25.17	35.89	0.00	0.00	134.90	150.22	51.21	98.69	6.46	10.99	317.57
EBX												
1	N/A	0.00	0.76	0.00	0.00	0.76	N/A	21.47	58.52	6.46	10.99	97.44
2A	N/A	0.00	2.03	0.00	0.00	2.03	N/A	21.47	60.55	6.46	10.99	99.47
2B	N/A	0.00	80.76	6.35	28.04	115.14	N/A	21.47	141.31	12.81	39.03	214.61
2C	N/A	0.00	0.36	0.00	0.00	0.36	N/A	21.47	141.66	12.81	39.03	214.97
2D	N/A	0.00	0.00	0.00	0.00	0.00	N/A	21.47	141.66	12.81	39.03	214.97
2E	N/A	0.00	0.00	0.00	0.00	0.00	N/A	21.47	141.66	12.81	39.03	214.97
3A	N/A	0.00	98.48	7.59	35.82	141.89	N/A	21.47	240.14	20.40	74.85	356.86
3B	N/A	0.00	7.10	0.00	0.00	7.10	N/A	21.47	247.25	20.40	74.85	363.96
4A	N/A	0.00	11.27	0.00	0.00	11.27	N/A	21.47	258.52	20.40	74.85	375.24
4B	N/A	0.00	382.06	3.81	7.99	393.85	N/A	21.47	640.58	24.21	82.83	769.09
WB												
29A	3.42	1.17	7.45	2.85	1.51	16.40	32.97	11.25	39.74	39.61	23.11	146.68
29F	2.50	0.85	0.89	0.00	0.00	4.24	35.47	12.10	40.63	39.61	23.11	150.92
29G	8.30	2.83	4.24	0.00	-5.45	9.92	43.77	14.93	44.87	39.61	17.66	160.84
29H	5.17	1.76	4.02	0.00	0.00	10.95	48.94	16.69	48.89	39.61	17.66	171.79
29J	8.66	2.95	1.16	0.00	-10.19	2.58	57.60	19.64	50.05	39.61	7.47	174.37
30	13.90	4.74	3.61	0.00	0.00	22.25	71.50	24.38	53.66	39.61	7.47	196.62
CB												
31A	6.29	2.14	17.02	2.07	1.30	28.82	12.83	4.38	23.43	6.10	3.65	50.39
33A	234.99	80.12	32.09	14.88	17.02	379.10	247.82	84.50	55.52	20.98	20.67	429.49
34	167.89	57.24	0.89	0.00	0.00	226.02	415.71	141.74	56.41	20.98	20.67	655.51
35	0.00	0.00	0.00	0.00	0.00	0.00	415.71	141.74	56.41	20.98	20.67	655.51

(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 4.610 percent per annum.

(c) The Water System Revenue Bond Surcharge equivalent unit rate is calculated by multiplying Column 1 by the ratio of the 2012 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)

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
2001	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0
TOTAL	5,841,000	7,112,000	9,441,000	8,476,000	8,762,000	2,363,000	104,758,000	38,830,000

TABLE B-26. Capital Costs of Each Aqueduct Reach to be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge

(in dollars)

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
2001	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0
TOTAL	53,304,000	0	238,887,000	0	143,418,000	8,607,000	152,025,000	390,912,000

TABLE B-27. Minimum OMP&R Costs of Each Aqueduct Reach to be Reimbursed through Minimum OMP&R Component of the East Branch Enlargement Transportation Charge

(in dollars)

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	1,324,201	0
2001	347	146	183	116	108	48	1,043,479	0
2002	1,639	690	861	546	510	226	1,537,631	0
2003	0	0	0	0	0	0	1,838,208	0
2004	2,132	27,868	18,579	18,731	10,355	8,528	1,503,239	0
2005	1,243	16,250	10,833	10,922	6,038	4,973	1,002,633	0
2006	4,632	60,550	40,367	40,697	22,499	18,529	1,497,992	0
2007	13,123	171,531	114,354	115,291	63,738	52,490	1,766,634	0
2008	28,340	370,451	246,967	248,992	137,654	113,362	2,844,766	0
2009	37,593	491,395	327,597	330,282	182,595	150,372	2,907,622	0
2010	8,932	116,755	77,837	78,475	43,385	35,728	1,990,480	0
2011	0	0	0	0	0	0	2,203,320	0
2012	**0**	**0**	**0**	**0**	**0**	**0**	**2,434,191**	**0**
2013	0	0	0	0	0	0	2,418,566	0
2014	0	0	0	0	0	0	2,418,566	0
2015	0	0	0	0	0	0	2,418,566	0
2016	0	0	0	0	0	0	2,418,566	0
2017	0	0	0	0	0	0	2,418,566	0
2018	0	0	0	0	0	0	2,418,566	0
2019	0	0	0	0	0	0	2,418,566	0
2020	0	0	0	0	0	0	2,418,566	0
2021	0	0	0	0	0	0	2,418,566	0
2022	0	0	0	0	0	0	2,418,566	0
2023	0	0	0	0	0	0	2,418,566	0
2024	0	0	0	0	0	0	2,418,566	0
2025	0	0	0	0	0	0	2,418,566	0
2026	0	0	0	0	0	0	2,418,566	0
2027	0	0	0	0	0	0	2,418,566	0
2028	0	0	0	0	0	0	2,418,566	0
2029	0	0	0	0	0	0	2,418,566	0
2030	0	0	0	0	0	0	2,418,566	0
2031	0	0	0	0	0	0	2,418,566	0
2032	0	0	0	0	0	0	2,418,566	0
2033	0	0	0	0	0	0	2,418,566	0
2034	0	0	0	0	0	0	2,418,566	0
2035	0	0	0	0	0	0	2,418,566	0
TOTAL	103,662	1,258,028	840,564	845,945	468,651	385,039	85,686,770	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)

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	736,527	0	2,072,879	0	1,416,309	0	1,416,309	3,489,188
2001	812,638	0	1,857,065	0	808,244	0	808,244	2,665,309
2002	728,857	0	2,270,960	0	1,138,792	0	1,138,792	3,409,752
2003	915,968	0	2,754,176	0	1,278,532	0	1,278,532	4,032,707
2004	933,016	0	2,522,448	0	1,853,926	0	1,853,926	4,376,374
2005	1,042,062	0	2,094,954	0	1,858,352	0	1,858,352	3,953,306
2006	831,436	0	2,516,702	0	1,722,964	0	1,722,964	4,239,666
2007	1,416,289	0	3,713,450	0	2,346,558	0	2,346,558	6,060,008
2008	1,058,617	0	5,049,149	0	2,709,455	0	2,709,455	7,758,604
2009	1,323,108	0	5,750,564	0	3,005,349	0	3,005,349	8,755,913
2010	1,281,554	0	3,633,146	0	2,563,076	0	2,563,076	6,196,222
2011	1,399,700	0	3,603,020	0	3,046,035	0	3,046,035	6,649,055
2012	**1,433,859**	**0**	**3,868,050**	**0**	**3,337,234**	**0**	**3,337,234**	**7,205,284**
2013	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2014	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2015	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2016	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2017	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2018	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2019	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2020	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2021	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2022	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2023	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2024	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2025	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2026	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2027	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2028	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2029	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2030	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2031	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2032	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2033	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2034	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
2035	1,422,393	0	3,840,959	0	3,022,378	0	3,022,378	6,863,337
TOTAL	48,515,712	0	138,104,371	0	105,219,716	0	105,219,716	243,324,087

(a) Units 3 and 4 at Devil Canyon Powerplant were operational in 1993.

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 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	11,731	1,010	10,566	466	0	93,227	117,000
1980	0	28,241	4,708	27,495	797	0	212,759	274,000
1981	0	56,134	16,676	61,271	538	0	385,381	520,000
1982	0	326,180	76,872	337,913	5,988	0	2,342,047	3,089,000
1983	0	554,658	138,964	582,070	9,004	0	3,940,304	5,225,000
1984	0	306,514	68,842	314,468	2,928	0	2,218,248	2,911,000
1985	49,675	447,266	65,773	347,262	4,514	21,614	3,505,896	4,442,000
1986	185,353	1,757,633	236,324	1,363,586	41,900	78,842	13,694,362	17,358,000
1987	49,735	2,455,279	378,535	1,774,447	10,615	151,421	19,107,968	23,928,000
1988	124,534	2,689,959	500,466	1,712,431	13,783	231,982	23,351,845	28,625,000
1989	155,446	7,118,094	2,423,000	1,671,088	17,419	1,673,409	49,111,544	62,170,000
1990	62,786	6,459,229	1,943,918	2,234,452	8,680	1,222,053	45,993,882	57,925,000
1991	28,686	6,265,822	1,875,066	2,168,712	4,024	1,065,433	44,057,257	55,465,000
1992	2,911	4,826,764	1,610,921	1,359,335	471	627,012	32,594,586	41,022,000
1993	1,205	5,094,237	1,828,410	2,722,156	212	199,684	33,380,096	43,226,000
1994	273	1,726,376	631,816	478,543	27	128,988	11,255,977	14,222,000
1995	0	1,130,963	423,243	206,978	0	87,480	7,326,336	9,175,000
1996	0	2,025,987	645,296	606,205	0	375,830	13,725,682	17,379,000
1997	0	451,011	154,366	205,796	0	7,164	2,992,663	3,811,000
1998	0	3,551	1,293	0	0	0	23,156	28,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0
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	1,173,824	7,834	0	19,966,108	24,854,327
1999	44,738	2,961,887	882,120	1,231,519	8,219	0	20,947,475	26,075,958
2000	49,031	3,246,109	966,768	1,349,695	9,008	0	22,957,586	28,578,197
2001	49,048	3,247,263	967,111	1,350,175	9,011	0	22,965,748	28,588,356
2002	47,894	3,170,848	944,353	1,318,402	8,799	0	22,425,318	27,915,614
2003	40,765	2,698,871	803,787	1,122,160	7,489	0	19,087,337	23,760,409
2004	44,199	2,926,222	871,498	1,216,690	8,120	0	20,695,237	25,761,966
2005	33,144	2,194,299	653,514	912,364	6,089	0	15,518,826	19,318,236
2006	46,979	3,110,276	926,313	1,293,217	8,631	0	21,996,927	27,382,343
2007	45,289	2,998,370	892,985	1,246,688	8,321	0	21,205,490	26,397,143
2008	42,495	2,813,410	837,900	1,169,784	7,807	0	19,897,389	24,768,785
2009	43,667	2,890,988	861,004	1,202,040	8,023	0	20,446,052	25,451,774
2010	44,850	2,969,289	884,324	1,234,596	8,240	0	20,999,819	26,141,118
2011	65,947	4,451,654	1,337,125	1,815,360	12,115	0	31,410,451	39,092,652
2012	**66,061**	**4,459,387**	**1,339,450**	**1,818,504**	**12,137**	**0**	**31,465,005**	**39,160,544**
2013	65,377	4,413,502	1,325,704	1,799,680	12,011	0	31,141,003	38,757,277
2014	65,935	4,440,177	1,332,302	1,815,003	12,114	0	31,338,360	39,003,891
2015	67,647	4,556,735	1,367,437	1,862,140	12,427	0	32,159,977	40,026,363
2016	67,833	4,568,915	1,371,036	1,867,296	12,462	0	32,246,306	40,133,848
2017	69,521	4,677,553	1,402,992	1,913,721	12,773	0	33,017,208	41,093,768
2018	67,967	4,565,298	1,368,311	1,870,971	12,487	0	32,231,364	40,116,398
2019	69,875	4,701,873	1,410,355	1,923,455	12,837	0	33,188,422	41,306,817
2020	66,894	4,490,668	1,345,610	1,841,436	12,290	0	31,706,634	39,463,532
2021	68,251	4,586,700	1,375,033	1,878,778	12,540	0	32,380,483	40,301,785
2022	67,576	4,544,719	1,362,885	1,860,207	12,415	0	32,081,290	39,929,092
2023	55,781	3,762,486	1,129,750	1,535,494	10,248	0	26,550,163	33,043,922
2024	57,698	3,889,786	1,167,709	1,588,275	10,600	0	27,450,163	34,164,231
2025	66,068	4,443,042	1,332,364	1,818,684	12,138	0	31,363,740	39,036,036
2026	23,846	1,627,474	491,144	656,422	4,381	0	11,468,392	14,271,659
2027	24,354	1,665,863	503,201	670,426	4,475	0	11,735,870	14,604,189
2028	15,584	1,069,659	323,583	428,985	2,863	0	7,532,579	9,373,253
2029	16,321	1,121,370	339,371	449,272	2,998	0	7,895,807	9,825,139
2030	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0
TOTAL	1,958,446	130,953,726	39,172,190	53,911,068	359,806	0	925,043,303	1,151,398,539

(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	405,521	121,973	121,147	40	57,978	2,782,398	3,489,189
2001	10	309,546	90,165	94,693	3	33,086	2,137,804	2,665,307
2002	49	390,469	108,436	139,812	15	46,617	2,724,355	3,409,753
2003	0	461,535	127,179	166,664	0	52,338	3,224,991	4,032,707
2004	1,278	510,656	156,828	143,969	265	75,892	3,487,487	4,376,375
2005	745	471,092	157,458	95,381	154	76,073	3,152,404	3,953,307
2006	2,777	490,817	145,890	152,494	575	70,531	3,376,584	4,239,668
2007	7,866	704,163	211,776	207,415	1,630	96,058	4,831,100	6,060,008
2008	16,988	873,674	229,413	359,949	3,520	110,913	6,164,148	7,758,605
2009	22,534	987,630	261,312	398,956	4,669	123,026	6,957,786	8,755,913
2010	5,354	720,014	217,730	212,625	1,109	104,921	4,934,468	6,196,221
2011	0	781,287	248,003	199,768	0	124,691	5,295,305	6,649,054
2012	**0**	**845,378**	**267,286**	**220,700**	**0**	**136,612**	**5,735,308**	**7,205,284**
2013	0	802,866	249,640	219,283	0	123,723	5,467,823	6,863,335
2014	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2015	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2016	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2017	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2018	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2019	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2020	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2021	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2022	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2023	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2024	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2025	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2026	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2027	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2028	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2029	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2030	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2031	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2032	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2033	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2034	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2035	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
TOTAL	57,770	28,358,998	8,690,663	8,116,373	11,991	4,307,239	193,781,053	243,324,087

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 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	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	1,283,803	7,834	66,278	22,881,260	28,511,435
1999	44,775	3,197,893	957,160	1,292,426	8,230	39,144	22,546,556	28,086,184
2000	49,163	3,651,630	1,088,741	1,470,842	9,048	57,978	25,739,984	32,067,386
2001	49,058	3,556,809	1,057,276	1,444,868	9,014	33,086	25,103,552	31,253,663
2002	47,943	3,561,317	1,052,789	1,458,214	8,814	46,617	25,149,673	31,325,367
2003	40,765	3,160,406	930,966	1,288,824	7,489	52,338	22,312,328	27,793,116
2004	45,477	3,436,878	1,028,326	1,360,659	8,385	75,892	24,182,724	30,138,341
2005	33,889	2,665,391	810,972	1,007,745	6,243	76,073	18,671,230	23,271,543
2006	49,756	3,601,093	1,072,203	1,445,711	9,206	70,531	25,373,511	31,622,011
2007	53,155	3,702,533	1,104,761	1,454,103	9,951	96,058	26,036,590	32,457,151
2008	59,483	3,687,084	1,067,313	1,529,733	11,327	110,913	26,061,537	32,527,390
2009	66,201	3,878,618	1,122,316	1,600,996	12,692	123,026	27,403,838	34,207,687
2010	50,204	3,689,303	1,102,054	1,447,221	9,349	104,921	25,934,287	32,337,339
2011	65,947	5,232,941	1,585,128	2,015,128	12,115	124,691	36,705,756	45,741,706
2012	**66,061**	**5,304,765**	**1,606,736**	**2,039,204**	**12,137**	**136,612**	**37,200,313**	**46,365,828**
2013	65,377	5,216,368	1,575,344	2,018,963	12,011	123,723	36,608,826	45,620,612
2014	65,935	5,243,043	1,581,942	2,034,286	12,114	123,723	36,806,185	45,867,228
2015	67,647	5,359,601	1,617,077	2,081,423	12,427	123,723	37,627,802	46,889,700
2016	67,833	5,371,781	1,620,676	2,086,579	12,462	123,723	37,714,131	46,997,185
2017	69,521	5,480,419	1,652,632	2,133,004	12,773	123,723	38,485,033	47,957,105
2018	67,967	5,368,164	1,617,951	2,090,254	12,487	123,723	37,699,189	46,979,735
2019	69,875	5,504,739	1,659,995	2,142,738	12,837	123,723	38,656,247	48,170,154
2020	66,894	5,293,534	1,595,250	2,060,719	12,290	123,723	37,174,459	46,326,869
2021	68,251	5,389,566	1,624,673	2,098,061	12,540	123,723	37,848,308	47,165,122
2022	67,576	5,347,585	1,612,525	2,079,490	12,415	123,723	37,549,115	46,792,429
2023	55,781	4,565,352	1,379,390	1,754,777	10,248	123,723	32,017,988	39,907,259
2024	57,698	4,692,652	1,417,349	1,807,558	10,600	123,723	32,917,988	41,027,568
2025	66,068	5,245,908	1,582,004	2,037,967	12,138	123,723	36,831,565	45,899,373
2026	23,846	2,430,340	740,784	875,705	4,381	123,723	16,936,217	21,134,996
2027	24,354	2,468,729	752,841	889,709	4,475	123,723	17,203,695	21,467,526
2028	15,584	1,872,525	573,223	648,268	2,863	123,723	13,000,404	16,236,590
2029	16,321	1,924,236	589,011	668,555	2,998	123,723	13,363,632	16,688,476
2030	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2031	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2032	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2033	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2034	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
2035	0	802,866	249,640	219,283	0	123,723	5,467,825	6,863,337
TOTAL	2,016,216	159,312,724	47,862,853	62,027,441	371,797	4,307,239	1,118,824,356	1,394,722,626

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 (10^6 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 ($m^3 \times 10^3$)	1.2335	0.8107
	acre-feet (af)	hectare-meters (ha - m)■	0.1234	8.107
	thousand acre-feet (taf)	million cubic meters ($m^3 \times 10^6$)	1.2335	0.8107
	thousand acre-feet (taf)	hectare-meters (ha - m)■	123.35	0.008107
	million acre-feet (maf)	billion cubic meters ($m^3 \times 10^9$)◆	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 ($m^3 \times 10^3$/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

● 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).

OTHER COMMON CONVERSION FACTORS

1 cubic foot=7.48 gallons=62.4 pounds of water
1 cubic foot per second (cfs)=450 gallons per minute (gpm)
1 cfs=646,320 gallons per day=1.98 af a day
1 acre-foot=approximately 325,851 gallons=43,560 cubic feet
1 million gallons=3.07 acre-feet
1 million gallons per day (mgd)=1,120 af a year

STATE OF CALIFORNIA
CALIFORNIA NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES