MANAGEMENT OF THE CALIFORNIA STATE WATER PROJECT

BULLETIN 132-02

JANUARY 2004



ARNOLD SCHWARZENEGGER
Governor, State of California

MICHAEL CHRISMAN
Secretary for Resources, The Resources Agency

LINDA S. ADAMS
Interim Director, Department of Water Resources

Bulletin 132-02

Management of the California State Water Project

Covers Activities during Calendar Year 2001

Published January 2004

❖ ❖ ❖

Arnold Schwarzenegger, Governor
State of California

Michael Chrisman, Secretary for Resources
The Resources Agency

Linda S. Adams, Interim Director
Department of Water Resources

❖ ❖ ❖

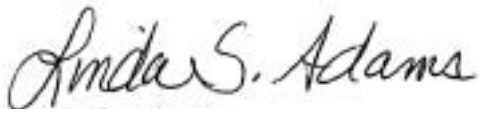
Foreword

❖ ❖ ❖

Bulletin 132-02, *Management of the California State Water Project*, continues the Bulletin 132 annual series begun in 1963. Bulletin 132-02 updates water supply planning, construction, financing, management, and operation activities of the State Water Project. Appendix B contains data and computations used to determine the State Water Project contractors' Statement of Charges for 2003. Appendix B was previously published as an individual document.

The Bulletin discusses significant events and issues that affect SWP management and operations. The Bulletin covers the period from January 1, 2001, to December 31, 2001.

Bulletin 132-02 also discusses water supply and delivery; the continuation of construction of the East Branch Extension; Delta resources and environmental issues, including the CALFED Bay-Delta Program; Oroville facilities relicensing; financial analysis of the SWP; and the update of business systems in the Department.



Linda S. Adams
Interim Director

Contents

Foreword iii
Organization and Acknowledgements xvii
Departmental Divisions and Offices xix
California Water Commission xx
Abbreviations and Acronyms xxi

Executive Summary xxvii
- Civil Engineering Award for the State Water Project xxix
- SWP Milestones xxix
  - Forty Years Ago - 1961 xxix
  - Ten Years Ago - 1991 xxix
- 2001 Highlights xxix
- 2001 Precipitation and Water Storage xxx
  - Precipitation in Water Year 2000-01 xxx
  - Precipitation in the First Quarter of Water Year 2001-02 xxxi
  - Runoff xxxi
  - Storage xxxi
- 2001 Water Supplies, Contracts, and Deliveries xxxi
  - Water Deliveries xxxi
- SWP Aqueduct Repair xxxiii
  - Aqueduct Leak xxxiii
- Delta Resources and Environmental Issues xxxiii
  - Bay-Delta Water Right Hearings xxxiii
  - CALFED Bay-Delta Program xxxiv
  - Status of Threatened Listings xxxv
- Power Resources xxxv
  - Energy Crisis xxxv
  - Oroville Facilities Relicensing xxxv
  - Deregulation of Electric Utilities xxxvi
- Financial Analysis xxxvi
- Monterey Amendment xxxvi
  - Monterey Settlement Agreement Guidelines xxxvii
- Security of the State Water Project xxxvii
- Project Development xxxvii
  - East Branch Extension xxxvii
  - Financing xxxviii
- Planning xxxviii

Arroyo Pasajero xxxviii
Department Reorganization xxxviii
Office of Water Use Efficiency xxxviii
Water Transfers Office xxxviii
Community Service xxxviii
Public Information Activities xxxviii

Chapter 1 The State Water Project 1
Precipitation and Runoff 3
Water Delivery Facilities 3
Project Design 5
Additional Construction 9
Methods of Financing 9
Long-Term Contracting Agencies 10

Chapter 2 Delta Resources 13
Significant Events in 2001 14
Delta Water Management Programs 15
South Delta Improvements Program 15
West Delta Program 18
North Delta Program 19
Delta Flood Control 19
Delta Levee Maintenance Subventions Program 19
Delta Special Flood Control Projects 20
Delta Water Rights Management 23
Delta Agricultural Water Users 24
South Delta Water Agency Contract 24
Western Delta Municipal Water Users 24

Chapter 3 Environmental Programs 25
Significant Events in 2001 26
Operations for Fish Species of Concern 27
San Joaquin River Activities 27
Spring-Run Chinook Salmon Protection Plan 28
Delta Export Curtailments Due to Delta Smelt 28
Decisions on Endangered Species 28
Fish Abundance Estimates 29
Feather River Fish Studies 31
Fish-Related Mitigation Projects 32

Chapter 4 Water Quality Programs 35
Significant Events in 2001 36

Delta Activities 37
Decision 1641 37
Water Supply Conditions 38
Water Year Classifications and Water Supply Indexes 38
Operations under the State Water Resource Control Board Water Right Decision 1641 38
Delta Cross Channel Gates 40
Water Quality Standards 40
Municipal and Industrial Standards 40
Agricultural Standards 40
Estuarine Habitat Protection Standard 41
Net Delta Outflow Index Standard 41
Flow Standards 42
Export Standards 42
Temporary Delta Barriers 43
Special Study and Biological Surveys 44
Fall Dissolved Oxygen Study in the Stockton Ship Channel 44
Benthic Monitoring 45
Phytoplankton and Chlorophyll *a* 46
Activities Outside the Delta 47
Water Quality Monitoring 47
Nonproject Groundwater Turn-ins 47
Municipal Water Quality Investigations Program 49
Bryte Chemical Laboratory 51
Quality Assurance/Quality Control 52
Suisun Marsh Activities 53
The Suisun Marsh 53
Suisun Ecological Workgroup 54
Modeling Support 54
Suisun Marsh Planning Support for the CALFED Levee Investigation Team 54
Suisun Marsh Planning Participation in the Project Work Team 54
Operation and Maintenance 55
Suisun Marsh Salinity Control Gates 55
Morrow Island Distribution System Maintenance 56
Monitoring 56
Comprehensive Review of Suisun Marsh Monitoring Data 56
Water Quality Monitoring and Compliance 56
Monitoring Station Maintenance, Repair, and Enhancements 56
Vegetation Monitoring 58
Salt Marsh Harvest Mouse Monitoring in Conservation Areas 58
Suisun Marsh Waterfowl Feeding Ecology Study 59

Aquatic Monitoring 59
Mitigation and Fulfillment of Permit Conditions 60
Suisun Marsh Salinity Control Gates Flashboard Modification Study 60
Salt Marsh Harvest Mouse Habitat Restoration and Mitigation Sites at Island Slough 60
Morrow Island Distribution System Fish Screen and Alternatives 61
Reports 61
Suisun Marsh Expenditure History 61

Chapter 5 Local Assistance 63
Significant Events in 2001 64
Davis-Grunsky Act Program 65
Water Use Efficiency 65
California Irrigation Management Information System 65
Water Recycling and Desalination Branch 65
Agricultural Water Management Plans 66
Urban Water Management Plans 66
Outreach 66
Agricultural Drainage Program 66
San Joaquin Valley Drainage Implementation Program 67
Proposition 204 67
San Joaquin Valley Agricultural Drainage Program 67
Environmental Impact Documents Review 71
Water Conservation Bond Laws 72

Chapter 6 Legislation and Litigation 75
Significant Events in 2001 76
Legislation 77
State Legislation 77
Federal Legislation 78
Litigation 78

Chapter 7 Water Supply Development and Reliability 83
Significant Events in 2001 84
Water Supply Development 85
Water Conveyance Through the SWP 86
Sacramento Valley Groundwater 86
Conjunctive Water Management 88
Local Water Supply Projects 89
Watershed Management 89
SWP Bay-Delta Proceedings—2001 Activities 89
Phase 8 90
Water Supply Contract Evaluation 90

CALFED Bay-Delta Program 90
Water Transfer Program 91
Storage Program 91
Conveyance Program 94
Environmental Water Account 95

Chapter 8 Water Supply and Allocation 97
Significant Events in 2001 98
Water Year 2000-01 99
Precipitation and Snowpack 99
Runoff and Storage 100
First Quarter Water Year 2001-02 102
SWP Storage 102
Lake Oroville 102
San Luis Reservoir 103
Lake Del Valle 103
Southern Reservoirs 103
Diversions from the Delta 103

Chapter 9 Water Contracts and Deliveries 109
Significant Events in 2001 110
Amendments to Long-Term SWP Water Supply Contracts 112
Monterey Amendments 113
Monterey Settlement Agreement Guidelines 113
Miscellaneous Agreements with Long-Term SWP Contractors 116
Water Conveyance/Exchange Agreements 116
Turn-in Agreements 118
Turnout Agreements 118
Agreements and Activities Related to the Monterey Amendments 119
Article 21 Water Program 122
Flexible Storage Program 122
Extended Carryover Program 122
Dry Year Water Purchase Program 123
Environmental Water Account 123
Fixed Assets 124
Variable Assets 126
Miscellaneous Agreements with Other Agencies 126
Water Conveyance Agreements–CVP Water 126
Water Deliveries 128
Approved Table A Deliveries 128
SWP Deliveries 128

Water Deliveries and Credits to Long-Term SWP Contractors 129
Water Delivered in 2001 by Month 139
SWP Water 139
Operational Flood Release Water 140
Non-SWP Water 140
Annual Table A Water and Water Delivered Since 1962 140

Chapter 10 Power Resources 143
Significant Events in 2001 144
Power Resources Program 145
Energy Crisis 145
Restructuring of the Electric Utility Industry 145
Oroville Facilities Relicensing 146
Sale of Reid Gardner Unit 4 147
Reliability Management System 147
Existing SWP Power Facilities 148
Future SWP Power Facilities 148
Contractual Resource Arrangements 148
Contractual Transmission Arrangements 151
Load Management 151
SWP Power Operation in 2001 152
Energy Consumed 152
Energy Generated 152
Contractual Resource Arrangements 152
Sales of Excess Power 157
Forecasting Power Operations 157
Criteria 158

Chapter 11 Facilities Maintenance 159
Significant Events in 2001 160
Inspecting and Maintaining Project Dams 161
Routine Inspections 161
Radial Gate Retrofitting 161
Independent Reviews 162
Maintaining Other Project Facilities 162
Arroyo Pasajero Program 162
Long-Term Solutions and Cooperative Efforts with the U.S. Army Corps of Engineers 163
Revised Joint Corps/Department and Department/Bureau Alternatives 163
Related Activities 164
Repairs and Modifications 165

Chapter 12 Engineering and Right of Way 169

Significant Events in 2001 170
Design Activities 171
Construction Activities 172
Oroville Division 173
Delta Facilities 174
North San Joaquin Division 174
San Luis Division 175
South San Joaquin Division 175
Tehachapi Division 175
West Branch 175
Mojave Division 176
Santa Ana Division 176
East Branch Extension 176
East Branch Enlargement 177
Construction Activities in Multiple Divisions 177
Miscellaneous Construction Activity 178
Levee Raising 178
Environmental Activities 178
Right of Way Activities 179

Chapter 13 Recreation 185
Significant Events in 2001 186
Recreation Areas 187
Recreation Days 187
Facilities 187
Planning 187
New Facilities 187
Improvements to Facilities 189
Oroville Recreation Plan 189
Fish Plantings 190
Recreation Financing 190

Chapter 14 Financial Analysis 195
Significant Events in 2001 196
Capital Requirements and Financing 197
Capital Requirements 198
Capital Financing 205
Capital Financing Sources 205
Annual Revenues and Expenditures 207
Project Revenues 207

Project Expenses 212
Future Costs of Water Service 214

Chapter 15 SWP Education and Information 219
Significant Events in 2001 220
Media Outreach 221
Energy Emergency 221
Flood Preparedness 221
Snow Surveys 221
Drought Panel 221
California State Water Project Atlas 221
Oral History Program 221
CALFED 221
News Events 222
Community Relations 222
Oroville 222
Publications 222
Video 223
Photography 223
Visitors Centers Programs and Promotions 223
SWP Tours 224
Water Safety Education 224
Displays and Exhibits 224
School Education Program 224
Water Awareness Month Activities 226

Appendix A: Annual Financial Report (discontinued)

Appendix B: Data and Computations Used in Determining Water Charges for 2003

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

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

Appendix F: San Joaquin Valley Post-Project Economic Impact (discontinued)

Tables



Table ES-1 SWP Water Delivered by Category, 1962-01 xxxii
Table 1-1 Physical Characteristics of Primary Storage Facilities 6
Table 1-2 Physical Characteristics of Primary Dams 7
Table 1-3 Pumping Plant Characteristics 7
Table 1-4 Power Plant Characteristics, by Type and Facility 8
Table 1-5 Total Miles of Aqueducts 8
Table 1-6 Long-Term Water Supply Contracting Agencies, by Area, as of December 31, 2001 12
Table 4-1 2001 Mean Water Quality at Selected State Water Project Locations 48
Table 4-2 Suisun Marsh Expenditures and Reimbursements Administered by the Department 62
Table 5-1 Water Conservation Bond Laws Projects and Funding 74
Table 9-1 2001 Turnback Water Pool Program 119
Table 9-2 Water Delivered to Long-Term Contractors through 2001, by Service Area 131
Table 9-3 Water Delivered in 2001, by Month 132
Table 9-4 Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-01 138
Table 10-1 Energy Used at Pumping Plants and Power Plants in 2001, by Month 153
Table 10-2 Energy Generated and Purchased in 2001, by Month 154
Table 10-3 Power, Transmission, and Other Services Purchased in 2001 and Costs of Purchase, by Area 155
Table 10-4 Energy Sold in 2001 and Revenue from Sales, by Area 156
Table 11-1 Outages for Maintenance and Repair of Facilities in 2001, by Month 166
Table 12-1 Design Activities, January 1, 2001, through December 31, 2001, by Division 181
Table 12-2 Construction Activities, January 1, 2001, through December 31, 2001, by Division 182
Table 13-1 Recreation Days Recorded in 2001, by Field Division and Facility 189
Table 13-2 Fish Planted in 2001 190
Table 13-3 Recreation and Enhancement Capital Costs of the State Water Project, 2001 192
Table 13-4 Interest Accruals on California Water Resources Development Bond Fund Disbursements 193
Table 14-1 Capital Requirements and Financing, December 31, 2001 201
Table 14-2 State Water Project Revenues and Expenditures, December 31, 2001 202
Table 14-3 Allocation of Capital Expenditures 199
Table 14-4 East Branch Enlargement Capital Costs by Facility 205
Table 14-5 Estimated Capital Costs for Power Generation and Transmission Facilities 205
Table 14-6 Estimated Future Costs for Planning Additional Conservation Facilities 205
Table 14-7 Application of Revenue Bond Proceeds 206
Table 14-8 Effect of Revenue Bond Proceeds on Project Interest Rate 211
Table 14-9 Actual Bond Sales and Project Interest Rates, by Date of Sale 212
Table 14-10 Operations, Maintenance, Power, and Replacement Costs, by Facility, Composition, and Purpose 203
Table 14-11 Annual Debt Service on Bonds Sold through December 31, 2001 204
Table 14-12 Estimated Unit Water Charges for 2003 and 2008, by Service Area 217
Table 15-1 Visitor-Days Recorded in 2001, by Location 224

Figures

Figure ES-1 East Branch Extension, Phase 1 xxxix
Figure 1-1 Names and Locations of Primary Water Delivery Facilities Current and Projected, December 31, 2001 4
Figure 1-2 Names, Locations, and First Year of Service of Long-Term Contracting Agencies, December 31, 2001 11
Figure 2-1 Boundaries of North, West, and South Delta Water Management Programs 16
Figure 3-1 Delta Smelt Fall Midwater Trawl Sampling Abundance Index, 1967 through 2001 30
Figure 3-2 Estimated Total Adult Winter-Run Chinook Salmon Escapement, 1967 through 2001 30
Figure 3-3 Estimated Spring-Run Chinook Salmon Escapement, 1990 through 2001 31
Figure 3-4 Young-of-the-Year Splittail Abundance Index, Fall Midwater Trawl, 1967 through 2001 32
Figure 4-1 Decision 1641 Water Quality Compliance Stations in the Sacramento-San Joaquin Delta 39
Figure 4-2 Compliance and Monitoring Stations in the Suisun Bay and Marsh 57
Figure 8-1 Statewide Precipitation by Hydrologic Region, 2000-01 Water Year, in Percentage of Average 101
Figure 8-2 Monthly Inflow into Lake Oroville, 1999-01 104
Figure 8-3 Cumulative Inflow into Lake Oroville 104
Figure 8-4 End-of-Month Storage in Lake Oroville, 2000 and 2001 Calendar Years 105
Figure 8-5 End of Month Storage in San Luis Reservoir, 2000 and 2001 Calendar Years 105
Figure 8-6 Water Pumped at Banks Pumping Plant in 2001, by Month 106
Figure 8-7 Water Diverted from the Sacramento-San Joaquin Delta by State Water Project and Central Valley Project in 2001, by Month 106
Figure 8-8 State's Share of Water Pumped at Dos Amigos Pumping Plant in 2001, by Month 107
Figure 8-9 Water Pumped at Edmonston Pumping Plant in 2001, by Month 108
Figure 9-1 Water Delivered in 2001 and Delivery Locations of Long-Term Water Supply Contractors and Feather River Area Districts with Water Right Agreements with the Department 130
Figure 10-1 Names, Locations, and Nameplate Capacity of Primary Power Facilities 149
Figure 13-1 Names and Locations of SWP Recreation Areas 188
Figure 15-1 Visitors Centers on the SWP 225

Sidebars



State Water Project Power Generation and Consumption in 2001 xxxv
2001 Income Statement for the State Water Project xxxvi
Clean Water Act 18
U.S. Army Corps of Engineers 21
Bureau of Reclamation 21
Endangered Species Acts 29
State Water Resources Control Board 37
Quality Assurance/Quality Control 53
Suisun Marsh Preservation Agreement 55
Water Code Section 1810 et seq. 81
Environmental Review Acts 87
CALFED Bay-Delta Program 91
Central Valley Project Improvement Act of 1992 93
Long-Term SWP Water Supply Contracts 111

STATE OF CALIFORNIA
Arnold Schwarzenegger, Governor

THE RESOURCES AGENCY
Michael Chrisman, Secretary for Resources

DEPARTMENT OF WATER RESOURCES
Linda S. Adams, Interim Director

Tom Glover *Deputy Director*	*Stephen W. Verigin* *Acting Chief Deputy Director*	*Gerald E. Johns* *Acting Deputy Director*
Peter S. Garris *Deputy Director (CERS)*	*L. Lucinda Chipponeri* *Deputy Director for Legislation*	*Peggy Bernardy* *Chief Counsel*

This report was prepared under the direction of

STATE WATER PROJECT ANALYSIS OFFICE
Dan Flory, Chief
Robert B. Cooke, Principal Engineer
George T. Qualley, Principal Engineer

By

Bulletin 132 Section
Kay Mogavero, Chief
Maureen Reed, Research Writer
Cynthia Shepard, Research Writer
Therese J. Tynan, Research Writer

With major contributions provided under the direction of

Mark Andersen, Chief, Oroville Facilities Relicensing Branch
Teresa Geimer, Chief, Transfers and Special Projects Branch
Len Marino, Chief, Water Project Planning Branch
Nancy Quan, Bay-Delta Hearings and Program Development
Gurdip Rehal, Chief, Project Power Contracts Branch
Dave Samson, Project Coordination
Craig Trombly, Chief, Project Water Contracts Branch
Pedro Villalobos, Chief, Project Cost Branch
Michael Werner, Chief, Project Power Planning Branch

Christina Acken, Senior Engineer
Teodoro Alvarez, Senior Engineer
Anirban Bhattacharyya, Senior Engineer
David Bonaly, Senior Engineer
Lori Brown, Senior Engineer
Miguel De Anda, Senior Engineer
Steve Gold, Senior Engineer
Charles Kearney, Senior Engineer
David Knock, Senior Engineer
Paul Mendoza, Senior Engineer
Lucas Munoz, Senior Engineer
Dave Paulson, Senior Engineer
Linda Quok, Senior Engineer
Amir Rangchi, Senior Engineer
Bhupinder Sandhu, Senior Engineer
James Upholt, Senior Engineer

Assisted by State Water Project Analysis Office staff

Frank Acuna
Shahram Ahi
Bob Aldridge
Ghassan Alqaser
Mary Ann Archuleta
Jamsheed Bahar
Melanie Baillie
Sal Batmanghilich
LaTresce Brown
Ken Bucher
Jonathan Canuela
Grace Cheng
Victorino Chico
Kim Cotto
Barbara Crawford-Shelnutt
Daniel Cretu
Theresa Cuyar
Don Davis
Janet Davis-Matsumoto
Ronney DeArman
Amrik Dhugga
Alvin Eshe
Andrea Glasgow
Jerry Green
Trevor Greene
Haydeh Hakim-Edrissi
Steven Heinbach
Dennis Johnson
Jon Jones
David Lane
Sue Larsen
Tom Linnebur
Howard Lockard
Gary Lotspeich
Barry Mahoney
Cherilyn Martin
Gerold Mateo
Dave Marty
Marie McLean
Jeremiah McNeill
Jingchao Mi
Edgar Najera
Douglas Nelson
Laura Nelson
Do Nguyen
Alice Nonog
Isela Ortiz
Charles Owens
Elizabeth Patterson
Balwant Purewal
Mark Risney
Terry Schultze
Brandy Scott
Jon Seehafer
Pat Separovich
Maureen Sergent
Donald Shelvock
Jessica Stratton
Nancy Tagupa
Elllen Tam
Lee Terry
Pamela Tom
Jakim Tonn
Mike Torabian
Raymond Valdez
Cecilia Vasquez
Dietlind Wiesner
Janet Wolfe-Eshe
Darlessia Worthen
Ingdean Yan
Ahrash Zamanian
Reza Zamanian
Lupe Zamudio

State of California

Departmental Divisions and Offices

❖ ❖ ❖

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

Executive Division
Tom Glover, Deputy Director
L. Lucinda Chipponeri, Deputy Director for Legislation

Executive Manager Power Systems
Raphael A. Torres, Chief

Division of Operations and Maintenance
Stephen L. Kashiwada, Chief
Richard Sanchez, Principal Engineer
David Starks, Chief, Oroville Field Division
Dave Duval, Chief, Delta Field Division
Jim Thomas, Chief, San Luis Field Division
Jeff J. Said, Chief, San Joaquin Field Division
Don Perez, Chief, Southern Field Division

Division of Engineering
Leslie F. Harder, Jr., Chief

Division of Fiscal Services
Perla Netto-Brown, Chief

Division of Flood Management
Stein Buer, Chief

Division of Planning and Local Assistance
Mark Cowin, Chief
Dwight Russell, Chief, Northern District
Karl P. Winkler, Chief, Central District
Paula J. Landis, Chief, San Joaquin District
Mark Stuart, Chief, Southern District

Division of Safety of Dams
David Gutierrez, Acting Chief

Bay-Delta Office
Katherine F. Kelly, Chief

Office of Water Education
Curtis Robinson, Chief

Division of Environmental Services
Barbara McDonnell, Chief

Office of the Chief Counsel
Peggy Bernardy, Chief Counsel

Office of Water Use Efficiency
Marsha Prillwitz, Chief

Water Transfers Office
Gerald Johns, Chief

California Water Commission



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

Daniel M. Dooley, Chair, Visalia
Walter Yep, Vice Chair, Piedmont

Richard W. Atwater, La Canada
Ashok Bhatt, Fremont
Ane D. Deister, Placerville
Rachel M. Dinno, Los Gatos
Martha G. Guzman, Sacramento
William J. Lyons, Jr., Modesto
Katherine Wilson Moret, Los Angeles

Executive Officer
Peter D. Rabbon

Staff Assistant
Lori Buford

Legal Counsel
Vacant

Abbreviations and Acronyms

A

AB Assembly Bill

ASCE American Society of Civil Engineers

ADA Americans with Disabilities Act

AFRP Anadromous Fish Restoration Plan

AWMP Agricultural Water Management Plan

B

BDAC Bay-Delta Advisory Council

BOD biochemical oxygen demand

Bureau Bureau of Reclamation

C

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

CalPX California Power Exchange

CCSG Cantua Creek Stream Group

CCWA Central Coast Water Authority

CD Conservation District

CDEC California Date Exchange Center

CEA Capacity Exchange Agreement

CEQA California Environmental Quality Act

CESA California Endangered Species Act

cfs cubic feet per second

CIMIS California Irrigation Management Information System

COA Coordinated Operation Agreement

Corps U.S. Army Corps of Engineers

CVC Cross Valley Canal

CVHJV Central Valley Habitat Joint Venture

CVP Central Valley Project

CVPIA Central Valley Project Improvement Act

CVRWQCB Central Valley Regional Water Quality Control Board

D

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

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

DBW Department of Boating and Waterways

DCVCW Direct Cross Valley Canal Wheeling

DEIR draft environmental impact report

DFG California Department of Fish and Game

DHS California Department of Health Services

DLRD Delta Lands Reclamation District

DO dissolved oxygen

DOC dissolved organic carbon

DOE Department of Energy or Division of Engineering

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

DSM2 Delta Simulation Model 2

DSOD Division of Safety of Dams

E

EA/IS Environmental Assessment/Initial Study

EBRPD East Bay Regional Park District

ECAT Environmental Coordination Advisory Team

EHV Extra-High Voltage

E/I Export/Import

EIR environmental impact report

EIS environmental impact statement

EPA U.S. Environmental Protection Agency

ESA Endangered Species Act

ESO Environmental Services Office

ESU Evolutionarily Significant Unit

ET_o Reference Evapotranspiration

EWA Environmental Water Account

F

FERC Federal Energy Regulatory Commission

FLIMS Field and Laboratory Information Management System

G

gpm gallons per minute

H

HMP Hazard Mitigation Plan

I

ICR Information Collection Rule

IEP Interagency Ecological Program

IFDM Integrated on-Farm Drainage Management

INDP Interim North Delta Plan

ISDP Interim South Delta Program

ISI Integrated Storage Investigation

ISO California Independent System Operator

K

kV kilovolt

KWB Kern Water Bank

kWh kilowatt hour

L

LADWP Los Angeles Department of Water and Power

M

MCL maximum contaminant level

MCWA Mokelumne-Cosumnes Watershed Alliance

mg/L milligrams per liter

MIDS Morrow Island Distribution System

MOP Musco Olive Products

MTBE methyl tertiary butyl ether

MWh megawatt hour

MWQI Municipal Water Quality Investigations

N

NDOI Net Delta Outflow Index

NEPA National Environmental Policy Act

NMFS National Marine Fisheries Service

NOP/NOI Notice of Preparation/Notice of Intent

NPC Nevada Power Company

NPDES National Pollutant Discharge Elimination System

O

O&M Division of Operations and Maintenance

OM&P operations, maintenance, and power

OMP&R operations, maintenance, power, and replacement

OM&R operations, maintenance, and replacement

OWUE Office of Water Use Efficiency

P

PCL Planning and Conservation League

PG&E Pacific Gas and Electric Company

pH [p(otential) of H(ydrogen]

ppt parts per thousand

Q

QA/QC Quality Assurance/Quality Control

R

RCRC Regional Council of Rural Counties

RD reclamation district

RMR Reliability Must-Run

RMS Reliability Management System

ROD Record of Decision

S

SAP System Application Products

SB Senate Bill

SCE Southern California Edison

SDIP South Delta Improvements Program

SDTBP South Delta Temporary Barriers Project

SDWA South Delta Water Agency

SEW Suisun Ecological Workgroup

SJVDIP San Joaquin Valley Drainage Implementation Program

SJRA San Joaquin River Agreement

SLFD San Luis Field Division

SMPA Suisun Marsh Preservation Agreement

SMSCG Suisun Marsh Salinity Control Gates

SPPC Sierra Pacific Power Company

SRB State Reclamation Board

SRCD Suisun Resource Conservation District

SVUR Sacramento Valley Unimpaired Runoff

SWP State Water Project

SWRCB State Water Resources Control Board

T

TOC total organic carbon

U

UCLA University of California at Los Angeles

USFWS U.S. Fish and Wildlife Service

USGS U.S. Geological Survey

V

VAMP Vernalis Adaptive Management Plan

W

WAM Water Awareness Month

WQA water quality assessment

WQCP Water Quality Control Plan

WR 95-06 SWRCB Water Right Order 95-06

WSCC Western Systems Coordinating Council

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

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

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

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

Executive Summary



Thermalito Forebay, above, plays an important role in the pumpback operations of the Oroville-Thermalito Complex and offers recreational activities.



The Bulletin 132 series began in 1963 and reported the first deliveries of water by the new State Water Project, which was still under construction. Bulletin 132-02, *Management of the California State Water Project*, continues this series with the thirty-ninth edition. It reports planning, construction, financing, managing, and operating activities of the SWP in 2001. The SWP is operated and maintained by the California Department of Water Resources.

Civil Engineering Award for the State Water Project

In 2001, California's SWP received a prestigious award for engineering excellence.

Selected as one of the greatest engineering achievements of the 20th Century, the SWP was the first project on United States soil to be named as a *Civil Engineering Monument of the Millennium* by the American Society of Civil Engineers.

SWP Milestones

Forty Years Ago - 1961

Construction began on the SWP facilities, including Oroville Dam, the key water storage facility on the Feather River in the upper Sacramento Valley.

California and the United States government signed an agreement to build the San Luis Joint-Use Facilities for storage, pumping, and conveyance for State-federal water operations.

Ten Years Ago - 1991

The Department initiated a California Water Bank to facilitate transfers and sales of water during drought to meet water needs.

2001 Highlights

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

In 2001, the SWP delivered 3,206,922 acre-feet of water to 26 of its 29 long-term water contractors and 18 other agencies. The project provides water for approximately 23 million people throughout the State, irrigation for 750,000 acres of farmland, and environmental benefits to wildlife refuges, as well as environmental mitigation programs.

The SWP facilitated the transfer or exchange of 21,592 acre-feet of approved Table A water among SWP long-term contractors and non-SWP agencies, conveyed 248,086 acre-feet of CVP water through SWP facilities, and provided 1,101,841 acre-feet to water rights holders within the SWP service area.

Energy shortages and price escalations continuing from 2000 rapidly developed into a full-scale energy crisis. Pacific Gas and Electric Company and Southern California Edison were unable to pass their higher costs on to their customers, which resulted in these utilities' inability to

purchase energy and a bankruptcy filing by PG&E. The Governor declared a State of Emergency on January 17 and ordered the Department to purchase both long-term and short-term energy on behalf of the utilities, thus creating the California Energy Resources Scheduling Division.

The Department signed the Participating Load Agreement with the California Independent System Operator, and operation of the California Power Exchange was effectively shut down by the Federal Energy Regulatory Commission.

Construction of Phase I of the East Branch Extension for San Bernardino and Riverside Counties continued with completion of the Crafton Hills Reservoir and Dam and the continuation of construction on Greenspot, Crafton Hills, and Cherry Valley Pump Stations. The project, when completed, will convey water to the San Gorgonio Pass Water Agency service area.

Following the discovery of a 1,000 gallon-per-minute leak, Department staff supervised the dewatering of a 1,200-foot section of the Aqueduct between Bethany Reservoir and Banks Pumping Plant. Repairs were completed about 2 weeks ahead of schedule, and normal water movement resumed after an interruption of 25 days.

The project continued to pay bondholders as scheduled and remained financially viable. The long-term water contractors continued to repay project construction bonds and operating expenses. In 2001, the SWP handled approximately $870 million in income and approximately $870 million in expenses, with general fund contributions limited to recreation facilities.

2001 Precipitation and Water Storage

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

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

Precipitation in Water Year 2000-01

After 6 water years classified as *wet* or *above normal*, water year 2001 was classified as *dry* in both the Sacramento and San Joaquin Valleys. All regions of the State except the Central Coast and Colorado Desert were drier than average, with extremely dry conditions prevailing in the North Coast and North Lahontan Regions.

After a promising start to the water year with double average precipitation in October 2000, November and December were very dry. Northern Sierra precipitation accumulation dropped below average in mid-November and was only half of average on January 1, 2001. This was the driest start to a water year since 1991, and the snowpack on New Year's Day was only half of average for the date.

Several storms arrived in mid- and late January, but precipitation was still well below average for the month in the northern Sierra. This raised concerns of potential drought, and the Department appointed a Drought Preparedness Coordinator.

February was the most productive month of the year, but precipitation was only slightly above average, not enough to make up for the lack of early winter storms.

The dry pattern resumed after the first week of March, and March precipitation totaled only about two-thirds of average. This dry period was interrupted by above-average April precipitation in the southern Sierra. Snowpack gains during these cool storms were offset by renewed heavy snowmelt at the end of the month.

May was very dry, with no rain at most stations; snowpack was depleted to 20 percent of average

by May 14. The summer was dry, with the only significant rainfall occurring in far Northern California in late June and in the southern Sierra in early July.

Statewide precipitation in 2001 was 75 percent of average, with percentages decreasing from south to north and from the coast inland.

Precipitation in the First Quarter of Water Year 2001-02

Water year 2001-02 began drier than average, with statewide precipitation and runoff about half of average in October as reservoir storage dropped below half of capacity. Productive storms with strong westerly flow improved the water supply outlook in November and December.

In contrast to 2000-01, these storms were good snow producers throughout the Sierra, building the early snowpack to about 170 percent of average by January 1. Precipitation in November and December was one-and-a-half times average for all regions of the State except Southern California. Central Valley runoff rose above average in December, and much of it was captured in reservoirs. Reservoir storage statewide rose to 21.2 million acre-feet (96 percent of average) on December 31.

Runoff

Statewide water year runoff totaled only half of average in the dry 2000-01 water year, and was less than average in all months. Runoff in the Sacramento River and San Joaquin River Regions was about 55 percent of average. Feather River unimpaired inflow to Lake Oroville was 2.1 million acre-feet (46 percent of average) for the water year.

Storage

Reservoir storage in the SWP at the end of the 2000-01 water year was 2.73 million acre-feet on September 30, 2001, which is 80 percent of average compared to 87 percent in water year 1999-00. Total storage in major SWP reservoirs was about 2.91 million acre-feet at the end of calendar year 2001, compared with 2.5 million acre-feet at the end of 2000. Reservoir storage decreased from 108 percent of average at the start of the water year to 86 percent at the end.

2001 Water Supplies, Contracts, and Deliveries

Water Deliveries

The Department approved deliveries of 1.65 million acre-feet on December 1, 2000, resulting in initial approved Table A amounts of 40 percent for most SWP contractor requests. Unusually dry conditions caused the Department to decrease the 2001 approved Table A amounts to 824,000 acre-feet on January 31, 2001. As a result of improvements in water conditions, approved Table A amounts were increased to 1.03 million acre-feet on March 6; 1.24 million acre-feet on March 15; 1.38 million acre-feet on May 4; 1.44 million acre-feet on May 17; and finally to 1.61 million acre-feet, or 39 percent, on August 16, 2001.

In 2001, 3,206,922 acre-feet of water were conveyed to 26 long-term contractors and 18 other agencies. The SWP delivered 1,546,742 acre-feet of approved Table A water. In addition, a total of 43,435 acre-feet of Article 21 and unscheduled water was delivered to the SWP long-term contractors. Table ES-1 shows SWP water deliveries by category for the years 1962-01.

Nonproject Water. The long-term water contractors received 113,196 acre-feet of nonproject water.

The SWP also delivered 2,929 acre-feet of recreation / fish and wildlife water and 1,613,816 acre-feet of water to satisfy water rights settlement holders and agreements made with SWP contractors and other agencies, including the Bureau of Reclamation.

Water rights water is transported through SWP facilities to long-term SWP contractors and other agencies, according to terms of various local water right agreements. Water may pass

Table ES-1. SWP Water Delivered by Category, 1962-01 (Acre-feet)

	Table A Water			Other SWP Water Deliveries					
				Article 21					
Year	Municipal and Industrial (1)	Agricultural (2)	Total (3)	Municipal and Industrial (4)	Agricultural (5)	Other Water[a] (6)	Feather River Diversions[b] (7)	Fish and Wildlife/ Recreation Water (8)	Total Deliveries (9)
1962						18,289			18,289
1963						22,456			22,456
1964						32,507			32,507
1965						44,105			44,105
1966						67,928			67,928
1967	5,747	5,791	11,538	0	0	53,605			65,143
1968	46,472	125,237	171,709	10,000	111,534	14,777	866,926		1,174,946
1969	34,434	158,586	193,020	0	72,397	18,829	794,374		1,078,620
1970	47,996	185,997	233,993	0	133,024	38,080	759,759		1,164,856
1971	85,286	272,054	357,340	2,400	293,619	44,119	778,362	8	1,475,848
1972	181,066	430,735	611,801	22,205	401,759	66,638	817,398	6,489	1,926,290
1973	293,824	400,564	694,388	3,161	293,255	42,511	800,743	1,155	1,835,213
1974	418,521	455,556	874,077	4,753	412,923	46,224	911,613	2,118	2,251,708
1975	641,621	582,369	1,223,990	21,043	601,859	63,793	862,218	3,377	2,776,280
1976	818,588	554,414	1,373,002	32,488	547,622	115,217	946,440	1,745	3,016,514
1977	280,919	293,236	574,155	0	0	389,065	581,994	1,111	1,546,325
1978	742,385	710,314	1,452,699	3,566	13,348	121,225	786,517	1,691	2,379,046
1979	690,659	969,237	1,659,896	66,081	582,308	187,630	882,549	1,766	3,380,230
1980	730,545	799,204	1,529,749	19,722	384,835	46,459	875,045	2,131	2,857,941
1981	1,057,273	852,289	1,909,562	12,000	896,428	279,161	838,557	4,688	3,940,396
1982	928,721	821,303	1,750,024	0	215,873	154,882	776,330	4,646	2,901,755
1983	483,499	701,370	1,184,869	0	13,019	181,453	602,905	7,849	1,990,095
1984	725,925	862,694	1,588,619	3,663	259,254	381,024	832,332	7,040	3,071,932
1985	992,538	1,002,915	1,995,453	9,638	298,034	404,842	870,008	4,033	3,582,008
1986	998,611	997,025	1,995,636	2,595	34,025	193,606	791,737	3,865	3,021,464
1987	1,096,368	1,033,718	2,130,086	6,949	107,958	377,592	831,947	7,672	3,462,204
1988	1,316,820	1,068,302	2,385,122	0	0	507,076	794,834	4,889	3,691,921
1989	1,602,454	1,251,293	2,853,747	0	0	474,559	830,500	8,135	4,166,941
1990	1,876,072	706,079	2,582,151	0	90	424,697	875,099	9,262	3,891,299
1991	536,669	12,444	549,113	3,521	0	551,051	565,395	4,879	1,673,959
1992	961,649	509,805	1,471,454	1,156	0	144,789	613,978	2,605	2,233,982
1993	1,064,866	1,250,369	2,315,235	0	0	254,854	822,589	2,609	3,395,287
1994	1,134,992	614,359	1,749,351	48,150	64,475	236,739	874,018	8,200	2,980,933
1995	801,570	1,165,523	1,967,093	17,984	46,346	78,425	860,077	2,575	2,972,500
1996	1,145,638	1,369,187	2,514,825	12,091	16,556	251,391	934,997	3,907	3,733,767
1997	1,258,456	1,067,319	2,325,775	2,814	18,618	322,000	993,211	4,146	3,666,564
1998	864,795	860,724	1,725,519	9,982	10,306	134,682	872,738	2,108	2,755,335
1999	1,405,299	1,333,592	2,738,891	61,191	96,879	85,312	1,108,672	4,324	4,095,269
2000	2,022,703	1,177,974	3,200,677	170,302	138,483	332,654	1,085,886	4,030	4,932,032
2001	1,162,897	383,845	1,546,742	10,261	33,174	535,160	1,078,656	2,929	3,206,922
Total	**28,455,878**	**24,985,423**	**53,441,301**	**557,716**	**6,098,001**	**7,739,406**	**28,518,404**	**125,982**	**96,480,810**

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

through SWP transportation facilities or a portion may be stored in SWP reservoirs for release at a later time.

Two South Bay Aqueduct contractors holding water rights to runoff from the Lake Del Valle watershed received 17,654 acre-feet of local water; 600 acre-feet of local runoff were delivered to a contractor in Southern California under local water rights; and ten nonproject agencies in the Feather River area received 1,078,656 acre-feet.

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

In addition, the Department conveyed 248,086 acre-feet of CVP water through SWP facilities for the Bureau.

Specific information regarding delivery amounts and locations can be found in Chapter 9, *Water Contracts and Deliveries.*

Dry Year Water Purchase Program. The Department operated the Dry Year Water Purchase Program in 2001, reflecting the year's drier hydrologic conditions. The Department delivered 114,073 acre-feet of dry year water to eight water agencies to help offset their water shortage conditions.

SWP Aqueduct Repair

Aqueduct Leak

Following the discovery of a 1,000 gallon-per-minute leak, staff from the Department's Division of Engineering and Operations and Maintenance supervised the dewatering of a 1,200-foot section of the SWP Aqueduct at Milepost 4.25 between Bethany Reservoir and Banks Pumping Plant. The leak was 29 feet under water. Repair crews controlled it by constructing two 30-foot-high cofferdams on either side of the leak and pumping approximately 55 cubic yards of concrete through the lining.

Repairs were completed about 2 weeks ahead of schedule, and normal water movement resumed after an interruption of 25 days.

Delta Resources and Environmental Issues

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

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

Bay-Delta Water Right Hearings

Implementation of the Bay-Delta Plan. SWRCB addressed implementation of the 1995 *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* through a water right hearing process staged in eight phases. Phases 1 through 7 of the hearing process were concluded in 1999, Phase 8 was postponed, and on December 29, 1999, SWRCB certified both the *Final Environmental Impact Report for Implementation of the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* and the *Final Environmental Impact Report for Consolidated and Conformed Place of Use.* Approval of these EIRs signified implementation of the 1995 Bay-Delta Plan and approval of the Department and the Bureau's request to be allowed to divert or redivert water from each others' points of diversion in the southern Delta.

SWRCB adopted Water Right Order 2001-05, which facilitates negotiations that may lead to a settlement of the potential responsibilities of numerous water users to implement the objectives in WQCP for the San Francisco Bay / Sacramento-San Joaquin Delta Estuary. This order stayed the resumption of Phase 8 of the Bay-Delta Water Rights Hearing for 18 months and automatically dismisses Phase 8 at the end of that period, unless SWRCB receives notice from the Department or the Bureau requesting the resumption of Phase 8. The order extended the responsibilities of the Department and the Bureau under Conditions 1 and 2 of Decision 1641 to meet the water quality objectives in the 1995 WQCP.

CALFED Bay-Delta Program

The CALFED Bay-Delta Program is a cooperative effort among State and federal agencies and California's environmental, urban, and agricultural communities. CALFED was started in 1995 to address environmental and water management problems associated with the Bay-Delta system, the intricate web of waterways created at the junction of the San Francisco Bay and the San Joaquin River system and the watershed that feeds them.

Through 2001, the CALFED Bay-Delta Program continued to work on a comprehensive, long-term solution for the Delta. This program is a component of a process defined in the State-federal Framework Agreement, signed in June 1994, which calls for a cooperative and coordinated process to solve long-term water quality and ecosystem problems in the Bay-Delta estuary. The signatories of the agreement, known collectively as CALFED, became responsible for developing long-term solutions for fish and wildlife, water supply reliability, flood control, and water quality problems in the estuary.

This was the first full year of implementation of the CALFED Bay-Delta Program, signifying the completion of the general planning phase and the beginning of specific project planning and implementation activities.

Integrated Storage Investigation. ISI is in the early stages of evaluating the approach to, and planning solutions for, surface storage. In 2001, investigations of five reservoir projects continued: In-Delta Storage, Los Vaqueros Reservoir Enlargement, Shasta Lake Enlargement, North-of-the-Delta Offstream Storage, and Upper San Joaquin River Basin Storage.

Environmental Water Account. EWA had its first operational year in 2001. This program is aimed at adding flexibility to the State's water delivery system. It is designed to provide water at critical times to meet environmental needs at no uncompensated cost to SWP / CVP water users.

To do that, EWA buys water from willing sellers or diverts surplus water when safe for fish. EWA then banks, stores, transfers, and releases the water as needed to protect fish and compensate water users.

In 2001, the Department and the Bureau started work on a joint EIS / EIR document for EWA, which will take into consideration the environmental impacts associated with the long-term use of EWA on both SWP and CVP operations, and will allow for long-term EWA contracts with willing water sellers.

In early 2001, EWA provided water to offset cuts in pumping to protect winter-run salmon, Delta smelt, and Sacramento splittail. About 290,000 acre-feet of EWA water were released at key times.

A source shift of 50,000 acre-feet was also undertaken to reduce the risk of low-point problems at San Luis Reservoir.

South Delta Improvements Program. In 1999, CALFED included the Interim South Delta Program as a component. The program was renamed the *South Delta Improvements Program*. The purpose of SDIP, slightly revised from that of the former ISDP, is to

- improve the reliability of existing SWP facilities;

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

Status of Threatened Listings

North American Green Sturgeon. On June 12, 2001, the National Marine Fisheries Service was petitioned to list the North American green sturgeon (*Acipenser medirostris)* as either a threatened or endangered species under the federal Endangered Species Act, and to designate critical habitat for the species concurrently with any listing. NMFS will initiate a status review for green sturgeon, and will publish its finding and decision by June 12, 2002.

Splittail. In 2001, U.S. Fish and Wildlife Service opened the ESA listing comment period for splittail on three separate occasions. A final rule is still pending.

Power Resources

In 2001, SWP pumping plants consumed 6.66 million MWh of energy and power plants generated 4.296 million MWh of energy. The Department sold 2.15 million MWh of energy in 2001 to 20 utilities, 12 power marketers, and the California ISO for total revenues of $256.23 million. The Department also received $85.48 million from capacity sales, exchanges, and transmission arrangements. The combined revenue was $341.71 million. The sidebar below documents 2001 SWP power generation and consumption.

Energy Crisis

The energy shortages and price escalations experienced in 2000 continued in 2001 and rapidly developed into a full-scale energy crisis. The inability of PG&E and SCE to pass their higher costs on to their customers, due to the energy crisis, resulted in these utilities' inability to purchase energy and a bankruptcy filing by PG&E. The Governor declared a State of Emergency on January 17 and ordered the Department to purchase both long-term and short-term energy on behalf of the utilities, thus creating the California Energy Resources Scheduling Division.

Oroville Facilities Relicensing

The existing 50-year term hydroelectric license for the Oroville facilities will expire January 31, 2007. To obtain a new license the Department must file a new application to FERC by January 31, 2005.

Participants in the application process indicated support for a collaborative approach, and the Department, as licensee, submitted a request to FERC to use the alternative licensing

State Water Project Power Generation and Consumption in 2001

Power Generation and Consumption	Millions of Megawatt Hours
Energy generation by SWP facilities	4.296
Energy purchased under long-term agreements	1.599
Short-term energy purchases	3.060
Total energy available to the SWP	**8.955**
Energy sales	(2.299)
Net power consumption of the SWP	**6.656**

procedures, which allow such an approach, in relicensing the Oroville facilities. On January 11, 2001, FERC accepted the Department's request. During 2001, primary achievements included the development and acceptance of Oroville Facilities Relicensing Process Protocols; formation of the Plenary Group and resource area workgroups; and preliminary identification of issues to be addressed in the relicensing process. The Department also initiated the National Environmental Policy Act's scoping process, which included hosting a site visit and public scoping meetings in both Oroville and Sacramento, distribution of *Draft Scoping Document 1* to the public, and submission of a *Preliminary Draft Study Plan* package to the Plenary Group.

Deregulation of Electric Utilities

In 2001, the Department signed the Participating Load Agreement with ISO.

FERC ordered the termination of the requirement for the Investor-Owned Utilities to buy and sell energy through the California Power Exchange. This effectively shut down operations of CalPX.

The Department sold spinning, nonspinng, and replacement reserves to ISO; bid pump loads into nonspinning reserves to provide ISO additional resources in case of system emergencies; and bought and sold energy.

Financial Analysis

In 2001, the Department continued to pay bondholders as scheduled. The SWP was financially viable and was indirectly paid for by the approximately 23 million water users who were served by the project. Direct payment was through the 29 long-term water contractors In 2001, the SWP handled approximately $870 million in income and $870 million in expenses. The large increase in income and expense levels over 2000 values is primarily due to a substantial increase in power costs in 2001. The sidebar below shows a 2001 income statement for the SWP.

Monterey Amendment

The Monterey Amendment, based on the Principles of Agreement released on December 16,

2001 Income Statement for the State Water Project

Revenues	**Thousands of Dollars**
Water contractor payments	867,715
Revenue bond cover adjustments	(44,522)
Rate management adjustments	(40,470)
Other revenue	84,791
Total operating revenues	**867,514**
Expenses	**Thousands of Dollars**
Project operations, maintenance, and power	705,534
Deposits to reserves	(91,054)
Water bond principal	70,670
Water bond interest	182,364
Total operating expenses and debt service	**867,514**
Net system revenues	**0**

1994, was designed to increase the reliability of existing water supplies, provide stronger financial management for the SWP, and increase water management flexibility by providing more tools for local water agencies. An Environmental Impact Report was prepared by the Central Coast Water Authority.

On December 27, 1995, the Planning and Conservation League filed a lawsuit against the Department and CCWA, challenging the California Environmental Quality Act compliance. PCL amended the complaint February 13, 1996, alleging that the Department could not legally transfer the Kern Water Bank to the Kern County Water Agency as part of the Monterey Amendment.

After a hearing held May 17, 1996, a Sacramento County Superior Court judge ruled in favor of the Department and CCWA and dismissed the lawsuit. PCL appealed the decision to the Third District Court of Appeal. On September 15, the Court of Appeal reversed the Superior Court ruling and ordered a new EIR to be prepared by the Department. The Department filed a petition on October 25, 2000, asking the California Supreme Court to review the Court of Appeal's decision. On December 13, 2000, the California Supreme Court denied review. The parties commenced mediation, and proceedings in Superior Court are stayed pending completion of mediation. Proposals and counterproposals have been exchanged without success, and mediation is continuing. The stay of litigation in Superior Court has been extended to June 2002.

Monterey Settlement Agreement Guidelines

In accordance with the Settlement Agreement dated May 5, 2003, reached in *Planning and Conservation League et al. v. Department of Water Resources*, the *Guidelines for Review of Proposed Permanent Transfers of State Water Project Annual Table A Amounts* from the Agreement are being published in this edition of Bulletin 132. The guidelines in their entirety can be found in Chapter 9, *Water Contracts and Deliveries*, and are also available online at www.swpao.water.ca.gov/pdfs/03-09.pdf.

Security of the State Water Project

Security and protection of the SWP is a primary goal for the Department, particularly after the events of September 11, 2001.

On September 11, 2001, security monitoring of SWP facilities was increased, tours were cancelled, and visitors centers were closed.

Since September 11, the Department has taken action to further increase security, regulate access, and closely monitor activities at SWP facilities and the Department's offices.

In an effort to protect SWP water from biochemical and chemical agents, Bryte Laboratory has joined the California Mutual Aid Laboratories, headed by Department of Health Services. SWP water and source water are being closely monitored, and the possibility of using additional real-time field instrumentation to enhance the early warning system has been investigated.

In addition to upgrades in facility and infrastructure security, special training on security and emergencies has been given to the Department's key managers, first-responders, and security staff.

Project Development

East Branch Extension

Work continued on the East Branch Extension of the California Aqueduct. Construction began in 1999; the project is anticipated to start operating in fall 2002. It is being constructed to convey 8,650 acre-feet of SWP water annually to the San Gorgonio Pass Water Agency service area.

Construction of Crafton Hills Reservoir was started in 2000 and completed in August 2001. Steel pipelines for Reaches 1 and 2 were installed and tested, and 28,150 linear feet of buried steel pipeline for Reach 3 were installed in 2001. Construction of Greenspot, Crafton

Hills, and Cherry Valley Pump Stations continued in 2001.

Phase I of the pipeline will bring SWP water to Yucaipa, Calimesa, Beaumont, Banning, and other nearby communities.

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

The pipeline will convey water from the Crafton Hills Pump Station through Crafton Hills Reservoir and Cherry Valley Pump Station to the Noble Creek Spreading Grounds. A map of the East Branch Extension, Phase I area, is shown in Figure ES-1.

Financing

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

Planning

Arroyo Pasajero

Since the demise of the two candidate plans presented in the March 1999 draft feasibility report, the investigation has focused on a new alternative made possible by the availability of relatively low productivity farmland in the Western Tulare Lakebed. This plan would rely on some increased storage in the existing detention basin west of the Aqueduct to be used in conjunction with a reservoir to be constructed in the western Tulare Lakebed near Kettlemen City. The Arroyo Pasajero Feasibility Investigation Information Paper, jointly authored by the U.S. Army Corps of Engineers and the Department in 2000, described in detail the Tulare Lakebed plan and a related plan involving significant enlargement at the existing detention basin without an overchute. Both of these plans were presented as viable options for continuing to pursue a Corps project at the Arroyo Pasajero.

While the Corps and the Department continued to develop and refine the two alternatives above, the Department and the Bureau independently began to evaluate a less costly version of the Tulare Lakebed plan that provided a lower, but acceptable, level of flood protection to the Aqueduct. The Department plans to complete its own feasibility investigation into this most cost effective plan during 2002.

Department Reorganization

Office of Water Use Efficiency

The Water Conservation Office was reorganized and a new Office of Water Use Efficiency was created in 2001. Its Water Recycling and Desalination Branch was established with the strategic goal of increasing the beneficial use of recycled water in the State.

Water Transfers Office

The Water Transfers Office was established in 2001. The office provides statewide direction, oversight, and coordination of the Department's water transfer program, including Drought Water Bank EIR and EWA. Activities are coordinated with other divisions and offices within the Department, in particular with the CALFED Bay-Delta Program, to meet commitments in the CALFED's Record of Decision.

Community Service

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

Public Information Activities

The Office of Water Education provided news media liaison and public information following the energy State of Emergency declared by the Governor on January 17, 2001.

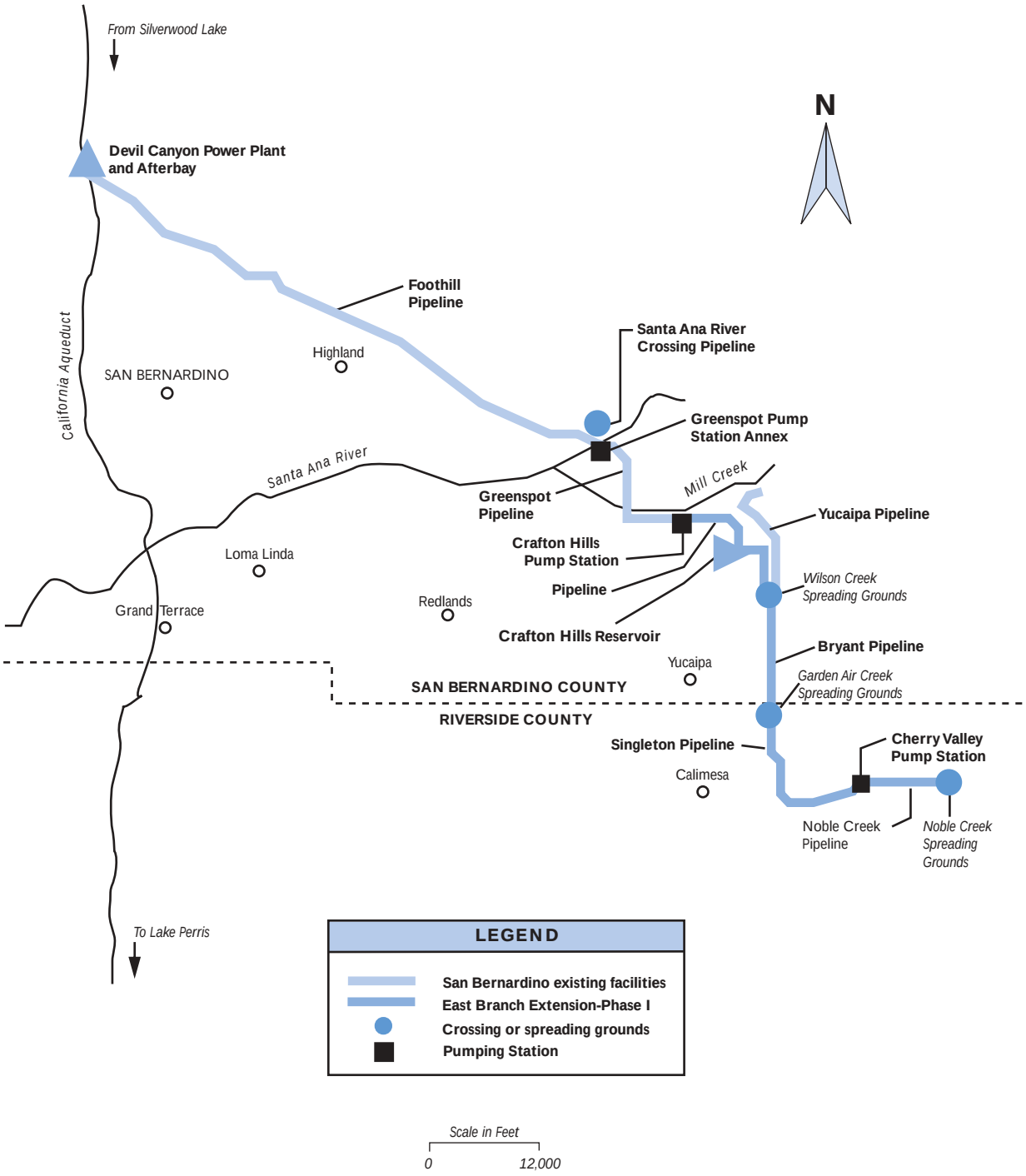


Figure ES-1. East Branch Extension, Phase 1

Chapter 1
The State Water Project



Clifton Court Forebay in the
Sacramento-San Joaquin Delta

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

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

In 1951, after many years of discussion and study, the Legislature authorized construction of a water storage and supply system to capture and store runoff in Northern California and deliver it to areas of need throughout the State. Eight years later, the Legislature passed the Burns-Porter Act, which provided the mechanism for obtaining funds necessary to construct the initial facilities. In 1960, California voters approved an issue of $1.75 billion in general obligation bonds, as authorized in the act, thereby obtaining funds to build the State Water Project. In 1962, the first water was delivered through a portion of the South Bay Aqueduct to two long-term contracting agencies in Alameda County.

Today the SWP, managed by the Department of Water Resources, is the largest state-built, multipurpose water project in the country. The SWP was designed and built to deliver water, control floods, generate power, provide recreational opportunities, and enhance habitats for fish and wildlife. Approximately 23 million of California's estimated 34 million residents benefit from SWP water; it irrigates about 750,000 acres of farmland, mainly in the south San Joaquin Valley.

Precipitation and Runoff

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

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

Water Delivery Facilities

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



Figure 1-1. Names and Locations of Primary Water Delivery Facilities Current and Projected, December 31, 2001

Existing long-term SWP water supply contracts call for the annual delivery of 4,086,021 acre-feet of Table A water by 1998 through SWP facilities, gradually increasing to a maximum of 4,172,686 acre-feet by 2020. A number of changes have occurred since the long-term water contracts were signed in the 1960s. These changes include population growth variations, differences in local use, local water conservation programs, and conjunctive-use programs. The SWP delivered 1,546,742 acre-feet of approved Table A water to long-term contractors' service areas in 2001. Demands for SWP water are expected to increase as the population of California continues to increase.

Project Design

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

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

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

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

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

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

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

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

As the water flows through the San Joaquin Valley, numerous turnouts convey the water to farmlands within the service areas of the SWP

and CVP. Along its journey, the water is lifted more than 1,000 feet by four pumping plants—Dos Amigos, Buena Vista, Teerink, and Chrisman—before reaching the foot of the Tehachapi Mountains.

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

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

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

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

A February 2001 contract to install fiber optic cable from the Greenspot Pump Station to the Crafton Hills Pump Station was completed in May 2001, and accepted in September 2001. Crafton Hills Reservoir, which began in March 2000, was completed in August 2001.

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

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

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

Table 1-1. Physical Characteristics of Primary Storage Facilities

Facility	Gross Capacity (Acre-feet)	Surface Area (Acres)	Shoreline (Miles)
Antelope Lake	22,600	930	15
Frenchman Lake	55,500	1,580	21
Lake Davis	84,400	4,030	32
Lake Oroville	3,537,600	15,800	167
Thermalito Forebay	11,800	630	10
Thermalito Afterbay	57,000	4,300	26
Thermalito Diversion Pool	13,400	320	10
Clifton Court Forebay	31,300	2,180	8
Bethany Reservoir	5,100	180	6
Lake Del Valle	77,100	1,060	16
San Luis Reservoir SWP storage, 1,062,183 AF	2,027,800	12,520	65
O'Neill Forebay SWP storage, 29,500 AF	56,400	2,700	12
Los Banos Reservoir	34,600	620	12
Little Panoche Reservoir	5,580	190	6
Quail Lake	7,600	290	3
Pyramid Lake	171,200	1,300	21
Elderberry Forebay	32,500	500	7
Castaic Lake	323,700	2,240	29
Silverwood Lake	75,000	980	13
Lake Perris	131,500	2,320	10

Table 1-2. Physical Characteristics of Primary Dams

Facility	Crest Elevation (Feet)	Structural Height (Feet)	Crest Length (Feet)	Structural Volume (Thousand Cubic Yards)
Antelope	5,025	120	1,320	380
Frenchman	5,607	139	720	537
Grizzly Valley	5,785	132	800	253
Oroville	922	770	6,920	80,000
Thermalito Diversion	233	143	1,300	154
Thermalito Forebay	231	91	15,900	1,840
Thermalito Afterbay	142	39	42,000	5,020
Clifton Court Forebay	14	30	36,500	2,440
Bethany	250	121	3,940	1,400
Del Valle	773	235	880	4,150
Sisk	554	385	18,600	77,645
O'Neill	233	88	14,350	3,000
Los Banos Detention	384	167	1,370	2,100
Little Panoche Detention	676	151	1,440	1,160
Pyramid	2,606	400	1,090	6,000
Elderberry Forebay	1,550	200	1,990	6,000
Castaic	1,535	425	4,900	46,000
Cedar Springs	3,378	249	2,230	7,600
Perris	1,600	128	11,600	20,000

Table 1-3. Pumping Plant Characteristics

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

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

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

Type and Facility	Number of Units	Normal Static Head (Feet)	Total Flow at Design Head (cfs)	Total Generator Rating (kW)
Hydro				
Thermalito Diversion Dam	1	63-77	615	3,300
Thermalito	4 (3 p-g)[a]	85-101	17,400	120,000
Hyatt	6 (3 p-g)[a]	410-676	16,950	819,000
Gianelli (total)	8 p-g[a]	99-327	16,960	424,000
SWP share				222,100
Alamo	1	115-141	1,740	18,000
Warne	2	719-739	1,600	78,200
Mojave Siphon	3	81-136	2,880	34,500
Devil Canyon	4	1,406	2,940	291,000
Castaic (total)	7 (6 p-g)[a]	900-1,050	20,820	1,260,000
SWP share[b]	n/a	n/a	n/a	n/a
Geo-thermal				
Reid Gardner, Unit 4 (total)	1[c]			275,000
SWP share of generation[d]				250,000

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

Table 1-5. Total Miles of Aqueducts

Facility	Channel and Reservoir	Canal	Pipeline	Tunnel	Total
North Bay Aqueduct	0.0	0.0	27.4	0.0	27.4
South Bay Aqueduct	0.0	8.4	32.9	1.6	42.9
Subtotal	*0.0*	*8.4*	*60.3*	*1.6*	*70.3*
California Aqueduct, Main Line					
Delta to O'Neill Forebay	1.4	67.0	0.0	0.0	68.4
O'Neill Forebay to Kettleman City	2.2	103.5	0.0	0.0	105.7
Kettleman City to Edmonston Pumping Plant	0.0	120.9	0.0	0.0	120.9
Edmonston Pumping Plant to Tehachapi Afterbay	0.0	0.2	2.5	7.9	10.6
Tehachapi Afterbay to Lake Perris	2.9	93.4	38.3	3.8	138.4
Subtotal	*6.5*	*385.0*	*40.8*	*11.7*	*444.0*
California Aqueduct Branches					
West Branch	9.2	9.1	6.4	7.2	31.9
Coastal Branch	0.0	15.0	97.9	2.7	115.6
Subtotal	*9.2*	*24.1*	*104.3*	*9.9*	*147.5*
Total	**15.7**	**417.5**	**205.4**	**23.2**	**661.8**

Additional Construction

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

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

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

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

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

Methods of Financing

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

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

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

Long-Term Contracting Agencies

From 1963 through 1967, 32 agencies or districts signed long-term water supply contracts with the Department. However, in 1965, the City of West Covina was annexed to the Metropolitan Water District of Southern California, and in 1981 Hacienda Water District was assigned to Tulare Lake Basin Water Storage District. On January 1, 1992, Castaic Lake Water Agency assumed all rights and obligations granted to Devil's Den Water District according to its long-term water supply contract. The 29 agencies and districts that now have long-term contracts with the Department as of December 31, 2001, are listed in Figure 1-2 and Table 1-6.

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

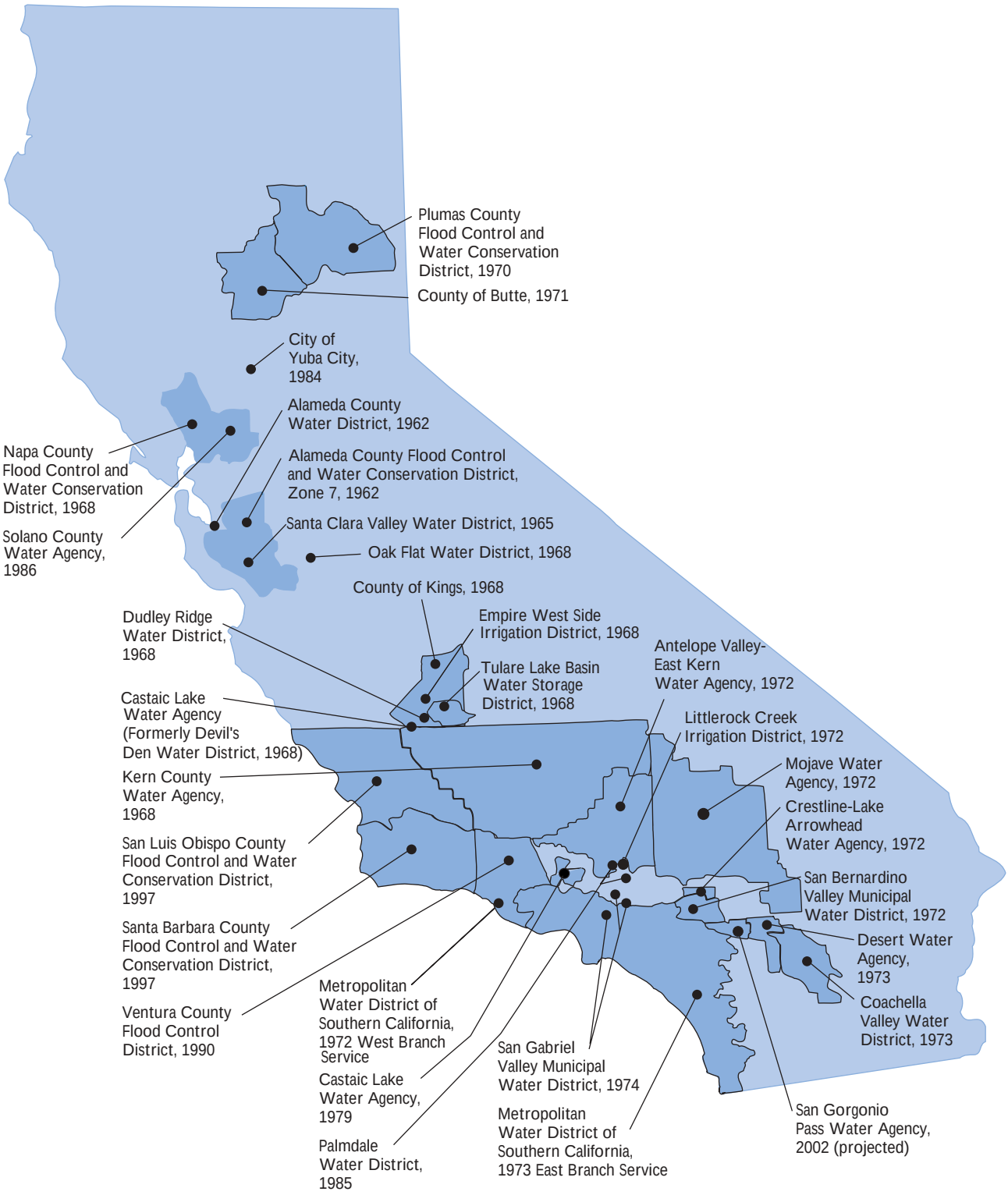


Figure 1-2. Names, Locations, and First Year of Service of Long-Term Contracting Agencies, December 31, 2001

Table 1-6. Long-Term Water Supply Contracting Agencies, by Area, as of December 31, 2001

Contracting Agency	Cumulative Deliveries through December 31, 2001 (Acre-Feet)[a]	Maximum Annual Table A (Acre-Feet)	Payments through December 31, 2001 (Dollars)	Gross Area as of December 31, 2001 (Acres)	Assessed Valuation 2001 (Dollars)[b]	Estimated Population December 31, 2001
Upper Feather River Area						
City of Yuba City	11,325	9,600	2,665,124	5,107	1,160,461,860	37,120
County of Butte	9,986	27,500	713,785	1,069,000	6,239,500,000	172,600
Plumas County Flood Control and Water Conservation District	10,472	2,700	1,209,897	1,676,056[c]	2,060,744,342[c]	21,200
Subtotal	*31,783*	*39,800*	*4,588,806*	*2,750,163*	*9,460,706,202*	*230,920*
North Bay Area						
Napa County Flood Control and Water Conservation District	185,515	29,025	50,573,315	510,010	14,008,347,997	128,145
Solano County Water Agency	389,285	47,756	65,937,840	537,600	22,175,539,868	394,542
Subtotal	*574,800*	*76,781*	*116,511,155*	*1,047,610*	*36,183,887,865*	*522,687*
South Bay Area						
Alameda County Flood Control and Water Conservation District, Zone 7	898,539	78,000	76,956,423	275,900	26,883,954,795	178,900
Alameda County Water District	867,088	42,000	69,926,941	65,920	31,903,065,502	322,000
Santa Clara Valley Water District	2,997,198	100,000	219,954,164	849,000	147,074,863,200	1,715,374
Subtotal	*4,762,825*	*220,000*	*366,837,528*	*1,190,820*	*205,861,883,497*	*2,216,274*
San Joaquin Valley Area						
County of Kings	76,997	4,000	3,170,564	893,300	3,847,066,037	122,848
Castaic Lake Water Agency	433,041			8,700	4,386,000	0
Dudley Ridge Water District	1,739,895	53,370	51,735,238	37,568	44,500,000	36
Empire West Side Irrigation District	95,752	3,000	2,662,927	7,400	not available	50
Kern County Water Agency	26,701,262	1,000,949	1,203,700,144	5,161,000	39,989,475,308	695,000
Oak Flat Water District	169,902	5,700	4,156,412	4,500	not available	10
Tulare Lake Basin Water Storage District	3,927,382	118,500	107,310,451	189,519	152,288,305	23
Subtotal	*33,144,231*	*1,185,519*	*1,372,735,736*	*6,301,987*	*44,037,715,650*	*817,967*
Central Coastal Area						
San Luis Obispo County Flood Control and Water Conservation District	16,779	25,000	38,984,065	2,131,300	22,082,450,364	246,681
Santa Barbara County Flood Control and Water Conservation District	89,121	45,486	187,825,842	1,775,296	15,003,892,855	399,543
Subtotal	*105,900*	*70,486*	*226,809,907*	*3,906,596*	*37,086,343,219*	*646,224*
Southern California Area						
Antelope Valley-East Kern Water Agency	1,244,630	138,400	281,225,830	1,525,547	13,600,000,000	310,000
Castaic Lake Water Agency[d]	345,618	95,200	140,741,678	133,700	17,200,000,000	200,000
Coachella Valley Water District	637,241	23,100	132,389,957	637,600	11,132,616,000	279,300
Crestline-Lake Arrowhead Water Agency	37,001	5,800	16,577,557	55,100	1,500,527,807	25,000
Desert Water Agency	887,787	38,100	158,993,193	209,760	5,276,513,800	65,445
Littlerock Creek Irrigation District	18,995	2,300	4,451,055	10,000	266,368,755	2,900
Metropolitan Water District of Southern California	19,708,486	2,011,500	5,747,684,185	3,328,000[f]	1,125,397,942,520[e]	17,300,000[f]
Mojave Water Agency	169,800	75,800	130,184,774	3,160,400	13,300,357,119	353,391
Palmdale Water District	125,321	21,300	39,349,796	119,680	862,000,000	90,000
San Bernardino Valley Municipal Water District	356,496	102,600	295,557,074	210,000	14,907,805,419	600,000
San Gabriel Valley Municipal Water District	257,435	28,800	89,685,106	18,297	10,146,852,471	207,576
San Gorgonio Pass Water Agency	0	17,300	41,116,632	140,600	1,945,425,320	44,600
Ventura County Flood Control District	17,274	20,000	35,038,524	308,252	21,957,265,429	457,000
Subtotal	*23,806,084*	*2,580,200*	*7,112,995,360*	*9,856,936*	*1,193,591,617,161*	*19,635,212*
Total, State Water Project	**62,425,623**	**4,172,786**	**9,200,478,492**	**25,054,112[f]**	**1,570,124,211,073[f]**	**24,369,284[f]**

[a]All water delivered to long-term SWP contractors, including carryover, Article 21, surplus, unscheduled, exchange, permit, purchased, local, and non-SWP water.
[b]Statutes of 1978, Chapter 1207, added Section 135 to the Revenue and Taxation Code, requiring assessment at 100 percent of full value for the 1981-82 fiscal year and fiscal years thereafter.
[c]Total of all Plumas County Flood Control and Water Conservation District, including Last Chance Creek Water District.
[d]District includes land in the San Joaquin Valley Area formerly known as Devil's Den Water District.
[e] Total for MWD, including Calleguas Municipal Water District, which is common to MWD and Ventura County Flood Control District.
[f]Includes duplicate values. Some areas that are within two or more agencies are included in each agency's total.

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

Chapter 2
Delta Resources



A Greek cargo ship steaming up the San Joaquin River on its way to the Port of Stockton. Bradford Island is in the foreground, Sherman Island in the background.

Significant Events in 2001

- The Department's Delta Levees Program, in partnership with the Department of Fish and Game, completed construction of 15 acres of habitat on Decker Island to meet the program's legislative mandate of net habitat enhancement. Material removed from Decker Island was used to rehabilitate levees on Webb Tract and Twitchell Island. The borrow site was sculpted and planted with native vegetation and eventually opened to the tidal influences of the Sacramento River.

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

The common goals of these programs have been to

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

Delta Water Management Programs

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

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

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

South Delta Improvements Program

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

- improve the reliability of existing SWP facilities;
- ensure that water of adequate quantity and quality is available for diversion to the South Delta Water Agency's service area for beneficial use; and

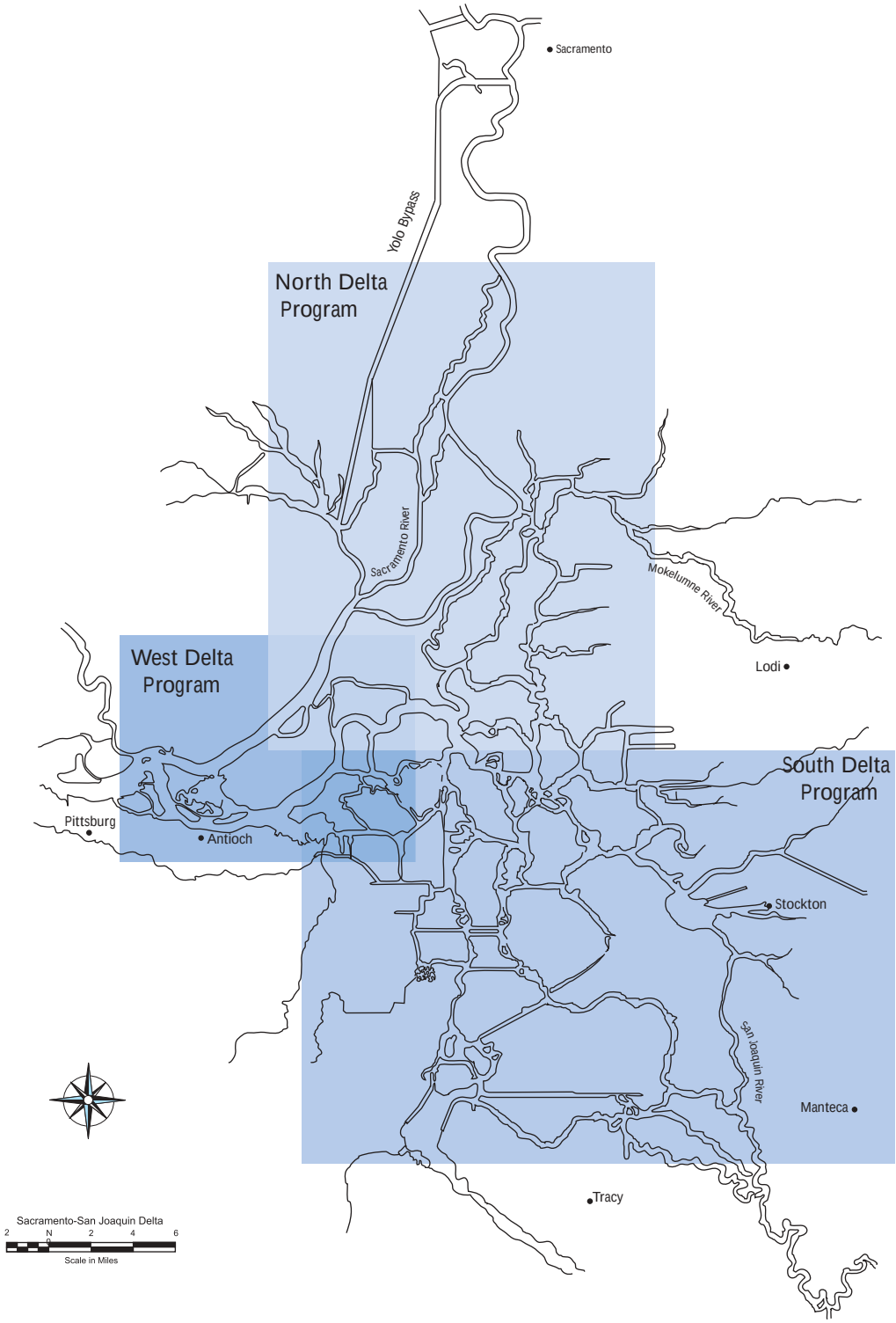


Figure 2-1. Boundaries of North, West, and South Delta Water Management Programs

- reduce the effects of SWP exports on both aquatic resources and direct losses of fish in the south Delta.

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

- three flow-control structures to improve local water levels and circulation in south Delta channels;
- a fish-control structure to improve fish migration in the San Joaquin River;
- some dredging in West Canal to improve conveyance capacity to Clifton Court Forebay;
- extensive dredging in the south Delta to improve channel capacity for local agricultural users;
- modifications to existing agricultural diversion intakes; and
- increasing the maximum allowable diversion rate into Clifton Court Forebay to 8,500 cfs.

Planning activities for increasing the SWP export limit to its maximum of 10,300 cfs are continuing; however, there are uncertainties regarding science and funding for a new intake and fish screening facilities at Clifton Court Forebay. The proposed project is a key component of the CALFED Conveyance Program. It would improve the reliability of SWP water supply and increase operational flexibility. In addition, the proposal to construct flow control structures in south Delta channels would allow the Department and the Bureau of Reclamation to improve conditions for local agricultural diverters in the vicinity of the project export facilities. The flow control structure would benefit both spring and fall salmon migrations in the San Joaquin River. The action to increase the maximum export limit to 8,500 cfs is scheduled for implementation in 2004.

Environmental Review Process. A Draft EIS/EIR for SDIP is scheduled for release in 2003 and a Final EIR/EIS is scheduled for 2004. Once the Final EIR/EIS is completed, a Notice of Determination and Record of Decision will be filed. State and federal regulatory agencies may then act on permits required to construct and operate the proposed facilities.

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

In addition, biological monitoring programs have been conducted to

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

Temporary rock barriers are installed on an annual basis during low flow conditions, at the four sites listed below.

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

(4) Grant Line Canal, 420 feet east of the Tracy Boulevard Bridge

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

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

Clean Water Act

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

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

West Delta Program

The objectives of the West Delta Program are to

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

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

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

North Delta Program

North Delta improvements are a Stage I action under the CALFED Bay-Delta Program. These improvements will primarily address flood control and ecosystem restoration in the north Delta area, but will also support other CALFED goals such as water supply reliability to the greatest extent possible. CALFED designated the Department as the State Implementation Agency for North Delta improvements. Many of the proposed CALFED North Delta improvement elements are similar to the elements of previous North Delta planning efforts that were suspended in deference to the CALFED Program.

A consultant contract to prepare an EIR/EIS for North Delta improvements was awarded in December 2001. The Department is overseeing preparation of EIR/EIS and has engaged stakeholders and agencies in the north Delta planning process through the North Delta Improvements Group and the Mokelumne-Cosumnes Watershed Alliance.

The Department is also working cooperatively with Sacramento County and Sacramento Area Flood Control Agency, with the input of numerous agencies and stakeholders to develop a regional hydraulic model to be used in the Department's North Delta planning process and other regional planning processes.

Delta Flood Control

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

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

Since 1988, the program has managed $145 million in appropriated funds and, combined with local funds, has realized $201 million in levee improvements. In 1996, Assembly Bill 360 was signed into law. This law expanded the area covered by the Delta Special Flood Control Projects Program to include the remainder of the legal Delta and the northern Suisun Bay from Van Sickle Island to Montezuma Slough. Bond appropriations of $25 million from Proposition 204 (enacted in 1996) and $30 million from Proposition 13 (enacted in 2000) provide supplemental funding.

Delta Levee Maintenance Subventions Program

The Delta Levee Maintenance Subventions Program provides funding, as a reimbursement, to local Delta reclamation districts for levee maintenance and repair, and each year participating districts prepare work plans and file applications for funding with the State Reclamation Board.

The applications and work plans are reviewed by the Department, which makes a recommendation and requests the approval of SRB for the program funding level. SRB also approves each

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

In order to assure continuance of the Delta's ability to provide the many statewide and local benefits, the Delta Levee Maintenance Subventions Program provides matching funds for levee maintenance critical to the long-term survival of Delta islands and the State water supply.

Delta Special Flood Control Projects

The Special Flood Control Projects Program assists the eight western islands, northern Suisun Bay, the towns of Thornton and Walnut Grove, and other locations in the Delta. In July 1989, the Legislature approved a plan of action for flood control for the towns of Thornton and Walnut Grove.

For the eight western Delta islands, the California Water Commission approved a report of initial or "fast-track" actions in September 1989 and approved the long-term actions and priorities in May 1990. The long-term plans function as a guide for the Department to determine how best to use appropriations to protect these islands and include

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

Depending on each reclamation district's ability to pay, the Department provides up to 100 percent of the cost of these activities. Districts receiving these funds are required to participate in habitat improvement programs to ensure a net long-term habitat enhancement.

Delta Levees Habitat Improvement. The Delta Flood Protection Program continues to make significant strides in its efforts to create valuable habitat in the Delta. In 2001, the program continued to develop 282.7 acres of various types of habitat for flood mitigation and 19.38 acres for enhancement. The program is also in the process of developing 36,350 linear feet of shaded riverine aquatic habitat, of which 12,898 linear feet will be used for mitigation and 23,452 linear feet for enhancement.

Completed mitigation and enhancement projects include

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

Projects underway include

- Decker Island Phase 2 design
- Prospect Island
- Sherman Island berm
- Sherman Island Parcel 11

- Franks Tract
- the last phase of Tyler Island

Projects that have been proposed include

- Dutch Slough Tidal Restoration
- Restoration of flooded islands study
- Bradford Island Tract 19 Acquisition
- Developing habitat on McCormack-Williamson Tract

The Department, DFG, and reclamation districts are making substantial progress in providing adequate avoidance or mitigation of net long-term habitat losses and in enhancing habitat in the Delta. Many participating districts are identifying potential habitat mitigation and enhancement areas that may be developed into diverse habitats as the program's habitat development process moves forward. The Department and DFG will continue to work with the reclamation districts to preserve existing habitat and to improve the quantity and quality of habitat in the Delta.

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

Subsidence Investigations. Organic soils in the Sacramento-San Joaquin Delta are now between 10 and 25 feet below sea level. The peat has oxidized and subsided since the mid-1800s, when the land was first drained and levees constructed. The Legislature recognized the problem and, with the initiation of the Delta Flood Protection Act of 1988, the Department began monitoring subsidence and studying its causes.

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

- land management practices substantially influence subsidence rates;
- cultivation practices that raise soil temperature and lower the water table dramatically increase oxidation of the peat soils;
- conversion of highly organic peat soils to carbon dioxide gas (oxidation) appears to be the primary cause of subsidence;
- permanently shallow flooded wetlands decrease release of gaseous carbon by as

U.S. Army Corps of Engineers

In addition to its historical leadership in flood control, the U.S. Army Corps of Engineers regulates structures or work affecting navigable waters of the United States according to Section 10 of the Rivers and Harbors Act (Title 33, United States Code, Section 403 [1899]) and any activity which results in discharges of dredged or fill material into waters of the United States (which includes wetlands), according to Section 404 of the Clean Water Act.

Bureau of Reclamation

The Bureau of Reclamation manages the operation of the Central Valley Project and shares with the Department responsibilities for meeting water quality and flow objectives in the Delta. CVP delivers about 7 million acre-feet of water a year to contractors in the Sacramento and San Joaquin Valleys and parts of the San Francisco Bay Area. Under the requirements of CVPIA, the Bureau also supplies water for fisheries and wildlife refuges in the Central Valley.

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

much as 80 percent, thereby mitigating subsidence;
- permanently shallow flooded wetlands also promote the growth of wetland vegetation that adds biomass back to the system; and
- subsidence mitigation and growth of wetland vegetation suggest that shallow permanent flooding has potential to reverse subsidence through biomass accretion.

In 1999, CALFED granted Category III funds to the Department to construct a Subsidence Reversal Demonstration Project on Twitchell Island. In 2001, the final report (*Geomorphology of the Sacramento-San Joaquin Delta*) was issued along with a draft report in which various sediment placement procedures were examined. Field monitoring, determination of hydrologic and tidal boundary conditions, and sediment modeling were initiated, and construction, monitoring, and instrumentation installation were continued at the field test sites. Water quality, soils, and hydraulic and carbon release data were collected from the test sites.

In 2003, USGS and area consultants will set up a learning laboratory to study ways to reverse subsidence. This project will combine the cultivation of tules and other aquatic vegetation in shallow ponds with application of thin layers of sediment. Land surface accretion and organic soil oxidation rates will be measured.

Reuse of Dredged Material for Delta Levees. As local sources of fill material for levee repair are depleted, new economical sources must be located. During the last 12 years, the Department, in coordination with the Corps, local reclamation districts, and the Central Valley Regional Water Quality Control Board, implemented three pilot projects at Sherman, Twitchell, and Jersey Islands to demonstrate the viability of relocating material from the San Francisco Bay Area to the Delta. Extensive monitoring and testing programs for salinity impact were required; no salinity impact was demonstrated.

Based on these results, the Department endeavored to find more opportunities to reuse clean, bay-dredged materials in the Sacramento-San Joaquin Delta. Current efforts for beneficial reuse of dredged material from the Bay Area principally consist of

- coordination with CVRWQCB to address water quality concerns;
- discussions with the Corps to promote identification and acquisition of federal funds to support beneficial reuse projects;
- assistance to the Long-Term Management Strategy and Save the Bay in preparing proposals to CALFED to evaluate the potential for Delta reuse of clean, dredged material from San Francisco Bay;
- coordination with the Corps, CVRWQCB, CALFED, and RD 341 to stockpile dredged material from Suisun Bay and New York Slough on Sherman Island—this is a long-term project and could consist of 200,000 cubic yards of material dredged annually for 5 years. This project will be initiated by a demonstration project with 150,000 cubic yards coupled with an intense monitoring program;
- levee restoration and habitat projects proposed or under construction; and
- submittal of Report of Waste Discharge to CVRWQCB for an application to obtain Waste Discharge Requirements for this project.

Levee restoration and habitat projects in 2001 include

- construction of landside berms on Bradford Island to reduce seepage and stabilize foundations;
- engineering investigation for levee restoration on Bethel Island;
- stability berms on Hotchkiss Tract;
- long-term levee improvements on Sherman Island, including stability berms to strengthen levees in critical areas;

- design of habitat mitigation parcel and setback levee on Sherman Island;
- stability berms and internal drains to strengthen historically weak levees and control seepage along Three Mile Slough on Sherman Island;
- levee repair of areas with stability and seepage problems on Webb Tract;
- habitat improvements to setback levee on Twitchell Island;
- design of a 2.2-acre island in the San Joaquin River for the Sherman Island Berm Demonstration Project;
- engineering investigation for levee restoration and a beneficial reuse project on Jersey Island;
- levee rehabilitation on Van Sickle Island; and
- reuse of dredged material stored on Decker Island for levee rehabilitation on Webb Tract and habitat construction in borrow area on Decker Island.

Levee Upgrades. The Department funds upgrades to the levees according to standards contained in Bulletin 192-82, *Delta Levees Investigation*. According to those standards most levees should be high enough to protect against overtopping during a 300-year flood event. The minimum freeboard should be 1.5 feet for levees protecting agricultural land, and 3 feet for levees protecting urban areas. A typical improved levee section should have a 16-foot crown width with a waterside slope of 2 horizontal to 1 vertical.

In August 1991, the Corps, the Bureau, and the Department signed a feasibility cost-sharing agreement for a special study of the Sacramento-San Joaquin Delta. Updating an earlier 1982 study, the 1991 special study provided for investigation of solutions for Delta flood protection, salinity intrusion, recreation, and navigation. In accordance with the Water Resources Development Act of 1986 and the federal policy of incurring no net loss of habitat, the 1991 study included environmental and wildlife habitat restoration measures. The study also considered the Department's management plans for water supply and flood control when developing alternatives for a comprehensive Delta plan.

This special study is divided into two phases. Phase I began in September 1991 and ended in March 1993. The Phase I report, called the *Initial Report*, described problems, possible solutions, and opportunities to improve and/or provide flood protection, fish and wildlife habitat, water quality, recreation, and navigation. The *Initial Report* included a plan that identified existing and future land uses in years 2000, 2020, and 2040. The report discussed developing a comprehensive plan, primarily for flood control, navigation, and environmental restoration.

In Phase II, a regional planning report for environmental restoration, flood control, and navigation continues to be developed. The goal of this report is to develop a region-wide plan for Corps involvement in the Delta that links to the other planning efforts. This regional planning report will incorporate and be closely coordinated with CALFED long-term policies and plans. Other Phase II current efforts are to

- design and construct a levee test section
- study borrow material sources
- study dredged material reuse
- develop a Memorandum of Understanding between the Corps and the Department concurrent with CALFED planning efforts

In addition, a joint program has been planned to investigate other reuse opportunities and technical studies of sediment traps, water quality effects of sediment reuse, subsidence control, and habitat restoration. These investigations should demonstrate the value of sediment reuse and will continue to build momentum for developing solutions to Delta problems, particularly for flood-control issues.

Delta Water Rights Management

Several agencies in the western Delta have rights to water in the Delta. To manage those water rights and resolve issues associated with

them, the Department negotiated water rights management contracts with some of the agencies concerned. Those agencies serve agricultural, municipal, and industrial users of Delta water.

Delta Agricultural Water Users

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

South Delta Water Agency Contract

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

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

Western Delta Municipal Water Users

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

According to terms of the contracts, the Department compensates each agency for additional costs of purchasing a substitute water supply from the Contra Costa Canal to replace water supplies of usable quality lost because of SWP operations. Credits for the number of days of above-average water supplies of usable quality from Mallard Slough and the San Joaquin River accrue to offset the number of below-average days in future years.

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

Chapter 3
Environmental Programs



Fish ladder at the Feather River Fish Hatchery

Significant Events in 2001

- On June 12, 2001, National Marine Fisheries Service was petitioned to list the North American green sturgeon (*Acipenser medirostris*) as either a threatened or an endangered species under the federal Endangered Species Act, and to designate critical habitat for the species concurrently with any listing determination. NMFS will initiate a status review for green sturgeon, and will publish its findings and decision by June 12, 2002.
- The annual Delta Outflow Index for 2001 was somewhat lower than for 2000 and the lowest since 1994. State Water Project export reductions occurred in mid-January due to water quality concerns. Exports were again decreased intermittently from January through June due to concerns for migrating salmon or Delta smelt. From mid-April to mid-May SWP export pumping was reduced to support the Vernalis Adaptive Management Plan. In June and early July, repairs to the California Aqueduct forced a curtailment of exports from Banks Pumping Plant.
- In 2001, U.S. Fish and Wildlife Service opened ESA listing comment period for splittail on three separate occasions. A final ruling is still pending.

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

Operations for Fish Species of Concern

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

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

San Joaquin River Activities

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

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

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

A temporary barrier was installed in Old River at Head on April 26 and removed on May 30. The purpose of this spring season barrier was to improve conditions for juvenile Chinook salmon migrating out of the San Joaquin River Basin. The Old River at Head barrier was installed again in the fall (October 6 through December 2) to help with low dissolved oxygen levels in the lower San Joaquin River and to prevent migrating adult Chinook salmon from entering the area.

Temporary barriers were installed on Middle River and Old River near Tracy on April 23 and

April 26, respectively, and the Grant Line Canal barrier was completed on May 6. The primary purpose of these barriers is to increase water levels in the south Delta for local water users. The barriers were removed in late November due to the end of irrigation water needs and possible conflicts with winter-run salmon.

Spring-Run Chinook Salmon Protection Plan

The Spring-Run Chinook Salmon Protection Plan outlines a monitoring program, identifies indicators that would trigger a response, and identifies possible actions to minimize SWP and CVP impacts on emigrating yearling spring-run salmon. Flow, turbidity, and either fish movement or fish presence are all continuously monitored using in-stream measurements, surveys, and in-stream sampling devices (e.g., rotary screw traps). Indicators triggering a potential response include an increase in flows or turbidity in the Sacramento River and its tributaries, fish migration toward the Delta, and the detection of spring-run salmon at the export facilities. Possible actions include the closure of the Delta Cross Channel gates and export reductions. Implementation of the protection plan continued in 2001.

The gates were operated to protect fisheries resources and for scientific experimentation. In January the gates were closed to protect Chinook salmon migration in the area. In late August they were opened and closed at different intervals to study impacts on fish, flows, and water quality. The gates were closed again for the remainder of the year in December because fish sampling found young out-migrating Chinook salmon in the north Delta.

Delta Export Curtailments Due to Delta Smelt

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

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

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

In 2001, approximately 13,200 Delta smelt were salvaged by SWP and about 12,700 by CVP, a decline from the approximately 113,500 Delta smelt salvaged at both facilities in 2000. Adult salvage numbers (almost 6,800) peaked in May 2001. The red-light take level was not exceeded in 2001. However, the yellow light level of concern (14-day running average of 400) was exceeded in May.

Decisions on Endangered Species

On June 12, 2001, NMFS received a petition from the Environmental Protection Information Center, the Center for Biological Diversity, and the Waterkeepers Northern California requesting that NMFS list the North American green sturgeon (*Acipenser medirostris*) as either a threatened or an endangered species under ESA, and that it designate critical habitat for the species concurrently with any listing

determination. In a 90-day finding notice published in the Federal Register on December 14, 2001, NMFS determined that the petition presents substantial scientific and commercial information in support of the petitioned action, and also solicited information and comments pertaining to the species. NMFS will initiate a status review for green sturgeon, and will publish its findings and decision whether to propose listing the species as threatened or endangered under ESA by June 12, 2002.

Endangered Species Acts

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

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

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

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

Fish Abundance Estimates

Figure 3-1 shows the abundance index for Delta smelt from 1967 through 2001, based on fall midwater trawl sampling. Using the first two tow-net surveys only, Delta smelt abundance indices are calculated as the product of the total catch at each site and a weighting factor that represents the estimated water volume for the site, divided by 1,000. The fall abundance index is significant because it provides one of the best indicators of the status of the adult Delta smelt population. The 2001 index was slightly lower than 2000, but it was still not an unusually low value based on observations over the last 10 years. Scientists do not know what causes these variations in abundance.

Figure 3-2 shows estimates of returning adult winter-run Chinook salmon from 1967 through 2001. The estimates are referred to as *escapement estimates*—the number of adults that escape mortality and return to spawn. The estimated escapement for 2001 was 5,500, which more than replaced the estimated 2,600 adults in the parent stock of 1998. This data continues to indicate a positive trend in the size of the reproductive population. Factors such as improved spawning and rearing habitat, reduced losses in the Delta, and reduced commercial fishing losses are all thought to have benefited winter-run Chinook salmon.

Figure 3-3 shows estimates of returning adult spring-run Chinook salmon from 1990 through 2001. Individual estimates are shown for Mill Creek, Deer Creek, Butte Creek, and the Feather River—the principal spawning streams for this race of salmon. The escapement estimates are shown separately for each stream because the Feather River estimate is based on returns to the Feather River Hatchery, where the genetic integrity of spring-run Chinook salmon is uncertain. The estimated escapement for 2001 was 4,100 for the Feather River Hatchery and about 13,140

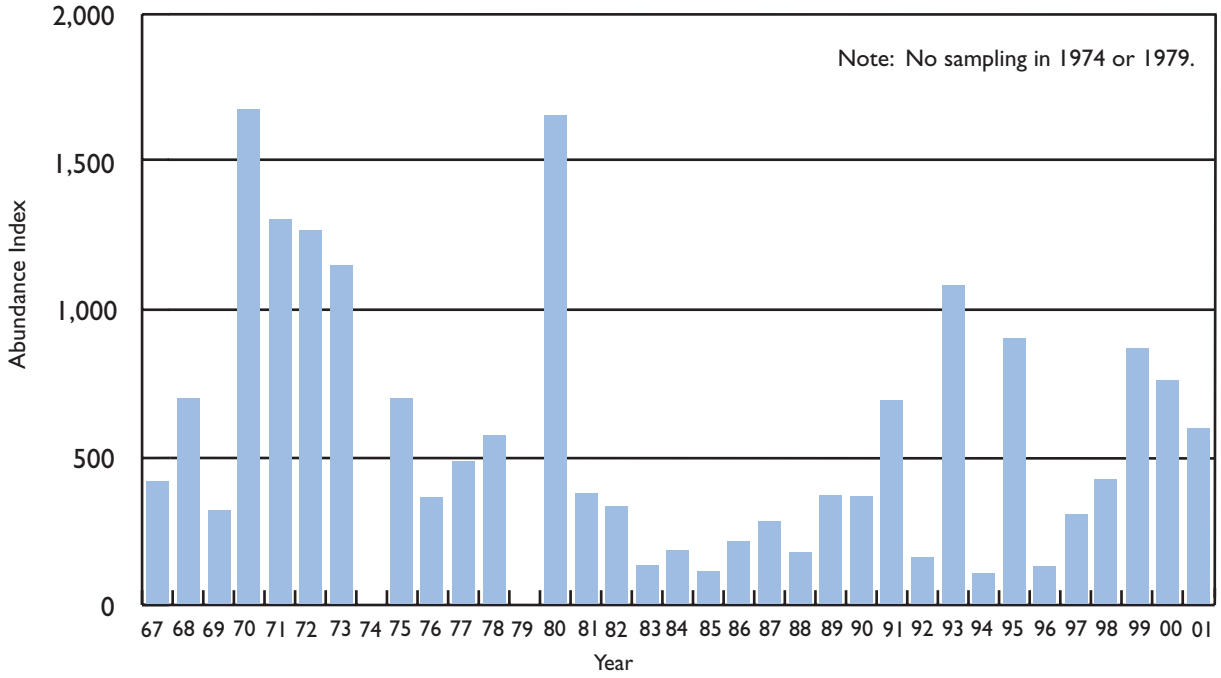


Figure 3-1. Delta Smelt Fall Midwater Trawl Sampling Abundance Index, 1967 through 2001

for the other streams combined. Overall, spring-run escapement in 2001 increased about 89 percent over 2000. Although the escapement estimates are lower than 1998, the 2001 escapement is the second highest over the last 10 years and the numbers remain consistently higher than those observed during the early 1990s. Factors such as improved spawning and rearing habitat, reduced losses in the Delta, and reduced commercial fishing losses are all thought to have benefited spring-run Chinook salmon.

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

Figure 3-4 shows the fall midwater abundance trawl index for young-of-the-year splittail for the period 1967 through 2001. The 2001 index was below average for the period of record, but higher than the low numbers observed during the drought period of the late 1980s and early 1990s. Splittail reproduce in spring and appear to have greater reproductive success in years when ample seasonally flooded habitat (such as Sutter and Yolo Bypasses) is available. Much of this habitat was not available during the splittail spawning season in 2001. Splittail is a long-lived minnow species (5-8 years), which helps the population persist through periods of low reproduction.

Feather River Fish Studies

The Feather River fish studies were initiated in the early 1990s to document and monitor fish populations of the lower Feather River. Early efforts focused on studies to identify flow requirements for Chinook salmon and steelhead. The program has progressively expanded since the mid-1990s in preparation for the Federal Energy Regulatory Commission relicensing of the SWP's Oroville-Thermalito Complex. In 2001, field program elements included operation of rotary screw traps, seining, snorkeling, salmon spawning surveys, and temperature monitoring.

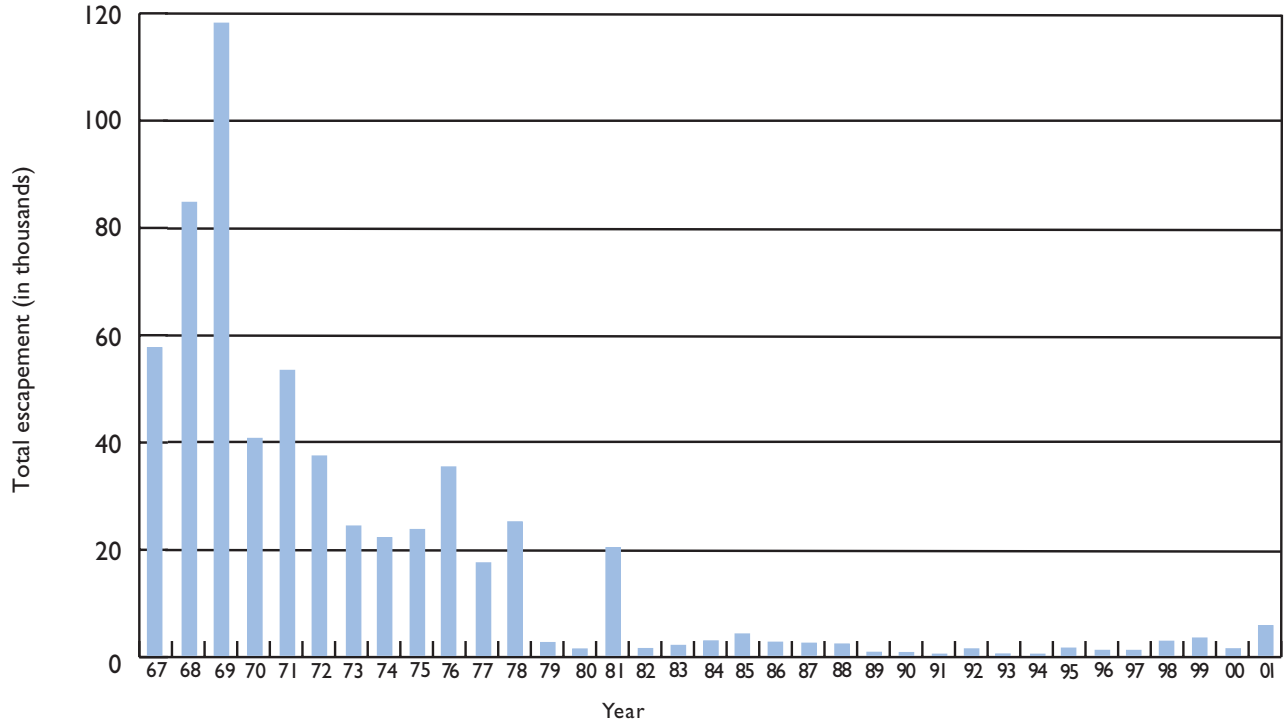


Figure 3-2. Estimated Total Adult Winter-Run Chinook Salmon Escapement, 1967 through 2001

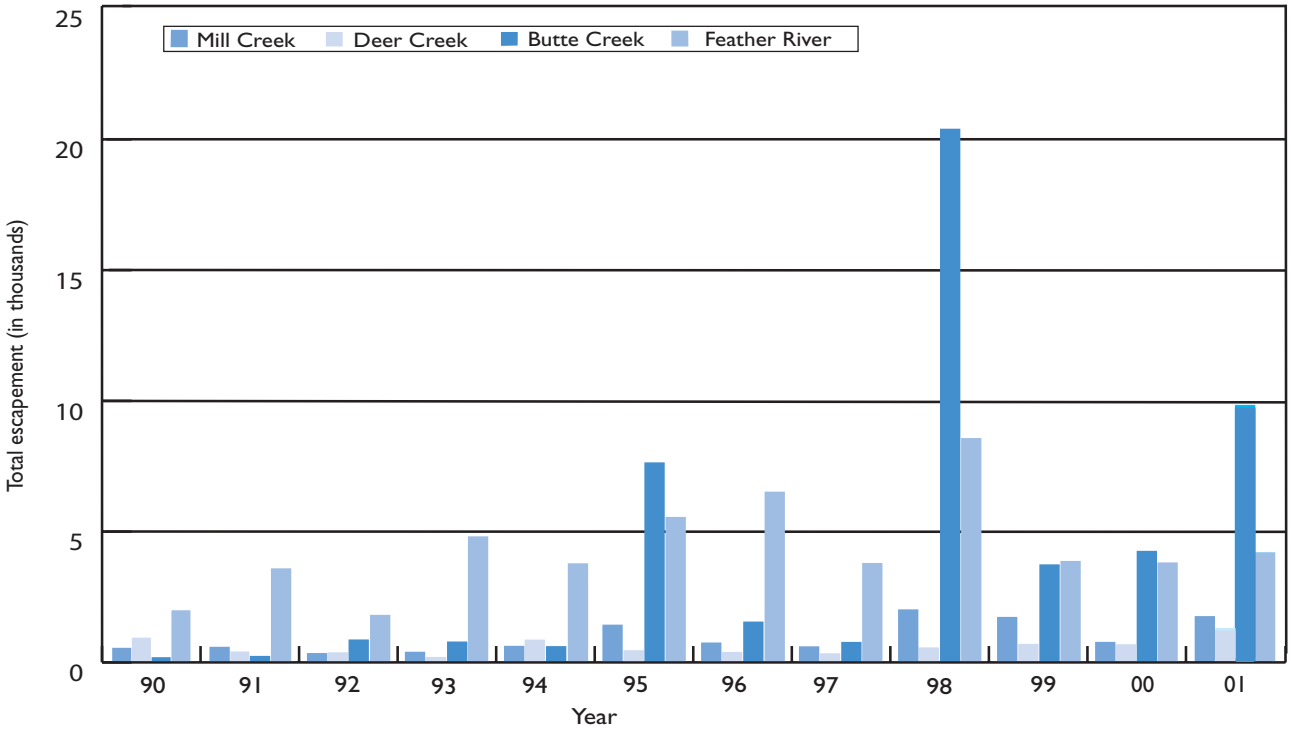


Figure 3-3. Estimated Spring-Run Chinook Salmon Escapement, 1990 through 2001

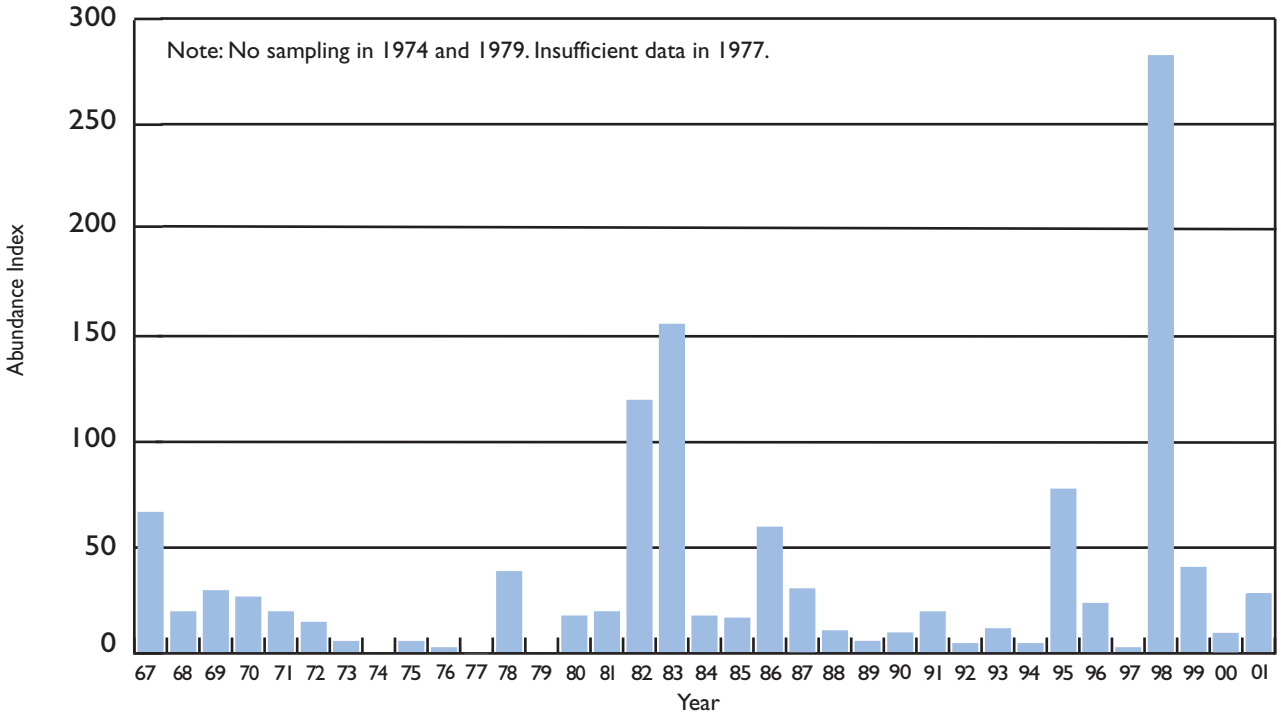


Figure 3-4. Young-of-the-Year Splittail Abundance Index, Fall Midwater Trawl, 1967 through 2001

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

Data from these Feather River sampling programs have revealed several significant and noteworthy trends. For example, snorkeling studies have shown there is substantial in-river spawning of steelhead. Juvenile steelhead first appear in March, and are most abundant in well-vegetated side channels of the low-flow channel. Within the low-flow channel, water temperatures do not appear to limit the abundance of juvenile steelhead. Also, rotary screw traps show that the peak of salmon emigration occurs in February or March. Flows do not appear to cue or influence the timing of salmon emigration. Salmon spawning surveys have shown that two-thirds of all spawning occurs within the low-flow channel. In 2001, a record 193,000 salmon spawned in the Feather River from the Fish Barrier Dam downstream to Gridley.

Fish-Related Mitigation Projects

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

Since 1986, the Department has spent $33 million on mitigation projects developed under this agreement. These projects include the following:

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

In 1996, the Department and DFG amended the agreement to

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

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

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

As of December 2001, the 5-year extension expired with only $4 million of the remaining $9 million spent due to difficulties in implementing several of the mitigation projects. About $1.4 million remained of the allocations under Amendment One, and $3.6 million became available for other projects when DFG halted planning for a conservation salmon hatchery in the San Joaquin basin. The Department and DFG amended the agreement again to

- provide 3 more years to spend the remaining $5 million of the $15 million lump sum provided in the agreement; and
- specify the likely allocation of the remaining unallocated funds.

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

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

- $1.1 million for salmon habitat and river restoration on the Merced River; and
- $68,000 for salmon spawning gravel replenishment at wing deflector sites on the Merced River.

Other mitigation projects approved in 2001 for implementation from the agreement's annual mitigation funds and the $15 million lump sum include a 3-year extension in funding for the Delta-Bay Enhanced Enforcement Project to enhance enforcement of fish and game laws in the Delta and upstream to benefit salmon, steelhead, and striped bass.

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

Chapter 4
Water Quality Programs



Salt marsh harvest mouse habitat in Suisun Marsh, with salt marsh harvest mouse, inset

Photo courtesy of Angelo Garcia, Jr., and U.S. Fish and Wildlife Service–Pacific Region

Significant Events in 2001

- In April, the Department again agreed to accept nonproject groundwater turn-ins. Turn-ins are authorized during periods of reduced State Water Project allocations. SWP contractors, or other participants of an approved program, convey groundwater into the California Aqueduct. This water may be used for local redistribution, transfer to other contractors, or exchange with the Environmental Water Account. Turn-ins not only added versatility to SWP water operations under dry-year conditions, but also improved SWP water quality for some constituents.
- The dry-year hydrology of 2001, combined with the water quality concerns relating to Water Right Decision 1641 compliance, constrained SWP operations frequently throughout the year. The electrical conductivity standards at Jersey Point and Emmaton were nearly exceeded during the summer months and the year-round chloride standard at Contra Costa Water District's Pumping Plant No. 1 was a frequent concern during the fall.

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

Delta Activities

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

Decision 1641

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

State Water Resources Control Board

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

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

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

On March 15, 2000, SWRCB adopted WR 2000-02, amending D-1641 and denying 21 petitions for reconsideration of D-1641. The Department conducts extensive monitoring to protect beneficial uses of water in the Delta and Suisun Marsh, as required by SWRCB's D-1641. Figure 4-1 shows water quality compliance stations throughout the Sacramento-San Joaquin Delta required by D-1641.

Water Supply Conditions

Water Year Classifications and Water Supply Indexes

Water year 2001 was classified as *dry* for California under criteria set forth by SWRCB in D-1641. (For a detailed discussion of water year 2001, see Chapter 8.)

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

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

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

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

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

The April-through-July Sacramento Valley unimpaired runoff forecast for May 1, 2001, was 3.69 million acre-feet (56 percent of average). The resulting Sacramento Valley 40-30-30 Index forecast was 5.9, resulting in the forecast classification of dry for water year 2001. The forecast of the San Joaquin Valley 60-20-20 Index on May 1 was 2.4, resulting in the water year being classified as *dry* in the San Joaquin Basin as well. The Eight River Index forecast on May 1 was 6.3 million acre-feet for April through July.

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

During 2001, the Department and the Bureau of Reclamation operated joint projects in accordance with SWRCB's D-1641, which includes water quality, flow, and operational criteria for the estuary. Operations of the SWP and CVP were coordinated with various objectives of CALFED, the Bay-Delta Plan, Central Valley Project Improvement Act, and biological opinions for fish species listed under federal and State endangered species acts. CALFED's Record of Decision, signed on August 28, 2000, mandates an Environmental Water Account managed by the Department, the Bureau, Department of Fish and Game, and U.S. Fish and Wildlife Service for the protection of listed fish species. Fish species currently listed under the federal and State Endangered Species Act include the winter and spring runs of Chinook salmon, Delta smelt, steelhead, and splittail.

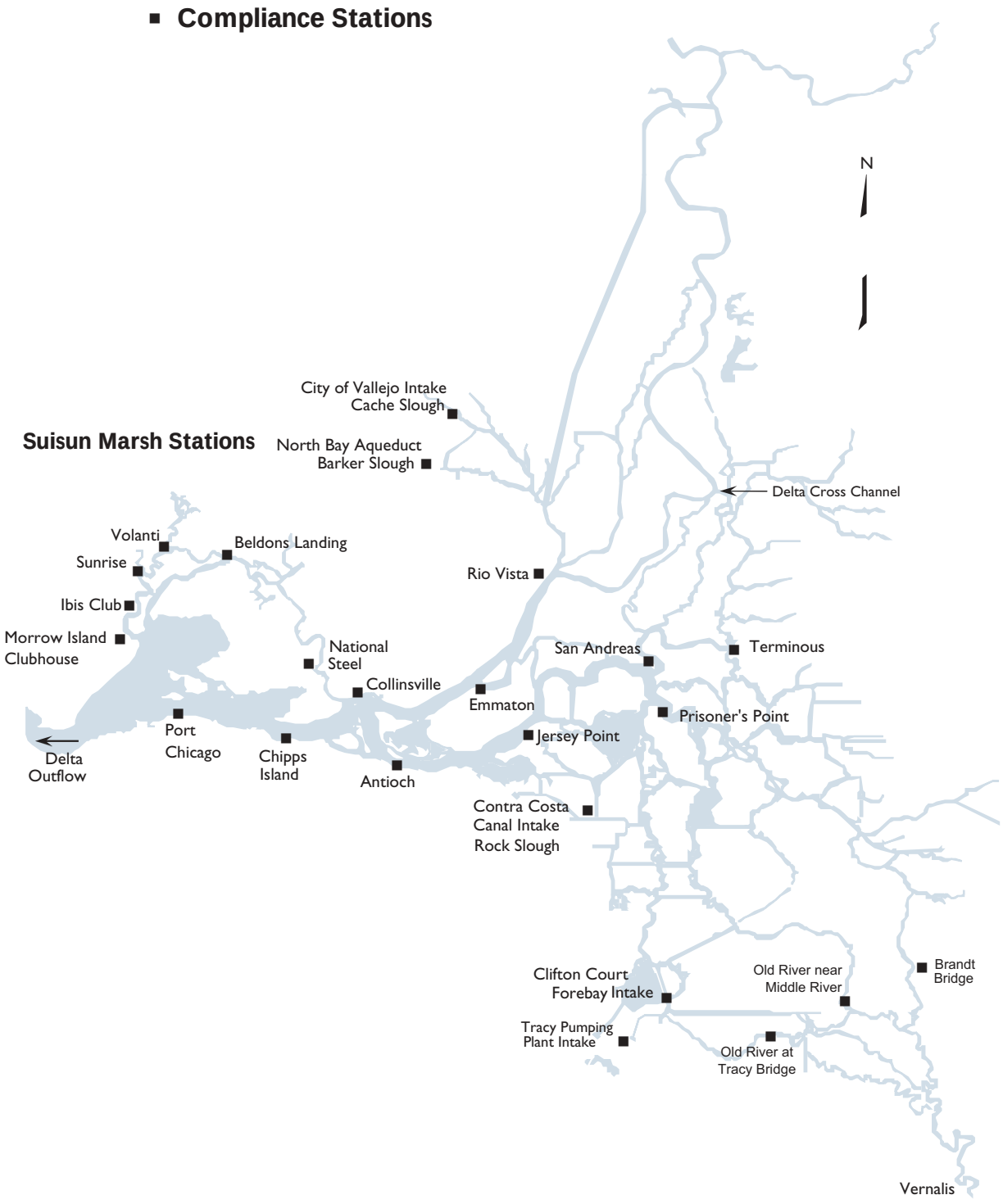


Figure 4-1. Decision 1641 Water Quality Compliance Stations in the Sacramento-San Joaquin Delta

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

Delta Cross Channel Gates

The Delta Cross Channel Gates allow fresher Sacramento River water to flow into interior Delta channels toward the export facilities of the SWP and CVP. During 2001, the gates were open for 192 days. To reduce flooding potential on the Mokelumne River and to prevent scour on the downstream side of the gate structure, the Bureau's standard operating procedures call for gate closure any time Sacramento River flow at Freeport reaches between 20,000 to 25,000 cfs. D-1641 contains measures that require closure of the gates from February 1 until May 20, during peak migration of winter, spring, and fall-run Chinook salmon smolts and steelhead, and the spawning season for Delta smelt, longfin smelt, Sacramento splittail, and striped bass.

The gates were open during the first half of January, with Sacramento River flows at Freeport remaining below 25,000 cfs, and closed on January 14 to protect juvenile winter-run salmon. The gates were opened for a 2-day period on January 24, but following that, the gates remained closed until May 26. On the weekends of May 26-27 and June 9-10, the gates were opened to permit the passage of recreational boats through the Cross Channel. The gates were opened on June 15, and essentially remained open through November 21, with the exception of an experimental period during August, September, and October when they were operated tidally and at night during certain periods. On November 21, the gates were closed for the protection of out-migrating juvenile salmon and then subsequently reopened on November 29 due to serious water quality concerns in the Contra Costa Canal. The gates were closed on December 4, as precipitation brought Freeport flows up above 20,000 cfs, and remained closed throughout the balance of the year.

Water Quality Standards

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

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

Municipal and Industrial Standards

D-1641 includes a year-round 250 mg/L chloride standard that is in effect at the Delta export locations (Contra Costa Pumping Plant No. 1, Clifton Court Forebay, Tracy Pumping Plant, Cache Slough at the City of Vallejo intake, and Barker Slough) where, with one exception, the chloride levels remained below the standard throughout 2001. The chloride standard was exceeded at Contra Costa Pumping Plant No. 1 on October 14, 16, and 17, rising to 263 mg/L. It was determined that the increase was due to local drainage as nearby Delta chloride levels remained relatively low.

An additional municipal and industrial water quality standard for chloride at the Contra Costa Canal Intake near Rock Slough specifies that the chloride level must be below 150 mg/L for a given number of days during the year. The dry year requirement of 165 days was met on July 22, 2001.

Agricultural Standards

Agricultural standards included an EC standard which varies by location based on water year type and is based on a 14-day running average during the irrigation season from April to mid-August, set at Emmaton, Jersey Point, Terminous, and San Andreas in the western and central Delta. The agricultural salinity standards at these Delta locations are based on water year type, becoming less stringent under dryer conditions; all locations met the standards in 2001. An additional salinity standard is applied year-round in the southern Delta at two locations on the San Joaquin River—Brandt Bridge and Vernalis—and two locations on Old River, at the Tracy Road Bridge and at the head of Middle River. Responsibility for meeting the salinity standard at the latter two sites was included in D-1641. This year-round agricultural salinity standard of 1.0 mS/cm was met at all four locations throughout 2001.

Estuarine Habitat Protection Standard

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

The number of days per month when the daily averaged EC maximum (2.64 mS/cm) is in effect at Chipps Island or at Port Chicago is conditioned by the previous month's Eight River Index. This may alternately be met with a maximum 14-day running average EC of 2.64 mS/cm or with specific Delta outflow, set as a 3-day average Net Delta Outflow Index of 11,400 cfs or 29,200 cfs, when the X2 position is at Chipps Island or Port Chicago, respectively. The Port Chicago standard becomes effective when the Port Chicago 14-day EC average immediately prior to the first day of the month is less than or equal to 2.64 mS/cm. During 2001, the Eight River Index for January through May was .87 million acre-feet, 1.50 million acre-feet, 2.39 million acre-feet, 2.03 million acre-feet, and 2.49 million acre-feet, respectively. On the last day of January 2001, the 14-day EC average at Port Chicago exceeded 2.64 mS/cm, triggering compliance at Chipps Island for February. Eleven days were required for X2 at Chipps Island during February and were met with both sufficient NDOI flows and mean daily EC below 2.64 mS/cm. During March the required 31 days were met at Chipps Island with mean daily EC and 14-day running average of EC below 2.64 mS/cm. The Chipps Island 28-day requirement for April was met with a combination of NDOI flows and days of EC below the required 2.64 mS/cm. In May, only 1 day was required for X2 compliance at Chipps Island and it was met with all three criteria. During June, the previous month's Eight River Index was 2.46 million acre-feet, which corresponds to a D-1641 requirement of 0 days at Chipps Island for X2. As a result, the X2 requirement for June defaulted to Collinsville, further upstream from Chipps Island. The Collinsville X2 must be maintained for every day of the month using either a 3-day average of NDOI flows above 7,100 cfs or a daily EC or 14-day running average of EC below 2.64 mS/cm.

Net Delta Outflow Index Standard

Delta outflow cannot be measured directly due to the tidal influence in the Delta. Instead, an approximation of Delta outflow is calculated using measured inflows, exports, and estimated Delta water use. NDOI, introduced in the 1995 Bay-Delta Plan and now part of D-1641, guided operations in 2001. It provides a more accurate method for calculating Delta outflow by including inflows of the Sacramento River, Yolo Bypass system, the eastside stream system (consisting of the Mokelumne, Cosumnes, and Calaveras Rivers), the Sacramento Regional Treatment Plant, and a measurement of San Joaquin River flow at Vernalis. The NDOI-calculated flows cannot be directly compared to the Delta Outflow Index used prior to 1995, because DOI does not include all of the

above-listed flows. The calculation of in-Delta consumptive use is also different in NDOI.

Excess outflow conditions, as defined by the Coordinated Operation Agreement, allow greater flexibility in project operations. During 2001, conditions vacillated between excess and balanced throughout the year. The year began in balanced conditions and ended in excess conditions. From February 13 through March 15, 2001, Delta outflow, calculated as NDOI, averaged 29,850 cfs per day. By comparison, February 15 to March 16, 2000, averaged nearly 154,000 cfs per day.

D-1641 sets specific minimum monthly NDOI standards, based upon water year type, between 3,000 and 8,000 cfs for the protection of fish and wildlife during January and from July to December. July's dry year NDOI standard of 5,000 cfs is the strictest of all months. Monthly NDOI was highest in March at 23,152 cfs. Monthly mean NDOI remained above 3,400 cfs during all months of 2001, with the lowest monthly mean occurring in August at 3,467 cfs. All NDOI standards were met in 2001, although some monthly averages were very close to the dry-year NDOI requirements.

Flow Standards

D-1641 includes minimum fish and wildlife flows measured in the Sacramento River at Rio Vista. These flow standards were incorporated from the Winter-Run Salmon Biological Opinion and set flow requirements based on the May 1 water year classification forecast. Water year 2001 was forecast to be dry, requiring mean monthly flow objectives of 3,000 cfs, 4,000 cfs, and 4,500 cfs for September, October, and November to December, respectively. During these periods, the 7-day running average cannot be more than 1,000 cfs below the monthly objective. All Rio Vista flow standards were met during 2001.

D-1641 also includes a minimum San Joaquin River base and pulse flows from the Winter-Run Salmon Biological Opinion that are dependent upon water year type. These flows are measured at Vernalis on the San Joaquin River. Dry year base flows are set at 2,280 cfs from February to April 14 and from May 16 through June 30, if the X2 objective is required to be at the further downstream Port Chicago location. The base-flow objective is relaxed to 1,420 cfs when X2 is required to be at Chipps Island. The Vernalis base-flow objective was met during 2001 with the X2 objective being located at Chipps Island during February through May, while June's X2 requirement was met at Collinsville.

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

Export Standards

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

The actual export amount is calculated using the 3-day average combined inflow rate for Clifton Court Forebay (excluding Byron-Bethany Irrigation District diversions from Clifton Court Forebay) added to the Tracy Pumping Plant

diversion. The export/inflow ratio limit is reported as either a 3-day or 14-day running average. A 14-day running average of inflows is used unless storage withdrawals from upstream reservoirs are being made for export, in which case a 3-day average of inflows is used. In all water year types, the February-through-June maximum combined export rate is 35 percent of Delta inflow; this may be relaxed in February, during years with less precipitation, to between 35 percent and 45 percent. From July through January, the export/inflow ratio rises to 65 percent.

During January 2001, combined SWP and CVP exports averaged 36 percent of Delta inflow. Far below the 65 percent limitation, exports were severely curtailed in early January to help alleviate salinity intrusion. Exports were reduced mid-month when the presence of juvenile winter-run salmon in the Sacramento River near Sacramento triggered export reductions required by the Juvenile Salmon Protection Plan. Exports during the more restrictive February-through-June period (35 percent objective) averaged 23 percent. In February, the percent of inflow diverted limit was raised to 45 percent because January's Eight River Index totaled only .87 million acre-feet.

Exports were affected many times during this February-through-June period by water quality concerns, as well as reductions made for the protection of winter-run salmon and Delta smelt. In addition, pumping at Banks Pumping Plant was halted almost entirely from June 12 through the end of the month due to a canal leak about 1 mile south of the plant. As a result, exports during the February-through-June period averaged only 23 percent when as much as 35 percent of inflow diversion was allowed.

Exports at Banks and Tracy Pumping Plants are limited under D-1641 to 1,500 cfs or 100 percent of the 3-day average of San Joaquin River flow at Vernalis during the 30-day April 15-to-May 15 pulse flow period, whichever is greater. This export limit can be used in lieu of the 35 percent export/inflow ratio only if it results in more restrictive conditions. As stated above, the SWP and CVP use alternate export and flow criteria contained within VAMP during the spring pulse flow period. In 2001, the VAMP spring experimental period extended from April 20 through May 20, during which the SWP and CVP used a combined export target of 1,500 cfs; exports averaged 12 percent of outflow during this period.

Combined exports typically ramp up following the end of the VAMP experimental period. However, concerns over Delta smelt salvage caused exports to remain low through the end of May. From July through the following January, the SWP and CVP are allowed to export at 65 percent of Delta inflow. During July through December 2001, the combined percent inflow diverted averaged 45 percent as water quality concerns hampered operations during late summer and fall. Banks Pumping Plant pumped a total of 142,757 acre-feet of CVP water in 2001.

Temporary Delta Barriers

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

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

The installation of the Middle River barrier was completed on April 23, 2001, and the Old River barrier near Tracy on April 26, 2001. The spring

Old River at Head barrier, which functions as part of VAMP, was also operational by April 26 and helped prevent migrating juvenile salmon from straying from their migration routes into interior Delta channels. The spring Old River at Head barrier was removed by May 30. The installation of the Grant Line Canal barrier was finished on May 6, 2001. The Old River near Tracy, Middle River, and the Grant Line Canal barriers were all removed by November 26.

The fall Old River at Head barrier, which helps keep upstream migrating adult salmon from straying out of the San Joaquin River into interior Delta channels, was operational on November 22, 2001. Removal of the fall Old River at Head barrier was completed on December 2.

Special Study and Biological Surveys

The Department monitors dissolved oxygen levels in the Stockton Ship Channel during the late summer and early fall of each year. Low DO levels can occur at that time due to hydraulic and environmental conditions that include low inflows and warm water temperatures. DO levels in the Stockton Ship Channel may decline to levels that can cause physiological stress to fish and block migration of salmon up the San Joaquin River.

The Department also surveys benthic organism density and diversity, phytoplankton biomass, and community composition in the Sacramento-San Joaquin Delta and Suisun and San Pablo Bays. These surveys are conducted in response to the mandate of D-1641.

Fall Dissolved Oxygen Study in the Stockton Ship Channel

Historically, DO levels in the eastern and central portions of the Stockton Ship Channel have dropped below 5.0 mg/L during the late summer and early fall because of a variety of conditions. These conditions include low San Joaquin River inflows, warm water temperatures, high biochemical oxygen demand, reduced tidal circulation, and intermittent reverse flow conditions in the San Joaquin River past Stockton. In an effort to prevent these low DO conditions from occurring, the Department usually installs a temporary rock barrier across the head of Old River during periods of projected low fall flows in the San Joaquin River. The barrier increases net flows down the San Joaquin River past Stockton and can partially alleviate low DO conditions in the channel.

Water year 2001 for the San Joaquin Valley was classified as *dry*, with relatively low San Joaquin River flows of less than 1,600 cfs past Vernalis in August and September. As a result of these low summer flows, and because fall flows were not projected to be sufficient to alleviate DO concerns within the eastern channel, the Department installed the Old River barrier on October 6. Although average daily flows in the San Joaquin River past Vernalis increased slightly in October (ranging from 1,480 cfs to 2,861 cfs), the barrier was not sufficient to eliminate reverse flow conditions in the San Joaquin River past Stockton. Average daily flows past Stockton ranged from -366 cfs to +796 cfs from August through October 2001.

As in previous years, the DO levels in the western portion of the channel from Prisoner's Point to Disappointment Slough were relatively high and stable throughout the study period, ranging from 6.7 to 11.2 mg/L. Surface and bottom DO levels in the western channel at top and bottom of the water column were essentially similar (unstratified) due, in part, to greater tidal mixing of the water column and the absence of conditions creating excessive BOD within this portion of the channel.

A DO sag (an area within the channel with DO levels less than or equal to 5.0 mg/L) was detected in bottom samples from the eastern portion of the channel on August 1 and persisted through October 3. The presence of the DO sag coincided with an approximate 2 mg/L decrease from top to bottom DO levels within the region, indicating incomplete water column mixing or increased BOD at, or near, the bottom.

The minimum bottom DO level of 4.0 mg/L was measured immediately east of Turner Cut in August. Channel DO levels recovered to levels greater than 5.0 mg/L by October 16.

A DO depression (an area within the channel with DO levels less than or equal to 6.0 mg/L) also occurred in the eastern and central region of the channel from Rough and Ready Island to Fourteen Mile Slough. The minimum value of 4.0 mg/L was measured at Turner Cut. The depression was due, in part, to warm water temperatures (21-27º C) and sustained reverse flow conditions past Stockton.

DO conditions within the channel improved significantly by October 16, as the minor depression detected within the central portion of the channel was eliminated and DO concentrations throughout the channel reached 6.0 mg/L or greater. This improvement continued due, in part, to cooler water temperatures (14-19° C), and the reduction of reverse flow conditions past Stockton. Monitoring through November 14, 2001, confirmed continued DO levels of 7.0 mg/L or greater throughout the channel. Because of the sustained improvement, no further fall DO studies were conducted, and the Old River barrier was removed on December 2.

Benthic Monitoring

The Department's Benthic Monitoring Program is conducted in the Bay-Delta system in order to comply with the mandate of D-1641. The monitoring program documents changes in the composition, abundance, density, and distribution of the benthic biota within the Bay-Delta. The data collected from this program are used to provide an indication of physical changes occurring in the system.

Benthic biota are relatively long-lived and can respond to changes in physical factors within the system such as fresh water inflows, substrate composition, salinity, and other water quality variables. Because operation of the SWP can impact the flow characteristics of the Bay-Delta and subsequently influence the density and distribution of benthic biota, benthic monitoring is an integral component of mandated compliance monitoring. Benthic monitoring data are also used to detect and document the presence of newly introduced species within the system.

Benthic monitoring is conducted throughout the year at 10 sampling sites distributed throughout the major habitat types within the Delta. The Bay-Delta Monitoring and Analysis Section staff collect four bottom grab samples and one sediment sample monthly at each site with a standard ponar grab. The grab samples are analyzed by contracted laboratories to identify organisms to genus (and to species when possible), and to enumerate all organisms collected.

The Environmental Monitoring Program maintains a database of 284 benthic organisms identified within the system. The benthic database regularly undergoes peer review and updates, and reflects the latest taxonomic information. New organisms found at any of the sampling stations are identified and added to the database. The taxonomy of identified organisms is also updated when necessary. During 2001, 10 new organisms were added to the benthic database. The new species observed and the locations at which they were collected are listed below.

- Nematode (*Unid. Nematode species B*) San Pablo Bay, July 2001 and September 2001
- Platyhelminthes (*Unid. Triclad species E*) San Pablo Bay, November 2001
- Arthropod (*Heptacarpus pictus*) San Pablo Bay, July 2001
- Arthropod (*Paranthura elegans*) San Pablo Bay, November 2001
- Molluscs (*Onchidoris bilamellata* and *Ostrea lurida*) San Pablo Bay, May 2001
- Annelid (*Paleanotus bellis*) San Pablo Bay, April 2001
- Annelids (*Scolelepis species B* and *Dorvillea rudolphi*) San Pablo Bay, June 2001
- Mollusc (*Cooperella sudiaphana*) Grizzly Bay, November 2001

Of the 154 species of benthic macrofauna collected in 2001, 10 species represented approximately 89 percent of all organisms collected. These ten include

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

Of the ten dominant species, *Ampelisca abdita* and *Potamocorbula amurensis* represent macrofauna that inhabit a more saline environment. These were found predominantly in San Pablo Bay, Suisun Bay, and Grizzly Bay. *Americorophium stimpsoni* and *Americorophium spinicorne* tolerate a wider range of salinity, and were collected in the more saline western sites as well as 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 six species are predominantly fresh water species and were collected at sites east of Suisun Bay.

Phytoplankton and Chlorophyll *a*

Average monthly chlorophyll *a* concentrations throughout much of the Delta were low, with 91 percent of the 236 samples taken in 2001 (from January 3 to December 6) having levels below 25 µg/L. These levels are similar to those detected throughout the Delta in 2000, when 80 percent of samples were reported as having levels below 25 µg/L. The maximum chlorophyll *a* concentration for all sample locations in the Delta occurred between April 13 and July 13, with the maximum chlorophyll *a* concentration of 119 µg/L measured on the San Joaquin River at Vernalis in the eastern Delta on July 13. This maximum was well above the highs of 36.6 µg/L (July 1999) and 46 µg/L (September 2000) recorded in previous years in the same area. In general, the highest chlorophyll *a* concentrations were observed in the eastern Delta at Vernalis, Buckley Cove, and Disappointment Slough, with average concentrations of 41.2 µg/L, 13.1 µg/L, and 9.9 µg/L, respectively.

The lowest chlorophyll *a* concentrations were observed west of the Delta in and around Suisun Bay. Average chlorophyll *a* concentrations of 1.4 µg/L and 1.6 µg/L were measured at Grizzly Bay near Suisun Slough and in Suisun Bay off Middle Point, respectively. The lowest observed concentration of 0.37 µg/L was reported in the mid-Delta on the San Joaquin River at Potato Point on March 15. In general, chlorophyll *a* minima did not appear to be consistent with a particular season.

Sampling locations in the west, north, and mid-Delta regions, and in San Pablo Bay, showed moderately average chlorophyll *a* concentrations ranging from 0.7 µg/L to 6.7 µg/L. These stations included Sacramento River at Green's Landing and Point Sacramento, Suisun Bay off Bull's Head Point, Old River opposite Rancho Del Rio, and San Pablo Bay near Pinole Point.

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

In addition to monitoring for chlorophyll *a*, water samples were analyzed for pheophytin. Pheophytin is a primary degradation product of chlorophyll *a* and its relative concentration is useful for estimating the general physiological state of phytoplankton populations. When phytoplankton are actively growing, the concentrations of pheophytin are normally expected to be relatively low in comparison to chlorophyll *a*. Percent chlorophyll *a* concentrations measured in 2001 ranged from 26 percent to 100 percent, with an average of 68 percent. In addition,

90 percent of the 235 samples collected had chlorophyll *a* levels above 50 percent. This relatively high percentage of chlorophyll *a* is generally associated with healthy, growing populations.

Phytoplankton populations consisted of (in order of abundance): flagellates, diatoms, green algae, cryptomonads, and blue-green algae. The following genera were identified in order of abundance: *Cyclotella, Synedra, Thalassiosira, Skeletonema, Chlorella, Melosira, Cosinodiscus, Scenedesmus, Cryptomonas, Navicula, Chlamydomonas*, and *Ankistrodesmus*.

Activities Outside the Delta

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

Water Quality Monitoring

The Division of Operations and Maintenance collects detailed water quality information on the concentration and distribution of chemical, biological, and physical parameters at 33 aqueduct and reservoir sites located throughout SWP facilities. Stations are situated south of the Delta at reservoirs, pumping plants, power plants, and check structures of the South Bay, Coastal Branch, and California Aqueduct. Other monitoring activities are conducted on the North Bay Aqueduct, Feather River, and at State reservoirs north of the Delta—Lake Oroville, Antelope Lake, Frenchman Lake, and Lake Davis.

The Water Quality Program of the SWP was established in 1968 when the California Aqueduct was completed. More than 60 different chemical constituents are monitored monthly, quarterly, or annually. In addition, automated stations are maintained for continuous monitoring of aqueduct water.

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

Selected SWP water quality data are available electronically through the Department's Web site at wwwomwq.water.ca.gov and reported monthly in the State Water Project Operations Data Report. Table 4-1 presents laboratory results of sampling at several representative stations during 2001.

Delta exports are normally the primary source of water in SWP facilities and reservoirs south of the Delta. Most Delta water is exported south during the winter and spring when the greatest freshwater outflow occurs; as a result, reservoirs south of the Delta are usually supplied with the highest quality water. San Luis Reservoir, the only SWP conservation storage facility between the Delta and Southern California, is usually filled by May 1.

Nonproject Groundwater Turn-ins

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

Table 4-1. 2001 Mean Water Quality at Selected State Water Project Locations

Constituents	Units	Detection Limit	Thermalito Afterbay at Outlet to Feather River	North Bay Aqueduct Barker Slough Pumping Plant	Banks Pumping Plant	Delta-Mendota Canal Upstream of McCabe Road	California Aqueduct				
							O'Neill Outlet (Check 13)	*Kettleman City (Check 21)*	*Highway 119 (Check 29)*	*Tehachapi Afterbay (Check 41)*	*Devil Canyon Afterbay near San Bernardino*
Alkalinity	mg/L	1	43	98	79	81	82	80	81	80	80
Arsenic	mg/L	0.001	<0.001	0.003	0.002	0.002	0.002	0.002	0.003	0.003	0.003
Boron	mg/L	0.1	<0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Bromide	mg/L	0.01	<0.01	0.06	0.28	0.23	0.27	0.27	0.29	0.25	0.29
Calcium	mg/L	1	9	18	20	22	21	21	22	22	21
Carbon-Total Organic	mg/L	0.1	NR	6.9	4.5	3.9	4.4	3.5	3.2	3.1	2.5
Chloride	mg/L	1	1	31	85	78	86	88	91	81	90
Chromium	mg/L	0.001	0.002	0.006	0.005	0.004	0.004	0.004	0.004	0.005	0.004
Copper	mg/L	0.001	0.001	0.003	0.002	0.003	0.002	0.002	0.002	0.002	0.005
Fluoride	mg/L	0.1	NR	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hardness	mg/L	1	38	102	105	112	111	108	110	106	106
Iron	mg/L	0.005	0.007	0.031	0.028	0.047	0.045	0.037	0.016	0.022	NR
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	14	14	14	14	14	13	13	13
Manganese	mg/L	0.005	<0.005	0.024	0.011	0.006125	0.010	0.016	<0.005	0.008	0.000
Nitrate + Nitrite	mg/L	0.01	0.01	0.28	0.73	NR	NR	0.71	NR	0.81	0.54
Phosphorus - Total	mg/L	0.01	NR	0.09	0.08	NR	NR	0.08	NR	0.07	0.09
Phosphorus - Ortho	mg/L	0.01	0.02	0.17	0.11	NR	NR	0.11	NR	0.10	0.08
Selenium	mg/L	0.001	NR	0.001	0.001	NR	NR	NR	0.002	NR	0.001
Sodium	mg/L	1	4	33	56	58	59	59	62	60	60
Specific Conductance	µS/cm	1	91	352	515	533	543	536	555	531	538
Sulfate	mg/L	1	2	29	39	44	45	42	46	44	42
Total Dissolved Soilds	mg/L	1	61	203	288	297	301	298	304	293	277
Turbidity	NTU	1	4	37	14	13	9	8	10	10	2
Zinc	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.015	<0.005

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

Water year 2001 was forecast to be dry and approved Table A amounts were only about 39 percent of contractor requests. In April 2001, the Department again agreed to accept nonproject groundwater turn-ins. New criteria were established to review the water quality of the turn-ins.

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

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

During 2001, the SWP received 154,972 acre-feet of water via the nonproject groundwater turn-ins. Turn-ins not only added versatility to SWP water operations under dry-year conditions, but also improved SWP water quality for some constituents. Turn-ins usually coincided with monthly decreases in total dissolved solids, conductivity, and organic carbon in the Aqueduct, while slight increases in nitrate and sulfate also resulted.

Municipal Water Quality Investigations Program

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

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

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

The current MWQI Program has progressed from the monitoring, problem identification, and assessment stages to the development of tools for the planning and study of alternative solutions to resolve the quality and reliability concerns about the Delta as a major drinking water source. In addition to monitoring water quality in the Delta, the program now includes studies on source water improvement and management. Several studies have developed and tested possible solutions to drinking water problems of the Delta and other watersheds of the SWP.

December 2001 marked the completion and publication of the 2001 California State Water Project Watershed Sanitary Survey Report. This report is the third in a series for the SWP. The

first was produced in 1990, and the second in 1996. Both the 1996 and 2001 reports are 5-year updates from the original sanitary survey required by DHS. The regulatory requirement is part of the federal Surface Water Treatment Rule, which requires that all water purveyors perform a sanitary survey of their source water watersheds. The report identifies land use activities and their potential threat to water quality contamination within the watersheds of the SWP.

The report represents the efforts of the Department, DHS, and the Sanitary Survey Action Committee, including the State Water Contractors who provide water for municipal and industrial use. The MWQI Program also worked closely with O&M to produce the report. A searchable CD-ROM version of the report will be produced in spring 2002.

The North Bay Aqueduct/Barker Slough Watershed Study was started to investigate problems identified in the 1996 Sanitary Survey. It was initially divided into two phases. Phase I began July 1, 1996, and continued until July 1997. The results were published in *The North Bay Aqueduct Barker Slough Watershed Water Quality Phase I Report*. Since then the MWQI Program has worked closely with the NBA Technical Advisory Committee, conducting yearly studies for the last 4 years to further investigate the sources of high organic carbon and turbidity within the watershed. A 4-year report will be completed in the winter of 2002 describing the findings to date. Sodium-enriched soils and poor land use practices within the watershed are identified as major culprits for causing the poor water quality of runoff in the watershed.

Currently, the stakeholders are investigating the feasibility of best management practices to reduce carbon and turbidity in the slough. The MWQI Program will continue to work with the stakeholders to provide water quality technical assistance to the project.

In fall 1999, the MWQI Program began an assessment study of EPA method 1623, a new EPA-approved sampling methodology for the protozoans *Cryptosporidium* and *Giardia*. The study continued into winter 2000. Even though the study showed consistency of recovery for replicate spiked samples at each site, recovery varied greatly between sites in the Delta. This could be attributed to different source water matrix turbidities and the constituents within the water interfering with recovery. Staff is currently in the process of publishing the results in a peer-reviewed scientific journal. The article is scheduled to be published in late fall 2002. Based on the findings, the MWQI Program is not supporting the use of EPA 1623 for source water monitoring in the Delta.

The MWQI Program received a CALFED grant in 2000 to purchase and install three automated carbon analyzers in the Delta. In the summer of 2001, the first analyzer began operating at Banks Pumping Plant. The analyzer automatically samples the exported water, determines the total organic carbon and dissolved organic carbon levels, and sends the data to Sacramento, where it is posted on the CDEC data website. The second analyzer will start operation in winter 2002, and will be located at the Hood water quality monitoring station on the Sacramento River. The third unit is destined for the future San Joaquin River monitoring station to be constructed at Vernalis. The analyzers can sample up to every 6 minutes, compared to the historical grab-sample organic carbon data, which has been sampled weekly. The data, coupled with flow measurements, will allow for the calculation of mass transport and loading of carbon from the two main Delta tributaries. The data will also be used by modelers to refine Delta Simulation Model 2 for calculation of organic carbon transport through the Delta.

Other components of the MWQI Program include

- evaluation of the water quality impacts at drinking water intakes from the proposed Delta Wetlands storage project;

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

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

Bryte Chemical Laboratory

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

In 2000, several water quality programs required that Bryte Laboratory investigate the possibility of performing phytoplankton speciation analysis for their programs. The procedure, developed and finalized in 2000, was first performed routinely in Feburary 2001. California's Office of Environmental Health Hazard Assessment established a new public health goal for hexavalent chromium at 2.5 micrograms per liter for finished drinking water. Bryte Laboratory was certified by the DHS' Environmental Laboratory Accreditation Program to perform these analyses and hexavalent chromium is now being measured in raw water sources.

The final procedure added in 2001 was a new method for oil and grease analysis. The old method required freon as an extracting solvent to remove oil and grease from water. Freon, an ozone-depleting chemical, is no longer being used or manufactured in the United States. The new method, EPA 1664, uses solid phase technology. Bryte Laboratory was certified in, and started using, an automated solid phase extraction system in 2001. The system is also being evaluated for semi-volatile compounds as a sample prep method for pesticide analysis. A substantial cost savings in solvent usage, labor, and time will result once the procedure has been validated by the laboratory.

Several SWP-funded programs require analysis of trace metals in water to parts per trillion (ng / L) to meet aquatic water quality criteria. The ultra low level metals analyses are currently being contracted to a private environmental laboratory at a cost of over $250,000 per year. After estimating the required equipment and labor cost, it was determined that it would be more cost effective to perform these tests at Bryte Laboratory. The only requirement was a Class 100 clean room which is now under construction and scheduled to be completed in late 2002.

The laboratory also replaced two obsolete instrument systems with more cost effective and efficient ones. One new system is used to analyze water samples for cations and metals for departmental programs, including the SWP, and the other is used to perform required SWP pesticide and herbicide analyses.

The Field and Laboratory Information Management System, implemented in 1997, has continued to enhance the laboratory's data

management capabilities. This system simplifies the transfer process by allowing electronic transfer of samples for analysis to the laboratory. It provides users with information on all analytical services available through Bryte Laboratory, including costs. It also provides users with sample requirements for each analysis requested, such as types of containers needed, sample volumes necessary, and the type of sample preservation required. The system is designed to store all current analytical data, including all required QA / QC data pertaining to sample analysis, and is designed to log, track, and assign sample analyses to the appropriate chemist in the laboratory. FLIMS will generate the final reports to the requester in hard copy and electronic format. The laboratory is now in the process of upgrading the FLIMS field module, which is projected to be in place by the end of 2002.

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

Quality Assurance/Quality Control

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

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

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

In 2001, the QA / QC Program provided data quality review for the 1997-01 *MWQI Water Quality Investigations of the Barker Slough Watershed*. This report was a study of the factors that may impact water quality in NBA. The program continued to assist in the QA / QC evaluation of TOC analyzers at the Sacramento River at Hood station and other stations. The program provided technical support in the preparation of the Quality Assurance Project Plan for new TOC analyzers at Banks Pumping Plant and San Joaquin River at Vernalis. The plan was finalized and approved by the U.S. Environmental Protection Agency. The analyzers are partially funded by EPA through a CALFED grant.

Quality Assurance/Quality Control

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

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

A study was started in November 2001 to evaluate how different analytical procedures may influence DOC / TOC results. The Department has used both combustion and oxidation analytical procedures and there is concern that the results of the two methods may not be comparable. The study will compare combustion and oxidation instruments on replicate samples from five surface water stations and three agricultural drains.

In 2000-01, the Department began developing a demonstration version of the Water Data Library to be made available on the Department's Intranet. All data between 1998 and May 2001 was transferred into the data tables. When completed, the Water Data Library will permanently house all the FLIMS data in an accessible format for the Department. Development also began on an update to the Field Module Software for use in the FLIMS data system. This version will enable better integration with the Water Data Library database.

Suisun Marsh Activities

The Suisun Marsh

The Suisun Marsh is about 59,000 acres of tidal and managed brackish water wetlands and 30,000 acres of bays and sloughs. It is the largest contiguous brackish marsh remaining in the United States. Situated in southern Solano County, west of the Sacramento-San Joaquin Delta and north of Suisun Bay, the marsh encompasses more than 10 percent of California's remaining natural wetlands. In addition, the marsh is the resting and feeding ground for thousands of waterfowl migrating on the Pacific Flyway.

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

Amendment Three Actions. The SMPA Amendment Three issues are now addressed as part of the Suisun Marsh Charter.

Suisun Marsh Charter. CALFED requested that the Department, DFG, the Bureau, USFWS, and SRCD develop a charter for resolving the conflicts that had escalated over Amendment Three, regional general permits, the levee investigations, and endangered species recovery. Since fall 2000, the Charter Group has been meeting to address the myriad of issues in Suisun Marsh and develop a coordinated and comprehensive solution to marsh conflicts. The

goal of the charter is to "develop a regional plan that balances implementation of the CALFED program, SMPA, and other management and restoration programs within Suisun Marsh in a manner responsive to the concerns of stakeholders and based upon voluntary participation of private landowners."

During 2001, the agencies intitiated work on the Suisun Marsh Charter Implementation Plan. This plan addresses water quality; managed wetland enhancement; levee and endangered species recovery needs; and proposes to address these needs on an equal basis.

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

Primarily, ECAT provides support for the Suisun Marsh Preservation Agreement Charter Group. At ECAT's monthly meetings during 2001, discussions included Suisun Marsh monitoring efforts, property acquisition for tidal marsh restoration, and maintenance of primary facilities. Monitoring focused on Island Slough, the salt marsh harvest mouse, and the California clapper rail.

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

The Department processed three invoices under the cost-share program during 2001 for a total of $42,281.42. The Department and the Bureau have paid a total of $1,246,106.

Suisun Ecological Workgroup

In the 1995 Bay-Delta Plan, SWRCB directed the Department to convene an interagency workgroup to evaluate the technical basis of the Suisun Marsh water quality objectives and their effects on beneficial uses. Consequently, SEW was formed to recommend salinity objectives to protect the beneficial uses of Suisun Marsh. Staff from SWRCB, SRCD, DFG, the Bureau, USFWS, and the Department have actively participated in the workgroup.

The Final Suisun Ecological Workgroup report was distributed in November 2001. The report's Web site is iep.water.ca.govsuisun_eco_workgroup/.

Modeling Support

Suisun Marsh Planning Support for the CALFED Levee Investigation Team

The CALFED Bay-Delta Program established the Suisun Marsh Levee Investigation Team to gather information on the costs and benefits of including Suisun Marsh levees in the CALFED program, especially as they relate to CALFED water quality, water supply reliability, and Ecosystem Restoration Program goals. The Suisun Marsh Planning Section supported the team by using the Department's DSM1 to evaluate hydrodynamics and salinity impacts of controlled and uncontrolled levee breaches in Suisun Marsh.

Suisun Marsh Planning Participation in the Project Work Team

The IEP DSM2 Project Work Team is nearing completion of a multiagency cooperative effort

Suisun Marsh Preservation Agreement

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

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

to recalibrate the DSM2 model. Recalibration efforts began in August 1999. The project work team activities include collection of new Bay-Delta channel geometry data, such as

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

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

Participants in the calibration effort include staff from the Department's ESO, Office of State Water Project Planning, Department of Planning and Local Assistance, and O&M; the Bureau; USGS; University of California, Berkeley; Stanford University; Contra Costa Water District; and the Metropolitan Water District of Southern California. The process is unique—a virtual interagency collaboration on calibration of a complex hydrodynamics and water quality model. The potential benefits include creating an accurate model and generating trust and understanding about the cooperative process. The team is working toward a February 2002 deadline for completion of the calibration.

Operation and Maintenance

Suisun Marsh Salinity Control Gates

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

During the 2000-01 control season (October 2000 through May 2001), the fall 2000 fish passage study was postponed to further review past results and the gates were operated primarily for salinity control.

From October 1 through November 3, 2000, the gates were held open and flashboards removed because of good water quality conditions in the marsh. Towards the later part of October 2000, salinity levels began to increase. As a result, flashboards were installed and gate operations began on November 4, 2000, and continued until May 13, 2001, to control salinity levels in the marsh. By mid-May 2001, salinity levels were lower; gate operation ceased and flashboards were removed for the remainder of the control season.

Morrow Island Distribution System Maintenance

The fish screens, originally required by the biological opinion for the project, serve to protect sensitive fisheries in the area. During 2000, the Department began a final engineering design for fish screen components. A request for proposal was written for installation of the five conical fish screens distributed along Goodyear and Suisun Sloughs. Department staff also began preparation of the documents required to obtain necessary environmental permits for the project.

In November 2000, the Suisun Marsh Charter Group was formed at the request of CALFED to prepare an Implementation Plan to guide ongoing operations in managed wetlands and recovery actions for listed species. To discuss cost-saving alternatives to fish screens, charter management representatives from the Department and USFWS toured the MIDS facilities in January 2001. To date, USFWS has agreed to consider alternative measures to minimize the potential for harassment, harm, or mortality to species of concern at the MIDS inlet. Potential alternatives to screening the MIDS inlet on Goodyear Slough continue to be discussed among the agencies at both the ECAT and Charter Group meetings.

Monitoring

Comprehensive Review of Suisun Marsh Monitoring Data

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

Water Quality Monitoring and Compliance

Suisun Marsh channel water salinity standards were specified in SWRCB WR 98-09 for seven compliance stations. Four of these—National Steel (S-64), Beldons Landing (S-49), Volanti (S-42), and Sunrise (S-21)—are located within the marsh. A fifth—Collinsville (C-2)—is located in the western Delta (Figure 4-2). The Department requested that the two remaining sites located in the western marsh—Morrow Island (S-35) and Ibis (S-97)—be converted to monitoring stations because of the SWP's minimal control on salinity levels at these locations. D-1641 granted an exemption from the compliance monitoring requirement for these stations. However, both remain active as water salinity monitoring stations.

Salinity levels remained well within compliance during the period from October 1, 2000, through May 31, 2001. See the Department's annual report to SWRCB, *Suisun Marsh Monitoring Program Data Summary: 2001 Water Year*, for details.

Monitoring Station Maintenance, Repair, and Enhancements

Routine maintenance, repair, and enhancement activities for Suisun Marsh monitoring stations during water year 2000-01 included



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

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

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

Vegetation Monitoring

In January 2001, a final report and a vegetation map for Suisun Marsh were completed. The map was developed following a methodology developed by DFG and approved by SMPA coordinators. The completed GIS database includes about 37,000 polygons, each of which have a series of attributes including vegetation type, type of disturbance, the amount of vegetation cover, and information on how the attribute was derived. A change detection was completed in May 2001 evaluating the amount of vegetation change between July 1999 and July 2000. The change detection revealed that less than 1 percent of the vegetation acreage had changed. Based on this information, DFG recommended conducting change detections once every 3 years. The next change detection is scheduled for summer 2003.

Salt Marsh Harvest Mouse Monitoring in Conservation Areas

In 1981, USFWS issued a Section 7 Biological Opinion for the implementation of the Suisun Marsh Plan of Protection that required DFG, on behalf of the Department, to manage 1,000 acres as salt marsh harvest mouse (*Reithrodontomys raviventris halicoetes*) conservation areas, with a goal of preserving a total of 2,500 acres as conservation areas throughout the marsh. Seven conservation areas totaling 1,130 acres were established in 1987. Since 1998, the Suisun Marsh Environmental Coordination Advisory Team has been working with USFWS to determine which areas of the marsh to include in the 2,500 acres of conservation areas. In 2001, three parcels were accepted by USFWS as new conservation areas, bringing the total acreage for conservation areas to 2,200 acres. In addition, two parcels at Island Slough are managed as mouse habitat as mitigation for the Department's projects in the marsh.

Western harvest mice occur with salt marsh harvest mice in wetland habitats of Suisun Marsh, but they also commonly occupy upland grassland habitats. During salt marsh harvest mice surveys, several standard morphological characteristics are assessed to determine the species of captured harvest mice. Many harvest mice captured in the marsh in these surveys have characteristics between the two species and are recorded as "unknown harvest mice." These unknowns raise questions about the genetics of harvest mice in Suisun Marsh and the applicability of the standard protocols. In 2000, with recommendations from the Suisun Marsh ECAT, the Department funded a harvest mouse genetics study at California Polytechnic State University, San Luis Obispo. The study has three objectives: (1) identification of species-specific genetic markers and matching the markers to morphological characteristics; (2) test for hybridization between the salt marsh harvest mouse and the western harvest mouse; and (3) test for genetic differentiation between populations from different areas around the San Francisco Bay Estuary. Six areas of the marsh were targeted for sample collection and, in 2001, both wetland and upland sites were sampled from these areas. During the surveys, hair samples were collected from captured mice and sent to Cal Poly for analysis. Final results of the study are expected in 2002.

In water year 2000-01, a total of 16 areas in the Suisun Marsh were surveyed for presence of the mice. These areas included nine salt marsh harvest mice conservation areas, the two mitigation areas at Island Slough, and five areas for collecting samples for the harvest mouse genetics study. Salt marsh harvest mice were captured at all but three of the areas surveyed. The primary goal of the surveys was to determine if salt marsh harvest mice were present at each site and to generally assess population levels.

Suisun Marsh Waterfowl Feeding Ecology Study

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

The samples are being analyzed at a University of California, Davis laboratory. During 2001, sample analysis was completed and the final report will be released in November 2002.

Aquatic Monitoring

In 2001, the Department contracted with UC Davis and DFG to conduct fisheries monitoring in Suisun Marsh. The monitoring was conducted to meet Corps and San Francisco Bay Conservation and Development Commission permit requirements for construction and operation of the gates and the NMFS 1993 Biological Opinion for Operation of the SWP and CVP.

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

UC Davis has sampled for fish in Suisun Marsh since 1979, with Department and Bureau funding. The number of fish sampled in the marsh dropped slightly in 2001; however, it was the second highest average catch since 1983. Fish catch in Suisun Marsh has fluctuated considerably since sampling began, and is at lower levels compared to the early 1980s. This effect is largely due to changes in the abundance of introduced species, which have dominated the fisheries since 1988. Prior to 2000, the general trend in abundance of introduced fishes over the history of this survey was an overall decline. Despite this trend, abundance of introduced species in 2000 and 2001 reached its highest and fourth highest levels, respectively, since sampling began. This rise can be attributed to changes in abundance of relatively few species, primarily striped bass, yellowfin goby, and shimofuri goby.

From 1995-01, there has been a gradual rise in abundance of native species, with only the Sacramento splittail showing consistent increases during this period. Sacramento splittail and tule perch experienced a dramatic increase in abundance in 2001. This is encouraging since the two species have historically comprised the largest proportion of the native species catch. Delta smelt numbers increased from the 2000 levels, with the third highest catch since 1980, although numbers remain relatively low. Longfin smelt catch declined slightly further in 2001. Since surveying began in 1994, the presence of eggs and larvae of Delta smelt and longfin smelt indicates that these species use the marsh for rearing and likely spawning. In 2000, splittail larvae were captured in the marsh for only the fourth year since sampling began in 1994. The 2001 UCD Suisun Marsh Larval Fish Survey report will be available in late 2002.

DFG and the IEP Environmental Monitoring Program have monitored *Neomysis mercedis* densities and chlorophyll *a* concentrations in Suisun Marsh since 1972 and 1976, respectively. *N. mercedis* catch has undergone a general downward trend since sampling began, with the most dramatic decrease following 1991. Densities have remained relatively low since then. Mysid shrimp abundance in the summer of 2001 was one of the lowest on record. Chlorophyll *a* concentrations, which serve as an indicator of phytoplankton abundance, have shown an overall decline in Suisun Marsh since 1987. This decline has, in part, been attributed to the efficient feeding habits of *Potamocorbula amurensis*, a suspension-feeding clam that invaded the San Francisco Bay and Estuary in 1986. Recently, the average annual chlorophyll *a* concentration in Suisun Marsh has fluctuated slightly, but remains low compared to levels measured prior to 1992. In 2001, chlorophyll *a* concentrations dropped even further and remained very low throughout the year. Food limitation, caused by low phytoplankton abundance, and competition with *Acanthomysis bowmani*, a mysid shrimp introduced from Asia in the early 1990s, are important factors in the decline of *N. mercedis*.

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

Mitigation and Fulfillment of Permit Conditions

Suisun Marsh Salinity Control Gates Flashboard Modification Study

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

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

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

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

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

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

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

Morrow Island Distribution System Fish Screen and Alternatives

During 2001, installation of the fish screens on Morrow Island was temporarily put on hold. On July 2, 1997, the Corps issued permit No. 20698N to perform maintenance on MIDS. Permit conditions required installation of a fish screen on the Goodyear Slough diversion structure. During 2000, pre-construction activities began on a hybrid fish screen proposal, developed by the Department and approved by USFWS and the Corps. In early 2001, due in part to escalating costs, the Department began exploring alternative mitigation strategies. Concurrently, the Suisun Marsh Charter committee began negotiating a blueprint for the marsh, which included evaluating existing departmental mitigation obligations (see CALFED Suisun Marsh Charter section). It was decided that the MIDS fish screen issue would be dealt with within the charter process. Resolution of this issue is expected by 2003.

Reports

In 2000, the following reports on Suisun Marsh were written and/or published.

The reports are available online at iep.water.ca.gov/suisun/curr-report/, or by request.

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

Suisun Marsh Expenditure History

Suisun Marsh expenditures and reimbursements administered by the Department for calendar years 1968 through December 2001 are summarized in Table 4-2. From 1968 through December 31, 2001, the Department disbursed more than $100 million SWP funds for planning, design, environmental documentation, construction, maintenance, monitoring, mitigation, and permit compliance in support of implementing the plan of protection for Suisun Marsh and SMPA and meeting standards set by SWRCB. The Bureau has reimbursed the Department about $39.3 million (39.2 percent) and the State's General Fund has reimbursed about $9.5 million (9 percent). These figures do not include up-front payments made by the Bureau for staff and other direct costs, as well as about $5.7 million in Bureau interest payments during 1988 and 1989.

Annual figures are reported in Table 4-2 for the Department's costs, the General Fund payment, Bureau payments, and costs billed to the SWP contractors.

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

Calendar Year	Costs	General Fund Payment[a]	Bureau Payments	Costs Billed to SWP Contractors	Total
1968	10,571	0	0	10,571	10,571
1969	34,182	0	0	34,181	34,182
1970	23,343	0	0	23,343	23,343
1971	1,042	0	0	1,042	1,042
1972	47	0	0	47	47
1973	0	0	0	0	0
1974	0	0	0	0	0
1975	2,709	0	0	2,709	2,709
1976	32,961	0	0	32,960	32,961
1977	37,475	0	0	37,475	37,475
1978	350,831	0	0	350,831	350,831
1979	3,660,096	0	0	3,660,099	3,660,096
1980	5,005,759	0	0	5,005,759	5,005,759
1981	2,964,977	0	0	2,964,974	2,964,977
1982	2,955,702	0	(2,500,000)	455,705	2,955,702
1983	2,754,091	0	0	2,754,094	2,754,091
1984	2,418,345	0	0	2,418,345	2,418,345
1985	2,332,776	0	0	2,332,773	2,332,776
1986	6,495,323	0	0	6,495,322	6,495,323
1987	13,600,701	0	0	13,600,701	13,600,701
1988	7,456,364	0	(17,368,725)[b]	(9,912,361)	(11,952,113)[c]
1989	2,341,960	(9,478,000)	(1,219,691)[b]	(8,355,731)	(2,004,988)[d]
1990	3,030,010	0	(695,450)	2,334,560	3,030,010
1991	6,223,042	0	(2,925,429)	3,297,613	6,223,042
1992	2,737,259	0	(1,174,655)	1,562,604	2,737,259
1993	2,979,255	0	(238,130)	2,979,255	2,979,255
1994	3,192,213	0	(1,962,549)	3,192,213	3,192,213
1995	2,721,078	0	(647,138)	2,721,078	2,721,078
1996	3,391,678	0	(1,482,396)	3,391,678	3,391,678
1997	3,634,267	0	(1,520,219)	3,634,267	3,634,267
1998	5,342,834	0	(1,107,501)	5,342,834	4,235,333
1999	8,791,864	0	(2,696,200)	8,791,864	6,175,664
2000	2,881,903	0	(3,300,053)	(418,250)	(418,150)
2001	2,616,726	0	(444,009)	2,172,717	2,172,717
Total	**100,102,283**	**(9,478,000)**	**(39,282,145)**	**51,342,138**	**55,653,129**

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

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

Chapter 5
Local Assistance



Irrigation in the Central Valley

Significant Events in 2001

- The Water Conservation Office was reorganized and a new Office of Water Use Efficiency was created.
- The Water Recycling and Desalination Branch of the Office of Water Use Efficiency was also established with a strategic goal of increasing the beneficial use of recycled water in the State.
- The Water Conservation Bond Law Program staff implemented five of the six programs authorized under the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act (Proposition 13).
- A total of 10 projects totaling $769,000 for fiscal year 2001-02 was approved from the Drainage Subaccount of Proposition 204.
- The Interim Reliable Water Supply and Water Quality Infrastructure and Management Subaccount of Proposition 13 awarded grants to 13 projects totaling $154.3 million.
- Fifty-three project grants were awarded by the Office of Water Use Efficiency in cooperation with CALFED. These grants were awarded to both agricultural and urban projects.

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

Davis-Grunsky Act Program

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

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

Water Use Efficiency

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

California Irrigation Management Information System

The Department's CIMIS expanded to 118 weather stations in 2001. Seventy percent of the stations on the CIMIS network belong to local agencies. The demand for CIMIS data has been increasing steadily since its establishment in 1982. For example, the number of registered CIMIS data users has grown from 661 in 1989 to 3,921 in 2001. There were approximately 70,000 requests for information in the year 2001 alone. A new CIMIS Web site, www.cimis.water.ca.gov, has been launched to satisfy growing demands. Users can now register online, access archived CIMIS data, and easily download large data files. Currently, a preliminary study is underway to develop a system that can use remotely sensed satellite data to map reference evapotranspiration for the entire State. Further enhancements to the database are forthcoming.

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

Water Recycling and Desalination Branch

The Water Recycling and Desalination Branch of the Office of Water Use Efficiency was established in 2001. The Branch's mission is "Protecting the environment, increasing local water supply and reliability, and improving water and energy efficiency through the safe use of

recycled and desalinated water" with a strategic goal of helping to increase the beneficial use of recycled water in the State.

Staff

- provided scientific review to several water recycling research and pilot scale projects on water recycling production and use;
- participated in workshops and meetings with technical presentations;
- responded to policy makers, legislators, and regulators on issues related to water recycling;
- responded to several public questions and inquiries regarding permitting process;
- helped increase public awareness on the importance of water recycling issues and projects;
- established the Recycling State Agencies Team;
- participated in the Southern California Water Recycling Project Initiative I and II; and
- developed and launched the Water Recycling and Desalination Web site, www.owue.water.ca.gov/recycle.

In 2001, the Department convened the 2002 Recycled Water Task Force, as required by the Legislature. Branch staff provided staffing and support for the Task Force in developing recommendations and advising the Department on how to increase industrial and commercial use of recycled water. The Department will make recommendations on specified topics to the Legislature by July 2003, as required by Assembly Bill 331.

Agricultural Water Management Plans

By the end of 2001, 50 water districts, three environmental interest groups, and over 50 other interested groups signed the Agricultural Water Management Memorandum of Understanding as members of the Agricultural Water Management Council. The agricultural signatories represent over 4.7 million acres of irrigated agriculture statewide.

Ten Agricultural Water Management Plans were submitted by agricultural water suppliers to the council. Department staff provided technical review and evaluated these plans. Department staff provided technical assistance to water districts to prepare Water Management Plans and helped implement efficient water management practices. The Department also provided administrative and programmatic assistance.

Urban Water Management Plans

The Department received 336 Urban Water Management Plan submittals between December 31, 2000, the legal deadline, and December 31, 2001. *Summary of 2000 Urban Water Management Plans*, a report to the Legislature required by Section 10644 of the California Water Code, was prepared.

Outreach

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

Agricultural Drainage Program

The Agricultural Drainage Program collects, evaluates, and reports information, and conducts studies and demonstration projects focusing on drainage problems in the San Joaquin Valley. The resulting data and information on agricultural drainage issues enable better definitions of drainage problems and lead to implementation of management plans. Specifically, data and information are used to implement drainage reduction, collection, storage and containment, reuse, reclamation, disposal actions, and projects. Departmental projects include demonstration of irrigation management improvements, integrated on-farm drainage management research and demonstration, evaporation pond design and management improvements, and development of pilot treatment, reclamation, and disposal facilities.

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

San Joaquin Valley Drainage Implementation Program

The Department continues to participate in the multiagency SJVDIP. Four State and four federal agencies sponsor this multiagency program. The Department acts as the lead agency, providing staff, management, and funding. SJVDIP is managed by OWUE.

In October 2000, SJVDIP adopted a Drainage Management Strategy outlining its approach to salinity / drainage programs. The SJVDIP Action Plan and the cooperative effort initiated among the parties are necessary to resolve drainage problems. The Department, while working with other agencies, continues to participate in this effort to assist the local districts. It also continues to play a major role in collecting necessary data, developing and transferring technologies, identifying research needs, and helping districts and growers implement drainage management options. Information about SJVDIP and its reports can be found on the Department's OWUE Web site at www.owue.water.ca.gov / statedrain.

Proposition 204

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

Each year the Department solicits proposals from public entities seeking funding for research activities consistent with the goals of the program. A Technical Review Committee integrated by SJVDIP members, representatives of universities, consultants, and stakeholders reviews and screens the proposals for the Department. The Department submits the proposal packages to an Oversight Committee comprised of representatives from the Department, DFA, and SWRCB for final approval. Ultimately, the Department is responsible for preparing and managing contracts for the approved proposals.

In 2001, a total of 10 projects totaling $769,000 was approved for fiscal year 2001-02. This program is closely coordinated with SJVDIP.

San Joaquin Valley Agricultural Drainage Program

This program consists of several activities: Drainage Monitoring and Evaluation, Drainage Treatment, Integrated on-Farm Drainage Management, on-Farm Drainage Reduction and Reuse Program, and Environmental Activities.

Drainage Monitoring and Evaluation. Drainage monitoring and evaluation involves collecting and evaluating information on the quality, quantity, and movement of drainage water. The following activities are covered under this category:

- Participating with the Bureau of Reclamation and the Central Valley Regional Water Quality Control Board in a cooperative information system for the San Joaquin River Real Time Water Quality Monitoring Program. This program provides State, federal, and local agencies with flow and salinity projections to assist in managing agricultural drainage releases into the San

Joaquin River. This activity is primarily funded by a 2-year CALFED grant which expires in 2002.

- Monitoring shallow groundwater levels and collecting flow and water quality data for drainage water from west side San Joaquin Valley tile drain sumps.
- Preparing an annual drainage report, *The San Joaquin Valley Drainage Monitoring Program 1998 Report*, a draft of which was completed November 2001.
- Preparing land use maps of drainage impaired areas. Shallow groundwater and irrigation methods maps were prepared using drainage monitoring data in conjunction with land use and irrigation methods data.
- Monitoring shallow groundwater specific conductivity for the west side of the San Joaquin Valley and development of 2001 specific conductivity map.
- Providing assistance for the collection of groundwater, soil, and operational data for the integrated on-farm drainage management project at Red Rock Ranch in western Fresno County.
- Maintaining a Web site that includes information on the purpose and history of the drainage program, drainage program activities, salinity and shallow groundwater maps, and Web site links related to other agricultural drainage programs.

Drainage Treatment. *Buena Vista Pilot Reverse Osmosis Project*. The Department continues to investigate technologies and costs for the treatment of saline agricultural subsurface drainage water. It agreed to continue participation in the pilot desalinization project at Buena Vista Water Storage District in Kern County. This project is a cooperative effort among the Buena Vista Water Storage District, Boyle Engineering, University of California, Los Angeles, and the Department to develop information on pretreatment, reverse osmosis treatment, and brine disposal. Agreements were written and plant operation began during the 2000 irrigation season; however, testing was curtailed in 2001 due to a lack of drainage water. The shortage was believed to be the result of climatic conditions that resulted in less irrigation water available as compared to the previous year. During the latter part of 2001, plans were developed to extend the pilot project for another year and to replace sump drainage water with saline shallow groundwater. Two wells were proposed to extract this groundwater.

Reverse Osmosis—Microfiltration Membrane Research. The Department continues to fund research on membranes for reverse osmosis and micro / ultra / nanofiltration processes under a contract with UCLA, Department of Chemical Engineering. University staff completed an evaluation of the potential performance of five common nanofiltration and low pressure reverse osmosis membranes used for desalination of agricultural subsurface drainage water from the San Joaquin Valley. The study evaluated the following parameters: performance profiles, rejection and flux, bio-fouling potential, gypsum scaling thresholds, and antiscalants.

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

Agricultural Subsurface Drainage: *Salt Recovery, Purification, and Utilization*. The Department continues to support investigations of processes for concentrating and purifying drainage salts for marketing purposes. These activities are performed on two fronts. The first is with the University of California, Davis and involves recovery of sodium sulfate from farm drainage water and using it in the reactive dye process of cotton. Work with UC Davis also includes the separation and purification of agricultural salts

and brines for the purpose of producing value-added salt products and mitigating environmental impacts of salt accumulation. The second area of investigation involves pilot scale research at Red Rock Ranch using a solar still to demonstrate processes of recovering potable water from drainage water using solar energy.

Selenium Removal from Agricultural Subsurface Water. The Department initiated a contract with the University of Southern Illinois to investigate cost-effective methods of removing selenium from agricultural subsurface drainage water using a variety of absorbents.

The Department continues to participate in cooperative research with the UC Center for Water Resources Salinity / Drainage Program (www.waterresources.ucr.edu). Activities include

(1) a study for mitigating selenium ecotoxic risk in agricultural drainage systems (see Web site above for specific details);
(2) compiling clear documentation of drainage water reuse studies, research, and demonstration projects; and
(3) assessing the efficacy of the Tulare Lake Drainage District flow-through wetland system for the removal of selenium in irrigation drainage waters before discharge into evaporation ponds. This research project concluded in 2000 and the final reports are being completed.

Integrated on-Farm Drainage Management. In 2001, IFDM became a permanent activity with the creation of the Integrated on-Farm Drainage Management Section. The objectives of this section are to provide technical assistance on Integrated on-Farm Drainage Management Systems through advisory, technical, and oversight committees. IFDM is a salt management system based on sequential reuse of saline drainage water to irrigate crops of progressively increasing salt tolerance. Each sequential reuse reduces the volume of drainage water and increases the salt concentration. Drainage water too saline for irrigation can be applied to a variety of discharge points. The IFDM program will provide funds and administer and monitor contracts with State, federal, university, and local entities to expand current knowledge of IFDM systems. Because preliminary findings indicate that IFDM systems have less significant environmental impacts than other options, as well as reducing the volume of drainage water produced, the management program will evaluate the possibility of converting existing projects to IFDM systems. Further aspects of the program will investigate the use of accelerated evaporation systems (solar evaporators) to develop agricultural brines, and the feasibility of using salt gradient solar pond systems for salt disposal and generation of heat or electricity for agricultural use.

Program activities also include

- coordinating IFDM research activities and data collection with other agencies involved with Red Rock Ranch and other IFDM sites;
- assisting growers and local agencies in planning and developing IFDM systems, participating with the Westside Resources Conservation District and SWRCB in developing a manual for designing, managing, and operating IFDM systems;
- investigating new techniques for extraction of salts from reused drainage water at a solar still facility in Red Rock Ranch; and
- participating in a joint investigation with the University of Texas at El Paso and the Bureau to determine the feasibility of salinity gradient solar pond technology. A memorandum report, *Conceptual Application and Feasibility of Salinity Gradient Solar Pond Technology in the San Joaquin Valley, California,* was completed in December 2001.

Planning for a cooperative project with the Bureau was initiated to investigate the long term interaction of irrigation, rainfall, and local and regional groundwater with the movement of salts and selenium in the soils of Red Rock Ranch. The project will use an integrated surface-groundwater hydrogeological model

developed by the University of Waterloo, near Toronto. This activity involves California State University, Fresno staff in a research project investigating suitable halophytes and salt tolerant crops that can use saline drainage water as an irrigation supply. The Department also concluded an investigation to determine if selenium present in subsurface drainage water can be removed using granulated activated carbons. Study results were negative.

On-Farm Drainage Reduction and Reuse Program. The Department's on-Farm Drainage Reduction and Reuse Program is managed by OWUE and provides technical assistance, information, and other resources to growers and irrigators. The program helps irrigation districts and growers apply irrigation water efficiently to reduce excessive deep percolation and drainage water from the immediate on-farm source, while maintaining salt balance in the root zone, thus providing a sustainable soil environment.

The program objective is being achieved through on-farm demonstration projects, studies, research and educational training, and workshops. Workshop topics include

- irrigation scheduling
- management, including upgrading, maintenance, operations, and performance
- advances in irrigation technology
- irrigation system evaluation
- drainage reuse
- salinity management

The program manages several on-farm demonstrations and other studies for salinity and irrigation management. These activities help improve and advance irrigation management, fine-tune the performance of irrigation hardware, and increase grower and irrigator knowledge.

Staff is presently involved in the following activities:

- management of in-progress contracts
- preparation of technical report summaries on the findings and results of on-farm demonstrations and studies
- participation in the SJVDIP Phase III Implementation Process

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

- *Integrated Management of Irrigation and Shallow Groundwater*—Field demonstration at Westlake Farms of irrigation management techniques to optimize crop use of shallow groundwater.
- *Lost Hills Drainage Reuse Trial*—A small field trial to determine if drainage water can be reused on selected crops, such as pistachios, and incorporated in the District's drainage water management programs.
- *Lost Hills Pre-irrigation Drainage Reduction*—Field demonstration of sprinkler/furrow irrigation management for pre-irrigation drainage reduction.
- *Pond-Shafter-Wasco Mobile Lab*—Program to assist growers with irrigation system evaluations to improve distribution uniformity and irrigation efficiency.
- *Pond-Shafter-Wasco Irrigation Training Workshops*—Irrigation training workshops conducted in both English and Spanish for growers and field workers.
- *Center for Irrigation Technology Irrigation/ Drainage Management Workshops*—Training and educational workshops on recent advances in irrigation and drainage management, conducted at CSU, Fresno.
- *Detrimental Salinity Buildup on the Periphery of the Wetted Areas Caused by Subsurface Drip Irrigation*—Identification of factors in

subsurface drip irrigation that may lead to a detrimental buildup of salinity and suggestions for practices to reduce or avoid salinity buildup in root zones.

- *Salinity Mobile Lab Mapping and Analysis*—Mapping of the salinity profile in a given crop field to assess the performance of irrigation management. This will produce site-specific salinity management programs resulting in substantial water savings, prevention of drainage problems from over-irrigation, and increased yields.
- I*rrigation Management Education and Training Workshop Through the Use of Demonstration Farms*—Workshops that provide practical methods of irrigation management at on-farm demonstration sites. Effectiveness of various practices will be determined through the use of a mobile irrigation lab.

Environmental. The environmental investigation studies and reports on short and long-term impacts of the design, construction, and operation of evaporation ponds and integrated on-farm drainage management systems used for disposal and/or management of drainage water. During 2001, the Department continued to assist CVRWQCB in assessing the biological implications of proposed and implemented modifications to evaporation basins. Environmental investigations include

- monitoring wildlife impacts at Integrated on-Farm Drainage Management Projects;
- developing wildlife management criteria at IFDM demonstration projects in coordination with USFWS;
- participating in the Grasslands Bypass long-term planning process, including EIS/EIR input;
- assisting UC researchers in invertebrate and other studies at evaporation ponds;
- participating in Red Rock Ranch research activities involving the required biological monitoring activities in accordance with Waste Discharge Requirements permits; and
- coordinating with CVRWQCB and CSU, Fresno Center for Irrigation Technology to identify IFDM topics and other considerations in developing a SWRCB 319(h) grant.

Environmental Impact Documents Review

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

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

From January through December 2001, about 4,150 documents were screened by the Environmental Review Section, with 774 referred for detailed review. Of these referrals, 281 were made during the preliminary stages when the projects were at the Notice of Preparation or Early Consultation stage and 493 assignments were for negative declarations and environmental impact reports. O&M received 159 formal referrals. The State Water Project Analysis Office received 53 formal referrals and 9 for information, and the Office of State Water Project Planning received 1 formal referral. In addition to the information referrals made to O&M, SWPAO, and OSWPP, 382 other information referrals were made to other departmental staff.

Comments submitted to the lead agencies addressed a number of issues. They included safety and water supply issues, encroachment on physical facilities, and water quality issues. Additional departmental actions involving such items as encroachment permit submittals and

informal comments took place, but cannot be tracked by the Environmental Review Section.

During 2001, the Environmental Review Section tracked documents related to development along the California Aqueduct, water transfers and other water supply issues, wastewater treatment, and fiber optic construction near SWP facilities. During 2001, total documents submitted through the State Clearinghouse process increased by about 12 percent. In that same period, documents referred for more detailed review increased from 548 to 774, an increase of about 40 percent. This increase was related to several factors, including increased numbers of documents submitted through the Clearinghouse process and a general increase in projects potentially affecting SWP supplies and facilities.

Water Conservation Bond Laws

With the objective of assisting local agencies in obtaining financing for their water management programs, California voters approved five bond laws between 1984 and 2000 authorizing the Department to provide low interest loans and grants to fund project feasibility studies or construction activities.

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

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

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

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

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

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

Water Conservation-Agricultural and Urban

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

Groundwater Recharge

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

Local Water Supply/Local Projects

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

Groundwater Storage

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

Infrastructure Rehabilitation

- replacement or rehabilitation of leaking mains, reservoirs, or distribution system components
- replacement of failing system components that threaten the health, safety, economy, or welfare of the community served by the system

Interim Reliable Water Supply

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

Table 5-1, organized by project type, summarizes the number of projects and funds committed for each of the five bond laws.

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

Bond Law	Type of Project	Number of Projects[a]	Funding[a] (millions of dollars)
Clean Water Bond Law of 1984	Water conservation	7	9.74
Water Conservation and Water Quality Bond Law of 1986	Water conservation	24	41.60
	Groundwater recharge	10	28.04
	Subtotal	*34*	*69.64*
Water Conservation Bond Law of 1988	Water conservation	7	17.44
	Groundwater recharge	8	24.30
	Local water supply	4	9.00
	Subtotal	*19*	*50.74*
Safe, Clean, Reliable Water Supply Act of 1996	Water conservation	2	7.00
	Groundwater recharge	5	22.10
	Local water supply	22	20.58
	Subtotal	*29*	*49.68*
Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act of 2000	Water conservation		
	Agricultural	5	0.46
	Urban	8	1.04
	Groundwater recharge	18	9.00
	Infrastructure rehabilitation	0	0.00
	Groundwater storage	10	9.50
	Interim reliable water supply	13	154.30
	Subtotal	*54*	*174.3*
	All water conservation	53	77.28
	All groundwater recharge	41	83.44
	All local water supply	26	29.58
	All infrastructure rehabilitation	0	0.00
	All groundwater storage	10	9.50
	All interim reliable water supply	13	154.30
	Total of all projects	**143**	**354.10**

[a]Construction project and feasibility study loan and grant commitments as of December 31, 2001.

Information in this chapter was contributed by the Division of Planning and Local Assistance.

Chapter 6
Legislation and Litigation



Historic photo of the Governor's office

Significant Events in 2001

- Assembly Bill 331 requires the Department to report to the Legislature by July 1, 2003, on opportunities for increasing the use of recycled water in industrial and commercial applications.
- Assembly Bill 599 requires the State Water Resources Control Board to integrate existing monitoring programs and design new programs to establish a comprehensive groundwater quality monitoring program that will assess all groundwater basins in the State.
- Senate Bill 23 provides legislative certification that the programs and projects described in the August 2000 CALFED Record of Decision, to be funded from $135 million in fiscal year 2000-01 General Fund appropriations, are consistent with the July 2000 CALFED final Programmatic Environmental Impact Statement/Environmental Impact Report.
- Senate Bill 739, the budget bill for fiscal year 2001-02, makes appropriations to support State government. CALFED is required to submit a report to the Legislature regarding the Environmental Water Account.
- Senate Bill 1191 eliminates specific legislatively mandated reports, prepared by the Department and other State agencies.
- *Laub v. Babbit, et al.* On September 28, 2000, the California Farm Bureau Federation and three individuals filed a lawsuit against several federal and State CALFED agencies and officials in federal district court. In December 2000, the court dismissed the California Environmental Quality Act claim against the State agencies. After the Farm Bureau amended its complaint to include additional State officials, the court dismissed this complaint as well, in September 2001.
- *Tulare Lake Basin Water Storage District v. U.S.* In February 1998, plaintiffs Tulare Lake Basin Water Storage District, Kern County Water Agency, Wheeler Ridge-Maricopa Water Storage District, and others filed a claim in the U.S. Court of Federal Claims alleging that the federal government took plaintiffs' water without just compensation in violation of the Fifth Amendment of the U.S. Constitution. On April 30, 2001, the U.S. Court of Federal Claims issued a decision regarding liability, but not the amount of compensation, for the Constitutional takings claim. The Court held that the federal government has the authority to protect winter-run Chinook salmon and Delta smelt under ESA, but that it must pay the costs of this protection to water users who would have received that water from the SWP.
- *Bay-Delta Programmatic EIR Cases.* In September 2000, a suit was filed in Sacramento Superior Court against the CALFED State and federal agencies alleging that the State agencies did not comply with CEQA in preparing the CALFED PEIS/EIR and ROD. The Regional Council of Rural Counties action also sought to invalidate the CALFED ROD. On November 14, 2001, the Municipal Water District of Orange County dismissed the case following a settlement in which the parties acknowledged actions set forth in the CALFED ROD and the agencies' progress in implementing certain program areas.

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

Legislation

State Legislation

AB 331 (Goldberg) 2002 Recycled Water Task Force (Chapter 590, Statutes of 2001). AB 331 requires the Department to report to the Legislature by July 1, 2003, on opportunities for increasing the use of recycled water in industrial and commercial applications and to identify the constraints and impediments to increasing such use. The bill requires the Department to convene the Recycled Water Task Force to advise the Department on preparing the report. It also requires the Department to carry out the provisions only to the extent that funds from the Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act (Proposition 13) are made available by the State Water Resources Control Board.

AB 599 (Liu) Groundwater Contamination: Quality Monitoring Program (Chapter 522, Statutes of 2001). This bill requires: (1) SWRCB to integrate existing monitoring programs and design new program elements for the purpose of establishing a comprehensive groundwater quality monitoring program to assess all groundwater basins in the State; (2) SWRCB to create an interagency task force to help design the monitoring program and to convene an advisory committee to assist the interagency group; and (3) a multiagency report to the Governor and the Legislature by January 1, 2002, on the status of implementation of the new law.

SB 23 (Costa) CALFED Funds: Bay-Delta Program (Chapter 7, Statutes of 2001). This bill provides legislative certification that the programs and projects described in the August 2000 CALFED Record of Decision, to be funded from $135 million in fiscal year 2000-01 General Fund appropriations, are consistent with the July 2000 CALFED Final Programmatic Environmental Impact Statement/Environmental Impact Report. As a result of SB 23, the Department is required to submit an annual report on the progress achieved by the Department in attaining Bay-Delta Program goals. This report is required annually beginning January 1, 2003.

SB 739 (Peace) 2001-02 Budget Act (Chapter 106, Statutes of 2001). This bill, the budget bill for fiscal year 2001-02, makes appropriations for support of State government. CALFED is required to submit a report to the Legislature regarding the Environmental Water Account. This one-time report was due on December 15, 2001. This bill also includes a reappropriation of $12.5 million from the Budget Act of 2000 (Chapter 52, Statutes of 2000) for the CALFED Environmental Water Account and Conveyance Program.

SB 1191 (Speier) State and Local Reporting Requirements (Chapter 745, Statutes of 2001). This bill eliminates specific legislatively mandated reports that are prepared by the Department. Among others, the following reports are no longer required:

- Section 232—report on investigations and hearings conducted on watersheds,

quantities of water required in the watershed, quantities of water available for export from the watershed, and the areas served.

- Section 11912—Costs of Recreation and Fish and Wildlife Enhancement, for the California State Water Project (Bulletin 132, Appendix D).
- Section 12308—Report on the Delta Flood Protection Program's progress in meeting habitat requirements, and summary of habitat and levee project expenditures.
- Section 12939—Management of the California State Water Project (Bulletin 132, Appendix A).
- Resolution 30 Chapter 100, Statutes of 1995—Report on the progress CALFED has made towards achieving comprehensive and long-term solutions to the problems in the Delta.

Federal Legislation

House of Representatives 2311 (S. Callahan) Energy and Water Development Appropriations Act of 2002, Public Law 107-66 (Signed into law in November 2001). HR 2311 appropriates monies for energy and water development for the fiscal year ending September 30, 2002; it includes continued funding for several previously authorized flood control projects in California.

Among other things, this law (1) authorizes the Secretary of the Army to construct the flood control project for Guadalupe River; (2) amends the Miscellaneous Appropriations Act (2001) to transfer administration of the San Gabriel Basin Restoration Fund from the Secretary of the Army to the Secretary of the Interior, and changes the purpose of the fund from the design and construction of certain water quality projects to the provision of grants to the San Gabriel Basin Water Quality Authority and the Central Basin Municipal Water District to reimburse them for the design, construction, and operation of such projects; and (3) amends the Water Resources Development Act of 1999 with respect to the makeup of water shortages caused by flood control operation at Folsom Dam and reservoir, to require payment of 75 percent of the costs of replacement water on a non-reimbursable basis by the Secretary of the Interior, and 25 percent by the Sacramento Area Flood Control Agency.

Litigation

As of December 31, 2001, the Department was involved in a number of court cases related to management of the SWP. In addition, the Department monitored other cases that could significantly impact management of the SWP.

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

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

In its decision, the Court of Appeal held the EIR was inadequate because the document should have included an analysis of Article 18(b), a standard term in the long-term water supply

contracts, as part of its "no project alternative" analysis. Article 18(b) authorized the Department to declare a permanent shortage and reduce all contractors' allocations across the board, thereby avoiding the agricultural shortage provisions. The Department believed that it was very unlikely that Article 18(b) would ever be invoked and, therefore, the elimination of Article 18(b) did not require a "no project alternative" analysis.

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

On December 13, 2000, the California Supreme Court denied review. The parties commenced mediation, and proceedings in Superior Court are stayed pending completion of mediation. Proposals and counterproposals have been exchanged without success, and mediation is continuing. The stay of litigation in Superior Court has been extended to June 2002.

Monterey Settlement Agreement Guidelines

In accordance with the Settlement Agreement dated May 5, 2003, reached in *Planning and Conservation League et al. v. Department of Water Resources*, the *Guidelines for Review of Proposed Permanent Transfers of State Water Project Annual Table A Amounts* are being published in this edition of Bulletin 132. The guidelines in their entirety can be found in Chapter 9, *Water Contracts and Deliveries*, and are also available online at www.swpao.water.ca.gov/pdfs/03-09.pdf.

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

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

The case will address several important legal questions, including

- whether D-1641 complied with CEQA
- whether the changes in D-1641 injured certain Delta water users
- whether D-1641 was consistent with area of origin laws

The Department is supportive of D-1641 and is working in cooperation with SWRCB. The plaintiffs filed their opening briefs in August 2001, and responses are due in February 2002.

Laub v. Babbit, et al. On September 28, 2000, the California Farm Bureau Federation and three individuals filed a lawsuit against several federal and State CALFED agencies and officials in federal district court. The Farm Bureau claimed that the agencies violated the National Environmental Policy Act and CEQA when they acquired land and water under the CALFED Program. In December 2000, the court dismissed the CEQA claim against the State agencies. After the Farm Bureau amended its complaint to include additional State officials, the court, in September 2001, dismissed this complaint as well. The court agreed with the federal and State defendants that the NEPA claim was not

ripe for adjudication, and it agreed with the State defendants that NEPA does not apply to State acquisitions of land and water. Further proceedings are pending.

Bay-Delta Programmatic EIR Cases. In September 2000, the Regional Council of Rural Counties, Central and South Delta Water Agencies, and certain individuals filed suit in Sacramento Superior Court against the CALFED State and federal agencies. The Municipal Water District of Orange County filed a related legal action in Los Angeles Superior Court at the same time. Following the dismissal of the Farm Bureau's legal claims from federal court, those petitioners refiled their legal action in Fresno Superior Court. All three actions allege that the State agencies did not comply with CEQA in preparing the CALFED PEIS/EIR and ROD. The RCRC action also seeks to invalidate the CALFED ROD on various grounds.

On April 2, 2001, all three actions were coordinated for hearing in the Sacramento Superior Court. The administrative record was filed in July 2001, and various preliminary motions were set for hearing in November and December 2001.

On November 14, 2001, the Municipal Water District of Orange County dismissed its case following a settlement in which the parties acknowledged actions set forth in the CALFED ROD and the agencies' progress in implementing certain program areas.

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

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

In June 1995, the petitioners appealed the trial court judgment. No order for stay (to prevent work from proceeding) was filed, and construction at Silverwood Lake began in September 1995. Work on replacement of the intake tower was substantially completed by May 1997, and the lake was returned to its preproject level.

On October 17, 1996, the Court of Appeal affirmed the Mitigated Negative Declaration in all respects but one. As to fishery mitigation, the appellate court held that the Mitigated Negative Declaration should have included either a commitment to the specific nature and extent of restocking the fishery or specific standards under which the Department and the California Department of Fish and Game would determine the nature and extent of restocking.

Petitioners then filed a petition for review with the California Supreme Court seeking to invalidate the entire Mitigated Negative Declaration. On January 22, 1997, the California Supreme Court denied the petition for review, and jurisdiction was returned to the Superior Court. A hearing was held in San Bernardino Superior Court on May 2, 1997, and the Department presented its Fishery Mitigation Plan. Further briefing occurred on the merits of the plan, and oral argument was postponed to January 30, 1998.

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

Water Code Section 1810 *et seq.*

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

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

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

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

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

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

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

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

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

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

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

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

(a) The amount and availability of unused capacity.

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

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

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

The mitigation plan included the following mitigation measures:

- fish macro and micro habitat enhancement
- fish population studies
- rough fish removal
- annual fish stockings
- a 1-time fish stocking if the fishery has not recovered by the end of 2002

The Department continued to implement the mitigation plan during 2001.

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

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

Information for this chapter was contributed by the Deputy Director for Legislation and the Office of the Chief Counsel.

Chapter 7
Water Supply Development and Reliability



Groundwater being pumped into a creek for agricultural use in Yolo County

Significant Events in 2001

- This was the first full year of implementation of the CALFED Bay-Delta Program, signifying the completion of the general planning phase and the beginning of specific project planning and implementation activities.
- The State Water Resources Control Board adopted Water Right Order 2001-05, which facilitates negotiations for a settlement of the potential responsibilities of numerous water users to implement the objectives in the Water Quality Control Plan for the San Francisco Bay / Sacramento-San Joaquin Delta Estuary. It stayed the resumption of Phase 8 of the Bay-Delta Water Rights Hearing for 18 months and automatically dismisses Phase 8 at the end of that period, unless requested by the Department or the Bureau of Reclamation. It also extended the responsibilities of the Department and the Bureau under Conditions 1 and 2 of Decision 1641 to meet the water quality objectives in the 1995 WQCP.
- The In-Delta Element of the Integrated Storage Investigation Program completed a planning study in December. In this study, the Department and the Bureau concluded that the Delta Wetlands Project as proposed requires modifications and additional analyses before initiating negotiations with Delta wetlands owners.
- CALFED's Environmental Water Account became operational for the first time.

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

Defining environmentally and technically suitable projects and satisfying many complex environmental procedures, laws, and regulations, present two significant challenges in planning and developing new facilities. Many environmental concerns center on the effects that additional storage and delivery facilities may have on the water quality and the environment of the Sacramento-San Joaquin Delta. The Delta is the critical link in the SWP conveyance system. As such, developing additional SWP facilities depends on resolution of Delta conflicts and the solutions currently being outlined by CALFED.

Through 2001, the CALFED Bay-Delta Program continued to work on a comprehensive, long-term solution for the Delta. This program is a component of a process defined in the State-federal Framework Agreement, signed in June 1994, which calls for a cooperative and coordinated process to solve long-term water quality and ecosystem problems in the Bay-Delta estuary. The signatories of the agreement, known collectively as CALFED, became responsible for developing long-term solutions for fish and wildlife, water supply reliability, flood control, and water quality problems in the estuary.

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

The year 2001 was the first full year of implementation of the program, signifying the completion of the general planning phase and the beginning of specific project planning and implementation activities.

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

Water Supply Development

To meet the SWP contractors' increasing need for water, the Department investigates and implements plans to augment the SWP water supply.

The Department's plans include

- developing programs to transfer water, either through programs such as the drought water bank or transfers between SWP long-term contractors and/or other agencies, including Central Valley Project contractors;
- establishing conjunctive-use programs;
- using SWP funds to develop local water supplies;

- managing the Feather River watershed above Lake Oroville to increase base-flow runoff and reduce sedimentation; and
- investigating and evaluating storage projects (see CALFED Bay-Delta Program below).

Water Conveyance Through the SWP

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

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

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

Transfer and Exchange Evaluations

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

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

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

Sacramento Valley Groundwater

The emphasis of SWP-related groundwater activities in the Sacramento Valley has shifted from the development of conjunctive use projects by the SWP to facilitating the development of projects by local entities. This activity is coordinated with the Department's Integrated Storage Investigation and supports CALFED's Water Transfer and EWA programs, and the Department's Phase 8 activities.

Conjunctive use denotes a set of water management techniques designed to maximize the complementary use of surface and groundwater storage to provide improved water supply reliability. Conceptually, surplus surface water is used to recharge groundwater basins in wetter years. The stored groundwater is extracted when needed to augment diminished surface water supplies during dry years. If they are thoughtfully designed and implemented, conjunctive-use projects can be operated with minimal impact to the environment or to other water users. However, the groundwater component of conjunctive use has become increasingly controversial as it gains more prominence in both the CALFED program and as part of various water transfer proposals. As a result, many counties, particularly in the Sacramento Valley, have adopted ordinances designed to regulate water transfers that involve groundwater substitution.

The Department perceives conjunctive use as somewhat of a double-edged sword. On the one hand, it is an integral part of many of the water supply management and development projects that can provide water supply to the SWP (for example, Phase 8) or to other Department programs. On the other hand, given the

Environmental Review Acts

The National Environmental Policy Act (Title 42 United States Code sections 4321-4370 [1970]) and the California Environmental Quality Act (California Public Resources Code sections 21000-21177 [1970]) require government agencies to document and consider environmental consequences of their actions in their decision-making process. NEPA states that it is the goal of the federal government to use all practicable means consistent with other considerations of national policy to protect and enhance the quality of the environment. All federal agencies must prepare an environmental impact statement, including a discussion of mitigation measures and alternatives, for actions significantly affecting environmental quality.

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

CEQA applies to projects directly undertaken, funded, or approved by State or local agencies. NEPA applies to projects directly undertaken, funded, or approved by federal agencies. The Department conducts many projects in cooperation with federal agencies. In those cases both CEQA and NEPA must be followed.

NEPA requires that mitigation measures and alternatives be disclosed to the public in the Environmental Impact Statement, but it does not generally require federal agencies to adopt such mitigation measures or alternatives. CEQA, on the other hand, does impose substantive duties on all California government agencies approving projects with significant environmental impacts to adopt alternatives or mitigation measures that they find to be feasible to substantially lessen these impacts, unless there are overriding reasons why they cannot. When a project is subject to both CEQA and NEPA, both laws encourage the agencies to cooperate in planning the project and preparing joint environmental documents.

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

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

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

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

frequent interconnection of surface and groundwater, conjunctive use and other groundwater development projects, if poorly designed, have the potential to adversely effect SWP supplies. To minimize this adverse potential, increased efforts are required to evaluate water transfer, conjunctive use, and other proposals that could impact the reliability of SWP supplies. The Department's Sacramento Valley Groundwater Program takes into account both the positive and potentially negative aspects of conjunctive use.

Local agencies are increasingly active in developing groundwater management programs and asserting control over water supply development and management activities. The Department works with local agencies and interested parties by providing technical and other assistance to help alleviate local anxieties and build consensus for local and regional conjunctive use. Concurrently, the Department actively monitors and evaluates proposed water transfers and other groundwater management activities to protect the existing SWP water supply.

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

Lower Colusa Basin. During 2001, activities focused on the continued development and calibration of a groundwater flow model to evaluate possible groundwater management alternatives. Also, the Department completed installation of a monitoring network that consists of 12 multiple-head wells in Reclamation District 108 where the extraction component of a project would be located. These activities are coordinated with the ISI activities in Yolo County and with Phase 8.

Butte Basin. The Department's efforts in Butte County focused on improving the technical understanding of the Butte Basin groundwater system; assisting in updating the groundwater model for the Butte Basin Water Users Association; assisting in the design and development of a monitoring-well network for the basin; and on building relationships with local interests. In addition, the Department, in cooperation with the county, Western Canal, and several landowners in the Cherokee Strip, designed a conjunctive-use demonstration project with the intent of testing the permitting process under the Butte County groundwater ordinance.

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

Conjunctive Water Management

The Department has implemented a Conjunctive Water Management Program which is designed to improve the management of groundwater resources in California through coordinated implementation of a number of activities. Improvements made by local agencies with Department support cover many facets of groundwater management, including developing a basic understanding of individual groundwater basins, identifying basin management strategies and objectives, planning and conducting groundwater studies, and designing and constructing conjunctive-use projects. This program is coordinated with the Department's Sacramento Valley Groundwater activities, and is supportive of the Department's water conveyance and Phase 8 activities as well as EWA.

In 2001, the Conjunctive Water Management Program completed the following items:

- executed Memoranda of Understanding with 30 local agency partners and provided technical and financial assistance to study groundwater basins and assess opportunities for conjunctive water management;
- awarded $18.5 million of Water Bond 2000 funds and $5 million of Local Groundwater Management Assistance Act grants to local agencies for 53 groundwater studies and projects; and
- provided technical assistance to numerous regional and statewide water management planning efforts.

Local Water Supply Projects

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

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

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

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

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

At this time, no local water supply projects are being considered by the Department. However, the Department is working with the CALFED Storage Program to enable more local supply and thus reduce demand on the Sacramento River.

Watershed Management

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

SWP Bay-Delta Proceedings—2001 Activities

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

- in-Delta water quality flow objectives
- Suisun Marsh salinity objectives
- salinity control actions in the San Joaquin Basin

- south Delta salinity objectives
- dissolved oxygen objectives
- combined use of the SWP and CVP points of diversion in the Delta

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

Phase 8

Phase 8 hearings were designed to consider potential responsibilities of numerous water users to implement the objectives in WQCP. In Phase 8, the Department and the Bureau claimed that certain water right holders in the valley must cease diversion or release water from the storage to help meet Delta water quality standards. On the other hand, the Sacramento Valley water users believed that their use did not contribute to water quality problems in the Delta. As senior water right holders and water users within the watershed and counties of origin, they contended they were not responsible for meeting these standards. The Phase 8 process would have ultimately determined which entities and individuals would be responsible for meeting water quality standards.

SWRCB received a number of requests from water right holders, including the Department and the Bureau, for a temporary postponement of Phase 8 proceedings. Since Phase 8 could involve litigation and judicial review for an extended period of time, and to avoid the consequences of delay, a number of parties to the hearings began developing negotiated agreements. The Department, the Bureau, State Water Contractors, and Northern California water associations were among negotiating parties. Some of their main issues included

- the responsibilities of water right holders to meet the objectives in the 1995 Bay-Delta Plan under the water right priority system;
- conditions needed to protect the public interest and public trust; and
- the effect of the hearing on the CALFED program.

On April 26, SWRCB adopted Water Right Order 2001-05, which facilitates negotiations that may lead to a settlement of the potential responsibilities of numerous water users to implement the objectives in WQCP for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. This order stayed the resumption of Phase 8 of the Bay-Delta Water Rights Hearing for 18 months and automatically dismisses Phase 8 at the end of that period, unless SWRCB receives notice from the Department or the Bureau requesting resumption of Phase 8. This order extended the responsibilities of the Department and the Bureau under Conditions 1 and 2 of D-1641 to meet the water quality objectives in the 1995 WQCP.

On September 20, SWRCB conducted a public informational workshop and received details regarding the status of negotiations and plans to implement the flow-dependent objectives, including information about the opportunities for nonparties to the negotiations to provide input.

Water Supply Contract Evaluation

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

CALFED Bay-Delta Program

The mission of the CALFED Bay-Delta Program is to develop and implement a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta. The program supports a strategy of conveying water through the Delta and not around it. The Department has vigorously supported this effort, seeing it as

CALFED Bay-Delta Program

The San Francisco Bay/Sacramento-San Joaquin Delta (Bay/Delta) Estuary is the largest estuary on the West Coast. It is a maze of tributaries, sloughs, and islands, and a haven for over 750 plants and wildlife species. It is also the hub of California's two largest water distribution system—the Central Valley Project, operated by the Bureau of Reclamation, and the State Water Project, operated by the Department of Water Resources. Together, these water development projects divert approximately 20 to 70 percent of the natural flow in the system, depending on the amount of runoff available in a given year. This, along with other issues, such as population growth and pollution, have had a serious impact on water supply and quality, and on the fish and wildlife resources in the estuary. All agreed on the importance of the Bay-Delta estuary as both a reliable source of water and as a fish and wildlife habitat; however, there was no consensus for solving conflicts regarding methods of management, conservation, increasing capacity of the system, and protecting the ecology of the region.

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

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

a means of developing and managing the State's water resources to meet the water delivery commitments of the SWP and to benefit the public and the environment, as well.

The CALFED Program is implemented through 11 major program elements. A discussion of key program elements follows.

Water Transfer Program

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

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

Storage Program

CALFED's Storage Program—a comprehensive program with a good potential benefit for the SWP—consists of actions related to surface and groundwater storage. The Division of Planning and Local Assistance has been working with CALFED to enhance the Department's ISI as well as conjunctive use programs that support local project development via loans and grants.

Surface Storage Investigations. CALFED initiated ISI as part of its ongoing evaluation of the appropriate role of storage alternatives in the CALFED solution. ISI is in the early stages of evaluating the approach to, and planning solutions for, surface storage.

In 2001, investigations of five reservoir projects continued: In-Delta Storage, Los Vaqueros Reservoir Enlargement, Shasta Lake Enlargement, North-of-the-Delta Offstream Storage, and Upper San Joaquin River Basin Storage. During 2001, the following investigative studies have been completed for these five potential projects.

In-Delta Storage Program

The Department and the Bureau evaluated three options for public ownership based on a proposal by Delta Wetlands Properties, a private venture formed to develop the Delta Wetlands Project. The project would divert and store 217,000 acre-feet of water on islands in the Sacramento-San Joaquin Delta.

In December 2001, the Department and the Bureau completed a joint planning study that evaluated water supply reliability, impacts on water quality, engineering feasibility, environmental impacts, economic justification, and policy and legal implications. This study considered whether the agencies should pursue three options: the lease or purchase of the Delta Wetlands Project, a re-engineered In-Delta Storage Project, or alternative configurations of islands for water storage. The benefits of the project include the potential to

- meet the ecosystem needs of the Sacramento-San Joaquin Delta, EWA, and Central Valley Project Improvement Act goals;
- provide water for use in the Delta; and
- increase reliability, operational flexibility, and water availability for south-of-the-Delta water use by the SWP and CVP.

Based on the study, the Department and the Bureau concluded that for ownership by the agencies, the Delta Wetlands Project as proposed requires modifications and additional analyses before negotiation is appropriate. The Department and the Bureau will continue evaluations of the re-engineered In-Delta Storage Project in 2002.

Los Vaqueros Reservoir Expansion

Contra Costa Water District owns and operates the 100,000 acre-feet Los Vaqueros Reservoir just northwest of the Sacramento-San Joaquin Delta. The Los Vaqueros enlargement would increase reservoir storage up to 400,000 acre-feet, for a potential storage capability of 500,000 acre-feet. In 2001, Contra Costa, the Department, the Bureau, and other local partners continued studies to determine how the expansion would benefit the water quality and reliability of water supplies for Bay Area water users. The Department and the Bureau are coordinating an agreement by affected agencies on the operation of Bay Area water supply facilities.

Two memoranda of understanding have been signed by State, federal, and local agencies.

- The Bay Area Blending and Exchange MOU outlines a collaboration to address Bay Area water quality and supply reliability concerns.
- The Los Vaqueros Reservoir Expansion MOU outlines how preliminary studies (feasibility study, environmental review, and preliminary design) will be performed.

In 2001, the agencies began working on a Draft Project Concept Report (pre-feasibility), and established and met with a newly formed Customer/Stakeholder Feedback Group to involve local entities, customers, and CALFED stakeholders. The purpose of the Project Concept Report is to inform CALFED agencies, Contra Costa board members, potential project partners, and the general public about the following:

- potential for an expanded Los Vaqueros Reservoir to meet each of the three CALFED Program objectives established for this project;

- potential for an expanded Los Vaqueros Reservoir to meet the Contra Costa Principles;
- nature of potential benefits an expanded Los Vaqueros Reservoir could provide;
- types of new or expanded facilities that could be required;
- issues raised by potential expansion of the Los Vaqueros Reservoir that will be addressed in subsequent phases of study; and
- next steps in the study program.

Shasta Lake Enlargement

The Shasta enlargement consists of inundating about 2,000 additional acres around the existing Shasta Reservoir, including a portion of the McCloud River protected by California Public Resources Code 5093, the Wild and Scenic Rivers Act. Benefits would include more cold water for the downstream fishery and more flexibility to provide increased instream flows and better water quality.

In 2001, the Department, the Bureau, local partners, and other State and federal agencies began studying project alternatives, water supply benefits, potential adverse effects, and mitigation strategies. These activities included reservoir area mapping, detailed topographic surveys to assess the impacts of existing facilities, initial hydrologic studies, and development of a plan formulation strategy that will address impacts of relocating transportation routes, recreational facilities, and communities.

North-of-the-Delta Offstream Storage

The Department and the Bureau are participating in a partnership with local and other State and federal agencies to further study north-of-the-Delta offstream storage opportunities. Storing water in offstream reservoirs during high flow periods provides opportunities to increase water storage in an environmentally sensitive manner. The stored water is then made available for beneficial uses at times when conflicts over available supplies are most pronounced—during droughts. This would help meet local demands during dry years and alleviate that demand on the Sacramento River.

Central Valley Project Improvement Act of 1992

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

CVPIA is designed to (1) protect, restore, and enhance fish, wildlife, and associated habitats in the Central Valley and Trinity River basins; (2) address impacts of CVP on fish, wildlife, and associated habitats; (3) improve operational flexibility of CVP; (4) encourage expanded use of voluntary water transfers and water conservation; (5) contribute to efforts to protect the Sacramento-San Joaquin Delta and estuary; and (6) achieve a reasonable balance among competing demands for CVP water, including fish and wildlife, agricultural, municipal, and power uses.

In addition to imposing further limitations on new and renewed CVP contracts and encouraging voluntary transfers of CVP water, CVPIA requires the implementation of a program to ensure that by 2002, natural production of anadromous fish will be sustainable at population levels twice the average sustained from 1967 to 1991. CVPIA also requires the dedication and management of an additional 800,000 acre-feet of CVP yield for fish and wildlife needs.

CVPIA also specifies measures to restore fish and wildlife and their habitat. Several measures—including installing a structural temperature control device at Shasta Dam, constructing specified Delta barriers, and acquiring supplemental wildlife refuge water—require cost sharing by the State of California. The Bureau is responsible for establishing guidelines and procedures to implement CVPIA requirements. The Department works closely with the Bureau as these programs develop to manage any effects on SWP operations and minimize adverse impacts to threatened and endangered species.

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

The Department and the Bureau filed and published a Notice of Preparation and Notice of Intent in November 2001. NOP/NOI identified the following possible alternatives for evaluation within the Environmental Impact Report/ Environmental Impact Statement:

- no project (present condition)
- no action (future condition)
- Sites Reservoir alternative
- Newville Reservoir alternative
- other possible alternatives, including conjunctive use and enlarged Shasta

Upper San Joaquin River Basin Storage

The Department, the Bureau, local partners, and other State and federal agencies are evaluating an increase of 250,000 to 700,000 acre-feet of storage in the upper San Joaquin River watershed. This additional storage could come by expanding Millerton Lake by raising Friant Dam, or a similar storage program. Additional water would be available to help restore and improve habitat and water quality in the San Joaquin River. The storage would also be designed to use groundwater and water exchanges that could improve water quality to urban areas. Other benefits could include hydropower, flood control, and recreation.

The Department, the Bureau, and their partners developed a 2-phase Plan of Study in 2001. Phase 1 will identify water resource opportunities and issues in the Upper San Joaquin River watershed. This phase will include an appraisal of opportunities to increase surface storage and conjunctive use of groundwater. Phase 2 will be more detailed and will begin with public meetings to determine the scope of the study.

Public involvement is important to the program. During Phase 1, the Department and the Bureau will establish working relationships with the public and key local, State, and federal agencies, coordinate related activities, and present its technical findings.

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

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

Conveyance Program

The Conveyance Program consists of projects proposed in the north and south Delta. The North Delta Program is comprised of studies related to the Delta Cross-Channel, a potential through-Delta facility, and a project to improve flood management and the ecosystem along the Mokelumne River. Actions in the south Delta include the South Delta Improvement Program, implementing flood/ecosystem improvements in the lower San Joaquin River, and potential interties between the SWP and CVP.

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

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

The proposed project is likely to consist of

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

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

Environmental Water Account

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

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

Under EWA, fish protection is achieved by periodic curtailment of project water delivery from the Bay-Delta to project water users south of the Delta and replacing it at a later date within the same calendar year. This necessitates the acquisition of alternative sources of project water, called *EWA assets*, which are used to replace the project water supply. EWA assets consist of *variable assets*, which are acquired through changes in operations; *fixed assets*, which are acquired through purchases from willing water sellers; and *source shifting*, which involves deferral of scheduled delivery of water allocations by willing participants. EWA is considered operational for any year when these assets are in place and Endangered Species Act commitments are provided by the management agencies. Year 2001 was the initial operational year of EWA.

In 2001, the Department and the Bureau initiated work on a joint EIS/EIR document for EWA, which will take into consideration the environmental impacts associated with the long-term use of EWA on both SWP and CVP operations, and will allow for long-term EWA contracts with willing water sellers. For more details on EWA deliveries, see Chapter 9, *Water Contracts and Deliveries*.

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

Chapter 8
Water Supply and Allocation



Snowpack is a predictor of seasonal snowmelt runoff.

Significant Events in 2001

- After 6 water years classified as *wet* or *above normal*, water year 2000-01 was classified as *dry* in both the Sacramento and San Joaquin Valleys.
- All regions of the State except the Central Coast and Colorado Desert were drier than average in water year 2000-01, with extremely dry conditions prevailing in the North Coast and North Lahontan Regions.
- Statewide precipitation was 75 percent of average, with percentages decreasing from south to north and from the coast inland.
- Mountain snowpack was only about 60 percent of average and peaked in mid-March, 2 weeks earlier than normal.
- Spring snowmelt runoff ranged from one-quarter to three-quarters of average in mountain basins. Due to the shortfall in mountain precipitation, water year runoff in California basins was only about half of average, adversely affecting water supply.
- There were water shortages for those exporting water from the Sacramento-San Joaquin Delta and the upper Klamath River. Statewide reservoir storage decreased about 5 million acre-feet since the previous fall, dropping from 8 percent above average to 14 percent below average at the end of the water year.
- Very few flood stages occurred. The highest water of the year occurred on March 6 when locally heavy rains caused the Santa Ynez River in Santa Barbara County to rise more than 8 feet above flood stage at the Narrows station near Lompoc.

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

Water Year 2000-01

Precipitation and Snowpack

All regions of the State except the Central Coast and Colorado Desert were drier than average with extremely dry conditions prevailing in the North Coast and North Lahontan Regions. Statewide precipitation was 75 percent of average, with percentages decreasing from south to north and from the coast inland. Mountain snowpack was only about 60 percent of average and peaked in mid-March, 2 weeks earlier than normal. The timing of the snow accumulation this winter was similar to the previous year, but with much less snow.

Eastern tropical Pacific Ocean surface temperatures were cooler than average (a La Niña condition) in fall 2000, which usually leads to dry south/wet north winter weather forecasts. Instead, the opposite occurred. By fall 2001, the sea surface temperatures were near normal.

After a promising start to the water year with double average precipitation in October 2000, November and December were very dry. Northern Sierra precipitation accumulation dropped below average in mid-November and was only half of average on January 1, 2001. This was the driest start to the water year since 1991, and the snowpack on New Year's Day was only half of average for the date.

Several storms arrived in mid and late January, but precipitation was still well below average for the month in the northern Sierra. This raised concerns of potential drought, and the Department appointed a Drought Preparedness Coordinator.

February was the most productive month of the year, but precipitation was only slightly above average, not enough to make up for the lack of early winter storms. (February has been the wettest month for 4 consecutive years.) Snow accumulation on south facing slopes above Lake Shasta and Trinity Lake approached normal levels after February storms with southerly flow, but regional snowpack remained below average.

The dry pattern resumed after the first week of March, and March precipitation totaled only about two-thirds of average. Sunny weather caused substantial early snowmelt, especially at lower elevations. The statewide snowpack peaked on March 14, and dropped to 60 percent of average on April 1, the date of the historical maximum accumulation. This dry period was interrupted by above-average April precipitation in the southern Sierra. Snowpack gains during these cool storms were offset by renewed heavy snowmelt at the end of the month.

May was very dry, with no rain at most stations. More than 180 daily high temperature records were set at stations ranging from the North Coast to the Colorado Desert during 11 days in May. The snowpack was depleted to 20 percent of average by May 14. Sunny weather and night temperatures above freezing caused a 24-hour melt at all elevations during the hottest periods. The summer was dry, with the only significant rainfall occurring in far Northern California in late June and in the southern Sierra in early July.

Summer temperatures were near-to-below normal.

The Northern Sierra Eight Station Precipitation Index finished with 33 inches for the water year (66 percent of average). The Feather River Basin was again among the driest mountain basins, receiving only half of average precipitation during the water year. Figure 8-1 shows statewide precipitation by hydrologic region.

Runoff and Storage

Statewide water year runoff totaled only half of average in the dry 2000-01 water year, and was less than average in all months. Runoff in the Sacramento River and San Joaquin River Regions was about 55 percent of average. Feather River unimpaired inflow to Lake Oroville was 2.1 million acre-feet (46 percent of average) for the water year. Reservoir storage decreased from 108 percent of average at the start of the water year to 86 percent at the end. While storage releases helped many water users, there were water shortages for those exporting water from the Sacramento-San Joaquin Delta and the upper Klamath River.

The Sacramento River Index for water year 2000-01 was 9.8 million acre-feet (54 percent of average). The Sacramento Valley 40-30-30 Index was *dry.* San Joaquin River system unimpaired runoff from the Stanislaus, Tuolumne, Merced, and San Joaquin Rivers was 3.2 million acre-feet (53 percent of average). The San Joaquin Valley 60-20-20 Index was *dry.*

The water year began with low base flow. Statewide unimpaired runoff was 35 percent of average for the 3 months ending December 2000. Reservoir storage dropped to average levels in January, and river levels continued to be very low through February.

The highest water of the year occurred on March 6 when locally heavy rains caused the Santa Ynez River in Santa Barbara County to rise more than 8 feet above flood stage at the Narrows station near Lompoc. On the Sacramento River, flood stage was slightly exceeded at Tehama on March 5, and the Colusa and Tisdale weirs overflowed into the Sutter Bypass for several days in late February and early March.

Sierra runoff doubled in late March as warm weather melted the low elevation snow. Cool weather in early April temporarily halted the melt, but late April flow tripled in some mountain streams. Record high temperatures in May accelerated the runoff from snowmelt, which peaked in most snow-fed rivers between May 8 and 12. Statewide runoff during May was two-thirds of average, but runoff in the San Joaquin River and Tulare Lake Regions was closer to average due to the accelerated snowmelt. Forecasts of April through July runoff, which were increased 10 percent in many of the southern Sierra basins after the April storms, were reduced by approximately 5 percent in May due to the very dry weather.

Runoff in Sierra basins receded abruptly in June due to the depleted snowpack, while the weather continued warmer and drier than average, despite an unseasonable storm in the far north. Statewide river runoff dropped precipitously to only a quarter of average, the lowest June flows in most rivers since 1992. In the San Joaquin Region, May runoff accounted for well over half of the April through July runoff, the highest fraction this century.

Statewide reservoir storage topped out near average at about three-quarters of capacity in May. Millerton Lake and Terminus Reservoir filled in late May, but the other major foothill reservoirs did not fill to capacity due to the subnormal snowpack. Statewide reservoir storage dropped to 10 percent below average on June 30 due to low inflow and high demands. This combination also caused the second lowest June net river accretions in the Sacramento Valley since 1950.

The total April through July river runoff in the Sacramento River Region ranged from 43 to 74 percent of average, reflecting lower precipitation in the northern Sierra in winter 2001. Runoff from July through September dropped to very low flow levels, much less than half of

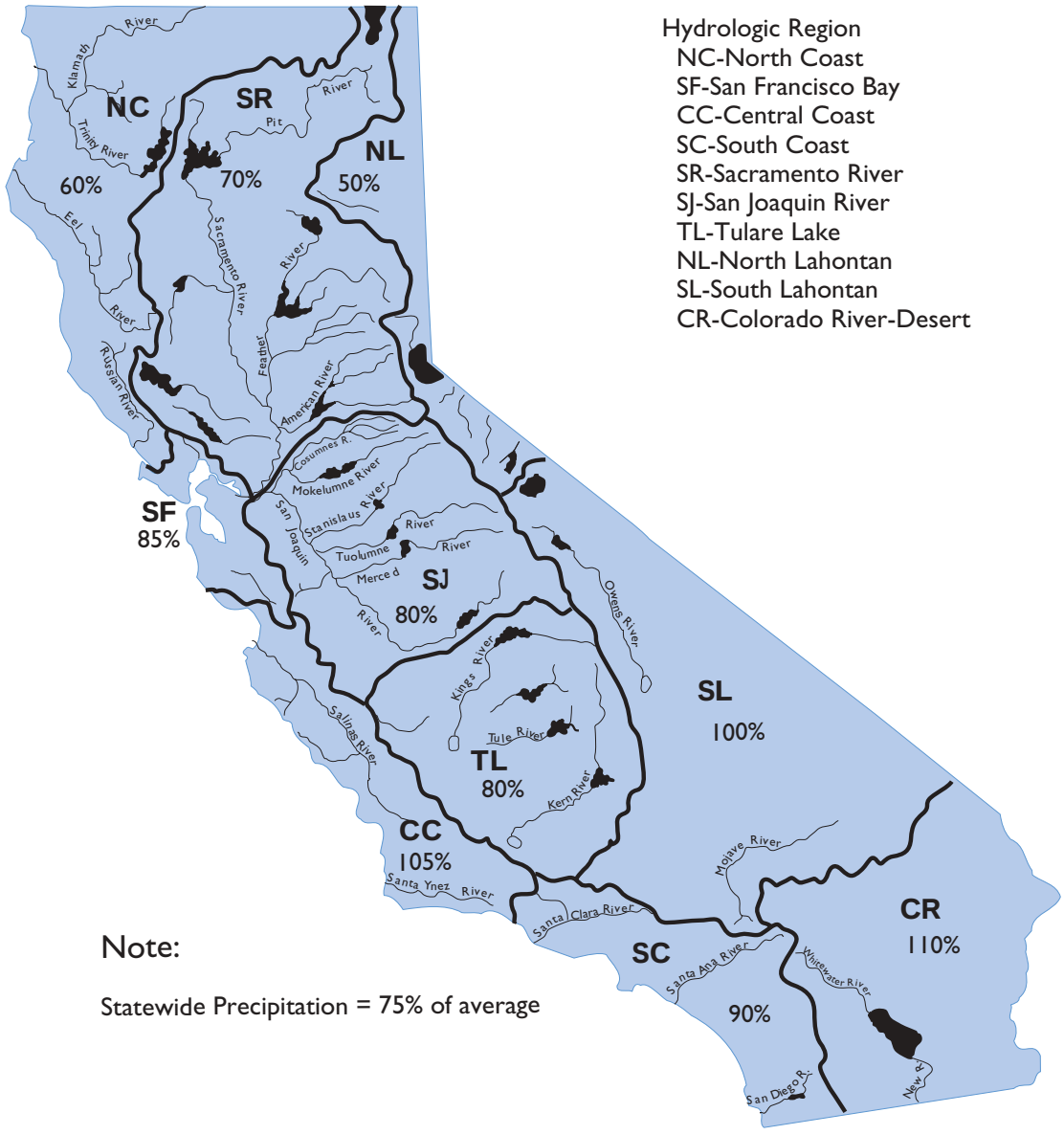


Figure 8-1. Statewide Precipitation by Hydrologic Region, 2000-01 Water Year, in Percentage of Average

average in most rivers. Only the upper Sacramento River ran near average, supported by subsurface flow in the Pit basin. Reservoir storage statewide dropped to 19.3 million acre-feet on September 30. This was 86 percent of average for the date, as compared to 108 percent a year ago, and was the lowest level since 1994.

First Quarter Water Year 2001-02

Water year 2001-02 began drier than average, with statewide precipitation and runoff about half of average in October as reservoir storage dropped below half of capacity. Productive storms with strong westerly flow improved the water supply outlook in November and December. In contrast to 2000-01, these storms were good snow producers throughout the Sierra, building the early snowpack to about 170 percent of average on January 1. Precipitation in November and December was one-and-a-half times average for all regions of the State except Southern California. Central Valley runoff rose above average in December, and much of it was captured in reservoirs. By late November, daily inflow to foothill reservoirs in the Sacramento Region rivaled the highest inflows in the prior 12 months, and peaked at twice those levels during the warmer storm at the end of December. This storm melted some of the low elevation snow, a reminder of the New Year's storm of 1997. The Sacramento River spilled over Tisdale Weir into the Sutter Bypass in early and late December. Reservoir storage statewide rose to 21.2 million acre-feet (96 percent of average) on December 31, still below the maximum winter flood control limits for most major reservoirs.

SWP Storage

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

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

Reservoir storage in the SWP at the end of the 2000-01 water year was 80 percent of average, compared to 87 percent of average at the end of water year 1999-00. Total 2000-01 storage in major SWP reservoirs was 2.73 million acre-feet on September 30, 2001, about 240 thousand acre-feet less than storage at the same time in water year 1999-00. September 30 storage at Lake Oroville was 1.49 million acre-feet, about 430,000 acre-feet less than last year. The State's share of San Luis Reservoir storage was 516,007 acre-feet, compared to 386,781 acre-feet last year. The combined storage in southern reservoirs was 642,630 acre-feet on September 30, compared to 629,788 acre-feet at the end of the 1999-00 water year.

Total storage in major SWP reservoirs was about 2.91 million acre-feet at the end of calendar year 2001, compared with 2.5 million acre-feet in 2000. The State's share of San Luis Reservoir storage was about 675,992 acre-feet, compared with 481,655 acre-feet at the end of 2000. The combined storage in southern reservoirs was about 635,000 acre-feet on December 31, 2001, compared to 636,000 acre-feet in 2000.

The following information about these reservoirs, including amounts of unimpaired runoff to Lake Oroville and storage levels for SWP conservation and other storage facilities, is based on the 2000-01 water year. Some of the information below refers to calendar year and is noted as such.

Lake Oroville

Lake Oroville, the keystone of the SWP, has a maximum capacity of 3,537,580 acre-feet. Runoff

from the Feather River drainage is collected and stored in the reservoir for release to the Sacramento-San Joaquin Delta through Oroville Dam, Thermalito Diversion Dam, and Thermalito Afterbay.

Lake Oroville inflow for the 2000-01 water year totaled about 1.89 million acre-feet—41 percent of average. Minimum storage occurred September 29, 2001, at 1,483,999 acre-feet—42 percent of its capacity. Maximum storage occurred May 6, 2001, at 2,203,836 acre-feet—about 62 percent of capacity. See Figures 8-2 and 8-3 for monthly and cumulative inflow, respectively, into Lake Oroville.

Total inflow into Lake Oroville during the 2001 calendar year was 2,030,753 acre-feet. Lake Oroville storage at the end of 2001 was 1,595,882 acre-feet. Figure 8-4 compares end-of-month storage in Oroville Reservoir for the 2000 and 2001 calendar years.

San Luis Reservoir

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

At the beginning of the 2000-01 water year, San Luis Reservoir contained 854,338 acre-feet—42 percent of its capacity. The SWP share was 390,225 acre-feet. By April 18, 2001, San Luis Reservoir reached its maximum storage for 2001 at 1,987,190 acre-feet—98 percent of normal maximum operating capacity. The highest end-of-month SWP share of storage was in March 2001 at 996,742 acre-feet (Figure 8-5).

Lake Del Valle

Lake Del Valle, situated off the South Bay Aqueduct, functions primarily as a storage facility for later water delivery in Santa Clara and Alameda Counties. At the beginning of the 2000-01 water year, Lake Del Valle held 32,817 acre-feet—about 43 percent of its maximum capacity of 77,106 acre-feet. Its highest storage occurred May 13, 2001, with 39,787 acre-feet.

By the end of the 2000-01 water year, on September 30, 2001, storage in Lake Del Valle was 38,205 acre-feet—50 percent of maximum capacity. Releases to Arroyo Del Valle and South Bay Aqueduct from Lake Del Valle totaled 19,546 acre-feet for the 2000-01 water year.

Southern Reservoirs

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

At the beginning of the 2000-01 water year, these reservoirs held 631,474 acre-feet—90 percent of combined normal maximum operating capacity of 701,321 acre-feet. At the end of the water year, they held 642,630 acre-feet—92 percent of combined normal maximum operating capacity.

Diversions from the Delta

The SWP diverts water from the Sacramento-San Joaquin Delta through Banks and Barker Slough Pumping Plants for delivery to contractors and SWP storage facilities. In 2001, the SWP diverted 2,311,970 acre-feet at Banks Pumping Plant, including a combined total of 195,286 acre-feet of Central Valley Project and Cross Valley Canal water wheeled by the Department. Figure 8-6 shows the amounts of water pumped each month in 2001 at Banks Pumping Plant; Figure 8-7 shows the monthly amounts of water diverted from the Delta by the SWP and CVP in 2001. CVP diverts water to similar areas from the Delta through Tracy Pumping Plant. CVP diverted about 2,262,471 acre-feet at Tracy Pumping Plant in 2001. Combined Delta exports include all of these plants.

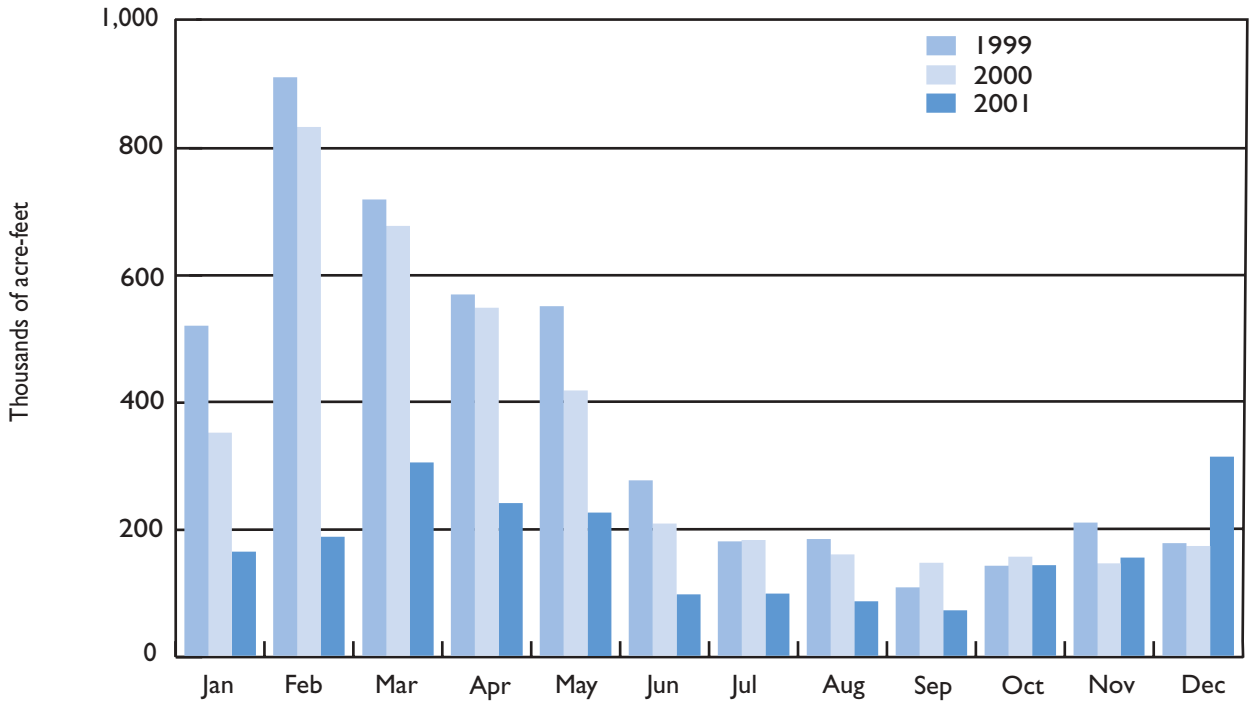


Figure 8-2. Monthly Inflow into Lake Oroville, 1999-01

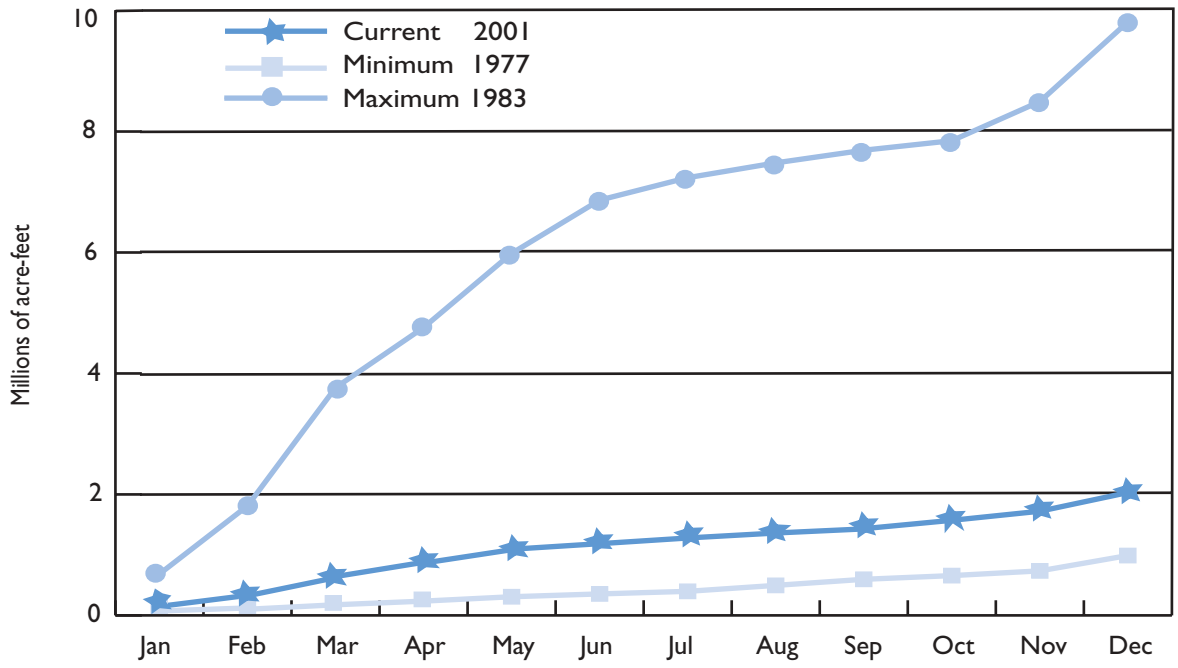


Figure 8-3. Cumulative Inflow into Lake Oroville

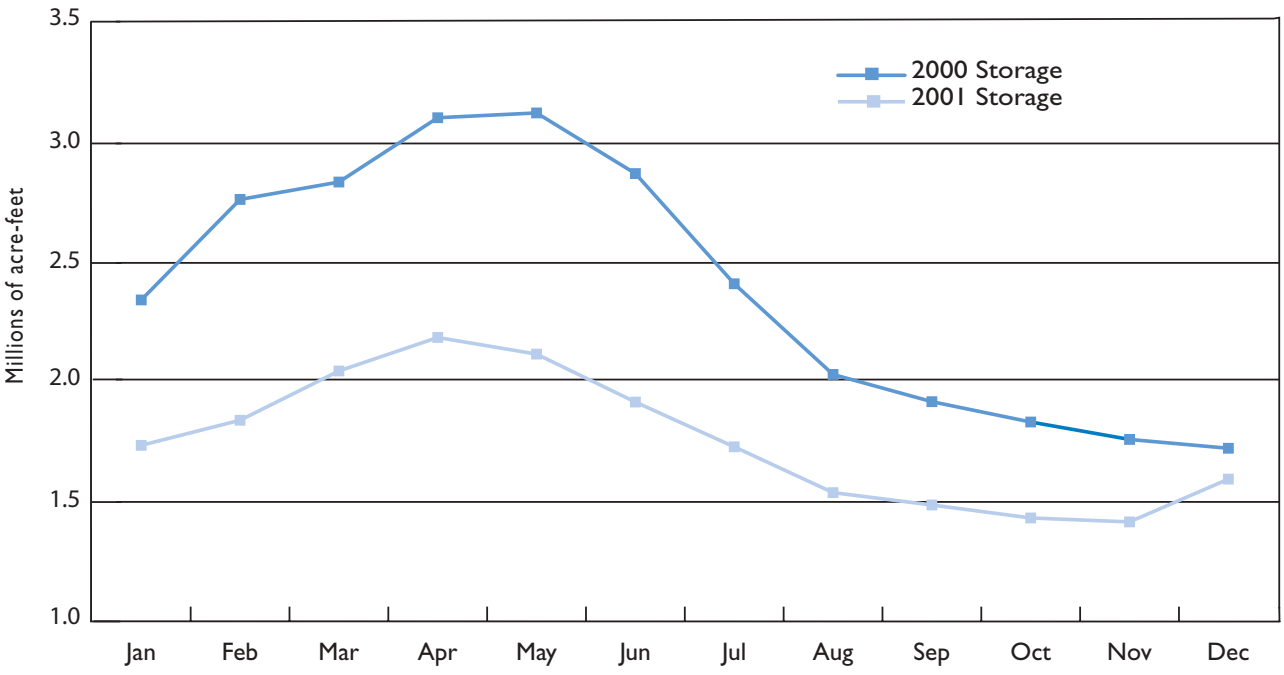


Figure 8-4. End-of-Month Storage in Lake Oroville, 2000 and 2001 Calendar Years

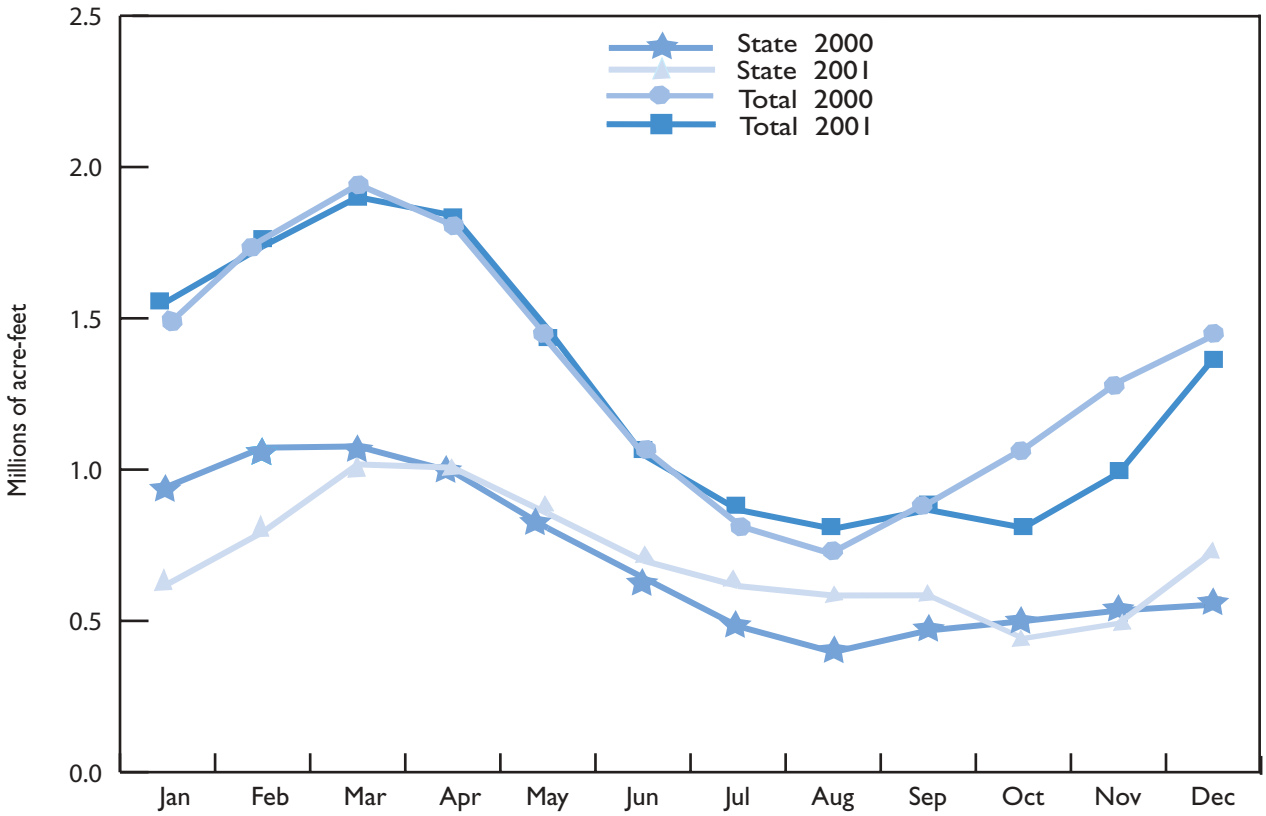


Figure 8-5. End of Month Storage in San Luis Reservoir, 2000 and 2001 Calendar Years

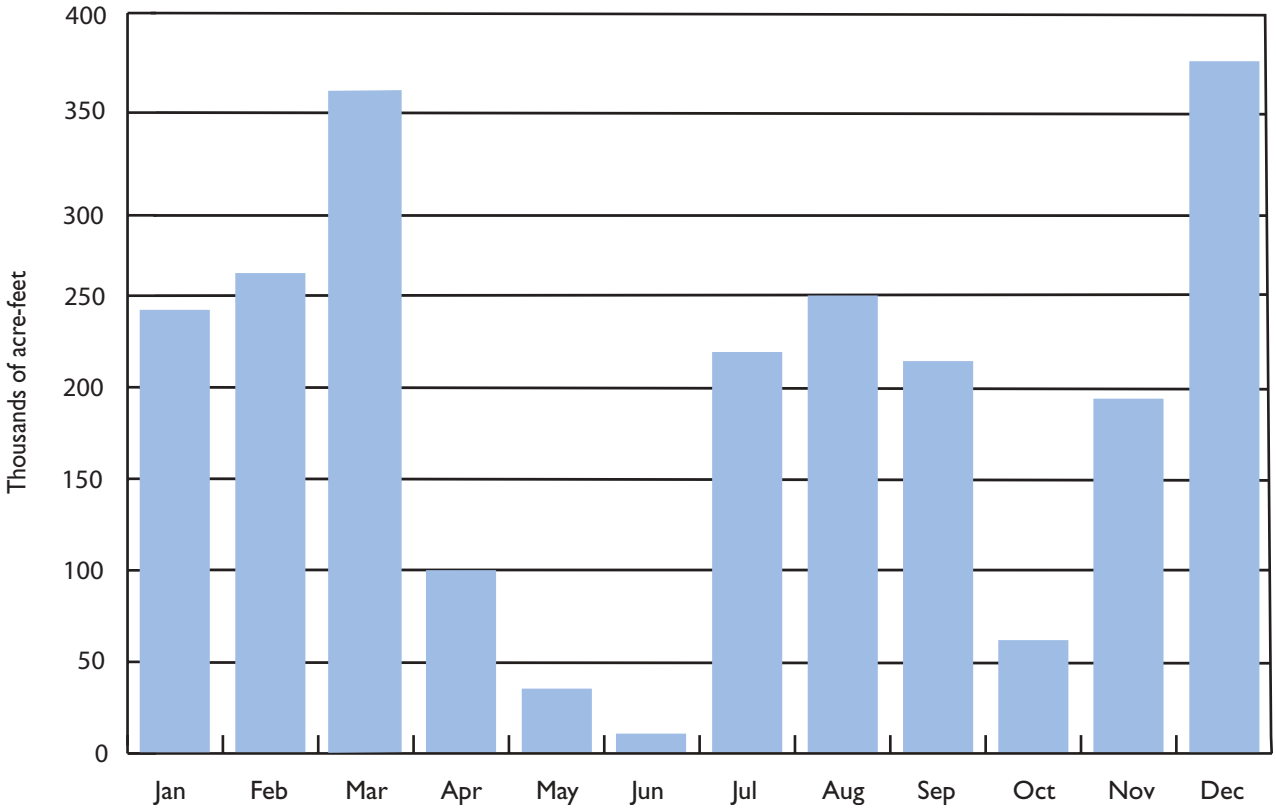


Figure 8-6. Water Pumped at Banks Pumping Plant in 2001, by Month

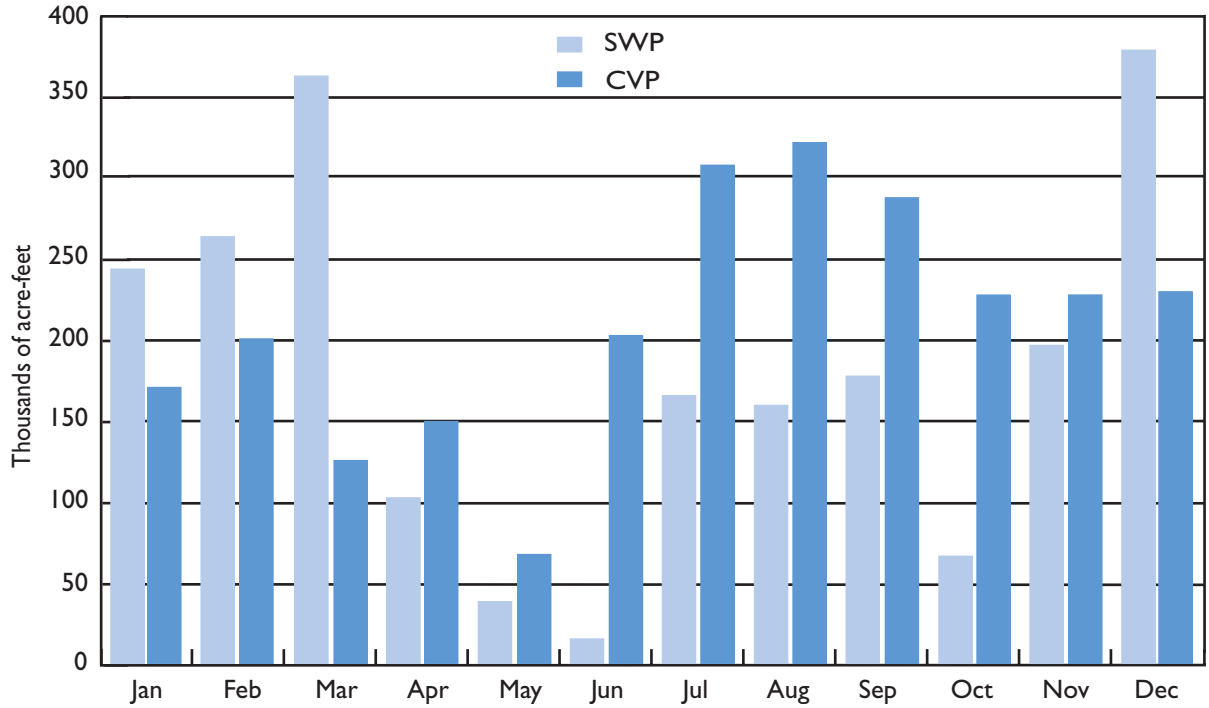


Figure 8-7. Water Diverted from the Sacramento-San Joaquin Delta by State Water Project and Central Valley Project in 2001, by Month

From Banks Pumping Plant, water is delivered either to the South Bay area through the South Bay Aqueduct or to the San Joaquin Valley, Central Coastal, and Southern California areas through the California Aqueduct. From Barker Slough Pumping Plant, the SWP diverts water to the North Bay Aqueduct; a total of 45,691 acre-feet was diverted in 2001.

The Department pumped CVC water at Banks Pumping Plant from July 14 through September during 2001 in compliance with the CVC conveyance agreements. The pumping rate varied from as low as 380 acre-feet per day to a high of 3,475 acre-feet per day. The amount pumped during this period was 142,757 acre-feet.

Daily Delta exports were highest at around 19,500 acre-feet per day during February and September. Combined SWP and CVP monthly Delta exports in 2001 varied from a low of 104,788 acre-feet in May to a high of 607,167 acre-feet in December. Delta exports totaled about 6.46 million acre-feet for 2001.

In the San Joaquin Valley near Kettleman City, the Coastal Branch of the Aqueduct serves agricultural areas west of the California Aqueduct, including municipal and industrial water users in San Luis Obispo and Santa Barbara Counties. In 2001, water pumped through Dos Amigos Pumping Plant to the San Joaquin Valley was 2,819,631 acre-feet. Included in that amount are 22,970 acre-feet for CVC water delivered to Westlands Water District. Also included is the 979,350 acre-foot federal share of pumping at Dos Amigos. Figure 8-8 shows the State's share of water pumped each month.

In 2001, water pumped through Edmonston Pumping Plant for delivery to Southern California totaled 1,288,666 acre-feet. Figure 8-9 shows the amount of water pumped each month.

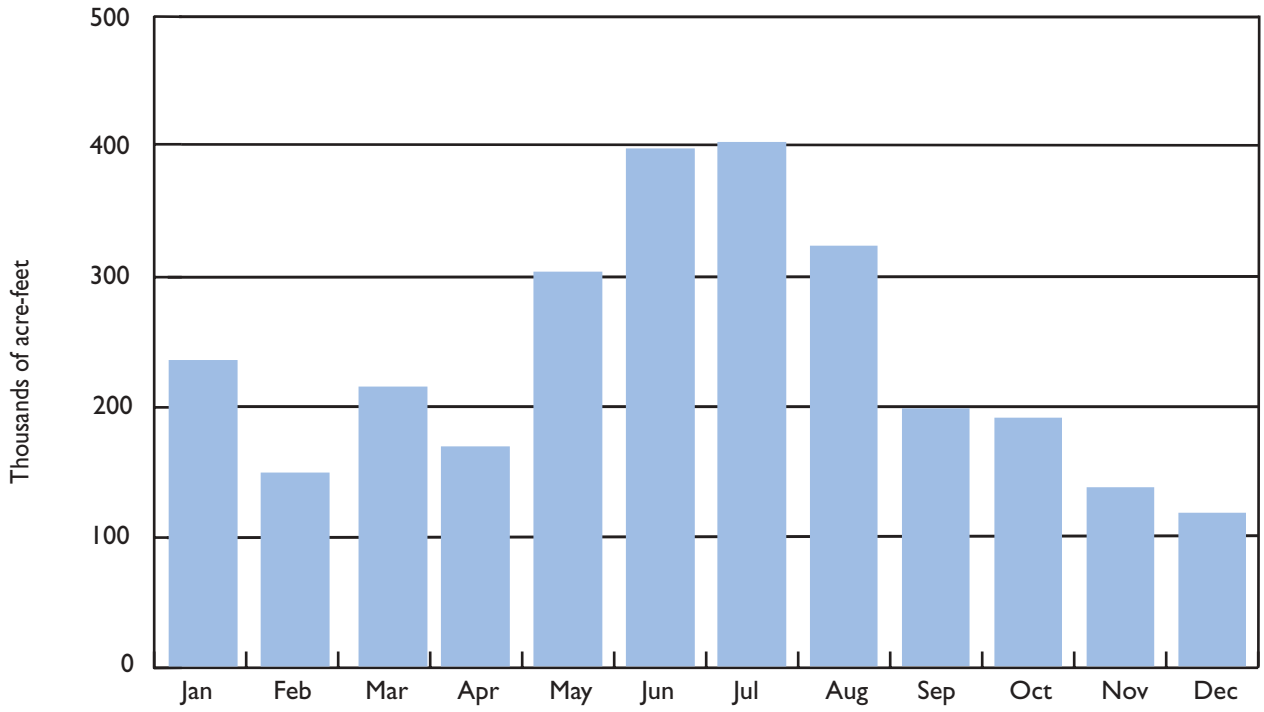


Figure 8-8. State's Share of Water Pumped at Dos Amigos Pumping Plant in 2001, by Month

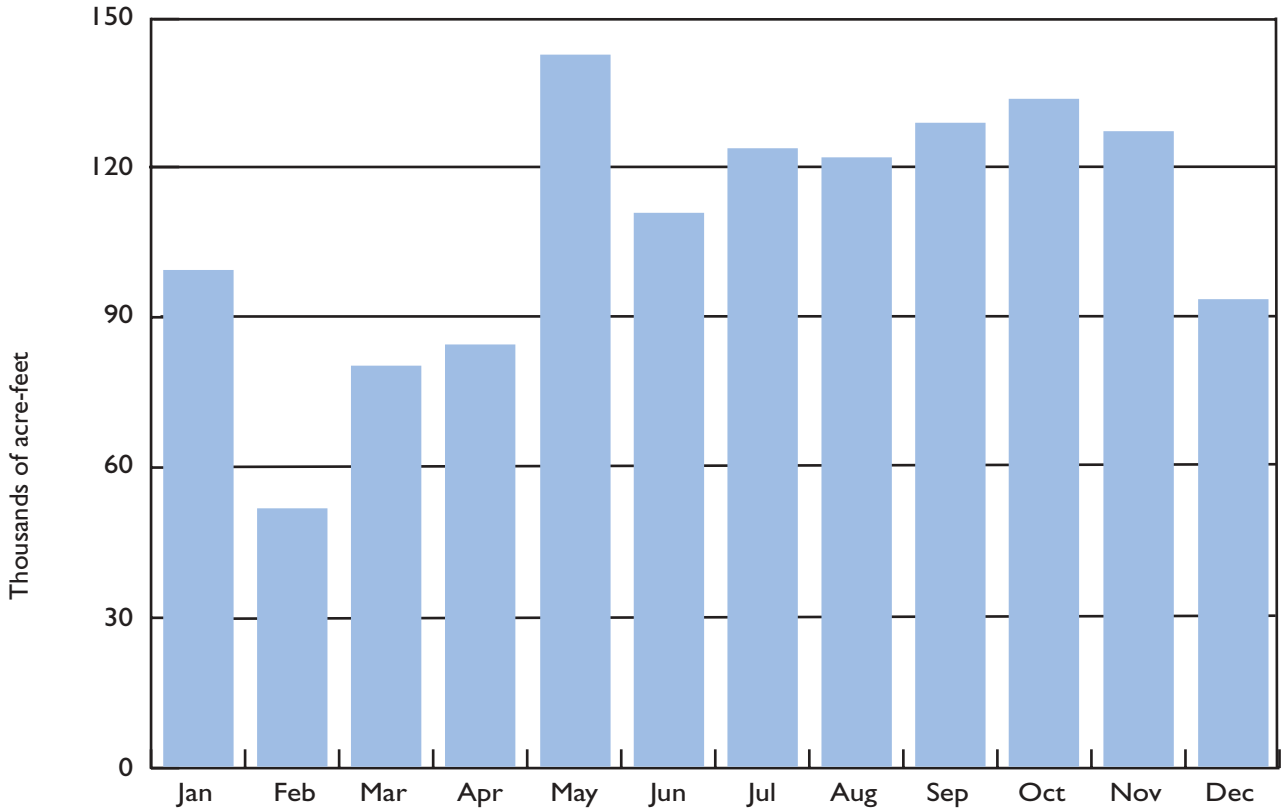


Figure 8-9. Water Pumped at Edmonston Pumping Plant in 2001, by Month

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

Chapter 9
Water Contracts and Deliveries



South Bay Pumping Plant

Significant Events in 2001

- On October 1, 2000, SWP long-term contractors submitted initial requests for 2001 approved Table A deliveries totaling 4.12 million acre-feet. The Department approved deliveries of 1.65 million acre-feet on December 1, 2000, resulting in initial approved Table A amounts of 40 percent for most SWP contractor requests. Unusually dry conditions caused the Department to decrease the 2001 approved Table A amounts to 824,000 acre-feet (20 percent) on January 31, 2001. As a result of improvements in water conditions, approved Table A amounts were increased to 1.03 million acre-feet (25 percent) on March 6, 2001; 1.24 million acre-feet (30 percent) on March 15, 2001; 1.38 million acre-feet (33 percent) on May 4, 2001; 1.44 million acre-feet (35 percent) on May 17, 2001; and finally to 1.61 million acre-feet (39 percent) on August 16, 2001.
- In 2001, 3,206,922 acre-feet of water were conveyed to 26 long-term contractors and 18 other agencies. That amount includes 1,546,742 acre-feet of approved Table A water; 43,182 acre-feet of Article 21 water and 253 acre-feet of unscheduled water; 2,929 acre-feet of SWP water for recreation, fish and wildlife; and 1,613,816 acre-feet of water delivered to satisfy water rights settlement agreements and agreements with SWP contractors and other agencies, including the Bureau of Reclamation.
- The Department executed five amendments to long-term water supply contracts.
- The Department executed 7 water conveyance / exchange agreements, 4 turnout agreements, 24 Turnback Water Pool Program agreements, 3 storage agreements, 9 Article 21 Water Program agreements, and one unscheduled water program agreement with SWP contractors.
- The Department conveyed 248,086 acre-feet of Central Valley Project water through SWP facilities.
- Ten Feather River water right settlement agencies received a total of 1,078,656 acre-feet.

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

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

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

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

Approved Table A represents the amount of annual Table A requested by the contractors and approved for delivery by the Department, based on hydrologic conditions, current reservoir storage, and total requests by the SWP water

Long-Term SWP Water Supply Contracts

The first water supply contract was signed with the Metropolitan Water District of Southern California on November 4, 1960. The contract was negotiated by the Department and Metropolitan according to terms of the contracting principles for water service contracts announced by Governor Edmund G. Brown on January 20, 1960.

The Metropolitan contract became the prototype for all water contracts; by the end of 1967, 31 agencies had contracted for water. In addition, a water supply contract was executed with the City of West Covina in December 1963, but was terminated in August 1965; the city's Table A amount was transferred to Metropolitan through an amendment to the district's long-term contract with the Department. Long-term contracts with Hacienda Water District and Devil's Den Water District were also terminated when those districts transferred their Table A amounts, through contract amendments, to Tulare Lake Basin Water Storage District (1981) and Castaic Lake Water Agency (1992), respectively. Today the SWP has long-term water supply contracts with 29 agencies. Those contracts have been amended periodically to incorporate mutually desired modifications.

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

The contracts were initially designed to be valid for 75 years or until all bonds sold as part of the California Water Resources Development Bond Act were repaid, whichever period was longer. As a result of amendments to contracts in the 1990s, the current combined maximum annual Table A amount totals 4,172,786 acre-feet, and the contracts are in effect for the longest of the following periods: (1) the project repayment period, which extends to the year 2035; (2) 75 years from the date of the contract; or (3) the period ending with the latest maturity date of any bond used to finance the construction costs of project facilities.

contractors. The Department is not always able to deliver the quantity of water requested by the contractors; under certain conditions, a lesser amount, allocated according to the long-term water supply contracts and the process noted above, is made available for delivery.

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

The long-term water supply contracts are amended as needed. During 2001, the Department executed five amendments to these contracts.

The Department also enters into miscellaneous agreements with SWP contractors and other agencies—which may be amended periodically—to convey SWP and non-SWP water through the California Aqueduct and approve the construction, operation, and maintenance of turnouts along SWP facilities. During 2001, the Department executed 7 water conveyance/exchange agreements, 4 turnout agreements, 24 Turnback Water Pool Program agreements, 3 storage agreements, 9 Article 21 Water Program agreements, and one unscheduled water program agreement with SWP contractors. Pending execution are one water conveyance/exchange agreement, four turn-in agreements, and two storage agreements.

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

Detailed information about amendments and agreements follows.

Amendments to Long-Term SWP Water Supply Contracts

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

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

The following long-term SWP Water Supply Contracts were amended during 2001.

Antelope Valley-East Kern Water Agency. The Department executed Amendment No. 20 to the Water Supply Contract between AVEK and the Department on December 31, 2001. The Amendment provided for the permanent transfer of 3,000 acre-feet of SWP Table A amounts from Tulare Lake Basin Water Storage District to AVEK, and set forth conditions for the transfer. The transfer is effective January 1, 2002. (SWPAO #02004)

County of Butte. The Department executed Amendment No. 16 to the Water Supply Contract between Butte and the Department on December 26, 2001. The Amendment provided for reduction of Butte's Table A amounts from 27,500 acre-feet to 3,500 acre-feet for 2002, 2003, and 2004. In 2005, Butte's Table A amounts will revert to the maximum of 27,500 acre-feet. (SWPAO #01030)

Dudley Ridge Water District. The Department executed Amendment No. 24 to the Water Supply Contract between Dudley Ridge and the Department on December 31, 2001. The Amendment provided for the permanent transfer of 3,973 acre-feet of SWP Table A amounts from Tulare to Dudley Ridge, and set forth conditions

for the transfer. The transfer is effective January 1, 2002. (SWPAO #02002)

Tulare Lake Basin Water Storage District. The Department executed Amendment No. 26 to the Water Supply Contract between Tulare and the Department on December 31, 2001. The Amendment provided for the permanent transfer of 3,973 acre-feet of SWP Table A amounts from Tulare to Dudley Ridge, and set forth conditions for the transfer. The transfer is effective January 1, 2002. (SWPAO #02001)

Tulare Lake Basin Water Storage District. The Department executed Amendment No. 27 to the Water Supply Contract between Tulare and the Department on December 31, 2001. The Amendment provided for the permanent transfer of 3,000 acre-feet of SWP Table A amounts from Tulare to AVEK, and set forth conditions for the transfer. The transfer is effective January 1, 2002. (SWPAO #02003)

Monterey Amendments

The Monterey Amendments restructure and clarify procedures for SWP water allocation during times of shortage; increase the use of water management practices that improve the reliability of water supplies; adjust the financial rate structure of the SWP to more closely match revenue needs; and provide accurate information on SWP capabilities. The Monterey Amendments are discussed in detail in Chapter 1, *Summary of Significant Events*, of Bulletin 132-95.

No Monterey Amendments were executed during 2001. Plumas County Flood Control and Water Conservation District and Empire West Side Irrigation District remain the only long-term SWP contractors who have not signed the Monterey Amendment.

The Planning and Conservation League filed a lawsuit on December 27, 1995, challenging the California Environmental Quality Act compliance for the Monterey Amendment. A Sacramento County Superior Court judge later dismissed the lawsuit. PCL appealed the decision and on September 15, 2000, the Third District Court of Appeal reversed the Superior Court ruling. On December 13, 2000, the California Supreme Court denied review. The parties commenced mediation, and proceedings in Superior Court are stayed pending completion of mediation. Proposals and counterproposals have been exchanged without success, and mediation is continuing. The stay of litigation in Superior Court has been extended to June 2002. Additional information can be found in Chapter 6, *Legislation and Litigation*.

Monterey Settlement Agreement Guidelines

Although the Monterey Settlement Agreement, dated May 5, 2003, falls outside the reporting period for Bulletin 132-02, the transfer guidelines prepared in connection with the agreement are reported here in order to meet the requirement of Item 5 of the guidelines, which specifies that they be published in the next edition of Bulletin 132.

The Settlement Agreement was reached in *Planning and Conservation League et al. v. Department of Water Resources.* In accordance with this Settlement Agreement, the *Guidelines for Review of Proposed Permanent Transfers of State Water Project Annual Table A Amounts* are given below. The guidelines are also available online at www.swpao.water.ca.gov/pdfs/03-09.pdf.

(1) *Purpose*: The purpose of these guidelines is to describe the process for DWR's review of proposed permanent transfers of State Water Project Annual Table A Amounts and, by so doing, provide disclosure to SWP contractors and to the public of DWR's process and policy for approving permanent transfer of SWP Annual Table A Amounts. Such disclosure should assist contractors in developing their transfer proposals and obtaining DWR review expeditiously, and assist the public in participating in that review.

(2) *Coverage*: These guidelines will apply to DWR's approval of proposed permanent transfers of water among existing SWP contractors and, if and when appropriate, to proposed permanent transfers of water

from an existing SWP contractor to a new SWP contractor.

(3) *Interpretation*: These guidelines are in furtherance of the State policy in favor of voluntary water transfers and shall be interpreted consistent with the law, including but not limited to Water Code Section 109, the Burns-Porter Act, the Central Valley Project Act, the California Environmental Quality Act, area of origin laws, the public trust doctrine, and with existing contracts and bond covenants. These guidelines are not intended to change or augment existing law.

(4) *Revisions*: Revisions may be made to these guidelines as necessary to meet changed circumstances, changes in the law or long-term water supply contracts, or to address conditions unanticipated when the guidelines are adopted. Revisions shall be in accordance with the Settlement Agreement.

(5) *Distribution*: The transfer guidelines shall be published by DWR in the next available edition of Bulletin 132, and also as part of the biennial disclosure of SWP reliability as described in the Settlement Agreement.

(6) *Contract Amendment*: Permanent transfers of SWP water are accomplished by amendment of each participating contractor's long-term water supply contract. The amendment consists of amending the Table A upwards for a buying contractor and downwards for a selling contractor. The amendment shall be in conformity with all provisions of the long-term water supply contracts, applicable laws, and bond covenants. Other issues to be addressed in the contract amendment will be subject to negotiation among DWR and the two participating contractors. The negotiations will be conducted in public, pursuant to the Settlement Agreement and Notice to State Water Project Contractors Number 03-10.

(7) *Financial Issues*: The purchasing contractor must demonstrate to DWR's satisfaction that it has the financial ability to assume payments associated with the transferred water. If the purchasing entity was not a SWP contractor as of 2001, special financial requirements pertain as described below, as well as additional qualifications.

(8) *Compliance with CEQA*: Consistent with CEQA, the State's policy to preserve and enhance environmental quality will guide DWR's consideration of transfer proposals (Public Resources Code Section 21000). Identification of the appropriate lead agency will be based on CEQA, the CEQA Guidelines, and applicable case law, including *PCL v. DWR*. CEQA requires the lead agency at a minimum to address the feasible alternatives to the proposed transfer and its potentially significant environmental impacts (1) in the selling contractor's service area; (2) in the buying contractor's service area; (3) on SWP facilities and operations; and (4) on the Delta and areas of origin and other regions as appropriate. Impacts that may occur outside of the transferring SWP contractors' service areas and on fish and wildlife shall be included in the environmental analysis. DWR will not approve a transfer proposal until CEQA compliance is completed. The lead agency shall consult with responsible and trustee agencies and affected cities and counties and, when DWR is not the lead agency, shall provide an administrative draft of the draft EIR or Initial Study/Negative Declaration to DWR prior to the public review period. A descriptive narrative must accompany a checklist, if a checklist is used. The lead agency shall conduct a public hearing on the EIR during the public comment period and notify DWR's State Water Project Analysis Office of the time and place of such hearing in addition to other notice required by law.

(9) *Place of Use*: The purchasing contractor must identify the place and purpose of use of the purchased water, including the reasonable and beneficial use of the water. Typically, this information would be included in the environmental documentation. If a specific transfer proposal does not fit precisely into any of the alternatives listed below, DWR will use the principles described in these Guidelines to define the

process to be followed. The information to be provided under this paragraph is in addition to the CEQA information described in Paragraph 8 of these guidelines.

a. If the place of use is within the contractor's service area, the contractor should disclose the purpose of the transferred water, such as whether the water is being acquired for a specific development project, to enhance overall water supply reliability in the contractor's service area, or some other purpose. If the transferred water is for a municipal purpose, the contractor should state whether the transfer is consistent with its own Urban Water Management Plan or that of its member unit(s) receiving the water.

b. If the place of use is outside the contractor's service area, but within the SWP authorized place of use, and service is to be provided by an existing SWP contractor, then, in addition to *Paragraph 9(a)* above, the contractor should provide DWR with copies of LAFCO approval and consent of the water agency with authority to serve that area, if any. In some instances, DWR's separate consent is required for annexations in addition to the approval for the transfer.

c. If the place of use is outside the SWP authorized place of use and service is to be provided by an existing SWP contractor, the contractor should provide information in *Paragraph 9(a)* and *9(b)*. Prior to approving the transfer, DWR will consider project delivery capability, demands for water supply from the SWP, and the impact, if any, of the proposed transfer on such demand. If DWR approves the transfer, DWR will petition State Water Resources Control Board for approval of expansion of authorized place of use. Water will not be delivered until the place of use has been approved by the SWRCB and will be delivered in compliance with any terms imposed by the SWRCB.

d. If the place of use is outside the SWP authorized place of use and service is not to be provided by an existing SWP contractor, DWR will consider the transfer proposal as a proposal to become a new SWP contractor. Prior to adding a new SWP contractor, DWR will consider project delivery capability, demands for water supply from the SWP, and the impact, if any, of the proposed transfer on such demand. DWR will consult with existing SWP contractors regarding their water supply needs and the proposed transfer. In addition to the information in Paragraph 9(a), 9(b), and 9(c), the new contractor should provide information similar to that provided by the original SWP contractors in the 1960's Bulletin 119 feasibility report addressing hydrology, demand for water supply, population growth, financial feasibility, etc.

DWR will evaluate these issues independently and ordinarily will act as lead agency for CEQA purposes. In addition, issues such as area of origin claims, priorities, environmental impacts and use of water will be addressed. The selling contractor may not be released from financial obligations. The contract will be subject to a CCP 860 validation action initiated by the new contractor. If DWR approves the transfer, DWR will petition the SWRCB for approval of expansion of authorized place of use. Water will not be delivered until the place of use has been approved by the SWRCB and will be delivered in compliance with any terms imposed by the SWRCB.

(10) *DWR Discretion*: Consistent with the long-term water supply contract provisions, CEQA, and other provisions of law, DWR has discretion to approve or deny transfers. DWR's exercise of discretion will incorporate the following principles:

a. As required by CEQA, DWR as an agency with statewide authority will implement feasible mitigation measures for any significant environmental impacts resulting from a transfer if such impacts and their mitigation are not addressed by other public agencies and are within DWR's jurisdiction.

b. DWR will invoke "overriding considerations" in approving a transfer only as authorized by law, including but not limited to CEQA, and, to the extent applicable, the public trust doctrine and area of origin laws.

Miscellaneous Agreements with Long-Term SWP Contractors

Water Conveyance/Exchange Agreements

During 2001, water conveyance/exchange agreements were executed with long-term SWP contractors as described below.

Dudley Ridge Water District. An agreement executed on December 26, 2001, between the Department, Dudley Ridge, and Tulare, provided for the delivery of up to 3,000 acre-feet of Dudley Ridge's 2001 approved Table A amounts to Tulare's turnout at Reach 8D of the California Aqueduct. Dudley Ridge requested the delivery to Tulare's turnout in addition to Dudley Ridge's turnout due to the rapid filling of San Luis Reservoir, the need to deliver 2000 SWP carryover Table A prior to spilling, and the availability of 2001 Article 21 water. A total of 674 acre-feet of Dudley Ridge's Article 56 carryover water was delivered to Tulare's turnout at Reach 8D during 2001. (SWPAO #01025)

Empire West Side Irrigation District. An agreement executed October 18, 2001, between the Department and Empire, approved the delivery of unscheduled water to Empire in 2001 at times when project water was not needed for fulfilling approved Table A deliveries or for meeting project operational commitments. A total of 253 acre-feet of unscheduled water was delivered to Empire in 2001. (SWPAO #01026)

Kern County Water Agency. A letter agreement, pending execution between the Department and Kern, will provide for the delivery of up to 20,000 acre-feet of 2001 water year CVP water supply from the Bureau on behalf of four Central Valley Project contractors. In exchange, Kern would return a like amount of its approved Table A amounts to the CVP contractors by December 31, 2001. The Department petitioned the State Water Resources Control Board in May 2001 for approval for delivery of the return water. A total of 11,487 acre-feet was delivered to CVP contractors at O'Neill Forebay and 11,487 acre-feet of water was returned from O'Neill Forebay to Kern in 2001. (SWPAO #01010)

Kern County Water Agency. A letter agreement dated September 21, 2001, and executed October 5, 2001, between the Department, Kern, and Dudley Ridge, approved the transfer of up to 1,500 acre-feet of Kern's 2001 Table A amounts to Dudley Ridge. The agreement facilitated the water transfer from Kern to Dudley Ridge on behalf of two landowners, C. J. Richie Farms and Westfarmers, who farm in both Kern and Dudley Ridge service areas. During 2001, a total of 1,500 acre-feet was delivered to Dudley Ridge. (SWPAO #01032)

Tulare Lake Basin Water Storage District. A letter agreement dated May 24, 2001, and executed June 6, 2001, between the Department, Tulare, and Empire approved the transfer of up to 500 acre-feet of Tulare's 2001 Table A amounts to Empire, on behalf of the landowner Westlake Farms, Inc., who farms in both Tulare and Empire service areas. During 2001, a total of 500 acre-feet of Tulare's Article 56 carryover water was delivered to Empire. (SWPAO #01020)

Tulare Lake Basin Water Storage District. A letter agreement dated June 27, 2001, and executed July 6, 2001, between the Department and Tulare, approved the transfer of up to 1,000 acre-feet of Tulare's 2001 Table A amounts to Westlands, on behalf of landowner Newton Brothers, who farms in both the Tulare and Westlands (Venture Farms Trust) service areas. The Department petitioned SWRCB on June 26, 2001, for approval of a temporary change of place of use. During 2001, a total of 82 acre-feet was delivered to Westlands. (SWPAO #01021)

Tulare Lake Basin Water Storage District. A letter agreement, dated June 15, 2001, and executed July 26, 2001, between the Department, Tulare, and Westlands, provides for the delivery of up to 50,000 acre-feet of non-project water from Westlands to Tulare between December 2000 and April 15, 2001, in exchange for a like amount of Tulare's Table A amounts during the period 2001 through 2003. The delivery of SWP exchange water to Westlands will be from the Delta to Reach 7 of the California Aqueduct for use within the Kings County portion of Westlands' service area. During December 2000, a total of 2,981 acre-feet was delivered to Tulare. During January, March, and April, a total of 25,164 acre-feet was delivered to Tulare. A combined total of 28,145 acre-feet was delivered to Tulare during 2000 and 2001. During 2001, 1,975 acre-feet were returned to Westlands, leaving a balance of 26,170 acre-feet to be returned to Westlands. (SWPAO #01009)

Tulare Lake Basin Water Storage District. A letter agreement dated June 29, 2001, and executed July 6, 2001, between the Department and Tulare, approved the transfer of up to 3,000 acre-feet of Tulare's 2001 Table A amounts to Westlands. The agreement facilitated the water transfer from Tulare to Westlands, on behalf of landowner Hansen Ranches, who farms in both the Tulare and Westlands (Vista Verde Farms, Inc.) service areas. The Department petitioned SWRCB on June 26, 2001, for approval of a temporary change of place of use. The Department has approved similar transfers annually since 1996. During 2001, a total of 1,000 acre-feet was delivered to Westlands. (SWPAO #01022)

During 2001, water was delivered pursuant to agreements with SWP contractors executed prior to 2001, as described below.

Alameda County Flood Control and Water Conservation District-Zone 7. A conveyance agreement dated July 28, 1995, between Alameda-Zone 7 and the Department provides for the transfer of up to 5,000 acre-feet of Byron-Bethany Irrigation District's local water annually to Alameda-Zone 7 through SWP facilities. An amendment to extend the agreement to December 31, 2001, was executed January 17, 2001. Byron-Bethany may only transfer water that has been made available by conservation and crop idling. In 2001, 3,997 acre-feet of Byron Bethany's local water was pumped at Banks Pumping Plant and delivered to Alameda-Zone 7's turnouts in the South Bay Aqueduct. (SWPAO #00321)

Dudley Ridge Water District. An agreement executed May 22, 1998, among the Department, Dudley Ridge, and Tulare, provided for the change in point of delivery, through 2035, of up to 1,000 acre-feet annually of Dudley Ridge's approved Table A amounts through Tulare's turnout located at Milepost 172.66 of the California Aqueduct. Dudley Ridge's approved Table A amounts will be delivered to Westlake Farms, which is located within Dudley Ridge's service area but not near its conveyance facilities. Tulare has conveyance capability and has agreed to provide service to Westlake Farms. During 2001, the Department delivered 14 acre-feet of Dudley Ridge's 2000 approved Table A amounts through Tulare's turnout at Reach 8C. (SWPAO #98001)

Kern County Water Agency. An agreement executed on June 8, 2000, between the Department, Kern, and Western Hills Water District, approved the delivery of 8,000 acre-feet of pre-1914 Lower River Water banked in Kern's share of the Pioneer Groundwater Banking Project. A portion of Kern's annual Table A amounts will be delivered annually to Western Hills from Reach 2A of the California Aqueduct; in exchange, Kern will take a like amount of banked local water from the Pioneer Groundwater Bank. The Department petitioned SWRCB and by SWRCB Order dated April 21, 2000, Western Hills' service area was included within the authorized SWP place of use. A total of 638 acre-feet of Kern's Table A amounts was delivered to Western Hills at Reach 2A during 2001. (SWPAO #01001)

Mojave Water Agency. An agreement executed November 13, 1997, among AVEK, Mojave, and

the Department, approved a change in point of delivery through 2019 of up to 2,250 acre-feet annually of Mojave's approved Table A amount to AVEK's Fairmont Turnout in Reach 19 of the California Aqueduct. Mojave does not have conveyance facilities to provide service to a solar energy generating station located within its service area. AVEK has conveyance capability and has agreed to provide service. During 2001, the Department delivered 1,385 acre-feet of Mojave's 2001 approved Table A amounts through AVEK's turnout at Reach 19. (SWPAO #97003)

Turn-in Agreements

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

Kern County Water Agency. A turn-in agreement is pending execution between the Department and Kern. In 2000, Kern, at the request of the Kern Water Bank Authority, constructed a turn-in facility at Milepost 238.19 at Reach 13B of the California Aqueduct. This agreement will approve the introduction of Kern's local water from Kern Water Bank into the California Aqueduct and remains in effect through December 31, 2001. During 2001, a total of 129,062 acre-feet of local water was introduced into the California Aqueduct under this agreement. (SWPAO #01023)

Kern County Water Agency. A turn-in agreement pending execution between the Department and Kern will approve the introduction of Kern's local water from Buena Vista Water Storage District into the California Aqueduct at Reach 13B (Buena Vista 7) at Milepost 242.65. This agreement remains in effect through December 31, 2001. During 2001, a total of 1,695 acre-feet of local water was introduced under this agreement. (SWPAO #01027)

Kern County Water Agency. A turn-in agreement pending execution between the Department and Kern approves the introduction of Kern's local water into the California Aqueduct at Reaches 14B, 14C, and 15. During 2001, a total of 396 acre-feet of local water was introduced into Reach 14B, and a total of 242 acre-feet was introduced into Reach 14C of the California Aqueduct. (SWPAO #01028)

During 2001, water was introduced into the Aqueduct pursuant to agreements with SWP contractors executed prior to 2001, as described below.

Kern County Water Agency. A turn-in agreement executed May 2, 1995, among Kern, Semitropic Water Storage District, and the Department, approved the introduction of Kern's local water into the California Aqueduct at Reach 10A (Semitropic No. 2 Turnout) at Milepost 209.80. During 2001, a total of 1,813 acre-feet of local water was introduced under this agreement.

Turnout Agreements

Antelope Valley-East Kern Water Agency. An agreement dated March 28, 2000, between the Department and AVEK, allowed the construction, operation, and maintenance of the Rancho Vista Turnout at Milepost 339.68, Reach 20B of the California Aqueduct. The turnout has a design capacity of 5 cfs. Construction was completed in March 2000, but was not formally accepted in 2001.

Kern County Water Agency and Belridge Water Storage District. An agreement dated October 29, 2001, among the Department, Kern, and Belridge Water Storage District, allowed the modification, operation, and maintenance of the existing Belridge Turnout No. 1A at Milepost 209.71, Reach 10A of the California Aqueduct. The turnout has a design capacity of

100 cfs. Modification work consists of removing the existing parshall flume measuring system and installing a new 54-inch diameter piped system with a venturi meter.

Kern County Water Agency and West Kern Water District. An agreement dated March 6, 2000, among the Department, Kern, and West Kern, allowed the construction, operation, and maintenance of the West Kern Turnout No. 3 at Milepost 224.07, Reach 12D of the California Aqueduct. The turnout has a design capacity of 15 cfs. Construction of the turnout was completed in April 2001.

Kern County Water Agency and Western Hills Water District. An agreement dated June 8, 2000, among the Department, Kern, and Western Hills, allowed the construction, operation, and maintenance of the Western Hills Turnout at Milepost 42.90, Reach 2A, on the west side of the California Aqueduct. The turn-out has a design capacity of 30 cfs. Construction of the turnout was completed in September 2001.

Agreements and Activities Related to the Monterey Amendments

Turnback Water Pool Program. Under Article 56(d) of the Monterey Amendments, the sixth year of the Turnback Water Pool Program was initiated through Notice to State Water Project Contractors No. 01-04, dated February 9, 2001. All SWP contractors who signed Monterey Amendments were permitted to participate in the program. The program allowed SWP contractors to offer a portion of their approved 2001 Table A water for sale in a turnback pool for use by interested SWP contractors. Based on Table A supply and demand, the turnback water was allocated among the selling and purchasing contractors. In 2001, 18,240 acre-feet of water were purchased under the Turnback Water Pool Program.

Transactions for Pool A and Pool B of the turnback Water Pool Program occurred in February and March 2001, respectively. Turnback water sold for $11.98 per acre-foot—50 percent of the Delta Water Rate—through Pool A, and for $5.99 per acre-foot—25 percent of the Delta Water Rate—through Pool B. All money collected through the Turnback Water Pool Program was paid to the selling contractors. The 2001 Turnback Water Pool Program closed April 1, 2001.

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

Table 9-1. 2001 Turnback Water Pool Program (Acre-feet)

Contractor	Sold	Purchased
	Pool A	
San Gorgonio	800	
Ventura	3,000	
Alameda County		107
Dudley Ridge		136
Kern		2,546
Tulare		301
Santa Barbara		116
AVEK		352
Castaic Lake		242
	Pool B	
Mojave	14,240	
San Gorgonio	200	
Napa		82
Alameda-Zone 7		308
Oak Flat		22
Dudley Ridge		211
Kern		3,956
Tulare		468
San Luis Obispo		99
Santa Barbara		180
AVEK		547
Castaic Lake		376
Coachella Valley		91
Desert		151
Metropolitan		7,949

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

Alameda County Flood Control and Water Conservation District, Zone 7. An agreement dated December 10, 1998, among the Department,

Alameda-Zone 7, and Kern, provided for the delivery of a portion of Alameda-Zone 7's 1998 approved Table A amounts, Article 21 water, and other water supplies for storage and later recovery from Semitropic Water Storage District in accordance with the Alameda-Zone 7 and Semitropic Water Storage District Banking Program Agreement. All return water is to be delivered to Alameda-Zone 7 by December 31, 2035. During 2001, a total of 1,807 acre-feet of water was recovered and delivered to Alameda-Zone 7's service area. (SWPAO #98020)

Alameda County Flood Control and Water Conservation District, Zone 7. An agreement pending execution among the Department, Alameda-Zone 7, and Kern, will provide for the delivery of a portion of Alameda-Zone 7's 2001 approved Table A amounts, Article 21 water, and other water supplies for storage and later recovery from Semitropic, in accordance with the Alameda-Zone 7 and Semitropic Water Storage District Banking Program Agreement. Alameda-Zone 7 signed similar delivery agreements for 1998, 1999, and 2000. All return water is to be delivered to Alameda-Zone 7 by December 31, 2011. During 2001, the Department delivered 5,000 acre-feet of Alameda-Zone 7's 2000 extended carryover water to Reach 10A for storage by Semitropic. (SWPAO #01035)

Alameda County Water District. A change of point of delivery agreement executed on October 22, 2001, among the Department, Alameda County, and Kern, approved the delivery of a portion of Alameda County's 2001 approved Table A amounts, Article 21 water, and other water supplies for storage and later recovery from the Semitropic Water Storage District Banking Program, in accordance with the Alameda County and Semitropic Banking Program Agreement. Alameda County has signed similar delivery agreements since 1996. All return water is to be delivered to Alameda County by December 31, 2035. No water was delivered in 2001 to Reach 10A for storage by Semitropic. (SWPAO #01018)

Dudley Ridge Water District. A change in point of delivery agreement executed on October 1, 2001, among the Department, Dudley Ridge, and Kern, approved the delivery of a portion of Dudley Ridge's 2001 approved Table A amounts, Article 21 water, and other water supplies for storage and later recovery from KWB. Dudley Ridge signed similar delivery agreements since 1996. All return water is to be delivered to Dudley Ridge by December 31, 2011. During 2001, the Department delivered 800 acre-feet of Dudley Ridge's 2000 extended carryover Table A amounts and 933 acre-feet of Article 21 water to Reach 13B for storage by Kern. (SWPAO #01024)

Dudley Ridge Water District. A letter agreement dated January 14, 2000, and executed February 2, 2000, among the Department, Dudley Ridge, and San Gabriel Valley Municipal Water District, provides for the delivery of a portion of Dudley Ridge's 1999 carryover Table A amounts for storage and later recovery from groundwater basins within San Gabriel. All return water is to be delivered to Dudley Ridge by December 31, 2010. A combined total of 4,394 acre-feet was delivered to San Gabriel during 1999 and 2000. According to the agreement, 95 percent of the water stored (4,174 acre-feet with 5 percent loss) will be returned to Dudley Ridge. During 2001, 4,174 acre-feet were returned to Dudley Ridge at Reach 8D, completing this agreement. (SWPAO #99002)

Dudley Ridge Water District. A letter agreement, executed November 19, 1996, among the Department, Dudley Ridge, and Kern, approved the delivery of up to 5,000 acre-feet of Dudley Ridge's 1996 Article 21 water and up to 1,000 acre-feet of Dudley Ridge's Table A amounts to KWB for storage and later recovery. The transfer was part of an exchange with Kern that allowed three landowners in Dudley Ridge to receive a like amount of water from Kern in future years when they could utilize the water more beneficially. During 1996, a total of 4,131 acre-feet was delivered to Kern. During 2001, a total of 3,215 acre-feet was recovered and delivered to Dudley Ridge at Reach 8D.

Dudley Ridge Water District. A letter agreement, executed in 1993, between Dudley Ridge and Kern, allowed the storage of 3,000 acre-feet of pre-1914 Kaweah River water to Rosedale-Rio Water Storage District, a member unit of Kern, for the benefit of Dudley Ridge. In exchange, Rosedale-Rio is to return 2,000 acre-feet of its portion of Kern's Table A water to Dudley Ridge within 10 years. During 1993, a total of 3,000 acre-feet was delivered to Rosedale-Rio for storage. During 1994, a total of 626 acre-feet was returned to Dudley Ridge. During 2001, a total of 1,374 acre-feet was returned to Dudley Ridge at Reach 8D, completing this agreement.

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

Before this long-term agreement was prepared, three interim agreements dated December 29, 1997, September 17, 1998 (first amendment to December 29, 1997), and April 13, 1999 (second amendment to December 29, 1997), among the Department, Metropolitan, and Kern provided temporary authorization for Metropolitan to store water in Arvin-Edison. Water was delivered to Arvin-Edison for storage each year from 1997 to 2000 under these agreements. During 2001, no water was delivered for storage in Arvin-Edison, and 20,800 acre-feet were recovered and delivered to Metropolitan at Reach 30. (SWPAO #01013)

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

Santa Clara Valley Water District. A 1996 agreement among the Department, Santa Clara, and Kern, approved for the delivery of a portion of Santa Clara's approved Table A amounts, Article 21 water, and other water supplies, for storage and later recovery from the Semitropic Water Storage District Banking Program, in accordance with the Santa Clara and Semitropic Banking Program Agreement. All return water is to be delivered to Santa Clara by December 31, 2035. During 1996, 45,000 acre-feet of Santa Clara's approved Table A amounts were delivered to Semitropic for storage. According to the Agreement, 90 percent of the water stored (40,500 acre-feet with 10 percent loss) will be returned to Santa Clara. During 2001, 30,000 acre-feet were returned to Santa Clara and subsequently sold to the Environmental Water Account, leaving a balance of 10,500 acre-feet of water stored in 1996 in Semitropic.

Santa Clara Valley Water District. An agreement, executed on December 27, 2001, among the Department, Santa Clara, and Kern, approved the delivery of a portion of Santa Clara's 2001 approved Table A amounts, Article 21 water, and other water supplies, for storage and later recovery from the Semitropic Water Storage District Banking Program, in accordance with the Santa Clara and Semitropic Banking Program Agreement. Santa Clara has signed similar

delivery agreements since 1996. All return water is to be delivered to Santa Clara by December 31, 2035. During 2001, the Department did not deliver any of Santa Clara's 2001 approved Table A amounts or Article 21 water to Semitropic. (SWPAO #01019)

Article 21 Water Program

Pursuant to Article 21 of the Monterey Amendments, Article 21 water replaces surplus, wet weather, and Article 12(d) water. The Article 21 water program allows a contractor to take delivery of water over the approved and scheduled Table A amounts for the current year. Article 21 water is available for delivery on a short-term basis as determined by the Department when water is still available after operational requirements for project water deliveries, water quality, and other requirements are being met.

The conditions for the Article 21 Water Program for 2001 were described in the February 20, 2001, Notice to State Water Project Contractors No. 01-05. Participants were required to sign the notice, which indicated acceptance of the criteria, procedures, and charges for the program. Nine SWP contractors participated and collectively received a total of 43,182 acre-feet of Article 21 water.

Since Empire has not signed the Monterey Amendment, it may still receive unscheduled water for agricultural purposes. Empire received 253 acre-feet of unscheduled water in 2001.

Flexible Storage Program

Pursuant to Article 54 of the Monterey Amendments, the flexible storage program provides SWP contractors participating in the repayment of the capital costs of Castaic Lake and Lake Perris the option to withdraw water in excess of approved deliveries. The objective of this program is to provide additional flexibility and water management benefits to local participating agencies.

Available "flexible storage" is approximately 50 percent of active storage, providing for 160,000 acre-feet at Castaic Lake and 65,000 acre-feet at Lake Perris. Participating contractors of the Castaic Lake flexible storage program include Metropolitan, Ventura, and Castaic Lake. Respectively, each can withdraw a maximum amount of 153,940 acre-feet, 1,377 acre-feet, and 4,683 acre-feet. At Lake Perris, Metropolitan can withdraw a maximum amount of 65,000 acre-feet. Any participating contractor is given 5 years to replace the water with Table A amounts, purchased water, exchange water, or local water.

Two SWP contractors participated in the Flexible Storage Program in 2001. Metropolitan withdrew 10,692 acre-feet from Lake Perris in the spring and replaced 4,710 acre-feet in the summer, leaving a balance of 10,692 acre-feet at the end of 2001. Metropolitan withdrew 64,300 acre-feet from Castaic Lake, leaving a balance of 64,300 acre-feet at the end of 2001. Castaic Lake Water Agency withdrew 2,589 acre-feet from Castaic Lake during the winter in 2000 and replaced 2,589 acre-feet in 2001, resulting in a zero water balance at the end of 2001.

Extended Carryover Program

Pursuant to Article 56 of the Monterey Amendments, contractors can elect to store project water outside of their service area for later use within their service area. Qualified contractors can request carryover Table A amounts for delivery in the following year to the extent that such deliveries do not adversely affect current or future project operations. Factors that influence how much extended carryover water can be delivered include operational constraints of project facilities, filling of SWP conservation storage facilities, flood control releases, and water quality restrictions. If storage requests exceed the available storage capacity, the amount available is allocated among the contractors requesting storage in proportion to their annual Table A amounts for that year. Eleven SWP contractors took delivery of 289,737 acre-feet of 2000 approved Table A amounts carried over into 2001 as extended carryover. Two SWP contractors had 5,800 acre-feet of their extended

carryover delivered to storage outside their service areas.

Dry Year Water Purchase Program

In 2001, significant areas of California experienced water deficiencies. To reduce the possibility of adverse economic impacts and hardship associated with water shortages, the Department created the Dry Year Water Purchase Program. Eight SWP contractors and Westlands participated in the program by signing a Memorandum of Understanding with the Department. Westlands later withdrew from the program. The remaining participating agencies (i.e., the eight SWP contractors) requested 138,806 acre-feet of dry year water. The Department obtained the water from Yuba County Water Agency and its member agencies, Browns Valley Irrigation District and Western Canal Water District, who made it available through land fallowing, groundwater substitution, and reservoir releases.

The eight SWP contractors that participated in the dry year program and the amount of water they purchased are as follows:

- Metropolitan—80,000 acre-feet
- AVEK—20,298 acre-feet
- Kern—14,125 acre-feet
- Dudley Ridge—13,113 acre-feet
- Santa Barbara—4,814 acre-feet
- Napa—3,200 acre-feet
- Oak Flat—1,656 acre-feet
- Tulare Lake—1,600 acre-feet

The participating agencies also entered into conveyance agreements with the Department to convey the dry year water across the Delta and through SWP facilities. Actual dry year water received by these agencies was less than the amount purchased at the source due to deductions for Delta carriage water losses (15 percent) and conveyance losses (2-3 percent). The total amount of dry year water delivered to the participating agencies was 114,073 acre-feet after deducting those losses.

Environmental Water Account

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

Under EWA, fish protection is achieved by periodically curtailing project water delivery from the Bay-Delta to project water users south of the Delta and replacing it at a later date within the same calendar year. This necessitates the acquisition of alternative sources of project water, called *EWA assets*, which are used to replace the project water supply (i.e., the undelivered water). EWA assets consist of *variable assets*, which are acquired through changes in operations; *fixed assets*, which are acquired through purchases from willing water sellers; and *source shifting*, which involves deferral of scheduled delivery of water allocations by willing participants. EWA is considered operational for any year when these assets are in place and Endangered Species Act commitments are provided by the management agencies.

EWA's first operational year was 2001. The first fish actions occurred in January and continued into June. Management agencies required 290,395 acre-feet of curtailments for fish protection, which was achieved by reduction in pumping at Banks and Tracy Pumping Plants in the Delta. A source shift of 50,000 acre-feet was undertaken to reduce the risk of low-point problems at San Luis Reservoir. Also, EWA was responsible for stream augmentation by returning water on a fish-friendly schedule and paying for a facility bypass on the American River to improve water temperature during fish migration. All fixed asset acquisitions in 2001 were made by the Department as single-year transactions and studies were carried out to

ensure that the transactions complied with CEQA.

The Department was able to compensate the SWP for its pumping reductions by acquiring 54,572 acre-feet in variable assets and 247,253 acre-feet of fixed assets through contract agreements. In addition, 72,280 acre-feet of water were acquired through an agreement with the Bureau. The initial year of EWA operation ended with an 83,710 acre-foot credit of water for use during 2002 EWA actions.

The following SWP contractors and non-SWP contractors participated in the Environmental Water Account Program.

Fixed Assets

The fixed asset water amounts below represent the total amounts of water acquired for EWA from various sources. These amounts have not been adjusted to reflect conveyance losses. Table 9-3 provides the relevant conveyance losses and the actual amounts of water delivered.

Arvin-Edison Water Storage District and Kern County Water Agency. An agreement executed on May 3, 2001, between the Department, Arvin-Edison, and Kern approved the purchase of up to 10,000 acre-feet of water for support of EWA under the CALFED Program. Arvin-Edison and Kern made approved carryover of 2000 Table A water available through a local 3-way exchange with Improvement District No. 4, Kern-Tulare Water District, and Rag Gulch Water District. A total of 10,000 acre-feet of the agencies' water was purchased. (SWPAO #01701)

Buena Vista Water Storage District, West Kern Water District, Rosedale-Rio Bravo Water District, and Kern County Water Agency. An agreement executed on May 3, 2001, between the Department and the participating agencies approved the purchase of up to 25,000 acre-feet of stored groundwater through the exchange of approved Table A water for support of EWA under the CALFED Program. Approved SWP water was stored by Kern for the participating agencies within Buena Vista's boundaries in 1995. A total of 23,719 acre-feet of the participants' water was purchased. (SWPAO #01706, #01707, #01708)

Cawelo Water District and Kern County Water Agency. An agreement executed on November 30, 2001, between the Department, Cawelo, and Kern approved the purchase of 5,000 acre-feet of groundwater through the exchange for approved Table A water and storage of up to 10,000 acre-feet of water for support of EWA under the CALFED Program. A total of 5,000 acre-feet of Cawelo's water was purchased. (SWPAO #01711)

Kern County Water Agency. An agreement executed on May 3, 2001, between the Department and Kern approved the purchase of up to 20,000 acre-feet of water stored in KWB through the exchange of approved Table A water for support of EWA under the CALFED Program. A total of 20,000 acre-feet of Kern's water was purchased. (SWPAO #01704)

Metropolitan Water District of Southern California. An agreement executed on February 14, 2001, between the Department and Metropolitan approved the exchange of up to 100,000 acre-feet of Metropolitan's approved Table A water to provide environmental enhancement and fisheries benefits to EWA under the CALFED Program. In exchange, the Department would return an equal amount of water at a later date. A total of 50,000 acre-feet of Metropolitan's approved Table A water was exchanged. (SWPAO #01720)

Merced Irrigation District. An agreement executed on August 15, 2001, between the Department and Merced approved the release of up to 25,000 acre-feet of stored water for support of EWA under the CALFED Program. Merced will pump additional groundwater to compensate for the release of the transfer water in addition to the amounts otherwise scheduled to be released to the Merced River. A total of 25,000 acre-feet of Merced's water was transferred. (SWPAO #01715)

Oroville-Wyandote Irrigation District. An agreement executed on December 8, 2001, between the Department and Oroville-Wyandote approved the transfer of up to 10,000 acre-feet of South Fork Project water that would otherwise remain in storage for support of EWA under the CALFED Program. A total of 10,000 acre-feet of Oroville-Wyandote's water was transferred. (SWPAO #01713)

Placer County Water Agency. An agreement executed on August 3, 2001, between the Department and Placer County approved the purchase of up to 20,000 acre-feet of water stored in the Middle Fork Project reservoirs for support of EWA under the CALFED Program. A total of 20,000 acre-feet of Placer County's water was purchased. (SWPAO #01716)

Rosedale Rio-Bravo Water Storage District and Kern County Water Agency. An agreement executed on May 3, 2001, between the Department, Rosedale Rio-Bravo, and Kern approved the purchase of up to 19,036 acre-feet of water for support of EWA under the CALFED Program. Rosedale Rio-Bravo made approved Table A water available through local use of a like amount of Section 215 Friant-Kern water banked in 2000. Rosedale Rio-Bravo acquired Section 215 water through an exchange with Arvin-Edison in 2000. A total of 19,036 acre-feet of the agencies' water was purchased. (SWPAO #01702)

Santa Clara Valley Water District and Kern County Water Agency. An agreement executed on August 10, 2001, between the Department, Santa Clara, and Kern approved the purchase and recharge of up to 30,000 acre-feet of water stored in the Semitropic Groundwater Basin for support of EWA under the CALFED Program. A total of 30,000 acre-feet of the agencies' water was purchased. (SWPAO #01714)

Semitropic Water Storage District, Kern County Water Agency, and Tulare Irrigation District. An agreement executed on September 12, 2001, between the Department and the participating agencies approved the purchase of up to 25,000 acre-feet of water stored in KWB. Semitropic stored 20,000 acre-feet of Table A water in KWB in 1995 and 1996, and 5,000 acre-feet of Semitropic's 2001 portion of Kern's approved Table A water was made available as a result of receiving Tulare's Section 215 water. The water was made available for support of EWA under the CALFED Program. A total of 10,767 acre-feet of Semitropic's water was purchased and 4,233 acre-feet of Tulare's water was exchanged. (SWPAO #01709)

Westside Mutual Water Company and Kern County Water Agency. An agreement executed on May 3, 2001, between the Department, Westside, and Kern approved the purchase of up to 21,000 acre-feet of water stored in KWB through exchange of approved Table A water for support of EWA under the CALFED Program. A total of 21,000 acre-feet of the agencies' water was purchased. (SWPAO #01710)

Westside Mutual Water Company, Tejon-Castac Water District, and Kern County Water Agency. An agreement executed on August 15, 2001, between the Department and participating agencies approved the purchase of up to 15,000 acre-feet of water stored in KWB through exchange of approved Table A water for support of EWA under the CALFED Program. A total of 15,000 acre-feet of the agencies' water was purchased. (SWPAO #01703)

Yuba County Water Agency. An agreement executed on February 8, 2001, between the Department and Yuba approved the transfer of up to 50,000 acre-feet of water from storage in New Bullards Bar Reservoir, in addition to amounts otherwise scheduled to be released for diversions from the Yuba River, for support of EWA under the CALFED Program. A total of 50,000 acre-feet of Yuba's water was transferred. (SWPAO #01712)

Variable Assets

EWA Share of State Gain. The Department has the opportunity to pump half the CVPIA (b)(2) releases that reach the Delta on behalf of EWA. A total of 11,472 acre-feet of water was

pumped at Banks Pumping Plant in 2000 and 37,916 acre-feet in 2001. (SWPAO #00740, SWPAO #01740)

Relaxation of the Export/Import Ratio. The Department has the opportunity to gain water credits if the EWA managing agencies decide that the E/I ratio can be relaxed, thus allowing the SWP to pump any extra water that the fisheries do not need. A total of 1,829 acre-feet of water was credited to EWA in 2000 and 3,354 acre-feet in 2001. (SWPAO #00730, SWPAO #01730)

CVP/SWP Exchange. The Bureau transferred 72,280 acre-feet of CVP water in San Luis Reservoir to the SWP for support of EWA under the CALFED Program (SWPAO #01750).

For additional information on EWA, see Chapter 7, *Water Supply Development and Reliability.*

Miscellaneous Agreements with Other Agencies

In addition to negotiating agreements with SWP contractors to provide for specified water deliveries, the Department also entered into several agreements with other agencies for water conveyance, or exchange, between January 1, 2001, and December 31, 2001.

Water Conveyance Agreements–CVP Water

The Department regularly enters into agreements to convey CVP water, such as agreements with contractors receiving water from the Bureau through the Cross Valley Canal, a water conveyance facility that connects with the Aqueduct near Tupman in Kern County. Other agencies or corporations receive CVP water through agreements between the Department and the Bureau, including the U.S. Department of Veterans Affairs, USFWS, and Musco Olive Products, Inc. Occasionally the Department also enters into agreements with the Bureau to convey CVP or SWP water from the Delta to O'Neill Forebay through CVP or SWP facilities. Some of these agreements allow the Bureau to make up for curtailed water exports from Tracy Pumping Plant associated with improving conditions for fish in the Delta. Other agreements allow replacing water exports foregone during maintenance and repair of Tracy and Banks Pumping Plants and CVP and SWP conveyance facilities between the Delta and O'Neill Forebay.

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

- long-term 3-party contracts with the Department and the Bureau, executed in 1976, and amendments extending the contracts through February 29, 1996; and
- interim renewal contracts: the first from March 1, 1996, through February 28, 1998; the second from March 1, 1998, through February 28, 2000; the third from March 1, 2000, through November 30, 2000; the fourth from December 1, 2000, through February 28, 2001; and the fifth from March 1, 2001, through February 28, 2002.

Between January 1, 2001, and December 31, 2001, the Department delivered CVP water to the CVC contractors as follows:

- On June 7, 2001, Pixley requested the Department to convey up to 13,950 acre-feet of its CVP water to Westlands during the 2001 contract year. From June through August 2001, the Department delivered a total of 13,520 acre-feet of the District's CVP water to Westlands' turnouts in Reaches 4 through 7 of the California Aqueduct. An agreement is expected to be signed in February 2003.
- On June 7, 2001, Lower Tule River requested the Department to convey up to

9,450 acre-feet of its CVP water to Westlands and up to 10,000 acre-feet to J.G. Boswell during the 2001 contract year. From June through August 2001, the Department delivered a total of 9,450 acre-feet of the District's CVP water to Westlands' turnouts in Reaches 4 through 7 of the California Aqueduct. The Department also delivered 4,500 acre-feet of the District's CVP water to J. G. Boswell, which is within Tulare, at turnouts in Reaches 8C and 8D of the California Aqueduct in June and July of 2001. The two agreements are expected to be signed in February 2003.

- On June 26, 2001, Kern-Tulare Water District requested the Department change the point of delivery for up to 24,000 acre-feet of the District's 2001 CVP water from the CVC turnout in Reach 12E to turnouts in Reaches 9 through 13B of the California Aqueduct for delivery to Kern. Under the agreement executed on August 21, 2001, the Department delivered 18,595 acre-feet of water from June through August 2001.
- On June 26, 2001, Rag-Gulch Water District requested the Department change the point of delivery for up to 7,980 acre-feet of their 2001 CVP water from the CVC turnouts in Reach 12E to turnouts in Reaches 9 through 13B of the California Aqueduct for delivery to Kern. Under the agreement executed on August 21, 2001, the Department conveyed 7,004 acre-feet of water from June through August 2001.

Westlands Water District. Westlands Water District requested that the Department convey 132,627 acre-feet of forbearance water to Westlands. Forbearance water is water that Westlands purchased from the Sacramento Valley CVP settlement contractors to augment its water supply. Due to an aqueduct leak, the Department was unable to pump water in June 2001; instead, 6,545 acre-feet was pumped by the Bureau in June and conveyed through State facilities to Westlands. During the rest of 2001, the Department pumped and conveyed an additional 126,082 acre-feet to Westlands. A conveyance agreement is expected to be signed in January 2003.

Musco Olive Products, Incorporated. Annual agreements dated December 15, 2000, and October 22, 2001, among Musco Olive Products, Inc., the Department, and the Bureau, provided for the conveyance of up to a combined 1,600 acre-feet of CVP water to Reach 2A of the California Aqueduct for use by Musco Olive Products, Inc. A portion of this water was delivered from January 1, 2001, through December 31, 2001. A total of 577 acre-feet was delivered in 2001.

Tracy Golf and Country Club. An agreement dated August 25, 2000, among the Department, the Bureau, and Tracy Golf and Country Club, provided for the conveyance of up to 300 acre-feet of CVP water through SWP facilities to the Tracy Golf and Country Club. This water was to be conveyed from May 11, 2000, through May 11, 2001. A total of 21 acre-feet was delivered to the Tracy Golf and Country Club turnout in Reach 2A of the California Aqueduct in 2001.

U.S. Department of Veterans Affairs. Letter agreements dated October 5, 2000, and December 12, 2001, among the U.S. Department of Veterans Affairs, the Department, and the Bureau, provided for the conveyance of up to 900 acre-feet of CVP approved water to Reach 2B of the California Aqueduct to the U.S. Department of Veterans Affairs' San Joaquin Valley National Cemetery. A total of 46 acre-feet was delivered to the National Cemetery in Reach 2B of the California Aqueduct in 2001.

U.S. Fish and Wildlife Service Cooperative Agreement. The Bureau initiated a cooperative agreement with the Department to deliver CVP water to the Kern National Wildlife Refuge for USFWS. Under the terms of this cooperative agreement, dated September 9, 1994, up to 26,530 acre-feet of CVP water would be delivered from Check 21 to the Buena Vista Water Storage District Turnout BV-1B, on Reach 10A of the California Aqueduct, from October 1,

1993, through April 10, 1995. Since the cooperative agreement was signed, eight modifications to the agreement have been executed. Under Modification No. 001, dated October 31, 1994, additional funding was provided. Similar funding adjustments through modifications were made each year to the agreement. Modification No. 010, executed March 13, 2001, extended the agreement through April 10, 2002, and defined the water delivery rates for 2001 and 2002. The Department conveyed 18,763 acre-feet of CVP water to Kern National Wildlife Refuge in 2001.

Other Turnout Agreements. In 2001, there were no new turnout agreements with non-SWP contractor agencies.

Water Deliveries

Approved Table A Deliveries

Each year, by October 1, the SWP long-term water contractors submit initial requests for approved Table A deliveries allocated to contractors for use in the subsequent calendar year. Initial approved Table A amounts for the coming year are made by the Department in December and are based on operations studies that assume 90 percent exceedence of historic water supply (where exceedence refers to the possibility that water supply in the coming year will be exceeded by the historic water supply), current reservoir storage, and total requests by the SWP water contractors. Forecasts for the year are updated as hydrological conditions change. Approved Table A amounts are increased or decreased depending on both actual and projected hydrologic conditions.

On October 1, 2000, SWP long-term contractors submitted initial requests for 2001 approved Table A deliveries totaling 4.12 million acre-feet. The Department approved deliveries of 1.65 million acre-feet on December 1, 2000 (Notice to SWP Contractors 00-17), resulting in initial approved Table A amounts of 40 percent for most SWP contractor requests. Unusually dry conditions caused the Department to decrease the 2001 approved Table A amounts to 824,000 acre-feet (20 percent) on January 31, 2001 (Notice to SWP Contractors 01-03). As a result of improvements in water conditions, approved Table A amounts were further increased to 1.03 million acre-feet (25 percent) on March 6 (Notice to SWP Contractors 01-07); 1.24 million acre-feet (30 percent) on March 15 (Notice to SWP Contractors 01-10); 1.38 million acre-feet (33 percent) on May 4 (Notice to SWP Contractors 01-12); 1.44 million acre-feet (35 percent) on May 17 (Notice to SWP Contractors 01-13); and finally to 1.61 million acre-feet (39 percent) on August 16 (Notice to SWP Contractors 01-15).

SWP Deliveries

The SWP delivers water for a variety of beneficial uses. In addition to delivering approved Table A water to long-term water supply contractors, the SWP

- conveys water to, and stores water for, other public agencies through special contracts and agreements;
- provides water for wildlife and recreational uses; and
- stores, releases, and delivers local runoff water from SWP facilities to agencies that hold local water rights.

In 2001, 3,206,922 acre-feet of water were conveyed to 26 long-term contractors and 18 other agencies. That amount includes

- 1,546,742 acre-feet of approved Table A water;[1]
- 43,182 acre-feet of Article 21 water and 253 acre-feet of unscheduled water;
- 2,929 acre-feet of SWP water for recreation, fish and wildlife; and
- 1,613,816 acre-feet of water delivered to satisfy water rights settlement agreements and

[1] Annual Table A water is the amount of SWP water long-term contractors may request each year in accordance with Article 12(a), "Procedure for Determining Water Delivery Schedule," of their water supply contract.

agreements with SWP contractors and other agencies, including the Bureau.

Figure 9-1 shows amounts of water delivered to various locations during 2001.

Specific information about water deliveries made to long-term contractors and other agencies during 2001 and historical deliveries from 1962 through 2001 are presented in the following three sections, each with a corresponding table:

- Water Delivered to Long-term Water Supply Contractors in 2001, by Service Area (Table 9-2);
- Water Delivered in 2001, by Month (Table 9-3); and
- Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-01 (Table 9-4).

Water Deliveries and Credits to Long-Term SWP Contractors

Table 9-2 shows amounts of water delivered in 2001. The following information about specific columns in Table 9-2 is arranged by column number.

2001 Approved Table A Water Delivered. Columns 1 through 5 show a detailed breakdown of approved Table A water delivered to long-term water supply contractors in 2001.

Turnback Pool Water. Column 4 shows 18,240 acre-feet of turnback pool water was delivered to long-term water supply contractors in 2001.

2000 Carryover Approved Table A Water Delivered During 2001. For several years, the Department has offered contractors the opportunity to carry over a portion of their approved Table A water for delivery in the current year to be delivered during the next year.

The carryover program was designed to encourage the most effective and beneficial use of water and to avoid obligating the contractors to use or lose the water by December 31 of each year. The SWP contractors' long-term contracts and amendments state the criteria for carrying over approved Table A water from one year to the next. Column 6 shows 291,344 acre-feet of water was carried over from 2000 for delivery in 2001.

Total Table A Water Delivered. Column 7 shows all approved Table A water delivered in 2001—a total of 1,546,742 acre-feet.

2001 Water Bank Recoveries. Column 8 shows 57,322 acre-feet of Water Bank recoveries in 2001.

2001 Article 21 Water. Column 9 shows 43,435 acre-feet of 2001 Article 21 water delivered to long-term water supply contractors in 2001 (includes 253 acre-feet of unscheduled water). Long-term water supply contractors who have not signed the Monterey Amendment receive unscheduled water.

Dry Year Purchase Program. Column 10 shows 114,073 acre-feet of Dry Year Water Program water delivered in 2001.

2001 Article 54 Flexible Storage Withdrawal Recoveries. Column 11 shows 74,992 acre-feet of Article 54, Flexible Storage Withdrawal in 2001.

Total SWP Water Delivered. Column 12 shows 1,836,564 acre-feet of total SWP water delivered in 2001. This includes total approved Table A water, water bank recoveries, Dry Year Purchase Program, Flexible Storage Withdrawal, and Article 21 and unscheduled water.

Non-SWP Water Deliveries. Column 13 includes deliveries of nonproject water to long-term water contractors. Nonproject water is generally local and permit water that a SWP contractor has a water right to, or water purchased from, exchanged with, or transferred from non-SWP agencies. In 2001, nonproject water deliveries totaled 113,196 acre-feet.

Total Deliveries. Column 14 shows total amounts of water delivered to long-term contractors. In 2001, the SWP delivered 1,949,760 acre-feet to 26 long-term contractors.

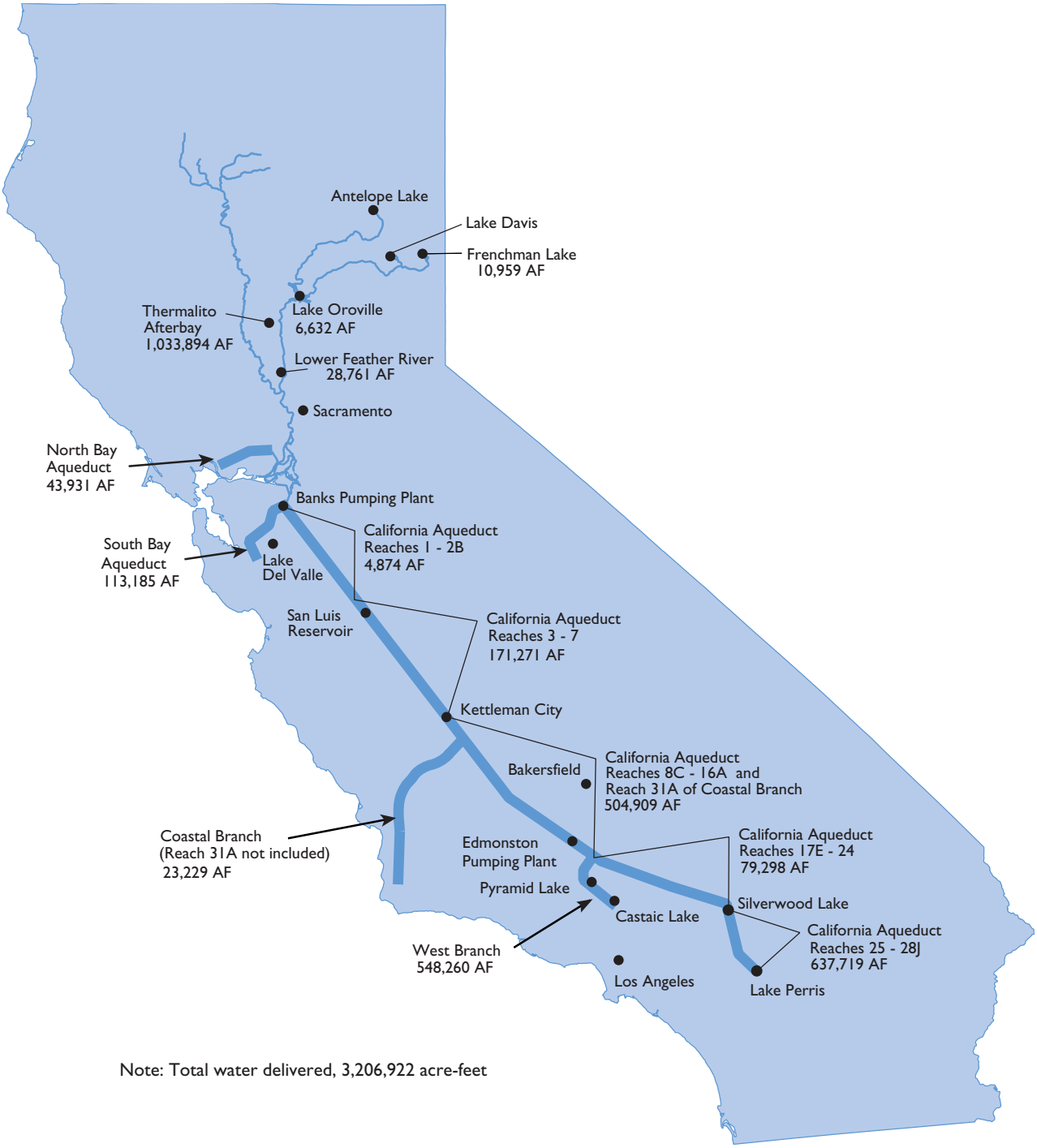


Figure 9-1. Water Delivered in 2001 and Delivery Locations of Long-Term Water Supply Contractors and Feather River Area Districts with Water Right Agreements with the Department

Table 9-2. Water Delivered to Long-Term Contractors through 2001, by Service Area (Acre-Feet)

Water Contractor or Agency	Water Deliveries in 2001: Annual Table A Water Deliveries: 2001 Table A without Transfers, Exchanges, and Storage (1)	2001 Table A Delivered through Transfers and Exchanges (2)	2001 Table A Delivered to Storage (3)	Pool Water (4)	Total 2001 Table A Delivered (5)	2000 Carryover Table A Delivered during 2001 (6)	Total Table A Deliveries (7)	Water Bank Recoveries (8)	2001 Article 21 Water (9)	2001 Dry Year Purchase (10)	2001 Article 54 Flexible Withdrawal (11)	Total SWP Water Delivered (12)	Non-SWP Water Deliveries (13)	Total Deliveries (14)
Feather River Area														
County of Butte	513	0	0	0	513	0	513	0	0	0	0	513	0	513
Plumas County Flood Control and Water Conservation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Yuba City	1,065	0	0	0	1,065	0	1,065	0	0	0	0	1,065	0	1,065
North Bay Area			0	0				0	0	0	0			
Napa County Flood Control and Water Conservation District	4,293	0	0	82	4,375	1,723	6,098	0	996	2,251	0	9,345	0	9,345
Solano County Water Agency	17,756	0	0	0	17,756	1,021	18,777	0	2,304	0	0	21,081	13,505[a]	34,586
South Bay Area														
Alameda County Flood Control and Water Conservation District-Zone 7	22,307	0	0	308	22,615	5,990	28,605	1,807	0	0	0	30,412	13,741[b]	44,153
Alameda County Water District	13,695	0	0	107	13,802	4,192	17,994	0	10	0	0	18,004	7,910[c]	25,914
Santa Clara Valley Water District	35,689	0	0	0	35,689	12,233	47,922	0	0	0	0	47,922	0	47,922
San Joaquin Valley Area														
Castaic Lake Water Agency	1,238	0	0	0	1,238	0	1,238	0	0	0	0	1,238	0	1,238
County of Kings	1,560	0	0	0	1,560	0	1,560	0	0	0	0	1,560	0	1,560
Dudley Ridge Water District	18,821	7,048[d]	0	347	26,216	6,815	33,031	3,215	933	10,812	0	47,991	0	47,991
Empire-West Side Irrigation District	0	0	0	0	0	1,607[e]	1,607	0	253	0	0	1,860	0	1,860
Kern County Water Agency	211,223	11,487[f]	0	6,502	229,212	48,016	277,228	0	23,233	11,647	0	312,108	42,845[g]	354,953
Oak Flat Water District	2,089	0	0	22	2,111	101	2,212	0	0	1,380	0	3,592	0	3,592
Tulare Lake Basin Water Storage District	37,773	3,057[h]		769	41,599	7,389	48,988	0	8,755	1,319	0	59,062	29,664[i]	88,726
Central Coastal Area														
San Luis Obispo County Flood Control and Water Conservation District	4,184	0	0	99	4,283	0	4,283	0	0	0	0	4,283	0	4,283
Santa Barbara County Flood Control and Water Conservation District	14,285	0	0	296	14,581	0	14,581	0	396	3,969	0	18,946	0	18,946
Southern California														
Antelope Valley-East Kern Water Agency	45,071	0	0	899	45,970	0	45,970	0	0	16,735	0	62,705	0	62,705
Castaic Lake Water Agency	29,233	0	0	618	29,851	0	29,851	0	850	0	0	30,701	4,931[j]	35,632
Coachella Valley Water District	9,009	0	0	91	9,100	0	9,100	0	0	0	0	9,100	0	9,100
Crestline-Lake Arrowhead Water Agency	1,057	0	0	0	1,057	0	1,057	0	0	0	0	1,057	600[k]	1,657
Desert Water Agency	14,859	0	0	151	15,010	0	15,010	0	0	0	0	15,010	0	15,010
Littlerock Creek Irrigation District	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Metropolitan Water District of Southern California	686,545	0	0	7,949	694,494	200,000	894,494	52,300	5,705	65,960	74,992	1,093,451	0	1,093,451
Mojave Water Agency	4,433	0	0	0	4,433	0	4,433	0	0	0	0	4,433	0	4,433
Palmdale Water District	8,170	0	0	0	8,170	2,257	10,427	0	0	0	0	10,427	0	10,427
San Bernardino Valley Municipal Water District	26,488	0	0	0	26,488	0	26,488	0	0	0	0	26,488	0	26,488
San Gabriel Valley Municipal Water District	2,360	0	0	0	2,360	0	2,360	0	0	0	0	2,360	0	2,360
San Gorgonio Pass Water Agency	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ventura County Flood Control District	1,850	0	0	0	1,850	0	1,850	0	0	0	0	1,850	0	1,850
Total	**1,215,566**	**21,592**	**0**	**18,240**	**1,255,398**	**291,344**	**1,546,742**	**57,322**	**43,435**	**114,073**	**74,992**	**1,836,564**	**113,196**	**1,949,760**

Note: For specific details, see Table 9-2.

[a] Permit water

[b] 3,997 acre-feet of transfer water from Byron-Bethany and 9,744 acre-feet of local water.

[c] Local water.

[d] 4,174 acre-feet from San Gabriel and 2,874 acre-feet from Kern.

[e] 1,107 acre-feet of wet weather carryover and 500 acre-feet from Tulare.

[f] To the Bureau.

[g] 17,246 acre-feet from the Bureau and 25,599 acre-feet from CVC contractors.

[h] To Westlands (1,082 acre-feet through transfer and 1,975 acre-feet through exchange).

[i] 25,164 acre-feet from Westlands and 4,500 acre-feet from CVC contractors.

[j] Local water.

[k] Local water.

Table 9-3. Water Delivered in 2001, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2001 Total Deliveries	2001 Contract Table A
Feather River Area														
City of Yuba City														
Approved Table A water	0	0	0	0	0	0	541	524	0	0	0	0	1,065	9,600
County of Butte														
Approved Table A water	81	42	103	84	5	3	22	24	8	27	38	76	513	3,500
Plumas County Flood Control and Water Conservation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	1,570
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water	0	0	0	1	1	1	1	0	0	3	5	0	12	
Last Chance Creek Water District														
Regulated delivery of local supply	0	0	0	30	3,935	3,172	1,658	1,847	198	119	0	0	10,959	
Thermalito Irrigation District														
Regulated delivery of local supply	110	81	127	145	336	394	414	384	280	228	0	17	2,516	
Oroville-Wyandotte Irrigation District														
Regulated delivery of local supply	91	0	35	339	1,020	1,010	1,050	1,050	1,010	747	217	63	6,632	
Western Canal Water District														
Regulated delivery of local supply	5,898	0	0	6,952	55,703	49,379	52,608	41,390	12,100	43,829	20,731	8,027	296,617	
Joint Water Districts Board														
Regulated delivery of local supply	32,710	0	0	27,880	122,935	112,491	116,560	101,740	51,090	58,370	62,150	48,310	734,236	
Oswald Water District														
Regulated delivery of local supply	0	0	0	0	1	150	122	16	0	0	0	0	289	
Tudor Mutual Water Company														
Regulated delivery of local supply	0	0	0	0	748	1,048	1,061	441	343	40	0	0	3,681	
Garden Highway Mutual Water Company														
Regulated delivery of local supply	0	0	108	1,041	2,511	2,900	2,484	2,233	1,234	2,521	69	0	15,101	
Plumas Mutual Water Company														
Regulated delivery of local supply	0	0	2	631	1,632	2,031	1,725	1,115	721	88	0	0	7,945	
Dana Brothers														
Regulated delivery of local supply	0	0	0	0	63	285	157	156	19	0	0	0	680	
SWP	81	42	103	85	6	4	564	548	8	30	43	76	1,590	
Non-SWP	38,809	81	272	37,018	188,884	172,860	177,839	150,372	66,995	105,942	83,167	56,417	1,078,656	
Feather River Area Total	38,890	123	375	37,103	188,890	172,864	178,403	150,920	67,003	105,972	83,210	56,493	1,080,246	14,670
North Bay Area														
Napa County Flood Control and Water Conservation District														
Approved Table A water	0	0	0	1,022	509	595	0	0	0	1,196	971	0	4,293	20,725
Article 21 water	0	0	532	0	0	0	0	0	0	0	0	464	996	
Article 56(c) extended carryover	920	803	0	0	0	0	0	0	0	0	0	0	1,723	
Dry Year Purchase Program	0	0	0	0	0	0	758	593	900	0	0	0	2,251	
Pool B water	0	0	0	0	0	82	0	0	0	0	0	0	82	
Agency Total	920	803	532	1,022	509	677	758	593	900	1,196	971	464	9,345	
Solano County Water Agency														
Approved Table A water	0	0	0	2,040	1,686	3,081	3,508	2,686	1,765	2,002	973	15	17,756	45,836
Article 21 water	0	1,324	456	0	0	0	0	0	0	0	0	524	2,304	
Article 56(c) extended carryover	1,021	0	0	0	0	0	0	0	0	0	0	0	1,021	
Vallejo Permit water	0	0	0	743	1,805	1,789	1,895	1,767	1,577	1,938	1,875	116	13,505	
Agency Total	1,021	1,324	456	2,783	3,491	4,870	5,403	4,453	3,342	3,940	2,848	655	34,586	
SWP	1,941	2,127	988	3,062	2,195	3,758	3,508	2,686	1,765	3,198	1,944	1,003	28,175	
Non-SWP	0	0	0	743	1,805	1,789	2,653	2,360	2,477	1,938	1,875	116	15,756	
North Bay Area Total	1,941	2,127	988	3,805	4,000	5,547	6,161	5,046	4,242	5,136	3,819	1,119	43,931	66,561
South Bay Area														
Alameda County Flood Control and Water Conservation District, Zone 7														
Approved Table A water	0	0	0	200	1,746	3,338	4,374	2,761	2,522	5,200	2,166	0	22,307	78,000
Article 56(c) extended carryover	990	0	0	0	0	0	0	0	0	0	0	0	990	
Article 56(c) extended carrying delivered to storage (Semitropic)	0	0	5,000	0	0	0	0	0	0	0	0	0	5,000	
Bank water recovery, Semitropic	0	0	0	0	0	1,300	0	507	0	0	0	0	1,807	
Local water	444	802	1,918	2,490	2,482	246	55	275	73	0	113	846	9,744	
Pool B water	0	0	0	0	0	0	100	108	100	0	0	0	308	
Transfer local water from Byron-Bethany Irrigation District	0	0	0	0	0	0	0	2,000	1,997	0	0	0	3,997	
Agency Total	1,434	802	6,918	2,690	4,228	4,884	4,529	5,651	4,692	5,200	2,279	846	44,153	
Alameda County Water District														
Approved Table A water	0	0	0	0	0	2,216	2,723	2,664	2,587	2,842	663	0	13,695	42,000
Article 21 water	0	0	10	0	0	0	0	0	0	0	0	0	10	

Table 9-3. Water Delivered in 2001, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2001 Total Deliveries	2001 Contract Table A
Article 56(c) extended carryover	1,953	1,412	827	0	0	0	0	0	0	0	0	0	4,192	
Local water	0	0	687	1,863	2,062	242	0	880	631	534	183	828	7,910	
Pool A water	0	0	0	0	0	0	0	107	0	0	0	0	107	
Agency Total	1,953	1,412	1,524	1,863	2,062	2,458	2,723	3,651	3,218	3,376	846	828	25,914	
Santa Clara Valley Water District														
Approved Table A water	0	0	0	4,112	4,341	3,770	4,639	5,154	4,501	6,284	2,888	0	35,689	100,000
Article 56(c) extended carryover	3,079	3,168	5,986	0	0	0	0	0	0	0	0	0	12,233	
Bank water recovery, Semitropic (for EWA)*	0	0	0	0	0	0	0	17,879	0	0	0	12,121	30,000	
Agency Total (*excluded water)	3,079	3,168	5,986	4,112	4,341	3,770	4,639	5,154	4,501	6,284	2,888	0	47,922	
Recreation/Fish and Wildlife														
Recreation/fish and wildlife water, Lake Del Valle	7	4	8	8	18	27	31	56	25	9	1	2	196	
SWP	6,022	4,580	70,921	39,250	37,306	20,624	14,336	29,180	30,710	25,093	14,950	12,121	305,093	
Non-SWP	444	802	2,605	4,353	4,544	488	55	3,155	2,701	534	296	1,674	21,651	
South Bay Area Total	6,466	5,382	73,526	43,603	41,850	21,112	14,391	32,335	33,411	25,627	15,246	13,795	326,744	220,000
San Joaquin Valley Area														
Castaic Lake Water Agency														
Approved Table A water	1,194	0	0	4	10	6	5	0	18	1	0	0	1,238	
County of Kings														
Approved Table A water	0	0	0	0	0	400	300	300	0	0	100	460	1,560	4,000
Dudley Ridge Water District														
Approved Table A water	0	0	0	1,642	3,036	3,307	4,352	453	3,804	1,819	86	308	18,807	53,370
Approved Table A water delivered through Tulare	0	0	0	0	0	0	0	14	0	0	0	0	14	
Article 21 water delivered to storage (Kern Water Bank)	0	0	933	0	0	0	0	0	0	0	0	0	933	
Article 56(c) extended carryover	1,199	533	3,609	0	0	0	0	0	0	0	0	0	5,341	
Article 56(c) extended carryover delivered to storage (Kern Water Bank)	0	0	800	0	0	0	0	0	0	0	0	0	800	
Article 56(c) extended carryover delivered through Tulare	0	0	674	0	0	0	0	0	0	0	0	0	674	
Bank water recovery, Kern Water Bank	0	0	0	0	2,250	965	0	0	0	0	0	0	3,215	
Dry Year Purchase Program	0	0	0	0	0	3,310	3,310	3,880	312	0	0	0	10,812	
Exchange approved Table A water from Kern	0	0	0	0	0	0	0	1,374	0	0	0	0	1,374	
Exchange approved Table A water from San Gabriel	0	0	0	0	0	1,300	1,574	1,300	0	0	0	0	4,174	
Pool A water	0	0	0	0	0	0	136	0	0	0	0	0	136	
Pool B water	0	0	0	0	0	0	211	0	0	0	0	0	211	
Transfer approved Table A water from Kern	0	0	0	0	0	0	0	1,500	0	0	0	0	1,500	
Agency Total	1,199	533	6,016	1,642	5,286	8,882	9,583	8,521	4,116	1,819	86	308	47,991	
Empire West Side Irrigation District														
Transfer Article 56 extended carryover from Tulare	0	0	500	0	0	0	0	0	0	0	0	0	500	3,000
Unscheduled water	0	0	253	0	0	0	0	0	0	0	0	0	253	
Wet weather carryover water	340	459	308	0	0	0	0	0	0	0	0	0	1,107	
Agency Total	340	459	1,061	0	0	0	0	0	0	0	0	0	1,860	
Kern County Water Agency														
Approved Table A water	0	0	1,702	0	23,541	62,788	48,131	28,985	24,186	15,905	4,920	427	210,585	1,000,949
Approved Table A water delivered for Western Hills	0	0	0	0	116	64	102	134	131	79	12	0	638	
Approved Table A water delivered to EWA*	0	0	0	0	31,219	10,000	2,500	0	21,000	9,296	9,233	0	83,248	
Article 21 water	0	0	23,233	0	0	0	0	0	0	0	0	0	23,233	
Article 56(c) extended carryover	25,671	11,982	10,363	0	0	0	0	0	0	0	0	0	48,016	
Article 56(c) extended carryover delivered to EWA*	0	0	44,036	0	0	0	0	0	0	0	0	0	44,036	
Dry Year Purchase Program	0	0	0	0	0	0	6,623	4,700	57	267	0	0	11,647	
Exchange approved Table A water to Dudley Ridge*	0	0	0	0	0	0	0	1,374	0	0	0	0	1,374	
Exchange approved Table A water for Alameda-Zone 7 (Semitropic water)*	0	0	0	0	0	1,300	0	507	0	0	0	0	1,807	
Exchange approved Table A water for Dudley Ridge (Kern Water Bank water)*	0	0	0	0	2,250	965	0	0	0	0	0	0	3,215	
Exchange approved Table A water for Metropolitan (Arvin-Edison water)*	0	0	0	0	0	0	0	0	5,000	5,800	5,000	5,000	20,800	
Exchange approved Table A water for Metropolitan (Semitropic water)*	0	0	1,614	1,300	0	13,179	0	0	0	0	0	0	16,093	
Exchange approved Table A water for Santa Clara (Semitropic water)*	0	0	0	0	0	0	0	17,879	0	0	0	6,065	23,944	
Exchange approved Table A water to the Bureau*	0	0	0	0	0	0	0	11,487	0	0	0	0	11,487	
Exchange water from the Bureau	0	0	0	0	0	0	11,487	0	0	0	0	0	11,487	
Pool A water	0	0	0	0	0	0	1,740	575	231	0	0	0	2,546	
Pool B water	0	0	0	0	0	0	2,619	997	340	0	0	0	3,956	
Turn-in water (from Kern Water Bank) recovered by Kern*	0	0	6,363	22,125	27,161	24,081	21,385	20,917	6,704	844	0	1,815	131,395	
Turn-in water (from Semitropic) recovered by Kern	0	0	0	0	184	0	0	0	0	0	230	1,399	1,813	
Kern Water Bank water turn-in water for EWA*	0	0	0	0	0	0	0	0	0	1,471	0	0	1,471	

Table 9-3. Water Delivered in 2001, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2001 Total Deliveries	2001 Contract Table A
Transfer approved Table A water to Dudley Ridge*	0	0	0	0	0	0	0	1,500	0	0	0	0	1,500	
Transfer CVP water from Kern-Tulare	0	0	0	0	0	750	5,028	12,817	0	0	0	0	18,595	
Transfer CVP water from Rag Gulch	0	0	0	0	0	250	1,672	5,082	0	0	0	0	7,004	
Agency Total (*excluded water)	25,671	11,982	35,298	0	23,657	63,852	77,402	53,290	24,945	16,251	4,932	427	337,707	
Oak Flat Water District														
Approved Table A water	0	0	0	193	622	753	45	0	28	409	37	2	2,089	5,700
Article 56(c) extended carryover water	49	9	43	0	0	0	0	0	0	0	0	0	101	
Dry Year Purchase Program	0	0	0	0	0	0	688	396	296	0	0	0	1,380	
Pool B water	0	0	0	0	22	0	0	0	0	0	0	0	22	
Agency Total	49	9	43	193	644	753	733	396	324	409	37	2	3,592	
Tulare Lake Basin Water Storage District														
Approved Table A water	0	0	0	477	838	7,976	9,507	11,438	412	1,234	237	5,654	37,773	118,500
Article 21 water	0	0	8,755	0	0	0	0	0	0	0	0	0	8,755	
Article 56(c) extended carryover	2,960	384	4,045	0	0	0	0	0	0	0	0	0	7,389	
Dry Year Purchase Program	0	0	0	0	0	0	0	1,319	0	0	0	0	1,319	
Dudley Ridge's approved Table A water delivered through Tulare*	0	0	0	0	0	0	0	14	0	0	0	0	14	
Exchange approved water to Westlands*	0	0	0	0	0	0	600	1,375	0	0	0	0	1,975	
Exchange CVP water from Westlands	10,864	0	5,360	8,940	0	0	0	0	0	0	0	0	25,164	
Pool A water	0	0	0	0	0	0	0	29	0	0	0	272	301	
Pool B water	0	0	0	0	0	0	0	0	0	0	0	468	468	
Transfer CVP water from Lower Tule River Irrigation District	0	0	0	0	0	1,042	3,458	0	0	0	0	0	4,500	
Transfer Article 56(c) extended carryover to Empire*	0	0	500	0	0	0	0	0	0	0	0	0	500	
Transfer approved Table A water to Westlands*	0	0	0	0	0	0	1,082	0	0	0	0	0	1,082	
Agency Total (*excluded water)	13,824	384	18,160	9,417	838	9,018	12,965	12,786	412	1,234	237	6,394	85,669	
Westlands Water District														
Transfer CVP water from Lower Tule River	0	0	0	0	0	1,332	4,210	3,908	0	0	0	0	9,450	
Transfer CVP water from Pixley	0	0	0	0	0	902	6,209	6,409	0	0	0	0	13,520	
Transfer CVP water from the Bureau (Sacramento Valley Contractors)	0	0	0	0	0	6,545	34,861	60,471	30,750	0	0	0	132,627	
Transfer approved Table A water from Tulare	0	0	0	0	0	0	1,082	0	0	0	0	0	1,082	
Exchange approved Table A water from Tulare	0	0	0	0	0	0	600	1,375	0	0	0	0	1,975	
Exchange water to Tulare*	10,864	0	5,360	8,940	0	0	0	0	0	0	0	0	25,164	
Agency Total (*excluded water)	0	0	0	0	0	8,779	46,962	72,163	30,750	0	0	0	158,654	
Recreation/Fish and Wildlife														
Department of Fish and Game, O'Neill Forebay/Lateral 4	27	29	53	54	24	8	3	13	10	131	61	31	444	
Department of Parks and Recreation, O'Neill Forebay/San Luis Reservoir	2	1	2	7	13	16	29	25	24	5	1	1	126	
Total	29	30	55	61	37	24	32	38	34	136	62	32	570	
EWA Program														
Article 56(c) extended carryover from Kern*	0	0	44,036	0	0	0	0	0	0	0	0	0	44,036	
Approved Table A water from Kern*	0	0	0	0	31,219	10,000	2,500	0	21,000	9,296	9,233	0	83,248	
E/I Relaxation*	0	0	0	0	0	0	0	0	0	0	3,354	0	3,354	
EWA share of State gain*	8,158	711	935	1,431	0	0	0	4,036	19,337	3,308	0	0	37,916	
Flexible storage withdrawal (Castaic Lake) from Metropolitan*	0	0	15,062	34,938	0	0	0	0	0	0	0	0	50,000	
Kern Water Bank water from Kern*	0	0	0	0	0	0	0	0	0	1,471	0	0	1,471	
Local water from Merced Irrigation District*	0	0	0	0	0	0	0	0	0	11,753	10,747	0	22,500	
Local water from Oroville-Wyandote Irrigation District*	0	0	0	0	0	0	0	0	8,500	0	0	0	8,500	
Local water from Placer County Water Agency*	0	0	0	0	0	0	0	0	0	2,240	12,759	0	14,999	
Local water from Yuba County Water Agency*	0	0	0	0	0	0	42,500	0	0	00	0	0	42,500	
Semitropic Water Bank water from Santa Clara*	0	0	0	0	0	0	0	17,879	0	0	0	12,121	30,000	
Total EWA Water (*excluded water)	8,158	711	60,033	36,369	31,219	10,000	45,000	21,915	48,837	28,068	36,093	12,121	338,524	
SWP	31,442	13,397	54,599	2,377	28,222	76,618	70,436	48,512	29,184	19,583	5,454	7,623	387,447	
Non-SWP	10,864	0	5,360	8,940	0	14,131	77,546	98,982	31,415	267	0	0	247,505	
San Joaquin Valley Area subtotal	42,306	13,397	59,959	11,317	28,222	90,749	147,982	147,494	60,599	19,850	5,454	7,623	634,952	1,185,519
Other Non-SWP Water Conveyed														
Tracy Golf and Country Club	4	6	11	0	0	0	0	0	0	0	0	0	21	
CVP Water Conveyed--Annual Contracts														
Plain View Water District/ Musco Olive Products, Inc.	38	43	47	39	0	50	41	68	72	78	78	23	577	
U.S. Department of Veteran Affairs, S.J.V. National Cemetery	1	1	1	2	7	6	3	9	4	8	3	1	46	
Subtotal	39	44	48	41	7	56	44	77	76	86	81	24	623	
Cross Valley Canal Contracts														
CVP water to Kern from Kern-Tulare*	0	0	0	0	0	750	5,028	12,817	0	0	0	0	18,595	
CVP water to Kern from Rag Gulch*	0	0	0	0	0	250	1,672	5,082	0	0	0	0	7,004	
CVP water to Tulare from Lower Tule River*	0	0	0	0	0	1,042	3,458	0	0	0	0	0	4,500	

Table 9-3. Water Delivered in 2001, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2001 Total Deliveries	2001 Contract Table A
CVP water to Westlands from Lower Tule River*	0	0	0	0	0	1,332	4,210	3,908	0	0	0	0	9,450	
CVP water to Westlands from Pixley*	0	0	0	0	0	902	6,209	6,409	0	0	0	0	13,520	
County of Fresno	0	0	0	0	0	0	0	1,350	0	0	0	0	1,350	
County of Tulare	0	0	0	0	0	0	0	2,389	0	0	0	0	2,389	
Hills Valley Irrigation District	0	0	0	0	0	0	396	1,110	0	0	0	0	1,506	
Tri-Valley Water District	0	0	0	0	0	0	0	514	0	0	0	0	514	
Subtotal (*excluded water)	0	0	0	0	0	0	396	5,363	0	0	0	0	5,759	
Bureau of Reclamation														
Kern National Wildlife Refuge	649	641	0	0	294	260	59	547	3,875	4,973	4,635	2,830	18,763	
Exchange approved Table A from Kern	0	0	0	0	0	0	0	11,487	0	0	0	0	11,487	
Recreation/fish and wildlife water	23	25	42	54	30	19	24	34	27	110	54	118	560	
Exchange CVP water to Kern*	0	0	0	0	0	0	11,883	5,363	0	0	0	0	17,246	
Subtotal (*excluded water)	672	666	42	54	324	279	83	12,068	3,902	5,083	4,689	2,948	30,810	
SWP	0	0	0	0	0	0	0	11,487	0	0	0	0	11,487	
Non-SWP	715	716	101	95	331	335	523	6,021	3,978	5,169	4,770	2,972	25,726	
San Joaquin Valley Area subtotal	715	716	101	95	331	335	523	17,508	3,978	5,169	4,770	2,972	37,213	
SWP (Total)	31,442	13,397	54,599	2,377	28,222	76,618	70,436	59,999	29,184	19,583	5,454	7,623	398,934	
Non-SWP (Total)	11,579	716	5,461	9,035	331	14,466	78,069	105,003	35,393	5,436	4,770	2,972	273,231	
San Joaquin Valley Area Total	43,021	14,113	60,060	11,412	28,553	91,084	148,505	165,002	64,577	25,019	10,224	10,595	672,165	
Central Coastal Area														
San Luis Obispo County Flood Control and Water Conservation District														
Approved Table A water	299	274	310	336	378	437	450	454	396	170	267	413	4,184	25,000
Pool B water	0	0	0	0	0	0	0	0	0	99	0	0	99	
Agency Total	299	274	310	336	378	437	450	454	396	269	267	413	4,283	
Santa Barbara County Flood Control and Water Conservation District														
Approved Table A water	1,186	888	699	1,315	1,926	2,499	62	2,424	512	987	776	1,011	14,285	45,486
Article 21 water	0	0	396	0	0	0	0	0	0	0	0	0	396	
Dry Year Purchase Program	0	0	0	0	0	0	2,232	0	1,737	0	0	0	3,969	
Pool A water	0	0	0	0	0	0	0	0	0	116	0	0	116	
Pool B water	0	0	0	0	0	0	0	0	0	180	0	0	180	
Agency Total	1,186	888	1,095	1,315	1,926	2,499	2,294	2,424	2,249	1,283	776	1,011	18,946	
SWP	1,485	1,162	1,405	1,651	2,304	2,936	512	2,878	908	1,552	1,043	1,424	19,260	
Non-SWP	0	0	0	0	0	0	2,232	0	1,737	0	0	0	3,969	
Central Coastal Area Total	1,485	1,162	1,405	1,651	2,304	2,936	2,744	2,878	2,645	1,552	1,043	1,424	23,229	70,486
Southern California Area														
Antelope Valley-East Kern Water Agency														
Approved Table A water	2,576	1,695	2,341	3,843	5,904	8,708	5,440	5,002	2,773	811	3,324	2,654	45,071	138,400
Dry Year Purchase Program	0	0	0	0	0	0	3,498	3,687	4,413	5,137	0	0	16,735	
Mojave's approved Table A water delivered through AVEK*	30	24	58	113	129	148	203	164	240	99	101	76	1,385	
Pool A water	0	0	0	0	352	0	0	0	0	0	0	0	352	
Pool B water	0	0	0	0	547	0	0	0	0	0	0	0	547	
Local turn-in water recovered by AVEK*	0	0	0	0	0	62	66	24	0	0	0	0	152	
Agency Total (*excluded water)	2,576	1,695	2,341	3,843	6,803	8,708	8,938	8,689	7,186	5,948	3,324	2,654	62,705	
Castaic Lake Water Agency														
Approved Table A water	1,769	803	1,081	2,995	3,686	3,808	3,669	3,749	3,599	3,576	498	0	29,233	95,200
Article 21 water	0	0	850	0	0	0	0	0	0	0	0	0	850	
Local water	0	0	0	0	0	0	0	0	0	0	2,337	2,594	4,931	
Pool A water	0	0	0	0	0	0	42	100	100	0	0	0	242	
Pool B water	0	0	0	0	0	0	100	100	176	0	0	0	376	
Flexible storage replacement with local water*	0	0	0	0	0	0	0	0	0	0	0	2,589	2,589	
Agency Total (*excluded water)	1,769	803	1,931	2,995	3,686	3,808	3,811	3,949	3,875	3,576	2,835	2,594	35,632	
Coachella Valley Water District														
Approved Table A water	0	0	0	1,155	1,155	1,925	1,925	2,849	0	0	0	0	9,009	23,100
Pool B water	0	0	0	91	0	0	0	0	0	0	0	0	91	
Agency Total	0	0	0	1,246	1,155	1,925	1,925	2,849	0	0	0	0	9,100	

Table 9-3. Water Delivered in 2001, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2001 Total Deliveries	2001 Contract Table A
Crestline-Lake Arrowhead Water Agency														
Approved Table A water	112	0	0	0	0	0	167	209	182	167	118	102	1,057	5,800
Local water	0	100	98	97	132	160	13	0	0	0	0	0	600	
Agency Total	112	100	98	97	132	160	180	209	182	167	118	102	1,657	
Desert Water Agency														
Approved Table A water	0	0	0	1,905	1,905	2,381	2,381	3,142	3,145	0	0	0	14,859	38,100
Pool B water	0	0	0	151	0	0	0	0	0	0	0	0	151	
Agency Total	0	0	0	2,056	1,905	2,381	2,381	3,142	3,145	0	0	0	15,010	
Littlerock Creek Irrigation District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	0	0	2,300
Metropolitan Water District of Southern California														
Approved Table A water	0	0	9,918	59,865	91,335	80,220	60,243	56,098	78,802	116,762	83,689	49,613	686,545	2,011,500
Article 21 water	0	0	5,705	0	0	0	0	0	0	0	0	0	5,705	
Article 56(c) extended carryover	94,266	60,337	45,397	0	0	0	0	0	0	0	0	0	200,000	
Bank water recovery, Arvin-Edison	0	0	0	0	0	0	0	0	5,000	5,800	5,000	5,000	20,800	
Bank water recovery, Semitropic	0	0	1,614	2,573	0	13,179	0	0	0	0	14,134	0	31,500	
Dry Year Purchase Program	0	0	0	0	0	0	35,712	30,248	0	0	0	0	65,960	
Flexible storage replacement with Article 21 water (Lake Perris)*	0	0	4,710	0	0	0	0	0	0	0	0	0	4,710	
Flexible storage replacement with local water (Castaic Lake)*	0	0	0	0	0	0	0	0	0	0	0	2,589	2,589	
Pool B water	0	0	0	7,949	0	0	0	0	0	0	0	0	7,949	
Flexible storage withdrawal (Castaic Lake)	0	0	0	0	0	0	0	0	0	0	0	14,300	14,300	
Flexible storage withdrawal (Castaic Lake) for EWA*	0	0	15,062	34,938	0	0	0	0	0	0	0	0	50,000	
Flexible storage withdrawal (Lake Perris)	0	0	0	0	0	0	0	0	0		0	10,692	10,692	
Agency Total (*excluded water)	94,266	60,337	62,634	70,387	91,335	93,399	95,955	86,346	83,802	122,562	102,823	79,605	1,043,451	
Mojave Water Agency														
Approved Table A water	84	20	577	280	655	256	105	250	190	330	234	67	3,048	75,800
Approved Table A water delivered through AVEK	30	24	58	113	129	148	203	164	240	99	101	76	1,385	
Pool B water sale*	0	0	14,240	0	0	0	0	0	0	0	0	0	14,240	
Agency Total (*excluded water)	114	44	635	393	784	404	308	414	430	429	335	143	4,433	
Palmdale Water District														
Article 56(c) extended carryover	1,078	698	481	0	0	0	0	0	0	0	0	0	2,257	21,300
Approved Table A water	0	0	0	0	577	954	1,662	1,972	1,407	1,096	502	0	8,170	
Agency Total	1,078	698	481	0	577	954	1,662	1,972	1,407	1,096	502	0	10,427	
San Bernardino Valley Municipal Water District														
Approved Table A water	1,145	0	165	164	1,062	2,159	2,560	2,690	2,576	2,635	3,278	8,054	26,488	102,600
San Gabriel Valley Municipal Water District														
Approved Table A water	0	0	0	0	0	0	0	0	0	0	0	2,360	2,360	28,800
Exchange approved water to Dudley Ridge*	0	0	0	0	0	1,300	1,574	1,300	0	0	0	0	4,174	
Agency Total (*excluded water)	0	0	0	0	0	0	0	0	0	0	0	2,360	2,360	
San Gorgonio Pass Water Agency														
Pool A water sale*	0	800	0	0	0	0	0	0	0	0	0	0	800	4,000
Pool B water sale*	0	0	200	0	0	0	0	0	0	0	0	0	200	
Agency Total (*excluded water)	0	800	200	0	0	0	0	0	0	0	0	0	1,000	
Ventura County Flood Control District														
Approved Table A water	154	154	154	154	154	154	154	154	154	154	154	156	1,850	20,000
Pool A water sale*	0	3,000	0	0	0	0	0	0	0	0	0	0	3,000	
Agency Total (*excluded water)	154	154	154	154	154	154	154	154	154	154	154	156	1,850	
Recreation/Fish and Wildlife														
Castaic Lake	16	8	6	15	28	31	43	56	40	30	6	10	289	
Castaic Lake to Lagoon	52	49	75	61	73	326	192	394	190	0	0	0	1,412	
Silverwood Lake	2	2	1	4	10	10	13	12	11	8	3	0	76	
Lake Perris	26	13	13	21	41	37	47	52	41	36	27	20	374	
Agency Total	96	72	95	101	152	404	295	514	282	74	36	30	2,151	
Recreation/Fish and Wildlife														
USFWS Recreation/fish and wildlife water (Pyramid Lake)	0	0	0	0	2	1	3	2	2	2	1	0	13	
SWP	101,214	63,731	68,341	81,238	107,461	113,892	78,651	76,479	98,344	131,430	111,032	93,074	1,124,887	
Non-SWP	0	100	98	97	132	160	39,223	33,935	4,413	5,137	2,337	2,594	88,226	
Southern California Area Total	101,214	63,831	68,439	81,335	107,593	114,052	117,874	110,414	102,757	136,567	113,369	95,668	1,213,113	2,566,900

Table 9-3. Water Delivered in 2001, by Month (Acre-feet)

Contracting Agency and Type of Service	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2001 Total Deliveries	2001 Contract Table A
SWP Water														
SWP Approved Table A Water														
Agricultural and M&I approved Table A water	8,630	3,900	17,108	81,899	145,316	191,946	157,270	134,294	133,938	163,785	106,032	71,448	1,215,566	
Agricultural and M&I approved Table A water for EWA*	0	0	0	0	31,219	10,000	2,500	0	21,000	9,296	9,233	0	83,248	
Article 21 water	0	1,324	40,870	0	0	0	0	0	0	0	0	988	43,182	
Article 56(c) extended carryover	133,186	79,326	77,225	0	0	0	0	0	0	0	0	0	289,737	
Article 56(c) extended carryover for EWA*	0	0	44,036	0	0	0	0	0	0	0	0	0	44,036	
Transfer Article 56(c) extended carryover	0	0	500	0	0	0	0	0	0	0	0	0	500	
Flexible storage replacement with Article 21 water (Lake Perris)*	0	0	4,710	0	0	0	0	0	0	0	0	0	4,710	
Flexible storage replacement with local water (Castaic Lake)*	0	0	0	0	0	0	0	0	0	0	0	2,589	2,589	
Flexible storage withdrawal (Castaic Lake)	0	0	0	0	0	0	0	0	0	0	0	14,300	14,300	
Flexible storage withdrawal (Castaic Lake) delivered for EWA	0	0	15,062	34,938	0	0	0	0	0	0	0	0	50,000	
Flexible storage withdrawal (Lake Perris)	0	0	0	0	0	0	0	0	0	0	0	10,692	10,692	
Kern Water Bank turn-in water for EWA*	0	0	0	0	0	0	0	0	0	1,471	0	0	1,471	
Wet weather carryover	340	459	308	0	0	0	0	0	0	0	0	0	1,107	
Unscheduled water	0	0	253	0	0	0	0	0	0	0	0	0	253	
Transfer approved water	0	0	0	0	0	0	1,082	1,500	0	0	0	0	2,582	
Exchange approved water	0	0	0	0	0	1,300	2,174	15,536	0	0	0	0	19,010	
Exchange approved water for banked water*	0	0	1,814	1,300	2,250	15,444	0	18,386	5,000	5,800	5,000	11,065	65,859	
Pool A water	0	0	0	0	352	0	1,918	811	331	116	0	272	3,800	
Pool B water	0	0	0	8,191	569	82	3,030	1,205	616	279	0	468	14,440	
Pool A water sale*	0	3,800	0	0	0	0	0	0	0	0	0	0	3,800	
Pool B water sale*	0	0	14,440	0	0	0	0	0	0	0	0	0	14,440	
Turn-in recoveries*	0	0	6,363	22,125	27,345	24,143	21,451	20,941	6,704	844	230	3,214	133,360	
Semitropic Water Bank turn-in water for EWA*	0	0	0	0	0	0	0	17,879	0	0	0	12,121	30,000	
Water Bank water recoveries	0	0	1,614	2,573	2,250	15,444	0	507	5,000	5,800	19,134	5,000	57,322	
Subtotal (approved Table A water) (*excluded)	142,156	85,009	152,940	127,601	148,487	208,772	165,474	153,853	139,885	169,980	125,186	103,168	1,722,491	
SWP Table A-related water														
Recreation/fish and wildlife water	132	106	158	171	208	456	359	608	341	222	104	64	2,929	
Subtotal (SWP water)	142,288	85,115	153,098	127,772	148,695	209,228	165,833	154,461	140,226	170,202	125,270	103,232	1,725,420	
Non-SWP Water														
Other water														
Local water	39,253	983	2,975	41,468	193,560	173,508	177,907	151,527	67,699	106,476	85,800	60,685	1,101,841	
Dry Year Purchase Program	0	0	0	0	0	3,310	52,821	44,823	7,715	5,404	0	0	114,073	
Vallejo Permit Water	0	0	0	743	1,805	1,789	1,895	1,767	1,577	1,938	1,875	116	13,505	
General conveyance	0	0	0	0	0	0	0	2,000	1,997	0	0	0	3,997	
Subtotal	39,253	983	2,975	42,211	195,365	178,607	232,623	200,117	78,988	113,818	87,675	60,801	1,233,416	
CVP Water														
CVC allocated deliveries	0	0	0	0	0	0	396	5,363	0	0	0	0	5,759	
Transferred water from CVP contractor	0	0	0	0	0	10,821	55,438	88,687	30,750	0	0	0	185,696	
Exchange water from CVP contractor to SWP contractor	10,864	0	5,360	8,940	0	0	11,883	0	0	0	0	0	36,651	
Conveying CVP water Annual Contract	43	50	59	41	7	56	44	77	76	86	81	24	644	
Conveying CVP water (Kern National Wildlife Refuge–the Bureau)	649	641	0	0	294	260	59	547	3,875	4,973	4,635	2,830	18,763	
Conveying CVP water recreation/fish and wildlife water (San Luis/Pyramid)	23	25	42	54	32	20	27	36	29	112	55	118	573	
Subtotal (CVP water)	11,579	716	5,461	9,035	333	11,157	67,451	94,710	34,730	5,171	4,771	2,972	248,086	
Total (Non-SWP water)	50,832	1,699	8,436	51,246	195,698	189,764	300,074	294,827	113,718	118,989	92,446	63,773	1,481,502	
Grand Total	193,120	86,814	161,534	179,018	344,393	398,992	465,907	449,288	253,944	289,191	217,716	167,005	3,206,922	4,124,136

Table 9-4. Total Amounts of Annual Table A Water and Water Conveyed, by Type, 1962-01 (Acre-feet)

	Annual Table A Water According to Long-Term Water Supply Contract							Water Conveyed								
								Deliveries								
Year	Upper Feather River Area (1)	North Bay Area (2)	South Bay Area (3)	San Joaquin Valley Area (4)	Central Coastal Area (5)	Southern California Area (6)	Total (7)	Annual Table A Water (8)	Article 21 Surplus and Unscheduled Water[a] (9)	Other Water[b] (10)	Feather River Diversions[c] (11)	Wildlife/ Recreation Water (12)	Subtotal (13)	Initial Fill Water (14)	Operational Losses and Storage Changes[d] (15)	Total (16)
1962	0	0	0	0	0	0	0	0	0	18,289	0	0	18,289	9	272	18,570
1963	0	0	0	0	0	0	0	0	0	22,456	0	0	22,456	71	185	22,712
1964	0	0	0	0	0	0	0	0	0	32,507	0	0	32,507	171	152	32,830
1965	0	0	0	0	0	0	0	0	0	44,105	0	0	44,105	93	729	44,927
1966	0	0	0	0	0	0	0	0	0	67,928	0	0	67,928	0	1,746	69,674
1967	0	0	11,538	0	0	0	11,538	11,538	0	53,605	0	0	65,143	8,328	4,212	77,683
1968	550	0	109,900	77,350	0	3,700	191,500	171,709	121,534	14,777	866,926	0	1,174,946	498,926	117,906	1,791,778
1969	620	0	98,700	163,075	0	5,000	267,395	193,020	72,397	18,829	794,374	0	1,078,620	510,614	72,196	1,661,430
1970	700	0	114,200	202,000	0	5,700	322,600	233,993	133,024	38,080	759,759	0	1,164,856	23,947	2,435	1,191,238
1971	890	0	116,200	251,800	0	6,700	375,590	357,340	296,019	44,119	778,362	8	1,475,848	7,853	5,812	1,489,513
1972	970	0	118,300	413,066	0	209,423	741,759	611,801	423,964	66,638	817,398	6,489	1,926,290	100,274	53,062	2,079,626
1973	1,100	0	120,400	383,652	0	481,100	986,252	694,388	296,416	42,511	800,743	1,155	1,835,213	204,638	53,798	2,093,649
1974	1,230	0	122,400	460,650	0	597,920	1,182,200	874,077	417,676	46,224	911,613	2,118	2,251,708	237,554	10,657	2,499,919
1975	1,610	0	124,500	545,809	0	714,950	1,386,869	1,223,990	622,902	63,793	862,218	3,377	2,776,280	103,352	(94,606)	2,785,026
1976	1,990	0	126,500	543,417	0	836,480	1,508,387	1,373,002	580,110	115,217	946,440	1,745	3,016,514	61,122	(681,025)	2,396,611
1977	2,420	0	128,600	581,400	0	954,901	1,667,321	574,155	0	389,065	581,994	1,111	1,546,325	0	(131,151)	1,415,174
1978	1,850	0	130,700	635,900	0	1,049,584	1,818,034	1,452,699	16,914	121,225	786,517	1,691	2,379,046	64,443	717,370	3,160,859
1979	2,130	0	132,700	702,685	0	1,190,573	2,028,088	1,659,896	648,389	187,630	882,549	1,766	3,380,230	12,302	(83,430)	3,309,102
1980	1,810	500	134,800	758,100	1,946	1,317,614	2,214,770	1,529,749	404,557	46,459	875,045	2,131	2,857,941	0	(26,606)	2,831,335
1981	1,940	650	137,000	818,000	2,813	1,432,065	2,392,468	1,909,562	908,428	279,161	838,557	4,688	3,940,396	0	(802,263)	3,138,133
1982	1,970	800	139,200	876,500	5,626	1,550,449	2,574,545	1,750,024	215,873	154,882	776,330	4,646	2,901,755	0	480,752	3,382,507
1983	2,000	950	141,400	867,118	8,439	1,681,257	2,701,164	1,184,869	13,019	181,453	602,905	7,849	1,990,095	0	(90,997)	1,899,098
1984	3,630	1,100	143,600	979,211	12,698	1,744,098	2,884,337	1,588,619	262,917	381,024	832,332	7,040	3,071,932	0	(140,182)	2,931,750
1985	3,760	1,250	145,800	1,019,049	21,138	1,864,849	3,055,846	1,995,453	307,672	404,842	870,008	4,033	3,582,008	0	92,885	3,674,893
1986	4,190	1,400	148,100	1,091,946	28,210	1,983,890	3,257,736	1,995,636	36,620	193,606	791,737	3,865	3,021,464	0	284,380	3,305,844
1987	4,620	1,550	150,300	1,188,500	35,204	2,103,941	3,484,115	2,130,086	114,907	377,592	831,947	7,672	3,462,204	0	(390,413)	3,071,791
1988	5,060	15,471	152,500	1,246,100	43,722	2,225,482	3,688,335	2,385,122	0	507,076	794,834	4,889	3,691,921	0	(92,850)	3,599,071
1989	5,500	24,615	156,700	1,290,400	56,342	2,424,633	3,958,190	2,853,747	0	474,559	830,500	8,135	4,166,941	0	447,917	4,614,858
1990	6,040	28,190	160,900	1,313,450	70,486	2,500,600	4,079,666	2,582,151	90	424,697	875,099	9,262	3,891,299	0	(528,869)	3,362,430
1991	11,880	29,590	166,400	1,338,011	70,486	2,510,200	4,126,567	549,113	3,521	551,051	565,395	4,879	1,673,959	0	167,435	1,841,394
1992	11,920	32,010	171,900	1,342,300	70,486	2,510,200	4,138,816	1,471,454	1,156	144,789	613,978	2,605	2,233,982	0	(63,541)	2,170,441
1993	11,960	34,620	177,400	1,342,300	70,486	2,510,200	4,146,966	2,315,235	0	254,854	822,589	2,609	3,395,287	0	726,123	4,121,410
1994	12,000	37,215	182,000	1,342,300	70,486	2,510,200	4,154,201	1,749,351	112,625	236,739	874,018	8,200	2,980,933	0	(295,405)	2,685,528
1995	12,050	44,030	184,000	1,342,300	70,486	2,510,200	4,163,066	1,967,093	64,330	78,425	860,077	2,575	2,972,500	0	69,536	3,042,036
1996	12,100	48,225	186,000	1,301,630	70,486	2,492,900	4,111,341	2,514,825	28,647	251,391	934,997	3,907	3,733,767	86	491,550	4,225,403
1997	12,150	49,315	188,000	1,297,300	45,201	2,492,900	4,084,866	2,325,775	21,432	322,000	993,211	4,146	3,666,564	527	(11,806)	3,655,285
1998	12,200	50,420	188,000	1,272,300	45,201	2,517,900	4,086,021	1,725,519	20,288	134,682	872,738	2,108	2,755,335	0	(132,491)	2,622,844
1999	12,250	51,500	188,000	1,272,300	70,486	2,519,900	4,114,436	2,738,891	158,070	85,312	1,108,672	4,324	4,095,269	0	(189,525)	3,905,744
2000	14,000	55,945	210,000	1,205,300	70,486	2,565,900	4,121,631	3,200,677	308,785	322,655	1,085,886	4,030	4,932,032	0	(20,103)	4,750,274
2001	14,670	66,561	220,000	1,185,519	70,486	2,566,900	4,124,136	1,546,742	43,435	535,160	1,078,656	2,929	3,206,922	0	159,983	3,378,772
Total	**193,760**	**575,907**	**5,126,638**	**30,650,738**	**1,011,400**	**54,592,309**	**92,150,752**	**53,441,301**	**6,655,717**	**7,739,406**	**28,518,404**	**125,982**	**96,480,810**	**1,834,310**	**24,175**	**98,351,162**

[a] Values include amounts of deliveries to short-term contractors (Mustang Water District, 1970-72; Tracy Golf and Country Club, 1974, 1979, and 1980; Green Valley Water District, 1974, 1975, 1978, 1979, 1980, and 1985; Granite Construction Company, 1980).
[b] Includes amounts of SWP non-Table A water and non-SWP water conveyed for SWP and non-SWP water contractors.
[c] Includes amounts of water diverted under various water rights agreements.
[d] Amounts reflect net effect of (1) operational losses from SWP transportation facilities; (2) changes in reservoir storage south of Delta; (3) storable local inflows to SWP reservoirs; (4) side inflow to San Luis Canal; and (5) inflow into California Aqueduct from Kern River Intertie.

This amount included 1,546,742 acre-feet of approved Table A water, 43,435 acre-feet of Article 21 and unscheduled water, and 113,196 acre-feet of nonproject water.

Water Delivered in 2001 by Month

During 2001, the SWP provided water service to 44 agencies, including 26 long-term water contractors. Those agencies and the amounts of water delivered to them by month are listed in Table 9-3.

This section and the accompanying table summarize water deliveries for 2001. Information about those deliveries is categorized as SWP water and nonproject water.

SWP Water

SWP water delivered in 2001 is categorized as follows:

Long-term water supply contracts

Article 21

carryover Table A water

current year approved Table A amounts

flexible storage

transfer and exchange of approved Table A water

turnback pools A and B

Related water

operational flood release

recreation and fish and wildlife

In 2001, SWP water was delivered in the following classifications and amounts.

Approved Table A Water. A total of 1,546,742 acre-feet of 2001 approved Table A water was delivered to 26 long-term contractors. Also, 291,344 acre-feet of carryover water, and 74,992 acre-feet of flexible storage withdrawal water were delivered in 2001.

Exchanges and Transfers of Approved Table A Water. During 2001, a total of 21,592 acre-feet of approved Table A water was exchanged or transferred to SWP long-term contractors and non-SWP water agencies as follows:

- Kern transferred 2,874 acre-feet to Dudley Ridge;
- Tulare Lake transferred 1,082 acre-feet of water to Westlands and exchanged 1,975 acre-feet with Westlands;
- the Bureau received 11,487 acre-feet of exchange water from Kern; and
- Dudley Ridge received 4,174 acre-feet of exchange water from San Gabriel.

2000 Carryover Approved Table A Water. In 2001, 291,344 acre-feet of 2000 approved Table A water were delivered that had been stored in SWP storage facilities in 2000; this amount includes 500 acre-feet of carryover water transferred from Tulare Lake to Empire.

Article 21 Water. The Article 21 water program allows a contractor to take delivery of water over the approved and scheduled Table A amounts for the current year. In 2001, nine contractors participated in the program. A total of 43,182 acre-feet of Article 21 water was delivered to Napa, Solano, Alameda County, Dudley Ridge, Kern, Tulare, Santa Barbara, Castaic Lake, and Metropolitan. Empire took delivery of 253 acre-feet of unscheduled water.

Water for Recreation and Fish and Wildlife. A total of 2,929 acre-feet of SWP water was conveyed for recreational use and enhancement of fish and wildlife.

Recreational Use. The SWP delivered 784 acre-feet of water for facilities at Lake Oroville, Lake Del Valle, O'Neill Forebay, Silverwood Lake, and Lake Perris. In addition, 1,701 acre-feet were delivered to Castaic Lake and Castaic

Lagoon, an impoundment downstream from Castaic Lake devoted entirely to recreation.

Wildlife Management. The SWP delivered 444 acre-feet of water to use in managing wildlife in the Pilibos Wildlife Area, located on about 770 acres of land near O'Neill Forebay, 40 miles south of Los Banos.

Operational Flood Release Water

There was no operational flood water released in 2001.

Non-SWP Water

In 2001, the Department used SWP facilities to convey non-SWP water for various agencies according to the terms of water rights and water transfer and exchange agreements. Detailed information concerning those conveyances is found under "Miscellaneous Agreements with Other Agencies" in this chapter.

Floodwater. Occasionally, during wet years, the Department accepts floodwater from the Kern River into the California Aqueduct through the Kern River-California Aqueduct Intertie under an agreement entitled *Agreement among the State of California, Kern County Water Agency, and the Kern River Interests for Diversions of Floodwaters through the Kern River-California Aqueduct Intertie*, dated November 18, 1975. In 2001, the Department did not accept any floodwater into the California Aqueduct.

Water Rights Water. Water in this category is transported through SWP facilities to long-term SWP contractors and other agencies according to terms of various local water rights agreements. Some water simply passes through SWP transportation facilities; a portion is stored in SWP reservoirs for release at a later time. In 2001, 1,101,841 acre-feet of water in this category were delivered to the Feather River and South Bay and Southern California areas.

Feather River Area. Ten nonproject agencies in the Feather River area received 1,078,656 acre-feet. Those agencies are

- Last Chance Creek Water District, 10,959 acre-feet
- Thermalito Irrigation District, 2,516 acre-feet
- Oroville-Wyandotte Irrigation District, 6,632 acre-feet
- Western Canal Water District, 296,617 acre-feet
- Joint Water Districts Board, 734,236 acre-feet
- Oswald Water District, 289 acre-feet
- Tudor Mutual Water Company, 3,681 acre-feet
- Garden Highway Mutual Water Company, 15,101 acre-feet
- Plumas Mutual Water Company, 7,945 acre-feet
- Dana Brothers, 680 acre-feet

South Bay Area. In the South Bay area, 17,654 acre-feet of local water were delivered to Alameda-Zone 7 and Alameda County. These two South Bay Aqueduct contractors hold water rights to runoff from Lake Del Valle watershed.

Southern California. In Southern California, 600 acre-feet of local runoff from the Houston Creek watershed were stored and delivered to Crestline under water rights held by the Department on Houston Creek. The authorized place of use is limited to Crestline.

In 2001, Castaic entered into transfer agreements with four parties downstream of Castaic Lake to transfer 4,931 acre-feet of local water to Castaic.

Annual Table A Water and Water Delivered Since 1962

Information about annual Table A water and water conveyed for the past 40 years is contained in Table 9-4. The following discussion of conveyed Table A water is arranged according to column numbers.

Annual Table A. Columns 1 through 7 of Table 9-4 show the amount of long-term contractor's annual Table A water by area for years 1962 through 2001 as specified in the Table A

schedules of the long-term water supply contracts.

In some instances Table A schedules—projections of each contractor's need for water to 2035—have been amended to meet the needs of individual contractors. The amounts of annual Table A water each contractor may request for years 1962 through 2035 can be found in Table B-4 in Appendix B.

Water Delivered. Columns 8 through 16 show water delivered or conveyed, including initial fill water and operational losses and storage changes.

Approved Table A Water. Column 8 shows amounts of approved Table A water delivered each year from 1962 through 2001.

Article 21 and Unscheduled Water. Article 21 and unscheduled water is water in excess of that required to meet all demands for the year's approved Table A water and water to be stored in SWP reservoirs.

Column 9 shows amounts of Article 21 water, as defined under *SWP Deliveries*, and unscheduled water delivered from 1962 through 2001.

Other Water. Column 10 includes amounts of water classified as other water delivered in 2001, including nonproject water conveyed through SWP facilities and regulated delivery of local supply.

In 2001, a total of 535,160 acre-feet of other water was delivered.

Feather River Diversions. Column 11 includes amounts of water from the Feather River delivered according to agreements for water rights water. In 2001, a total of 1,078,656 acre-feet in this category was delivered to agencies in the Feather River area.

Recreation Water. Column 12 shows water conveyed for recreational use or to provide water to improve water quality for fish and wildlife. In 2001, a total of 2,929 acre-feet of SWP water was conveyed for this purpose.

Initial Fill Water. The quantities listed in Column 14 represent the amounts used to initially fill the aqueducts and reservoirs south of the Delta to maximum operating capacities. Initial filling began in 1962 with the filling of the South Bay Aqueduct and was completed in 1979 when Lake Perris reached its maximum operating capacity of 127,000 acre-feet. In 1996 and 1997, the Coastal Aqueduct was initially filled.

Operational Losses. Column 15 includes the total amounts of water lost through evaporation and seepage, net storage changes in reservoirs south of the Delta, and amounts of inflow from local drainage areas, including inflows into San Luis Canal and from the Kern River Intertie.

Negative values are indicated for years when withdrawals and evaporation from reservoirs south of the Delta exceed the amounts of water added to the reservoirs.

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

Chapter 10
Power Resources



Hyatt Switchyard

Significant Events in 2001

- Energy used at the 25 State Water Project pumping and generating plants totaled 6.66 million MWh.
- The Department sold 2.15 million MWh of energy to 20 utilities, 12 power marketers, and the California Independent System Operator, for total revenues of $256.23 million. The Department also received $85.48 million from capacity sales, exchanges, and transmission arrangements. The combined revenue received was $341.71 million.
- The Department purchased 3.49 million MWh of energy at a cost of $402.82 million. Associated capacity cost was $20.44 million. Transmission and other costs were $170.98 million.
- The energy shortages and price escalations continuing from 2000 rapidly developed into a full-scale energy crisis. Pacific Gas and Electric Company and Southern California Edison Company were unable to pass their higher costs on to their customers, which resulted in these utilities' inability to purchase energy and a bankruptcy filing by PG&E. The Governor declared a State of Emergency on January 17 and ordered the Department to purchase both long-term and short-term energy on behalf of the utilities, thus creating the California Energy Resources Scheduling Division. CERS is funded independently of the financial systems related to the State Water Project.
- The Federal Energy Regulatory Commission ordered the termination of the requirement for the Investor Owned Utilities to buy and sell energy through the California Power Exchange. This effectively shut down operations of the CalPX.
- Curtailments of return and additional energy to the Department from SCE under the Power Contract and Capacity Exchange Agreement continued until early May, at which time SCE agreed to suspend their curtailments of energy deliveries and the arbitration process. The arbitration process resumed in December after the Department and SCE were unable to reach a solution.

Long-term State Water Project contractors depend on the SWP to provide economical sources of power to deliver affordable water. Responding to that need, the Department developed and administers a comprehensive power resources program. Key elements of the program include the strategic timing of generation and pumping schedules, purchase of power resources and transmission services, short-term sales of power surpluses, and studies of power resources for future needs.

Power Resources Program

The goals of the SWP power resources program are to

- obtain reliable, environmentally sensitive, and competitively priced power sources and transmission services sufficient to operate the SWP;
- develop and manage power resources to minimize the cost of water deliveries to SWP contractors;
- minimize impacts on the SWP when major contractual power arrangements begin to expire in 2004;
- meet responsibilities and criteria of the Western Systems Coordinating Council; and
- conform with regulations of the California Energy Commission and the Federal Energy Regulatory Commission.

To achieve these goals, the Department constructed its own power facilities and contracted for long-term power resources with many electric utilities. In addition, the Department arranged for transmission service between SWP power resources and pumping loads and interconnected utilities. The power resources program takes advantage of SWP water storage and conveyance capacities that allow the Department to operate the SWP in a cost-effective manner. This control of pumping loads and generation allows the Department to enter into advantageous agreements with other electric utilities that complement the use of SWP generation to meet SWP power requirements.

Energy Crisis

The shortages of energy and price escalations experienced in 2000 continued in 2001 and rapidly developed into a full-scale energy crisis. The inability of Pacific Gas and Electric Company and Southern California Edison Company to pass their higher costs to their customers resulted in these companies' inability to purchase energy for their customers and a bankruptcy filing by PG&E. The Governor ordered the Department to purchase both long-term and short-term energy on behalf of the companies, thus creating the California Energy Resources Scheduling Division. CERS is funded independently of the financial systems related to the State Water Project.

Restructuring of the Electric Utility Industry

On September 23, 1996, Assembly Bill 1890 was signed into law by the Governor. AB 1890 called for restructuring the electric utility industry in California and creating the California Independent System Operator and the separate California Power Exchange. To make the new California markets viable and to limit market power control of the investor-owned utilities (PG&E, SCE, and San Diego Gas and Electric Company), the utilities were required to unbundle their transmission, generation, and distribution into separate business units and divest half

of their thermal generation. The investor-owned utilities were granted full recovery of their stranded costs through a competitive transition charge.

On March 31, 1998, ISO and CalPX began operation. ISO manages most of California's transmission grid and is responsible for overall system reliability. Scheduling coordinators were created to submit energy schedules to ISO. All loads and resources within the ISO-controlled grid, and resources imported or exported within California, must schedule through these coordinators. ISO operates the following three markets:

- *ancillary services market*, which consists of regulation, spinning, nonspinning, replacement reserves, voltage support, and black start. Regulation, spinning, nonspinning, and replacement reserves are acquired through day-ahead and hour-ahead markets. Voltage support and black start are purchased on a yearly contract basis;
- *congestion management market*, which uses adjustment bids to clear congestion on a transmission path; and
- *real-time imbalance market*, which uses supplemental energy bids to maintain grid integrity by adjusting generation to match constantly changing loads and system losses.

In 1998, the Department signed numerous agreements to participate in ISO markets, including (1) Scheduling Coordinator Agreement, (2) Meter Service Agreement for Scheduling Coordinators, (3) Participating Generator Agreement, and (4) Meter Service Agreement for ISO Metered Entities. In 2001, the Department signed the Participating Load Agreement with ISO.

FERC ordered the termination of the requirement for the Investor-Owned Utilities to buy and sell energy through the California Power Exchange. This effectively shut down operations of the CalPX.

The Department participated in various stakeholder processes and intervened in numerous dockets before FERC to resolve ongoing issues of concern. Major issues included

- development of ISO's transmission access charge and off-peak rates;
- conversion of existing transmission contracts to ISO service and receipt of financial and physical transmission rights from ISO as compensation;
- unbundling ISO's grid management charge paid by scheduling coordinators to recover ISO's costs;
- reaching conformity between the investor-owned utilities transmission owner's tariffs and ISO's tariff;
- numerous ISO tariff amendments covering operational and market issues;
- redesign of the ISO's Ancillary Services markets to increase participation, reduce costs, and provide for proper cost allocation;
- revision of Reliability Must-Run contracts to reduce costs and prevent gaming by owners;
- firm transmission rights auction to purchase firm transmission capacity on congested interzonal and intertie transmission paths; and
- formulation of price cap policies to eventually end the use of price caps by establishing market mechanisms to encourage competition.

The Department

- sells spinning, nonspinning, and replacement reserves to ISO;
- bids pump loads into nonspinning reserves to provide ISO more resources in case of system emergencies or contingencies; and
- buys and sells energy.

Oroville Facilities Relicensing

The existing 50-year term FERC hydropower license, Project Number 2100 for operation of the Oroville facilities, will expire January 31,

2007. To obtain a new license the Department must file a new application by January 31, 2005.

FERC offers three relicensing procedures—traditional, hybrid, and alternative—that allow applicants to accommodate their unique interests and operations while seeking a license renewal. The traditional procedure involves minimal FERC involvement while the alternative procedures allow for more FERC involvement and stakeholder interaction. The Department selected the alternative licensing procedure that encourages a collaborative stakeholder approach throughout the multiyear relicensing process.

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

During calendar year 2001, primary achievements included development and acceptance of Oroville Facilities Relicensing Process Protocols (dated May 1, 2001); formation of the Plenary Group and resource area work groups; and preliminary identification of issues to be addressed in the relicensing process. The Department also initiated the National Environmental Policy Act's scoping process which included hosting a site visit and public scoping meetings in both Oroville and Sacramento, distribution of *Draft Scoping Document 1* to the public, and submission of a *Draft Study Plan* package to the Plenary Group. The field study plan package will identify the framework for studies needed to support the Department's license application that will be filed on or before January 31, 2005.

SWP facilities that will be subject to new license terms and conditions include

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

Sale of Reid Gardner Unit 4

On November 20, 2000, NRG Energy and Dynegy acquired Nevada Power Company's share of the Reid Gardner Generating Station. Under the terms of the sale, NRG was to operate the station, with Dynegy serving as the power marketer and fuel supplier.

However, on April 18, 2001, the Governor of Nevada signed AB 369, stripping the previous law of provisions for electric power industry restructuring and stopping the sale of utility-owned power plants, including the sale of Reid Gardner Generation Station.

Reliability Management System

In 1996, electrical disturbances on local transmission networks led to two major outages of the interconnected transmission systems of several states, including California. In both instances, operation of the SWP, as well as that of numerous other major transmission-dependent systems, was adversely impacted.

The 1996 summer outages on the western grid focused attention on the need to take additional steps to ensure the reliability of the western interconnected grid. To address these concerns and ensure reliability, WSCC developed the voluntary Reliability Management System Program, implemented in September 1999.

The RMS criteria are based on existing WSCC and FERC reliability criteria; participants are subject to sanctions for noncompliance. Currently, there is no legal authority to require any entity to participate in a mandatory reliability program with sanctions.

Existing SWP Power Facilities

Figure 10-1 shows the names, locations, and nameplate capacity of the Department's primary power facilities.

Hydroelectric. Economic hydroelectric generation provides the largest share of SWP power resources. The combined 759-megawatt Hyatt Pumping-Generating Plant and Thermalito Pumping-Generating Plant (Hyatt-Thermalito) generate about 2.2 billion kWh of energy in a median water year, while the 3 MW from Thermalito Diversion Dam Power Plant add another 24 million kWh of energy a year.

Generation at SWP aqueduct recovery plants—Gianelli, Alamo, Devil Canyon, Warne, and Mojave Siphon—varies with the amount of water conveyed. These five plants generate about one-sixth of the total energy used by the SWP.

Coal. Since July 1983, under the "Participation Agreement Reid Gardner Unit No. 4" between the Department and Nevada Power Company, the Department has received energy from Reid Gardner Power Plant, a coal-fired facility near Las Vegas, Nevada. Reid Gardner consists of four units. The Department owned 67.8 percent of Unit 4, while NPC owned the remainder of Unit 4 as well as all of Units 1, 2, and 3. Under the Agreement, the Department received up to 235 MW (90.4 percent of 260 MW total capacity) from Reid Gardner Unit No. 4, subject to NPC's limited right to interrupt the Department's energy deliveries during specific periods. Whenever NPC interrupted the Department's scheduled energy, the Department received payment based on NPC's combustion turbine costs. On November 20, 2000, NPC sold its share of the Reid Gardner Generating Station to NRG Energy and Dynegy; however, on April 18, 2001, the Governor of Nevada signed AB 369, which stopped the sale.

In addition, the Department receives 15 MW upgrade capacity completed in June 1990. Since September 1998, the Department has received all the upgrade capacity and associated energy and will continue receiving it through 2013.

Future SWP Power Facilities

To meet future SWP power requirements, the Department also considers and evaluates new power resources, including reviewing SWP power requirements and analyzing the type of resource and its cost. Factors considered include

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

The Department continues to consider several potential power resources. These include a second unit at Alamo Power Plant, a third unit at Warne Power Plant, and additional capacity at Hyatt-Thermalito.

Contractual Resource Arrangements

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

Some agreements allow the Department to sell, buy, and/or exchange short-term firm capacity and/or firm energy on an hourly, daily, weekly, or monthly basis. Those agreements permit more efficient use of the Department's generating resources and more efficient scheduling of energy deliveries.

Negotiations continue with various utilities in the Pacific Northwest to develop arrangements for purchases, sales, and exchanges to take advantage of the Department's 300 MW transmission capacity on the Extra-High Voltage Pacific Northwest Intertie.



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

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

The Department receives capacity and energy at the Sylmar Substation based on weekly water schedules through the West Branch.

Gianelli Pumping-Generating Plant is a joint SWP (222 MW) and Bureau of Reclamation (202 MW) facility.

Power Exchanges. The largest portion of the energy used by the SWP is provided by the 1979 Power Contract and the 1981 Capacity Exchange Agreement with SCE. Service began in April 1983 under the Power Contract and in April 1987 under CEA.

Curtailments of return and additional energy to the Department from SCE under the Power Contract and Capacity Exchange Agreement continued until early May, at which time SCE agreed to suspend their curtailments of energy deliveries and the arbitration process until December in order for staff from the Department and SCE to reach a solution to the dispute. The arbitration process resumed in December when the Department and SCE were unable to reach a solution.

According to terms of the power contract, the Department provides SCE with up to

- 350 MW of capacity and approximately 40 percent of the energy from Hyatt-Thermalito;
- 120 MW of capacity and all the energy generated by Devil Canyon Power Plant Units 1 and 2; and
- 15 MW of capacity and all the energy generated by Alamo Power Plant.

In return, the Department receives off-peak energy from SCE equal to the amount of energy provided to SCE from Hyatt-Thermalito, Devil Canyon Power Plant, and Alamo Power Plant, plus an additional amount of energy as payment for the capacity. This additional amount of energy is determined annually, based on the Capacity-Energy Exchange Formula as defined in the 1979 Power Contract. The formula determines the value of capacity in dollars and converts the dollar amounts into an equivalent amount of off-peak energy.

According to terms of CEA, each year the Department must provide 412.5 million kWh of energy to SCE during on-peak periods at a maximum delivery rate of 225 MW. SCE returns approximately 110 percent of the energy the Department provides during mid-peak and off-peak periods. In addition, SCE waives 75 percent of its charges to the Department for specified firm transmission service provided to SWP pumping and generating facilities. SCE also makes an annual payment of $900,000 to the Department.

Also, according to terms of the 1979 Power Contract, SCE receives energy from four of the Metropolitan Water District of Southern California power plants—Lake Mathews, Foothill Feeder, San Dimas, and Yorba Linda. In return, the Department receives off-peak energy from SCE averaging 107 percent of the total energy provided to SCE from those plants. All the energy from the fifth plant, Greg Avenue, is provided to LADWP according to a 1983 agreement between LADWP and the Department. The utility returns 98.8 percent of this energy to the Department during off-peak periods.

Purchases. The Department obtains a significant amount of energy through long-term and short-term purchase agreements with utilities in California, the Northwest, and the Southwest.

Long-Term Purchases. The Department purchases hydroelectric energy generated by other utilities. The output of the 165 MW Pine Flat Power Plant, owned and operated by Kings River Conservation District, supplies the SWP about

400 million kWh of energy in median water years.

The Department contracts for the energy output of five hydroelectric plants owned and operated by Metropolitan. The total capacity of those plants is 30 MW. To use this resource efficiently, the Department included it in the exchange arrangements with SCE.

The Department signed an agreement with PacifiCorp of Portland, Oregon, to purchase 100 MW of firm capacity and associated energy. That agreement became effective June 1, 1991, and will continue through 2004.

Short-Term Purchases. Additionally, according to terms of the 1988 Coordination Agreement between the Department and Metropolitan, the Department may purchase surplus energy from Metropolitan's Colorado River Aqueduct system. The Coordination Agreement provides for coordinated operation between the SWP and Metropolitan's Colorado River Aqueduct system. It also provides for

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

The Department also has the Western System Power Pool agreement with member utilities to purchase interruptible economy energy to satisfy unexpected, short-term energy shortages and to sell surplus short-term energy.

Contractual Transmission Arrangements

Although able to acquire transmission independently, the Department depends on other sources for transmission services. PG&E and SCE are the primary providers of transmission service between SWP power resources and pumping loads and interconnected utilities for purchases, sales, and exchanges of power.

Under the Comprehensive Agreement with PG&E, the Department receives 1,355 MW of firm transmission service over the PG&E transmission system between SWP pump loads and power resources in Northern and Central California. The agreement allows the Department to request and receive additional firm and interruptible transmission service if needed.

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

In August 1967, the Department contracted for 300 MW of transmission capacity on the Extra-High Voltage Pacific Northwest Intertie from the California-Oregon border to the Table Mountain, Tesla, Los Banos, and Midway substations. The Department retains its entire 300 MW share of EHV capacity for access to the Pacific Northwest Intertie through December 31, 2004; 100 MW of this capacity is committed to receiving the long-term purchase of 100 MW from PacifiCorp.

In December 1984, the Department signed a Memorandum of Understanding with many public and private California utilities. As implemented in the Interim Participation Agreement and the Long-Term Participation Agreement, the Department has an option (which can be exercised during a 5-year period beginning in January 2005) to purchase 97 MW of transmission capacity on the third 500 kV transmission line that connects California with the Pacific Northwest Intertie. The transmission line began operation March 17, 1993.

Other SWP transmission needs are met by contractual arrangements with California utilities.

Load Management

The SWP controls the timing of its pumping load through an extensive computerized network. That control system allows the Department to minimize the cost of power it purchases

by maximizing pumping during off-peak periods, when power costs are lower—usually at night—and by selling power to other utilities during on-peak periods, when power values are high. By taking advantage of this flexibility in scheduling SWP pumping load and generation, the net cost of power needed for SWP water deliveries is reduced.

Sales of Excess Power. When generation from SWP power resources exceeds requirements, the excess power is sold on the open market. Currently, the Department contracts with utilities and marketers for short-term purchase, sale, or exchange of power. In addition to selling firm power, the Department may sell power on a day-to-day or hour-to-hour basis according to the terms of its interchange agreements and of the Western Systems Power Pool Agreement. These agreements provide the basis for making economical energy transactions, short-term capacity and energy sales or exchanges, unit commitments, and transmission service purchases. Through these contracts, the Department sells excess capacity and energy at market rates.

In 2001, the Department also bought and sold excess energy not sold through bilateral agreements.

SWP Power Operation in 2001

Tables 10-1 through 10-4 present actual information about SWP power operation for calendar year 2001, including energy consumed and generated, energy exchanged and purchased, and energy sold.

Energy Consumed

Energy used at the 25 SWP pumping and generating plants totaled 6.66 million MWh.

Table 10-1 shows the amount of energy used each month at SWP pumping and generating plants to operate the SWP in 2001.

According to terms and conditions of various water conveyance contracts and exchange agreements, some water belonging to the Central Valley Project is pumped through Banks and Dos Amigos Pumping Plants and Gianelli Pumping-Generating Plant. The Bureau furnishes the energy for pumping this water.

Energy Generated

Table 10-2 shows amounts of energy generated at SWP facilities in 2001, as well as energy purchased for SWP operations.

Hydroelectric and Coal. The Hyatt-Thermalito power complex in Oroville produces a large amount of SWP energy and generated 1.23 million MWh of energy.

Energy generated at SWP recovery plants—Alamo, Devil Canyon, Mojave Siphon, and Warne—totaled 1.76 million MWh.

The SWP share of energy generated at the coal-fired Reid Gardner Unit 4 totaled 1.64 million MWh of energy.

Contractual Resource Arrangements

SWP power operations rely on contractual arrangements as well as SWP facilities. Those contractual arrangements include joint development projects, energy exchanges, purchases, and transmission.

Joint Development. Through the West Branch Cooperative Development Agreement with LADWP, the Department receives energy based on the amount of water scheduled through the West Branch. In 2001, LADWP provided 511,042 MWh of energy for the Department's share of energy generated at Castaic Power Plant.

The Department's share of Gianelli Pumping-Generating Plant used 326,945 MWh and generated 175,417 MWh of energy.

Energy Exchanges. The Department has two agreements with SCE to purchase and/or exchange power. According to terms of the 1979 Power Contract (in effect since April 1983), part of the output of Devil Canyon Power Plant and

Table 10-1. Energy Used at Pumping Plants and Power Plants in 2001, by Month (Millions of Kilowatt-Hours)

	Month												
Pumping Plants and Power Plants	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*	*Total*
Hyatt-Thermalito Pumping-Generating Plant (pumpback and station service)	34.040	25.824	44.176	38.534	42.116	7.523	4.539	5.669	2.098	0.036	0.118	7.954	212.626
North Bay Interim Pumping Plant	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.013
Cordelia Pumping Plant	0.783	0.719	0.405	1.110	0.778	1.001	1.095	1.166	1.131	1.264	0.982	0.397	10.831
Barker Slough Pumping Plant	0.349	0.386	0.190	0.716	0.764	1.193	1.353	1.089	0.827	1.083	0.728	0.199	8.878
South Bay Pumping Plant	5.224	5.259	7.045	8.819	9.117	6.168	13.217	12.395	9.828	12.606	4.207	0.590	94.476
Bottle Rock Power Plant (station service)	0.045	0.045	0.040	0.038	0.031	0.030	0.031	0.029	0.013	0.000	0.000	0.000	0.301
Del Valle Pumping Plant	0.009	0.057	0.008	0.293	0.188	0.076	0.357	0.076	0.068	0.057	0.005	0.008	1.202
Banks Pumping Plant	69.492	75.252	103.405	28.189	9.948	6.349	43.496	41.488	46.726	15.888	52.712	106.396	599.341
Gianelli Pumping-Generating Plant (SWP share)	39.668	69.410	76.062	14.584	1.359	0.231	1.687	9.745	7.116	(0.208)	25.363	81.929	326.945
Dos Amigos Pumping Plant (SWP share)	21.121	7.894	22.935	13.206	25.562	25.508	29.844	21.605	19.673	25.530	16.488	12.538	241.905
Buena Vista Pumping Plant	24.259	12.883	21.176	22.037	38.439	33.079	35.602	33.325	33.336	33.475	30.424	22.438	340.473
Teerink Pumping Plant	27.004	14.022	22.018	23.211	39.519	32.373	35.646	34.291	36.257	36.651	34.087	25.059	360.137
Chrisman Pumping Plant	61.270	31.715	49.058	51.893	87.948	69.383	76.996	75.449	80.563	81.843	77.136	56.684	799.937
Edmonston Pumping Plant	223.912	115.824	179.704	188.582	319.677	248.968	277.006	273.135	292.840	299.731	285.211	209.791	2,914.382
Alamo Power Plant (station service)	0.013	0.026	0.039	0.020	0.016	0.021	0.057	0.040	0.017	0.020	0.024	0.010	0.304
Pearblossom Pumping Plant	29.651	19.727	35.559	34.352	42.128	38.628	43.040	41.229	39.224	39.827	37.987	31.717	433.067
Mojave Siphon Power Plant (station service)	0.056	0.202	0.156	0.147	0.000	0.000	0.000	0.000	0.003	0.001	0.000	0.000	0.564
Pine Flat Power Plant	0.011	0.032	0.026	0.008	0.006	0.001	0.000	0.000	0.000	0.000	0.011	0.010	0.106
Devil Canyon Power Plant (station service)	0.096	0.117	0.100	0.083	0.103	0.054	0.005	0.000	0.000	0.011	0.029	0.051	0.649
Oso Pumping Plant	13.578	5.243	6.069	7.115	18.323	10.659	11.942	12.060	15.831	16.818	17.190	11.194	146.022
Warne Power Plant (station service)	0.191	0.097	0.032	0.262	0.085	0.234	0.096	0.119	0.099	0.028	0.005	0.028	1.276
Las Perillas Pumping Plant	0.488	0.118	0.291	0.342	0.954	1.121	1.155	1.033	0.688	0.302	0.148	0.170	6.811
Badger Hill Pumping Plant	1.304	0.283	0.765	0.904	2.613	3.082	3.176	2.878	1.914	0.779	0.363	0.413	18.475
Devil's Den Pumping Plant	1.047	0.824	1.010	1.194	1.709	2.158	1.998	2.061	1.911	1.147	0.775	1.000	16.834
Bluestone Pumping Plant	0.992	0.781	0.956	1.132	1.631	2.062	1.903	1.960	1.812	1.089	0.731	0.951	15.999
Polonio Pass Pumping Plant	1.066	0.839	1.023	1.199	1.686	2.099	1.965	2.037	1.879	1.116	0.778	1.022	16.709
Subtotal	*555.669*	*387.579*	*572.249*	*437.971*	*644.700*	*492.002*	*586.209*	*572.879*	*593.856*	*569.095*	*585.502*	*570.552*	*6,568.263*
Deviation Adjustments	3.384	6.376	0.688	(2.143)	2.555	7.061	9.910	11.501	6.848	16.301	15.463	9.665	87.608
Total Energy Required for SWP	**559.053**	**393.954**	**572.938**	**435.828**	**647.255**	**499.063**	**596.119**	**584.380**	**600.704**	**585.396**	**600.965**	**580.217**	**6,655.871**

Table 10-2. Energy Generated and Purchased in 2001, by Month (Millions of Kilowatt-Hours)

Sources of Energy	Month												
	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*	*Total*
SWP Energy Sources													
Hyatt-Thermalito Power Plant	97.975	57.222	79.772	78.292	192.980	162.097	149.266	139.137	55.685	89.326	63.770	69.149	1,234.668
Gianelli Pumping-Generating Plant (SWP share)	9.300	0.000	1.680	12.527	43.713	38.409	18.841	12.311	3.966	28.352	6.141	0.178	175.417
Alamo Power Plant	5.669	3.758	5.090	6.440	7.885	7.615	2.568	5.733	7.733	7.638	5.894	5.971	71.995
Mojave Siphon Power Plant	3.342	2.247	4.257	3.921	4.953	4.578	5.137	4.933	4.612	4.755	4.513	3.548	50.796
Devil Canyon Power Plant	58.264	41.819	61.628	67.046	72.574	75.838	78.335	77.414	69.458	72.825	68.756	58.557	802.513
Reid Gardner Unit 4[a]	139.468	149.206	178.580	64.860	122.095	120.246	154.462	167.816	150.987	143.446	105.826	142.124	1,639.116
Warne Power Plant	29.119	12.490	12.424	15.914	39.800	22.851	26.496	26.628	34.302	38.176	37.834	24.908	320.943
Subtotal	*343.137*	*266.742*	*343.431*	*248.999*	*484.000*	*431.634*	*435.106*	*433.972*	*326.743*	*384.518*	*292.733*	*304.434*	*4,295.448*
Energy Sources from Long-Term Agreements													
Castaic Power Plant	44.734	18.644	14.210	24.684	67.573	36.867	43.546	42.072	57.911	59.751	60.880	40.171	511.042
Metropolitan Water District Small Hydro Generation	0.000	0.000	0.000	0.000	0.379	15.028	15.448	14.216	11.203	9.288	12.680	77.630	155.872
Pine Flat Power Plant KRCD	0.000	0.000	1.398	2.877	41.591	114.110	81.048	23.179	1.533	0.000	0.000	0.000	265.736
Power Exchange Delivered to other entities	(551.609)	(576.340)	(626.399)	(741.096)	(633.644)	(723.809)	(679.811)	(722.963)	(506.798)	(394.633)	(268.724)	(360.348)	(6,786.174)
Power Exchange Received from other entities	551.609	580.060	608.899	808.696	692.624	723.559	683.811	725.663	509.198	394.733	268.393	274.196	6,821.441
Power Exchange Delivered to SCE	(123.450)	(73.370)	(81.560)	(90.050)	(165.440)	(180.150)	(183.640)	(184.910)	(133.300)	(159.860)	(133.290)	(114.930)	(1,623.950)
Power Exchange Received from SCE	58.100	0.000	46.870	0.000	42.020	96.370	267.350	304.510	319.650	281.140	314.010	524.740	2,254.760
Power System Imbalances	0.869	(0.216)	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.659
Purchases													
Purchases (firm and power contractors)	404.025	330.441	432.925	347.110	402.461	224.400	145.200	145.875	143.000	151.550	167.767	165.593	3,060.347
Subtotal	*384.278*	*279.219*	*396.343*	*352.221*	*447.570*	*306.374*	*372.952*	*347.642*	*402.397*	*341.969*	*421.716*	*607.052*	*4,659.733*
Total Resources	727.415	545.961	739.775	601.220	931.570	738.008	808.058	781.614	729.139	726.487	714.449	911.486	8,955.182
Less Energy Sales	(168.362)	(152.007)	(166.837)	(165.392)	(284.315)	(238.945)	(211.939)	(197.234)	(128.436)	(141.091)	(113.484)	(331.269)	(2,299.310)
Total Energy Provided to the SWP	**559.053**	**393.954**	**572.938**	**435.828**	**647.255**	**499.063**	**596.119**	**584.380**	**600.704**	**585.396**	**600.965**	**580.217**	**6,655.871**

[a]The upgrade energy of 9,419 MWh from Reid Gardner Unit 4 is included.

Table 10-3. Power, Transmission, and Other Services Purchased in 2001 and Costs of Purchase, by Area

Name of Supplier	Type of Service Purchased	Energy (MWh)	Energy Cost (Dollars)	Capacity Cost (Dollars)	Total Cost (Dollars)
Power and Capacity Purchases					
Northwest Area					
Bonneville Power Administration	Firm and nonfirm energy	5,200.00	189,400.00		189,400.00
PacifiCorp	Firm and nonfirm energy	613,275.00	17,301,954.72		17,301,954.72
	Capacity			20,436,000	20,436,000.00
BC Hydro, Powerex	Firm and nonfirm energy	5,700.00	165,900.00		165,900.00
Idaho Power Company	Firm and nonfirm energy	7,800.00	1,248,000.00		1,248,000.00
Northern California Area					
Kings River Conservation District	Hydroelectric energy	265,736.02	2,040,745.68		2,040,745.68
Sacramento Municipal Utility District	Firm and nonfirm energy	1,502.00	223,815.00		223,815.00
City and County of San Francisco	Firm and nonfirm energy	11,349.00	1,646,830.00		1,646,830.00
California Energy Resources Scheduling	Firm and nonfirm energy	28,293.00	4,627,507.50		4,627,507.50
Turlock Irrigation District	Firm and nonfirm energy	20.00	7,000.00		7,000.00
Northern California Power Agency	Firm and nonfirm energy	670.00	143,325.00		143,325.00
Southern California Area					
Metropolitan Water District of Southern California	Hydroelectric energy	152,933.20	5,991,932.78		5,991,932.78
California Power Exchange	Firm energy	69,499.00	11,266,564.23		11,266,564.23
City of Azusa	Firm and nonfirm energy	6,916.00	1,198,346.59		1,198,346.59
City of Riverside	Firm and nonfirm energy	1,904.00	297,320.00		297,320.00
San Diego Gas and Electric Company		7,623.00	1,297,249.00		1,297,249.00
City of Vernon	Firm and nonfirm energy	95.00	11,400.00		11,400.00
Southwest Area					
Arizona Public Service Company	Firm and nonfirm energy	7,800.00	1,017,600.00		1,017,600.00
Public Service Company of New Mexico	Firm and nonfirm energy	23,400.00	3,240,900.00		3,240,900.00
Salt River Project	Firm and nonfirm energy	3,684.00	635,320.00		635,320.00
Nevada Power Company	Upgrade energy	9,419.00	234,712.60		234,712.60
Energy Marketers	Firm and nonfirm energy	2,265,617.00	350,035,221.22		350,035,221.22
Subtotal		*3,488,435.22*	*402,821,044.32*	*20,436,000.00*	*423,257,044.32*
Transmission and Other Purchases					
California Independent System Operator	Ancillary and other services				77,676,173.64
	FERC charges				268,488.72
California Power Exchange	Share of SCE's default payment				2,271,479.66
Kings River Conservation District	Pine Flat operation and maintenance				3,828,398.70
	Pine Flat debt service and refinancing fees				4,694,548.88
Los Angeles Department of Water and Power	Hydro power plant scheduling				1,150.00
	Castaic line transmission service				63,870.51
Nevada Power Company	Reid Gardner Unit 4 firm transmission				1,863,006.00
	Operations and maintenance				21,100,593.00
	Coal and diesel fuel				27,759,955.00
	Insurance				999,393.00
	Property taxes				1,191,449.00
Pacific Gas and Electric Company	EHV transmission				1,500,000.00
	Midway-Wheeler Ridge, transmission operation and maintenance				132,864.00
	Bottle Rock transmission				3,878.00
	Firm transmission				8,827,012.50
	Table Mountain—Tesla line credit				(2,580,626.88)
	Pine Flat firm and additions				249,100.57
	Castle Rock Junction–Lakeville Line—ownership charges				100,340.02
	Coastal Branch—ownership charge				156,463.00
Southern California Edison Company	Firm transmission—power contracts				10,675,560.00
	Power contract dispute settlement credit				(24,812,000.00
	Capacity exchange agreement transmission credit				(6,856,200.00)
	Additional facilities charges (D.C. and Mojave)				1,259,927.04
	ISO GMC charges				66,439.79
	Southern California Edison share of Oroville Table A amounts to ISO				13,236,855.37
	Scheduling and dispatching				47,815.00
TERA Power Corporation	Lawsuit settlement				2,000,000.00
FERC charges for Oroville, Pine Flat, and southern facilities					53,131.33
Other FERC charges (transmission)					376,160.55
Miscellaneous Fees					11,973.48
Subtotal					*146,167,199.88*
Total		**3,488,435.22**	**402,821,044.32**	**20,436,000.00**	**569,424,244.20**

Table 10-4. Energy Sold in 2001 and Revenue from Sales, by Area

Name of Supplier	Energy Sold (MWh)	Revenue from Energy Sales (Dollars)	Revenue from Capacity, Sales, Exchanges, and Transmission Arrangements (Dollars)	Total Power Sales (Dollars)
Power and Transmission Purchases				
Pacific Northwest Area				
Bonneville Power Administration	960	38,400.00		38,400.00
Idaho Power Company	250	8,750.00		8,750.00
Portland General Electric Company	600	6,000.00		6,000.00
Northern California Area				
CAISO—Ancillary and Other Services			80,212,698.64	80,212,698.64
City and County of San Francisco	31,720	2,388,015.50		2,388,015.50
City of Redding	665	34,290.00		34,290.00
City of Santa Clara	0	0.00	18,851.76	18,851.76
Northern California Power Agency	13,987	705,323.25	93,314.91	798,638.16
Sacramento Municipal Utility District	36,029	10,211,691.50		10,211,691.50
California Department of Water Resources	936,051	134,578,042.31		134,578,042.31
Turlock Irrigation District	1,245	104,380.00		104,380.00
Southern California Area				
California Power Exchange	21,834	5,004,732.37		5,004,732.37
City of Azusa	7,288	397,283.50		397,283.50
City of Banning	1,336	32,779.00		32,779.00
City of Glendale	14,589	766,745.00		766,745.00
City of Riverside	65,410	2,949,806.71	1,113,000.00	4,062,806.71
City of Vernon	174	11,020.00		11,020.00
Los Angeles Department of Water and Power	5,423	164,090.00	594,000.00	758,090.00
Metropolitan Water District of Southern California	1,210	145,748.00		145,748.00
San Bernardino Valley Municipal Water District	64	5,068.60[a]		5,068.60
Southern California Edison		2,229,275.50[b]	900,000.00	3,129,275.50
Southwest Area				
Nevada Power Company	271,911	29,246,719.41	2,531,921.01	31,778,640.42
Miscellaneous			14,758.44	14,758.44
Energy Marketers				
Twelve marketers	740,917	67,199,948.30		67,199,948.30
Total	**2,151,663**	**256,228,108.95**	**85,478,544.76**	**341,706,653.71**

[a]Received from San Bernardino Valley Municipal Water District due to generation lost by Southern California Edison, which was replaced by the Department.
[b]Adjustment of return and additional energy for 1994, 1995, and 1996.

the Hyatt-Thermalito Complex and all output of Alamo Power Plant are delivered to SCE.

According to the terms of the Capacity Exchange Agreement (in effect since April 1987), the Department delivers energy to SCE each year during on-peak periods and, in return, receives a greater amount of off-peak energy as well as transmission considerations. Those two exchange agreements resulted in a net of about 630,810 MWh of energy to the SWP in 2001.

In June 2000, SCE started curtailing return and additional energy under the combustion turbine provision of the 1979 Power Contract and the 1981 Capacity Exchange Agreement based on SCE's unilaterally imposed combustion turbine proxy.

Purchases and Costs. Table 10-3 shows amounts of power, transmission, and other services purchased in 2001 and costs of purchases, by area. It also reflects the restructuring of the electric industry through transactions with ISO and through new charges (grid management and ancillary services charges.)

The Department purchased 3.48 million MWh of energy at a cost of $402.82 million.

Associated costs for capacity totaled $20.44 million. Other SWP power costs, including transmission, operation, maintenance, and ISO ancillary services totaled $146.17 million. This amount includes $4.69 million and $3.83 million for debt service and operations and maintenance costs, respectively, at Pine Flat Power Plant. It also includes $1.86 million for transmission at Reid Gardner Unit 4 and $51.05 million for costs associated with operations and maintenance, fuel, insurance, and property taxes at Reid Gardner Unit 4.

Long-Term Purchases. According to terms of the Kings River Conservation District contract, the Department receives the total output of the 165 MW Pine Flat Power Plant. In 2001, the power plant provided 265,736 MWh of energy to the SWP at a total cost of $2.04 million.

The Department purchased 613,275 MWh of energy at a cost of $17.30 million, under a contract for firm energy with PacifiCorp.

Under the Metropolitan Small Hydro Contract, the Department purchased 152,933 MWh of energy in 2001 from five small hydroelectric power plants on the Metropolitan system at a cost of $5.99 million.

Long-term purchases are shown in Table 10-3.

Short-Term Purchases. Existing resources and long-term power and transmission contracts ensure that the SWP has enough power to meet long-term needs. When SWP power requirements exceed resources during daily operations, short-term purchases meet the difference. In 2001, the SWP purchased short-term energy from 18 marketers. The short-term energy purchases totaled 2.27 million MWh at a cost of $350 million (Table 10-3).

Sales of Excess Power

The Department sold 2.15 million MWh of energy to 20 utilities, 12 power marketers, and California ISO, for total revenues of $256.23 million in 2001. The Department also received $85.48 million in revenues for capacity, exchanges, and transmission arrangements, including $80.21 million for transactions made through ISO. See Table 10-4 for information about energy and other services sold and revenue received, including those sold to ISO.

Forecasting Power Operations

Each year, after reviewing the water contractors' water delivery requests and the construction schedule for future facilities, the Department forecasts SWP power requirements through 2035, paying particular attention to forecasts through 2004, the year major power contracts expire.

Actual SWP power requirements may vary significantly from the amounts forecast. Those variations are due to the amount of water

available and delivered in a given year. For example, dry conditions in Northern California could result in a reduction of the amount of water available for delivery. If full deliveries cannot be made, less power would be used than was originally forecasted. Power requirements could also decrease during a wet year because of the availability of local water in the San Joaquin Valley or Southern California.

Conversely, power requirements could exceed the amount originally forecasted if actual water deliveries were greater than the amounts estimated. For example, if additional pumping is needed to refill reservoirs south of the Delta after an unexpected dry year, more power would be used than was initially forecast.

Criteria

The Department bases its forecast of electric power primarily on SWP pumping power requirements to deliver water for SWP contractors' short-term and long-term water delivery requests. Requirements are based on the amount of energy necessary to deliver approved Table A water requested by water contractors, including losses in reservoirs and aqueducts, recreation water, and water to replace storage in reservoirs south of the Delta.

Short-term power requirements, based on the actual water supply and reservoir storage levels, are determined for the current and two ensuing years of operation. Long-term operational studies for the remaining years are based on median-year water-supply conditions and optimal reservoir storage levels.

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

Chapter 11
Facilities Maintenance



Aqueduct repair on Milepost 4.25 with the aid of temporary coffer dams. Bethany Reservoir is in the background.

Significant Events in 2001

- Following the discovery of a 1,000 gallon-per-minute leak, staff from the Department's Operations and Maintenance and Division of Engineering supervised the dewatering of a 1,200-foot section of the State Water Project Aqueduct at Milepost 4.25 between Bethany Reservoir and Banks Pumping Plant. Repairs were completed about 2 weeks ahead of schedule, and normal water movements resumed after an interruption of 25 days.
- The first of the two phases of construction to retrofit eight radial gates at Oroville Dam was completed in November 2001. The second phase of the construction for the remaining four gates is scheduled for completion in October 2002.
- The retrofit of the 14 radial gates at Thermalito Diversion Dam was completed in October 2001.
- The sixth and seventh Director's Safety Review Board met and evaluated the construction of Crafton Hills Dam in San Bernardino, which was completed in August 2001 to the Board's satisfaction.
- The Director's Safety Board concurred with the Department's recommendation that a planned seismicity evaluation for Clifton Court Forebay, Bethany, Patterson, and Del Valle Dams would benefit from the development of a fault model. Assessment of the first and second phase of the seismicity evaluation has been made a priority.

The Department of Water Resources, through the Division of Operations and Maintenance, monitors all State Water Project facilities to ensure safety and reliability. Staff also conduct biennial and quinquennial inspections and make reports on facilities to document any deficiencies. These inspections allow facilities to be maintained at the highest level possible with available staff and resources. Finally, the Department is required, under federal and State law, to contract periodically with independent consultants to review the safety of SWP dams and power facilities.

Inspecting and Maintaining Project Dams

Several types of inspections of SWP facilities are conducted by the Department to ensure that each dam is safe for continued operation.

O&M staff collect and evaluate data about the performance of each facility. Engineers from Division of Safety of Dams review instrumentation data and inspect jurisdictional SWP dams annually to ensure that each dam is satisfactory for continued safe operation. The engineers evaluate proposed modifications to existing dams as well as the design and construction of new jurisdictional dams.

The Department is required to contract periodically with independent consultants to review the safety of SWP dams and power facilities, except Pearblossom Spill Basin. The four dams in the San Luis Field Division (San Luis, O'Neill Forebay, Los Banos Detention, and Little Panoche Detention) are used jointly with the Bureau of Reclamation, and are not currently under the jurisdiction of DSOD. Pearblossom Spill Basin Dam was originally designed to be used during misoperation at the Pearblossom Pumping Plant. The spill basin was never fully completed and has never been used.

The Federal Energy Regulatory Commission inspects all licensed SWP facilities annually. These inspections include a review of significant events, instrumentation data, and visual appearance of each dam, penstock, or power plant. In addition, under FERC and California Water Code requirements, consulting engineers and geologists are retained to evaluate SWP dam facilities every 5 years.

Routine Inspections

During 2001, DSOD, along with O&M staff, inspected and performed routine and scheduled maintenance at Frenchman, Antelope, and Grizzly Valley Dams in the Upper Feather River area; at Oroville, Bidwell Bar, Parish Camp, Thermalito Diversion, Thermalito Forebay, Thermalito Afterbay, and Feather River Hatchery Dams in the Oroville Field Division; at Clifton Court Forebay, Bethany, Patterson, and Del Valle Dams in the Delta Field Division; at Pyramid, Castaic, Cedar Springs, Devil Canyon Power Plant First and Second Afterbays, and Perris Dams in Southern Field Division. At the request of O&M and the Bureau, DSOD engineers participated in the inspections of Sisk, O'Neill, Los Banos, and Little Panoche Detention Dams in the San Luis Field Division.

Radial Gate Retrofitting

In 2000, DSOD approved an alteration application submitted by O&M to strengthen 14 radial gates at Thermalito Diversion Dam. Construction work began in May 2000 and was completed in October 2001.

In May 2001, work began on an alteration project to strengthen eight radial gates at Oroville Dam. The first of the two phases of construction (four gates) was completed in November 2001. The second phase of the construction for the remaining four gates is scheduled for completion in October 2002.

Independent Reviews

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

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

These provisions require the Department to retain a board of three consultants to meet at least once every 5 years to review the operational performance of Department-owned dams, and more often when consulting on new dams. The board of consultants independently reviews and assesses safety conditions of SWP dams.

Consultants are selected based on their knowledge of geotechnical, structural, and civil engineering, including their experience in evaluating the performance of dams. Their independent assessments include review of dam performance during earthquakes, evaluation of instrumentation data, inspection of each dam, and evaluation of studies performed by the Department. The consultants then prepare their reports on each dam, approving whether the dams are safe for continued operation and making recommendations. Based on these recommendations, the Department prepares action plans.

In March and August 2001, the sixth and seventh Director's Safety Review Board met and evaluated the construction of Crafton Hills Dam in San Bernardino. Crafton Hills Dam, located on the East Branch of the SWP, was completed in August 2001 to the Board's satisfaction.

In May 2001, a Director's Safety Review Board met and evaluated Clifton Court Forebay, Bethany, Patterson, and Del Valle Dams. In general, the Board concurred with the Department's recommendation that a planned seismicity evaluation for the four dams would benefit from the development of a fault model that reflects the current understanding of the Great Valley Blind Thrust and its secondary faulting. Also, an attenuation practice consistent with blind thrust faulting will need to be considered.

Assessment of the first and second phase of the seismicity evaluation has been made a priority and is expected to be completed by January 1, 2003. The third phase should be completed by January 2006 so that the results can be presented at the next Director's Safety Review Board meeting.

FERC Reviews. These reviews, which may be conducted by one or more consultants, are scheduled every 5 years. The last review was conducted in September 1998.

Maintaining Other Project Facilities

The Department continually monitors all SWP facilities and performs repairs and modifications as necessary to ensure safe, reliable water delivery. Headquarters' staff conduct biennial inspections of project facilities and complete inspection reports for each field division. The Oroville and San Joaquin Field Divisions are inspected in spring and summer of even-numbered years and the Delta, San Luis, and Southern Field Divisions are inspected in odd-numbered years. Each report lists action items to ensure that follow-up inspections and reports are made.

Arroyo Pasajero Program

The Arroyo Pasajero and its tributaries drain approximately 530 square miles of the Coast Mountains west of the California Aqueduct in

Fresno County. Its downstream juncture with the San Luis Canal segment of the California Aqueduct, between Highway 198 and Avenal Cutoff Road, poses a particularly difficult operational and maintenance problem for the SWP.

During periods of heavy rainfall, high flows in the Arroyo Pasajero and its tributaries transport heavy sediment loads eroded from the Diablo range of the coastal mountains. Over many eons, sediment transported by Arroyo floods formed a 450-square-mile alluvial fan extending from its apex at the eastern margin of Pleasant Valley (Anticline Ridge) to the San Joaquin Valley trough. The California Aqueduct traverses the Arroyo's alluvial fan and forms a barrier to Arroyo flood flows. Flood control facilities include a detention basin designed to store storm runoff and sediment upstream of the Aqueduct, a culvert to release floodwaters east of the Aqueduct, and drain inlets to release floodwaters into the Aqueduct. The volume of runoff and sediment deposition is roughly 500 percent greater than was originally estimated during the design of the detention basin in the mid-1960s.

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

Since the floods of 1969, when nearly all of the detention basin's planned 50-year sediment storage capacity was filled by deposition, the Department and the Bureau have worked to minimize the effects of heavy flooding. In 1980, asbestos was discovered in the Metropolitan Water District of Southern California's water supply and traced to runoff from the Arroyo Pasajero and other Diablo range streams. This discovery, in conjunction with the high cost of removing sediment from the Aqueduct, led the Department to adjust operating procedures to minimize runoff entering the Aqueduct.

Long-Term Solutions and Cooperative Efforts with the U.S. Army Corps of Engineers

In 1990, the Department sought the assistance of the U.S. Army Corps of Engineers to identify viable long-term solutions to the Arroyo Pasajero flooding and sediment problems. In 1992, the Corps issued the *Arroyo Pasajero Reconnaissance Report,* which demonstrated a federal interest in flood control at Arroyo Pasajero. The feasibility study—started in 1994 as a joint effort among the Corps, the Department, and the Bureau—provides a more rigorous analysis of the flooding and sedimentation problems and evaluates potential solutions in greater detail. The Department, as local sponsor, is committed to 50 percent of the total study cost, with one-half of this commitment met by providing in-kind services for the study. Under the Department's agreement with the Bureau for the Joint-Use Facilities of the San Luis Unit, the Bureau pays 45 percent of the Department's study cost. The total cost of the joint Corps/Department/Bureau Arroyo Pasajero flood control study remained at $8.1 million.

A draft Feasibility Report/Environmental Impact Statement/Environmental Impact Report was released to the public in March 1999. A public meeting on the document was held in April 1999. Two candidate plans demonstrating a federal interest were presented. However, compelling comments opposing both candidate plans were received from the public and from agencies.

Revised Joint Corps/Department and Department/Bureau Alternatives

Since the demise of the two candidate plans presented in the March 1999 draft Feasibility Report, the investigation has focused on a new alternative made possible by the availability of relatively low productivity farmland in the western Tulare Lakebed. This plan would rely on some increased storage in the existing detention basin west of the Aqueduct to be used in conjunction with a reservoir that would be constructed in the western Tulare Lakebed down

slope of the Aqueduct near Kettleman City. It would fully utilize the design philosophy of the San Luis Canal by taking significant flood flows into the canal and conveying them south to be evacuated from Pool 21 and into the Tulare Lakebed reservoir for later beneficial use. This plan has the added benefit of addressing the largely unregulated drain inlet inflows to the canal that are upstream of the Arroyo Pasajero by providing a much needed emergency floodwater outlet from Pool 21.

The Corps and the Department jointly authored the *Arroyo Pasajero Feasibility Investigation Information Paper* in November 2000. The paper described in detail the Tulare Lakebed plan, and demonstrated that this plan continued to show a federal interest at the Arroyo Pasajero with a benefit to cost ratio of 1.4:1 and an estimated project cost of $233 million. It also showed that a significant enlargement of the existing detention basin (without an overchute) at the Aqueduct demonstrated a federal interest with a 1.1:1 benefit-to-cost ratio and an estimated cost of $325 million. Both plans were presented as viable options to continue pursuing a Corps project at the Arroyo Pasajero.

While the Corps and the Department continued to develop and refine the two alternatives above, the Department and the Bureau independently began to evaluate a less costly version of the Tulare Lakebed plan which provided a lower, but acceptable, level of flood protection to the Aqueduct. This effort was in response to the State Water Contractors' proposal that the Department develop the least costly alternative that would provide 100-year level of protection to the Aqueduct. And, to be consistent with other SWP flood protection facilities, this level of protection would be based on a single 4-day flood as opposed to the larger flood volume that would be expected from a series of six floods over 30 days as used by the Corps.

By applying the lower and more traditional single flood volume to the flood control improvements needed at the Arroyo Pasajero, 100-year level of flood protection can be achieved at an estimated cost of $55 million. Of this amount, about $13 million is estimated for specific improvements to the existing Aqueduct West Side Detention Basin such as raised embankments, drain inlet modifications, and facilities to protect adjacent non-SWP infrastructure. The remaining $42 million is the estimated cost of a 45,000 acre-foot reservoir located in the western Tulare Lakebed as well as an Aqueduct floodwater turnout structure and chute connecting the Aqueduct to the proposed Tulare Lakebed Reservoir. The Department plans to complete its own feasibility investigation into this more cost effective plan during 2002 with a plan to proceed into final design, environmental documentation, and other procedural steps leading to possible construction during 2004.

The Department's feasibility investigation on the Arroyo Pasajero West Side Detention Basin improvements and Tulare Lakebed Reservoir plan is intended to work in conjunction with the interim flood control measures constructed at the Cantua and Salt Creek Detention Basins in 1999. In addition to the measures constructed in 1999, the Department has identified roughly 700 acres of land most at risk immediately west of the canal in the Cantua and Salt Creek areas, with the expectation that flood easements will be acquired in these areas during 2002.

Related Activities

The Department, with the support of the State Water Contractors, continued during 2001 to provide funds and staff support to a Coordinated Resource Management Plan group called the *Stewards of the Arroyo Pasajero Watershed*. The mission of this group is "to improve the Arroyo Pasajero watershed through erosion and sediment control by implementing improved land management practices that will sustain and promote the aesthetics, environmental quality, and economic viability of the watershed." It is believed that this watershed management plan will increase watershed infiltration and decrease erosion, complementing any structural flood control improvements and reducing the threat Arroyo Pasajero poses to the California Aqueduct and surrounding communities.

Repairs and Modifications

Table 11-1 presents information, arranged chronologically, about significant scheduled and unscheduled outages at SWP pumping and power plants in 2001. The table includes information about incidents resulting in outages exceeding 14 days.

Table 11-1. Outages for Maintenance and Repair of Facilities in 2001, by Month

Month	Facility	Units Taken Out of Service
January	Chrisman Pumping Plant	Units 2 and 3 from January 2 to January 25 to replace unit circuit breakers and repair pumps Unit 5 from January 29 to February 19 to replace unit circuit breaker
	Edmonston Pumping Plant	Units 1, 3, 5, 9, and 13 from January 2 to February 19 to repair discharge valves Unit 7 from January 2 to March 26 to repair discharge valve, rewedge motor, and to retrofit unit circuit breaker
	Oso Pumping Plant	Units 3 and 5 from January 2 to February 1 to repair discharge valves Unit 4 from January 2 to June 7 for annual maintenance and to repair discharge valve, pump, and motor
	Pine Flat Power Plant	Units 1, 2, and 3 from January 8 to February 2 for annual maintenance
	Devil Canyon Power Plant	Unit 2 from January 15 to March 8 for annual maintenance and to repair turbine
	Banks Pumping Plant	Unit 8 from January 19 to April 6 for annual maintenance and to repair discharge valve
February	Warne Power Plant	Unit 2 from February 12 to March 1 for annual maintenance
	Barker Slough Pumping Plant	Unit 2 from February 13 to March 29 to refurbish pump and motor
	Chrisman Pumping Plant	Units 6 and 7 from February 19 to March 12 to retrofit unit circuit breakers
March	Chrisman Pumping Plant	Unit 5 from March 1 to August 10 for annual maintenance and to repair discharge valve and pump
	Gianelli Pumping-Generating Plant	Unit 3 from March 12 to May 30 to repair butterfly valve and to replace field poles Unit 4 from March 24 to April 28 to repair butterfly valve and pump
	Dos Amigos Pumping Plant	Unit 4 from March 12 to May 21 to repair pump and motor
	Devil Canyon Power Plant	Unit 1 from March 12 to May 1 for annual maintenance and replacement of unit circuit breaker
	Pearblossom Pumping Plant	Unit 5 from March 18 to October 25 for annual maintenance and to repair discharge valve and pump
April	Edmonston Pumping Plant	Unit 3 from April 2 to April 27 to retrofit unit circuit breaker Unit 6 from April 30 to May 23 to retrofit unit circuit breaker
	Mojave Siphon Power Plant	Unit 1 from April 2 to April 19 for annual maintenance
	Hyatt Power Plant	Unit 4 from April 8 to May 7 to replace governor
	Banks Pumping Plant	Unit 4 from April 9 to August 22 for unit maintenance, motor rewedge, discharge valve repair, and penstock gate work Unit 5 from April 9 to May 19 for penstock gate work
	Reid Gardner Power Plant	Unit 4 from April 14 to May 8 for annual maintenance
May	South Bay Pumping Plant	Unit 3 from May 11 to June 6 to overhaul pump and to repair discharge valve and motor
	Chrisman Pumping Plant	Unit 3 from May 29 to expected completion date in 2002 for annual maintenance and to repair pump
June	Banks Pumping Plant	Units 1 through 11 from June 6 to July 3 for Aqueduct leak repairs Unit 5 from June 11 to July 2 to repair discharge valve oil leak
	Teerink Pumping Plant	Unit 4 from June 6 to June 22 to repair motor
	Cordelia Pumping Plant	Unit 1 from June 25 to July 30 to refurbish pump and motor
July	Alamo Power Plant	Unit 1 from July 9 to August 9 to replace mechanical shaft seal
	South Bay Pumping Plant	Unit 3 from July 24 to August 29 to repair motor bearing

Table 11-1. Outages for Maintenance and Repair of Facilities in 2001, by Month (Continued)

Month	Facility	Units Taken Out of Service
	Banks Pumping Plant	Unit 5 from July 30 to August 28 for annual maintenance and to repair discharge valve and pump
August	Del Valle Pumping Plant	Unit 4 from August 6 to October 17 to refurbish pump and motor
	Banks Pumping Plant	Unit 11 from August 27 to September 10 to repair discharge valve Unit 4 from August 28 to November 6 to replace burned control cables Unit 5 from August 28 to expected completion date in 2002 to rewind stator after fire
	Teerink Pumping Plant	Unit 6 from August 28 to September 13 to repair motor
	South Bay Pumping Plant	Unit 3 from August 30 to September 22 to repair lower motor guide bearing
September	Pine Flat Power Plant	Unit 2 from September 4 to expected completion date in 2002 for annual maintenance and to modify penstock Units 1 and 3 from September 13 to expected completion date in 2002 for annual maintenance and to modify penstock
	Dos Amigos Pumping Plant	Unit 1 from September 10 to expected completion date in 2002 to repair motor and replace field poles
	Chrisman Pumping Plant	Unit 1 from September 17 to October 11 for annual maintenance and to repair pump
October	Hyatt Power Plant	Unit 1 from October 2 to expected completion date in 2002 to refurbish unit and repair turbine
	Gianelli Pumping-Generating Plant	Unit 7 from October 4 to expected completion date in 2002 to repair butterfly valve and pump and to replace field poles
	Thermalito Power Plant	Unit 2 from October 9 to November 16 for annual maintenance and to replace governor
November	South Bay Pumping Plant	Unit 8 from November 2 to expected completion date in 2002 to repair discharge valve and pump and to work on Altamont Pipeline
	Pearblossom Pumping Plant	Unit 4 from November 5 to expected completion date in 2002 to repair discharge valve and pump
	Devil Canyon Power Plant	Unit 4 from November 5 to December 14 for annual maintenance and to modify turbine
	Edmonston Pumping Plant	Unit 4 from November 5 to November 29 to repair starting disconnect switch
	Banks Pumping Plant	Unit 4 from November 6 to December 7 to modify CO_2 system
	Buena Vista Pumping Plant	Unit 8 from November 13 to expected completion date in 2002 to repair discharge valve
	Warne Power Plant	Unit 1 from November 26 to December 21 for annual maintenance
December	Gianelli Pumping-Generating Plant	Unit 3 from December 5 to expected completion date in 2002 to repair motor
	South Bay Pumping Plant	Units 1 through 7 from December 14 to expected completion date in 2002 to work on Altamont pipeline Unit 9 from December 14 to expected completion date in 2002 to repair discharge valve and work on Altamont pipeline

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

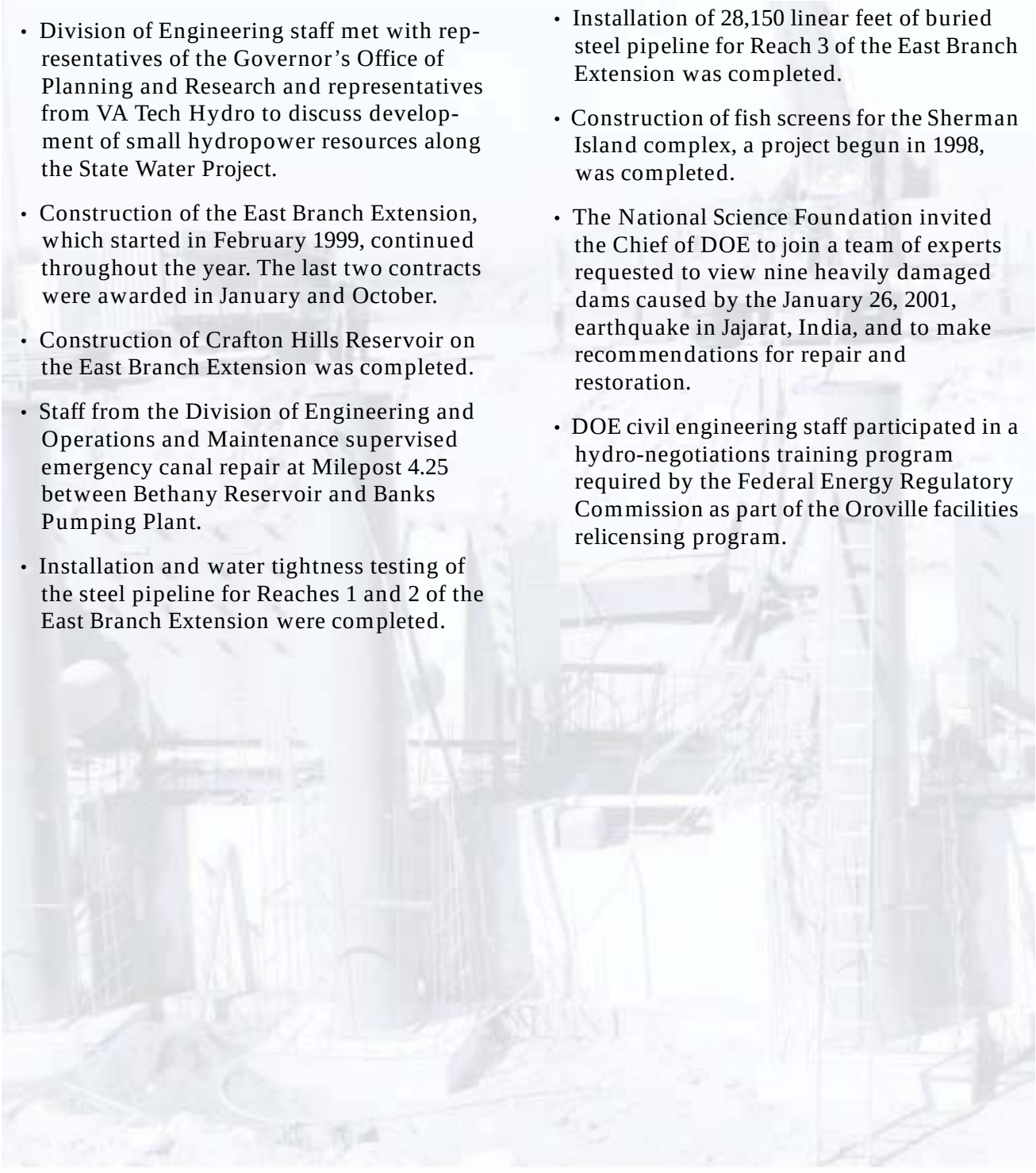
Chapter 12
Engineering and Right of Way



Construction of Greenspot Pumping Plant,
East Branch Extension

Significant Events in 2001

- Division of Engineering staff met with representatives of the Governor's Office of Planning and Research and representatives from VA Tech Hydro to discuss development of small hydropower resources along the State Water Project.
- Construction of the East Branch Extension, which started in February 1999, continued throughout the year. The last two contracts were awarded in January and October.
- Construction of Crafton Hills Reservoir on the East Branch Extension was completed.
- Staff from the Division of Engineering and Operations and Maintenance supervised emergency canal repair at Milepost 4.25 between Bethany Reservoir and Banks Pumping Plant.
- Installation and water tightness testing of the steel pipeline for Reaches 1 and 2 of the East Branch Extension were completed.
- Installation of 28,150 linear feet of buried steel pipeline for Reach 3 of the East Branch Extension was completed.
- Construction of fish screens for the Sherman Island complex, a project begun in 1998, was completed.
- The National Science Foundation invited the Chief of DOE to join a team of experts requested to view nine heavily damaged dams caused by the January 26, 2001, earthquake in Jajarat, India, and to make recommendations for repair and restoration.
- DOE civil engineering staff participated in a hydro-negotiations training program required by the Federal Energy Regulatory Commission as part of the Oroville facilities relicensing program.



Construction of the initial facilities of the State Water Project began in 1957 with the relocation of the Western Pacific Railroad yards and Highway 70 near Oroville. Following the start of the South Bay Aqueduct facilities in 1960, the first water delivery through the SWP was made in 1965. In 1963, work began on the California Aqueduct, and by 1968 the SWP was delivering water to long-term contractors in the San Joaquin Valley. The SWP delivered water to Lake Perris, its southernmost point, with the 1973 completion of its facilities.

SWP water was delivered to Napa County in 1968 through the first phase of the North Bay Aqueduct, and to Solano County in 1988 by the second phase. The first SWP water delivery through the Coastal Branch, Phase I into Kings and Kern Counties, was made in 1968. With completion of the Phase II facilities, water was delivered to San Luis Obispo and Santa Barbara Counties in 1997.

Even before completion of the initial facilities in 1973, work had begun in the early 1970s on building power plants and adding pumping units and turbine-generators deferred from the initial construction of the SWP; enlarging or extending Aqueduct reaches; and providing facilities to ensure water quality in the Delta.

In the 1990s, design and construction activities focused on repairing and replacing components of existing facilities, constructing the Devil Canyon Second Afterbay, constructing Phase II of the Coastal Branch to deliver water to San Luis Obispo and Santa Barbara Counties, and extending the SWP to the San Gorgonio Pass service area through the East Branch Extension, which is scheduled for completion at the end of 2002.

Design Activities

From January 1, 2001, through December 31, 2001, Division of Engineering worked on 30 design projects that developed into construction projects. Table 12-1 lists these projects along with expected or actual design completion dates. Both Tables 12-1 and 12-2 can be found at the end of this chapter, organized geographically north to south according to construction division. Within each division, facilities in which design or construction activities occurred are listed alphabetically, and activities at each facility are listed chronologically.

In addition to designing projects, division staff worked with the Divisions of Operations and Maintenance, Flood Management, and Environmental Services; the Departments of Fish and Game and Boating and Water Ways; and U.S. Army Corps of Engineers, Bureau of Reclamation, Federal Energy Regulatory Commission, and other entities concerned with water resources activities. DOE staff prepared preliminary design and estimates and/or conducted special studies of dams, canal embankments, and other SWP facilities. Some of the studies and activities included

- work on FERC requirements pertaining to operation of the SWP
- South Bay Aqueduct enlargement and rehabilitation
- Battle Creek Salmon and Steelhead Restoration Project
- presentation to the Governor's Office of Planning and Resources potential locations

for installation of small hydroelectric facilities along the SWP
- preparation of geologic exploration drilling contracts for Northern and Southern California
- discussion of North Bay Aqueduct enlargement with NBA water contractors
- discussion of American River levee remedial work and watershed issues with the Corps
- exploration drilling at Webb Track and Bacon Island as part of the Delta storage studies
- discussion of North Bay Aqueduct Pipeline Reach 6, Barker Slough to Travis Tank cleaning
- discussion of Delta seismicity study program with O&M
- preparation of an estimate for DBW for Medeiros boating facility
- preparation of a Final Design and Construction Report for Colusa Bypass
- preparation of a reevaluation report for O&M on Clifton Court Forebay radial gates and geological exploration drilling for new forebay intake
- initiation of Frenchman Dam Fault Study and inspection of previous erosion at Antelope Dam spillway
- initiation of Tehachapi Second Afterbay and afterbay dam geological exploration
- initiation of East Branch Enlargement, Phase II study activities
- initiation of East Branch Extension, Phase II Feasibility Study
- preparation of draft of Crafton Hills Reservoir inundation plan
- preparation of the SWP energy retrofit cursory cost estimate, and scheduling of design and construction
- inspection of damaged concrete at Lokern Bridge, Milepost 229 and recommendation for repairs
- teleconference on Valley String Storage operational model and fatal flow study
- staff participation in Sites Reservoir Project Workshop
- meeting with Northern District representatives to perform site visit for possible study for alignment of Clog Dam Siphon on Mill Creek

DOE staff also completed the studies and activities listed below.

- Gap Dam exploration drilling
- Perris Dam foundation drilling
- backfilling of observation well and slope indicator holes at Cedar Spring Dam
- inundation plan for Butte County
- Antelope Dam spillway repairs report
- Gorman Creek Bridge model study
- Pyramid Dam hot spots study
- Stoney Gorge Dam seismic issues
- Grant Line Canal rubber dam alternative preliminary studies
- Hesperia Master Drainage Plan
- Battle Creek Fish Ladder and Passage Project
- Los Vaqueros Reservoir Enlargement and Storage Alternatives
- Delta Wetlands Project
- California Aqueduct bypass facilities to Pacheco Reservoir enlargement
- Byron Road Bridge deck deterioration problem, studies and analyses
- Cedar Springs Dam and Castaic Dam Inundation Study
- Quail Canal Inundation Study
- cross-drainage hydrology and capacity evaluation studies

Construction Activities

DOE worked on 59 construction contracts in 2001, listed in Table 12-2. This table shows contract title, specification number, date the contractor received the Notice to Begin Work, the expected or actual acceptance date (completion date discussed in text), and the actual or

estimated contract cost (including change orders for added work). Resolution of contract claims may extend the actual contract closeout beyond the completion or acceptance date.

Oroville Division

Hyatt Power Plant. Refurbishment of turbine Units 1, 3, and 5 started in February 1999 (Specification No. 98-22) and continued throughout the year with approximately 16 percent of the work completed. Estimated completion is March 2004.

Renovation of electrical controls for intake gantry cranes at Hyatt Power Plant that started in April 2000 (Specification No. 00-02) was completed in June 2001.

Work to remove mineral residue and to control seepage between the ceiling and roof at Hyatt Power Plant started in September 2000 (Specification No. 00-18) and was completed in June 2001 and accepted in July 2001.

Renovation of electrical controls for bridge cranes and an intake shutter gantry crane that started in December 2000 is scheduled for completion in March 2002 (Specification No. 00-21).

Refurbishment of pump-turbine Units 2, 4, and 6 started in November 2001 (Specification No. 01-11). Completion is estimated for February 2006. This work involves

- furnishing one pump-turbine model, conducting model test program, and submitting a report;
- designing, manufacturing, delivering to worksite, and installing designated new items;
- disassembling, refurbishing, and assembling Units 2, 4, and 6;
- performing required tests; and
- providing liaison services.

Hyatt Power Plant and Thermalito Pumping-Generating Plant. Furnishing governor replacements for the Hyatt Power and Thermalito Pumping-Generating Plants continued during 2001 (Specification No. 99-19). The work was approximately 90 percent complete by the end of 2001. Completion is expected by October 2002.

Lake Oroville. Work continued on construction of Lime Saddle Campground facilities that began in September 2000 (Specification No. 00-14) and was completed in November 2001.

Oroville Dam. In January, work began on a contract for radial gate rehabilitation (Specification No. 00-11). Acceptance is expected in January 2003. The work consists of

- fabricating and installing trunnion beams and appurtenances
- fabricating and installing radial gate arm reinforcing plates
- restoring missing welds and repairing cracks in existing welds
- coating the downstream surfaces of radial gate arms, trunnions, and appurtenances

Oroville Dam and Thermalito Diversion Dam. Fabrication and rehabilitation of stop logs for these facilities started in January 2000 (Specification No. 99-30) and was essentially completed in November 2000. Acceptance is expected in August 2002.

Thermalito Diversion Dam. Rehabilitation of existing radial gates at Thermalito Diversion Dam started in July 2000, was completed in October 2001, and accepted in December 2001. (Specification No. 00-12).

Thermalito Pumping-Generating Plant. A contract to replace expansion joints on the pumping-generating plant roof and in the switchyard began in August 2000 (Specification No. 00-15). Due to asbestos in existing roofing materials, the roofing expansion joint work was amended by contract change order. Approximately 84 percent of the work was completed by the end of the year.

Delta Facilities

South Delta. Construction of fish screens for agricultural diversions on Sherman Island began in July 1998, was completed in October 2001, and accepted in December 2001 (Specification No. 98-07).

Dredging to improve conditions for local agricultural diverters and navigation in the South Delta (Specification No. 00-16) began in August 2000, was completed in December 2000, and accepted in February 2001 at the following sites: Del's Harbor Marina, Mendota Yacht Club, Livermore Yacht Club, Little Hawaii Island, Hammer Island, Middleton Island, Tracy Oasis Marina, and a Grant Line Canal agricultural diversion.

Work on the multiyear (1998 through 2000) contract for the installation and removal of seasonal, temporary rock barriers in designated South Delta waterways (Middle River, Old River, and Grant Line Canal) began in January 1998 (Specification No. 97-23) and was completed and accepted in May 2001. A new contract (Specification No. 01-01) was awarded in March 2001 for years 2001, 2002, and 2003.

These temporary barriers are installed to enhance water levels and circulation in the South Delta for local agricultural diversion, to assist fish migration, and to gather hydraulic data for the design of future permanent barriers.

North San Joaquin Division

California Aqueduct. Work on an emergency canal repair at Milepost 4.25 started in June 2001 (Specification No. 01-19) and was completed in September 2001. Work consisted of

- building cofferdams around the affected canal area
- dewatering the work site and identifying the leakage
- repairing the damaged canal building lining and aqueduct embankment
- restoring the access roads

South Bay Aqueduct. Work on a contract to furnish combined valves and sluice gates was awarded and started in July 2001 (Specification No. 01-18). Approximately 64 percent of the work was completed by the end of 2001, with estimated completion in December 2002. Work consists of the following:

- designing, manufacturing, and testing two sluice gate assemblies;
- designing, manufacturing, and testing a hydraulic power unit;
- designing, manufacturing, and testing eight AWWA butterfly valve assemblies;
- designing, manufacturing, and testing five air valve assemblies; and
- providing liaison and erecting engineer services.

Rehabilitation of access structures and valves was started in October 2001 (Specification No. 01-10) and is scheduled for completion in July 2002. The work consists of the following:

- installing two sluice gate assemblies;
- constructing access and equipment structures for existing pipeline;
- cleaning and refurbishing existing access structures;
- installing air vacuum valves and butterfly valves;
- constructing a valve vault and installing an in-line valve and actuator;
- removing and disposing asbestos pipe coating on existing pipe; and
- demolishing and removing damaged concrete canal lining panels at various locations and replacing the panels with shotcrete.

A contract to modify the Altamont Pipeline (Specification No. 01-08) was also started in September 2001. Work is estimated to be completed in March 2002. Approximately 35 percent of the work was completed by the end of 2001 and included

- removing and wasting pipe inside and outside the tunnel under Highway 580
- furnishing and installing steel pipe inside and outside the tunnel under Highway 580
- removing and wasting two existing concrete access structures
- constructing a new access structure

A contract to line the Altamont Pipeline (Specification No. 01-09) was started in September 2001. Work is estimated to be completed in April 2002 with approximately 33 percent of the work completed by the end of the year. Work included

- cleaning by hydroblasting approximately 2 miles of interior concrete and steel pipeline
- coating the pipeline

Terminal tank seismic modifications (Specification No. 01-21) were started in September 2001 and scheduled to be completed in March 2002. Curb ring and seismic structural steel modifications were approximately 55 percent completed by the end of 2001.

San Luis Division

Gianelli Pumping-Generating Plant. Work on a contract to furnish electrical field poles and materials for the generating unit at Gianelli began in September 2000 (Specification No. 00-17); approximately 33 percent of the work was completed by year end. Completion is estimated for July 2004.

Operation and Maintenance Facilities. A contract to seal and pave roads and parking areas at various locations of the San Luis Division was awarded and work started in August 2000 (Specification No. 00-13). The work was completed in December 2000 and accepted in February 2001.

South San Joaquin Division

California Aqueduct. A contract to rehabilitate the Lokern Road Bridge (Specification No. 01-22) was started in October 2001 and is scheduled to be completed in January 2002. The work includes

- excavating the roadway
- applying asphalt concrete and joint sealant
- reinforcing existing concrete and steel
- repairing concrete cracks and metalwork

Tehachapi Division

Edmonston Pumping Plant. Work on furnishing 15 kV circuit breakers for this facility continued during 2001 (Specification No. 97-01). The completion date for this work has been extended to May 2002 because breakers for Gianelli Pumping-Generating Plant and Devil Canyon Power Plant have been added by contract change order.

Work to repair landslide-caused damage to the Pastoria/Beartrap access road (Specification No. 01-12) was started in September 2001 and completed in December 2001.

West Branch

Castaic Dam and Pastoria Siphon. A contract to recoat Castaic Dam outlet works and Pastoria Siphon (Specification No. 01-03) started in August 2001 with an estimated completion date of March 2002. Work includes

- preparing surfaces, including the use of high-pressure water blasting;
- recovering, removing, and disposing of debris, including lead from existing coatings; and
- applying coating.

Oso Pumping Plant. Work on a contract to furnish automatic voltage regulators began in May 2000. Although it was originally scheduled for completion in June 2002 (Specification No. 00-06), a contract change order to furnish and deliver six automatic voltage regulators for Pearblossom Pumping Plant extended the expected completion to December 2002.

Mojave Division

Mojave Siphon Power Plant. The contract to furnish and install turbines, generators, and governors began in August 1989, and was completed in July 1996 (Specification No. 89-13). However, acceptance was delayed until February 2001 due to equipment performance issues.

Work on a contract to construct valve vaults and to furnish and install turbine shutoff valves for Units 1 and 2 at this facility began in April 1998, and was completed in December 1999 (Specification No. 97-25). Repair of the pipeline interfacing at these facilities was added by contract change orders, extending the completion time. Acceptance is expected in April 2002.

Pearblossom Pumping Plant. The contract to manufacture, furnish, install, and test three 375 cfs vertical centrifugal pump units at Pearblossom Pumping Plant (Specification No. 87-04) started in May 1987 and was completed in 1999. However, a large amount of remedial warranty work has to be performed before the units can be accepted. Completion of warranty work is anticipated in June 2003.

Santa Ana Division

San Bernardino Tunnel Intake. The contract to reconstruct the San Bernardino Tunnel intake structure (Specification No. 95-07) started in July 1995 and was completed in June 1999. Remedial warranty work on the gate hydraulic operating system has to be completed before the contract can be accepted.

Santa Ana Pipeline. Work on a contract to perform modifications and repair to the Santa Ana Pipeline at Milepost 433.06 (Specification No. 98-20) was started in October 1998, completed in July 1999, and accepted in April 2001.

East Branch Extension

Construction of the East Branch Extension began with the issuance of a Notice to Begin Work on February 26, 1999, for pipeline Reaches 1 and 2. Phase I of the project is being constructed to convey 8,650 acre-feet of SWP water annually to the San Gorgonio Pass Water Agency service area, with provisions to provide San Bernardino Valley Municipal Water District deliveries to the Yucaipa Valley. Located in San Bernardino and Riverside Counties, the project facilities will consist of existing pipelines, three new pipeline reaches, three new pump stations, and a new reservoir. The official groundbreaking ceremony for site work took place in Yucaipa on August 23, 1999. Below are brief descriptions of construction contracts.

Crafton Hills Reservoir. A contract to construct a 125 acre-foot capacity reservoir and dam was awarded in February 2000 (Specification No. 99-31). Work began in March 2000 and was completed in August 2001.

Pipeline Reaches. A contract for pipeline Reaches 1 and 2 (Specification No. 98-24) was awarded in February 1999 with expected completion in December 2002. This pipeline starts at Mill Creek in San Bernardino County and extends through the cities of Yucaipa and Calimesa to Garden Air Creek in Riverside County.

Work on a contract for pipeline Reach 3 (Specification No. 99-32), Garden Air Creek to Noble Creek, started in March 2000 and is scheduled for completion in May 2002.

Pump Stations. A February 2001 contract to install fiber optic cable from the Greenspot Pump Station to the Crafton Hills Pump Station (Specification No. 00-08) was completed in May 2001, and accepted in September 2001.

Work started in March 1999 on a contract to furnish power circuit breakers and switchyard equipment for Greenspot and Crafton Hills Pump Stations (Specification No. 98-16) and is scheduled for completion in June 2003.

A second contract to furnish power transformers for these facilities (Specification No. 98-18) started in May 1999, with a scheduled completion date of June 2003.

Work began in October 1999 on a contract to design, manufacture, test, and deliver 5 kV

switchgear for Greenspot and Crafton Hills Pump Stations (Specification No. 99-15). This contract also includes the design, manufacture, testing, and delivery of programmable logic controllers for the Cherry Valley Pump Station. The completion date is scheduled for March 2003.

Work started in November 1999 on a contract to design, manufacture, shop test, and deliver three 4,500 gallons per minute and one 9,000 gpm vertical turbine pumps for Greenspot Pump Station, two 4,500 gpm and one 9,000 gpm vertical turbine pumps for the Crafton Hills Pump Station, and two 3,600 gpm vertical turbine pumps for the Cherry Valley Pump Station (Specification No. 99-17). It also calls for electric motors, variable frequency drives, appurtenant equipment, and associated training programs. Completion of this contract is scheduled for June 2003.

A contract to construct Greenspot, Crafton Hills, and Cherry Valley Pump Stations (Specification No. 99-27) was awarded in May and work started in June 2000; completion is scheduled for January 2003.

An October 2001 contract to furnish and install the control and communications systems (Specification No. 01-05) is expected to be completed in June 2003.

Valve Facilities. A contract to construct new valve facilities at Carter Street and enlarge and reconstruct an existing valve facility in the Morton Canyon (Specification No. 00-07) was started in November 2000. Completion of the work is scheduled for December 2002.

Valves. Three separate contracts were awarded to furnish different types of valves. In October 1999, work began on a contract to furnish ANSI ball valves (Specification No. 99-20) and on a contract to furnish AWWA butterfly valves (Specification No. 99-22). The contract to furnish ANSI butterfly valves began in November 1999 (Specification No. 99-23). All three contracts are scheduled for completion in June 2003.

East Branch Enlargement

Devil Canyon Power Plant. Work on this contract (Specification No. 87-15) was started in July 1987 and completed in February 2001. Remedial warranty work by the turbine manufacturer was completed and accepted in March 2001.

Devil Canyon Power Plant Second Afterbay. A contract to provide the Inland Feeder Connection at Devil Canyon Power Plant Second Afterbay was started in January 2001 (Specification No. 00-22). Work is scheduled to be completed in May 2002.

Construction Activities in Multiple Divisions

The contract to furnish butterfly valves for Mojave Siphon and Devil Canyon Power Plants started in August 1991, and was completed in September 2002 (Specification No. 91-15).

Electrical equipment work continues on a contract to furnish spare coils and associated materials for Pearblossom and Oso Pumping Plants (Specification No. 98-27). This work was started in March 1999 and is estimated to be complete in September 2002.

Work continues on a contract for revegetation of disturbed areas at Mojave Siphon Power Plant and Devil Canyon Second Afterbay (Specification No. 99-21). This work, which started in November 1999, fulfills FERC permit requirements and is scheduled for completion in July 2003.

Work on a contract to furnish spare coils for Banks Pumping Plant and Gianelli Pumping-Generating Plant (Specification No. 00-19) began in September 2000; completion is scheduled for April 2002.

In July 2001, work started on a contract to apply an asphalt seal coat and asphalt slurry seal to the paved roads and parking areas at the San Joaquin and Southern Field Divisions

(Specification No. 01-04). The contract is scheduled to be completed in June 2002.

Roof replacement work started in August 2001 on various buildings at the Oroville, San Joaquin, and Southern Field Divisions (Specification No. 01-06). Work was completed in December 2001. Work included the following:

- demolish existing roofing, parapet wall surfaces, insulation, and flashing, including asbestos abatement;
- remove and reinstall existing equipment and metal siding;
- perform sheet metal work, apply sealants and paint, and install roof drains;
- raise equipment curbs, install new pitch pockets and penetration flashings; and
- furnish and install an air conditioning system with gas heating at the Castaic Operations and Maintenance Center's main warehouse, including HVAC ductwork, air inlets and outlets, and an electrical hook-up for the HVAC unit.

A contract to furnish spare coils for Warne and Devil Canyon Power Plants (Specification No. 01-13) started in October 2001 with completion scheduled for January 2003.

A contract to add stairs at the Gianelli Pumping-Generating Plant, an atrium enclosure at the San Joaquin Field Division O&M Administration Building, and various Americans with Disabilities Act modifications at the San Luis and San Joaquin Field Divisions started in November 2001 (Specification No. 01-20). Completion is estimated for October 2002.

Miscellaneous Construction Activity

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

Levee Raising

Work which began on a contract to raise portions of the levee on the Eastside Bypass on the San Joaquin River in Merced County in August 2000 (Specification No. 00-03) was completed in December 2000, and accepted in February 2001.

Phase III of the salmon habitat enhancement project at Robinson Reach on the Merced River (Specification No. 01-02) was started in July 2001 and is scheduled to be completed in February 2002. The work includes

- excavating and backfilling existing river channel native material to directed lines and grades;
- screening, processing, and relocating graded native material to directed line and grades; and
- placing select borrow material to directed lines and grades.

Environmental Activities

Environmental issues have concerned the Department since the inception of the SWP. These issues have increased in magnitude with the increased enactment of laws at both the State and federal level. To comply with these environmental laws, the Department has incorporated them into the design and construction phases of the projects. A specific section dealing with environmental requirements and protection has become an integral part of the contract specifications for construction contracts. Contracts being developed are reviewed carefully by DOE's environmental scientist to insure compliance with all the requirements outlined in the environmental permits.

In addition to reviewing contracts that went out to construction, the staff environmental scientist oversaw work on the following projects during 2002:

(1) *Lime Saddle Campground, Lake Oroville*. Prehistoric resources were found within the project boundaries (i.e., bedrock mortars). These sites were protected during construction consistent with Department of Parks and Recreation and the Office of Historic Preservation standards. Interpretive signs

were posted to educate visitors about the value and significance of these and other cultural resources.

(2) *Willow Slough Bypass Levee Raising, Sacramento River.* Known environmental resources at the worksite included the following sensitive species: giant garter snake, burrowing owl, and Swainson's hawk, all of which were found within the project boundaries. To avoid impacts to these listed species, buffers were placed where construction was prohibited.

(3) *Lokern Road Bridge Rehabilitation, California Aqueduct Milepost 222.91.* Construction project to rehabilitate Lokern Road Bridge, which was shut down because of unsafe conditions, was postponed until the migrating cliff swallows (*Petrochelidon pyrrhonota*) had completed nesting activities. The cliff swallow is protected under the Federal Migratory Bird Act of 1918.

(4) *Stair Addition, ADA Modification and Atrium Enclosure, San Luis and San Joaquin Field Divisions.* Netting was installed at the location of the stair addition to deter nesting activities of migrating cliff swallows (*Petrochelidon pyrrhonota*) during construction activities.

Right of Way Activities

The Department has spent a net total of $246.9 million to acquire rights of way and recreation and mitigation land for the SWP from its inception to December 31, 2001. From January 1 to December 31, 2001, the Department

- acquired property rights over 5 parcels (10.67 acres temporary easement) for a total cost of $29,100 for the East Branch Extension, Phase I Project;
- acquired permanent easement across .06 acres for $1,600 for Santa Ana Pipeline, Sugarloaf Mountain road repair;
- acquired permanent easement across 2.37 acres for $2,600 for the Feather River Migration Study;
- managed 67 leases for a total revenue of $651,163;
- obtained 408 temporary permits: 1 temporary entry permit for Albion River stream flow monitoring; 1 for Arroyo Pasajero flood control studies; 1 for Big River stream flow monitoring; 6 for Butte County monitoring well drilling; 1 for Coastal Branch, Phase II; 3 for installation of CIMIS weather stations; 3 for installation of Clugh Siphon; 1 for Delta Facilities studies; 11 for East Branch Extension—Reach 1; 1 for CALFED Water Quality Monitoring; 2 for Glenn County Groundwater Monitoring drilling; 13 for in-Delta storage; 2 for Middle River seasonal tide barriers; 4 for Pleasant Valley Hydrogeologic Investigation; 2 for Rock Slough Levee—tide monitoring; 2 for Rock Slough Chloride Monitoring Program; 1 for North Bay Aqueduct; 1 for Orestimba Creek Gauging Station; 1 for South Geyser Power Plant sale; 1 for Sacramento Maintenance Yard; 299 for South Delta Improvement Program; 4 for South Delta Management Sediment Sampling Survey; 6 for South Delta Temporary Barriers—Old River; 9 for Suisun Marsh facilities; 1 for Tehachapi Afterbay Enlargement Study; 7 for South Bay Aqueduct facilities remediation; 24 for West Side Reservoir studies;
- processed 33 encroachment permit applications; issued 20 encroachment permits; and collected fees of $29,055 for review and inspection costs;
- received 2 encroachment reviews where the applicant had prior property rights; completed 2;
- coordinated review of 16 tentative tract map developments within 1 mile of the Aqueduct;
- issued 14 temporary entry permits allowing entry onto State-owned property for various studies; and
- acquired .22-acre permanent access road easement in exchange for quitclaim of .79 acres on the South Bay Aqueduct.

Table 12-1. Design Activities, January 1, 2001, through December 31, 2001, by Division

Construction Division and Facility	Construction Contract	Date Design Began	Design Estimated Completion Date
Oroville Division			
Hyatt Power Plant	Pump/turbine refurbishment Units 2, 4, and 6	March 2000	July 2001
Thermalito Pumping-Generating Plant	Furnish spare stator coils	September 2001	May 2002
Suisun Marsh Facilities			
Morrow Island Distribution System	Intake structure reconstruction	September 2000	May 2002
South Delta Facilities			
Rock Barriers	Temporary Rock Barriers—Middle River, Old River, and Grant Line Canal	September 2000	January 2001
South Bay Aqueduct			
Pipelines	Pipe modifications, Altamont Pipeline	December 2000	May 2001
	Lining, Altamont Pipeline	January 2001	May 2001
	Pipeline rehabilitation—access structures and valves	December 2000	July 2001
	Furnish combined valves and sluice gates	March 2001	June 2001
Santa Clara Terminal Reservoir	Terminal Tank—seismic retrofit	November 2000	July 2001
	Isolation system, SBA	December 2000	May 2001
North San Joaquin Division			
Clifton Court Forebay	Sediment removal	September 2001	March 2002
Banks Pumping Plant	Automatic voltage regulators, Units 1 through 7	April 2000	December 2002
San Luis Division			
Gianelli Pumping-Generating Plant	Automatic voltage regulator, Units 1 through 6	April 2000	December 2002
South San Joaquin Division			
Edmonston Pumping Plant	Replacement of pumps, Units W2, W4, W6, and W8	September 2001	January 2003
Tehachapi Surge Tank	Pastoria/Beartrap access road landslide repair	November 2000	July 2001
Lokern Road Bridge	Bridge repair	July 2001	August 2001
Mojave Division			
Pearblossom Pumping Plant	Furnish automatic voltage regulators, Units 1through 6	January 1999	February 2001
Santa Ana Division			
East Branch Extension	Furnish and install control and communication system	January 1998	July 2001
West Branch			
Pyramid Dam and Piru Creek	Pyramid Dam Bridge repair and Piru Creek repairs	October 2000	February 2003
	Pyramid Dam spillway repair	October 2000	October 2002
Castaic Dam and Pastoria Siphon	Recoating dam outlet works and siphon pipelines	January 2001	April 2001
Warne Power Plant	Soffit and fascia replacement	October 2000	July 2001
Multiple Divisions			
San Luis and San Joaquin Field Divisions	Stair addition, ADA modifications, and atrium enclosure	March 2000	August 2001
Warne and Devil Canyon Power Plants	Furnishing spare stator coils and materials	December 2000	June 2001
San Joaquin, Oroville, and Southern Field Divisions	Roof replacement at O&M Buildings	August 2000	June 2001
State Water Project	Seal and pave roads and parking areas	March 1999	May 2001
Miscellaneous			
Sacramento River	Willow Slough Bypass levee raising	November 1999	January 2002
Battle Creek	Salmon and steelhead restoration project	September 2000	May 2002
Kern River	Schaeffer fish barrier, South Fork	October 2000	January 2002
Merced River	Salmon habitat enhancement Reach 1	January 2001	April 2001

Table 12-2. Construction Activities, January 1, 2001, through December 31, 2001, by Division

Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW[a])	Acceptance Date (Expected or Actual)	Contract Costs (in Thousands of dollars)
Oroville Division				
Hyatt Power Plant	Refurbish turbine Units 1, 3, and 5 (98-22)	February 1999	May 2004	10,150
	Renovate electrical controls for intake gate gantry cranes (00-02)	April 2000	October 2002	261
	Remove mineral residue and control seepage (00-18)	September 2000	July 2001	58
	Renovate electrical controls for bridge cranes and intake shutter gantry crane (00-21)	December 2000	August 2002	1,485
	Refurbish pump-turbine Units 2, 4, and 6 (01-11)	November 2001	February 2007	13,466
Hyatt Power Plant and Thermalito Pumping-Generating Plant	Furnish governor replacement (99-19)	November 1999	December 2002	1,570
Lake Oroville	Construct Lime Saddle Campground (00-14)	September 2000	June 2002	5,929
Oroville Dam	Rehabilitate radial gate (00-11)	January 2001	January 2003	2,193
Oroville Dam and Thermalito Diversion Dam	Fabricate/rehabilitate stop logs (99-30)	January 2000	August 2002	1,760
Thermalito Diversion Dam	Rehabilitate radial gate (00-12)	July 2000	December 2001	2,181
Thermalito Pumping-Generating Plant	Replace expansion joint (00-15)	August 2000	December 2002	76
Delta Facilities				
South Delta Facilities	Construct fish screens—Sherman Island (98-07)	July 1998	December 2001	2,888
	Dredging (00-16)	August 2000	February 2001	3,163
Temporary Rock Barriers	Construct temporary rock barriers: Middle River, Old River, and Grant Line Canal (97-23)	January 1998	July 2001	6,387
	Construct temporary rock barriers: Middle River, Old River, and Grant Line Canal (01-01)	March 2001	February 2004	6,387
North San Joaquin Division				
California Aqueduct	Emergency repair, Milepost 4.25 (01-19)	June 2001	April 2002	5,509
South Bay Aqueduct	Furnish valves and sluice gates (01-18)	July 2001	February 2003	1,744
	Rehabilitate pipeline access structures and valves (01-10)	October 2001	November 2002	5,300
	Modify Altamont Pipeline (01-08	July 2001	September 2002	2,814
	Line Altamont Pipeline (01-09)	July 2001	September 2002	3,805
	Seismic modifications to terminal tank (01-21)	September 2001	October 2002	662
San Luis Division				
Gianelli Pumping-Generating Plant	Furnish field poles and materials (00-17)	September 2000	September 2004	5,140
O&M Facilities	Seal and pave roads and parking areas (00-13)	August 2000	February 2001	757
South San Joaquin Division				
California Aqueduct	Rehabilitate Lokern Road bridge, Milepost 222.91 (01-22)	October 2001	August 2002	280
Tehachapi Division				
Edmonston Pumping Plant	Furnish 15kV circuit breakers (circuit breakers for Gianelli and Devil Canyon added by contract change order) (97-01)	April 1997	August 2002	10,672
	Repair Pastoria/Beartrap access road landslide (01-12)	September 2001	April 2002	360

[a] Notice to Begin Work

Table 12-2. Construction Activities, January 1, 2001, through December 31, 2001, by Division (Continued)

Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW[a])	Acceptance Date (Expected or Actual)	Contract Costs (in Thousands of dollars)
West Branch				
Castaic Dam	Recoat Castaic Dam outlet works and Pastoria Siphon Pipelines (01-03)	August 2001	March 2002	2,353
Oso Pumping Plant	Furnish automatic voltage regulators (00-06)	May 2000	February 2003	1,102
Mojave Division				
Mojave Siphon Power Plant	Furnish and install turbines (89-13)	August 1989	February 2001	14,728
	Construct valve vaults (97-25)	April 1998	April 2002	2,758
Pearblossom Pumping Plant	Furnish and install vertical centrifugal pumps (87-04)	May 1987	August 2003	2,303
Santa Ana Division				
San Bernardino Tunnel	Reconstruct intake (95-07)	July 1995	January 2003	25,531
Santa Ana Pipeline	Modify pipeline—Milepost 433.06 (98-20)	October 1998	April 2001	1,232
East Branch Extension				
Crafton Hills Reservoir	Construct reservoir (99-31)	March 2000	March 2002	5,775
Pipeline Reaches	Construct pipeline Reaches 1 and 2, Mill Creek to Garden Air Creek (98-24)	February 1999	December 2002	20,649
	Construct pipeline Reach 3, Garden Air Creek to Noble Creek (99-32)	March 2000	May 2002	12,555
	Install fiber optic cable (00-08)	February 2001	September 2001	361
Pump Stations				
Greenspot and Crafton Hills	Furnish power circuit breakers and switchgear equipment (98-16)	March 1999	June 2003	280
	Furnish power transformers (98-18)	May 1999	June 2003	631
Greenspot, Crafton Hills, and Cherry Valley	Furnish 5kV switchgear and furnish PLC cubicle, Cherry Valley Pump Station (99-15)	October 1999	March 2003	628
	Furnish pumps, motors, and variable frequency drives (99-17)	November 1999	June 2003	3,111
	Construct pump stations (99-27)	June 2000	January 2003	21,800
	Furnish and install supervisory control and communications systems (01-05)	October 2001	June 2003	5,500
Carter Street and Morton Canyon Valve Facilities	Construct valve facilities (00-07)	November 2000	December 2003	2,815
Valves	Furnish ANSI ball valves (99-20)	October 1999	June 2003	1,200
	Furnish AWWA butterfly valves (99-22)	October 1999	June 2003	862
	Furnish ANSI butterfly valves (99-23)	November 1999	June 2003	1,460
East Branch Enlargement				
Devil Canyon Power Plant	Furnish and install turbines, governors, and valves (87-15)	July 1987	March 2001	10,527
Devil Canyon Second Afterbay	Inland feeder connection (00-22)	January 2001	July 2002	1,192
Multiple Divisions				
Mojave Siphon and Devil Canyon Power Plants	Furnish butterfly valves (91-15)	August 1991	September 2002	6,475
Pearblossom and Oso Pumping Plants	Furnish spare coils and materials (98-27)	March 1999	November 2002	614
Mojave Siphon Power Plant and Devil Canyon Second Afterbay	Revegetation (99-21)	November 1999	September 2003	500
Banks Pumping Plant and Gianelli Pumping-Generating Plant	Furnish spare coils (00-19)	September 2000	November 2002	1,900
San Joaquin and Southern Field Divisions	Seal and pave roads and parking areas (01-04)	July 2001	July 2002	1,973

Table 12-2. Construction Activities, January 1, 2001, through December 31, 2001, by Division (Continued)

Construction Division and Facility	Construction Contract (Specification Number)	Starting Date (NTBW[a])	Acceptance Date (Expected or Actual)	Contract Costs (in Thousands of dollars)
Oroville, San Joaquin, and Southern Field Divisions	Replace roofs (01-06)	August 2001	June 2002	1,445
Warne and Devil Canyon Power Plants	Furnish spare coils and materials (01-13)	October 2001	March 2003	1,030
San Luis and San Joaquin Field Divisions	Add stairs, ADA modifications, and enclose atrium (01-20)	November 2001	December 2002	986
Miscellaneous Activities				
Eastside Bypass	Raise Levee—San Joaquin (00-03)	August 2000	February 2001	1,766
Robinson Reach	Salmon habitat enhancement, Merced River (01-02)	July 2001	September 2002	3,688

Information for this chapter was provided by the Division of Engineering and the Division of Land and Right of Way.

Chapter 13
Recreation



Dedication ceremony at Arroyo Del Valle Youth Camp and Environmental Education Center

Photo courtesy of The Taylor Family Foundation, Camp Arroyo

Significant Events in 2001

- Departmental staff worked at the Department's recreation exhibit at the International Sportsmen's Exposition at Cal Expo in January, and at the Alameda County Fairgrounds in February. The exhibit provided interactive activities including a fish simulator. Hundreds of children received individual trophies for successfully catching a fish on the simulator at the two events.
- The dedication ceremony for the Arroyo Del Valle Youth Camp and Environmental Education Center took place on May 19, 2001. The event was co-sponsored by the Taylor Family Foundation, Alameda County Office of Education, Camp Open Arms, and East Bay Regional Park District. The facility will accommodate terminally ill young children. Members of the State Legislature participated in the dedication ceremonies. The site is located immediately downstream of Lake Del Valle Dam.
- An additional recreational facility was added to the Lake Oroville State Recreation Area with the opening of the Lime Saddle Campground on June 29, 2001. Planning, design, and construction of the campground were funded by the State Water Project Contractors. Lime Saddle Campground is the first new campground in 10 years to be opened by the Department of Parks and Recreation. The total cost of the project was $7 million.
- In August, staff from the Department's Central District and Office of Water Education assisted in an aquatic safety program for disadvantaged youth. The Sacramento Metropolitan Aquatic Rescue Training program is an attempt to teach children water safety and the potential hazards of lakes and rivers. This was a 2-day event which was held at Lake Oroville State Recreation Area.
- The reporting of capital costs allocated to fish and wildlife and recreation enhancement, previously in Appendix D to Bulletin 132, is now included in this chapter.



The State Water Project is a multipurpose project that benefits millions of Californians. In addition to providing water supply, flood control, and habitat for fish and wildlife, the SWP offers extensive and varied recreational opportunities—tours, sightseeing, fishing, hunting, camping, boating, water skiing, bicycling, and swimming. These recreational opportunities, as well as fish and wildlife enhancement, are financed by appropriations from several legislative provisions and other funding sources.

Recreation Areas

The SWP has 37 developed recreation areas or sites throughout California, including 18 developed fishing access sites. Figure 13-1 shows the names and locations of each area.

Recreation Days

In 2001, SWP facilities received 4.57 million recreation days of use (Table 13-1), a 5 percent decrease from the 4.82 million recreation days recorded in 2000. Recreational use at the fishing access sites and along the California Aqueduct Bikeway nearly equaled that of 2000. A recreation day is defined as one individual user visiting a recreation site along the SWP during a 1-day period.

Most SWP recreation and visitor use is concentrated at the major reservoirs. Nearly 50 percent of the total SWP recreational use in 2001 occurred at the four major reservoirs in Southern California: Pyramid Lake, Castaic Lake, Silverwood Lake, and Lake Perris. Since the SWP began delivering water in 1962, more than 165 million recreation days have been recorded at SWP recreational facilities.

Facilities

Planning

During 2001, the Department of Boating and Waterways completed plans for the following projects:

- Planning and survey work were completed for a combination building and other improvements at the Honker Cove area at Lake Davis.
- Planning was completed for boat ramp extensions at the Lime Saddle and Bidwell Canyon areas at Lake Oroville.
- Design is underway for the renovation of the parking area at the basalt area at San Luis Reservoir.
- Drawings were completed for a boating instruction and safety center at Castaic Lake Lagoon. The project is a partnership between DBW, Los Angeles County Department of Parks and Recreation, and California State University at Northridge. The goal is to promote boating safety and instruction.

New Facilities

Lake Oroville. Construction at Lake Oroville include the following:

- Construction of the Lime Saddle Campground was completed and dedicated in June. This area includes 30 individual tent sites, a 6-tent group campsite, 14 recreational vehicle spaces with full hookups, and restrooms with showers. This is the first new campground in 10 years to be opened by the Department of Parks and Recreation.
- Construction began on the major renovation and reconfiguration of the Spillway Boat



1. Antelope Lake Recreation Area
2. Frenchman Lake Recreation Area
3. Lake Davis Recreation Area
4. Lake Oroville State Recreation Area
5. White Slough Wildlife Area
6. Bethany Reservoir
7. Lake Del Valle State Recreation Area
8. Bikeway from Bethany Reservoir to O'Neill Forebay (70 miles)
9. Grant Line Road Fishing Access Site
10. Niels Hansen Fishing Access Site
11. Orestimba Fishing Access Site
12. Access Walk-in Fishing (63 miles)
13. Cottonwood Road Fishing Access Site
14. San Luis Reservoir State Recreation Area
15. Los Banos Reservoir
16. Canyon Road Fishing Access Site
17. Mervel Avenue Fishing Access Site
18. Fairfax Fishing Access Site
19. Access to Walk-in Fishing (208 miles accessible along the aqueduct)
20. Three Rocks Fishing Access Site
21. Huron Fishing Access Site
22. Avenal Cutoff Fishing Access Site
23. Kettleman City Fishing Access Site
24. Lost Hills Fishing Access Site
25. Buttonwillow Fishing Access Site
26. Pyramid Lake State Recreation Area
27. Castaic Lake State Recreation Area
28. Munz Ranch Road Fishing Access Site
29. Bikeway from Quail Lake to Silverwood Lake (107 miles, not all accessible)
30. 70th Street West Fishing Access Site
31. Access Walk-in Fishing (83 miles)
32. Avenue S Fishing Access Site
33. 77th Street East Fishing Access Site
34. Longview Road Fishing Access Site
35. Silverwood Lake State Recreation Area
36. Lake Perris State Recreation Area
37. San Jacinto Wildlife Area

Figure 13-1. Names and Locations of SWP Recreation Areas

Launching Facility. Completion is projected in fall 2002.

Pyramid Lake. Shore access and boarding floats were added at the Emigrant Landing Area at Pyramid Lake.

Table 13-1. Recreation Days Recorded in 2001, by Field Division and Facility

Field Division	Number of Recreation Days
Oroville Field Division	
Frenchman Lake	240,000
Antelope Lake	70,000
Lake Davis	145,000
Lake Oroville and Thermalito Forebay	645,700
Thermalito Afterbay and Oroville Wildlife Area	260,000
Subtotal	*1,360,700*
Delta Field Division	
Lake Del Valle	315,100
Bethany Reservoir	21,800
Fishing Access Site:	
Neils Hansen	100
California Aqueduct:	
Walk-In Fishing	700
Bikeway	100
White Slough Wildlife Area	12,000
Subtotal	*349,800*
San Luis Field Division	
San Luis Reservoir, including O'Neill Forebay and Los Banos Reservoir	524,500
California Aqueduct:	
Walk-In Fishing	12,000
Wildlife Areas	11,000
Subtotal	*547,500*
San Joaquin Field Division	
Fishing Access Sites:	
Kettleman City	1,300
Lost Hills	1,200
Buttonwillow	1,400
California Aqueduct:	
Walk-In Fishing	6,900
Subtotal	*10,800*
Southern Field Division	
Silverwood Lake	333,100
Lake Perris	1,042,800
Pyramid Lake	141,900
Castaic Lake	765,000
Fishing Access Sites:	
Quail Lake	1,400
77th Street East	500
Longview Road	100
California Aqueduct:	
Walk-In Fishing	3,000
Bikeway	1,300
Subtotal	*2,299,900*
Total	**4,568,700**

Improvements to Facilities

In 2001, DBW made improvements to launch ramps 5 and 7 at Lake Perris. Improvements to the Lake Perris Marina restroom are currently under construction.

Oroville Recreation Plan

The Federal Energy Regulatory Commission issued Order 2100-052 on October 1, 1992. This order required the Department to prepare a revised recreation plan for Lake Oroville, replacing the original *Oroville Reservoir, Thermalito Forebay, and Thermalito Afterbay: Water Resources Recreation Report* (Bulletin 117-6), which was prepared in December 1966. Another new plan, FERC Order 2100-054, submitted June 1, 1993, and approved September 22, 1994, includes additional recreation facilities and addresses concerns raised by local residents regarding recreation and fishery-related issues.

In 1995, the Lake Oroville Recreation Advisory Committee was established. This committee, comprised of local government, citizens' groups, and State agencies, was formed to advise the Department on recreation plan implementation. The following elements are either being developed or are already completed.

- Ten floating campsites were constructed and moored at various locations on the lake.
- An en route RV camping area was added at the North Thermalito Forebay area.
- Construction began on a duck brood pond and restroom and picnic facilities at Thermalito Afterbay.
- Buoys were deployed around the water-ski slalom course.
- Construction was completed on the 41-mile bike trail main loop.
- Construction was completed on the Lime Saddle Boat Ramp improvements, an equestrian campground at Loafer Creek Recreation area, and lighting on Oroville Dam.

- Fishery and fishing improvements were completed, including development of a fish management and stocking plan, stocking Chinook salmon, and development of fish shelters.

Most recreation and fish facilities were completed by 2000; certain elements of the plan may require time extensions to complete.

Fish Plantings

In 2001, the Department of Fish and Game continued its fish-planting activities at 12 SWP facilities. Total plantings of trout and Chinook salmon decreased by more than 25 percent in 2001 (see Table 13-2).

Recreation Financing

Previously the Department reported capital costs allocated to fish and wildlife enhancement and recreation in Appendix D to Bulletin 132, *Costs of Recreation and Fish and Wildlife Enhancement.* This report is no longer mandated by the Legislature, and these capital costs, starting with fiscal year 2000-01, are reported in this bulletin.

The financing of recreation and fish and wildlife enhancement in connection with the SWP was provided for by the Davis-Dolwig Act, Assembly Bill 12, and the Environmental Water Act, Assembly Bills 1441 and 1442.

Table 13-2. Fish Planted in 2001 (Thousands)

Location and Size	Eagle Lake Trout	Brook Trout	Rainbow Trout	Brown Trout	Chinook Salmon	Total
Antelope Reservoir						
Catchables		10.4	10.0			20.4
Lake Davis						
Catchables	53.3					53.3
Frenchman Reservoir						
Subcatchables	57.9					57.9
Fingerling	150.2					150.2
Lake Oroville						
Fingerling			No fish planted			
Yearlings						
Thermalito Forebay						
Catchables		8.6	22.4			31.0
Lake Del Valle						
Catchables	3.4		32.4			35.8
Los Banos Reservoir						
Catchables			11.7			11.7
Pyramid Lake						
Catchables			30.4			30.4
Castaic Lake						
Catchable			48.1			48.1
Castaic Lake Lagoon						
Catchables			40.1			40.1
Silverwood Lake						
Catchables			48.0			48.0
Lake Perris						
Catchables			52.4			52.4
Lake Skinner[a]						
Catchables			No fish planted			
California Aqueduct			No fish planted			
Total	**264.8**	**19.0**	**295.5**			**579.3**

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

The Davis-Dolwig Act declared the Legislature's intent to provide the Department with General Fund appropriations for SWP fish and wildlife enhancement and recreation. For fiscal years 1983-84 through 2000-01, no funds were appropriated for these purposes.

AB 12 provided for a $5 million annual appropriation from tideland oil and gas revenues to be used for recreation, enhancement of fish and wildlife, and purchases of land for recreational uses. The Department received $90 million from these revenues; there have been no appropriations since 1985.

Legislation enacted in 1989 (AB 1441 and AB 1442) offset a portion of the amount owed by the State for fish and wildlife enhancement and recreational costs against the amount the SWP owed to the California Water Fund. See Chapter 14, Financial Analysis, for more details.

Joint Capital Cost Allocations. Table 13-3 shows capital costs allocated to fish and wildlife enhancement and recreation and overall costs of lands acquired for recreation development through 2001. Costs have increased by $247,960 since last reported. These costs are budgeted by the Department from funds available for financing project construction costs. Recreation and enhancement costs not reported in this table are budgeted by several State departments and are financed by appropriations from a variety of funds.

Accrued Interest Charges. Table 13-4 details accrued interest charges included in the costs shown in Table 13-3, and reimbursements through December 2001. These interest accruals are calculated through December 31, 2001, on the portion of annual disbursements financed by the California Water Resources Development Bond Fund, and based on the weighted average interest costs of Burns-Porter and Water System Revenue bonds sold to date. The reimbursements were included in the Department's budget as appropriations from the General Fund and are used by the Department to pay for operations, maintenance, power, and replacement costs associated with operating the SWP for fish and wildlife enhancement and recreation.

For a more detailed discussion of these legislative provisions, and the Department's procedures for reporting and tabulating recreation and enhancement costs, please see the last Appendix D (Appendix D to Bulletins 132-98, B132-99, B132-00, and B132-01). This report is located on Web site www.swpao.water.ca.gov/publications.

Table 13-3. Recreation and Enhancement Capital Costs of the State Water Project, 2001

Facility	1952-2000	2001	Subtotal	Interest	Total Costs	B132-01 Costs	Difference
Joint Costs Allocated to Recreation and Enhancement							
Frenchman Dam and Lake (78.5%)[a]							
California Water Resources Development Bond Fund	102,997	0	102,997	2,097	105,094	105,095	(1)
All Other Funds	2,728,838	497	2,729,335	0	2,729,335	2,728,227	1,108
Antelope Dam and Lake (100%)							
California Water Resources Development Bond Fund	1,033,261	0	1,033,261	113,788	1,147,049	1,147,100	(51)
All Other Funds	4,305,274	200,175	4,505,449	0	4,505,449	4,304,747	200,702
Grizzly Valley Dam and Lake Davis (99%)							
California Water Resources Development Bond Fund	4,003,092	0	4,003,092	486,754	4,498,846	4,490,191	(345)
All Other Funds	2,586,605	855	2,587,460	0	2,587,460	2,585,643	1,817
San Luis Dam and Reservoir, O'Neil Forebay, and Los Banos Reservoir (3.4%)							
California Water Resources Development Bond Fund	988,910	0	988,910	169,085	1,157,995	1,163,539	(5,544)
All Other Funds	3,496,338	1,641	3,497,979	0	3,497,979	3,495,695	2,284
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	5,365,817	(744)
All Other Funds	4,481,906	16,770	4,498,676	0	4,498,676	4,467,438	31,238
Oroville Division (2.9%)							
California Water Resources Development Bond Fund	5,725,216	0	5,725,216	1,790,491	7,515,707	7,517,162	(1,455)
All Other Funds	4,752,543	98,909	4,851,452	0	4,851,452	4,731,918	119,534
Del Valle Dam and Lake Del Valle (48%)							
California Water Resources Development Bond Fund	10,546,762	0	10,546,762	6,813,560	17,360,322	17,367,145	(6,823)
All Other Funds	3,252,932	2,150	3,255,082	0	3,255,082	3,246,095	8,987
California Aqueduct Dos Amigos Pumping Plant to Termini (5.7%)							
California Water Resources Development Bond Fund	48,382,162	0	48,382,162	75,353,663	123,735,935	123,825,459	(89,524)
All Other Funds	57,998,228	170,446	58,168,674	0	58,168,674	58,174,995	(6,321)
Subtotal	*158,852,731*	*491,443*	*159,344,174*	*85,626,954*	*244,971,128*	*244,716,266*	*254,862*
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	3,538	1
All Other Funds	49,950	0	49,950	0	49,950	49,947	3
Grizzly Valley Dam and Lake Perris							
California Water Resources Development Bond Fund	204,475	0	204,475	17,573	222,048	222,061	(13)
All Other Funds	553,246	0	553,246	0	553,246	554,244	(998)
Abbey Bridge Dam and Reservoir							
California Water Resources Development Fund	9	0	9	0	9	9	0
All Other Funds	9,921	0	9,912	0	9,921	9,921	0
San Luis Dam and Reservoir, O'Neil Forebay, and Los Banos Reservoir							
California Water Resources Development Bond Fund	395,284	0	395,284	33,467	428,751	428,776	(25)
All Other Funds	415,612	0	415,612	0	415,612	415,610	2
California Aqueduct Delta to Dos Amigos Pumping Plant							
California Water Resources Development Bond Fund	461,086	0	461,086	158,456	619,542	619,660	(118)
All Other Funds	(137,600)	0	(137,600)	0	(137,600)	(137,494)	(106)
Oroville Division							
California Water Resources Development Bond Fund	7,809,509	0	7,809,509	3,673,041	11,482,550	11,486,010	(3,460)
All Other Funds	3,094,314	6,010	3,100,324	0	3,100,324	3,094,256	6,068
Del Valle Dam and Lake Del Valle							
California Water Resources Development Bond Fund	519,425	0	519,425	448,292	967,717	968,102	(385)
All Other Funds	(32,202)	0	(32,202)	0	(32,202)	(32,200)	(2)
California Aqueduct Dos Amigos Pumping Plant to Termini							
California Water Resources Development Bond Fund	478,971	0	478,971	915,217	1,394,188	1,395,119	(931)
All Other Funds	398,327	0	398,327	0	398,237	398,349	(22)
Castaic Dam and Lake							
California Water Resources Development Bond Fund	1,954,297	0	1,954,297	3,856,203	5,810,500	5,814,453	(3,953)
All Other Funds	952,325	0	952,325	0	952,325	952,325	0
Cedar Spring Dam and Silverwood Lake							
California Water Resources Development Bond Fund	424,966	0	424,966	817,173	1,242,139	1,242,977	(838)
All Other Funds	370,163	0	370,163	0	370,163	370,186	(23)
Perris Dam and Lake Perris							
California Water Resources Development Bond Fund	1,022,313	0	1,022,313	2,033,799	3,056,112	3,058,211	(2,099)
All Other Funds	4,939,976	0	4,939,976	0	4,939,976	4,939,979	(3)
Subtotal	*23,887,746*	*6,010*	*23,893,756*	*11,953,381*	*35,847,137*	*35,854,039*	*(6,902)*
Total Recreation and Enhancement Costs							
California Water Resources Development Bond Fund	88,523,781	0	88,523,781	97,580,335	186,104,116	186,220,424	(116,308)
All Other Funds	94,216,696	497,453	94,714,149	0	94,714,149	94,349,881	364,268
Total	**182,740,477**	**497,453**	**183,237,930**	**97,580,335**	**280,818,265**	**280,570,305**	**247,960**

[a]Allocation percentages are based on percentages previously reported to the Legislature, as well as preliminary estimates for facilities not yet reported.

Table 13-4. Interest Accruals on California Water Resources Development Bond Fund Disbursements

Facility	1952-2000 Disbursements: WRD Bond Funds	1952-2000 Disbursements: All Other Funds	1952-2000 Reimbursements: WRDBond Funds	1952-2000 Reimbursements: All Other Funds	1952-2000 Interest Accrual	2001 Disbursements: WRD Bond Funds	2001 Disbursements: All Other Funds	2001 Reimbursements: WRD Bond Funds	2001 Reimbursements: All Other Funds	2001 Interest Accrual	2002 Beginning of Year Balance to be Reimbursed: Disbursements: WRD Bond Funds	2002 Beginning of Year Balance to be Reimbursed: Disbursements: All Other Funds	2002 Beginning of Year Balance to be Reimbursed: Reimbursements: WRD Bond Funds	2002 Beginning of Year Balance to be Reimbursed: Reimbursements: All Other Funds	Interest Accruals 1992-2002
Joint Costs Allocated to Recreation and Enhancement															
Frenchman Dam and Lake	102,997	2,728,838	104,900	2,719,468	2,088	0	497	0	0	9	102,997	2,729,335	104,900	2,719,468	2,097
Antelope Dam and Lake	1,033,261	4,305,274	1,140,322	4,478,932	113,483	0	200,175	0	0	305	1,033,261	4,505,449	1,140,322	4,478,932	113,788
Grizzly Valley Dam and Lake Davis	4,003,092	2,586,605	4,444,594	2,568,667	484,704	0	855	0	0	2,050	4,003,092	2,587,460	4,444,594	2,568,667	486,754
Sisk Dam, San Luis Reservoir, O'Neil Forebay, and Los Banos Reservoir	988,910	3,496,338	1,938,244	2,725,578	204,431	0	1,641	0	0	(35,346)	988,910	3,497,979	1,938,244	2,725,578	169,085
California Aqueduct, Delta to Dos Amigos Pumping Plant	4,467,667	4,481,906	5,267,351	4,092,435	892,979	0	16,770	0	0	4,427	4,467,667	4,498,676	5,267,351	4,092,435	897,406
Oroville Division	5,725,216	4,752,543	7,324,529	4,570,269	1,781,831	0	98,909	0	0	8,660	5,725,216	4,851,452	7,324,529	4,570,269	1,790,491
Del Valle Dam and Lake Del Valle	10,546,762	3,252,932	16,463,934	3,130,016	6,772,953	0	2,150	0	0	40,607	10,546,762	3,255,082	16,463,934	3,130,016	6,813,560
California Aqueduct Dos Amigos Pumping Plant to Termini	48,382,162	57,998,228	113,035,518	49,410,851	74,869,039	0	170,446	0	0	484,734	48,382,162	58,168,674	113,035,518	49,410,851	75,353,773
Subtotal	*75,250,067*	*83,602,664*	*149,719,392*	*73,696,216*	*85,121,508*	*0*	*491,443*	*0*	*0*	*505,446*	*75,250,067*	*84,094,107*	*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	159	0	0	0	0	1	3,379	49,950	3,520	49,947	160
Grizzly Valley Dam and Lake Davis	204,475	553,246	220,423	554,244	17,499	0	0	0	0	74	204,475	553,246	220,423	554,244	17,573
Abbey Bridge Dam and Reservoir	9	9,921	9	9,921	0	0	0	0	0	0	9	9,921	9	9,921	0
Sisk Dam, San Luis Reservoir, O'Neil Forebay, and Los Banos Reservoir	395,284	415,612	425,700	415,610	33,329	0	0	0	0	138	395,284	415,612	425,700	415,610	33,467
California Aqueduct, Delta to Dos Amigos Pumping Plant	461,086	(137,600)	603,887	(137,494)	157,747	0	0	0	0	709	461,086	(137,600)	603,887	(137,494)	158,456
Oroville Division	7,809,509	3,094,314	11,028,039	649,733	3,652,451	0	6,010	0	0	20,590	7,809,509	3,100,324	11,028,039	649,733	3,673,041
Del Valle Dam and Lake Del Valle	519,425	(32,202)	917,078	(32,200)	445,998	0	0	0	0	2,294	519,425	(32,202)	917,078	(32,200)	448,292
California Aqueduct Dos Amigos Pumping Plant to Termini	478,971	398,327	1,271,912	398,349	909,678	0	0	0	0	5,539	478,971	398,327	1,271,912	398,349	915,217
Castaic Dam and Lake	1,954,297	952,325	5,291,258	951,070	3,832,681	0	0	0	0	23,522	1,954,297	952,325	5,291,258	951,070	3,856,203
Cedar Spring Dam and Silverwood Lake	424,966	370,163	1,132,207	370,137	812,193	0	0	0	0	4,980	424,966	370,163	1,132,207	370,137	817,173
Perris Dam and Lake Perris	1,022,313	4,939,976	2,780,487	4,867,247	2,021,313	0	0	0	0	12,486	1,022,313	4,939,976	2,780,487	4,867,247	2,033,799
Subtotal	*13,273,714*	*10,614,032*	*23,674,520*	*8,096,564*	*11,883,048*	*0*	*6,010*	*0*	*0*	*70,333*	*13,273,714*	*10,620,042*	*23,674,520*	*8,096,564*	*11,953,381*
Total	**88,523,781**	**94,216,696**	**173,393,912**	**81,792,780**	**97,004,556**	**0**	**497,453**	**0**	**0**	**575,779**	**88,523,781**	**94,714,149**	**173,393,912**	**81,792,780**	**97,580,335**

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

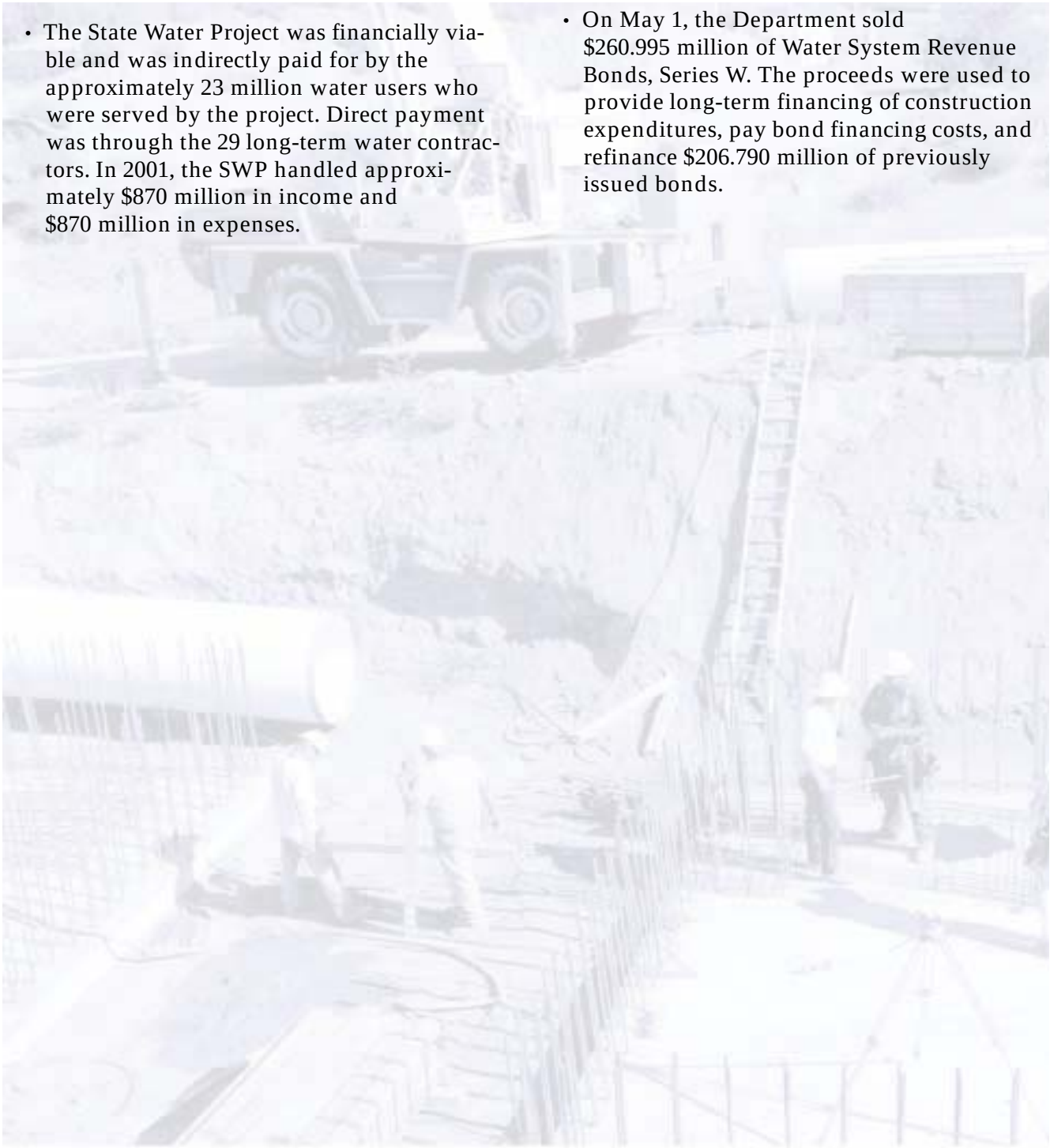
Chapter 14
Financial Analysis



Construction of pipeline Reach 2 of the
East Branch Extension in Yucaipa

Significant Events in 2001

- The State Water Project was financially viable and was indirectly paid for by the approximately 23 million water users who were served by the project. Direct payment was through the 29 long-term water contractors. In 2001, the SWP handled approximately $870 million in income and $870 million in expenses.
- On May 1, the Department sold $260.995 million of Water System Revenue Bonds, Series W. The proceeds were used to provide long-term financing of construction expenditures, pay bond financing costs, and refinance $206.790 million of previously issued bonds.



This chapter presents both a summary and a detailed explanation of State Water Project current financial analysis, capital costs and requirements, revenues and expenses, and bond activities for years 2002 through 2015.

The Department performs financial analysis annually to ensure that the SWP financing program will have sufficient funds to meet construction obligations; project operation, maintenance, power, and replacement costs; and debt service payments for bonds expended for construction. The results of the current financial analysis, dated December 31, 2001, are presented in Tables 14-1 and 14-2 on pages 201 and 202, respectively.

Future contingencies may change the financial analysis, some of which are

- alterations in schedules of currently planned construction for future facilities;
- changes in economic conditions, including changes in interest rates and in SWP contractor Table A amounts due to changes in amounts of water needed, conserved, or reclaimed;
- completion of Delta transfer facilities;
- development of additional sources of water not foreseen at this time;
- deviations from the assumptions regarding actual rates of price escalations for future construction from those currently assumed for cost estimates;
- increases in capital costs related to additional conservation facilities; and
- outcome of lawsuits now pending before the courts.

Capital Requirements and Financing

In conducting the current analysis, the Department projected that future construction and Davis-Grunsky Act Program costs through the year 2015 will total $188 million. Special capital requirements for revenue bond financing of these construction costs are projected at $26 million for a total capital requirement of $214 million. This projection includes construction and financing costs for the following significant SWP facilities planned for completion by 2015:

- Interim South Delta facilities;
- extension of the East Branch of the California Aqueduct; and
- construction of a new intake at Clifton Court Forebay.

Most of these capital requirements will be financed from the projected sale of $194 million of revenue bonds. The remaining $20 million will be financed from current bond proceeds, capital resources revenues, and the transfer of excess revenues not needed for operation costs or debt service.

The analysis of capital requirements and financing presented in Table 14-1 does not include the costs and financing of all facilities needed to develop the remaining yield necessary to meet the total 4.2 million acre-feet contractual commitment to long-term SWP water contractors. Also, Table 14-1 does not include costs of associated work essential for realizing full benefits from the SWP but financed and constructed by

local interests or State agencies other than the Department. Those facilities include on-shore recreational developments at SWP facilities and local distribution facilities.

The allocation of capital expenditures among various SWP purposes is detailed in Table 14-3.

Capital Requirements

Lines 1 through 19 in Table 14-1 show actual and projected SWP capital requirements through 2015. Estimates of future capital expenditures include allowances for construction costs escalation of 3 percent per year from 2002 through 2003 and 4 percent per year from 2004 through 2015. Right-of-way costs are escalated at 4 percent per year from 2002 through 2015. Capital expenditures for the SWP also include requirements other than those for construction, such as disbursements made as part of the Davis-Grunsky Act Program (Line 15) and special capital requirements under revenue bond financing (Line 16). The Department will decide whether to construct facilities only after examining alternatives and completing environmental documentation and other review processes.

Line 1, Initial Project Facilities, includes only those facilities completed before 1974 (see Bulletin 132-74, Chapter 2). Additional costs after 1973 and estimated costs of remaining work on the initial SWP facilities are not included.

Line 2, North Bay Aqueduct, Phase II, consists of pipelines, pumping plants, and a small reservoir necessary to divert water from the western Delta to Napa and Solano Counties for urban use. Phase II is connected with the Phase I facilities which were completed in 1968 (Phase I costs are included in the initial project facilities discussed in Line 1). Phase II became operational in May 1988.

Line 3, Delta and Suisun Marsh Facilities, shows historical costs in Column 1 that include planning costs for general Delta facilities and historical costs associated with the previously planned peripheral canal and overland water delivery facilities for the western Delta.

Also included are historical planning costs for Suisun Marsh as well as construction costs for the Suisun Marsh Salinity Control Gates and an access road. The projected amounts include projected planning costs plus projected costs for constructing four permanent barriers in the Delta and an additional intake at Clifton Court Forebay.

Line 4, Final Four Units at Banks Pumping Plant, includes costs of the final four 1,067-cfs units, which became operational in spring 1992.

Line 5, Coastal Branch Aqueduct, Phase II, includes all costs for the planning, design, and construction of Phase II of the Coastal Branch of the California Aqueduct. Phase II construction began in October 1993 and was completed in 1997. Water deliveries from Phase II facilities began in July 1997.

Line 6, West Branch Aqueduct, shows costs for all facilities on the West Branch except Warne Power Plant. Warne Power Plant costs are included in Line 10.

Line 7, East Branch Enlargement, includes expenditures for first-stage construction of the East Branch Enlargement, including the enlargement share of power plant costs at Mojave Siphon and Devil Canyon. (The remaining power plant costs are included in Line 10.) East Branch Enlargement costs, by facility, are presented in Table 14-4. Costs for Alamo Power Plant consist of expenditures for Unit 1 facilities allocated to enlargement. Construction of Unit 2 has been deferred.

All costs in Line 7 are allocated to and repaid by the seven Southern California contractors participating in the East Branch Enlargement.

Line 8, East Branch Improvements, shows all aqueduct costs on the East Branch not allocated to the enlargement project. Those costs include improvements constructed concurrently with the enlargement work and the reconstruction of

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

Facilities and Construction Divisions	Expenditures Incurred Through 2001	Future Expenditures	Total	Preliminary Allocation Among Project Purposes			
				Water Supply and Power Generation	*Flood Control*[a]	*Recreation and Fish and Wildlife Enhancement*	*Other*[b]
Project Construction Expenditures							
Upper Feather Division	17,967	0	17,967	1,412	0	16,555	0
Oroville Division	575,613	0	575,613	478,105	76,007	21,501	0
Delta Facilities Division	365,909	51,308	417,217	374,958	0	42,259	0
North Bay Aqueduct	94,036	31	94,067	94,067	0	0	0
South Bay Aqueduct	82,531	164	82,695	61,229	7,665	13,801	0
California Aqueduct							
North San Joaquin Division	268,601	459	269,060	259,764	0	9,296	0
San Luis Division	265,437	311	265,748	255,408	0	10,340	0
South San Joaquin Division	311,674	515	312,189	294,860	0	17,329	0
Tehachapi Division	327,129	332	327,461	309,171	0	18,290	0
Mojave Division	321,732	353	322,085	284,144	0	37,941	0
Santa Ana Division	255,015	159	255,174	223,778	0	31,396	0
West Branch	540,567	84	540,661	509,325	0	31,326	0
Coastal Branch	479,246	85	479,331	479,331	0	0	0
Subtotal, California Aqueduct	*2,769,401*	*2,298*	*2,771,699*	*2,615,781*	*0*	*155,918*	*0*
Other Project Facilities							
Small Hydroelectric Power Generating Facilities	104,198	0	104,198	104,198	0	0	0
Off-Aqueduct Power Generating Facilities	446,670	19,062	465,732	465,732	0	0	0
East Branch Enlargement	449,053	0	449,053	449,053	0	0	0
East Branch Extension	93,207	31,460	124,667	124,667	0	0	0
Coastal Branch Extension	32,680	0	32,680	32,680			
San Joaquin Drainage Facilities	53,130	37,800	90,930	0	0	0	90,930
Planning and Preoperations	36,312	46,200	82,512	82,512	0	0	0
Unassigned	63,855	0	63,855	0	0	0	63,855
Subtotal, Project Construction Expenditures	*5,184,562*	*188,323*	*5,372,885*	*4,884,394*	*83,672*	*250,034*	*154,785*
Other Capital Expenditures							
Davis-Grunsky Act Program	130,000	0	130,000	0	0	0	130,000
Total Capital Expenditures	**5,314,562**	**188,323**	**5,502,885**	**4,884,394**	**83,672**	**250,034**	**284,785**

[a]Reflects the Department's allocation to this purpose, irrespective of federal payments.
[b]Includes costs currently unassigned to purpose, planning costs of deleted features of project facilities, initial costs of inventoried items, joint costs assigned to the federal government, and costs assigned to the Davis-Grunsky Act Program.

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

Line 9, East Branch Extension, shows expenditures for Phase I of the extension of the East Branch of the California Aqueduct. The East Branch Extension will extend the California Aqueduct east from the Devil Canyon Power Plant to a terminus at Noble Creek near Beaumont in Riverside County. The extension will provide water service to the San Gorgonio Pass Water Agency and the San Bernardino Valley Municipal Water District. Construction began in October 1998 and is scheduled for completion in 2002. All costs in Line 9 will be allocated to and repaid by the two participating contractors.

Line 10, Power Generation and Transmission Facilities, does not include the East Branch Enlargement share of costs for Alamo, Mojave Siphon, and Devil Canyon Power Plants shown in Line 7 of Table 14-1. The capital costs for facilities included in Line 10 are shown in Table 14-5.

Line 11, Additional Conservation Facilities, shows projected costs to plan and study additional conservation facilities. Specific planning activities and projected spending amounts for 2002 through 2015 are shown in Table 14-6. Expenditures for these items are being reviewed. Construction costs of additional conservation facilities are not included in the financial analysis.

Line 11 does not include CALFED program costs. CALFED expenditures for preliminary planning and environmental impact report preparation are currently financed by appropriations from the General Fund. The Department assumes that future costs of the CALFED program will continue to be financed from the General Fund.

Line 12, San Joaquin Drainage Facilities, includes projected costs of the San Joaquin Valley Drainage Monitoring Program. The activities in this program are monitoring, evaluating, reducing and treating drainage, and investigating evaporation ponds.

The Department assumes that future costs of the drainage program will be financed by revenue transfers (Line 31).

Line 13, Other Costs, includes items such as general design and construction costs, costs of completing operation and maintenance facilities, and costs of other completion activities for the initial facilities of the California Aqueduct. Portions of those costs ultimately will be allocated to Aqueduct units described in the preceding paragraphs.

Line 14, Total Project Construction Expenditures, is the total of Lines 1 through 13.

Line 15, Davis-Grunsky Act Program Costs, shows costs of the Davis-Grunsky Act Program, a financial assistance program to provide grants and loans to public agencies for constructing local water projects.

As of December 31, 2001, the Department had disbursed $130 million (including $8.5 million for administration) in grants and loans for local agencies throughout the State.

Line 16, Special Capital Requirements under Revenue Bond Financing, presents special capital requirements at the time revenue bonds are sold. The financial analysis assumes that proceeds from any future revenue bonds will be used to pay for bond discounts, bond issuance costs, and debt service reserve requirements.

Information about the application of proceeds to these special requirements for actual and assumed revenue bond sales is presented in Table 14-7.

Line 17, Total Capital Requirements, is the total of Lines 14, 15, and 16.

Line 18, Power Facilities Capital Requirements, shows the total capital requirements for power facilities included in Line 17.

Table 14-1. Capital Requirements and Financing, December 31, 2001 (Thousands of Dollars)

Line Number/Item	1952-2001	Calendar Year 2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2002-2015	1952-2015
Capital Requirements																	
1. Initial Project Facilities	2,202,316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,202,316
2. North Bay Aqueduct, Phase II	90,419	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	90,419
3. Delta and Suisun Marsh Facilities	215,169	18,168	15,607	15,086	1,550	898	0	0	0	0	0	0	0	0	0	51,309	266,478
4. Final 4 Units at Banks Pumping Plant	43,673	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43,673
5. Coastal Branch Aqueduct, Phase II	489,619	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	489,619
6. West Branch Aqueduct	190,905	95	0	0	0	0	0	0	0	0	0	0	0	0	0	95	191,000
7. East Branch Enlargement	449,053	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	449,053
8. East Branch Improvements	150,867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150,867
9. East Branch Extension	93,207	26,271	5,189	0	0	0	0	0	0	0	0	0	0	0	0	31,460	124,667
10. Power Generation and Transmission Facilities	682,809	912	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	0	0	19,062	701,871
11. Additional Conservation Facilities	144,978	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	46,200	191,178
12. San Joaquin Drainage Facilities	53,130	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	37,800	90,930
13. Other Costs	378,417	499	499	499	499	401	0	0	0	0	0	0	0	0	0	2,397	380,814
14. Total Project Construction Expenditures	**5,184,562**	**51,945**	**28,945**	**23,235**	**9,699**	**8,949**	**7,650**	**7,650**	**7,650**	**7,650**	**7,650**	**7,650**	**7,650**	**6,000**	**6,000**	**188,323**	**5,372,885**
15. Davis-Grunsky Act Program Costs	130,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130,000
16. Special Capital Requirements Under Revenue Bond Financing	581,007	5,141	8,145	12,778	0	0	0	0	0	0	0	0	0	0	0	26,064	607,071
17. Total Capital Requirements	**5,895,569**	**57,086**	**37,090**	**36,013**	**9,699**	**8,949**	**7,650**	**7,650**	**7,650**	**7,650**	**7,650**	**7,650**	**7,650**	**6,000**	**6,000**	**214,387**	**6,109,956**
18. Power Facilities Capital Requirements	1,270,694	912	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	0	0	19,062	1,289,756
19. Water Facilities Capital Requirements	4,624,875	56,174	35,440	34,363	8,049	7,299	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	195,325	4,820,200
Financing of Capital Requirements																	
Power Revenue Bond Proceeds																	
20. Power Revenue Bonds through Series H	1,162,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,162,458
Water Revenue Bond Proceeds																	
21. East Branch Enlargement, Current Bonds	485,274	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	485,274
22. East Branch Extension, Current Bonds	53,994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53,994
23. East Branch Extension, Future Bonds	0	32,140	55,680	0	0	0	0	0	0	0	0	0	0	0	0	87,820	87,820
24. Water System Facilities, Current Bonds	1,444,789	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,444,789
25. Water System Facilities, Future Bonds	0	13,460	2,000	91,000	0	0	0	0	0	0	0	0	0	0	0	106,460	106,460
26. Subtotal, Water Revenue Bonds	*1,984,057*	*45,600*	*57,680*	*91,000*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*194,280*	*2,178,337*
Other Capital Financing																	
27. Initial Project Facilities Bond Proceeds	1,452,452	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,452,452
28. Davis-Grunsky Act Program Bond Proceeds	130,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130,000
29. Application of California Water Fund Monies (Tideland Oil Revenues)	508,056	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	508,056
30. Interim Financing	66,941	11,486	(25,090)	(54,987)	1,650	0	0	0	0	0	0	0	0	0	0	(66,941)	0
31. Application of Capital Resources Revenues to Construction	535,415	0	0	0	3,549	4,449	3,150	3,150	3,150	3,150	3,150	3,150	3,150	1,500	1,500	33,048	568,463
32. Revenue Transfers Applied	56,190	0	4,500	0	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	54,000	110,190
33. Subtotal, Other Capital Financing	*2,749,054*	*11,486*	*(20,590)*	*(54,987)*	*9,699*	*8,949*	*7,650*	*7,650*	*7,650*	*7,650*	*7,650*	*7,650*	*7,650*	*6,000*	*6,000*	*20,107*	*2,769,161*
34. Total Financing of Capital Requirements	**5,895,569**	**57,086**	**37,090**	**36,013**	**9,699**	**8,949**	**7,650**	**7,650**	**7,650**	**7,650**	**7,650**	**7,650**	**7,650**	**6,000**	**6,000**	**214,387**	**6,109,956**

Table 14-2. State Water Project Revenues and Expenditures, December 31, 2001 (Thousands of Dollars)

Line Number/Item	1952-2001	Calendar Year 2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2001-2015	1952-2015
Project Revenues																	
1. Capital resources revenues	814,701	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	814,701
Water Contractor Payments																	
2. Transportation capital	2,982,614	143,333	139,753	134,787	134,798	133,721	133,743	133,743	133,743	133,743	133,743	133,743	132,293	131,209	129,431	1,881,783	4,864,397
3. Transportation minimum	3,882,122	250,681	272,958	321,521	245,679	249,428	251,794	270,615	271,289	270,991	271,602	271,583	206,736	167,310	155,040	3,477,227	7,359,349
4. Transportation variable	2,007,998	206,963	113,477	125,499	125,066	133,710	128,344	110,621	117,361	133,034	129,412	142,257	170,359	186,802	193,643	2,016,548	4,024,546
5. Delta Water Charge	1,616,056	99,781	96,217	99,621	101,086	102,236	102,507	102,899	103,118	103,342	103,571	103,804	103,809	103,816	103,825	1,429,632	3,045,688
6. East Branch Enlargement payments	375,827	45,683	45,644	45,287	45,412	45,092	45,126	44,218	44,274	44,349	44,549	44,609	44,627	44,061	44,529	627,460	1,003,287
7. East Branch Extension payments	9,896	4,801	6,808	10,762	10,760	10,764	10,762	10,760	10,764	10,769	10,761	10,763	10,902	10,893	10,897	141,166	151,062
8. Coastal Extension payments	8,429	3,260	3,261	3,260	3,260	3,261	4,218	4,216	4,211	4,211	4,216	4,213	4,213	4,209	4,211	54,220	62,649
9. Water Revenue bond surcharge	303,949	56,072	57,729	58,078	58,408	57,944	57,847	58,082	58,150	58,189	58,318	58,389	58,333	59,434	58,798	813,771	1,117,720
10. Subtotal water contractor payments	11,186,891	810,574	735,847	798,815	724,469	736,156	734,341	735,154	742,910	758,628	756,172	769,361	731,272	707,734	700,374	10,441,807	21,628,698
11. Revenue bond cover adjustments	(2,825)	(41,339)	(38,882)	(38,741)	(40,356)	(40,310)	(40,467)	(44,264)	(44,284)	(44,308)	(44,368)	(44,465)	(36,379)	(35,898)	(33,612)	(567,673)	(570,498)
12. Rate management adjustments	(135,993)	(40,470)	(40,470)	0	(26,000)	(37,000)	(39,000)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(40,500)	(506,940)	(642,933)
Other Revenues																	
13. Federal payments for project operating costs	182,901	12,009	10,788	11,827	11,827	11,827	11,827	11,827	11,827	11,827	11,839	11,839	11,839	11,839	11,839	164,781	347,682
14. Appropriations for operating costs allocated to recreation	16,657	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,657
15. Davis-Grunsky loan repayments	46,413	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	19,600	66,013
16. Revenue bond proceeds	652,006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	652,006
17. Interest earnings on operating revenue	559,716	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	56,000	615,716
18. Oroville-Thermalito payments	249,279	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	249,279
19. Miscellaneous revenues	166,430	113,291	10,800	0	0	0	0	0	0	0	0	0	0	0	0	124,091	290,521
20. Subtotal, other revenues	*1,873,402*	*130,700*	*26,988*	*17,227*	*17,227*	*17,227*	*17,227*	*17,227*	*17,227*	*17,227*	*17,239*	*17,239*	*17,239*	*17,239*	*17,239*	*364,472*	*2,237,874*
21. Total operating revenues	12,921,475	859,465	683,483	777,301	675,340	676,073	672,101	667,617	675,353	691,047	688,543	701,635	671,632	648,575	643,501	9,731,666	22,653,141
22. Total operating revenues and capital resources revenues	13,736,176	859,465	683,483	777,301	675,340	676,073	672,101	667,617	675,353	691,047	688,543	701,635	671,632	648,575	643,501	9,731,666	23,467,842
Project Expenses																	
23. Project operations, maintenance, and power costs	5,977,685	416,994	385,124	488,507	395,681	398,078	393,927	373,603	381,091	395,759	392,014	403,188	409,736	389,373	392,820	5,615,895	11,593,580
24. Deposits to replacement reserves	96,618	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	96,618
25. Deposits to special reserves	141,309	131,870	34,200	24,348	445	(269)	(90)	989	1,126	2,770	4,925	7,718	3,815	5,831	14,504	232,182	373,491
26. Capital resources expenditures	605,773	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	605,773
Payments of Debt Service																	
27. Principal repayments on bonds sold through December 31, 2001 (current bonds)	1,526,290	125,939	95,655	100,389	111,650	116,485	122,290	143,280	150,635	157,565	164,545	172,400	148,945	151,390	141,585	1,902,753	3,429,043
28. Interest on bonds sold through December 31, 2001 (current bonds)	5,036,024	184,662	161,117	157,079	151,949	146,162	140,355	134,129	126,883	119,342	111,450	102,707	93,515	86,365	78,983	1,794,698	6,830,722
29. Future water bond principal repayments	0	0	570	1,230	1,900	2,010	2,125	2,245	2,375	2,505	2,645	2,800	2,960	3,125	3,300	29,790	29,790
30. Future water bond interest payments	0	0	2,317	5,748	9,215	9,107	8,994	8,871	8,743	8,606	8,464	8,322	8,161	7,991	7,809	102,348	102,348
31. Total principal	1,526,290	125,939	96,225	101,619	113,550	118,495	124,415	145,525	153,010	160,070	167,190	175,200	151,905	154,515	144,885	1,932,543	3,458,833
32. Total interest	5,036,024	184,662	163,434	162,827	161,164	155,269	149,349	143,000	135,626	127,948	119,914	111,029	101,676	94,356	86,792	1,897,046	6,933,070
33. *Subtotal debt service*	*6,562,314*	*310,601*	*259,659*	*264,446*	*274,714*	*273,764*	*273,764*	*288,525*	*288,636*	*288,018*	*287,104*	*286,229*	*253,581*	*248,871*	*231,677*	*3,829,589*	*10,391,903*
Net Revenues																	
34. Total Operating Expenses and Debt Service	13,383,699	859,465	678,983	777,301	670,840	671,573	667,601	663,117	670,853	686,547	684,043	697,135	667,132	644,075	639,001	9,677,666	23,061,365
35. Net system revenues	352,477	0	4,500	0	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	54,000	406,477
Application of Net System Revenues																	
36. California Water Fund repayment	296,287	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	296,287
37. Revenues used for capital expenditures	56,190	0	4,500	0	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	54,000	110,190

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

Feature	Calendar Year																
	1962-2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016-2035	Total
Project Facility																	
Feather River facilities	206,314	36,312	27,598	31,856	11,124	16,950	10,258	10,258	10,260	10,254	10,378	10,380	10,392	10,411	10,411	208,238	631,394
North Bay Aqueduct	29,310	2,526	2,202	2,581	1,743	2,548	2,584	2,538	2,561	2,587	2,620	2,654	2,709	2,761	2,779	56,539	121,242
Delta facilities	389	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	389
Suisun Marsh	27,451	2,235	1,286	1,641	1,928	1,758	1,791	1,791	1,792	1,790	1,788	1,794	1,789	1,790	1,787	35,580	87,992
South Bay Aqueduct	183,059	14,287	11,240	13,453	9,479	10,194	10,297	9,945	10,072	10,231	10,342	10,508	10,853	11,158	11,209	223,975	560,301
California Aqueduct																	
Delta to Edmonston	2,556,059	167,329	150,395	193,093	148,735	166,141	167,196	159,790	160,626	168,636	167,079	168,737	185,794	188,831	191,163	3,952,488	8,892,092
Edmonston to Perris	1,942,402	99,658	100,384	137,590	132,422	126,023	128,802	116,222	123,113	129,559	129,994	138,269	152,062	165,343	166,134	3,479,141	7,267,118
West Branch	(68,724)	9,978	349	12,670	(1,220)	(13,009)	(14,954)	(14,459)	(15,006)	(15,149)	(15,112)	(14,276)	(15,150)	(15,947)	(15,755)	(324,313)	(520,079)
Coastal Branch	110,177	9,967	8,831	11,355	9,225	10,146	10,183	9,749	9,904	10,100	10,204	10,400	10,835	11,216	11,282	225,409	478,983
Off-Aqueduct power generating facilities	875,812	52,974	60,013	62,073	61,054	61,054	61,054	61,054	61,054	61,036	61,036	61,036	36,768	125	125	1,125	1,577,393
Recreation, planning, and CVP negotiations	582	667	683	683	683	683	683	683	683	683	683	683	683	683	683	13,669	23,797
Water quality monitoring	261,224	23,332	23,950	21,193	20,188	15,270	15,712	15,712	15,712	15,712	12,683	12,683	12,683	12,683	12,683	227,572	718,992
Davis-Grunsky Act Program	5,692	312	320	320	320	320	320	320	320	320	319	319	319	319	319	6,379	16,538
Subtotal	*6,129,746*	*419,575*	*387,251*	*488,507*	*395,681*	*398,078*	*393,927*	*373,603*	*381,091*	*395,759*	*392,014*	*403,188*	*409,736*	*389,373*	*392,820*	*8,105,803*	*19,856,152*
Payments to\credits from PG&E under Comprehensive Agreement	(55,443)	(2,581)	(2,127)	0	0	0	0	0	0	0	0	0	0	0	0	0	(60,151)
Total OMP&R Costs	**6,074,303**	**416,994**	**385,124**	**488,507**	**395,681**	**398,078**	**393,927**	**373,603**	**381,091**	**395,759**	**392,014**	**403,188**	**409,736**	**389,373**	**392,820**	**8,105,803**	**19,796,001**
Composition																	
Salaries and expenses of headquarters personnel	1,295,216	202,177	180,449	153,683	90,498	99,843	93,155	92,566	93,329	92,404	90,825	91,924	91,403	90,588	88,626	1,528,574	4,375,258
Salaries and expenses of field personnel	2,198,131	227,488	197,728	173,109	108,029	120,365	118,805	118,451	119,422	118,241	116,555	119,976	119,262	118,122	115,561	2,674,123	6,763,370
Pumping power																	
Used by pumping plants	3,409,447	131,102	(167,795)	169,834	248,354	208,092	219,530	200,594	207,381	224,516	225,698	232,226	265,264	285,124	293,124	6,059,848	12,212,339
Produced by generation plants	(1,635,783)	(194,443)	116,579	(70,469)	(112,531)	(91,553)	(98,894)	(99,339)	(100,372)	(100,715)	(102,377)	(102,251)	(103,238)	(104,863)	(104,893)	(2,163,407)	(5,068,549)
Payments to/credits from PG&E under Comprehensive Agreement	(55,443)	(2,581)	(2,127)	0	0	0	0	0	0	0	0	0	0	0	0	0	(60,151)
Off-Aqueduct power generating facilities requirement	875,812	52,974	60,013	62,073	61,054	61,054	61,054	61,054	61,054	61,036	61,036	61,036	36,768	125	125	1,125	1,577,393
Oroville-Thermalito insurance premiums	10,766	277	277	277	277	277	277	277	277	277	277	277	277	277	277	5,540	20,184
Less: Portion of costs incurred during construction	(121,051)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	(121,051)
Subtotal	*5,977,095*	*416,994*	*385,124*	*488,507*	*395,681*	*398,078*	*393,927*	*373,603*	*381,091*	*395,759*	*392,014*	*403,188*	*409,736*	*389,373*	*392,820*	*8,105,803*	*19,698,793*
Deposits to replacement reserves	97,208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97,208
Total OMP&R Costs	**6,074,303**	**416,994**	**385,124**	**488,507**	**395,681**	**398,078**	**393,927**	**373,603**	**381,091**	**395,759**	**392,014**	**403,188**	**409,736**	**389,373**	**392,820**	**8,105,803**	**19,796,001**
Project Purpose																	
Water supply and power generation	5,846,777	398,487	365,773	466,830	373,124	375,523	371,372	351,047	358,535	373,204	369,446	380,619	387,166	366,800	370,247	7,654,678	18,809,628
Payments to/credits from PG&E under Comprehensive Agreement	(55,443)	(2,581)	(2,127)	0	0	0	0	0	0	0	0	0	0	0	0	0	(60,151)
Recreation and fish and wildlife enhancement	109,124	8,631	8,711	8,909	9,790	9,790	9,790	9,790	9,790	9,790	9,790	9,790	9,790	9,790	9,790	195,800	438,865
Flood control	3,424	315	325	326	325	323	323	324	324	323	324	325	326	329	329	6,245	14,210
Miscellaneous purposes																	
Federal share, San Luis, and Delta facilities	162,316	11,542	11,827	11,827	11,827	11,827	11,827	11,827	11,827	11,827	11,839	11,839	11,839	11,839	11,839	236,780	564,449
Other (Davis-Grunsky, drainage, City of Los Angeles)	8,105	600	615	615	615	615	615	615	615	615	615	615	615	615	615	12,300	29,000
Total OMP&R Costs	**6,074,303**	**416,994**	**385,124**	**488,507**	**395,681**	**398,078**	**393,927**	**373,603**	**381,091**	**395,759**	**392,014**	**403,188**	**409,736**	**389,373**	**392,820**	**8,105,803**	**19,796,001**

Table 14-11. Annual Debt Service on Bonds Sold through December 31, 2001 (Thousands of Dollars)

Calendar Year	Series A through Y Water Bonds		Oroville Revenue Bonds[a]		Pyramid Project Revenue Bonds[b]		Small Hydro Project Revenue Bonds[b]		Alamo Project Revenue Bonds[b]		Water System Facilities Water System Revenue Bonds		Subtotal		Devil Canyon-Castaic Project Revenue Bonds		Reid Gardner Project Revenue Bonds[b]		South Geysers Project Revenue Bonds[b]		Bottle Rock Project Revenue Bonds[b]		East Branch Enlargement Project Water System Revenue Bond		Coastal Extension Facilities Water System Revenue Bonds		East Branch Extension Facilities Water System Revenue Bonds		Grand Total	
	Principal	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*	*Principal*	*Interest*
1964	0	3,333	0	0	0	0	0	0	0	0	0	0	0	3,333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,333
1965	0	11,114	0	0	0	0	0	0	0	0	0	0	0	11,114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,114
1966	0	18,764	0	0	0	0	0	0	0	0	0	0	0	18,764	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,764
1967	0	26,911	0	0	0	0	0	0	0	0	0	0	0	26,911	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26,911
1968	0	37,761	0	3,876	0	0	0	0	0	0	0	0	0	41,637	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41,637
1969	0	47,460	0	10,448	0	0	0	0	0	0	0	0	0	57,908	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57,908
1970	0	53,290	0	13,145	0	0	0	0	0	0	0	0	0	66,435	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66,435
1971	0	63,035	0	13,145	0	0	0	0	0	0	0	0	0	76,180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76,180
1972	0	69,149	1,260	13,112	0	0	0	0	0	0	0	0	1,260	82,261	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,260	82,261
1973	1,200	69,347	1,330	13,042	0	0	0	0	0	0	0	0	2,530	82,389	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	2,530	90,097
1974	3,000	69,533	1,400	12,969	0	0	0	0	0	0	0	0	4,400	82,502	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	4,400	90,210
1975	5,000	69,366	1,475	12,893	0	0	0	0	0	0	0	0	6,475	82,259	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	6,475	89,967
1976	7,000	69,657	1,555	12,811	0	0	0	0	0	0	0	0	8,555	82,468	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	8,555	90,176
1977	10,200	69,298	1,635	12,727	0	0	0	0	0	0	0	0	11,835	82,025	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	11,835	89,733
1978	12,700	69,286	5,775	12,537	0	0	0	0	0	0	0	0	18,475	81,823	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	18,475	89,531
1979	13,650	68,660	11,585	12,275	0	0	0	0	0	0	0	0	25,235	80,935	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	25,235	88,643
1980	16,050	67,941	3,265	11,739	0	7,900	0	0	0	0	0	0	19,315	87,580	0	7,708	0	0	0	0	0	0	0	0	0	0	0	0	19,315	95,288
1981	18,050	67,078	4,885	11,444	0	7,292	0	0	0	0	0	0	22,935	85,814	0	7,708	0	5,312	0	0	0	0	0	0	0	0	0	0	22,935	98,834
1982	19,250	66,130	17,920	10,968	0	7,292	0	0	0	0	0	0	37,170	84,390	0	7,708	0	14,347	0	0	0	0	0	0	0	0	0	0	37,170	106,445
1983	20,520	65,111	21,110	10,147	0	7,292	0	3,727	0	2,449	0	0	41,630	88,726	900	7,708	0	35,719	0	4,777	0	6,017	0	0	0	0	0	0	42,530	142,947
1984	21,785	64,036	10,005	9,013	640	7,292	0	3,727	0	4,198	0	0	32,430	88,266	955	7,647	0	35,719	0	5,647	0	10,315	0	0	0	0	0	0	33,385	147,594
1985	22,555	62,892	12,700	8,628	675	7,238	0	3,727	0	4,198	0	0	35,930	86,683	1,010	7,583	9,425	27,209	0	5,647	0	10,315	0	0	0	0	0	0	46,365	137,437
1986	23,830	61,705	11,435	7,859	715	7,377	0	3,537	0	4,263	0	0	35,980	84,741	1,070	7,515	3,805	32,882	0	5,516	1,240	10,315	0	4,021	0	0	0	0	42,095	144,990
1987	25,495	60,452	11,715	7,188	790	7,513	0	3,348	265	4,329	0	4,952	38,265	87,782	1,135	7,442	4,860	32,605	0	5,386	1,305	10,253	0	9,651	0	0	0	0	45,565	153,119
1988	26,770	59,120	6,685	6,664	830	7,447	345	3,348	280	4,314	710	11,037	35,620	91,930	1,205	7,366	5,065	32,295	580	5,521	1,390	10,849	995	9,875	0	0	0	0	44,855	157,836
1989	28,145	57,790	33,705	5,513	875	7,378	365	3,328	295	4,298	1,148	14,373	64,533	92,680	1,275	7,284	7,820	27,557	709	5,646	1,565	11,592	1,078	10,104	0	0	0	0	76,980	154,863
1990	29,385	56,436	10,385	4,301	930	7,305	405	3,304	320	4,279	1,227	19,555	42,652	95,180	1,355	7,198	6,675	29,781	761	5,596	1,678	11,491	1,134	10,048	0	0	0	0	54,255	159,294
1991	30,365	55,034	12,055	3,922	980	7,227	430	3,276	335	4,257	2,129	27,569	46,294	101,285	1,435	7,107	7,170	29,302	818	5,535	1,791	11,376	1,197	16,856	0	0	0	0	58,705	171,461
1992	31,745	54,193	14,135	2,985	2,395	5,308	960	2,553	1,260	3,086	5,108	28,411	55,603	96,536	1,520	7,010	8,950	27,188	1,934	4,136	4,575	7,942	2,583	22,241	0	0	0	0	75,165	165,053
1993	33,390	52,670	13,755	2,237	1,525	5,688	445	2,640	755	3,300	4,577	29,965	54,447	96,500	1,610	6,907	8,820	26,953	901	4,256	3,264	8,385	3,039	21,428	0	0	0	0	72,081	164,429
1994	35,075	51,231	35,225	934	1,580	5,634	695	2,569	780	3,274	5,910	38,223	79,265	101,865	1,705	6,799	78,457	26,273	1,588	4,072	3,374	8,270	4,567	20,752	0	0	0	0	168,956	168,031
1995	36,280	49,703	0	0	1,635	5,570	745	2,536	805	3,242	8,064	37,879	47,529	98,930	1,810	6,684	5,420	19,230	1,695	4,005	3,521	8,133	4,979	20,499	0	0	0	0	64,954	157,481
1996	37,520	48,024	0	0	2,320	5,486	3,135	2,464	1,055	3,203	10,459	58,170	54,489	117,347	1,920	6,561	49,465	18,130	3,043	3,909	3,682	7,974	4,771	23,240	0	0	0	0	117,370	177,161
1997	37,215	46,365	0	0	1,695	5,274	585	2,283	875	3,073	14,375	67,910	54,745	124,905	2,035	6,432	7,515	15,255	1,825	3,696	3,861	7,741	6,300	23,708	0	1,981	0	76	76,281	183,794
1998	37,295	44,736	0	0	1,770	5,237	625	2,258	910	3,059	16,754	68,585	57,354	123,875	2,155	6,295	5,045	16,144	1,935	3,637	4,030	7,509	6,760	23,966	0	1,829	0	229	77,279	183,484
1999	38,220	43,132	0	0	1,845	5,141	680	2,229	960	3,005	18,701	68,085	60,406	121,592	2,285	6,160	9,310	11,660	2,081	3,548	4,240	7,319	7,518	25,033	0	1,808	65	2,931	85,905	180,050
2000	39,510	41,469	0	0	1,925	5,045	610	2,197	1,010	2,955	19,536	66,902	62,591	118,568	2,420	6,040	9,870	11,195	1,950	3,448	4,470	7,097	8,974	24,652	0	1,808	915	2,927	91,190	175,734
2001	40,600	39,751	0	0	2,250	5,035	780	2,335	1,155	2,936	20,944	66,635	65,729	116,693	2,565	5,912	10,365	10,827	2,045	3,394	4,720	6,925	9,425	24,191	0	1,808	950	2,889	95,799	172,639
2002	41,740	37,984	0	0	2,270	4,689	840	2,231	1,190	2,782	22,229	65,302	68,269	112,988	2,720	5,773	11,055	10,171	2,160	3,140	4,990	6,471	9,911	23,478	200	2,408	990	2,851	100,295	167,279
2003	43,590	36,159	0	0	2,375	4,562	870	2,186	1,255	2,716	23,400	63,868	71,490	109,491	2,885	5,626	2,060	9,616	2,290	3,019	5,285	6,190	10,405	22,948	210	2,399	1,030	2,811	95,655	162,100
2004	45,730	34,244	0	0	2,500	4,427	970	2,137	1,330	2,643	25,477	62,336	76,007	105,787	3,055	5,470	2,175	9,509	2,425	2,888	5,610	5,889	9,827	22,379	220	2,388	1,070	2,769	100,389	157,079
2005	46,985	32,242	0	0	2,705	4,285	1,320	2,083	1,445	2,568	26,784	60,802	79,239	101,980	3,240	5,305	8,790	9,397	2,750	2,748	5,950	5,565	10,336	21,852	230	2,378	1,115	2,725	111,650	151,949
2006	48,275	30,186	0	0	2,865	4,130	1,370	2,009	1,525	2,484	27,681	59,187	81,716	97,995	3,435	5,130	9,305	8,894	2,920	2,586	6,325	5,213	11,384	21,295	240	2,369	1,160	2,680	116,485	146,161
2007	49,765	28,060	0	0	3,020	3,960	1,450	1,930	1,620	2,393	28,949	57,766	84,804	94,109	3,640	4,945	9,800	8,355	3,100	2,410	6,730	4,833	11,996	20,710	1,015	2,359	1,205	2,633	122,290	140,355
2008	51,755	25,871	0	0	3,145	3,783	1,395	1,847	1,650	2,298	30,885	56,197	88,830	89,997	3,860	4,749	25,560	7,781	3,410	2,224	7,375	4,430	11,910	20,070	1,070	2,303	1,265	2,574	143,280	134,128
2009	54,095	23,583	0	0	3,315	3,605	1,405	1,770	1,780	2,200	32,602	54,588	93,197	85,747	4,090	4,540	26,895	6,376	3,585	2,033	7,815	4,006	12,593	19,432	1,130	2,239	1,330	2,510	150,635	126,883
2010	55,785	21,206	0	0	3,495	3,419	1,390	1,693	1,935	2,094	34,390	52,862	96,995	81,275	4,335	4,319	28,250	4,983	3,795	1,833	8,265	3,558	13,330	18,755	1,195	2,174	1,400	2,445	157,565	119,342
2011	57,275	18,749	0	0	3,575	3,220	1,415	1,616	2,010	1,980	36,395	51,058	100,670	76,624	4,595	4,085	29,600	3,520	4,005	1,620	8,735	3,083	14,215	18,030	1,270	2,103	1,455	2,384	164,545	111,449
2012	58,615	16,199	0	0	3,795	2,972	1,430	1,521	2,165	1,841	38,475	49,080	104,480	71,612	4,875	3,837	31,470	1,838	4,280	1,342	9,395	2,474	15,040	17,253	1,330	2,040	1,530	2,310	172,400	102,707
2013	60,455	13,650	0	0	3,860	2,706	1,995	1,423	2,430	1,688	40,502	46,968	109,242	66,436	5,165	3,574	305	16	4,700	1,043	10,535	1,817	15,878	16,429	1,400	1,970	1,720	2,231	148,945	93,516
2014	57,985	11,222	0	0	5,125	2,499	2,065	1,313	3,615	1,561	44,348	44,837	113,138	61,433	5,475	3,303	0	0	4,380	787	8,820	1,251	16,302	15,552	1,470	1,897	1,805	2,143	151,390	86,365
2015	53,775	8,806	0	0	4,690	2,227	2,145	1,199	3,085	1,372	45,689	42,512	109,384	56,117	5,805	3,015	0	0	4,070	551	1,310	772	17,576	14,653	1,550	1,819	1,890	2,057	141,585	78,983
2016	46,215	6,588	0	0	4,710	1,975	2,320	1,081	2,955	1,208	47,969	40,111	104,169	50,964	6,150	2,710	0	0	1,975	331	1,245	706	18,576	13,687	1,630	1,736	1,990	1,961	135,735	72,095
2017	38,145	4,652	0	0	4,780	1,724	2,435	954	2,775	1,052	50,287	37,609	98,422	45,992	6,520	2,388	0	0	685	225	1,225	641	19,823	12,669	1,720	1,650	2,085	1,859	130,480	65,423
2018	25,435	3,011	0	0	5,015	1,468	2,550	820	2,950	905	52,992	34,975	88,942	41,180	6,910	2,045	0	0	725	190	1,295	579	20,968	11,577	1,810	1,559	2,195	1,752	122,845	58,881
2019	16,975	1,804	0	0	5,250	1,216	2,640	692	3,125	757	55,921	32,225	83,911	36,695	7,325	1,682	0	0	765	155	1,370	514	22,089	10,422	1,910	1,463	2,310	1,640	119,680	52,571
2020	17,405	956	0	0	5,505	940	2,760	551	3,320	595	58,946	29,318	87,936	32,361	7,765	1,298	0	0	810	116	1,455	444	23,369	9,203	2,005	1,361	2,420	1,525	125,760	46,307
2021	8,595	318	0	0	3,005	656	2,915	406	575	424	62,193	26,288	77,283	28,093	8,230	890	0	0	215	75	1,070	370	25,137	7,954	2,120	1,254	2,545	1,403	116,600	40,038
2022	1,885	60	0	0	9,210	491	3,115	246	7,505	394	66,176	22,698	87,891	23,889	8,725	458	0	0	230	63	1,130	312	26,639	6,609	2,230	1,140	2,670	1,277	129,515	33,747
2023	85	7	0	0	0	0	180	76	0	0	73,635	19,592	73,900	19,675	0	0	0	0	420	50	2,080	249	22,475	5,175	2,350	1,021	2,805	1,142	104,030	27,311
2024	35	3	0	0	0	0	190	66	0	0	71,186	15,709	71,411	15,778	0	0	0	0	445	26	2,200	128	23,795	3,977	2,470	896	2,950	1,003	103,271	21,808
2025	0	0	0	0	0	0	200	57	0	0	56,613	11,920	56,813	11,977	0	0	0	0	0	0	0	0	19,906	2,655	2,605	765	3,095	855	82,419	16,252
2026	0	0	0	0	0	0	210	46	0	0	50,882	9,006	51,092	9,052	0	0	0	0	0	0	0	0	9,787	1,565	2,745	626	3,250	700	66,874	11,943
2027	0	0	0	0	0	0	220	36	0	0	48,868	6,449	49,088	6,485	0	0	0	0	0	0	0	0	7,732	1,072	2,890	480	3,410	538	63,120	8,575
2028	0	0	0	0	0	0	230	24	0	0	39,689	4,011	39,919	4,035	0	0	0	0	0	0	0	0	6,881	693	3,160	327	3,580	367	53,540	5,422
2029	0	0	0	0	0	0	245	12	0	0	41,731	2,044	41,976	2,056	0	0	0	0	0	0	0	0	7,254	355	3,340	168	3,760	189	56,330	2,768
Total	**1,582,400**	**2,386,523**	**244,995**	**246,522**	**109,585**	**200,930**	**51,075**	**85,414**	**61,300**	**103,678**	**1,364,536**	**1,667,566**	**3,413,891**	**4,690,634**	**139,165**	**283,872**	**423,302**	**566,040**	**76,005**	**116,826**	**158,916**	**229,308**	**498,454**	**650,715**	**45,515**	**54,524**	**59,960**	**60,386**	**4,815,208**	**6,652,304**

[a]Principal and interest schedule adjusted to reflect early redemption of bonds.
[b]Allocated portions of Power Facilities Revenue Bonds and Water System Revenue Bonds.

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

Facility	Dollar Amounts (in millions)
Aqueduct and siphons	115.3
Pearblossom Pumping Plant	70.1
Alamo Power Plant	5.0
Mojave Siphon Power Plant	54.5
Devil Canyon Power Plant and Second Afterbay	204.1
Total	**449.0**

Table 14-5. Estimated Capital Costs for Power Generation and Transmission Facilities

Facility	Dollar Amounts (in millions)
Power Plants	
Reid Gardner, Unit 4	288.3
Bottle Rock	120.9
South Geysers	49.6
Devil Canyon	36.8
Warne	84.5
Alamo	44.9
Mojave Siphon	45.2
Thermalito Diversion Dam	14.1
Subtotal	*684.3*
Transmission Lines	
Midway-Wheeler Ridge	10.7
Geysers-Lakeville	6.9
Total	**701.9**

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

Activity	Project Expenditures (in millions)
Future Water Supply	37.8
Other Planning Costs	8.4
Total	**46.2**

Table 14-7. Application of Revenue Bond Proceeds (Millions of Dollars)

Bond Series[a]	Construction Expenditures	Other Capital Requirements					Total Principal Amount of Bonds
		Reimbursement of General Fund	*Capitalized Interest*	*Capitalized Operating Costs*	*Bond Financing and Refunding Costs*[b]	*Subtotal*	
Oroville	218.0	2.6	19.9	1.5	3.0	27.0	245.0
Devil Canyon-Castaic	126.4	0.0	10.0	0.7	2.1	12.8	139.2
Pyramid Series A	74.0	0.0	19.2	1.0	1.6	21.8	95.8
Reid Gardner Series B	146.1	0.0	41.9	0.0	12.0	53.9	200.0
Reid Gardner Series C	91.1	0.0	17.9	7.9	8.1	33.9	125.0
Small Hydro-South Geysers Series D	49.6	0.0	19.9	0.0	5.5	25.4	75.0
Bottle Rock Series E	96.9	0.0	22.0	3.7	2.4	28.1	125.0
Alamo-South Geysers Series F	59.1	0.0	14.2	0.0	1.7	15.9	75.0
Reid Gardner Series G	1.6	0.0	0.0	0.0	237.9	237.9	239.5
Power Facilities Series H	22.2	0.0	0.0	0.0	184.5	184.5	206.7
East Branch Enlargement Series A	108.3	0.0	12.6	0.0	11.1	23.7	132.0
Water System Facilities Series B	97.4	0.0	0.0	0.0	2.6	2.6	100.0
Water System Facilities Series C	0.6	0.0	0.0	0.0	8.4	8.4	9.0
Water System Facilities Series D	95.9	0.0	2.9	0.0	1.2	4.1	100.0
Water System Facilities Series E	0.4	0.0	0.0	0.0	8.6	8.6	9.0
Water System Facilities Series F	0.0	0.0	0.0	0.0	160.0	160.0	160.0
Water System Facilities Series G	86.8	0.0	4.6	0.0	8.6	13.2	100.0
Water System Facilities Series H	85.5	0.0	5.7	0.0	8.8	14.5	100.0
Water System Facilities Series I	158.9	0.0	5.8	0.0	15.3	21.1	180.0
Water System Facilities Series J	0.0	0.0	0.0	0.0	649.8	649.8	649.8
Water System Facilities Series K	88.6	0.0	3.1	0.0	8.3	11.4	100.0
Water System Facilities Series L	0.0	0.0	0.0	0.0	537.8	537.8	537.8
Water System Facilities Series M	166.3	0.0	9.9	0.0	13.8	23.7	190.0
Water System Facilities Series N	137.4	0.0	6.0	0.0	8.6	14.6	152.0
Water System Facilities Series O	156.5	0.0	8.4	0.0	170.1	178.5	335.0
Water System Facilities Series P	141.6	0.0	5.2	0.0	13.2	18.4	160.0
Water System Facilities Series Q	135.0	0.0	8.0	0.0	123.6	131.6	266.6
Water System Facilities Series R	0.0	0.0	0.0	0.0	20.7	20.7	20.7
Water System Facilities Series S	78.2	0.0	5.8	0.0	116.2	122.0	200.2
Water System Facilities Series T	0.0	0.0	0.0	0.0	135.7	135.7	135.7
Water System Facilities Series U	98.7	0.0	5.3	0.0	103.2	108.5	207.2
Water System Facilities Series V	0.0	0.0	0.0	0.0	20.6	20.6	20.6
Water System Facilities Series W	41.0	0.0	1.3	0	218.7	220.0	261.0
Subtotal	*2,562.1*	*2.6*	*249.6*	*14.8*	*2,823.7*	*3,090.7*	*5,652.8*
Future East Branch Extension Bonds	76.8	0.0	3.0	0.0	8.0	11.0	87.8
Future Water System Facilities Bonds	91.0	0.0	6.0	0.0	9.5	15.5	106.5
Total	**2,729.9**	**2.6**	**258.6**	**14.8**	**2,841.2**	**3,117.2**	**5,847.1[c]**

[a]Actual bond issue for all except future water system facilities and future East Branch Enlargement bonds.
[b]Bond financing and refunding costs include funds applied to debt service reserve requirements.
[c]Includes $2,421 million of refunded principal, leaving a net principal obligation of $3,424 million.

Line 19, Water Facilities Capital Requirements, shows the total capital requirements for water facilities included in Line 17.

Capital Financing

The SWP was constructed with three general types of financing: Burns-Porter Act, revenue bonds, and capital resources. Lines 20 through 33 of Table 14-1 present specific information about those sources of financing.

Burns-Porter Act. Burns-Porter financing is derived from the sale of California Water Resources Development Bonds (general obligation bonds) and State Tideland Oil Revenues deposited in the California Water Fund as authorized by the Burns-Porter Act (California Water Code Sections 12930-12944), approved by voters in November 1960. The Burns-Porter Act authorized an issue of $1.75 billion of general obligation State bonds, which are repaid by revenues received according to the water supply contracts. Of that authorization, $130 million were reserved specifically for the Davis-Grunsky Act Program.

Proceeds from the sale of general obligation bonds were deposited in the California Water Resources Development Bond Fund-Bond Proceeds Account, from which monies were expended only for the construction of SWP facilities and for the Davis-Grunsky Act Program. Approximately 30 percent of the expenditures through 2001 for construction and the Davis-Grunsky Act Program were financed with general obligation bonds.

Monies deposited in the California Water Fund were appropriated for purposes outlined in the Burns-Porter Act. Such deposits were derived from a portion of the State Tideland Oil Revenues according to a continuing authorization. The California Water Fund was used to finance $508 million, or approximately 10 percent, of the construction expenditures through 2001.

Revenue Bonds. Revenue bond financing is derived from the sale of revenue bonds as authorized by the Central Valley Project Act (California Water Code Sections 11100-11925). The Department's authority to issue revenue bonds was confirmed by a decision of the California Supreme Court in 1963 (*Warne v. Harkness*, 60 Cal. 2d 579).

Proceeds from the sale of revenue bonds are deposited in the Central Valley Water Project Construction Fund, from which money is expended only for purposes specified in the resolution authorizing each bond sale. Those purposes, in addition to paying construction, planning, and right-of-way costs, may include funding the Debt Service Reserve Account, paying interest on bonds, and paying water system operating expenses during a specified period.

As of December 31, 2001, the Department had sold $5.6 billion of revenue bonds. That amount includes $2.4 billion of refunded bonds, leaving a total principal obligation of $3.2 billion.

Capital Resources. Capital resources financing is derived from payments and appropriations (including a portion of the State Tideland Oil Revenues) authorized by a variety of special contracts, cost-sharing agreements, and legislative actions concerning the SWP, plus accrued interest on these funds.

Capital resources revenues are deposited in the Central Valley Water Project Construction Fund and may be expended for interest on general obligation bonds and costs of constructing SWP facilities.

According to the Department's financial management policy, the capital resources revenues are used first to cover any general obligation bond debt service that exceeds available revenues.

Capital Financing Sources

Capital financing sources include power revenue bonds, East Branch Enlargement bonds, East Branch Extension bonds, water system facilities bonds, initial project facilities bonds, proceeds from the Davis-Grunsky Act Program,

California Water Fund monies, and capital resources revenues.

Line 20, Power Revenue Bonds through Series H, includes the proceeds applied from power revenue bonds for Oroville, Devil Canyon, Castaic, Warne, Reid Gardner, Bottle Rock, Alamo, South Geysers, and small hydro projects.

No future power revenue bond sales are projected for the financial analysis.

Line 21, East Branch Enlargement, Current Bonds, shows that $485 million of Water System Revenue Bond proceeds have been applied to the East Branch Enlargement project through December 31, 2001. Of this total amount, $416 million were used for construction expenditures and $69 million for bond discounts, interest costs, and debt service reserves.

No future East Branch Enlargement revenue bond sales are projected for the financial analysis.

Line 22, East Branch Extension, Current Bonds, shows that $54 million of Water System Revenue Bond proceeds had been spent through December 31, 2001.

Line 23, East Branch Extension, Future Bonds, shows the Department's estimate of additional bonds required to complete construction of the East Branch Extension and to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Line 24, Water System Facilities, Current Bonds, shows that through December 31, 2001, $1.4 billion of proceeds from Water System Revenue Bonds, Series A through Series W, were applied to SWP projects other than the East Branch Enlargement and the East Branch Extension. Of this total amount, $1.2 billion were used to pay for construction expenditures and $0.2 billion to pay for bond discounts, capitalized interest, and debt service reserve requirements.

Line 25, Water System Facilities, Future Bonds, shows that $106 million of future water revenue bonds are needed to provide $91 million for construction of SWP water system facilities and $15 million for bond discounts, interest costs, and debt service reserve requirements.

Line 26, Subtotal, Water Revenue Bonds, is the total of Lines 21 through 25.

Line 27, Initial Project Facilities Bond Proceeds, shows the amount of general obligation bonds sold to provide initial financing costs for SWP facilities and for costs of planning certain additional conservation facilities.

Financing initial facilities from general obligation bonds was completed in mid-1972 and totaled $1.444 billion—$1.750 billion Burns-Porter Act authorization less $130 million reserved for the Davis-Grunsky Act Program and $176 million "offset" for additional conservation facilities. (The Burns-Porter Act provides that to the extent California Water Fund monies are expended, an equal amount of general obligation bonds are reserved [offset] for financing the construction of additional conservation facilities in certain watersheds.)

In mid-1972, the reservation of offset bonds was effectively limited to $176 million, the total amount of California Water Fund monies expended up to that time. By mid-1972, all general obligation bonds authorized by the Burns-Porter Act had been offset, reserved for the Davis-Grunsky Act Program, or used for SWP construction.

Approximately $8.5 million of the offset bonds were used to finance planning studies of the Middle Fork Eel River Development. This financial analysis is not based on the use of any offset bond proceeds to meet capital requirements. If, at some time, the State constructs an additional conservation facility, as specified in Water Code Section 12938, the remaining offset bonds could be sold.

Line 28, Davis-Grunsky Act Program Bond Proceeds, shows, for simplification, the entire

$130 million of capital expenditures authorized for the Davis-Grunsky Act Program according to the Burns-Porter Act as being funded by proceeds from the sale of general obligation bonds. In fact, $28 million from the California Water Fund was used for the program in lieu of bond proceeds prior to 1969.

Line 29, Application of California Water Fund Monies, shows the amount of SWP costs financed under the Burns-Porter Act. The Act provides that any available money in the California Water Fund must be used for construction in lieu of proceeds from the sale of general obligation bonds.

When the Burns-Porter Act became effective in late 1960, approximately $97 million had been accumulated in the fund. That balance plus subsequent appropriations, interest earnings, and other miscellaneous income to the fund through December 31, 2001, was used to finance a total of $508 million of SWP costs.

Line 30, Interim Financing, shows the net annual amounts of funds flowing into and out of the Water Revenue Commercial Paper Notes program. The note program was established in March 1993 to provide an ongoing source of interim financing for Water System Projects prior to permanent financing from the sale of long-term revenue bonds. The Department has authority to issue up to $94.4 million of Water Revenue Commercial Paper Notes. A positive number indicates money borrowed from the program to finance construction costs. A negative number indicates money repaid into the program. The financial analysis assumes that all funds borrowed from the program will be repaid before the end of the analysis period.

Line 31, Application of Capital Resources Revenues to Construction, presents the Capital Resources Revenues applied for capital expenditures.

Line 32, Revenue Transfers Applied, shows monies assumed to be transferred to the California Water Fund according to provisions of the Burns-Porter Act and subsequently reappropriated to construction (see Line 37 in Table 14-2). Projected amounts for 2002 through 2015 include funds to finance expenditures for San Joaquin drainage facilities, as indicated in Line 12 of Table 14-1, and expenditures for additional conservation facilities, as indicated in Line 11.

Line 33, Subtotal, Other Capital Financing, is the total of Lines 27 through 32.

Line 34, Total Financing of Capital Requirements, totals Lines 20, 26, and 33.

Annual Revenues and Expenditures

After financial analysis of SWP operations, the Department concluded that projected payments by contractors and other revenues will be adequate to pay annual operations, maintenance, power, and replacement costs and meet all repayment obligations on funds used to finance SWP construction and other authorized costs during the period 2002 through 2015. Data on annual revenues and expenditures are presented in Table 14-2. A detailed discussion of each line item is presented below.

Project Revenues

SWP revenues consist primarily of SWP contractor payments required under their individual long-term water supply contracts. Those revenues are deposited in two funds: the Central Valley Water Project Revenue Fund, where all revenues pledged to revenue bonds are placed, and the California Water Resources Development Bond Fund-Systems Revenue Account, where all other SWP operating revenues are placed. Use of those funds is limited to paying operating costs and debt service, except that revenues in excess of those costs may be deposited to a reserve for future SWP construction since the California Water Fund has been repaid (see Line 36).

Line 1, Capital Resources Revenues, includes

- federal payments for SWP capital expenditures;

- appropriations for capital costs allocated to recreation;
- appropriations for SWP capital expenditures prior to passage of the Burns-Porter Act and according to Senate Bill 261 (1968);
- payments from Los Angeles Department of Water and Power for Castaic power development;
- advances from water contractors for construction of requested works;
- investment earnings on the Capital Resources Account; and
- investment earnings on unexpended revenue bond proceeds.

Historically, appropriations for capital costs allocated to recreation and fish and wildlife enhancement have amounted to $5 million per year, which have been appropriated by the California Legislature from the State Tideland Oil Revenues. There have been no appropriations since 1985, and no appropriations are indicated in the financial analysis for the period 2002-2015. Legislation enacted in 1989 offset a portion of the amount owed to the SWP by the State for costs allocated to recreation and fish and wildlife enhancement against the amount the SWP owed to the California Water Fund (see Line 36).

Lines 2 through 9, Water Contractor Payments, show amounts of the separate elements of water contractor payments.

Amounts in Line 4 also include revenues sufficient to cover costs associated with sales of excess power. Appendix B of this bulletin presents a detailed explanation of payments identified in Lines 2 through 9.

Operations, maintenance, power, and replacement costs are repaid as they are incurred as part of the Transportation Charge; therefore, no interest charges are included. Construction costs included in the Transportation Charge and all construction and annual OMP&R costs included in the Delta Water Charge are to be repaid with interest at the Project Interest Rate.

The Project Interest Rate, as defined in Article 1(r) of the standard provisions for water supply contracts, is the weighted average of the rates paid on certain securities issued and loans obtained to finance SWP facilities, as described below.

According to the original contract provisions, the basis for determining the Project Interest Rate was the weighted average of rates paid on general obligation bond sales only. In 1969, after Oroville Revenue Bonds were issued, the contract was amended to expand the basis to include rates on all other securities sold and loans obtained thereafter for financing SWP facilities, including revenue bonds (see Bulletin 132-70, page 28).

However, not all proceeds from the sale of revenue bonds are melded into the calculation of the Project Interest Rate. Only those proceeds applied to construction costs (the only application of general obligation bonds permitted by law) and those consumed by the bond discount (a component of the total interest cost of a revenue bond issue) are included in the calculation (see Table 14-8).

Calculations for determining the Project Interest Rate do not include proceeds from the sale of revenue bonds for Off-Aqueduct Power Facilities, the East Branch Enlargement facilities, or water system facilities defined in the Water Revenue Bond Amendment. Table 14-9 lists all bond sales by date and presents basic information used in the calculation of the Project Interest Rate.

Information about contractor water charges in Appendix B is based on known conditions and substantiates the Department's determination of 2003 water charges to be billed July 1, 2002. However, information about significant differences between the sum of future charges included in Lines 2 through 9 of Table 14-2 and the substantiation of 2003 charges included in Appendix B are as described below.

Table 14-8. Effect of Revenue Bond Proceeds on Project Interest Rate (Millions of Dollars)

Project	Proceeds Included in Project Interest Rate					
	Applied to Construction Costs	*Less Portion of Proceeds Derived from Interest Earnings Prior to Delivery of Bonds*	*Plus Bond Discount and Financing Costs*	*Subtotal, Proceeds Included in Calculating Project Interest Rate*	*Total Principal Amount of Bonds*	*Percentage of Total Amount Included in Calculating Project Interest Rate*
Devil Canyon-Castaic Project Revenue Bonds	125.3	1.5	1.4	125.2	139.2	90.0
Pyramid Project Revenue Bonds (Series A)	71.2	0.5	1.1	71.8	95.8	75.0
Alamo Project Bond Anticipation Note	16.8	0.1	0.3	17.0	24.4	70.0
Small Hydro Project I Revenue Bonds (Series D)	25.4	0.2	1.5	26.7	37.5	71.0
Alamo Project Revenue Bonds (Series F)	38.9	0.3	0.7	39.3	50.0	79.0
Power Facilities						
Revenue Bonds (Series H)						
Facility						
Pyramid Project	5.0	0.0	0.1	5.1	5.1	100.0
Alamo Project	1.7	0.0	0.0	1.7	1.7	100.0
Small Hydro Project I	25.2[a]	0.2	0.4	25.4	35.6	71.0
Water System Revenue Bonds (Series J)						
Facility						
Pyramid Project	0	0	75.9[b]	75.9	99.2[b]	77.0
Alamo Project	0	0	45.6[b]	45.6	57.1[b]	80.0
Small Hydro Project I	0	0	27.8[b]	27.8	38.8[b]	72.0
Water System Revenue Bonds (Series L)						
Facility						
Small Hydro Project I	0	0	1.5[b]	1.5	2.1[b]	71.0
Water System Revenue Bonds (Series Q)						
Facility						
Pyramid Project	0	0	3.0[b]	3.0	3.9[b]	77.0
Alamo Project	0	0	4.8[b]	4.8	6.0[b]	80.0
Water System Revenue Bonds (Series S)						
Facility						
Pyramid Project	0	0	8.0[b]	8.0	10.4[b]	77.0
Alamo Project	0	0	7.6[b]	7.6	9.5[b]	80.0
Water System Revenue Bonds (Series U)						
Facility						
Pyramid Project	0	0	2.4[b]	2.4	3.2[b]	75.0
Alamo Project	0	0	3.2[b]	3.2	4.0[b]	80.0
Water System Revenue Bonds (Series W)						
Facility						
Pyramid Project	0	0	27.5[b]	27.5	36.0[b]	76.5
Alamo Project	0	0	11.7[b]	11.7	14.7[b]	79.8
Small Hydro Project (construction)	3.4	0	0	3.4	3.7	92.0
Small Hydro Project (refunding)	0	0	16.3[b]	16.3	22.7[b]	71.7

[a]Amount consists of 71 percent of proceeds deposited in escrow account to refund portion of Series D bonds ($35.1 million plus deposits to construction account [$0.3 million]).
[b]Represents amount of principal used to refund portions of prior bond issues.

Table 14-9. Actual Bond Sales and Project Interest Rates, by Date of Sale

Bond Sales	Date of Sale	Dollar-Years[a] (Thousands)	Interest Cost (Thousands)	Issue Interest Rate[b] (Percent)	Project Interest Rate[c] (Percent)
$ 50,000,000 Bond Anticipation Notes	11/21/63	26,944	531	1.971	1.971
$100,000,000 Series A Water Bonds	2/18/64	3,402,000	119,750	3.520	3.508
$ 50,000,000 Series B Water Bonds	5/05/64	1,726,000	60,986	3.533	3.516
$100,000,000 Series C Water Bonds	10/07/64	3,452,000	123,764	3.585	3.544
$100,000,000 Series D Water Bonds	2/16/65	3,497,900	122,403	3.499	3.531
$100,000,000 Series E Water Bonds	11/23/65	3,497,900	130,029	3.717	3.573
$100,000,000 Series F Water Bonds	6/08/66	3,497,900	137,359	3.927	3.638
$100,000,000 Series G Water Bonds	11/22/66	3,497,900	143,788	4.111	3.711
$100,000,000 Series H Water Bonds	3/21/67	3,497,900	129,261	3.695	3.709
$100,000,000 Series J Water Bonds	7/18/67	3,497,900	143,199	4.094	3.754
$100,000,000 Series K Water Bonds	11/14/67	3,497,900	163,887	4.685	3.853
$150,000,000 Revenue Bonds, Oroville Division, Series A	4/03/68	5,228,700	270,289	5.169	
$100,000,000 Series L Water Bonds	7/11/68	3,497,900	166,918	4.772	3.941
$100,000,000 Series M Water Bonds	10/22/68	3,497,900	169,989	4.860	4.021
$ 94,995,000 Revenue Bonds, Oroville Division, Series B	4/01/69	3,423,460	195,902	5.722	
$ 46,761,000 Cumulative 1970 General Fund Borrowing, repaid 7/10/70	-	4,938	346	7.007	
$200,000,000 Series N and P Bond Anticipation Notes	6/16/70	200,000	11,660	5.830	4.030
$100,000,000 Series N Water Bonds	2/02/71	3,447,900	190,292	5.519	4.148
$100,000,000 Series Q Bond Anticipation Notes	3/10/71	100,000	2,349	2.349	4.143
$100,000,000 Series P Water Bonds	4/21/71	3,397,900	193,377	5.691	4.255
$150,000,000 Series Q and R Water Bonds	11/09/71	5,171,850	265,734	5.138	4.342
$ 40,000,000 Series S Water Bonds	3/28/72	1,399,160	76,509	5.468	4.371
$139,165,000 Devil Canyon-Castaic Revenue Bonds	8/08/72	4,776,204	258,839	5.419	4.457
$ 10,000,000 Series T Water Bonds	3/20/73	185,265	9,491	5.123	4.459
$ 10,000,000 Series U Water Bonds	1/13/76	158,750	8,731	5.500	4.462
$ 10,000,000 Series V Water Bonds	11/15/77	158,750	7,573	4.770	4.462
$ 95,800,000 Pyramid Hydroelectric Revenue Bonds	10/23/79	2,260,072	172,495	7.632	4.584
$150,000,000 Reid Gardner Project, Series A Bond Anticipation Notes	7/1/81	347,906	29,572	8.500	
$ 75,600,000 Bottle Rock Project, Bond Anticipation Notes	12/1/81	264,600	25,137	9.500	
$ 24,400,000 Alamo Project, Bond Anticipation Notes	12/1/81	24,266	2,305	9.499	4.589
$200,000,000 Reid Gardner Project, Series B Revenue Bonds	7/07/82	4,623,137	553,793	11.979	
$125,000,000 Reid Gardner Project, Series C Revenue Bonds	11/16/82	2,720,045	255,744	9.402	
$ 37,500,000 Small Hydro Project I, Series D Revenue Bonds	11/16/82	837,769	84,587	10.097	4.666
$ 37,500,000 South Geysers Project, Series D Revenue Bonds	11/16/82	930,325	90,021	9.676	
$125,000,000 Bottle Rock Project, Series E Revenue Bonds	4/27/83	2,624,805	225,102	8.576	
$ 50,000,000 Alamo Project, Series F Revenue Bonds	4/27/83	1,190,763	100,836	8.468	4.727
$ 25,000,000 South Geysers Project, Series F Revenue Bonds	4/27/83	608,550	52,578	8.640	
$239,505,000 Reid Gardner Project, Series G Revenue Bonds	3/15/85	4,524,136	425,840	9.413	
$206,690,000 Power Facilities Series H Revenue Bonds	6/20/86	4,430,520	347,745	7.849	4.713
$132,000,000 East Branch Enlargement, Series A Water System Revenue Bonds	7/15/86	3,427,165	254,915	7.438	
$100,000,000 Series B Water System Revenue Bonds	5/05/87	2,564,012	194,817	7.598	
$ 9,000,000 Series C Water System Revenue Bonds	12/01/87	324,000	31,995	9.875	
$100,000,000 Series D Water System Revenue Bonds	6/14/88	2,640,510	201,253	7.622	
$ 9,000,000 Series E Water System Revenue Bonds	11/29/88	324,000	31,995	9.875	
$160,030,000 Series F Water System Revenue Bonds	3/15/89	2,779,838	189,261	6.808	
$100,000,000 Series G Water System Revenue Bonds	3/06/90	2,434,175	172,277	7.077	
$100,000,000 Series H Water System Revenue Bonds	1/10/91	2,459,172	168,857	6.866	
$180,000,000 Series I Water System Revenue Bonds	5/14/91	4,366,680	294,090	6.735	
$649,835,000 Series J Water System Revenue Bonds	1/16/92	12,422,222	745,198	5.999	
$100,000,000 Series K Water System Revenue Bonds	5/12/92	2,366,783	147,064	6.214	
$ 9,000,000 Series W Water Bonds	8/19/92	95,250	6,172	6.480	4.621
$537,830,000 Series L Water System Revenue Bonds	5/19/93	11,414,859	640,518	5.611	4.620
$ 2,000,000 Series X Water Bonds	9/01/93	26,000	1,247	4.796	
$ 1,400,000 Series Y Water Bonds	11/30/94	19,483	1,249	6.411	
$190,000,000 Series M Water System Revenue Bonds	12/19/93	3,911,846	194,981	4.984	
$152,000,000 Series N Water System Revenue Bonds	3/03/95	2,241,606	122,658	5.472	
$335,000,000 Series O Water System Revenue Bonds	12/05/95	7,528,890	375,667	4.990	
$160,000,000 Series P Water System Revenue Bonds	5/07/96	3,553,823	204,524	5.755	
$266,630,000 Series Q Water System Revenue Bonds	11/05/96	5,481,815	299,846	5.470	
$ 20,700,000 Series R Water System Revenue Bonds	3/10/97	564,125	36,627	6.493	
$200,205,000 Series S Water System Revenue Bonds	7/30/97	4,093,110	203,755	4.978	4.615
$135,665,000 Series T Water System Revenue Bonds	7/30/97	1,310,620	66,942	5.108	
$207,180,000 Series U Water System Revenue Bonds	12/01/98	4,032,075	200,758	4.979	
$ 20,580,000 Series V Water System Revenue Bonds	12/01/98	525,100	32,819	6.250	
$260,995,000 Series W Water System Revenue Bonds	5/01/01	3,659,312	195,822	5.351	4.613
Total		**177,694,286**	**10,484,018**		
Portion allocated to Project Interest Rate		**63,938,398**	**2,949,675**	**4.613**	**4.613**

[a]A unit equivalent to one dollar of principal amount outstanding for 1 year.
[b]The total interest cost (without regard to discounts paid or premiums received) divided by the total dollar-years, expressed as a percent.
[c]Determined by dividing cumulative interest costs by cumulative dollar-years, expressed as a percent. Excludes Oroville Field Division bonds and revenue bonds for off-aqueduct power facilities, the East Branch Enlargement facilities, East Branch Extension facilities, or water system facilities as defined in the Water Revenue Bond Amendment.

- Future capital costs in Appendix B are based on the prevailing prices as of December 31, 2001. Those costs presented in the financial analysis include allowances for price escalation.
- Pre-2002 charges in Appendix B represent charges as they should have been according to currently known conditions. Pre-2002 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 2002 and thereafter have been adjusted for any apparent overpayments or underpayments of pre-2002 charges.
- Charges in Appendix B for East Branch Enlargement costs include the amounts for debt service and 25 percent cover for the East Branch Enlargement share of the Series A through Series W bonds. Charges in Table 14-2 also include amounts of the debt service and cover for assumed future bonds.
- The water revenue bond surcharge in Appendix B applies only to the Series B through Series W bonds. Surcharge values included in Table 14-2 apply to Series B through Series W bonds and to assumed future issues required to finance SWP construction costs included in Table 14-1.

Line 10, Subtotal, Water Contractor Payments, is the total of Lines 2 through 9.

Line 11, Revenue Bond Cover Adjustments, represents the credit to contractors resulting from the cover of 25 percent of 1 year's debt service for Off-Aqueduct Power Facility Bonds and Water System Revenue Bonds. Cover is collected as required by the bond resolutions to provide security to the bondholders. If not needed to meet annual bond service, the cover is credited to the contractors in the following year. The annual charges for the following cost components include an amount for bond cover:

- minimum OMP&R component of the Transportation Charge for Off-Aqueduct Power Facilities;
- Water System Revenue Bond Surcharge;
- capital cost component of the Transportation Charge for East Branch Enlargement Facilities;
- capital cost component of the Transportation Charge for Coastal Branch Extension Facilities; and
- capital cost component of the Transportation Charge for East Branch Extension Facilities.

Line 12, Rate Management Adjustments, shows the projected amount of revenue reductions allocated to SWP contractors after repayment of the California Water Fund (see Line 36). Under provisions of the Monterey Amendment, the reduction amount allocated to agricultural contractors is deposited into a trust fund to stabilize payments in water-short years. The urban contractor allocation is applied as a direct reduction in charges.

Line 13, Federal Payments for Project Operating Costs, shows federal payments made according to the December 31, 1961, agreement between California and the United States providing for the Department to operate and maintain the San Luis Joint-Use Facilities. According to the January 12, 1972, supplement to the agreement, the Bureau of Reclamation initially paid 45 percent of OM&R costs for those activities. (The percentage does not apply to power costs; the Bureau and the Department provide their own power to pump water through the joint facilities.)

The percentage paid by the Bureau is periodically reviewed by the Bureau and the Department. The most recent review of the percentage paid by the Bureau was completed in 1987 and resulted in a federal share of 44.09 percent. The amounts in Line 13 are based on the assumption that the federal share will continue at 44.09 percent for calendar years 2002 through 2015.

Line 14, Appropriations for Operating Costs Allocated to Recreation, shows appropriations made

under the Davis-Dolwig Act. In passing the Davis-Dolwig Act, the California Legislature declared its intent that except for funds provided according to Assembly Bill 12 (1966), the Department budget will include appropriations of monies from the General Fund necessary for enhancement of fish and wildlife and recreation in connection with State water projects.

Annual OMP&R costs allocated to recreation and fish and wildlife enhancement are to be paid by annual appropriations from the General Fund. For fiscal years 1983-84 through 1998-01, no funds were appropriated for recreation and fish and wildlife enhancement purposes. No appropriations are indicated for 2002 through 2015.

Legislation enacted in 1989 offset a portion of the amount owed to the SWP by the State for costs allocated to recreation and to fish and wildlife enhancement against the amount the SWP owed to the California Water Fund (see line 36).

Line 15, Local Agency Payments under Davis-Grunsky Loan Repayment Contracts, shows repayment for $52.5 million of loans disbursed as of December 31, 2001. Repayment on any future loans was assumed to be beyond the period covered by the financial analysis.

Line 16, Revenue Bond Proceeds, includes bond proceeds classified as special reserves according to the description of revenue bond financing in Line 16 of Table 14-1. Those proceeds, used for capitalized OMP&R costs, revenue bond debt service, and debt service reserves, are not classified as revenue but are included in this line to simplify the financial presentation.

Line 17, Interest Earnings on Operating Revenues, includes interest earnings on unexpended proceeds from the sale of general obligation bonds, interest on operating reserves, and other short-term investment earnings on SWP revenues.

Line 18, Payments under Oroville-Thermalito Power Sale Contract, shows payments from Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company. Those utilities purchased all power generation from Hyatt and Thermalito Power Plants before April 1, 1983, according to a power sale contract dated November 29, 1967. The 1952-2001 entry includes amounts of final settlement of payments made according to the contract.

Line 19, Miscellaneous Revenues, includes all other operating revenues not included in Lines 2 through 18.

Line 20, Subtotal, Other Revenues, is the total of Lines 13 through 19.

Line 21, Total Operating Revenues, is the total of Lines 10, 11, 12, and 20.

Line 22, Total Operating Revenues and Capital Resources Revenues, is the total of Lines 1 and 21.

Project Expenses

Project expenses include

- operations, maintenance, and power costs
- deposits to replacement reserves
- deposits to special reserves
- capital resources expenditures
- debt service

Revenue bond proceeds earmarked for debt service during construction and the first year's operating expenses are deposited in the Central Valley Water Project Construction Fund and disbursed according to resolutions authorizing the issuance of such bonds.

Water contractor revenues associated with operating costs and debt service attributable to projects financed by revenue bonds are deposited in the Central Valley Water Project Revenue Fund for appropriate disbursement. All other operating revenues are deposited in the California Water Resources Development Bond Fund-Systems Revenue Account and are disbursed according to the following four priorities of use as specified in the Burns-Porter Act:

(1) SWP operations, maintenance, power, and replacement costs;
(2) general obligation bond debt service;
(3) repayment of expenditures from the California Water Fund; and
(4) deposits to a reserve for future SWP construction.

Project expenses are presented in Lines 23 through 33 of Table 14-2.

Line 23, Project Operations, Maintenance, and Power Costs, shows the OM&P portion of the historical and projected costs presented in Table 14-10 on page 203.

Table 14-10 and Line 23 of Table 14-2 also include amounts of the operations and maintenance costs for the federal share of joint facilities and those OM&P costs allocated to recreation, which are intended to be offset by revenues listed in Lines 13 and 14.

Allowances for cost escalations are included in OM&P costs through 2004. Allowances for additional long-term price escalations in the future are not included in these estimates because changes in OM&P costs do not substantially affect the overall results of the financial analysis. (For the most part, changes in OM&P costs cause direct offsetting changes in operating revenues.)

Power costs make up the major item of annual operating expenses for the SWP. Assumptions about future power sources and costs are discussed in Chapter 10. Line 23 also includes costs associated with power transactions that result in the sale of power not required for the delivery of water.

Line 24, Deposits to Replacement Reserves, shows funds set aside as required by contract for replacing existing SWP facilities. By December 31, 2001, $60.2 million had been spent for replacement costs; the balance of the replacement reserve as of that date was $20.1 million. Replacement reserve amounts are also included in Table 14-10.

Line 25, Deposits to Special Reserves Under Revenue Bond Financing, includes two significant components: special reserve deposits related to revenue bonds and capital resources revenue carryover from prior years used for construction in the current year. Special reserve deposits are the net of several income and expenditure items. Income items related to revenue bonds are as follows:

- proceeds set aside to pay bond interest during construction (capitalized interest;)
- proceeds set aside for first year operating costs (capitalized operations and maintenance);
- water contractor payments or bond proceeds set aside for debt service reserves;
- water contractor payments for revenue bond cover requirements; and
- deposits to and withdrawals from operating reserves to meet day-to-day cash flow requirements.

The 1952-2001 column also includes advances to the Department's revolving fund for working funds to purchase mobile equipment and to meet day-to-day operating expenses.

The expenditure items related to revenue bonds are as follows:

- debt service cover payments returned to water contractors;
- debt service reserve interest payments returned to water contractors;
- surplus account funds returned to water contractors or applied to meet expenses;
- total capitalized interest paid out; and
- total capitalized operations and maintenance paid out.

Special reserves, reduced over time as reserved amounts, are used for their respective purposes. The amount indicated each year in Line 25 indicates the change from the previous year. A negative number indicates a withdrawal of special reserves to meet expenses, while a positive number indicates a deposit.

Line 26, Capital Resources Expenditures, includes the amount of capital resources revenues applied to construction that is shown in Line 31 of Table 14-1. In Table 14-2, these expenditures are funded out of withdrawals from the reserves in Line 25 and do not affect net revenues shown in Line 35.

Lines 27 and 28, Payment of Debt Service on Bonds Sold through December 31, 2001, show the total principal and interest payments on bonds sold to date. Table 14-11 on page 204 summarizes payments on general obligation bonds (Series A through Y water bonds), power revenue bonds by project, and water system revenue bonds (Series A through W).

Lines 29 and 30, Payments on Projected Future Water Bonds, include the projected annual debt service amounts for future water revenue bonds included on Lines 23 and 25 of Table 14-1 for the East Branch Extension and other water system facilities. Assumptions about the service on these future bonds are that

- interest costs for the water revenue bonds average 6.0 percent; and
- bonds are to be repaid by the end of the project repayment period (2035) or sooner with maturities commencing in the year following the date of sale and with equal annual bond service for the principal repayment period.

Lines 31 and 32, Total Payments of Bond Debt Service, show the total of principal payments indicated on Lines 27 and 29 and the total of interest repayments indicated on Lines 28 and 30.

Line 33, Subtotal, Debt Service, is the total of Lines 31 and 32.

Line 34, Total Operating Expenses and Debt Service, is the total of Lines 23, 24, 25, 26, and 33.

Line 35, Net System Revenues, shows the annual amounts of revenues remaining after the payment of operating costs and bond debt service costs.

Line 36, California Water Fund Repayment, shows the total amount of repayments made to the California Water Fund to reimburse the fund for monies expended for construction of the State Water Resources Development System.

Repayment of the California Water Fund was completed in 1998 after reimbursements totaling $508 million. In addition to the $297 million of repayments shown in Line 36, $211 million of reimbursement were credited to the SWP as offsets for recreation and fish and wildlife enhancement expenditures.

Line 37, Revenues Used for Capital Expenditures, includes the amounts required annually for financing scheduled capital expenditures. Revenues not needed for operating costs or debt service are available for financing SWP capital expenditures.

Future Costs of Water Service

Estimates of future water costs are useful to SWP contractors for short-range and long-range planning of water needs, operations, and budgets. Unit water charges shown in Table 14-12 represent both unescalated and escalated costs of water according to service areas for years 2003 and 2008. The unit rates include costs of existing and future SWP facilities accounted for in Table 14-1 and Table 14-7. The unit charges are based on the assumption that in 2003 and 2008, the SWP will be able to deliver the entire amounts of water requested by contractors. The unit water charges included in Table 14-12 are listed both as unescalated 2001 dollars and as escalated rates reflecting assumed future inflation.

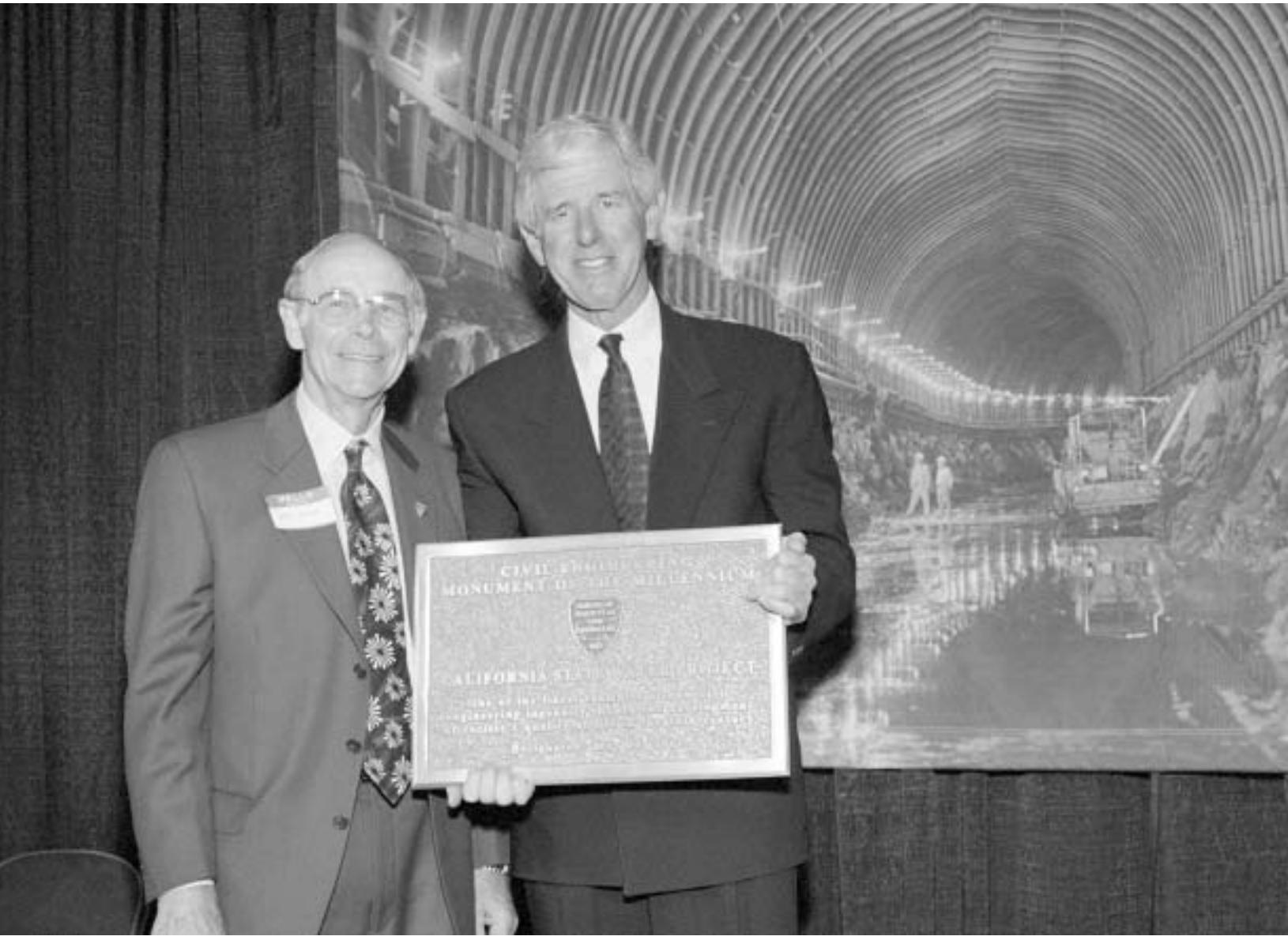
The Department's estimates of future capital expenditures include allowances for escalation of construction costs at 3 percent per year for 2002 through 2003 and at 4 percent per year for 2004 through 2015. The escalation rates for future power sources vary, depending on the source of energy.

Table 14-12. Estimated Unit Water Charges for 2003 and 2008, by Service Area (Dollars per Acre-Foot)

Service Area and Charge	2003		2008	
	Unescalated	*Escalated*	*Unescalated*	*Escalated*
Feather River Area				
Capital; Operations, Maintenance, and Replacement (OM&R)	37	37	27	27
North Bay Area				
Capital; OM&R	160	160	146	148
Power	18	18	14	15
Total	**178**	**178**	**160**	**163**
South Bay Area				
Capital; OM&R	126	126	91	93
Power	35	35	31	32
Total	**161**	**161**	**122**	**125**
Coastal Area				
Capital; OM&R	545	545	518	520
Power	84	84	83	86
Total	**629**	**629**	**601**	**606**
San Joaquin Area				
Capital; OM&R	58	58	52	54
Power	16	16	16	16
Total	**74**	**74**	**68**	**70**
Southern California Area				
Capital; OM&R	182	182	134	135
Power	95	95	85	87
Total	**277**	**277**	**219**	**222**

Information for this chapter was provided by the State Water Project Analysis Office in conjunction with the Division of Fiscal Services.

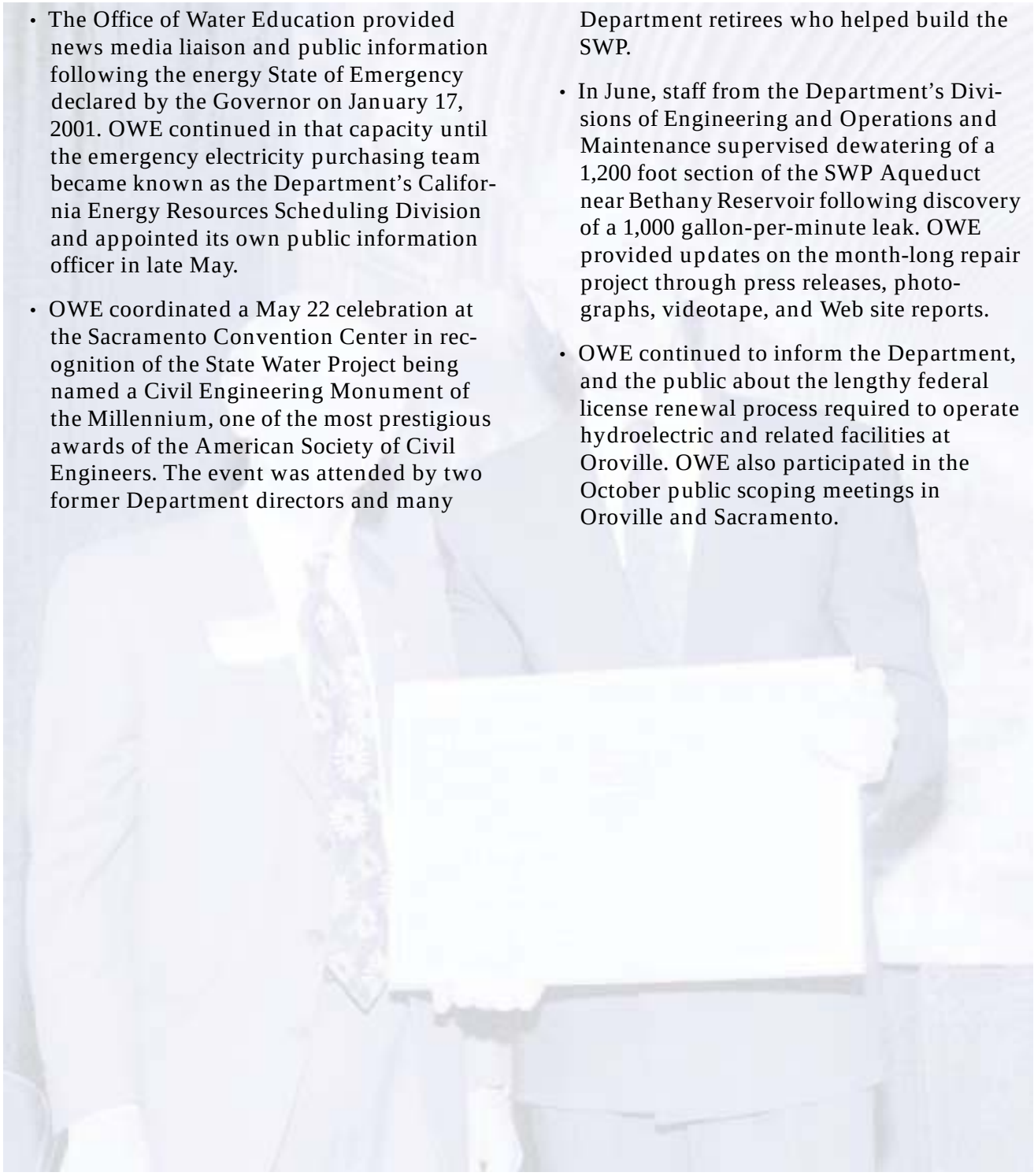
Chapter 15
SWP Education and Information



Former Director Hannigan holds the Civil Engineering Monument of the Millennium plaque presented by the American Society of Civil Engineers President, Robert Bein.

Significant Events in 2001

- The Office of Water Education provided news media liaison and public information following the energy State of Emergency declared by the Governor on January 17, 2001. OWE continued in that capacity until the emergency electricity purchasing team became known as the Department's California Energy Resources Scheduling Division and appointed its own public information officer in late May.
- OWE coordinated a May 22 celebration at the Sacramento Convention Center in recognition of the State Water Project being named a Civil Engineering Monument of the Millennium, one of the most prestigious awards of the American Society of Civil Engineers. The event was attended by two former Department directors and many Department retirees who helped build the SWP.
- In June, staff from the Department's Divisions of Engineering and Operations and Maintenance supervised dewatering of a 1,200 foot section of the SWP Aqueduct near Bethany Reservoir following discovery of a 1,000 gallon-per-minute leak. OWE provided updates on the month-long repair project through press releases, photographs, videotape, and Web site reports.
- OWE continued to inform the Department, and the public about the lengthy federal license renewal process required to operate hydroelectric and related facilities at Oroville. OWE also participated in the October public scoping meetings in Oroville and Sacramento.



The Office of Water Education most often represents the Department to the public. OWE has award-winning graphics, video, and photography units that provide materials relating to the Department's varied functions. OWE deals directly with the news media to communicate the Department's activities and policies and with the public via educational programs that demonstrate the Department's role in providing a reliable, high quality water supply for the State.

Media Outreach

Energy Emergency

OWE prepared news releases and staffed work stations at the Emergency Operations Center following the Governor's emergency declaration regarding California's electricity shortage. Media tours were conducted at the Center and interviews arranged with Department officials.

Flood Preparedness

OWE assisted in the development of improved briefings and tours of the Flood Center and publicized flood season meetings. A Web site provided the public and news media with information on flood preparedness and emergency work. The flood update site continued in 2001 with maps of the Sacramento and San Joaquin River systems and the State's hydrologic regions.

Snow Surveys

OWE provided media outreach for the Division of Flood Management's Snow Surveys Section in 2001.

Drought Panel

OWE issued news releases, posted information to a new Web site, provided audio-video assistance, briefed State Water Contractors, distributed a Department report in support of the Governor's new Advisory Drought Planning Panel, and helped with a drought exhibit at the Association of California Water Agencies' 2000 Fall Conference.

California State Water Project Atlas

After the *SWP Atlas* premiered in 1999, sales were slow but steady. Many volumes were given to foreign dignitaries who toured SWP facilities. Before September 11, 2001, the inventory level was at approximately 2,000 copies. After September 11, sales were halted for security reasons.

Oral History Program

An Oral History Program, started in 2001, collects interviews from key Department personnel about their assignments and management of the Department during its early years.

The Bulletin 200 series, published in the 1970s, recorded the technical aspects of the SWP's construction, but the human aspect (memories of coworkers and recollection of challenges and changes in the organization) was missing.

The series is expected to be completed by the end of 2003 with a cataloging / reference system, as well as a plan for distribution to repository libraries.

CALFED

OWE assisted CALFED in media outreach activities, including designing exhibits about the Sacramento-San Joaquin Delta that will be displayed at the Vista del Lago Visitors Center.

News Events

The Department notified news media of the following water-related highlights of 2001:

- announcements to SWP contractors for (1) SWP deliveries projected to meet 39 percent of most contractors' 2001 annual Table A, (2) deliveries at 1.61 million acre-feet, and (3) a total of 61.6 million acre-feet delivered since deliveries began in 1962;
- public scoping meetings on the North-of-the-Delta Offstream Storage Program;
- initiation of the 2002 Dry Year Water Purchase Program to help public agencies throughout California supplement their water supplies if 2002 is dry;
- public workshops to provide information on the fundamentals of water well construction, operation, and maintenance for owners of private residential wells;
- an agreement signed by the Department and Metropolitan Water District of Southern California providing $35 million in State funding to Metropolitan for design and construction of the Hayfield Groundwater Storage and Dry-Year Supply Project;
- repair of an Aqueduct leak near Bethany Reservoir that required dewatering of a 1,200 foot section of the SWP; and
- an agreement signed by the Department and Metropolitan providing State funds to Metropolitan for lining the remaining unlined portion of the Coachella Canal.

Community Relations

Oroville

OWE staff assisted in the preparation and media outreach for Oroville community meetings regarding the Department's license renewal application to the Federal Energy Regulatory Commission for Oroville's hydroelectric and ancillary facilities, opening of the new Lime Saddle Campground, and the Department's operations at Oroville Dam. OWE maintained the Lake Oroville recreation Internet site, www.lakeoroville.water.ca.gov, which provides information for tourists about the lake's recreational opportunities and other area facilities and attractions. In addition, the Department provided photography support to the City of Oroville and the Oroville Area Chamber of Commerce for various community events.

Publications

SWP Brochures. OWE's new SWP publications included a Spanish language version of *Easy Ways to Save Water*, which provides tips on saving water both inside and outside the home. The brochure was also printed in English.

Four revisions were completed in 2001 of the 35 individual SWP brochure series. The Feather River Fish Hatchery guide and brochure were revised and combined into one publication. The South Bay Aqueduct brochure now includes information on Bethany Reservoir. The California Aqueduct *Fishing Safety* and *Fishing Along the SWP* brochures were combined into a brochure titled *Fishing Along the SWP*, which is available in English, Spanish, Vietnamese, Lao, Hmong, and Cambodian. The Vista del Lago guide was updated in Spanish and English. A new brochure on Lake Oroville recreational opportunities was also produced.

E-News. OWE continues to increase awareness of statewide and local water news through a daily e-mail distribution to Department management of the *California Water News*, a compilation of major newspaper articles of interest to the Department. Distribution continues to widen and now includes nearly 4,000 individuals and agencies throughout the State, SWP contractors, municipal and private water agencies, other government departments, and educators and librarians.

The Department continued a water bond Web site providing the public and interested agencies with information on the Department's implementation of programs funded by passage of Proposition 13. The Web site is coordinated with the Division of Flood Management and the Division of Planning and Local Assistance.

OWE administered the *Recent News* at wwwdwr.water.ca.gov, posted news releases, news advisories, and new Web sites involving Proposition 13, Governor's Advisory Drought Planning Panel, DWR News Online, Flood Update, FERC relicensing of Oroville, Monterey Agreement, and water bonds.

***DWR People*.** The Department's employee newsletter continued as a quarterly publication during 2001. Stories spotlight individual and team accomplishments, skills, awards, promotions, retirements, and other news items.

- The winter issue of *DWR People* featured the Equal Opportunity and Management Investigations Office.
- The spring issue featured the Program Analysis and Support Office, the 2001 United California State Employees Campaign results, and the Department's annual awards.
- The summer issue featured the Division of Engineering's Project Geology Office and Water Awareness Month activities.
- The fall issue featured Hyatt Power Plant's refurbishment, Edmonston's West Wing project, Oroville's Spillway launching facility completion, The Reclamation Board's 90 years, the California Irrigation Management Information System, and the California State University, Sacramento well drilling project.

Video

Lake Oroville. To promote attendance at Oroville's Salmon Festival, a public service announcement was created and airtime purchased on four Northern California television stations.

Aerial footage was taken of Lake Oroville's 167-mile shoreline with global positioning system tracking for use by the Division of O&M.

Other Projects. Video staff documented the American Society of Civil Engineers Monument of the Millennium award presented to the Department's former Director honoring the SWP as one of the ten most significant engineering accomplishments of the 20th century.

Graphic services video group co-produced eight versions of the CALFED Bay-Delta Program Overview, including statewide and regional versions.

The video unit produced a visual presentation of the Twitchell and Decker Island habitat restoration projects as an educational supplement to Delta tours conducted by DPLA.

A video was created for the Governor's 2001 Environmental and Economic Leadership awards ceremony, describing the award recipients and their accomplishments.

Graphic Services staff worked with ACWA to develop an opening video for ACWA's 2001 Spring Conference.

Photography

The Department's photography unit provided photographs documenting monthly construction progress on the East Branch Extension and other Southern California projects. Other work included: digital and photographic services supporting efforts in the FERC relicensing of the Oroville facilities; photographic contributions to *DWR News* and *DWR People*; aerial photography of floodplains; coverage of the Klamath Basin drought; photographs of environmental scientists for the Environmental Services Office; and CALFED photography for their annual report.

Visitors Centers Programs and Promotions

During 2001, 2,554,050 visitors were welcomed at the SWP visitors centers and field division facilities listed in Table 15-1.

Table 15-1. Visitor-Days Recorded in 2001, by Location

Field Division	Visitor-Days
Oroville	423,353
Delta	277,376
San Luis	698,041
San Joaquin	13,475
Southern	1,141,805
Total	**2,554,050**

Total visitor figures include boaters, bicyclists, anglers, and other recreationists. Promotional brochures for Vista del Lago, San Luis, and Oroville Visitors Centers were placed in hotels and travel agencies. Newspaper and magazine ads were also prepared to promote Oroville recreation. Figure 15-1 shows visitors centers on the SWP.

Travel planners were encouraged to schedule trips for senior groups to SWP visitors centers. Tabletop displays were set up at travel conferences and promotional items, such as tote bags and sports bottles, were distributed.

SWP Tours

Although the September terrorist attacks in New York, Pennsylvania, and Washington, D.C. prompted cancellation of eight scheduled visits, the Department welcomed 29 tour groups with 323 visitors to SWP facilities in 2001. Since September 11, 2001, all tours have been restricted to the three SWP visitors centers and to office briefings at Department Headquarters. In 2001, tour groups came from the United States and the following foreign countries: Australia, Belgium, Canada, several Central Asian nations, China, Egypt, France, Germany, Indonesia, Israel, Japan, Korea, the province of Kosovo, the Philippines, Spain, and Vietnam.

Water Safety Education

The Department participated in a cooperative effort to develop and conduct a pilot program at an SWP lake that would encourage "at risk" children to join a Junior Lifeguard Program.

The project took 60 youngsters, ages 8-17, on a 2-day field trip to Lake Oroville as part of the Sacramento Metropolitan Aquatic Rescue Training Lifeguard Program. SMART teaches useful rescue techniques to children.

The field trip served to not only promote Lake Oroville's many recreational opportunities but also the Department's community outreach program whose summer message *Get Wet, Stay Safe* focused on recreational water safety.

Displays and Exhibits

During 2001, the Department created the following SWP-related items:

- parking lot signs and maps at Vista del Lago Visitors Center. Ten outdoor interpretive displays were installed on the observation deck along with two telescopes that overlook the lake;
- design of 2001 calendar;
- self-guided tour interpretive panels for the Feather River Fish Hatchery, including several relief castings for Americans with Disabilities Act compliance;
- the Gianelli Archives Room and Romero Visitors Center at San Luis Reservoir were updated. Historical memorabilia is now displayed on a bi-yearly rotational schedule; and
- exhibits, videos, and informational materials for use at the ACWA spring and fall conferences.

School Education Program

The program's goal is to provide students and educators with a statewide perspective on water issues such as conservation, conveyance systems, and the water cycle. OWE develops and promotes high quality materials, which are provided free of charge to schools, educators, and water districts.



Figure 15-1. Visitors Centers on the SWP

Program achievements for 2001 include

- a display of the Department's Children's Exhibit components at Sacramento's Leonardo DaVinci Elementary School; the Sacramento Zoo's Earth Day observance; the Sacramento Discovery Center's Creek Week event; the American River Education Center's *Get Wet* event in Folsom; and the *Make a Splash* event at the American River Water Education Center in Folsom;
- updating the *Water Facts and Fun* Web site;
- providing curriculum materials and childrens videos to California teachers and water agencies;
- contracting for development of the Teachers Guide and Student Passport for the Romero Visitor's Center;
- presenting the Department's Education Program to the California Regional Environmental Education Community Conference in Yosemite;
- conducting a teacher workshop, *All About Water*, for the Marina Coast Water Agency;
- participating and assisting at Water Education Committee meetings hosted by the Imperial Irrigation District, meetings hosted by California State University, San Bernardino, and meetings co-hosted by OWE and CALFED staff members; and
- participating on the Project Water Education for Teachers Advisory Board, the Creek Week Planning Committee, and the California Environmental Education Interagency Network.

The School Education Program also co-sponsored and provided support to

- the *Environmentality Campaign* for fifth grade students in conjunction with the State of California and the Walt Disney Corporation;
- the California Department of Education's *Regional Environmental Education Coordinators Network*; and
- the Aquatic Outreach Institute's Educator Conference on creeks, wetlands, and watersheds.

Water Awareness Month Activities

During May 2001, the Department celebrated Water Awareness Month for the fourteenth consecutive year. The theme was *Use Water Wisely: It's a Way of Life.*

As part of Water Awareness Month, the Department's news releases highlighted the public sale of the *California State Water Project Atlas* as well as activities at SWP visitors centers. The Department's public information officers answered media inquiries regarding Water Awareness Month and special events marking the annual observance.

Because the Department is a sponsoring agency, OWE provided a member to the State Water Awareness Campaign Steering Committee.

Information for this chapter was provided by the Office of Water Education.

Appendix B

Data and Computations Used to Determine 2003 Water Charges

Appendix B
Data and Computations
Used to
Determine 2002 Water Charges

Contents

Types of Water Charges 233
Composition and Timing of Water Charges 236
Bases for Allocating Reimbursable Costs Among Contractors 238
    Capital and Minimum OMP&R Costs 238
    Variable OMP&R Costs 240
    Water Conveyance 241
Bases for Reimbursable Costs 242
    Capital Costs 242
    Annual Operating Costs 243
    Transportation and Devil Canyon-Castaic Contract Costs 244
    Conservation Capital and Operating Costs 245
Project Water Charges 245
    Transportation Charges 245
    Delta Water Charges 248
    Water System Revenue Bond Surcharge 251
    Total Water Charges 251
    Equivalent Total Water Charges 251
    Equivalent Water Costs by Reach 251
    East Branch Enlargement Facility Charges 251
Short-Term Agreements 252

Figures

B-1 Relationships of Data Used to Substantiate Statements of Charges 234
B-2 Relationships of Data Used to Substantiate East Branch Enlargement Charges 235
B-3 Composition of Delta Water Charge and Transportation Charge 237
B-4 Repayment Reaches and Descriptions 239

Tables

1 Project Purpose Cost Allocation Factors 243
2 Criteria for Amortizing Capital Costs of Transportation Facilities 246
3 Minimum OMP&R Costs of Reach 31A Assigned Directly to Kerm County Water Agency 246
4 Summary of Off-Aqueduct Power Facility Charges and Credits 247
5 Projected Charges for Off-Aqueduct Power Facilities 247

Tables (continued)

6 Kilowatt-Hour Per Acre-Foot Factors for Allocating Off-Aqueduct Power Facility Costs 248
7 Extra Peaking Charges for Additional Power, by Pumping Plant 249
8 Extra Peaking Charges for Additional Power, by Contractor 250
9 Determination of Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities Among Participating Contractors 253
B-1 Factors for Distributing Reach Capital Costs Among Contractors 255
B-2 Factors for Distributing Reach Minimum OMP&R Costs Among Contractors . . . 257
B-3 Power Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant 259
B-4 Annual Table A Amounts to Project Water 261
B-5A Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor 265
B-5B Annual Water Quantities Delivered to Each Contractor 277
B-6 Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities 281
B-7 Reconciliation of Capital Costs Allocated to Water Supply and Power Generation 290
B-8 SWP Capital Costs of Requested Delivery Structures 291
B-9 Capital Costs of Requested Excess Peaking Capacity 292
B-10 Capital Costs of Each Aqueduct Reach to be Reimbursed through Capital Cost Component of Transportation Charge 294
B-11 Minimum OMP&R Costs of Each Aqueduct Reach to be Reimbursed through Minimum OMP&R Component of Transportation Charge 302
B-12 Variable OMP&R Costs to be Reimbursed through Variable OMP&R Component of Transportation Charge 310
B-13 Capital and Operating Costs of Project Conservation Facilities to be Reimbursed through Delta Water Charge 313
B-14 Capital Costs of Transportation Facilities Allocated to Each Contractor 314
B-15 Capital Cost Component of Transportation Charge for Each Contractor 318
B-16A Minimum OMP&R Component of Transportation Charge for Each Contractor 322
B-16B Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities 326
B-17 Unit Variable OMP&R Component of Transportation Charge 330
B-18 Variable OMP&R Component of Transportation Charge for Each Contractor . . . 334
B-19 Total Transportation Charge for Each Contractor 338
B-20A Calculation of Delta Water Rates 342
B-20B Delta Water Rates by Facility 343
B-21 Total Delta Water Charge for Each Contractor 344
B-22 Water System Revenue Bond Surcharge for Each Contractor 348
B-23 Total Transportation and Delta Water Charge for Each Contractor 352
B-24 Equivalent Unit Charge for Water Supply for Each Contractor 356
B-25 Equivalent Unit Transportation Costs of Water Delivered from or through Each Aqueduct Reach 357
B-26 Capital Costs of Each Aqueduct Reach to be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge 358

Tables (continued)

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 360
B-28 Capital Costs of East Branch Enlargement Transportation Facilities Allocated to Each Contractor 362
B-29 Capital Cost Component of the East Branch Enlargement Facilities Transportation Charge for Each Contractor. 363
B-30 Minimum OMP&R Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor 364
B-31 Total East Branch Enlargement Facilities Transportation Charge for Each Contractor 365

Appendix B
Data and Computations
Used to
Determine 2003 Water Charges

The Department of Water Resources annually furnishes Statements of Charges to the 29 long-term State Water Project water supply contractors. Article 29(e) of the Standard Provisions for Water Supply Contracts, approved August 3, 1962, describes those statements:

> *All such statements shall be accompanied by the latest revised copies of the document amendatory to Article 22 and of Tables B, C, D, E, F, and G of this contract, together with such other data and computations used by the State in determining the amounts of the above charges as the State deems appropriate.*

To comply with Article 29(e), the Department performs an annual comprehensive review and redetermination of all water supply and financial aspects of the SWP for the entire project repayment period. This annual redetermination is performed in accordance with Article 22(f) and Article 28 of the water 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 2003. The information is based on established data about the SWP, both known and projected, as of June 30, 2002.

The computational procedures and interrelationships between tabulations in this appendix are outlined in Figure B-1 and Figure B-2. All tables referenced in Figures B-1 and B-2 follow this text.

Types of Water Charges

Charges to SWP water supply contractors include the costs of facilities for the conservation and development of a water supply and the conveyance of such supply to SWP service areas. These facilities are classified as "Project Conservation Facilities" and "Project Transportation Facilities" in the Standard Provisions for Water Supply Contract. The names of the main facilities in each classification follow.

Project Conservation Facilities

- Frenchman Dam and Lake
- Grizzly Valley Dam and Lake Davis
- Antelope Dam and Lake
- Oroville Dam and Lake Oroville
- Oroville power facilities
- Delta Facilities
- A portion of the California Aqueduct from the Delta to Dos Amigos Pumping Plant
- Sisk Dam, San Luis Reservoir, and Gianelli Pumping-Generating Plant

Project Transportation Facilities

- Grizzly Valley Pipeline
- North Bay Aqueduct
- South Bay Aqueduct, including Del Valle Dam and Lake Del Valle
- Remainder of the California Aqueduct from the Delta to Dos Amigos Pumping Plant and all facilities south, including dams and lakes in Southern California
- Off-Aqueduct Power Facilities (Reid Gardner Unit No. 4, Bottle Rock Power Plant, and South Geysers Power Plant)

The standard provisions provide for a Delta Water Charge and a Transportation Charge for project water.

The Delta Water Charge is a unit charge applied to each acre-foot of SWP water the contractors receive according to their Table A. The unit

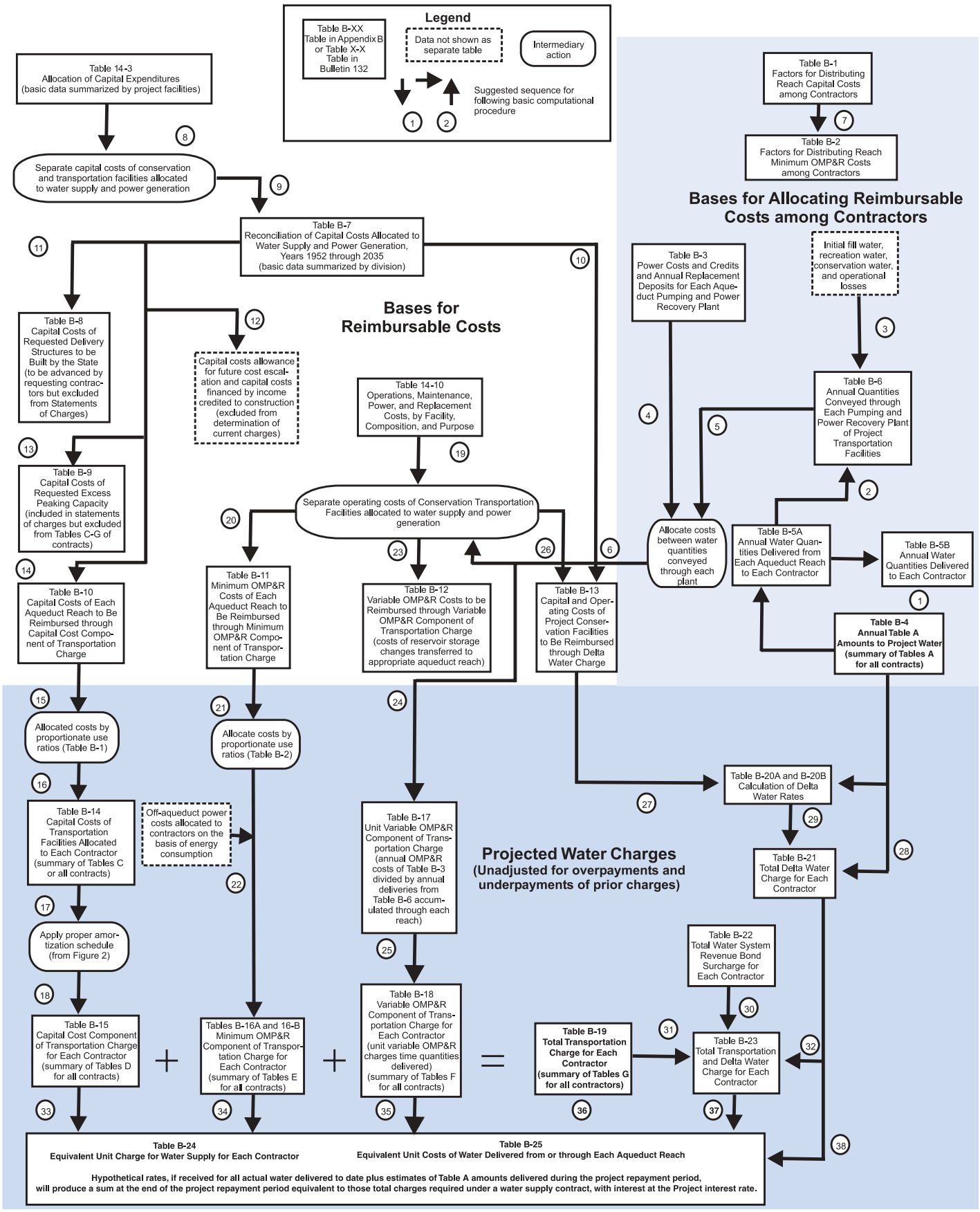


Figure B-1. Relationships of Data Used to Substantiate Statements of Charges

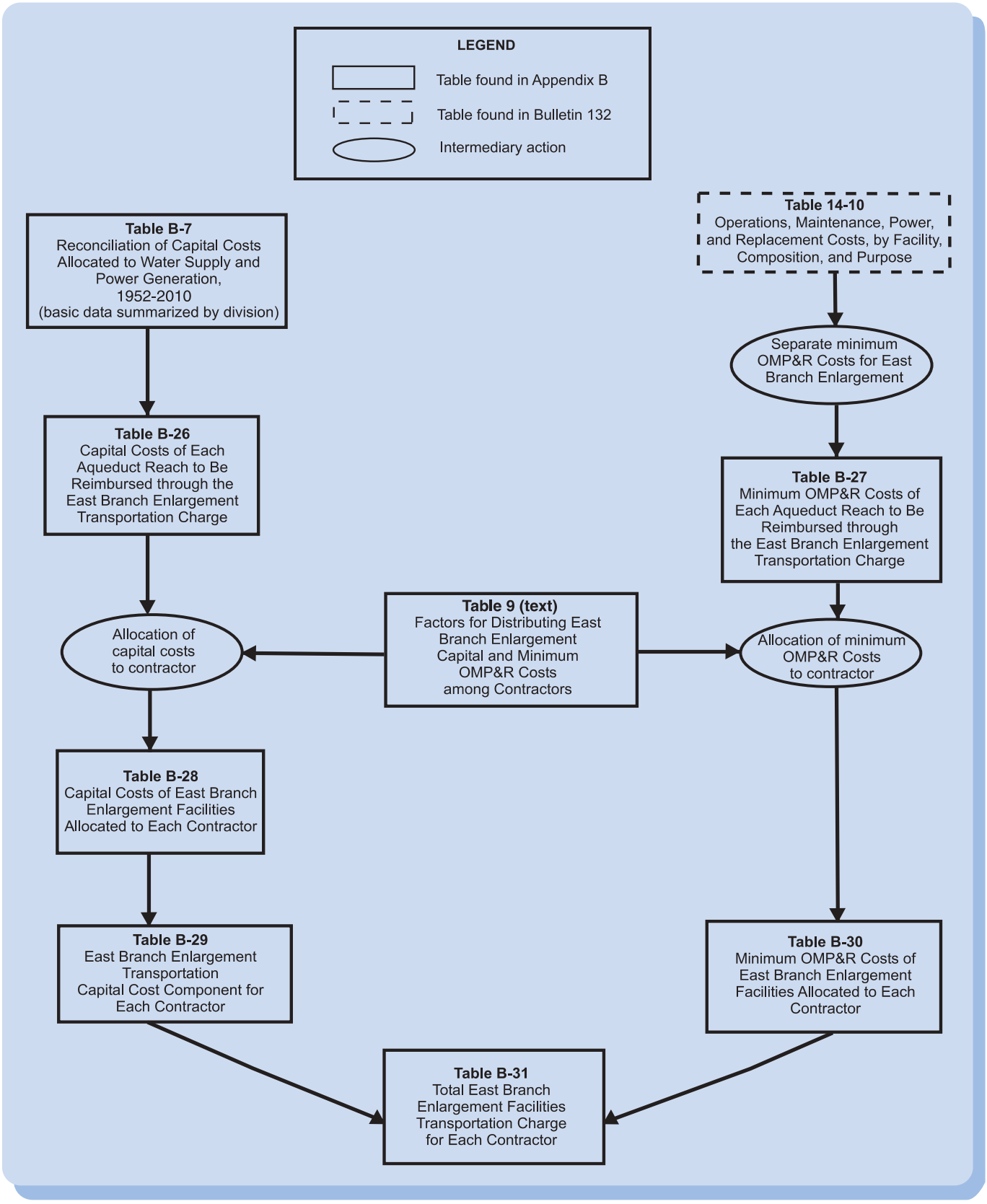


Figure B-2. Relationships of Data Used to Substantiate East Branch Enlargement Charges

charge, if applied to each acre-foot of all contractors' Table A for the remainder of the project repayment period, is calculated to result in repayment of all outstanding reimbursable costs of the Project Conservation Facilities, with appropriate interest, by the end of the repayment period (2035).

The Transportation Charge is for use of facilities to transport water to the vicinity of each contractor's turnout. Generally, the annual charge represents each contractor's proportionate share of the reimbursable capital costs and operating costs of the Project Transportation Facilities.

Each contractor's allocated share of those reimbursable capital costs is amortized for repayment to the State; and certain variations are allowed in the amortization methods. Essentially, the contractors' shares of reimbursable operating costs are repaid in the year such costs are incurred by the State.

The East Branch Enlargement Transportation Charge is paid by the seven Southern California contractors participating in the enlargement. San Bernardino Valley Municipal Water District advanced funds to pay the district's allocated capital costs for the East Branch Enlargement. The remaining six contractors pay an allocated share of the debt service on revenue bonds sold to finance the enlargement. Each contractor also will pay an allocated share of the minimum operation, maintenance, power, and replacement (OMP&R) costs of the East Branch Enlargement.

Composition and Timing of Water Charges

As shown in Figure B-3, the Delta Water Charge and the Transportation Charge consist of the following three components:

(1) Conservation and Transportation capital cost components, which will return to the State all reimbursable capital costs;

(2) Conservation and Transportation minimum OMP&R components, which will return to the State all reimbursable operating costs that do not depend on or vary with quantities of water actually delivered to the contractors; and

(3) A Transportation variable OMP&R component, which will return to the State all reimbursable operating costs that depend on, and vary with, quantities of water actually delivered to the contractors.

The formula for computing the Delta Water Rate, Article 22(f) of the Standard Provisions for Water Supply Contract, was designed to ensure that all adjustments for prior overpayments or underpayments of the Delta Water Charge are accounted for in a redetermination of the rate. Since the redetermined rate applies to all future contractors' Table A quantities, such adjustments are amortized during the remainder of the project repayment period. This appendix includes a redetermination of the Delta Water Rate for 2003.

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 2001 included in those tables are the redetermined amounts and do not equal the amounts actually paid by contractors.

As provided under the Water System Revenue Bond Amendment to the water supply contracts, differences between actual payments under the Transportation capital cost component and amounts computed in this redetermination are accumulated with interest and amortized during the remaining years of the contract repayment period. All computations for adjustments are included in the attachments accompanying each contractor's Statement of Charges and are reflected in revised copies of Table C through Table G of the contract, which are also furnished to each long-term water supply contractor in the annual Statements of Charges.

These redeterminations exclude four charges associated with water service other than the Delta Water Charge and the Transportation

Delta Water Charge

Capital Cost Component

1. Planning, design, right-of-way, and construction costs of Conservation Facilities
2. Operations and maintenance costs for newly constructed Conservation Facilities prior to initial operations
3. Activation costs for newly constructed Conservation Facilities
4. Power costs allocated to initial filling of San Luis Reservoir
5. Capitalized O&M costs (major repair work and so forth) for Conservation Facilities
6. Program costs (portion) to mitigate impacts on current Delta fishery population due to SWP pumping prior to 1986 (Department of Water Resources-Department of Fish and Game agreement)

Minimum OMP&R Component

1. Direct O&M costs of Conservation Facilities
   a. Headquarters and field divisions (portion)
   b. Insurance and FERC costs (portion)
2. General O&M costs allocated to Conservation Facilities
   a. Contractor Accounting Office (portion)
   b. Financial and contract administration (portion)
   c. Water rights
   d. Power planning for SWP facilities (portion)
3. Replacement deposits for SWP control centers (portion)
4. Credits for a portion of Hyatt-Thermalito power generation
5. Power costs and credits related to pumping water to San Luis Reservoir for project operations (storage changes)
6. Value of power used and generated by Gianelli Pumping-Generating Plant
7. Program costs (portion) to offset annual fish losses resulting from pumping at Banks Pumping Plant (Department of Water Resources-Department of Fish and Game agreement)

Transportation Charge

Capital Cost Component

1. Planning, design, right-of-way, and construction costs of Transportation Facilities
2. O&M costs for newly constructed Transportation Facilities prior to initial operation
3. Activation costs for newly constructed Transportation Facilities
4. Power costs allocated to initial filling of Southern California reservoirs
5. Capitalized O&M costs (major repair work and so forth) for Transportation Facilities
6. Program costs (portion) to mitigate impacts on current Delta fishery population due to SWP pumping prior to 1986 (Department of Water Resources-Department of Fish and Game agreement)

Minimum OMP&R Component

1. Direct O&M costs of Transportation Facilities
   a. Headquarters and field divisions (portion)
   b. Insurance and FERC costs (portion)
2. General O&M costs related to Transportation Facilities
   a. Contractor Accounting Office (portion)
   b. Financial and contract administration (portion)
   c. Power planning for SWP facilities (portion)
3. Power costs and credits related to pumping water to Southern California reservoirs for project operations (storage changes)
4. Power costs for pumping water to replenish losses from Transportation Facilities
5. Other power costs
   a. Station service at Transportation Facility power and pumping plants
   b. Transmission service costs related to “backbone” Transportation Facilities
6. Replacement deposits for SWP control centers (portion)
7. Off-Aqueduct Power Facility costs–bond service, bond cover costs (25 percent of bond service), bond reserves, transmission costs to provide service to “backbone,” fuel costs taxes, and O&M-less power sales allocated to Off-Aqueduct Power Facilities
8. Program costs (portion) to offset annual fish losses resulting from pumping at Banks Pumping Plant (Department of Water Resources-Department of Fish and Game agreement)

Variable OMP&R Component

1. Power purchase costs
   a. Capacity
   b. Energy
   c. Pine Flat bond service, O&M, and transmission costs allocated to aqueduct pumping plants
2. Alamo, Devil Canyon, Warne, and Castaic power generation credited at the power plant reach and charged to aqueduct pumping plants
3. Hyatt-Thermalito Diversion Dam power plant generation charged to aqueduct pumping plants (credits for this generation are reflected in the Delta Water Rate)
4. Replacement deposits for equipment at pumping plants and power plants
5. Credits from sale of excess SWP system power
6. Program costs (portion) to offset annual fish losses resulting from pumping at Banks Pumping Plant (Department of Water Resources-Department of Fish and Game agreement)

Note: Excludes costs recovered under the East Branch Enlargement Transportation Charge.

Figure B-3. Composition of Delta Water Charge and Transportation Charge

Charge. The excluded charges (and the manner in which such excluded charges are treated in this appendix) are:

(1) Advances of funds pursuant to Article 4(d) of the standard provisions for excess capacity constructed by the State at the request of contractors.

(2) Advances of funds pursuant to Article 10(d) of the standard provisions for delivery structures (turnouts) constructed by the State at the request of contractors. Partial information concerning actual and projected capital costs of such delivery structures is included in this appendix. Statements concerning these costs and data are furnished to the appropriate contractors at various times and are not part of the annual statements.

(3) Payments for sale and service of surplus water to entities other than contractors, pursuant to Article 21 of the standard provisions, are also excluded. Those payments are generally based on the unit rates shown in Table B-25. Net revenues resulting from noncontractor service are applied as indicated on page 24 of Bulletin 132-71.

(4) Payments under the Devil Canyon-Castaic contract for costs of the Devil Canyon-Castaic facilities allocable to power generation. Charges billed as a result of the contract are billed separately from those billed as a result of the water supply contract. Information about the treatment of such charges in relation to redetermined Transportation Charges is included in special attachments to the bills of the six participating contractors.

The time and method of payment for corresponding components of the Delta Water Charge and the Transportation Charge are as follows:

(1) The capital cost components of the Delta Water Charge and the Transportation Charge are paid in two semiannual installments, due January 1 and July 1 of each year, based on statements furnished by the State on or before July 1 of the preceding year;

(2) The minimum OMP&R components of the Delta Water Charge and the Transportation Charge are paid in 12 equal installments, due the first of each month and based on statements furnished by the State on or before July 1 of the preceding year; and

(3) The variable OMP&R component of the Transportation Charge is paid in varying monthly amounts and is due the fifteenth day of the second month following actual water delivery. The charges are projected based on a unit charge per acre-foot established on or before July 1 of the preceding year. Those unit charges may be revised during the year to reflect current power costs and revenues. The unit charges are applied to actual monthly delivery quantities as determined by the State on or before the fifteenth day of the month following actual delivery.

Bases for Allocating Reimbursable Costs Among Contractors

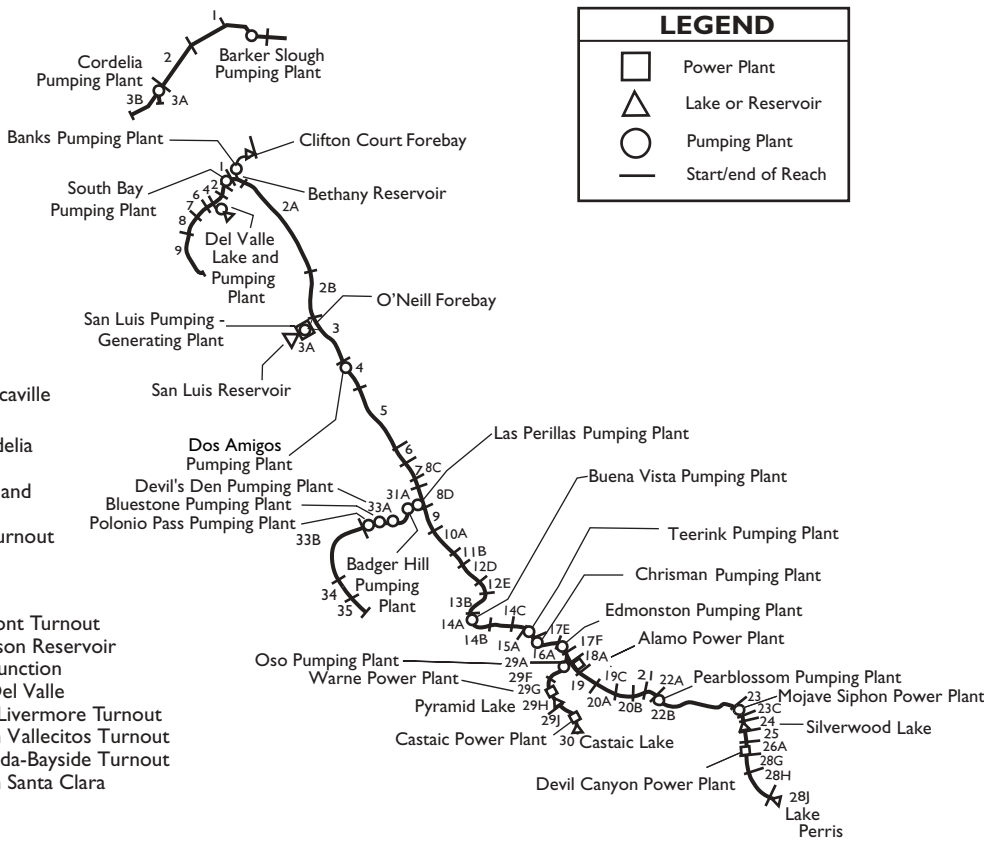
This section describes the procedures for allocating reimbursable costs of Project Transportation Facilities among contractors (see upper right portion of Figure B-1). Those costs do not include annual costs of Off-Aqueduct Power Facilities, which are explained in the section "Project Water Charges."

Capital and Minimum OMP&R Costs

Figure B-4 includes information about the repayment reaches that form the basis for allocating reimbursable costs of the Project Transportation Facilities among contractors.

Allocations of reimbursable capital costs and minimum OMP&R costs of each reach are based on the proportionate maximum use of that reach by respective contractors under planned conditions of full development.

The derivation of ratios that represent the proportionate maximum use of each aqueduct reach by the respective contractors was first



North Bay Aqueduct

1 Barker Slough through Fairfield/Vacaville Turnout
2 Fairfield/Vacaville Turnout to Cordelia Forebay
3A Cordelia Forebay through Benicia and Vallejo Turnouts
3B Cordelia Forebay through Napa Turnout Reservoir

South Bay Aqueduct

1 Bethany Reservoir through Altamont Turnout
2 Altamont Turnout through Patterson Reservoir
4 Patterson Reservoir to Del Valle Junction
5 Del Valle Junction through Lake Del Valle
6 Del Valle Junction through South Livermore Turnout
7 South Livermore Turnout through Vallecitos Turnout
8 Vallecitos Turnout through Alameda-Bayside Turnout
9 Alameda-Bayside Turnout through Santa Clara Terminal Facilities

California Aqueduct

North San Joaquin Division

1 Delta through Bethany Reservoir
2A Bethany Reservoir to Orestimba Creek
2B Orestimba Creek to O'Neill Forebay

San Luis Division

3A San Luis Dam, Reservoir, and Pumping-Generating Plant
3 O'Neill Forebay to Dos Amigos Pumping Plant
4 Dos Amigos Pumping Plant to Panoche Creek
5 Panoche Creek to Five Points
6 Five Points to Arroyo Pasajero
7 Arroyo Pasajero to Kettleman City

South San Joaquin Division

8C Kettleman City through Milham Avenue
8D Milham Avenue through Avenal Gap
9 Avenal Gap through Twisselman Road
10A Twisselman Road through Lost Hills
11B Lost Hills to 7th Standard Road
12D 7th Standard Road through Elk Hills Road
12E Elk Hills Road through Tupman Road
13B Tupman Road to Buena Vista Pumping Plant
14A Buena Vista Pumping Plant through Santiago Creek
14B Santiago Creek through Old River Roa
14C Old River Road to Teerink Pumping Plant
15A Teerink Pumping Plant to Chrisman Pumping Plant
16A Chrisman Pumping Plant to Edmonston Pumping Plant

Tehachapi Division

17E Edmonston Pumping Plant to Porter Tunnel
17F Porter Tunnel to Junction, West Branch, California Aqueduct

Mojave Division

18A Junction, West Branch, California Aqueduct through Alamo Power Plant
19 Alamo Power Plant to Fairmont
19C Buttes Junction through Buttes Reservoir
20A Fairmont through 70th Street West
20B 70th Street West to Palmdale
21 Palmdale to Littlerock Creek
22A Littlerock Creek to Pearblossom Pumping Plant
22B Pearblossom Pumping Plant to West Fork Mojave River
23 West Fork Mojave River to Silverwood Lake
23C Mojave Siphon Power Plant
24 Cedar Springs Dam and Silverwood Lake

Santa Ana Division

25 Silverwood Lake to South Portal, San Bernardino Tunnel
26A South Portal, San Bernardino Tunnel through Devil Canyon Power Plant
28G Devil Canyon Power Plant to Barton Road
28H Barton Road to Lake Perris
28J Perris Dam and Lake Perris

West Branch, California Aqueduct

29A Junction, West Branch, California Aqueduct through Oso Pumping Plant
29F Oso Pumping Plant through Quail Embankment
29G Quail Embankment through Warne Power Plant
29H Pyramid Dam and Lake
29J Pyramid Lake through Castaic Power Plant
30 Castaic Dam and Lake

Coastal Branch, California Aqueduct

31A Avenal Gap to Devil's Den Pumping Plant
33A Devil 's Den Pumping Plant through Tank 1
33B Tank 1 through Chorro Valley Turnout
34 Chorro Valley Turnout through Lopez Turnout
35 Lopez Turnout through Guadalupe Turnout

Figure B-4. Repayment Reaches and Descriptions

reported in Bulletin 132-70. The ratios in Bulletin 132-70 were subsequently revised for the North Bay Aqueduct, the South Bay Aqueduct, the California Aqueduct from the Delta to Castaic Lake, and the Coastal Branch.

All the revisions reported in previous bulletins regarding the derivation of ratios that represent the proportionate maximum use of each aqueduct reach by the respective contractors were last reported in Tables B-1 and B-2 of Bulletin 132-91. In 1998, under Article 53 of the Monterey Amendment, Kern County Water Agency began to permanently transfer some of their agricultural capacity to other state water contractors. In 1998, 25,000 acre-feet of capacity were transferred to Mojave. In 2000, Castaic Lake Water Agency acquired 41,000 acre-feet of capacity from the Delta to Castaic Lake, Palmdale Water District acquired 4,000 acre-feet from the Delta to Reach 20B, and Alameda County Flood Control and Water Conservation District-Zone 7 acquired 7,000 acre-feet and 15,000 acre-feet in two separate transfers for a total of 22,000 acre-feet of capacity from the Delta to Reach 10A and the South Bay Aqueduct. In 2001, three additional transfers went into effect: Alameda-Zone 7 increased their allocated water capacity by 10,000 acre-feet, and Napa County Flood Control and Water Conservation District and Solano County Water Agency both acquired aqueduct capacity of 4,025 acre-feet and 5,756 acre-feet, respectively, from the Delta to Reach 11B and through the North Bay Aqueduct. In two separate transfers outside of Monterey, Tulare Lake Basin Water Storage District transferred 3,000 acre-feet of capacity to Antelope Valley-East Kern Water Agency and 3,973 acre-feet to Dudley Ridge Water District.

Table B-1 presents the reach ratios currently applicable to reimbursable capital costs.

Table B-2 presents corresponding ratios for allocating 2002 and after reimbursable minimum OMP&R costs among contractors. Requested excess capacity is omitted when deriving ratios applicable to capital costs because the capital costs for the excess capacity are paid on an incremental-cost basis and not a proportionate-use basis. However, requested excess capacity is accounted for in the ratios applicable to minimum OMP&R costs.

Variable OMP&R Costs

Article 26(a) includes provisions to ensure that the variable OMP&R component of the Transportation Charge will result in a return to the State of those costs that depend on and vary with the amount of SWP water deliveries. (The minimum OMP&R component results in a return of those operating costs that do not vary with deliveries.) Under Article 26(a) all such costs for a reach for a given year will be allocated among contractors in proportion to the actual annual use of that reach by the respective contractors.

Table B-3 summarizes the total power costs and credits for each aqueduct pumping and power recovery plant. Those variable costs consist of:

- Costs of capacity and energy used exclusive of associated power transmission and station service charges (transmission and station service costs are classified as minimum OMP&R costs);
- Credits for capacity and energy produced at aqueduct power recovery plants (treated as negative costs); and
- Payments for replacement of major plant machinery components having economic lives shorter than the project repayment period. In 1997, the Department discontinued charging for a sinking fund for replacements. Replacement costs for 1999 and thereafter are to be paid on an annual basis as the costs are incurred.

Table B-3 excludes plant capacity and energy costs associated with surplus and unscheduled water service after May 1, 1973. Prior to that date, surplus water service was charged the same unit variable OMP&R component as SWP water service. An amendment to the long-term water supply contracts in 1973 significantly changed the rate structure for surplus water service. Capacity and energy costs for pumping surplus and unscheduled water were allocated directly to those water contractors receiving surplus and unscheduled water service. A contract

amendment in 1991 again revised the rate structure to provide for payment of costs through a melded power rate. These revisions to charges for surplus and unscheduled water are effective from the date of the amendments and are not applied to past charges.

An interruptible water program was established in 1994. This program is based on individual annual contracts; costs for interruptible water actually delivered are included in Table B-3.

Water Conveyance

The water conveyance quantities that form the basis for annual allocations are presented in Tables B-4, B-5A, B-5B, and B-6.

Table B-4 presents the schedules of annual allocations as set forth in Table A and Article 6(a) of each water supply contract.

Table B-5A shows amounts of actual and projected SWP water quantities delivered or to be delivered to each aqueduct reach for each contractor. Projected deliveries for years 2002 through 2035 are based on contractors' requests for future water deliveries. The quantities included in Table B-5A also include non-project water delivered to contractors and surplus water deliveries prior to May 1, 1973, and actual interruptible water deliveries in 1994 and after.

Table B-5B presents a summary of actual and projected annual water quantities delivered or to be delivered to each contractor. Quantities also include amounts of nonproject water and surplus water delivered prior to May 1, 1973, and actual deliveries of interruptible water in 1994 and after.

Table B-6 summarizes the annual SWP water quantities conveyed or to be conveyed through each aqueduct pumping plant or power plant for each of the following functions:

- *Deliveries-Water Supply.* Water made available to contractors at down-aqueduct delivery structures, including certain hypothetical quantities to facilitate cost allocations, for those years when deliveries are made from net annual storage withdrawals. The net annual amounts of storage withdrawals are hypothetically added to the actual amounts conveyed from the Delta to the reservoirs, since deliveries made from storage withdrawals bear the same variable OMP&R costs per acre-foot as they would if the deliveries were actually conveyed from the Delta in that year. The hypothetical increases in the deliveries made from reservoir storage withdrawals are offset by equal credits to the minimum OMP&R costs of the respective reservoirs. Thus, the variable OMP&R components per acre-foot (Table B-17) may be applied to the total annual quantities delivered either from aqueduct reservoir storage or from the Delta.
- *Initial Fill Water.* Water required for initial filling of down-aqueduct reaches and reservoirs or for repayment of pre-consolidation water used during construction.
- *Deliveries-Recreation*. Water delivered to down-aqueduct recreation developments or used for fish and wildlife mitigation or enhancement.
- *Operational Losses*. Water lost through evaporation and seepage from all down-aqueduct reaches.
- *Reservoir Storage Changes*. Water placed in down-aqueduct reservoir storage after initial filling of the reservoirs, including projected net annual storage accretions (positive values) and withdrawals (negative values) for all down-aqueduct reservoirs of the Project Transportation Facilities.

Those variable OMP&R costs (Table B-12) that are allocable to storage accretions are assigned to the minimum OMP&R costs of the respective reservoirs. With the exception of Banks Pumping Plant, "Reservoir Storage Changes" also includes SWP water placed into Southern California groundwater storage from 1978 through 1982 (as positive amounts); and water withdrawn from storage and delivered to contractors in 1979, 1982, 1987, 1988, and 1989 (as negative amounts). At Banks Pumping

Plant, groundwater additions and withdrawals are included in "Conservation Water."

Table B-6 also summarizes the following two amounts under the heading "Conservation Water" (Column 25):

(1) Net annual water amounts stored and projected to be stored in San Luis Reservoir; and
(2) Water lost and projected to be lost through evaporation and seepage from San Luis Reservoir and from the water conservation portion of the California Aqueduct.

"Conservation Water" includes initial fill water, operational losses, and net annual storage changes associated with San Luis Reservoir and the portion of the California Aqueduct that is allocated to conservation. The same allocation procedure outlined above for Transportation Facilities also applies to water delivered from storage in Conservation Facilities, except that the hypothetical cost increases are added to the variable OMP&R cost to be reimbursed through the Transportation Charge and deducted from the minimum OMP&R costs to be reimbursed through the Delta Water Charge.

San Luis Reservoir is operated to conserve water for future delivery to downstream contractors. To account for costs associated with reservoir storage, those power and replacement costs of Banks Pumping Plant (a joint Transportation-Conservation Facility) that are allocated to the conveyance of annual conservation water quantities are transferred to the capital costs of San Luis Reservoir (during initial fill) or to the minimum OMP&R costs of San Luis Reservoir (subsequent to initial fill).

In years of net storage withdrawal from San Luis Reservoir, a portion of the minimum OMP&R cost of the reservoir is transferred to the variable OMP&R cost of Banks Pumping Plant. That transfer is equal to the variable OMP&R cost per acre-foot of delivery through Banks Pumping Plant for that year, multiplied by the acre-feet of deliveries derived from San Luis Reservoir storage for that year. Table B-6 also includes amounts of nonproject water and surplus water delivered prior to May 1, 1973, and actual deliveries of interruptible water in 1994 and after.

Bases for Reimbursable Costs

This section describes the methods used to derive the costs allocated by the procedures outlined in the preceding section. A diagram of the cost derivation process is shown in the upper-left quadrant of Figure B-1.

First, the capital and minimum OMP&R costs of all SWP facilities are allocated among the various project purposes according to the allocation percentages in Table 1. Those percentages may be subject to revision in the future.

The redeterminations in this appendix involve only the SWP costs that are allocated to water supply and power generation.

Capital Costs

Capital costs used in the redeterminations in this appendix reflect prices prevailing on December 31, 2001; future cost escalation will be reflected in subsequent bulletins.

Table B-7 presents a reconciliation of estimated total capital costs of each Project Conservation Facility and each Project Transportation Facility. This table shows the relationship of Project Conservation and Transportation costs allocated to contractors (Tables B-8, B-9, B-10, and B-13) to the total SWP capital costs projected by the Department.

Table B-8 shows costs incurred and projected to be incurred by the State in connection with each contractor's turnouts. Costs incurred by the State for both State-constructed and contractor-constructed delivery structures are paid directly by the contractors for which the structures are built. (The State incurs design review and construction inspection costs in connection with contractor-constructed turnouts.)

Table B-9 lists costs and payments for excess capacity built into SWP Transportation Facilities according to amendments to contracts with

Table 1. Project Purpose Cost Allocation Factors (percentages)

Project Facilities	Water Supply and Power Generation		All Other Purposes (Nonreimbursable)	
	Capital Costs	*Minimum OMP&R Costs*	*Capital Costs*	*Minimum OMP&R Costs*
Project Conservation Facilities				
Frenchman Dam and Lake	21.5	0.0	78.5	100.0
Antelope Dam and Lake	0.0	0.0	100.0	100.0
Grizzly Valley Dam and Lake Davis	1.0	1.8	99.0	98.2
Oroville Division[a]	97.1	99.5	2.9	0.5
California Aqueduct, Delta to Dos Amigos Pumping Plant	96.6	96.7	3.4	3.3
Delta Facilities	86.0	86.0	14.0	14.0
Transportation Facilities				
Grizzly Valley Pipeline	100.0	100.0	0.0	0.0
North Bay Aqueduct	100.0	100.0	0.0	0.0
South Bay Aqueduct				
Del Valle Dam and Lake Del Valle	25.2	22.0	74.8[b]	78.0[c]
Remainder of South Bay Aqueduct	100.0	100.0	0.0	0.0
California Aqueduct				
Delta to Dos Amigos Pumping Plant	96.6	96.7	3.4	3.3
Dos Amigos Pumping Plant to termini (excluding Coastal Branch)	94.3	96.9	5.7	3.1
Coastal Branch	100.0	100.0	0.0	0.0

[a] Percentages indicated are applicable to the remaining costs of division after excluding costs allocated to flood control that are reimbursed by the federal government (22 percent of capital costs) and excluding specific power costs of Hyatt and Thermalito power plants and switchyards.
[b] Percentage indicated consists of 48.8 percent of costs allocated to recreation and 26.8 percent to flood control.
[c] Percentage indicated consists of 44.9 percent of costs allocated to recreation and 33.1 percent to flood control.

Metropolitan Water District of Southern California, San Gabriel Valley Municipal Water District, and AVEK Water Agency as follows:

(1) Additional costs incurred by the State for requested excess capacity;
(2) Advances by water contractors of funds for such costs; and
(3) Credits for advances in excess of costs, which were applied to respective contractors' installments of the capital cost component of the Transportation Charge in 1981.

Under Amendment 2 of Metropolitan's contract, 809 cfs of excess capacity were originally constructed in reaches of the West Branch at Metropolitan's request. That capacity was reclassified as basic capacity of SWP Transportation Facilities under Amendment 7. Metropolitan paid $16.3 million as a prepayment of the capital cost component of the Transportation Charge in lieu of advancing funds for the original requested capacity.

Amendment 5 to Metropolitan's contract requires that additional costs for modifications to the Santa Ana Pipeline (required for enlargement of Lake Perris) will be allocated to Metropolitan and returned to the State through payments of the Transportation Charge. The additional costs to be repaid through Metropolitan's capital cost component for the aqueduct reach from Devil Canyon Power Plant to Barton Road total about $6.7 million (see Bulletin 132-72, page 98).

Table B-10 presents the actual and projected annual capital costs of each aqueduct reach that will eventually be returned to the State, with interest, through contractors' payments of the capital cost component of the Transportation Charge and payment of debt service under the Devil Canyon-Castaic contracts.

Annual Operating Costs

Annual operating costs allocable to water supply and power generation are returned to the

State through the minimum and variable OMP&R components of Delta Water and Transportation Charges and through a portion of the revenues from energy sales. All reimbursable operating costs of Conservation Facilities are included in the minimum OMP&R component of the Delta Water Charge.

Transportation and Devil Canyon-Castaic Contract Costs

Table B-11 shows the amounts of the actual and projected costs to be reimbursed through payments of the minimum OMP&R component of the Transportation Charge and allocated operating costs under the Devil Canyon-Castaic contract. The table includes the following seven types of operating costs incurred annually that do not vary with water quantities delivered to the contractors:

(1) All direct labor charges for field operation and maintenance personnel, including associated indirect costs;

(2) A distributed share of general operating costs that cannot be identified solely with one facility or aqueduct reach;

(3) Electric power transmission and station service costs allocable to aqueduct pumping and power recovery plants;

(4) All costs for equipment, materials, and supplies;

(5) Portions of the power and replacement costs of all up-aqueduct pumping plants and power plants that are allocable to the annual conveyance of water lost to evaporation and seepage from respective aqueduct reaches or placed into storage in respective reservoirs of the Project Transportation Facilities (after initial fill);

(6) Credits, which offset those costs in (5) above, for deliveries drawn from reservoir storage; and

(7) Escalation of projected operating costs at 5 percent per year for 2002, 2003, and 2004.

Table B-12 shows the portions of variable OMP&R costs in Table B-3 that are allocable to the water supply delivery quantities included in Table B-6 and reimbursed through payments of the variable OMP&R component of the Transportation Charge.

The following five adjustments are made to the Table B-3 costs to derive the Table B-12 costs:

(1) Part of the variable OMP&R costs of each plant is allocated to recreation. The allocation to recreation is in proportion to the quantity of water conveyed through each plant each year for delivery to on-shore recreational developments.

(2) That portion of variable plant costs attributable to the initial fill of aqueduct reaches is allocated to the joint capital costs of respective down-aqueduct reaches and reservoirs.

(3) That portion of costs attributable to evaporation and seepage is allocated to the joint minimum OMP&R costs of respective down-aqueduct reaches and reservoirs.

(4) Adjustments are made for additions or withdrawals from storage in aqueduct reservoirs. In years when water is added to storage in aqueduct reservoirs, the cost of conveying this water into storage is charged to the minimum OMP&R costs of the corresponding reservoir. In years when storage in aqueduct reservoirs is decreased for the purpose of making deliveries, a credit is applied to the minimum OMP&R costs of the reservoir from which the storage is released. This credit is equal to the number of acre-feet of storage reduction times the variable OMP&R unit rate for the year storage is released. The unit rate is equal to the variable OMP&R unit rate for the year the water is taken from storage.

(5) That portion of costs attributable to pumping water to replace evaporation and seepage losses and for additions or withdrawals from storage in San Luis Reservoir is charged to the minimum OMP&R component of the Delta Water Rate.

The remaining costs are allocated to Transportation water supply and repaid by the contractors.

Conservation Capital and Operating Costs

Table B-13 is a summary of actual and projected capital and operating costs of the initial Project Conservation Facilities. These costs are reimbursed through payments by contractors under the Delta Water Charge, Oroville power sales, and Gianelli Pumping-Generating Plant credits. Table B-13 also shows credits applied to the reimbursable capital costs of the Project Conservation Facilities according to negotiated settlements concerning incurred planning costs for the period from 1952 through 1978.

Project Water Charges

This section describes the redetermination of past and projected components of the Transportation Charge for annual revision of Tables C through G of each water supply contract. This section also describes the derivation of the unit Delta Water Rates and the Water System Revenue Bond Surcharge.

A summary of equivalent unit charges for each acre-foot of SWP water service is also included for each contractor and each aqueduct reach. A diagram of all calculations may be found in the lower half of Figure B-1.

Transportation Charges

The accumulation of allocated costs of each aqueduct reach to each contractor is the basis for the Transportation Charge components.

Table B-14 summarizes each contractor's share of the capital costs of aqueduct reaches presented in Table B-10. Those amounts are determined by applying proportionate-use ratios set forth in Table B-1 to the costs in Table B-10. The resulting allocated costs are set forth in Table C of the respective water supply contracts.

Prepayments of the capital cost component, required under Metropolitan's Amendment 7, are included as negative capital costs in Table B-14 and Table C of Metropolitan's Statement of Charges. Solano, Empire West Side Irrigation District, and Crestline also prepaid capital costs (see Table B-14 footnotes).

Table B-14 includes costs of the planned East Branch Extension to provide water service to San Bernardino Valley Municipal Water District and San Gorgonio Pass Water Agency.

Both Table B-14 and Table C of the six contractors for project water service below Devil Canyon Power Plant and Castaic Power Plant include the capital costs reimbursable under the Devil Canyon-Castaic contract.

Table B-15 summarizes capital cost components of the Transportation Charge for each contractor for each year of the project repayment period. By the year 2035, the capital cost components shown in Table B-15 will recover the costs shown in Table B-14, with interest at the Project Interest Rate of 4.613 percent per annum and based on the amortization schedules included in Table 2.

Those estimated components, subsequently adjusted for prior overpayments or underpayments, are included in Table D of the water supply contracts. Costs of excess capacity are billed separately and are not included in Table B-15.

Table B-15 includes the debt service payments due from the six contractors down-aqueduct from Devil Canyon Power Plant and Castaic Power Plant according to terms of the Devil Canyon-Castaic contract.

Table B-16A summarizes the minimum OMP&R components of the Transportation Charge for each year of the project repayment period. Those estimated components, subsequently adjusted for prior overpayments or underpayments, are included in Table E of the respective contracts.

The total amounts included in Table B-16A are determined by applying the proportionate-use ratios in Table B-2 to the reach costs in Table B-11.

Table B-16A excludes charges for Off-Aqueduct Power Facilities, which are included separately in Table B-16B. Both Table B-16A and Table E include the operating costs payable under the Devil Canyon-Castaic contract for the six

Table 2. Criteria for Amortizing Capital Costs of Transportation Facilities

Contractor	Year of Initial Payment[a]
Alameda County Flood Control and Water Conservation District - Zone 7	1963[b]
Alameda County Water District	1963
Antelope Valley-East Kern Water Agency	1963
Castaic Lake Water Agency	1964
City of Yuba City	[c]
Coachella Valley Water District	1964
County of Butte	[c]
County of Kings	1968
Crestline-Lake Arrowhead Water Agency	1964
Desert Water Agency	1963[d]
Dudley Ridge Water District	1968[e]
Empire West Side Irrigation District	1968[e]
Kern County Water Agency	
Agricultural Use	1968[e]
Municipal and Industrial Use	1965
Littlerock Creek Irrigation District	1964
Metropolitan Water District of Southern California	1963
Mojave Water Agency	1964
Napa County Flood Control and Water Conservation District	1966
Oak Flat Water District	1968[e]
Palmdale Water District	1964
Plumas County Flood Control and Water Conservation District	1970
San Bernardino Valley Municipal Water District	1963
San Gabriel Valley Municipal Water District	1963[d]
San Gorgonio Pass Water Agency	1963[d]
San Luis Obispo County Flood Control and Water Conservation District	1964[f]
Santa Barbara County Flood Control and Water Conservation District	1964
Santa Clara Valley Water District	1963
Solano County Water Agency	1973
Tulare Lake Basin Water Conservation District	1968[e]
Ventura County Flood Control District	1964

[a] Allocated capital costs of transportation facilities amortized in equal annual installments unless otherwise noted.

[b] Principal payments on each annual capital cost prior to 1971 delayed until calendar year 1972, except payments for 1963.

[c] For Yuba City and Butte County payments for Delta Water Charge only.

[d] Payment deferred for 1963 and added to 1964 payment with accrued interest.

[e] For Dudley Ridge Water District, Empire West Side Irrigation District, Kern County Water Agency (agricultural use), Oak Flat Water District, and Tulare Lake Basin Water Conservation District, 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 amounts in Table A (Table B-4) through the project repayment period.

[f] For San Luis Obispo Flood Control and Water Conservation District and Santa Barbara County Flood Control and Water Conservation District, all principal and interest payments for costs of the Coastal Stub were deferred until 1976.

contractors down-aqueduct from Devil Canyon Power Plant and Castaic Power Plant.

As part of operating agreements with the Department, Kern was billed from 1963 through 1987 for any additional operating costs caused by early installation of units in Las Perillas and Badger Hill Pumping Plants by Berrenda Mesa Water Storage District (see Bulletin 132-71, page 7). Under those agreements, a portion of minimum OMP&R costs of Reach 31A were assigned directly to Kern, as shown in Table 3, with the remaining reach costs allocated by application of the proportionate-use ratios. The Department purchased the last unit, Unit No. 6, at Las Perillas and Badger Hill Pumping Plants in early 1997 to provide pumping capacity for deliveries to Coastal Area contractors, which began in 1997.

Table 3. Minimum OMP&R Costs of Reach 31A Assigned Directly to Kern County Water Agency

Year	Direct Charges
1969	46,511
1970	46,302
1971	140,074
1972	95,017
1973	72,454
1974	100,692
1975	127,456
1976	138,504
1977	120,753
1978	157,652
1979	121,231
1980	150,728
1981	75,866
1982	82,805
1983	90,007
1984	107,468
1985	159,406
1986	137,241
1987	127,073
1988	130,924
1989	128,468
1990	138,234
1991	139,527
1992	185,370
1993	219,344
1994	364,196
1995	272,341
1996	322,123
Total	**3,997,767**

Table B16-B summarizes the annual charges for Off-Aqueduct Power Facilities allocated to each water contractor, adjusted for prior overpayments or underpayments of charges. Those charges are to repay all Off-Aqueduct Power costs, including bond service, deposits for reserves, operation and maintenance costs, fuel costs, taxes, and insurance.

Adopted October 1, 1979, the General Bond Resolution requires that sufficient revenues be collected each year to repay all of those costs. In addition, an amount totaling 25 percent of the annual bond service is collected each year to ensure that sufficient funds are available to cover all annual costs. Any revenues collected and not needed during the year are refunded to the contractors in the next year.

Table 4 summarizes Off-Aqueduct Power Facility charges and credits related to deliveries for 2001.

Table 4. Summary of Off-Aqueduct Power Facility Charges and Credits

2001 Charges	
Reid Gardner Power Plant	$84,375,023
Bottle Rock Power Plant	$15,057,605
South Geysers Power Plant	$6,764,459
Subtotal	*$106,197,087*
2001 Credits	
Power sales	$31,857,360
Miscellaneous water (wheeling)	0
Subtotal	*$31,857,360*
Grand Total	**$74,339,727**

Table 5 shows projected charges for Off-Aqueduct Power Facilities and an amount equal to 25 percent of annual bond service for 2002 and each year thereafter.

The annual charges for Off-Aqueduct Power Facilities are allocated among contractors in proportion to the electrical energy required to pump SWP water for the year. The initial allocation for the Statements of Charges is based on estimates of energy to pump requested SWP 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 5. Projected Charges for Off-Aqueduct Facilities

Year	Total Annual Cost	25% Bond Service
2002	99,317,238	9,496,515
2003	95,590,104	7,115,420
2004	97,694,308	7,124,214
2005	105,052,358	8,799,579
2006	105,108,364	8,810,780
2007	105,090,114	8,807,130
2008	124,529,871	12,695,081
2009	124,443,485	12,677,804
2010	124,391,126	12,670,932
2011	124,241,807	12,641,068
2012	124,532,875	12,699,282
2013	59,786,704	4,603,669
2014	19,170,879	3,809,176
2015	8,503,441	1,675,688
2016	5,444,316	1,063,863
2017	3,595,316	694,063
2018	3,610,878	697,175
2019	3,628,379	700,676
2020	3,655,407	706,081
2021	2,287,297	432,459
2022	2,292,704	433,541
2023	3,624,204	699,841
2024	3,623,641	699,728

The energy required to pump each contractor's water is calculated using the kilowatt-hour per acre-foot factors (shown in Table 6) for the pumping plants upstream from the delivery turnouts. The amounts include transmission losses.

Table B-17 presents a summary of actual and projected total variable OMP&R costs for each acre-foot of water conveyed through each aqueduct pumping plant and power plant for each year of the project repayment period. Those data are derived according to the following procedure specified in Article 26(a) of the Standard Provisions for calculating the variable OMP&R component of the Transportation Charge:

- An annual charge per acre-foot of projected water deliveries to all contractors served from or through each reach is determined so the projected variable OMP&R costs to be incurred for each reach will be returned to the State.

Table 6. 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
Banks	296	296
South Bay (including Del Valle)	869	1,165
Dos Amigos	138	434
Buena Vista	242	676
Teerink	295	971
Chrisman	639	1,610
Edmonston	2,236	3,846
Pearblossom	703	4,549
Oso	280	4,126
Las Perillas	77	511
Badger Hill	200	711
Devil's Den	705	1,416
Bluestone	705	2,121
Polonio Pass	705	2,826

[a] Includes transmission losses

- The total annual variable OMP&R component for any contractor for a given reach is obtained by multiplying the unit charge associated with that reach by the quantity of water actually delivered from or through the reach to the contractor.

The data summarized in Table B-17 are derived by dividing the costs shown in Table B-3 by the quantities of water shown in Table B-6. However, certain costs included in Table B-3 for extra peaking service, which would otherwise constitute variable OMP&R costs, are assigned directly to contractors requesting this type of service (see Bulletin 132-71, page 21, and Water Service Contractors Council Memo No. 593, July 10, 1970). Those costs are excluded from the unit charges shown in Table B-17. Peaking charges based on additional capacity ceased in 1983. Since 1984, costs are based on market energy rates. The amounts of extra peaking charges for additional power costs are shown in Table 7 and Table 8.

The unit rates shown in Table B-17 constitute the rates for the pumping plants and power plants listed. The cumulative rates constitute the total rates, cumulative from the Sacramento-San Joaquin Delta, and are applicable to deliveries from or downstream of the pumping plants and power plants. Extra peaking service costs are excluded.

Table B-18 shows the variable OMP&R components of the Transportation Charge for each contractor for each year of the project repayment period. Table B-18 is developed from the costs per acre-foot included in Table B-17 and the delivery quantities for each contractor from each reach as indicated in Table B-5A, plus any costs for extra peaking service. Those estimated components, subsequently adjusted for prior overpayments or underpayments, are included in Table F of the respective water supply contracts.

Table B-19 summarizes the annual Transportation Charges for each contractor (the sums of the corresponding amounts included in Tables B-15, B-16A, B-16B, and B-18). Those estimated payments, subsequently adjusted for prior overpayments or underpayments, are set forth in Table G of the respective water supply contracts.

Both Table B-19 and Table G for the six contractors down-aqueduct from Devil Canyon Power Plant and Castaic Power Plant include amounts of debt service and operating cost payments due according to provisions of the Devil Canyon-Castaic contract.

Delta Water Charges

Table B-20A presents the calculation of the Delta Water Rate for the initial Conservation Facilities applicable in 2003 according to the amended Articles 22(e) and 22(g) of all 29 contracts. The Delta Water Rate was calculated at a Project Interest Rate of 4.613 percent based on Conservation Facility costs shown in Table B-13. That Delta Water Rate is used to compute projected Delta Water Charges under Article 53(i) for the contractors who have executed the Monterey Amendment. Included in Table B-20A is the Delta Water Rate for the two contractors who have not executed the Monterey Amendment (Plumas County and Empire).

Table 7. Extra Peaking Charges for Additional Power, by Pumping Plant (Dollars)

Year	Cordelia Napa	Cordelia Solano	Barker Slough	South Bay	Banks	Dos Amigos	Las Perillas and Badger Hill	Buena Vista	Teerink	Chrisman	Edmonston	Pearblossom	Oso	Total
1972	0	0	0	0	0	10,579	24,700	0	0	0	0	0	0	35,279
1973	0	0	0	0	0	0	6,016	0	0	0	0	0	0	6,016
1974	0	0	0	0	0	0	7,140	0	0	0	0	0	0	7,140
1975	0	0	0	0	0	494	6,397	0	0	0	0	0	0	6,891
1976	0	0	0	0	0	0	1,981	0	0	0	0	0	0	1,981
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	45,145	3,680	0	0	0	0	0	0	48,825
1979	0	0	0	0	0	0	3,306	0	0	0	0	0	0	3,306
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	12,126	0	0	0	0	0	0	0	12,126
1982	0	0	0	0	0	89,339	0	0	0	0	0	0	0	89,339
1983	0	0	0	35	7,594	3,534	152	0	0	0	0	0	0	11,315
1984	0	0	0	2,096	84,396	38,607	7,203	11,173	3,823	3,593	0	0	0	150,891
1985	0	0	0	1,480	19,612	8,841	763	4,488	4,412	8,929	28,353	0	0	76,878
1986	0	0	0	0	1,864	863	0	291	354	766	2,683	0	0	6,821
1987	0	0	0	604	17,129	7,838	835	2,295	1,806	3,460	11,058	0	0	45,025
1988	639	39	287	894	43,475	20,082	2,213	5,792	4,367	8,272	25,886	0	0	111,946
1989	2,491	566	1,483	70	40,251	18,642	1,935	3,401	1,531	2,058	3,793	0	0	76,221
1990	45	0	18	343	19,524	9,044	0	150	145	314	643	0	0	30,226
1991	903	0	281	0	21	8	0	15	17	39	139	41	0	1,464
1992	208	117	203	0	7,070	2,502	0	182	190	435	0	0	0	10,907
1993	0	681	889	4,483	123,080	54,741	0	8,898	5,458	10,900	35,068	11,139	0	255,337
1994	0	366	393	679	6,566	2,795	454	1,083	155	357	1,121	0	132	14,101
1995	0	0	0	1,717	24,464	9,422	27	1,865	3,475	782	1,104	400	0	43,256
1996	4	0	1	1,983	10,031	4,976	0	391	432	1,015	3,404	1,160	0	23,397
1997	0	1,780	2,152	3,107	337,357	165,774	1,753	34,604	12,296	15,910	21,028	0	0	595,761
1998	0	0	0	20,966	235,693	106,251	2,354	697	848	1,836	6,426	0	0	375,071
1999	0	0	0	0	63,196	26,235	0	3,394	4,136	8,959	31,350	7,740	0	145,010
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**4,290**	**3,549**	**5,707**	**38,457**	**1,041,323**	**637,838**	**70,909**	**78,719**	**43,445**	**67,625**	**172,056**	**20,480**	**132**	**2,184,530**

Table 8. Extra Peaking Charges for Additional Power, by Contractors (Dollars)

Year	Napa	Solano	Alameda -Zone 7	ACWD[a]	SCVWD[b]	Dudley Ridge	Empire West Side	Kern County	County of Kings	Oak Flat	Tulare	AVEK[c]	Castaic Lake	Coachella Valley	Desert Water Agency	LCID[d]	Palmdale	SGVMWD[e]	Total
1972	0	0	0	0	0	0	0	35,269	0	0	10	0	0	0	0	0	0	0	35,279
1973	0	0	0	0	0	0	0	6,016	0	0	0	0	0	0	0	0	0	0	6,016
1974	0	0	0	0	0	0	0	7,140	0	0	0	0	0	0	0	0	0	0	7,140
1975	0	0	0	0	0	0	0	6,891	0	0	0	0	0	0	0	0	0	0	6,891
1976	0	0	0	0	0	0	0	1,981	0	0	0	0	0	0	0	0	0	0	1,981
1977	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	2,035	0	44,484	42	0	0	2,264	0	0	0	0	0	0	48,825
1979	0	0	0	0	0	0	0	2,821	0	0	0	0	485	0	0	0	0	0	3,306
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	11,951	0	0	0	0	0	0	0	175	0	0	12,126
1982	0	0	0	0	0	2,173	0	80,945	0	0	0	4,671	1,128	0	0	0	0	422	89,339
1983	0	0	0	0	48	9,511	0	0	1,365	0	0	0	391	0	0	0	0	0	11,315
1984	0	0	0	0	2,874	0	0	144,021	281	809	0	0	2,906	0	0	0	0	0	150,891
1985	0	0	0	2,029	0	0	64	25,664	0	98	0	48,767	256	0	0	0	0	0	76,878
1986	0	0	0	0	0	0	0	0	0	13	2,194	4,614	0	0	0	0	0	0	6,821
1987	0	0	229	0	599	313	84	24,141	0	95	0	18,207	545	0	0	812	0	0	45,025
1988	892	73	665	561	0	1,853	1,404	58,905	0	72	2,368	44,526	627	0	0	0	0	0	111,946
1989	3,478	1,062	96	0	0	13	403	55,085	0	239	8,278	0	1,043	0	0	1,035	5,489	0	76,221
1990	63	0	470	0	0	0	0	28,587	0	0	0	0	0	0	0	81	1,025	0	30,226
1991	1,184	0	0	0	0	0	0	0	0	0	0	0	0	0	0	280	0	0	1,464
1992	271	257	0	0	0	0	49	10,109	221	0	0	0	0	0	0	0	0	0	10,907
1993	0	1,570	6,122	0	0	0	3,757	97,812	504	0	74,577	0	0	24,983	41,156	0	4,856	0	255,337
1994	0	759	896	0	0	0	7	9,933	0	0	0	0	2,450	0	0	56	0	0	14,101
1995	0	0	2,353	0	0	10,197	0	28,085	310	0	0	0	27	0	0	0	2,284	0	43,256
1996	5	0	81	2,612	0	334	205	4,552	969	0	7,809	0	0	0	0	0	3,598	3,232	23,397
1997	0	3,932	3,999	0	0	6,190	0	546,733	0	40	0	0	0	0	0	0	34,867	0	595,761
1998	0	0	19,666	8,442	0	22,631	1	312,626	0	651	0	0	0	0	0	0	11,054	0	375,071
1999	0	0	0	0	0	0	0	76,425	0	0	6,922	0	0	0	0	0	11,576	50,087	145,010
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**5,893**	**7,653**	**34,577**	**13,644**	**3,521**	**55,250**	**5,974**	**1,620,176**	**3,692**	**2,017**	**102,158**	**123,049**	**9,858**	**24,983**	**41,156**	**2,439**	**74,749**	**53,741**	**2,184,530**

[a] Alameda County Water Agency
[b] Santa Clara Valley Water District
[c] Antelope Valley East Kern Water Agency
[d] Littlerock Creek Irrigation District
[e] San Gabriel Valley Municipal Water District

Table B-20B shows each component of the 2003 Delta Water Rate from Table B-20A.

Table B-21 summarizes the annual Delta Water Charge for each contractor. The projected charges in Table B-21 are developed by multiplying the total rate per acre-foot, as shown in Table B-20A, by the annual amounts in Table A for each contractor as shown in Table B-4.

Water System Revenue Bond Surcharge

Table B-22 summarizes the Water System Revenue Bond Surcharge to the Delta Water Charge and the Transportation capital cost component of each contractor. The surcharge shown in Table B-22 includes the financing costs of WSRB Series B through W. This surcharge is levied according to an amendment to the water supply contracts for repaying Water System Revenue Bond financing costs. All long-term water supply contractors signed that amendment.

Total Water Charges

Table B-23 summarizes the total annual charges to each contractor (the sum of the Transportation Charge in Table B-19, the Delta Water Charge in Table B-21, and the Water System Revenue Bond Surcharge in Table B-22). The charges do not reflect past payments by contractors and are unadjusted for prior overpayments or underpayments.

Equivalent Total Water Charges

Table B-24 presents the Transportation Charge and Delta Water Charge in terms of the equivalent unit charge for each acre-foot of SWP water delivered or 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 SWP water delivered to date; all surplus water delivered prior to May 1, 1973; all interruptible water deliveries in 1994 and after; and all SWP water projected to be delivered during the remainder of the project repayment period (Table B-5B).

The equivalent unit Delta Water Charges included in Table B-24 are greater than those in Table B-20A because current projections of allocated water service are less for most contractors than the amounts shown in Table A.

Equivalent Water Costs by Reach

Table B-25 presents a summary of the equivalent unit Transportation cost of conveying SWP water through respective aqueduct reaches of the Project Transportation Facilities.

Those unit costs provide the basis of charges assessed for extra service (such as for delivery of SWP water 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 SWP water amounts are conveyed through a given reach. Table B-25 also includes surplus water delivered prior to May 1, 1973, and interruptible water deliveries in 1994 and after.

East Branch Enlargement Facility Charges

Table B-26 reflects the Department's projection of annual capital costs of the East Branch Enlargement Facilities for each aqueduct reach. Those projections will be redetermined in future bulletins to include:

- A reallocation of costs of constructing the present East Branch facilities between Alamo Power Plant and Silverwood Lake;
- A reallocation of costs of Silverwood Lake to reflect additional use as a result of East Branch Enlargement operation;
- Reallocation of costs of San Bernardino Tunnel to reflect redistribution of flow capacities necessary for the East Branch Enlargement Facilities; and
- Actual construction costs of the enlargement.

These costs will be recovered with interest from the seven Southern California water contractors participating in the enlargement, according to their amended water supply contracts (Table 9).

Table B-27 lists the projected minimum OMP&R costs for each reach of the enlargement to be repaid by the seven contractors participating in the East Branch Enlargement. Currently, this table includes only the amounts of estimated incremental minimum OMP&R costs attributable to the East Branch Enlargement. According to Article 49 (e)(1), the contractors participating in the East Branch Enlargement will also share in the remaining minimum OMP&R costs of the affected reaches according to a formula to be developed by the Department in consultation with the affected contractors. Once the formula is developed, subsequent versions of this table will reflect the transfer of a share of the minimum OMP&R costs now included in Table B-11.

Table B-28 shows each participating contractor's share of the estimated capital costs of the East Branch Enlargement shown in Table B-26.

Table B-29 shows the amounts of the annual capital cost components of the East Branch Enlargement Transportation Charge for each participating contractor. This component consists of each contractor's allocated share of debt service on bonds sold to finance the enlargement.

Table B-30 shows the minimum OMP&R components of the East Branch Enlargement Transportation Charge for each participating contractor for each year of the project repayment period. The amounts shown in Table B-30 will recover the minimum OMP&R costs shown in Table B-27.

Table B-31 shows the annual East Branch Enlargement Transportation charges for each participating contractor (the sums of the corresponding amounts included in Tables B-29 and B-30).

Short-Term Agreements

The long-term water supply contractors and the Department have executed a short-term agreement that affects the contractors' charges. A 5-year agreement was executed in late 1997 between the Department and 16 Municipal and Industrial contractors, who agreed to pay their allocated shares of Municipal Water Quality Investigations costs. The MWQI charges under this agreement are included in the Transportation minimum OMP&R components shown in Table B-16A.

Nine contractors have executed short-term agreements to participate in the feasibility study for the American Basin conjunctive use program. The costs of the feasibility study are included in Table B-16A.

Table 9. Determination of Factors for Distributiing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities among Participating Contractors

Reach Number	Description
18A	Junction, West Branch, California Aqueduct, through Alamo Power Plant
19	Alamo Power Plant to Fairmont
20A	Fairmont through 70th Street West
20B	70th Street West to Palmdale
21	Palmdale to Littlerock Creek
22A	Littlerock Creek to Pearblossom Pumping Plant
22B	Pearblossom Pumping Plant to West Fork Mojave River
23B	West Fork Mojave River to Silverwood Lake (excluding Mojave Siphon Power Plant facilities)
23C	Mojave Siphon Power Plant facilities
24	Cedar Springs Dam and Silverwood Lake
25	Silverwood Lake to South Portal, San Bernardino Tunnel
26A	South Portal, San Bernardino Tunnel through Devil Canyon Power Plant
26B	Devil Canyon Power Plant Bypass

Share of Enlargement Capacity (cfs)

Reach Number	Antelope Valley-East Kern Water Agency	Coachella Valley Water District	Desert Water Agency	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	Metropolitan Water District of Southern California	Total
18A		151	13	136	6		1,200	1,506
19		151	13	136	6		1,200	1,506
20A	35	151	13	136	6		1,200	1,541
20B	35	151	13	136	6		1,200	1,541
21	35	151	13	136			1,200	1,535
22A	35	151	13	136			1,200	1,535
22B		151	13	136			1,200	1,500
23B		184	67	212			1,200	1,663
23C		184	67				1,200	1,451
24		190	78				1,200	1,468
25		193	83			63	1,200	1,539
26A		193	83			63	1,200	1,539
26B							300	300

Factors for Distributing Capital and Minimum OMP&R Costs of East Branch Enlargement Facilities (flow ratios)

Reach Number	Antelope Valley-East Kern Water Agency	Coachella Valley Water District	Desert Water Agency	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	Metropolitan Water District of Southern California	Total
18A	0.00000000	0.10026560	0.00863214	0.09030544	0.00398406	0.00000000	0.79681276	1.00000000
19	0.00000000	0.10026560	0.00863214	0.09030544	0.00398406	0.00000000	0.79681276	1.00000000
20A	0.02271252	0.09798832	0.00843608	0.08825438	0.00389358	0.00000000	0.77871512	1.00000000
20B	0.02271252	0.09798832	0.00843608	0.08825438	0.00389358	0.00000000	0.77871512	1.00000000
21	0.02280130	0.09837134	0.00846906	0.08859935	0.00000000	0.00000000	0.78175895	1.00000000
22A	0.02280130	0.09837134	0.00846906	0.08859935	0.00000000	0.00000000	0.78175895	1.00000000
22B	0.00000000	0.10066667	0.00866667	0.09066667	0.00000000	0.00000000	0.79999999	1.00000000
23B	0.00000000	0.11064342	0.04028863	0.12748046	0.00000000	0.00000000	0.72158749	1.00000000
23C	0.00000000	0.12680910	0.04617505	0.00000000	0.00000000	0.00000000	0.82701585	1.00000000
24	0.00000000	0.12942779	0.05313351	0.00000000	0.00000000	0.00000000	0.81743870	1.00000000
25	0.00000000	0.12540611	0.05393112	0.00000000	0.00000000	0.04093567	0.77972710	1.00000000
26A	0.00000000	0.12540611	0.05393112	0.00000000	0.00000000	0.04093567	0.77972710	1.00000000
26B	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	1.00000000	1.00000000

Table B-1

Factors for Distributing Reach Capital Costs Among Contractors

Reach No.	Reach Description	North Bay Area		South Bay Area				Total
		Napa County FC&WCD	Solano County Water Agency	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor	
	North Bay Aqueduct							
1	Barker Slough thru Fairfield/Vacaville Turnout	0.29667896	0.70332104					1.00000000
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.38414552	0.61585448					1.00000000
3A	Cordelia Forebay thru Benicia and Vallejo Turnouts		1.00000000					1.00000000
3B	Cordelia Forebay thru Napa Turnout Reservoir	1.00000000						1.00000000
	South Bay Aqueduct							
1	Bethany Reservoir thru Altamont Turnout							
2	Altamont Turnout thru Patterson Reservoir			0.22599612	0.20663021	0.49237700	0.07499667	1.00000000
4	Patterson Reservoir to Del Valle Junction			0.22599658	0.20663059	0.49237783	0.07499500	1.00000000
5	Del Valle Junction thru Lake Del Valle			0.19504795	0.21450017	0.51113249	0.07931939	1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.14436367	0.12972254	0.33715573	0.38875806	1.00000000
				0.14599918	0.21144710	0.50574745	0.13680627	1.00000000
7	South Livermore Turnout thru Vallecitos Turnout							
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.25176680	0.60218448	0.14604872	1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities				0.27934645	0.72065355		1.00000000
						1.00000000		1.00000000
	California Aqueduct							
1	Delta thru Bethany Reservoir			0.00954737	0.00872917	0.02080118	0.00342507	N/A

Reach No.	Reach Description	Central Coastal Area		Southern California Area				
		San Luis Obispo County FC&WCD	Santa Barbara County FC&WCD	Antelope Valley-East Kern Water Agency	Castaic Lake Water Agency	Coachella Valley Water District	Crestline-Lake Arrowhead Water Agency	Desert Water Agency
	California Aqueduct							
1	Delta thru Bethany Reservoir	0.00533010	0.00983337	0.02939084	0.01285827	0.00528315	0.00133612	0.00871300
2A	Bethany Reservoir to Orestimba Creek	0.00557213	0.01027988	0.03072531	0.01343201	0.00552068	0.00139620	0.00910474
2B	Orestimba Creek to O'Neill Forebay	0.00557824	0.01029119	0.03075915	0.01345351	0.00552831	0.00139814	0.00911733
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557719	0.01028923	0.03075332	0.01345294	0.00552772	0.00139798	0.00911637
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557607	0.01028717	0.03074719	0.01345233	0.00552710	0.00139784	0.00911536
5	Panoche Creek to Five Points	0.00557467	0.01028462	0.03073954	0.01345157	0.00552633	0.00139763	0.00911409
6	Five Points to Arroyo Pasajero	0.00557257	0.01028074	0.03072799	0.01345042	0.00552517	0.00139733	0.00911216
7	Arroyo Pasajero to Kettleman City	0.00557189	0.01027949	0.03072428	0.01345006	0.00552480	0.00139723	0.00911154
8C	Kettleman City thru Milham Avenue	0.00557103	0.01027792	0.03071961	0.01344960	0.00552432	0.00139712	0.00911076
8D	Milham Avenue thru Avenal Gap	0.00568611	0.01049020	0.03135418	0.01373353	0.00563986	0.00142632	0.00930130
9	Avenal Gap thru Twisselman Road			0.03426625	0.01356094	0.00616886	0.00156011	0.01017373
10A	Twisselman Road thru Lost Hills			0.03481391	0.01377767	0.00626946	0.00158556	0.01033963
11B	Lost Hills to 7th Standard Road			0.03835043	0.01517717	0.00691699	0.00174933	0.01140749
12D	7th Standard Road thru Elk Hills Road			0.04031661	0.01595523	0.00727790	0.00184059	0.01200265
12E	Elk Hills Road thru Tupman Road			0.04037074	0.01597665	0.00728878	0.00184332	0.01202059
13B	Tupman Road to Buena Vista Pumping Plant			0.04379882	0.01733322	0.00791595	0.00200194	0.01305492
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04599268	0.01820137	0.00831952	0.00210399	0.01372049
14B	Santiago Creek thru Old River Road			0.04682530	0.01853084	0.00847388	0.00214303	0.01397505
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04825217	0.01909545	0.00873768	0.00220973	0.01441013
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04905609	0.01941356	0.00888679	0.00224744	0.01465600
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.05089794	0.02014241	0.00922722	0.00233351	0.01521742
17E	Edmonston Pumping Plant to Porter Tunnel			0.05329388	0.02109050	0.00967107	0.00244575	0.01594937
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05340725	0.02113537	0.00969176	0.00245098	0.01598349
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13238112		0.02399391	0.00606795	0.03957043
19	Alamo Power Plant to Fairmont			0.13237766		0.02399451	0.00606811	0.03957141
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847931		0.02576425	0.00651573	0.04249001
20B	70th Street West to Palmdale			0.02276024		0.02702917	0.00683555	0.04457607
21	Palmdale to Littlerock Creek			0.02318952		0.02754716	0.00696651	0.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608043
22B	Pearblossom Pumping Plant to West Fork Mojave River					0.02827552	0.00715074	0.04663153
23	West Fork Mojave River to Silverwood Lake					0.00324449	0.00818122	0.00535117
24	Cedar Springs Dam and Silverwood Lake					0.01024605	0.01251569	0.01690478
25	Silverwood Lake to South Portal San Bernardino Tunnel							
26A	South Portal, San Bernardino Tunnel thru Devil Canyon Pwp.							
28G	Devil Canyon Power Plant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch, Calif. Aqueduct thru Oso Pumping P.				0.03544337			
29F	Oso Pumping Plant thru Quail Embankment				0.03544339			
29G	Quail Embankment thru Warne Power Plant				0.03544339			
29H	Pyramid Dam and Lake				0.02817144			
29J	Pyramid Lake thru Castaic Power Plant				0.03544338			
30	Castaic Dam and Lake				0.02927284			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560301	0.19482503		0.07364766			
33A	Devil's Den Pumping Plant thru Tank 1	0.10101221	0.89898779					
33B	Tank 1 through Chorro Valley Turnout	0.09912818	0.90087182					
34	Chorro Valley Turnout through Lopez Turnout	0.05479573	0.94520427					
35	Lopez Turnout through Guadalupe Turnout	0.00000000	1.00000000					

Note: Proportionate use factors **do not** reflect permanent water transfer as a result of the Monterey Amendment.

Table B-1

Factors for Distributing Reach Capital Costs Among Contractors

Reach No.	San Joaquin Valley Area							
	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Kern County Water Agency		County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
				Municipal and Industrial	Agricultural			
	California Aqueduct							
1	0.01707770	0.00088678	0.00254693	0.02741768	0.30629913	0.00090695	0.00167121	0.03504975
2A	0.01781031	0.00092482	0.00266258	0.02864263	0.31945188	0.00094747	0.00174288	0.03655331
2B	0.01785838	0.00092731	0.00266550	0.02868743	0.32030556	0.00094896		0.03665201
3	0.01786337	0.00092757	0.00266499	0.02868589	0.32039254	0.00094892		0.03666225
4	0.01786863	0.00092785	0.00266446	0.02868428	0.32048398	0.00094886		0.03667303
5	0.01787517	0.00092819	0.00266380	0.02868227	0.32059816	0.00094879		0.03668649
6	0.01788508	0.00092870	0.00266279	0.02867923	0.32077093	0.00094868		0.03670685
7	0.01788826	0.00092887	0.00266246	0.02867825	0.32082633	0.00094864		0.03671338
8C	0.01789228	0.00092909	0.00266205	0.02867702	0.32089625	0.00094859		0.03672162
8D	0.01828779		0.00271703	0.02928147	0.32798200			0.01820857
9				0.03204523	0.32739538			
10A				0.03257442	0.31658608			
11B				0.03597398	0.24684668			
12D				0.03787171	0.20804762			
12E				0.03793198	0.20695175			
13B				0.01458796	0.16600071			
14A				0.00620338	0.13319181			
14B				0.00632023	0.11741558			
14C				0.00651962	0.09039633			
15A				0.00663252	0.07516317			
16A				0.00688973	0.04028829			
17E				0.00212516				
31A			0.05046240		0.57546190			

Reach No.	Southern California Area (Continued)								Total
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District	San Gorgonio Pass Water Agency	Metropolitan Water District of Southern California	Ventura County Flood Control District	
1	0.00049180	0.01101147	0.00369131	0.02362857	0.00650354	0.00398392	0.43929350	0.00429212	1.00000000
2A	0.00051413	0.01151136	0.00385891	0.02469101	0.00679699	0.00416304	0.45921072	0.00448701	1.00000000
2B	0.00051469	0.01152409	0.00386317	0.02472511	0.00680570	0.00416880	0.45973548	0.00449194	1.00000000
3	0.00051461	0.01152193	0.00386244	0.02472246	0.00680478	0.00416835	0.45965407	0.00449108	1.00000000
4	0.00051451	0.01151965	0.00386167	0.02471968	0.00680380	0.00416787	0.45956848	0.00449019	1.00000000
5	0.00051440	0.01151681	0.00386070	0.02471620	0.00680259	0.00416730	0.45946161	0.00448907	1.00000000
6	0.00051419	0.01151251	0.00385926	0.02471095	0.00680076	0.00416640	0.45929991	0.00448738	1.00000000
7	0.00051413	0.01151113	0.00385879	0.02470927	0.00680016	0.00416612	0.45924807	0.00448685	1.00000000
8C	0.00051405	0.01150938	0.00385821	0.02470716	0.00679941	0.00416576	0.45918261	0.00448616	1.00000000
8D	0.00052466	0.01174718	0.00393793	0.02522383	0.00694100	0.00425288	0.46868533	0.00457883	1.00000000
9	0.00057339	0.01283841	0.00430367	0.02758959	0.00758975	0.00465175	0.51227887	0.00500407	1.00000000
10A	0.00058254	0.01304366	0.00437246	0.02803943	0.00771262	0.00472760	0.52049091	0.00508405	1.00000000
11B	0.00064171	0.01436906	0.00481665	0.03093503	0.00850448	0.00521581	0.57349473	0.00560046	1.00000000
12D	0.00067463	0.01510596	0.00506361	0.03254889	0.00894541	0.00548790	0.60297374	0.00588755	1.00000000
12E	0.00067553	0.01512626	0.00507040	0.03259749	0.00895830	0.00549608	0.60379667	0.00589546	1.00000000
13B	0.00073290	0.01641098	0.00550099	0.03540212	0.00972547	0.00596896	0.65516902	0.00639604	1.00000000
14A	0.00076961	0.01723325	0.00577656	0.03720681	0.01021819	0.00627322	0.68807273	0.00671639	1.00000000
14B	0.00078354	0.01754538	0.00588113	0.03789703	0.01040613	0.00638960	0.70057530	0.00683798	1.00000000
14C	0.00080743	0.01808019	0.00606036	0.03907670	0.01072763	0.00658850	0.72199174	0.00704634	1.00000000
15A	0.00082089	0.01838154	0.00616135	0.03974336	0.01090913	0.00670088	0.73406357	0.00716371	1.00000000
16A	0.00085171	0.01907194	0.00639271	0.04126559	0.01132404	0.00695754	0.76170731	0.00743264	1.00000000
17E	0.00089182	0.01997003	0.00669365	0.04325018	0.01186455	0.00729213	0.79767940	0.00778251	1.00000000
17F	0.00089372	0.02001251	0.00670788	0.04334270	0.01188988	0.00730773	0.79937767	0.00779906	1.00000000
18A	0.00221525	0.04960424	0.01662680	0.10730448	0.02944860	0.01809192	0.57469530		1.00000000
19	0.00221522	0.04960300	0.01662640	0.10730707	0.02944876	0.01809230	0.57469556		1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161798	0.01942666	0.61700971		1.00000000
20B	0.00249470	0.05586076	0.01872390	0.12087843	0.03316986	0.02038045	0.64729087		1.00000000
21	0.00254199	0.05692053		0.12319480	0.03380324	0.02077093	0.65963498		1.00000000
22A		0.05773082		0.12495766	0.03428605	0.02106816	0.66905054		1.00000000
22B		0.05842136		0.12645207	0.03469614	0.02132008	0.67705256		1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614		1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404		1.00000000
25				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
28G				0.05126137			0.94873863		1.00000000
28H							1.00000000		1.00000000
28J							1.00000000		1.00000000
29A							0.95147783	0.01307880	1.00000000
29F							0.95147785	0.01307876	1.00000000
29G							0.95147785	0.01307876	1.00000000
29H							0.96278381	0.00904475	1.00000000
29J							0.95147787	0.01307875	1.00000000
30							0.96212388	0.00860328	1.00000000
31A									1.00000000
33A									1.00000000
34									1.00000000
35									1.00000000

Table B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	Reach Description	North Bay Area		South Bay Area				Total
		Napa County FC&WCD	Solano County Water Agency	Alameda County FC&WCD, Zone 7	Alameda County Water District	Santa Clara Valley Water District	Future Contractor	
	North Bay Aqueduct							
1	Barker Slough thru Fairfield/Vacaville Turnout	0.29251728	0.70748272					1.00000000
2	Fairfield/Vacaville Turnout to Cordelia Forebay	0.42000793	0.57999207					1.00000000
3A	Cordelia Forebay thru Benicia and Vallejo Turnouts		1.00000000					1.00000000
3B	Cordelia Forebay thru Napa Turnout Reservoir	1.00000000						1.00000000
	South Bay Aqueduct							
1	Bethany Reservoir thru Altamont Turnout			0.33210523	0.19743326	0.47046151		1.00000000
2	Altamont Turnout thru Patterson Reservoir			0.33209377	0.19743668	0.47046955		1.00000000
4	Patterson Reservoir to Del Valle Junction			0.30784679	0.20460347	0.48754974		1.00000000
5	Del Valle Junction thru Lake Del Valle			0.53312173	0.12972254	0.33715573		1.00000000
6	Del Valle Junction thru South Livermore Turnout			0.31697267	0.20137347	0.48165386		1.00000000
7	South Livermore Turnout thru Vallecitos Turnout			0.14604872	0.25176680	0.60218448		1.00000000
8	Vallecitos Turnout thru Alameda-Bayside Turnout				0.27934645	0.72065355		1.00000000
9	Alameda-Bayside Turnout thru Santa Clara Terminal Facilities					1.00000000		1.00000000
	California Aqueduct							
1	Delta thru Bethany Reservoir	See Sheet 2 of 2	See Sheet 2 of 2	See Sheet 2 of 2	0.00870753	0.02074960		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	0.00531835	0.00981171	0.03024899	0.02544495	0.00527041	0.00133287	0.00869197
2A	Bethany Reservoir to Orestimba Creek	0.00557100	0.01027782	0.03168331	0.02660933	0.00551832	0.00139557	0.00910081
2B	Orestimba Creek to O'Neill Forebay	0.00557711	0.01028911	0.03171981	0.02666671	0.00552594	0.00139750	0.00911340
3	O'Neill Forebay to Dos Amigos Pumping Plant	0.00557605	0.01028715	0.03171428	0.02666993	0.00552535	0.00139734	0.00911243
4	Dos Amigos Pumping Plant to Panoche Creek	0.00557493	0.01028509	0.03170848	0.02667331	0.00552472	0.00139719	0.00911141
5	Panoche Creek to Five Points	0.00557353	0.01028253	0.03170122	0.02667753	0.00552395	0.00139701	0.00911014
6	Five Points to Arroyo Pasajero	0.00557143	0.01027865	0.03169023	0.02668392	0.00552278	0.00139670	0.00910820
7	Arroyo Pasajero to Kettleman City	0.00557075	0.01027740	0.03168672	0.02668598	0.00552241	0.00139660	0.00910758
8C	Kettleman City thru Milham Avenue	0.00551487	0.01017433	0.03136512	0.02635513	0.00546350	0.00138172	0.00901044
8D	Milham Avenue thru Avenal Gap	0.00562709	0.01038134	0.03200472	0.02691487	0.00557597	0.00141015	0.00919593
9	Avenal Gap thru Twisselman Road			0.03445407	0.02792623	0.00606718	0.00153438	0.01000602
10A	Twisselman Road thru Lost Hills			0.03499258	0.02838814	0.00616386	0.00155882	0.01016547
11B	Lost Hills to 7th Standard Road			0.03834527	0.03123672	0.00676378	0.00171053	0.01115484
12D	7th Standard Road thru Elk Hills Road			0.04020653	0.03283099	0.00709777	0.00179499	0.01170563
12E	Elk Hills Road thru Tupman Road			0.04025763	0.03288687	0.00710782	0.00179754	0.01172222
13B	Tupman Road to Buena Vista Pumping Plant			0.04356587	0.03568787	0.00769909	0.00194705	0.01269732
14A	Buena Vista Pumping Plant thru Santiago Creek			0.04566837	0.03729760	0.00807686	0.00204261	0.01332033
14B	Santiago Creek thru Old River Road			0.04632133	0.03353190	0.00819710	0.00207301	0.01351863
14C	Old River Road to Wheeler Ridge Pumping Plant			0.04750935	0.03231068	0.00841284	0.00212757	0.01387441
15A	Wheeler Ridge Pumping Plant to Chrisman Pumping Plant			0.04820545	0.03278404	0.00853905	0.00215950	0.01408255
16A	Chrisman Pumping Plant to Edmonston Pumping Plant			0.04981626	0.03387945	0.00882974	0.00223302	0.01456195
17E	Edmonston Pumping Plant to Porter Tunnel			0.05182162	0.03524319	0.00919222	0.00232470	0.01515976
17F	Porter Tunnel to Junction, West Branch, Calif. Aqueduct			0.05192618	0.03531429	0.00921085	0.00232941	0.01519047
18A	Junction, West Branch, Calif. Aqueduct thru Alamo Pwp.			0.13485579		0.02392545	0.00605074	0.03945770
19	Alamo Power Plant to Fairmont			0.13485222		0.02392610	0.00605088	0.03945868
19C	Buttes Junction thru Buttes Reservoir			1.00000000				
20A	Fairmont thru 70th Street West			0.06847930		0.02576425	0.00651573	0.04249001
20B	70th Street West to Palmdale			0.02276024		0.02702917	0.00683555	0.04457607
21	Palmdale to Littlerock Creek			0.02318952		0.02754717	0.00696651	0.04543034
22A	Littlerock Creek to Pearblossom Pumping Plant			0.01181870		0.02794143	0.00706621	0.04608044
22B	Pearblossom Pumping Plant to West Fork Mojave River					0.02827552	0.00715074	0.04663153
23	West Fork Mojave River to Silverwood Lake					0.00324449	0.00818122	0.00535117
24	Cedar Springs Dam and Silverwood Lake					0.01024605	0.01251569	0.01690478
25	Silverwood Lake to South Portal San Bernardino Tunnel							
26A	South Portal, San Bernardino Tunnel thru Devil Canyon Pwp.							
28G	Devil Canyon Power Plant to Barton Road							
28H	Barton Road to Lake Perris							
28J	Perris Dam and Lake Perris							
29A	Junction, West Branch, Calif. Aqueduct thru Oso Pumping P.			0.00296720	0.05726734			
29F	Oso Pumping Plant thru Quail Embankment			0.00296796	0.05726649			
29G	Quail Embankment thru Warne Power Plant				0.05742327			
29H	Pyramid Dam and Lake				0.03349572			
29J	Pyramid Lake thru Castaic Power Plant				0.05740996			
30	Castaic Dam and Lake				0.03248607			
31A	Avenal Gap to Devil's Den Pumping Plant	0.10560302	0.19482546		0.07364766			
33A	Devil's Den Pumping Plant thru San Luis Obispo Power Plant	0.10101221	0.89898779					
33B	Tank 1 through Chorro Valley Turnout	0.10101221	0.89898779					
34	Chorro Valley Turnout through Lopez Turnout	0.05271277	0.94728723					
35	Lopez Turnout through Guadalupe Turnout		1.00000000					

Note: Proportionate use factors reflect permanent water transfer as a result of the Monterey Amendment.

Table B-2

Factors for Distributing Reach Minimum OMP&R Costs Among Contractors

Reach No.	North Bay Area		South Bay Area	San Joaquin Valley Area							
							Kern County Water Agency				
	Napa County FC&WCD	Solano County Water Agency	Alameda County FC&WCD-Zone 7	Dudley Ridge Water District	Empire West Side Irrigation District	Future Contractor San Joaquin Valley	Municipal and Industrial	Agricultural	County of Kings	Oak Flat Water District	Tulare Lake Basin Water Storage District
	California Aqueduct										
1	0.00101509	0.00145937	0.02259462	0.01822266	0.00088486	0.00254133	0.02735514	0.27521928	0.00090496	0.00166760	0.03290280
2A	0.00106176	0.00152639	0.00803287	0.01904030	0.00092456	0.00266206	0.02863369	0.28756463	0.00094726	0.00174239	0.03437925
2B	0.00106392	0.00152954	0.00804744	0.01909169	0.00092705	0.00266498	0.02867844	0.28834293	0.00094874		0.03447194
3	0.00106401	0.00152968	0.00804760	0.01909703	0.00092730	0.00266446	0.02867691	0.28842416	0.00094870		0.03448155
4	0.00106410	0.00152983	0.00804776	0.01910263	0.00092758	0.00266392	0.02867529	0.28850957	0.00094864		0.03449164
5	0.00106421	0.00153001	0.00804797	0.01910963	0.00092792	0.00266325	0.02867327	0.28861621	0.00094857		0.03450426
6	0.00106440	0.00153029	0.00804829	0.01912023	0.00092844	0.00266225	0.02867022	0.28877757	0.00094846		0.03452335
7	0.00106446	0.00153037	0.00804839	0.01912364	0.00092861	0.00266191	0.02866924	0.28882931	0.00094842		0.03452947
8C	0.00105156	0.00151173	0.00795478	0.01886343	0.00091598	0.00263523	0.02835185	0.28489446	0.00093791		0.03405982
8D	0.00107379	0.00154372	0.00812143	0.01927267		0.00268884	0.02893981	0.29107692			0.01575422
9	0.00080012	0.00110418	0.00730148				0.03150656	0.29388811			
10A	0.00081332	0.00112220	0.00742007				0.03201476	0.28269236			
11B	0.00065223	0.00095504	0.00290791				0.03516180	0.21892694			
12D							0.03691687	0.18536220			
12E							0.03697255	0.18424158			
13B							0.01417987	0.14250526			
14A							0.00601809	0.10970513			
14B							0.00610995	0.10098096			
14C							0.00627333	0.07966579			
15A							0.00636884	0.06599903			
16A							0.00658818	0.03445849			
17E							0.00201822				
31A	0.00629812	0.00979558	0.02622386			0.05046240		0.43995900			

Reach No.	Southern California Area (continued)								
	Littlerock Creek Irrigation District	Mojave Water Agency	Palmdale Water District	San Bernardino Valley Municipal Water District	San Gabriel Valley Municipal Water District	San Gorgonio Pass Water Agency	Metropolitan Water District of Southern California	Ventura County Flood Control District	Total
1	0.00049058	0.01818496	0.00458603	0.02357135	0.00648783	0.00397424	0.43808129	0.00427963	1.00000000
2A	0.00051389	0.01903187	0.00480333	0.02468014	0.00679408	0.00416118	0.45886126	0.00448293	1.00000000
2B	0.00051445	0.01906354	0.00480896	0.02471421	0.00680278	0.00416692	0.45938503	0.00448786	1.00000000
3	0.00051437	0.01906308	0.00480815	0.02471155	0.00680185	0.00416648	0.45930357	0.00448702	1.00000000
4	0.00051427	0.01906261	0.00480731	0.02470877	0.00680087	0.00416600	0.45921795	0.00448613	1.00000000
5	0.00051415	0.01906200	0.00480625	0.02470530	0.00679965	0.00416542	0.45911100	0.00448502	1.00000000
6	0.00051395	0.01906109	0.00480465	0.02470004	0.00679781	0.00416454	0.45894919	0.00448332	1.00000000
7	0.00051388	0.01906081	0.00480413	0.02469835	0.00679721	0.00416426	0.45889731	0.00448279	1.00000000
8C	0.00050873	0.01884547	0.00475513	0.02443504	0.00672626	0.00411986	0.46572982	0.00443783	1.00000000
8D	0.00051908	0.01923791	0.00485220	0.02493801	0.00686417	0.00420465	0.47527438	0.00452813	1.00000000
9	0.00056431	0.01850174	0.00527629	0.02713476	0.00746655	0.00457502	0.51697022	0.00492278	1.00000000
10A	0.00057314	0.01878996	0.00535917	0.02756710	0.00758471	0.00464791	0.52514673	0.00499970	1.00000000
11B	0.00062807	0.02058540	0.00587475	0.03024992	0.00831877	0.00510025	0.57594907	0.00547871	1.00000000
12D	0.00065856	0.02158164	0.00607678	0.03174344	0.00872701	0.00535205	0.60420090	0.00574464	1.00000000
12E	0.00065941	0.02160853	0.00608451	0.03178836	0.00873891	0.00535964	0.60502251	0.00575192	1.00000000
13B	0.00071360	0.02338053	0.00658461	0.03443241	0.00946266	0.00580542	0.65511388	0.00622456	1.00000000
14A	0.00074805	0.02450567	0.00690246	0.03612176	0.00992421	0.00609023	0.68705368	0.00652495	1.00000000
14B	0.00075876	0.02485355	0.00700123	0.03665940	0.01006985	0.00618088	0.69712523	0.00661822	1.00000000
14C	0.00077822	0.02548811	0.00718087	0.03762404	0.01033245	0.00634353	0.71529087	0.00678794	1.00000000
15A	0.00078961	0.02586004	0.00728614	0.03818842	0.01048617	0.00643870	0.72592508	0.00688738	1.00000000
16A	0.00081599	0.02672140	0.00752970	0.03948832	0.01084079	0.00665787	0.75046133	0.00711751	1.00000000
17E	0.00084885	0.02779341	0.00783291	0.04110922	0.01128270	0.00693115	0.78103803	0.00740402	1.00000000
17F	0.00085056	0.02784944	0.00784871	0.04119251	0.01130553	0.00694519	0.78261790	0.00741896	1.00000000
18A	0.00220895	0.04946256	0.01657935	0.10699871	0.02936461	0.01804030	0.57305584		1.00000000
19	0.00220892	0.04946131	0.01657891	0.10700135	0.02936480	0.01804074	0.57305609		1.00000000
19C									1.00000000
20A	0.00237800	0.05324853	0.01784830	0.11522152	0.03161799	0.01942666	0.61700971		1.00000000
20B	0.00249470	0.05586075	0.01872390	0.12087843	0.03316986	0.02038045	0.64729088		1.00000000
21	0.00254199	0.05692052		0.12319480	0.03380324	0.02077093	0.65963498		1.00000000
22A		0.05773081		0.12495766	0.03428605	0.02106816	0.66905054		1.00000000
22B		0.05842135		0.12645207	0.03469614	0.02132008	0.67705257		1.00000000
23				0.14467451	0.03969010	0.02439237	0.77446614		1.00000000
24				0.22243002	0.04339444	0.02843498	0.66607404		1.00000000
25				0.11825184	0.03722720	0.01993915	0.82458181		1.00000000
26A				0.14947726	0.03997502	0.02520426	0.78534346		1.00000000
28G				0.05126137			0.94873863		1.00000000
28H							1.000000000		1.00000000
28J							1.000000000		1.00000000
29A							0.92702291	0.01274255	1.00000000
29F							0.92702302	0.01274253	1.00000000
29G							0.92979606	0.01278067	1.00000000
29H							0.95753173	0.00897255	1.00000000
29J							0.92980918	0.01278086	1.00000000
30							0.95895422	0.00855971	1.00000000
31A		0.09318490							1.00000000
33A									1.00000000
33B									
34									1.00000000
35									1.00000000

Table B-3

Power Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant

(Dollars)

Calendar Year	North Bay Aqueduct			South Bay Aqueduct	California Aqueduct					
	Reach 1	Reach 3A	Reach 3B	Reach 1[b]	Reach 1	Reach 4	Reach 14A	Reach 15A	Reach 16A	Reach 17E
	Barker Slough Pumping Plant (1)	Cordelia Pumping Plant Solano (2)	Cordelia Pumping Plant Napa[a] (3)	South Bay & Del Valle Pumping Plant (4)	Banks Pumping Plant (5)	Dos Amigos Pumping Plant (6)	Buena Vista Pumping Plant (7)	Teerink Pumping Plant (8)	Chrisman Pumping Plant (9)	Edmonston Pumping Plant (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	37,731	0	0	0	0	0	0
1963	0	0	0	56,414	0	0	0	0	0	0
1964	0	0	0	71,745	0	0	0	0	0	0
1965	0	0	0	138,653	0	0	0	0	0	0
1966	0	0	0	189,402	0	0	0	0	0	0
1967	0	0	0	220,327	28,554	0	0	0	0	0
1968	0	0	7,128	339,261	1,286,777	227,505	0	0	0	0
1969	0	0	8,557	274,851	817,304	119,303	0	0	0	0
1970	0	0	13,666	439,983	330,508	193,720	2,940	0	0	0
1971	0	0	10,626	413,657	559,946	205,206	134,340	7,921	0	0
1972	0	0	14,430	615,164	1,072,833	541,628	305,868	159,125	348,235	1,179,787
1973	0	0	14,453	477,134	880,234	469,676	469,104	472,187	829,325	2,961,697
1974	0	0	17,508	502,473	959,269	536,361	514,168	553,285	993,796	3,522,973
1975	0	0	14,801	373,706	1,315,916	536,495	607,981	664,738	1,340,518	4,675,938
1976	0	0	20,867	580,607	878,728	572,326	658,261	645,377	1,360,502	4,740,176
1977	0	0	22,640	534,087	631,578	178,904	139,856	138,714	291,196	977,258
1978	0	0	21,670	559,981	3,833,011	653,606	966,756	926,444	1,728,268	6,104,186
1979	0	0	16,240	614,117	3,394,344	994,921	805,839	788,539	1,612,105	5,564,009
1980	0	0	19,936	523,445	1,981,918	818,368	857,033	846,757	1,808,192	6,269,482
1981	0	0	23,863	639,976	1,975,220	1,640,814	1,197,553	1,189,437	2,731,775	9,388,367
1982	0	0	12,078	484,808	3,405,761	1,148,258	1,159,605	1,212,973	2,557,070	9,355,533
1983	0	0	2,339	77,394	1,264,426	140,742	276,289	264,076	545,887	1,827,188
1984	0	0	4,797	289,827	1,390,432	555,409	551,468	508,111	1,044,264	3,507,659
1985	0	0	10,220	456,051	2,830,593	1,283,981	1,336,378	1,378,587	2,994,227	10,459,919
1986	0	0	15,484	827,079	7,180,656	2,282,364	2,290,023	2,343,903	5,062,706	17,643,403
1987	0	0	27,223	901,077	3,924,603	1,996,638	1,851,663	1,885,638	4,119,308	14,361,151
1988	18,112	19,927	23,868	932,456	5,377,272	2,072,091	2,100,427	2,142,121	4,724,696	16,562,202
1989	30,783	45,783	26,501	1,211,118	10,887,880	3,334,006	3,427,675	3,553,496	7,936,397	27,756,045
1990	53,484	67,109	40,793	1,881,178	9,523,541	4,754,649	5,990,489	6,327,687	14,254,357	50,152,078
1991	11,254	10,442	5,983	365,808	3,463,154	723,518	1,263,736	1,445,729	3,363,863	12,019,190
1992	14,484	13,070	9,398	327,309	2,700,240	808,067	1,071,702	1,121,273	2,503,167	8,677,102
1993	(12,340)	(8,753)	(5,393)	(159,836)	(333,548)	(609,139)	(461,719)	(459,965)	(1,018,142)	(3,558,718)
1994	54,154	39,894	29,105	823,063	4,439,609	1,940,345	2,322,098	2,371,362	5,328,412	18,692,998
1995	20,699	20,620	11,791	253,482	4,009,296	1,076,372	924,147	887,105	1,948,905	6,847,537
1996	59,545	47,288	23,483	645,189	9,531,541	3,449,781	2,444,752	2,341,848	5,156,434	18,332,558
1997	69,837	52,935	21,955	963,877	7,625,930	3,064,281	2,847,907	2,788,387	6,217,434	22,057,503
1998	(11,058)	(9,488)	(4,554)	(124,695)	296,016	(362,362)	(316,705)	(304,065)	(673,122)	(2,350,976)
1999	21,254	18,191	6,779	396,491	4,175,860	1,799,891	1,193,161	925,507	2,466,760	9,689,030
2000	82,114	59,979	21,914	1,081,461	10,478,280	4,447,569	4,164,526	4,265,296	9,816,527	35,701,059
2001	360,154	248,528	217,580	3,502,397	26,213,100	9,835,816	15,100,251	15,492,910	34,909,230	128,989,295
2002	173,557	32,651	177,406	1,538,793	14,680,653	4,642,864	6,107,140	7,146,244	15,097,969	52,967,757
2003	375,640	195,728	307,536	3,721,780	21,433,269	9,922,728	11,371,944	13,163,196	28,036,511	98,906,658
2004	389,109	219,767	319,196	3,921,777	26,058,231	10,464,991	12,025,305	13,935,207	29,680,824	104,743,794
2005	207,980	198,539	216,612	3,176,388	21,584,978	9,573,384	11,255,377	10,987,650	25,855,817	96,825,221
2006	214,548	203,187	225,929	3,287,110	23,126,841	9,946,654	11,832,996	11,568,602	27,237,632	102,033,340
2007	212,062	199,330	225,764	3,225,068	22,331,664	9,923,236	11,952,001	11,703,076	27,569,831	103,313,747
2008	190,918	178,091	205,535	2,881,813	22,770,657	8,884,477	10,727,134	10,506,362	24,752,590	92,761,501
2009	200,243	185,311	217,739	2,999,007	20,420,354	9,295,489	11,267,192	11,040,568	26,016,008	97,506,750
2010	212,284	194,945	233,248	3,154,577	25,935,175	9,875,846	12,027,091	11,794,076	27,798,986	104,206,557
2011	214,002	195,027	237,575	3,155,894	23,789,729	10,022,438	12,280,340	12,054,775	28,424,216	106,574,702
2012	223,914	202,518	251,132	3,277,116	22,302,697	10,337,464	12,630,579	12,392,764	29,215,921	109,531,431
2013	249,788	224,507	282,419	3,632,925	29,375,501	11,656,428	14,343,734	14,090,460	33,232,867	124,624,139
2014	272,450	242,789	311,554	3,928,785	26,336,992	12,735,821	15,738,952	15,471,936	36,500,423	136,899,091
2015	280,928	246,801	328,143	3,993,688	29,640,914	12,995,149	16,082,363	15,813,538	37,309,820	139,942,650
2016	287,654	249,568	342,598	4,038,479	33,717,392	13,277,918	16,502,394	16,237,879	38,320,578	143,755,816
2017	286,618	245,617	347,826	3,974,531	30,348,837	13,103,267	16,303,710	16,045,314	37,868,577	142,065,966
2018	299,299	253,415	370,618	4,100,734	29,251,695	13,370,770	16,562,112	16,287,570	38,430,143	144,149,272
2019	311,073	260,272	392,920	4,211,682	34,928,356	14,288,960	17,979,503	17,727,206	41,865,823	157,125,533
2020	295,860	244,693	380,597	3,959,575	30,602,342	13,279,449	16,635,326	16,389,904	38,697,456	145,211,091
2021	296,007	244,251	381,758	3,952,437	30,080,687	13,313,949	16,706,420	16,464,575	38,877,657	145,896,242
2022	285,469	235,556	368,167	3,811,730	27,703,335	12,846,720	16,124,372	15,891,464	37,524,846	140,820,710
2023	287,343	237,101	370,582	3,836,732	29,907,543	12,940,347	16,245,819	16,011,855	37,809,801	141,891,456
2024	299,558	247,181	386,337	3,999,848	33,066,275	13,503,802	16,958,853	16,715,679	39,472,516	148,133,103
2025	298,005	245,898	384,333	3,979,106	27,444,619	13,372,108	16,763,987	16,518,773	39,003,515	146,363,834
2026	300,361	247,844	387,373	4,010,571	34,613,956	13,578,641	17,071,285	16,829,432	39,743,734	149,157,099
2027	295,143	243,537	380,642	3,940,884	30,625,850	13,300,205	16,701,490	16,461,731	38,872,561	145,880,987
2028	297,509	245,489	383,693	3,972,474	31,437,741	13,391,898	16,809,896	16,567,361	39,121,128	146,811,516
2029	293,139	241,884	378,059	3,914,139	29,829,197	13,202,699	16,575,558	16,336,922	38,577,467	144,772,465
2030	295,871	244,139	381,581	3,950,609	31,359,569	13,325,377	16,730,027	16,489,192	38,936,962	146,121,538
2031	291,199	240,284	375,556	3,888,233	27,443,968	12,815,324	15,942,955	15,689,954	37,029,607	138,917,759
2032	297,911	245,821	384,214	3,977,861	31,407,855	13,564,441	17,101,427	16,866,804	39,838,497	149,527,065
2033	315,193	260,082	406,501	4,208,611	31,824,784	13,976,672	17,440,121	17,171,890	40,534,340	152,082,589
2034	301,936	249,143	389,404	4,031,600	31,099,493	13,746,575	17,330,997	17,093,205	40,373,102	151,533,547
2035	294,837	243,285	380,248	3,936,807	30,207,360	13,324,419	16,749,823	16,512,323	38,994,502	146,344,324
Total	10,119,884	8,269,776	11,840,524	148,329,612	1,085,019,291	459,231,620	561,075,795	558,861,990	1,302,924,519	4,849,504,879

[a]Power costs for the period 1968 through 1987 are for an interim facility.
[b]The costs of Del Valle Pumping Plant are combined with those of South Bay Pumping Plant to simplify the cost allocations.

Table B-3

Power Costs and Credits and Annual Replacement Deposits for Each Aqueduct Pumping and Power Recovery Plant

(Dollars)

Calendar Year	California Aqueduct (continued)									
	Reach 18A	Reach 22B	Reach 23	Reach 26A	Reach 29A	Reach 29G	Reach 29J	Reach 31A	Reach 33A	
	Alamo Power Plant (11)	Pearblossom Pumping Plant (12)	Mojave Siphon Power Plant (13)	Devil Canyon Power Plant (14)	Oso Pumping Plant (15)	Warne Power Plant (16)	Castaic Power Plant (17)	Las Perillas and Badger Hill Pumping Plants (18)	Devil's Den, Bluestone, and Polonio Pass Pumping Plants (19)	Grand Total (20)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	37,731
1963	0	0	0	0	0	0	0	0	0	56,414
1964	0	0	0	0	0	0	0	0	0	71,745
1965	0	0	0	0	0	0	0	0	0	138,653
1966	0	0	0	0	0	0	0	0	0	189,402
1967	0	0	0	0	0	0	0	0	0	248,881
1968	0	0	0	0	0	0	0	118,578	0	1,979,249
1969	0	0	0	0	0	0	0	76,920	0	1,296,935
1970	0	0	0	0	0	0	0	134,749	0	1,115,566
1971	0	0	0	0	0	0	0	168,689	0	1,500,385
1972	0	81,484	0	(3,112)	157,005	0	(385,696)	213,251	0	4,300,002
1973	0	586,209	0	(956,197)	238,650	0	(1,193,216)	120,014	0	5,369,270
1974	0	566,546	0	(963,572)	286,640	0	(1,823,397)	119,505	0	5,785,555
1975	0	587,227	0	(1,125,945)	421,687	0	(2,835,302)	92,012	0	6,669,772
1976	0	871,540	0	(1,567,312)	278,869	0	(2,512,021)	146,530	0	6,674,450
1977	0	275,980	0	(1,262,960)	17,319	0	(1,701,284)	84,225	0	327,513
1978	0	1,758,473	0	(3,345,147)	215,573	0	(2,361,377)	190,745	0	11,252,189
1979	0	1,770,844	0	(3,381,969)	122,134	0	(2,752,003)	203,143	0	9,752,263
1980	0	1,769,468	0	(3,508,195)	86,893	0	(2,728,494)	182,996	0	8,927,799
1981	0	2,049,947	0	(3,743,153)	382,330	0	(2,854,192)	189,573	0	14,811,510
1982	0	1,614,895	0	(3,149,352)	444,009	(973,898)	(3,476,126)	182,427	0	13,978,041
1983	0	301,180	0	(5,905,161)	59,561	(1,314,237)	(3,904,690)	18,936	0	(6,346,070)
1984	0	633,223	0	(7,865,341)	135,658	(2,285,362)	844,120	117,585	0	(568,150)
1985	0	1,140,057	0	(10,664,136)	739,708	(8,476,552)	(19,162,735)	155,931	0	(15,517,771)
1986	(1,080,970)	2,482,042	0	(12,235,312)	1,037,512	(6,269,528)	(11,462,662)	317,622	0	10,434,322
1987	(1,062,392)	1,822,523	0	(10,871,342)	914,642	(6,757,040)	(11,630,562)	266,825	0	1,749,955
1988	(810,907)	2,373,442	0	(14,772,519)	951,580	(7,448,747)	(12,677,211)	237,272	0	1,826,082
1989	(822,973)	4,130,250	0	(19,098,882)	1,543,985	(8,790,866)	(14,657,167)	309,851	0	20,823,882
1990	(845,641)	6,810,694	0	(21,336,948)	3,032,334	(11,692,826)	(19,863,014)	466,262	0	49,616,226
1991	(351,262)	1,306,263	0	(5,781,948)	778,874	(5,250,121)	(8,731,129)	17,608	0	4,660,962
1992	(997,736)	1,116,809	0	(9,903,370)	541,093	(5,955,563)	(9,599,392)	111,742	0	(7,440,605)
1993	(84,856)	(370,935)	0	(7,956,659)	(244,261)	(4,607,075)	(9,740,511)	(122,190)	0	(29,754,040)
1994	(93,031)	2,528,937	0	(12,122,861)	1,035,776	(6,228,273)	(10,867,596)	226,550	0	10,520,542
1995	(1,297,179)	951,513	0	(10,256,635)	342,312	(3,827,718)	(7,403,219)	261,423	0	(5,229,549)
1996	(2,959,744)	2,725,712	(941,959)	(13,155,960)	908,180	(5,026,221)	(8,969,945)	321,137	0	14,933,619
1997	(2,876,697)	3,431,693	(1,932,337)	(13,519,660)	990,932	(5,184,788)	(9,027,058)	322,753	208,816	18,123,700
1998	(2,244,105)	(439,496)	(1,385,473)	(10,955,475)	(66,088)	(1,888,975)	(4,963,075)	(56,675)	(87,016)	(25,947,387)
1999	(2,811,928)	1,352,205	(2,482,354)	(14,772,635)	534,779	(5,526,541)	(9,954,674)	112,032	168,665	(12,687,527)
2000	(5,115,222)	5,421,666	(4,415,314)	(25,857,510)	1,709,792	(9,462,353)	(17,958,030)	325,327	535,608	15,302,689
2001	(3,295,344)	19,734,730	(3,628,767)	(19,510,751)	6,556,320	(7,997,746)	(13,990,430)	1,106,148	2,198,685	216,042,106
2002	(3,814,800)	8,990,343	(6,077,500)	(19,290,000)	2,506,491	(7,137,500)	(12,794,600)	481,153	1,293,639	66,722,260
2003	(5,538,000)	16,094,315	(10,554,500)	(29,645,000)	4,795,575	(11,840,000)	(21,122,100)	861,474	2,938,191	133,424,945
2004	(5,642,000)	17,081,704	(10,716,000)	(30,052,500)	5,078,807	(12,145,000)	(21,357,100)	901,494	3,080,940	147,988,546
2005	(5,351,373)	15,391,020	(6,251,025)	(30,108,725)	4,617,493	(13,739,575)	(22,324,450)	1,101,445	2,987,921	126,204,677
2006	(5,410,640)	15,993,056	(6,316,725)	(30,413,625)	4,977,036	(14,283,625)	(23,422,800)	1,078,360	3,057,887	134,935,763
2007	(5,487,109)	16,010,761	(6,395,700)	(30,960,225)	5,136,439	(15,137,525)	(24,586,100)	1,004,150	2,999,840	133,240,310
2008	(5,594,927)	14,595,518	(6,548,625)	(31,216,650)	4,533,729	(15,018,475)	(24,315,100)	897,154	2,680,192	113,871,894
2009	(5,599,674)	15,312,105	(6,526,500)	(31,566,025)	4,785,345	(15,241,625)	(24,652,550)	933,523	2,788,845	119,382,105
2010	(5,647,379)	16,426,820	(6,596,625)	(31,860,925)	5,104,632	(15,363,925)	(24,964,750)	982,058	2,933,839	136,446,530
2011	(5,693,157)	16,611,770	(6,650,250)	(32,188,175)	5,310,366	(15,968,250)	(25,907,400)	982,468	2,935,064	136,381,134
2012	(5,786,264)	17,432,000	(6,829,725)	(32,405,200)	5,314,385	(15,350,650)	(25,007,250)	1,020,205	3,047,802	141,800,839
2013	(5,775,031)	19,694,001	(6,846,000)	(32,831,750)	6,125,474	(15,930,550)	(25,950,950)	1,130,974	3,378,714	174,707,650
2014	(5,799,048)	21,282,846	(6,862,800)	(32,782,050)	6,876,821	(16,535,550)	(26,891,650)	1,223,077	3,653,871	192,604,310
2015	(5,888,677)	22,084,532	(7,063,725)	(33,390,200)	6,913,429	(16,379,725)	(26,613,550)	1,243,282	3,714,231	201,253,591
2016	(5,951,375)	22,787,335	(7,156,875)	(34,005,575)	7,081,837	(16,562,650)	(26,938,550)	1,257,226	3,755,891	210,997,540
2017	(5,906,866)	22,369,205	(7,174,350)	(33,978,600)	7,059,201	(16,738,275)	(27,262,450)	1,237,319	3,696,415	203,891,862
2018	(5,969,705)	23,139,446	(7,497,975)	(34,012,075)	6,978,987	(16,051,100)	(26,157,200)	1,276,607	3,813,789	208,596,402
2019	(6,016,799)	24,261,839	(7,434,300)	(34,727,425)	8,036,893	(17,748,700)	(29,161,650)	1,311,148	3,916,974	231,529,308
2020	(5,985,826)	22,869,770	(7,439,925)	(34,666,150)	7,241,985	(17,147,525)	(28,022,500)	1,232,663	3,682,507	207,461,292
2021	(6,012,334)	22,932,590	(7,505,625)	(34,811,350)	7,300,150	(17,287,900)	(28,281,650)	1,230,441	3,675,868	207,454,173
2022	(6,040,064)	22,059,549	(7,496,625)	(34,809,700)	7,075,111	(17,364,050)	(28,413,900)	1,186,637	3,545,005	195,354,332
2023	(6,055,527)	22,261,227	(7,534,575)	(34,804,325)	7,117,365	(17,354,700)	(28,398,200)	1,194,421	3,568,260	199,532,525
2024	(6,029,865)	23,267,060	(7,548,000)	(34,803,550)	7,422,046	(17,358,975)	(28,405,950)	1,245,201	3,719,961	214,291,080
2025	(6,001,712)	22,834,462	(7,450,050)	(34,514,225)	7,383,608	(17,359,025)	(28,406,000)	1,238,744	3,700,671	205,800,651
2026	(6,065,585)	23,524,715	(7,632,075)	(35,124,800)	7,441,969	(17,358,975)	(28,405,950)	1,248,539	3,729,936	217,298,070
2027	(6,023,520)	22,865,753	(7,471,275)	(34,768,475)	7,326,469	(17,391,000)	(28,457,150)	1,226,845	3,665,125	207,675,802
2028	(6,002,276)	23,048,825	(7,494,675)	(34,815,075)	7,357,527	(17,330,950)	(28,355,950)	1,236,678	3,694,504	210,377,313
2029	(6,012,193)	22,710,356	(7,507,125)	(34,810,950)	7,263,055	(17,358,950)	(28,406,000)	1,218,518	3,640,251	204,858,491
2030	(6,002,370)	22,921,986	(7,494,825)	(34,815,050)	7,330,753	(17,359,000)	(28,406,050)	1,229,872	3,674,170	208,914,351
2031	(6,005,989)	22,363,537	(7,813,125)	(34,452,000)	6,719,550	(16,250,975)	(26,531,150)	1,210,454	3,616,158	195,491,299
2032	(6,076,113)	23,118,595	(7,908,300)	(34,774,175)	7,645,411	(17,854,700)	(29,359,850)	1,238,355	3,699,513	212,940,632
2033	(6,041,803)	24,370,928	(7,942,800)	(34,611,900)	7,411,410	(16,440,850)	(26,994,600)	1,310,191	3,914,118	223,195,477
2034	(6,071,272)	23,395,374	(7,981,350)	(34,688,400)	7,760,371	(17,873,775)	(29,401,050)	1,255,085	3,749,493	216,293,478
2035	(6,073,246)	22,970,807	(7,716,375)	(35,001,675)	7,342,244	(17,376,700)	(28,533,900)	1,225,575	3,661,331	207,485,989
Total	(224,122,506)	762,459,271	(266,222,129)	(1,391,256,544)	242,525,762	(658,605,180)	(1,120,552,138)	45,390,832	118,635,674	6,503,430,932

Table B-4

Annual Table A Amounts to Project Water

(Acre-Feet)

Calendar Year	North Bay Area			South Bay Area[a]				Central Coastal Area		
	Napa County FC&WCD[b] (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	507	5,248	5,783	11,538	0	0	0
1968	0	0	0	6,900	15,000	88,000	109,900	0	0	0
1969	0	0	0	8,200	15,500	75,000	98,700	0	0	0
1970	0	0	0	10,000	16,200	88,000	114,200	0	0	0
1971	0	0	0	11,200	17,000	88,000	116,200	0	0	0
1972	0	0	0	12,400	17,900	88,000	118,300	0	0	0
1973	0	0	0	13,600	18,800	88,000	120,400	0	0	0
1974	0	0	0	14,800	19,600	88,000	122,400	0	0	0
1975	0	0	0	16,000	20,500	88,000	124,500	0	0	0
1976	0	0	0	17,200	21,300	88,000	126,500	0	0	0
1977	0	0	0	18,400	22,200	88,000	128,600	0	0	0
1978	0	0	0	19,600	23,100	88,000	130,700	0	0	0
1979	0	0	0	20,800	23,900	88,000	132,700	0	0	0
1980	0	500	500	22,000	24,800	88,000	134,800	1,000	946	1,946
1981	0	650	650	23,000	26,000	88,000	137,000	1,000	1,813	2,813
1982	0	800	800	24,000	27,200	88,000	139,200	2,000	3,626	5,626
1983	0	950	950	25,000	28,400	88,000	141,400	3,000	5,439	8,439
1984	0	1,100	1,100	26,000	29,600	88,000	143,600	4,500	8,198	12,698
1985	0	1,250	1,250	27,000	30,800	88,000	145,800	7,500	13,638	21,138
1986	0	1,400	1,400	28,000	32,100	88,000	148,100	10,000	18,210	28,210
1987	0	1,550	1,550	29,000	33,300	88,000	150,300	12,500	22,704	35,204
1988	5,745	9,726	15,471	30,000	34,500	88,000	152,500	15,500	28,222	43,722
1989	6,195	18,420	24,615	31,000	35,700	90,000	156,700	20,000	36,342	56,342
1990	6,940	21,250	28,190	32,000	36,900	92,000	160,900	25,000	45,486	70,486
1991	7,290	22,300	29,590	34,000	38,400	94,000	166,400	25,000	45,486	70,486
1992	7,840	24,170	32,010	36,000	39,900	96,000	171,900	25,000	45,486	70,486
1993	8,490	26,130	34,620	38,000	41,400	98,000	177,400	25,000	45,486	70,486
1994	9,135	28,080	37,215	40,000	42,000	100,000	182,000	25,000	45,486	70,486
1995	9,780	34,250	44,030	42,000	42,000	100,000	184,000	25,000	45,486	70,486
1996	10,425	37,800	48,225	44,000	42,000	100,000	186,000	25,000	45,486	70,486
1997	11,065	38,250	49,315	46,000	42,000	100,000	188,000	6,215	38,986	45,201
1998	11,710	38,710	50,420	46,000	42,000	100,000	188,000	6,215	38,986	45,201
1999	15,850	39,170	55,020	46,000	42,000	100,000	188,000	25,000	45,486	70,486
2000	16,325	39,620	55,945	68,000	42,000	100,000	210,000	25,000	45,486	70,486
2001	20,725	45,836	66,561	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2002	21,100	46,296	67,396	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2003	21,475	46,756	68,231	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2004	21,850	47,206	69,056	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2005	22,225	47,256	69,481	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2006	22,550	47,306	69,856	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2007	22,875	47,356	70,231	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2008	23,200	47,406	70,606	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2009	23,525	47,456	70,981	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2010	23,850	47,506	71,356	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2011	24,175	47,556	71,731	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2012	24,500	47,606	72,106	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2013	24,775	47,656	72,431	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2014	25,150	47,706	72,856	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2015	25,825	47,756	73,581	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2016	26,450	47,756	74,206	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2017	27,075	47,756	74,831	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2018	27,700	47,756	75,456	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2019	28,325	47,756	76,081	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2020	28,925	47,756	76,681	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2021	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2022	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2023	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2024	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2025	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2026	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2027	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2028	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2029	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2030	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2031	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2032	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2033	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2034	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
2035	29,025	47,756	76,781	78,000	42,000	100,000	220,000	25,000	45,486	70,486
Total	1,048,440	2,049,856	3,098,296	3,636,607	2,459,248	6,510,783	12,606,638	1,189,430	2,218,494	3,407,924

[a]Table A quantities for the South Bay Area were supplied by non-Project water for the period June 1962 through November 1967. Actual delivery quantities of Project water are shown for 1967.

[b]District's Table A quantities exclude amounts during the period 1968 through 1987 that were supplied by non-Project water.

Table B-4

Annual Table A Amounts to Project Water

(Acre-Feet)

Calendar Year	San Joaquin Valley Area								
			Kern County Water Agency						
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	Total (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	14,300	1,000	0	46,600	46,600	900	2,300	12,250	77,350
1969	14,325	3,000	0	95,700	95,700	1,200	2,500	46,350	163,075
1970	15,700	3,000	28,700	116,400	145,100	1,300	2,600	34,300	202,000
1971	17,900	3,000	35,700	154,600	190,300	1,300	2,800	36,500	251,800
1972	20,000	3,000	39,200	231,500	270,700	1,400	5,366	112,600	413,066
1973	22,000	3,000	43,500	267,000	310,500	1,500	3,100	43,552	383,652
1974	33,390	3,000	48,000	299,000	347,000	1,500	3,471	72,289	460,650
1975	40,555	3,000	52,700	358,120	410,820	1,600	3,576	86,258	545,809
1976	30,921	3,000	56,100	386,050	442,150	1,600	4,039	61,707	543,417
1977	30,400	3,000	60,600	423,000	483,600	1,700	3,700	59,000	581,400
1978	32,500	0	64,100	470,200	534,300	1,900	3,900	63,300	635,900
1979	38,544	3,000	67,600	516,300	583,900	2,000	4,000	71,241	702,685
1980	41,000	3,000	71,100	563,400	634,500	2,200	5,700	71,700	758,100
1981	41,000	3,000	74,800	616,600	691,400	2,300	4,300	76,000	818,000
1982	41,000	3,000	79,600	665,700	745,300	2,500	4,500	80,200	876,500
1983	42,900	3,000	83,500	721,600	805,100	2,800	3,770	9,548	867,118
1984	45,100	3,000	103,600	757,000	860,600	3,100	4,800	62,611	979,211
1985	47,200	3,000	108,900	806,100	915,000	3,400	4,900	45,549	1,019,049
1986	49,300	3,000	113,400	820,246	933,646	3,700	5,100	97,200	1,091,946
1987	51,400	3,000	119,100	904,400	1,023,500	4,000	5,200	101,400	1,188,500
1988	53,500	3,000	123,900	950,700	1,074,600	4,000	5,400	105,600	1,246,100
1989	55,600	3,000	128,200	984,100	1,112,300	4,000	5,600	109,900	1,290,400
1990	28,850	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,313,450
1991	53,411	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,338,011
1992	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1993	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1994	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1995	57,700	3,000	134,600	1,018,800	1,153,400	4,000	5,700	118,500	1,342,300
1996	53,370	3,000	134,600	982,460	1,117,060	4,000	5,700	118,500	1,301,630
1997	53,370	3,000	134,600	978,130	1,112,730	4,000	5,700	118,500	1,297,300
1998	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
1999	53,370	3,000	134,600	953,130	1,087,730	4,000	5,700	118,500	1,272,300
2000	53,370	3,000	134,600	886,130	1,020,730	4,000	5,700	118,500	1,205,300
2001	53,370	3,000	134,600	866,349	1,000,949	4,000	5,700	118,500	1,185,519
2002	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2003	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2004	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2005	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2006	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2007	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2008	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2009	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2010	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2011	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2012	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2013	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2014	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2015	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2016	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2017	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2018	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2019	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2020	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2021	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2022	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2023	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2024	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2025	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2026	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2027	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2028	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2029	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2030	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2031	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2032	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2033	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2034	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
2035	57,343	3,000	134,600	866,349	1,000,949	4,000	5,700	111,527	1,182,519
Total	3,361,478	199,000	7,693,900	52,342,311	60,036,211	233,900	352,822	6,672,973	70,856,384

Table B-4

Annual Table A Amounts to Project Water

(Acre-Feet)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	3,700	0	0	0	0	0	0	0	0
1969	0	5,000	0	0	0	0	0	0	0	0
1970	0	5,700	0	0	0	0	0	0	0	0
1971	0	6,700	0	0	0	0	0	0	0	0
1972	20,000	8,936	5,200	526	8,000	170	8,400	1,620	1,677	122
1973	25,000	12,400	5,800	870	9,000	290	10,700	2,940	48,000	11,500
1974	30,000	15,400	6,400	1,160	10,000	400	13,100	4,260	50,000	12,300
1975	35,000	18,200	7,000	1,450	11,000	520	15,400	5,580	52,500	13,100
1976	44,000	21,200	7,600	1,740	12,000	640	17,800	6,900	55,000	14,000
1977	50,000	24,100	8,421	2,030	13,000	730	20,200	8,220	57,500	14,800
1978	57,000	24,762	9,242	2,320	14,000	920	0	9,340	60,000	15,700
1979	63,000	28,000	10,063	2,610	15,000	1,040	24,900	10,260	62,500	16,600
1980	69,200	30,400	10,884	2,900	17,000	1,150	27,200	11,180	65,500	17,400
1981	75,000	32,800	12,105	3,190	19,000	1,270	23,100	11,700	68,500	18,300
1982	81,300	34,800	13,326	3,480	21,000	1,380	22,843	12,320	71,500	19,100
1983	87,700	37,300	14,547	3,770	23,000	1,500	34,300	12,940	74,500	19,900
1984	35,000	39,600	15,768	4,060	25,000	1,610	36,700	13,560	78,000	20,700
1985	40,000	41,800	16,989	4,350	27,000	1,730	39,000	14,180	81,500	21,800
1986	42,000	43,600	18,210	4,640	29,000	1,840	41,400	14,800	85,000	23,200
1987	44,000	45,600	19,431	4,930	31,500	1,960	43,700	15,420	89,000	24,600
1988	46,000	48,000	20,652	5,220	34,000	2,070	46,000	16,040	93,000	26,000
1989	125,700	50,100	21,873	5,510	36,500	2,190	48,500	16,660	97,000	27,400
1990	132,100	52,000	23,100	5,800	38,100	2,300	50,800	17,300	101,500	28,800
1991	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1992	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1993	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1994	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1995	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1996	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1997	138,400	54,200	23,100	5,800	38,100	2,300	50,800	17,300	102,600	28,800
1998	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
1999	138,400	54,200	23,100	5,800	38,100	2,300	75,800	17,300	102,600	28,800
2000	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2001	138,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2002	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2003	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2004	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2005	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2006	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2007	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2008	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2009	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2010	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2011	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2012	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2013	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2014	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2015	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2016	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2017	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2018	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2019	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2020	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2021	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2022	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2023	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2024	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2025	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2026	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2027	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2028	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2029	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2030	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2031	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2032	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2033	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2034	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2035	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
Total	7,432,000	4,545,098	1,286,111	321,556	2,107,600	127,210	3,760,043	1,127,720	5,909,177	1,641,322

Table B-4

Annual Table A Amounts to Project Water

(Acre-Feet)

Calendar Year	Southern California Area				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	11,538
1968	0	0	0	3,700	0	300	250	550	0	191,500
1969	0	0	0	5,000	0	350	270	620	0	267,395
1970	0	0	0	5,700	0	400	300	700	0	322,600
1971	0	0	0	6,700	0	450	440	890	0	375,590
1972	0	154,772	0	209,423	0	500	470	970	0	741,759
1973	0	354,600	0	481,100	0	600	500	1,100	0	986,252
1974	0	454,900	0	597,920	0	700	530	1,230	0	1,182,200
1975	0	555,200	0	714,950	0	1,050	560	1,610	0	1,386,869
1976	0	655,600	0	836,480	0	1,400	590	1,990	0	1,508,387
1977	0	755,900	0	954,901	0	1,800	620	2,420	0	1,667,321
1978	0	856,300	0	1,049,584	0	1,200	650	1,850	0	1,818,034
1979	0	956,600	0	1,190,573	0	1,450	680	2,130	0	2,028,088
1980	6,800	1,057,000	1,000	1,317,614	0	1,100	710	1,810	0	2,214,770
1981	7,800	1,157,300	2,000	1,432,065	0	1,200	740	1,940	0	2,392,468
1982	8,800	1,257,600	3,000	1,550,449	0	1,200	770	1,970	0	2,574,545
1983	9,800	1,358,000	4,000	1,681,257	0	1,200	800	2,000	0	2,701,164
1984	10,800	1,458,300	5,000	1,744,098	1,600	1,200	830	3,630	0	2,884,337
1985	11,800	1,558,700	6,000	1,864,849	1,700	1,200	860	3,760	0	3,055,846
1986	12,900	1,659,300	8,000	1,983,890	2,100	1,200	890	4,190	0	3,257,736
1987	14,000	1,759,800	10,000	2,103,941	2,500	1,200	920	4,620	0	3,484,115
1988	15,100	1,860,400	13,000	2,225,482	2,900	1,200	960	5,060	0	3,688,335
1989	16,200	1,961,000	16,000	2,424,633	3,300	1,200	1,000	5,500	0	3,958,190
1990	17,300	2,011,500	20,000	2,500,600	3,800	1,200	1,040	6,040	0	4,079,666
1991	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,080	11,880	0	4,126,567
1992	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,120	11,920	0	4,138,816
1993	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,160	11,960	0	4,146,966
1994	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,200	12,000	0	4,154,201
1995	17,300	2,011,500	20,000	2,510,200	9,600	1,200	1,250	12,050	0	4,163,066
1996	0	2,011,500	20,000	2,492,900	9,600	1,200	1,300	12,100	0	4,111,341
1997	0	2,011,500	20,000	2,492,900	9,600	1,200	1,350	12,150	0	4,084,866
1998	0	2,011,500	20,000	2,517,900	9,600	1,200	1,400	12,200	0	4,086,021
1999	2,000	2,011,500	20,000	2,519,900	9,600	2,890	1,450	13,940	0	4,119,646
2000	3,000	2,011,500	20,000	2,565,900	9,600	2,890	1,510	14,000	0	4,121,631
2001	4,000	2,011,500	20,000	2,566,900	9,600	3,500	1,570	14,670	0	4,124,136
2002	4,000	2,011,500	20,000	2,569,900	9,600	3,500	1,630	14,730	0	4,125,031
2003	5,000	2,011,500	20,000	2,570,900	9,600	3,500	1,690	14,790	0	4,126,926
2004	6,000	2,011,500	20,000	2,571,900	9,600	3,500	1,750	14,850	0	4,128,811
2005	6,500	2,011,500	20,000	2,572,400	9,600	27,500	1,810	38,910	0	4,153,796
2006	7,000	2,011,500	20,000	2,572,900	9,600	27,500	1,880	38,980	0	4,154,741
2007	7,500	2,011,500	20,000	2,573,400	9,600	27,500	1,950	39,050	0	4,155,686
2008	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,020	39,120	0	4,165,931
2009	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,090	39,190	0	4,166,376
2010	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,160	39,260	0	4,166,821
2011	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,240	39,340	0	4,167,276
2012	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,320	39,420	0	4,167,731
2013	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,410	39,510	0	4,168,146
2014	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,500	39,600	0	4,168,661
2015	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,600	39,700	0	4,169,486
2016	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,170,211
2017	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,170,836
2018	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,171,461
2019	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,086
2020	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,686
2021	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2022	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2023	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2024	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2025	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2026	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2027	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2028	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2029	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2030	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2031	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2032	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2033	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2034	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
2035	17,300	2,011,500	20,000	2,583,200	9,600	27,500	2,700	39,800	0	4,172,786
Total	747,200	112,360,272	988,000	142,353,309	449,900	905,180	112,820	1,467,900	0	233,790,451

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	Grizzly Valley Pipeline PC FC&WCD (1)	North Bay Aqueduct Reach 1 SCWA (2)	North Bay Aqueduct Reach 3A SCWA (3)	North Bay Aqueduct Reach 3B NC FC&WCD[a] (4)	North Bay Aqueduct Total (5)	South Bay Aqueduct Reach 1 ACWD (6)	South Bay Aqueduct Reach 1 AC FC&WCD (7)	South Bay Aqueduct Reach 2 AC FC&WCD (8)	South Bay Aqueduct Reach 4 AC FC&WCD (9)	South Bay Aqueduct Reach 5 ACWD (10)
1962	0	0	0	0	0	8,412	141	353	0	0
1963	0	0	0	0	0	10,914	814	917	0	0
1964	0	0	0	0	0	19,238	248	1,425	0	0
1965	0	0	0	0	0	15,280	637	1,830	138	0
1966	0	0	0	0	0	0	2,475	2,537	499	0
1967	0	0	0	0	0	0	1,527	2,391	862	0
1968	0	0	0	1,214	1,214	0	1,608	3,799	721	0
1969	0	0	0	2,687	2,687	0	1,165	3,459	1,851	0
1970	70	0	0	3,618	3,618	0	1,345	4,558	3,182	0
1971	64	0	0	2,521	2,521	0	546	1,908	2,403	0
1972	505	0	0	3,647	3,647	0	1,066	4,605	2,041	1,489
1973	679	0	0	3,792	3,792	0	430	1,123	1,193	0
1974	648	0	0	4,870	4,870	0	177	0	975	0
1975	405	0	0	6,840	6,840	0	137	1,783	1,864	0
1976	382	0	0	7,122	7,122	0	265	7,204	3,384	0
1977	303	0	0	8,226	8,226	0	210	4,491	2,213	0
1978	278	0	0	6,034	6,034	0	422	2,426	3,754	0
1979	329	0	0	6,561	6,561	0	197	4,283	5,567	0
1980	295	0	0	6,707	6,707	0	77	3,883	6,686	1,508
1981	355	0	0	9,001	9,001	0	1,250	4,648	5,273	5,752
1982	305	0	0	1,213	1,213	0	473	3,043	4,406	0
1983	262	0	0	2,287	2,287	0	179	2,712	1,714	0
1984	272	0	0	2,923	2,923	0	165	4,219	2,219	0
1985	254	0	0	4,039	4,039	0	213	5,199	2,060	0
1986	317	1,400	0	3,519	4,919	0	200	6,052	2,062	0
1987	452	1,550	0	7,693	9,243	0	218	7,538	2,372	0
1988	523	1	9,725	5,392	15,118	0	222	8,302	4,681	0
1989	486	10	17,246	6,195	23,451	0	222	8,051	6,562	0
1990	548	3,275	15,856	6,940	26,071	0	256	8,160	8,347	0
1991	420	3,117	3,855	1,380	8,352	0	162	3,676	3,269	0
1992	485	5,553	9,220	4,001	18,774	0	217	5,177	2,188	0
1993	444	14,709	14,471	5,286	34,466	0	190	5,843	8,430	1,650
1994	492	10,343	14,913	6,792	32,048	0	132	4,482	5,427	0
1995	308	5,452	15,893	5,182	26,527	0	278	6,236	7,195	0
1996	360	12,930	17,069	4,893	34,892	0	277	6,151	5,119	0
1997	231	16,029	17,501	4,341	37,871	0	138	6,647	6,501	1,323
1998	0	11,562	18,204	5,359	35,125	0	106	3,748	2,493	0
1999	0	15,191	19,562	5,304	40,057	0	148	3,048	8,227	0
2000	0	12,343	20,751	4,958	38,052	0	110	7,464	9,761	0
2001	662	9,646	11,435	9,345	30,426	0	105	7,822	4,879	0
2002	1,188	16,961	13,446	17,928	48,335	0	186	10,745	6,441	0
2003	1,690	28,146	18,150	21,475	67,771	0	242	15,680	22,042	0
2004	1,750	27,056	19,930	21,850	68,836	0	271	16,200	29,540	0
2005	1,810	27,106	20,100	22,225	69,431	0	281	16,600	28,681	0
2006	1,880	27,156	20,100	22,550	69,806	0	281	16,980	27,836	0
2007	1,950	27,206	20,200	22,875	70,281	0	332	9,920	26,311	0
2008	2,020	28,866	18,530	23,200	70,596	0	332	9,920	26,311	0
2009	2,090	28,866	18,580	23,525	70,971	0	332	9,920	26,311	0
2010	2,160	28,866	18,630	23,850	71,346	0	332	9,920	26,311	0
2011	2,240	28,866	18,680	24,175	71,721	0	332	9,920	26,311	0
2012	2,320	28,866	18,730	24,500	72,096	0	332	9,920	26,311	0
2013	2,410	28,866	18,780	24,775	72,421	0	332	9,920	26,311	0
2014	2,500	28,866	18,830	25,150	72,846	0	332	9,920	26,311	0
2015	2,600	28,866	18,880	25,825	73,571	0	332	9,920	26,311	0
2016	2,700	28,866	18,880	26,450	74,196	0	332	9,920	26,311	0
2017	2,700	28,866	18,880	27,075	74,821	0	332	9,920	26,311	0
2018	2,700	28,866	18,880	27,700	75,446	0	332	9,920	26,311	0
2019	2,700	28,866	18,880	28,325	76,071	0	332	9,920	26,311	0
2020	2,700	28,866	18,880	28,925	76,671	0	332	9,920	26,311	0
2021	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2022	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2023	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2024	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2025	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2026	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2027	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2028	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2029	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2030	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2031	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2032	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2033	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2034	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
2035	2,700	28,866	18,880	29,025	76,771	0	332	9,920	26,311	0
Total	93,742	1,084,990	844,867	1,067,635	2,997,492	53,844	29,637	535,078	1,018,077	11,722

[a]For the period 1968 through 1987, deliveries are non-Project water pumped through an interim facility.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	South Bay Aqueduct[b] (continued)						California Aqueduct									
							North San Joaquin Division			San Luis Division						
	Reach 5	Reach 6	Reach 7	Reach 8	Reach 9		Reach 2A			Reach 3				Reach 4		
Calendar Year	AC FC&WCD (11)	AC FC&WCD (12)	ACWD (13)	ACWD (14)	SCVWD (15)	Total (16)	OFWD[c] (17)	TLBWSD (18)	SCVWD (19)	MWD (20)	DRWD (21)	KCWA (M&I) (22)	KCWA (Ag) (23)	KCWA (M&I) (24)	KCWA (Ag) (25)	DRWD (26)
1962	0	0	0	0	0	8,906	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	12,645	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	20,911	0	0	0	0	0	0	0	0	0	0
1965	0	0	1,127	0	15,014	34,026	0	0	0	0	0	0	0	0	0	0
1966	0	0	14,864	0	34,538	54,913	0	0	0	0	0	0	0	0	0	0
1967	0	0	12,882	0	39,101	56,763	0	0	0	0	0	0	0	0	0	0
1968	5	0	24,817	0	70,105	101,055	3,084	0	0	0	0	0	0	0	0	0
1969	160	0	813	0	62,264	69,712	3,016	0	0	0	0	0	0	0	0	0
1970	164	0	0	0	80,311	89,560	5,911	0	0	0	0	0	0	0	0	0
1971	160	0	5,961	0	87,606	98,584	7,212	0	0	0	0	0	0	0	0	0
1972	2,777	0	26,182	0	100,266	138,426	8,166	0	0	0	0	0	0	0	0	0
1973	229	0	2,521	0	88,582	94,078	3,214	0	0	0	0	0	0	0	0	0
1974	162	0	0	4	88,000	89,318	3,471	0	0	0	0	0	0	0	0	0
1975	120	714	393	593	88,000	93,604	3,576	0	0	0	0	0	0	0	0	0
1976	817	5,461	13,774	7,526	88,000	126,431	4,112	0	0	0	0	0	0	0	0	0
1977	524	5,206	11,284	7,556	76,220	107,704	1,472	0	0	0	0	0	0	0	0	0
1978	2,034	2,348	854	5,009	95,727	112,574	3,906	0	0	0	0	0	0	0	0	0
1979	3,937	5,341	3,430	7,444	91,991	122,190	6,149	0	0	0	0	0	0	0	0	0
1980	0	6,144	2,824	6,702	88,000	115,824	5,700	0	0	0	0	0	0	0	0	0
1981	1,157	7,262	7,595	8,570	88,000	129,507	4,300	0	0	0	0	0	0	0	0	0
1982	630	4,571	1,776	4,540	88,000	107,439	3,838	0	0	0	0	0	0	0	0	0
1983	50	111	0	3,157	86,733	94,656	3,822	0	0	0	0	0	0	0	0	0
1984	55	126	0	3,338	88,000	98,122	5,700	0	0	0	0	0	0	0	0	0
1985	63	7,537	11,203	7,813	88,000	122,088	5,433	0	0	0	0	0	0	0	0	0
1986	212	2,083	5,311	7,068	88,000	110,988	5,107	0	0	0	0	0	0	0	0	0
1987	285	12,993	15,488	9,902	88,000	136,796	5,625	0	0	0	0	0	0	0	0	0
1988	189	12,436	24,259	9,205	87,961	147,255	4,412	0	0	0	0	0	0	0	0	0
1989	418	10,974	17,340	8,702	90,000	142,269	6,091	300	0	0	602	0	0	0	12,647	1,898
1990	593	15,678	22,149	9,554	91,800	156,537	2,922	0	200	0	0	0	0	0	0	0
1991	359	1,945	9,155	3,493	28,200	50,259	141	0	0	0	0	0	0	0	0	0
1992	154	6,933	12,621	6,532	42,839	76,661	2,239	0	0	0	0	0	0	0	0	0
1993	5,964	13,208	1,792	6,829	62,065	105,971	2,858	0	0	0	0	0	0	0	0	0
1994	822	9,679	3,379	19,532	57,115	100,568	3,071	0	0	0	0	0	0	0	0	0
1995	955	15,427	21	17,772	28,756	76,640	5,169	0	0	0	0	0	0	0	3,500	14,446
1996	388	6,968	1,871	11,591	44,850	77,215	4,904	0	0	0	0	0	0	1,125	4,162	0
1997	1,582	12,654	1,876	10,864	60,601	102,186	5,238	0	0	11,100	0	0	0	0	0	0
1998	1,277	8,347	3,817	11,478	39,610	70,876	4,401	0	0	(11,100)	0	0	0	0	0	0
1999	1,444	13,133	5,326	16,226	52,945	100,497	4,871	0	0	0	0	0	0	0	0	0
2000	946	16,396	4,498	18,100	78,258	135,533	4,508	0	0	0	0	3,320	68,960	1,517	878	0
2001	3,010	13,593	0	18,004	77,922	125,335	3,592	0	0	0	0	15,267	131,620	0	0	0
2002	3,451	14,895	0	24,298	67,979	127,995	4,793	0	0	0	0	0	0	0	0	0
2003	5,104	17,130	17,079	24,921	100,000	202,198	5,700	0	0	0	0	0	0	0	0	0
2004	5,091	17,948	12,908	29,092	100,000	211,050	5,700	0	0	0	0	0	0	0	0	0
2005	5,091	18,905	11,500	30,500	100,000	211,558	5,700	0	0	0	0	0	0	0	0	0
2006	5,099	19,930	11,500	30,500	100,000	212,126	5,700	0	0	0	0	0	0	0	0	0
2007	1,226	22,095	11,820	37,680	100,000	209,384	5,700	0	0	0	0	0	0	0	0	0
2008	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2009	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2010	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2011	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2012	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2013	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2014	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2015	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2016	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2017	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2018	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2019	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2020	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2021	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2022	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2023	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2024	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2025	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2026	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2027	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2028	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2029	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2030	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2031	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2032	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2033	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2034	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
2035	1,226	22,095	4,320	37,680	100,000	201,884	5,700	0	0	0	0	0	0	0	0	0
Total	91,032	946,831	456,970	1,479,135	6,019,359	10,641,685	340,124	300	200	0	602	18,587	200,580	2,642	21,187	16,344

[b]For the period June 1962 through November 1967, deliveries were supplied by non-Project water.
[c]Includes 425 AF of 1988 advance Table A amount and 141 AF of 1992 advance Table A amount.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)															
	San Luis Division (continued)															
	Reach 4	Reach 5							Reach 6				Reach 7			
Calendar Year	TLBWSD (27)	DRWD (28)	KCWA (M&I) (29)	KCWA (Ag) (30)	MWD (31)	CLWA (32)	TLBWSD (33)	OFWD (34)	KCWA (M&I) (35)	MWD (36)	KCWA (Ag) (37)	TLBWSD (38)	KCWA (M&I) (39)	CLWA (40)	DRWD (41	KCWA (Ag) (42)
1962	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	1,550	0	0	0	0	0	0	0	0	0
1989	0	0	0	18,831	0	0	0	0	0	0	8,260	0	0	0	0	5,262
1990	1,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	10,823	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	27,200	0	28,200	0	5,095	1,624	2,000	0	0	31,200	0	18,157	0	0	10,043
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	2,100	0	0
1995	0	0	0	21,776	0	0	0	0	0	0	3,932	0	10,875	0	0	20,595
1996	0	0	1,125	81,507	0	0	4,000	0	0	0	0	0	3,424	0	0	69,704
1997	0	0	9,080	154,940	0	0	3,500	0	0	0	0	0	27,079	0	0	32,463
1998	0	0	0	0	0	0	0	0	20,400	0	33,340	3,000	3,998	0	200	62081
1999	1,300	0	0	0	21,500	0	8,000	0	0	11,000	33,776	23,000	7,923	0	0	19,500
2000	0	0	8,130	57,647	0	0	0	0	1,457	2,165	35,847	3,000	0	1,200	0	45,137
2001	0	0	0	0	0	0	2,457	0	0	0	0	600	0	0	0	0
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2,800	38,023	18,335	362,901	21,500	5,095	21,131	2,000	21,857	13,165	146,355	29,600	71,456	3,300	200	264,785

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)													
	South San Joaquin Division													
	Reach 7		Reach 8C						Reach 8D					
Calendar Year	TLBWSD (43)	MWD (44)	KCWA (M&I) (45)	KCWA (Ag) (46)	DRWD (47	TLBWSD (48)	EWSID (49)	CK (50)	KCWA (M&I) (51)	KCWA (Ag) (52)	DRWD (53)	CK (54)	SLOC FC&WCD (55)	TLBWSD (56)
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	25,100	1,978	900	0	0	26,360	0	0	0
1969	0	0	0	0	0	7,081	56	100	0	0	31,375	0	0	0
1970	0	0	0	0	0		3,942		0	0	40,407	0	0	3,408
1971	0	0	0	0	0	80,906	5,990	3,700	0	0	41,053	0	0	41,579
1972	0	0	0	0	0	144,843	5,795	1,400	0	0	42,443	0	0	113,550
1973	0	0	0	0	0	26,317	3,000	1,500	0	1,500	22,057	0	0	24,147
1974	0	0	0	0	0	32,603	3,000	1,500	0	0	33,390	0	0	39,686
1975	0	0	0	0	0	41,536	3,000	1,600	0	0	40,555	0	0	44,722
1976	0	0	0	0	0	26,595	3,000	1,600	0	0	41,421	0	0	32,216
1977	0	0	0	0	0	12,984	738	1,530	0	0	11,153	0	0	5,097
1978	0	0	0	0	0	3,934	454	2,070	0	0	51,747	0	0	8,119
1979	0	0	0	0	0	74,758	1,739	2,000	0	0	38,544	0	0	80,363
1980	0	0	0	0	0	35,140	894	2,200	0	0	41,000	0	0	40,304
1981	0	0	0	0	0	50,888	5,859	2,300	0	0	41,000	0	0	32,550
1982	0	0	0	0	0	4,405	361	1,536	0	0	41,000	214	0	14,146
1983	0	0	0	0	0	1,001	0	3,550	0	0	42,900	0	0	5
1984	0	0	0	0	0	3,677	0	3,100	0	0	45,100	0	0	2,066
1985	0	0	0	0	0	68,638	5,197	3,400	0	0	46,251	0	0	41,153
1986	0	0	0	0	0	40,017	1,170	3,700	0	0	50,249	0	0	39,338
1987	0	0	0	0	0	30,359	2,525	4,000	0	0	46,288	0	0	62,725
1988	0	0	0	0	0	46,281	3,475	4,000	0	0	47,994	0	0	48,035
1989	0	0	0	0	2,391	63,703	3,000	4,000	0	0	52,158	0	0	63,947
1990	0	0	0	0	0	23,504	1,279	2,000	0	161	36,296	0	0	32,066
1991	0	0	0	0	0	1,697	221		0	0	927	0	0	483
1992	0	0	0	0	280	15,982	1,354	1,806	0	0	12,667	0	0	30,746
1993	0	0	0	0	0	57,112	2,741	4,000	0	0	23,221	0	0	65,732
1994	0	0	0	0	0	21,510	1,666	2,116	0	1,726	28,793	0	0	40,852
1995	0	0	989	10,527	0	40,934	1,631	4,000	2,959	27,270	45,240	0	0	57,435
1996	0	0	0	1,500	95	84,130	1,868	4,000	0	1,455	52,722	0	100	148,745
1997	0	0	0	1,500	0	9,467	0	0	0	0	57,496	0	100	9,402
1998	0	0	0	1,000	90	8,956	542	15	0	20,000	49,435	0	0	8,721
1999	4,470	500	0	400	86	90,334	3,176	4,000	0	9,000	58,290	0	0	162,631
2000	20,500	18,157	0	400	166	65,098	1,799	3,600	0	0	57,918	0	0	119,696
2001	0	0	0	0	14	23,300	1,360	1,560	0	6,089	40,155	0	0	58,369
2002	0	0	0	0	0	37,300	1,443	2,654	0	0	48,677	0	0	46,995
2003	0	0	0	0	0	45,770	3,000	4,000	0	0	57,343	0	0	65,757
2004	0	0	0	0	0	45,770	3,000	4,000	0	0	57,343	0	0	65,757
2005	0	0	0	0	0	45,770	3,000	4,000	0	0	57,343	0	0	65,757
2006	0	0	0	0	0	45,770	3,000	4,000	0	0	57,343	0	0	65,757
2007	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2008	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2009	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2010	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2011	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2012	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2013	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2014	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2015	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2016	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2017	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2018	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2019	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2020	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2021	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2022	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2023	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2024	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2025	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2026	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2027	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2028	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2029	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2030	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2031	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2032	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2033	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2034	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
2035	0	0	0	0	0	44,611	3,000	4,000	0	0	57,343	0	0	66,916
Total	24,970	18,657	989	15,327	3,122	2,776,889	173,253	211,437	2,959	67,201	3,278,601	214	200	3,722,621

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

	California Aqueduct (continued)													
	South San Joaquin Division (continued)													
	Reach 9				Reach 10A								Reach 11B	
Calendar Year	DRWD (57)	KCWA (M&I) (58)	KCWA (Ag) (59)	TLBWSD (60)	MWD (61)	KCWA (M&I) (62)	TLBWSD (63)	AC FC&WCD (64)	KCWA (Ag) (65)	SCVWD (66)	ACWD (67)	TLBWSD (68)	KCWA (M&I) (69)	KCWA (Ag) (70)
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	30,951	0	0	0	0	0	0	0	0	0	0	24,776
1969	0	0	24,489	0	0	0	0	0	0	0	0	2,842	0	64,682
1970	0	0	46,114	1,855	0	0	0	0	158	0	0	4,315	0	72,279
1971	0	0	58,356	0	0	0	0	0	9,973	0	0	0	0	63,773
1972	0	0	75,464	0	0	0	0	0	5,876	0	0	0	0	72,358
1973	0	0	54,583	0	0	0	0	0	22,948	0	0	0	0	67,544
1974	0	0	63,814	0	0	10,019	0	0	22,719	0	0	0	0	87,476
1975	0	0	50,021	0	0	2,791	0	0	72,121	0	0	0	0	85,675
1976	0	0	53,465	0	0	74	0	0	50,444	0	0	0	0	85,067
1977	0	0	24,668	0	0	201	0	0	34,451	0	0	0	3,981	29,603
1978	0	0	72,231	0	0	0	0	0	161,889	0	0	0		88,753
1979	0	0	74,524	0	0	285	0	0	153,245	0	0	0	484	108,379
1980	0	0	79,946	0	0	3,780	0	0	131,836	0	0	0	3,112	103,207
1981	0	0	76,508	0	0	341	0	0	133,500	0	0	0	494	104,395
1982	0	0	76,877	0	0	4,700	0	0	164,832	0	0	0	798	99,081
1983	0	2,217	84,573	0	0	0	0	0	146,493	0	0	0	2,069	94,117
1984	0	4,100	85,732	0	0	6,910	0	0	150,302	0	0	0	2,349	124,819
1985	0	0	67,696	0	0	6,495	0	0	153,473	0	0	0	10,666	118,646
1986	0	0	79,943	0	0	5,065	0	0	198,099	0	0	0	8,673	124,836
1987	0	0	97,732	0	0	900	0	0	226,521	0	0	0	13,074	111,877
1988	0	1,100	83,858	0	0	9,529	0	0	212,495	0	0	0	13,509	114,031
1989	0	0	91,134	0	0	21,038	0	0	251,979	0	0	0	9,986	127,058
1990	0	0	83,108	0	0	25,189	0	0	47,472	0	0	0	9,319	104,107
1991	0	13,683	601	0	0	1,142	0	0	6,820	0	0	0	6,099	118
1992	0	28	40,183	0	0	3,685	0	0	89,390	0	0	0	7,419	35,093
1993	197	5,945	53,597	0	44,496	775	0	0	233,862	0	0	0	2,696	72,645
1994	0	0	44,994	0	0	5,227	0	0	126,792	0	0	0	3,506	71,202
1995	0	0	64,076	0	50,000	366	0	0	229,448	0	0	0	1,154	97,072
1996	0	2,236	89,291	0	95,000	6,666	0	0	199,854	45,000	6,200	0	1,185	96,250
1997	4,900	0	72,013	0	125,000	3,577	900	0	157,385	35,000	10,000	0	1,111	104,823
1998	0	0	57,530	0	39,500	2,603	0	1,970	163,587	23,800	3,780	0	1,311	72,646
1999	0	0	72,734	0	75,850	1,657	0	22,910	190,787	30,000	16,100	0	2,127	92,262
2000	0	2,000	71,562	0	9,208	7,672	0	23,940	283,208	23,730	13,380	0	3,793	89,623
2001	0	0	54,198	0	0	9,041	0	5,000	90,561	0	0	0	710	73,031
2002	0	0	45,978	0	0	152	19,428	1,478	172,414	3,311	650	0	1,948	106,631
2003	0	0	100,000	0	0	150	0	6,000	219,060	0	0	0	2,000	106,727
2004	0	0	100,000	0	0	150	0	6,000	219,060	0	0	0	2,000	106,727
2005	0	0	100,000	0	0	150	0	6,000	219,060	0	0	0	2,000	106,727
2006	0	0	100,000	0	0	150	0	6,000	219,060	0	0	0	2,000	106,727
2007	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2008	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2009	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2010	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2011	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2012	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2013	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2014	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2015	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2016	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2017	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2018	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2019	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2020	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2021	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2022	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2023	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2024	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2025	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2026	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2027	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2028	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2029	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2030	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2031	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2032	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2033	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2034	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
2035	0	0	71,230	0	0	400	0	19,116	254,546	0	0	0	2,000	106,727
Total	5,097	31,309	4,668,214	1,855	439,054	152,080	20,328	633,662	12,553,008	160,841	50,110	7,157	177,573	6,509,926

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	South San Joaquin Division (continued)											
	Reach 12E				Reach 13B				Reach 14A		Reach 14B	
	KCWA (M&I) (71)	KCWA (Ag) (72)	DRWD (73)	MWD (74)	KCWA (M&I) (75)	MWD (76)	TLBWSD (77)	KCWA (Ag) (78)	KCWA (M&I) (79)	KCWA (Ag) (80)	KCWA (M&I) (81)	KCWA (Ag) (82)
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	9,279	0	0	0	0	0	4,891	0	0	0	3
1971	0	28,056	0	0	0	0	0	0	0	23,844	0	49,929
1972	0	62,342	0	0	0	0	0	17,388	0	26,621	0	77,034
1973	0	13,082	0	0	0	0	0	9,297	0	15,328	0	47,040
1974	2,651	4,248	0	0	8,038	0	0	4,246	0	7,794	0	32,356
1975	0	10,787	0	0	8,538	0	0	7,059	0	10,306	0	27,736
1976	37,519	20,555	0	0	5,626	0	0	8,855	0	268	0	35,296
1977	20,280	1,737	0	0	0	0	0	5,024	0	8,299	0	13,539
1978	47,133	15,011	0	0	21,773	0	0	7,601	0	34,029	0	72,351
1979	50,740	61,567	0	0	5,663	0	0	17,766	3,012	27,356	0	59,413
1980	32,039	22,252	0	0	0	0	0	22,515	4,312	16,876	0	40,513
1981	59,917	58,470	0	0	7,844	0	0	14,037	4,511	13,007	8	42,753
1982	36,139	75,587	0	0	0	0	0	25,553	3,735	24,240	184	57,739
1983	0	10,950	0	0	0	0	0	3,491	1,168	20,302	0	57,922
1984	63,941	39,929	0	0	12,117	0	0	26,178	137	35,369	10	79,179
1985	69,839	84,117	0	0	0	0	0	67,711	206	33,103	0	72,855
1986	62,109	51,540	0	0	0	0	0	66,551	180	26,384	0	70,864
1987	95,297	86,223	0	0	5,609	0	0	40,374	610	30,098	9	67,710
1988	86,390	123,249	0	0	9,298	0	0	47,167	622	32,778	19	75,968
1989	83,965	146,544	0	0	5,504	0	0	57,114	721	29,292	7	82,201
1990	82,164	38,973	0	0	7,645	0	0	20,423	673	26,800	13	81,076
1991	8,842	303	0	0	0	0	0	0	768	0	0	0
1992	47,181	57,048	0	0	789	0	0	17,449	673	16,238	464	41,143
1993	84,822	285,554	0	5,504	12,798	0	0	88,157	629	17,832	0	62,493
1994	66,188	77,839	0	0	2,494	0	0	33,148	2,513	16,760	3,000	54,011
1995	107,130	181,097	1,000	0	8,751	0	3,500	110,685	3	21,234	0	67,391
1996	89,257	134,138	4,131	0	28,063	0	0	64,849	0	26,978	0	85,936
1997	32,061	128,329	8,012	1,486	43,803	0	0	49,312	0	23,035	0	79,790
1998	28,258	88,998	5,925	24,234	29,444	5,500	0	40,085	0	15,706	0	58,132
1999	110,173	255,343	1,321	62,162	12,969	0	0	92,998	0	21,153	0	67,576
2000	71,306	96,702	3,118	159,731	4,066	0	0	98,136	0	19,264	0	70,585
2001	20,226	34,139	1,733	0	4,044	0	0	33,116	1	12,451	0	49,602
2002	55,148	70,841	387	0	3,837	0	0	28,613	0	11,765	0	35,944
2003	107,114	160,362	0	0	7,446	0	0	41,800	0	19,400	0	65,500
2004	107,114	160,362	0	0	7,446	0	0	41,800	0	19,400	0	65,500
2005	107,114	160,362	0	0	7,446	0	0	41,800	0	19,400	0	65,500
2006	107,114	160,362	0	0	7,446	0	0	41,800	0	19,400	0	65,500
2007	102,800	135,246	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2008	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2009	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2010	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2011	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2012	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2013	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2014	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2015	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2016	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2017	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2018	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2019	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2020	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2021	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2022	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2023	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2024	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2025	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2026	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2027	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2028	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2029	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2030	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2031	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2032	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2033	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2034	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
2035	102,800	105,846	0	100,000	6,000	0	0	41,800	6,000	20,000	0	69,500
Total	4,960,371	6,115,211	25,627	3,153,117	452,497	5,500	3,500	2,509,189	198,474	1,302,110	3,714	4,093,580

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	South San Joaquin Division (continued)							Mojave Division				
	Reach 14C		Reach 15A		Reach 16A			Reach 18A	Reach 19			
	KCWA (M&I) (83)	KCWA (Ag) (84)	KCWA (M&I) (85)	KCWA (Ag) (86)	KCWA (M&I) (87)	KCWA (Ag) (88)	AVEKWA (89)	AVEKWA (90)	MWA (91)	MWA (92)	AVEKWA (93)	AVEKWA (94)
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	24,187	0	3,552	0	0	0	0	0	0	0	0
1972	0	35,016	0	6,064	0	4,768	0	0	0	0	0	0
1973	0	19,043	0	19,916	0	1,961	0	0	0	0	0	0
1974	0	12,601	0	18,000	3,000	1,564	0	0	0	0	0	1,223
1975	0	12,783	0	35,420	3,200	9,867	0	0	0	0	0	7,622
1976	0	9,005	0	39,551	3,500	11,667	0	3,808	0	0	0	23,063
1977	0	3,757	0	6,158	3,420	685	0	1,231	0	0	0	8,927
1978	0	24,542	0	31,148	7,989	1,655	0	1,321	0	0	0	36,333
1979	0	22,372	0	38,602	2,813	15,808	0	2,098	0	0	0	49,910
1980	0	19,953	0	37,817	2,700	16,145	0	2,610	0	0	0	61,534
1981	7	18,729	0	39,033	2,636	18,156	0	2,340	0	0	0	65,690
1982	0	26,479	0	47,782	1,921	16,577	0	1,669	0	0	0	41,127
1983	0	26,613	0	37,426	1,400	17,907	0	43	0	0	0	26,377
1984	2	34,996	0	49,848	1,338	24,246	0	90	0	0	0	22,462
1985	0	31,758	0	44,078	1,309	16,820	0	8	0	0	0	23,440
1986	0	34,566	0	42,461	1,213	15,559	0	8	0	0	0	16,898
1987	10	31,019	0	34,748	1,665	10,170	0	0	0	0	0	15,958
1988	1	37,165	16	41,978	1,925	8,987	0	0	0	0	0	13,471
1989	5	37,800	2	43,239	2,668	8,649	0	0	0	0	0	18,007
1990	9	34,174	6	36,347	2,819	8,608	0	0	0	0	0	17,281
1991	0	0	0	0	2,588	343	2,000	0	0	0	0	728
1992	0	18,084	0	24,243	2,087	8,275	0	0	0	0	0	7,238
1993	0	28,103	0	27,997	2,494	9,167	0	0	0	0	0	13,340
1994	1,000	22,624	0	29,511	3,011	13,877	0	0	0	0	0	19,122
1995	0	31,285	0	26,134	3,188	15,042	0	0	0	0	0	20,222
1996	0	38,879	0	36,186	2,573	18,142	0	0	0	0	0	23,919
1997	0	33,512	0	36,281	3,997	17,048	0	0	64	0	0	28,834
1998	0	23,097	0	28,712	3,751	17,032	0	0	1,345	0	0	22,466
1999	0	31,489	0	36,801	3,316	24,071	0	0	1,439	0	0	30,944
2000	0	33,716	0	40,063	3,015	20,919	0	0	1,361	0	0	34,786
2001	0	23,557	0	31,192	2,308	13,062	0	0	1,309	0	0	24,370
2002	0	13,906	0	41,356	4,352	18,905	0	0	1,728	0	0	47,694
2003	0	29,300	0	36,300	3,490	18,800	0	0	0	0	0	95,505
2004	0	29,300	0	36,300	3,490	18,800	0	0	0	0	0	93,209
2005	0	29,300	0	36,300	3,490	18,800	0	0	0	0	0	90,800
2006	0	29,300	0	36,300	3,490	18,800	0	0	0	0	0	88,269
2007	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	76,390
2008	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	72,989
2009	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2010	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2011	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2012	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2013	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2014	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2015	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2016	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2017	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2018	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2019	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2020	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2021	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2022	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2023	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2024	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2025	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2026	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2027	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2028	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2029	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2030	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2031	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2032	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2033	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2034	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
2035	0	34,200	0	40,300	4,400	20,100	0	0	0	0	0	71,384
Total	1,034	1,903,810	24	2,325,544	223,756	1,043,782	2,000	15,226	7,246	0	0	3,167,516

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)								
	Mojave Division (continued)								
	Reach 20A			Reach 20B		Reach 21		Reach 22A	Reach 22B
	PWD (95)	MWA (96)	AVEKWA (97)	PWD (98)	AVEKWA (99)	LCID (100)	PWD (101)	AVEKWA (102)	MWD[d] (103)
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	338	0	0	0
1973	0	0	0	0	0	290	0	0	(14,800)
1974	0	0	0	0	0	400	0	0	(16,400)
1975	0	0	420	0	0	520	0	0	(18,000)
1976	0	0	471	0	416	589	0	0	(19,600)
1977	0	0	773	0	271	111	0	0	0
1978	0	0	5,549	0	934	208	0	0	(25,384)
1979	0	0	7,555	0	930	133	0	0	(25,063)
1980	0	0	7,605	0	655	191	0	3	(27,884)
1981	0	0	10,333	0	966	1,270	0	46	(31,105)
1982	0	0	7,313	0	8	0	0	174	(34,326)
1983	0	0	6,253	0	20	38	0	268	(37,547)
1984	0	0	9,558	0	2	1	0	550	(40,768)
1985	1,510	0	11,613	32	217	0	16	1,786	(43,989)
1986	3,041	0	13,808	45		163	10	1,735	(47,210)
1987	2,389	0	15,493	1,624	151	1,085	1,366	2,273	(50,931)
1988	366	0	17,117	1,261	281	419	143	3,210	(54,652)
1989	381	0	23,481	7,848	112	971	780	3,591	(58,373)
1990	282	0	25,843	8,292	84	1,747	34	3,988	(61,200)
1991	84	1,391	4,282	3,830	131	522	0	2,427	(18,360)
1992	185	1,310	18,518	3,850	650	251	0	3,859	(27,624)
1993	164	1,514	23,662	7,597	996	734	0	5,098	0
1994	299	1,399	25,250	8,119	124	1,098	0	4,657	0
1995	328	1,227	22,385	6,633	0	480	0	4,679	0
1996	354	1,316	26,979	11,080	0	494	0	5,458	0
1997	313	1,272	27,999	11,548	0	444	0	5,549	0
1998	195	0	25,985	8,557	0	404	0	4,468	0
1999	377	0	32,409	12,901	36	342	0	5,684	0
2000	0	0	37,819	9,060	80	0	0	10,892	0
2001	0	0	33,216	10,427	282	0	0	4,989	0
2002	0	0	41,364	24,282	249	1,495	0	6,867	0
2003	0	0	39,240	21,651	0	2,300	0	6,304	0
2004	0	0	41,219	21,651	0	2,300	0	6,621	0
2005	0	0	43,296	21,651	0	2,300	0	6,953	0
2006	0	0	45,479	21,651	0	2,300	0	7,301	0
2007	0	0	55,816	21,300	50	2,300	0	9,144	0
2008	0	0	58,746	21,300	50	2,300	0	9,615	0
2009	0	0	60,205	21,300	50	2,300	0	9,761	0
2010	0	0	60,205	21,300	50	2,300	0	9,761	0
2011	0	0	60,205	21,300	50	2,300	0	9,761	0
2012	0	0	60,205	21,300	50	2,300	0	9,761	0
2013	0	0	60,205	21,300	50	2,300	0	9,761	0
2014	0	0	60,205	21,300	50	2,300	0	9,761	0
2015	0	0	60,205	21,300	50	2,300	0	9,761	0
2016	0	0	60,205	21,300	50	2,300	0	9,761	0
2017	0	0	60,205	21,300	50	2,300	0	9,761	0
2018	0	0	60,205	21,300	50	2,300	0	9,761	0
2019	0	0	60,205	21,300	50	2,300	0	9,761	0
2020	0	0	60,205	21,300	50	2,300	0	9,761	0
2021	0	0	60,205	21,300	50	2,300	0	9,761	0
2022	0	0	60,205	21,300	50	2,300	0	9,761	0
2023	0	0	60,205	21,300	50	2,300	0	9,761	0
2024	0	0	60,205	21,300	50	2,300	0	9,761	0
2025	0	0	60,205	21,300	50	2,300	0	9,761	0
2026	0	0	60,205	21,300	50	2,300	0	9,761	0
2027	0	0	60,205	21,300	50	2,300	0	9,761	0
2028	0	0	60,205	21,300	50	2,300	0	9,761	0
2029	0	0	60,205	21,300	50	2,300	0	9,761	0
2030	0	0	60,205	21,300	50	2,300	0	9,761	0
2031	0	0	60,205	21,300	50	2,300	0	9,761	0
2032	0	0	60,205	21,300	50	2,300	0	9,761	0
2033	0	0	60,205	21,300	50	2,300	0	9,761	0
2034	0	0	60,205	21,300	50	2,300	0	9,761	0
2035	0	0	60,205	21,300	50	2,300	0	9,761	0
Total	10,268	9,429	2,392,384	841,290	9,045	90,638	2,349	391,736	(653,216)

[d] In accordance with the Exchange Agreement between the noted agencies, MWD assumed responsibility for payment of variable OMP&R costs on the exchange water in reaches beyond Reach 22B, and Desert Water Agency and Coachella Valley Water District for such costs from the Delta through Reach 22B.
The adjustment in deliveries in Reach 22B provides for compliance with provisions for the repayment of costs under the agreement in 1993 and after the exchange takes place in Reach 26A.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)								
	Mojave Division (continued)								Santa Ana Division
	Reach 22B					Reach 23	Reach 24		Reach 26A
	CVWD[d] (104)	AVEKWA[e] (105)	SCWA (106)	DWA[d] (107)	MWA (108)	MWA (109)	CLAWA (110)	MWA (111)	MWD[f] (112)
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	55	0	464	0	0
1973	5,800	0	0	9,000	0	0	389	0	444
1974	6,400	0	0	10,000	0	14	627	0	84,981
1975	7,000	0	0	11,000	0	0	825	0	169,960
1976	7,600	0	0	12,000	0	0	1,002	0	215,312
1977	0	0	0	0	22	58	1,109	0	64,823
1978	10,084	0	0	15,300	0	0	1,209	0	297,708
1979	10,063	0	0	15,000	4,000	0	1,260	0	260,903
1980	10,884	0	0	17,000	4,000	0	1,239	0	300,345
1981	12,105	0	0	19,000	4,000	0	1,485	0	395,678
1982	13,326	0	0	21,000	10,500	0	1,238	0	214,566
1983	14,547	0	0	23,000	0	0	911	0	175,288
1984	15,768	0	0	25,000	0	0	1,128	0	122,311
1985	16,989	0	0	27,000	0	0	1,422	0	147,599
1986	18,210	0	0	29,000	0	0	1,506	0	215,265
1987	19,431	214	0	31,500	17	0	1,849	0	175,012
1988	20,652	0	0	34,000	9	0	2,006	0	247,101
1989	21,873	89	0	36,500	0	200	2,170	0	326,217
1990	23,100	10	0	38,100	0	0	1,827	0	399,387
1991	6,930	0	0	11,430	0	0	849	2,032	107,182
1992	10,427	0	0	17,197	42	0	519	9,334	219,524
1993	0	0	0	0	0	0	439	10,000	98,291
1994	0	0	0	0	14,634	0	785	819	192,979
1995	0	0	0	0	7,495	0	409	0	107,299
1996	0	0	0	0	6,111	0	485	0	73,438
1997	0	0	0	0	9,038	0	651	0	157,215
1998	0	0	0	0	2,580	0	187	0	36,770
1999	0	0	0	0	6,705	0	1,132	0	139,752
2000	0	0	0	0	10,019	0	1,194	0	332,113
2001	0	0	0	0	3,048	0	1,057	0	284,007
2002	0	0	0	0	17,053	0	3,770	0	397,351
2003	0	0	0	0	15,000	0	5,800	0	443,380
2004	0	0	0	0	20,000	0	5,800	0	455,770
2005	0	0	0	0	25,000	0	5,800	0	458,541
2006	0	0	0	0	30,000	0	5,800	0	458,540
2007	0	0	0	0	75,800	0	5,800	0	593,066
2008	0	0	0	0	75,800	0	5,800	0	593,066
2009	0	0	0	0	75,800	0	5,800	0	593,066
2010	0	0	0	0	75,800	0	5,800	0	593,066
2011	0	0	0	0	75,800	0	5,800	0	593,066
2012	0	0	0	0	75,800	0	5,800	0	593,066
2013	0	0	0	0	75,800	0	5,800	0	593,066
2014	0	0	0	0	75,800	0	5,800	0	593,066
2015	0	0	0	0	75,800	0	5,800	0	593,066
2016	0	0	0	0	75,800	0	5,800	0	593,066
2017	0	0	0	0	75,800	0	5,800	0	593,066
2018	0	0	0	0	75,800	0	5,800	0	593,066
2019	0	0	0	0	75,800	0	5,800	0	593,066
2020	0	0	0	0	75,800	0	5,800	0	593,066
2021	0	0	0	0	75,800	0	5,800	0	593,066
2022	0	0	0	0	75,800	0	5,800	0	593,066
2023	0	0	0	0	75,800	0	5,800	0	593,066
2024	0	0	0	0	75,800	0	5,800	0	593,066
2025	0	0	0	0	75,800	0	5,800	0	593,066
2026	0	0	0	0	75,800	0	5,800	0	593,066
2027	0	0	0	0	75,800	0	5,800	0	593,066
2028	0	0	0	0	75,800	0	5,800	0	593,066
2029	0	0	0	0	75,800	0	5,800	0	593,066
2030	0	0	0	0	75,800	0	5,800	0	593,066
2031	0	0	0	0	75,800	0	5,800	0	593,066
2032	0	0	0	0	75,800	0	5,800	0	593,066
2033	0	0	0	0	75,800	0	5,800	0	593,066
2034	0	0	0	0	75,800	0	5,800	0	593,066
2035	0	0	0	0	75,800	0	5,800	0	593,066
Total	251,189	313	0	402,027	2,387,528	272	226,543	22,185	24,973,966

[e] 1988 advance allocation.

[f] In accordance with the Exchange Agreement between the noted agencies, MWD assumed responsibility for payment of variable OMP&R costs on the exchange water in reaches beyond Reach 22B, and Desert Water Agency and Coachella Valley Water District for such costs from the Delta through Reach 22B. The adjustment in deliveries in Reach 22B provides for compliance with provisions for the repayment of costs under the agreement. In 1993 and after the exchange takes place in Reach 26A.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	Santa Ana Division (continued)											
	Reach 26A					Reach 28G	Reach 28H			Reach 28J		
	SBVMWD[g] (113)	SGVMWD (114)	SGPWA (115)	CVWD[f] (116)	DWA[f] (117)	MWD (118)	CVWD (119)	DWA (120)	MWD (121)	CVWD (122)	DWA (123)	MWD (124)
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0
1972	1,275	0	0	0	0	0	0	0	0	0	0	0
1973	32,426	0	0	0	0	18,942	0	0	0	0	0	0
1974	16,605	612	0	0	0	0	0	0	0	0	0	0
1975	13,865	5,450	0	0	0	0	0	0	0	0	0	251
1976	12,273	6,071	0	0	0	0	0	0	55	0	0	2,000
1977	24,833	8,996	0	0	0	0	0	0	43	0	0	2,442
1978	4,055	7,771	0	0	0	0	0	0	48	0	0	64,054
1979	18	290	0	0	0	0	0	0	1,290	0	0	94,353
1980	0	1,085	0	0	0	0	0	0	3,013	0	0	91,532
1981	16,021	3,619	0	0	0	0	0	0	4,365	0	0	149,405
1982	8,409	12,599	0	0	0	0	0	0	3,961	0	0	155,629
1983	5,994	734	0	0	0	0	0	0	6,645	0	0	41,616
1984	5,556	7,656	0	0	0	0	0	0	109,743	0	0	5,672
1985	7,390	5,028	0	0	0	0	0	0	182,781	0	0	6,538
1986	6,421	9,454	0	0	0	0	0	0	131,439	0	0	30,071
1987	18,751	10,630	0	0	0	0	0	0	144,743	0	0	26,315
1988	21,386	8,948	0	0	0	0	0	0	199,641	0	0	22,209
1989	20,782	12,839	0	0	0	0	0	0	247,430	0	0	51,462
1990	18,831	16,649	0	0	0	0	0	0	257,796	0	0	36,060
1991	3,661	5,399	0	0	0	0	0	0	38,832	0	0	5,958
1992	3,358	7,908	0	0	0	0	0	0	85,341	0	0	12,223
1993	4,361	14,397	0	23,100	38,100	0	0	0	61,841	0	0	4,588
1994	9,135	15,230	0	14,102	23,257	0	0	0	134,262	0	0	4,725
1995	696	12,922	0	23,100	38,100	0	0	0	117,762	0	0	21,099
1996	6,064	15,989	0	62,219	102,622	0	0	0	144,906	0	0	12,418
1997	9,654	18,175	0	58,100	53,100	0	0	0	107,853	0	0	47,777
1998	1,878	9,310	0	78,100	58,100	0	6,582	7,708	77,473	1,027	4,839	50,411
1999	12,874	21,729	0	50,480	58,100	0	0	0	206,689	0	0	8,163
2000	18,399	14,475	0	42,323	58,234	0	0	0	379,713	0	0	7,864
2001	26,488	2,360	0	9,100	15,010	0	0	0	260,984	0	0	33,414
2002	70,491	23,418	1,100	15,600	25,735	0	0	0	354,134	0	0	23,571
2003	102,600	28,800	5,000	23,100	38,100	0	0	0	405,329	0	0	3,600
2004	102,600	28,800	6,000	23,100	38,100	0	0	0	406,461	0	0	3,960
2005	102,600	28,800	6,500	23,100	38,100	0	0	0	405,350	0	0	3,960
2006	102,600	28,800	7,000	23,100	38,100	0	0	0	349,805	0	0	3,960
2007	102,600	28,800	7,500	23,100	38,100	0	0	0	136,549	0	0	4,692
2008	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2009	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2010	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2011	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2012	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2013	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2014	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2015	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2016	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2017	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2018	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2019	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2020	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2021	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2022	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2023	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2024	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2025	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2026	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2027	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2028	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2029	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2030	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2031	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2032	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2033	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2034	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
2035	102,600	28,800	17,300	23,100	38,100	0	0	0	136,549	0	0	4,692
Total	3,787,750	1,230,143	517,500	1,138,524	1,727,658	18,942	6,582	7,708	8,789,649	1,027	4,839	1,163,368

[g]Includes 1,650 AF recaptured from groundwater storage in 1982, 10,000 AF in 1987, and 8,749 AF in 1988. This water was stored under DWR's Groundwater Demonstration Program.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)									
	West Branch								Coastal Branch	
	Reach 29F	Reach 29H	Reach 30						Reach 31A	
	AVEKWA (125)	VCFCD (126)	CVWD (127)	DWA (128)	MWD[h] (129)	VCFCD (130)	CLWA (131)	SBCFC&WCD (132)	KCWA (M&I) (133)	KCWA (Ag) (134)
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	71,657
1969	0	0	0	0	0	0	0	0	0	52,094
1970	0	0	0	0	0	0	0	0	0	71,910
1971	0	0	0	0	0	0	0	0	0	98,481
1972	53	0	0	0	71,938	0	0	0	0	107,850
1973	20	0	0	0	155,297	0	0	0	0	69,227
1974	36	0	0	0	209,136	0	0	0	0	68,474
1975	26	0	0	0	374,280	0	0	0	0	74,516
1976	24	0	0	0	420,684	0	0	0	0	78,358
1977	0	0	0	0	122,447	0	0	0	0	35,504
1978	0	0	0	0	171,139	0	0	0	0	81,242
1979	0	0	0	0	145,591	0	7	0	0	104,017
1980	0	0	0	0	164,721	0	1,210	0	0	97,497
1981	0	0	0	0	277,503	0	5,761	0	0	97,054
1982	0	0	0	0	351,362	0	9,516	0	0	83,076
1983	0	0	0	0	157,519	0	9,476	0	0	87,859
1984	0	0	0	0	260,624	0	11,477	0	0	119,098
1985	0	0	0	0	390,696	0	12,401	0	0	110,124
1986	0	0	0	0	379,275	0	13,928	0	0	118,298
1987	0	0	0	0	417,285	0	16,167	0	0	116,259
1988	0	0	0	0	488,265	0	18,904	0	0	109,435
1989	0	0	0	0	589,962	0	21,719	0	0	102,156
1990	0	4,836	0	0	764,380	0	22,139	0	0	103,362
1991	0	988	0	0	257,835	0	3,846	1,240	0	780
1992	0	0	0	0	420,849	0	14,812	0	0	73,748
1993	6	0	0	0	437,470	0	13,787	0	0	90,764
1994	0	0	0	0	475,900	0	14,919	0	200	77,536
1995	0	0	0	0	139,882	0	17,747	0	0	85,050
1996	0	0	0	0	267,618	0	18,448	0	0	100,578
1997	11	0	10,240	16,890	271,379	1,850	22,842	0	0	97,020
1998	7	0	0	0	187,277	1,850	19,782	0	0	86,879
1999	0	0	0	0	327,001	1,850	28,813	0	0	92,095
2000	0	2,200	0	0	632,991	1,850	31,085	0	0	85,215
2001	0	0	0	0	444,764	1,850	30,701	0	0	63,448
2002	0	0	0	0	671,693	3,998	56,042	0	0	66,406
2003	0	3,150	0	0	719,217	16,850	40,000	0	0	82,500
2004	0	3,150	0	0	728,831	16,850	42,000	0	0	82,500
2005	0	3,150	0	0	758,069	16,850	44,000	0	0	82,500
2006	0	3,150	0	0	758,070	16,850	46,000	0	0	82,500
2007	0	3,150	0	0	977,193	16,850	85,200	0	0	115,100
2008	0	3,150	0	0	977,193	16,850	85,200	0	0	115,100
2009	0	3,150	0	0	977,193	16,850	85,200	0	0	115,100
2010	0	3,150	0	0	977,193	16,850	85,200	0	0	115,100
2011	0	3,150	0	0	977,193	16,850	93,375	0	0	115,100
2012	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2013	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2014	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2015	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2016	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2017	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2018	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2019	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2020	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2021	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2022	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2023	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2024	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2025	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2026	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2027	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2028	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2029	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2030	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2031	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2032	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2033	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2034	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
2035	0	3,150	0	0	977,193	16,850	95,200	0	0	115,100
Total	183	111,974	10,240	16,890	41,749,547	569,298	3,306,504	1,240	200	6,644,967

[h] Deliveries exclude 6,171 AF of 1982 exchange water.

Table B-5A

Annual Water Quantities Delivered from Each Aqueduct Reach to Each Contractor

(Acre-Feet)

Calendar Year	California Aqueduct (continued)						Grand Total (141)
	Coastal Branch (continued)					Total (140)	
	Reach 31A	Reach 33A	Reach 34	Reach 35			
	CLWA (135)	SLOCFC&WCD (136)	SLOCFC&WCD (137)	SLOCFC&WCD (138)	SBCFC&WCD (139)		
1962	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	56,763
1968	7,382	0	0	0	0	192,188	294,457
1969	9,970	0	0	0	0	195,705	268,104
1970	11,739	0	0	0	0	276,211	369,459
1971	12,490	0	0	0	0	553,081	654,250
1972	13,905	0	0	0	0	895,006	1,037,584
1973	9,418	0	0	0	0	638,930	737,479
1974	9,700	0	0	0	0	783,984	878,820
1975	10,700	0	0	0	0	1,129,728	1,230,577
1976	11,700	0	0	0	0	1,245,662	1,379,597
1977	5,075	0	0	0	0	465,442	581,675
1978	11,362	0	0	0	0	1,339,268	1,458,154
1979	19,138	0	0	0	0	1,537,075	1,666,155
1980	13,882	0	0	0	0	1,413,363	1,536,189
1981	12,700	0	0	0	0	1,779,479	1,918,342
1982	12,700	0	0	0	0	1,641,571	1,750,528
1983	12,659	0	0	0	0	1,089,626	1,186,831
1984	12,741	0	0	0	0	1,489,814	1,591,131
1985	12,099	0	0	0	0	1,863,544	1,989,925
1986	13,301	0	0	0	0	1,882,290	1,998,514
1987	11,821	0	0	0	0	1,984,570	2,131,061
1988	11,534	0	0	0	0	2,221,538	2,384,434
1989	14,645	0	0	0	0	2,686,838	2,853,044
1990	6,440	0	0	0	0	2,398,121	2,581,277
1991	716	0	0	0	0	489,489	548,520
1992	5,887	0	0	0	0	1,374,775	1,470,695
1993	4,157	0	0	0	0	2,173,352	2,314,233
1994	9,422	0	0	0	0	1,727,504	1,860,612
1995	9,486	0	0	0	0	1,926,835	2,030,310
1996	14,052	0	0	0	0	2,429,928	2,542,395
1997	4,870	0	1,099	0	7,439	2,263,966	2,404,254
1998	311	0	3,592	0	18,618	1,657,381	1,763,382
1999	4,086	0	0	3,743	20,137	2,755,037	2,895,591
2000	8,395	0	0	3,962	22,741	3,416,608	3,590,193
2001	1,238	0	0	4,283	18,946	2,017,646	2,174,069
2002	11,599	0	0	16,150	33,904	2,694,600	2,872,118
2003	0	0	0	25,000	45,486	3,272,931	3,544,590
2004	0	0	0	25,000	45,486	3,304,427	3,586,063
2005	0	0	0	25,000	45,486	3,342,825	3,625,624
2006	0	0	0	25,000	45,486	3,294,780	3,578,592
2007	10,000	0	0	25,000	45,486	3,674,921	3,956,536
2008	10,000	0	0	25,000	45,486	3,655,321	3,929,821
2009	10,000	0	0	25,000	45,486	3,655,321	3,930,266
2010	10,000	0	0	25,000	45,486	3,655,321	3,930,711
2011	1,825	0	0	25,000	45,486	3,655,321	3,931,166
2012	0	0	0	25,000	45,486	3,655,321	3,931,621
2013	0	0	0	25,000	45,486	3,655,321	3,932,036
2014	0	0	0	25,000	45,486	3,655,321	3,932,551
2015	0	0	0	25,000	45,486	3,655,321	3,933,376
2016	0	0	0	25,000	45,486	3,655,321	3,934,101
2017	0	0	0	25,000	45,486	3,655,321	3,934,726
2018	0	0	0	25,000	45,486	3,655,321	3,935,351
2019	0	0	0	25,000	45,486	3,655,321	3,935,976
2020	0	0	0	25,000	45,486	3,655,321	3,936,576
2021	0	0	0	25,000	45,486	3,655,321	3,936,676
2022	0	0	0	25,000	45,486	3,655,321	3,936,676
2023	0	0	0	25,000	45,486	3,655,321	3,936,676
2024	0	0	0	25,000	45,486	3,655,321	3,936,676
2025	0	0	0	25,000	45,486	3,655,321	3,936,676
2026	0	0	0	25,000	45,486	3,655,321	3,936,676
2027	0	0	0	25,000	45,486	3,655,321	3,936,676
2028	0	0	0	25,000	45,486	3,655,321	3,936,676
2029	0	0	0	25,000	45,486	3,655,321	3,936,676
2030	0	0	0	25,000	45,486	3,655,321	3,936,676
2031	0	0	0	25,000	45,486	3,655,321	3,936,676
2032	0	0	0	25,000	45,486	3,655,321	3,936,676
2033	0	0	0	25,000	45,486	3,655,321	3,936,676
2034	0	0	0	25,000	45,486	3,655,321	3,936,676
2035	0	0	0	25,000	45,486	3,655,321	3,936,676
Total	383,145	0	4,691	853,138	1,622,823	173,869,027	187,601,946

Table B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	North Bay Area			South Bay Area[b]				Central Coastal Area		
	Napa County FC&WCD[a] (1)	Solano County WA (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1962	0	0	0	494	8,412	0	8,906	0	0	0
1963	0	0	0	1,731	10,914	0	12,645	0	0	0
1964	0	0	0	1,673	19,238	0	20,911	0	0	0
1965	0	0	0	2,605	16,407	15,014	34,026	0	0	0
1966	0	0	0	5,511	14,864	34,538	54,913	0	0	0
1967	0	0	0	4,780	12,882	39,101	56,763	0	0	0
1968	1,214	0	1,214	6,133	24,817	70,105	101,055	0	0	0
1969	2,687	0	2,687	6,635	813	62,264	69,712	0	0	0
1970	3,618	0	3,618	9,249	0	80,311	89,560	0	0	0
1971	2,521	0	2,521	5,017	5,961	87,606	98,584	0	0	0
1972	3,647	0	3,647	10,489	27,671	100,266	138,426	0	0	0
1973	3,792	0	3,792	2,975	2,521	88,582	94,078	0	0	0
1974	4,870	0	4,870	1,314	4	88,000	89,318	0	0	0
1975	6,840	0	6,840	4,618	986	88,000	93,604	0	0	0
1976	7,122	0	7,122	17,131	21,300	88,000	126,431	0	0	0
1977	8,226	0	8,226	12,644	18,840	76,220	107,704	0	0	0
1978	6,034	0	6,034	10,984	5,863	95,727	112,574	0	0	0
1979	6,561	0	6,561	19,325	10,874	91,991	122,190	0	0	0
1980	6,707	0	6,707	16,790	11,034	88,000	115,824	0	0	0
1981	9,001	0	9,001	19,590	21,917	88,000	129,507	0	0	0
1982	1,213	0	1,213	13,123	6,316	88,000	107,439	0	0	0
1983	2,287	0	2,287	4,766	3,157	86,733	94,656	0	0	0
1984	2,923	0	2,923	6,784	3,338	88,000	98,122	0	0	0
1985	4,039	0	4,039	15,072	19,016	88,000	122,088	0	0	0
1986	3,519	1,400	4,919	10,609	12,379	88,000	110,988	0	0	0
1987	7,693	1,550	9,243	23,406	25,390	88,000	136,796	0	0	0
1988	5,392	9,726	15,118	25,830	33,464	87,961	147,255	0	0	0
1989	6,195	17,256	23,451	26,227	26,042	90,000	142,269	0	0	0
1990	6,940	19,131	26,071	33,034	31,703	92,000	156,737	0	0	0
1991	1,380	6,972	8,352	9,411	12,648	28,200	50,259	0	1,240	1,240
1992	4,001	14,773	18,774	14,669	19,153	42,839	76,661	0	0	0
1993	5,286	29,180	34,466	33,635	10,271	62,065	105,971	0	0	0
1994	6,792	25,256	32,048	20,542	22,911	57,115	100,568	0	0	0
1995	5,182	21,345	26,527	30,091	17,793	28,756	76,640	0	0	0
1996	4,893	29,999	34,892	18,903	19,662	89,850	128,415	100	0	100
1997	4,341	33,530	37,871	27,522	24,063	95,601	147,186	1,199	7,439	8,638
1998	5,359	29,766	35,125	17,941	19,075	63,410	100,426	3,592	18,618	22,210
1999	5,304	34,753	40,057	48,910	37,652	82,945	169,507	3,743	20,137	23,880
2000	4,958	33,094	38,052	58,617	35,978	101,988	196,583	3,962	22,741	26,703
2001	9,345	21,081	30,426	34,409	18,004	77,922	130,335	4,283	18,946	23,229
2002	17,928	30,407	48,335	37,196	24,948	71,290	133,434	16,150	33,904	50,054
2003	21,475	46,296	67,771	66,198	42,000	100,000	208,198	25,000	45,486	70,486
2004	21,850	46,986	68,836	75,050	42,000	100,000	217,050	25,000	45,486	70,486
2005	22,225	47,206	69,431	75,558	42,000	100,000	217,558	25,000	45,486	70,486
2006	22,550	47,256	69,806	76,126	42,000	100,000	218,126	25,000	45,486	70,486
2007	22,875	47,406	70,281	79,000	49,500	100,000	228,500	25,000	45,486	70,486
2008	23,200	47,396	70,596	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2009	23,525	47,446	70,971	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2010	23,850	47,496	71,346	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2011	24,175	47,546	71,721	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2012	24,500	47,596	72,096	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2013	24,775	47,646	72,421	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2014	25,150	47,696	72,846	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2015	25,825	47,746	73,571	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2016	26,450	47,746	74,196	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2017	27,075	47,746	74,821	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2018	27,700	47,746	75,446	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2019	28,325	47,746	76,071	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2020	28,925	47,746	76,671	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2021	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2022	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2023	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2024	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2025	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2026	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2027	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2028	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2029	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2030	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2031	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2032	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2033	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2034	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
2035	29,025	47,746	76,771	79,000	42,000	100,000	221,000	25,000	45,486	70,486
Total	1,067,635	1,929,857	2,997,492	3,254,317	2,051,781	6,180,400	11,486,498	858,029	1,624,063	2,482,092

[a]For the period 1968 through 1987, deliveries are non-Project water pumped through an interim facility.
[b]For the period June 1962 through November 1967, deliveries were supplied by non-Project water.

Table B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	San Joaquin Valley Area								Total (19)
			Kern County Water Agency						
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	Total (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	
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	138,165	1,039,985	1,178,150	4,000	4,871	289,735	1,539,629
2000	61,202	1,799	106,276	1,117,862	1,224,138	3,600	4,508	208,294	1,503,541
2001	41,902	1,360	51,597	616,066	667,663	1,560	3,592	84,726	800,803
2002	68,492	1,443	65,437	612,759	678,196	2,654	4,793	84,295	839,873
2003	57,343	3,000	120,200	879,749	999,949	4,000	5,700	111,527	1,181,519
2004	57,343	3,000	120,200	879,749	999,949	4,000	5,700	111,527	1,181,519
2005	57,343	3,000	120,200	879,749	999,949	4,000	5,700	111,527	1,181,519
2006	57,343	3,000	120,200	879,749	999,949	4,000	5,700	111,527	1,181,519
2007	57,343	3,000	121,600	908,749	1,030,349	4,000	5,700	111,527	1,211,919
2008	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2009	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2010	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2011	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2012	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2013	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2014	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2015	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2016	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2017	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2018	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2019	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2020	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2021	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2022	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2023	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2024	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2025	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2026	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2027	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2028	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2029	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2030	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2031	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2032	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2033	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2034	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
2035	57,343	3,000	121,600	879,349	1,000,949	4,000	5,700	111,527	1,182,519
Total	3,387,944	173,253	6,337,857	50,747,677	57,085,534	211,651	342,124	6,590,823	67,791,329

Table B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency[c] (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	7,382	0	0	0	0	0	0	0	0
1969	0	9,970	0	0	0	0	0	0	0	0
1970	0	11,739	0	0	0	0	0	0	0	0
1971	0	12,490	0	0	0	0	0	0	0	0
1972	53	13,905	0	464	0	338	55	0	1,275	0
1973	20	9,418	5,800	389	9,000	290	0	0	32,426	0
1974	1,259	9,700	6,400	627	10,000	400	14	0	16,605	612
1975	8,068	10,700	7,000	825	11,000	520	0	0	13,865	5,450
1976	27,782	11,700	7,600	1,002	12,000	589	0	0	12,273	6,071
1977	11,202	5,075	0	1,109	0	111	80	0	24,833	8,996
1978	44,137	11,362	10,084	1,209	15,300	208	0	0	4,055	7,771
1979	60,493	19,145	10,063	1,260	15,000	133	4,000	0	18	290
1980	72,407	15,092	10,884	1,239	17,000	191	4,000	0	0	1,085
1981	79,375	18,461	12,105	1,485	19,000	1,270	4,000	0	16,021	3,619
1982	50,291	22,216	13,326	1,238	21,000	0	10,500	0	8,409	12,599
1983	32,961	22,135	14,547	911	23,000	38	0	0	5,994	734
1984	32,662	24,218	15,768	1,128	25,000	1	0	0	5,556	7,656
1985	37,064	24,500	16,989	1,422	27,000	0	0	1,558	7,390	5,028
1986	32,449	27,229	18,210	1,506	29,000	163	0	3,096	6,421	9,454
1987	34,089	27,988	19,431	1,849	31,500	1,085	17	5,379	18,751	10,630
1988	34,079	30,438	20,652	2,006	34,000	419	9	1,770	21,386	8,948
1989	45,280	36,364	21,873	2,170	36,500	971	200	9,009	20,782	12,839
1990	47,206	28,579	23,100	1,827	38,100	1,747	0	8,608	18,831	16,649
1991	9,568	4,562	6,930	849	11,430	522	3,423	3,914	3,661	5,399
1992	30,265	20,699	10,427	519	17,197	251	10,686	4,035	3,358	7,908
1993	43,102	23,039	23,100	439	38,100	734	11,514	7,761	4,361	14,397
1994	49,153	26,441	14,102	785	23,257	1,098	16,852	8,418	9,135	15,230
1995	47,286	27,233	23,100	409	38,100	480	8,722	6,961	696	12,922
1996	56,356	32,500	62,219	485	102,622	494	7,427	11,434	6,064	15,989
1997	62,393	27,712	68,340	651	69,990	444	10,374	11,861	9,654	18,175
1998	52,926	20,093	85,709	187	70,647	404	3,925	8,752	1,878	9,310
1999	69,073	32,899	50,480	1,132	58,100	342	8,144	13,278	12,874	21,729
2000	83,577	40,680	42,323	1,194	58,234	0	11,380	9,060	18,399	14,475
2001	62,857	31,939	9,100	1,057	15,010	0	4,357	10,427	26,488	2,360
2002	96,174	67,641	15,600	3,770	25,735	1,495	18,781	24,282	70,491	23,418
2003	141,049	40,000	23,100	5,800	38,100	2,300	15,000	21,651	102,600	28,800
2004	141,049	42,000	23,100	5,800	38,100	2,300	20,000	21,651	102,600	28,800
2005	141,049	44,000	23,100	5,800	38,100	2,300	25,000	21,651	102,600	28,800
2006	141,049	46,000	23,100	5,800	38,100	2,300	30,000	21,651	102,600	28,800
2007	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2008	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2009	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2010	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2011	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2012	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2013	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2014	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2015	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2016	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2017	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2018	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2019	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2020	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2021	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2022	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2023	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2024	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2025	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2026	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2027	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2028	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2029	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2030	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2031	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2032	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2033	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2034	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
2035	141,400	95,200	23,100	5,800	38,100	2,300	75,800	21,300	102,600	28,800
Total	5,978,403	3,698,044	1,407,562	226,543	2,159,122	90,638	2,426,660	853,907	3,787,750	1,230,143

[c]Devil's Den Water District merged with Castaic Lake Water Agency effective January 1, 1992.

Table B-5B

Annual Water Quantities Delivered to Each Contractor

(Acre-Feet)

Calendar Year	Southern California Area (continued)				Feather River Area					
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)	South Bay Area Future Contractor (38)	Grand Total (39)
1962	0	0	0	0	0	0	0	0	0	8,906
1963	0	0	0	0	0	0	0	0	0	12,645
1964	0	0	0	0	0	0	0	0	0	20,911
1965	0	0	0	0	0	0	0	0	0	34,026
1966	0	0	0	0	0	0	0	0	0	54,913
1967	0	0	0	0	0	0	0	0	0	56,763
1968	0	0	0	7,382	0	0	0	0	0	294,457
1969	0	0	0	9,970	0	0	0	0	0	268,104
1970	0	0	0	11,739	0	0	70	70	0	369,459
1971	0	0	0	12,490	0	192	64	256	0	654,442
1972	0	71,938	0	88,028	0	186	505	691	0	1,037,770
1973	0	159,883	0	217,226	0	53	679	732	0	737,532
1974	0	277,717	0	323,334	0	127	648	775	0	878,947
1975	0	526,491	0	583,919	0	253	405	658	0	1,230,830
1976	0	618,451	0	697,468	0	527	382	909	0	1,380,124
1977	0	189,755	0	241,161	0	706	303	1,009	0	582,381
1978	0	507,565	0	601,691	0	579	278	857	0	1,458,733
1979	0	477,074	0	587,476	0	302	329	631	0	1,666,457
1980	0	531,727	0	653,625	0	267	295	562	0	1,536,456
1981	0	795,846	0	951,182	0	221	355	576	0	1,918,563
1982	0	691,192	0	830,771	0	334	305	639	0	1,750,862
1983	0	343,521	0	443,841	0	325	262	587	0	1,187,156
1984	0	457,582	0	569,571	108	177	272	557	0	1,591,416
1985	0	683,625	0	804,576	62	308	254	624	0	1,990,295
1986	0	708,840	0	836,368	328	313	317	958	0	1,999,155
1987	0	712,424	0	863,143	88	459	452	999	0	2,131,608
1988	0	902,564	0	1,056,271	303	385	523	1,211	0	2,385,122
1989	0	1,156,698	0	1,342,686	403	300	486	1,189	0	2,853,747
1990	0	1,396,423	4,836	1,585,906	494	380	548	1,422	0	2,582,151
1991	0	391,447	988	442,693	265	328	420	1,013	0	549,113
1992	0	710,313	0	815,658	642	117	485	1,244	0	1,471,454
1993	0	652,190	0	818,737	746	256	444	1,446	0	2,315,235
1994	0	807,866	0	972,337	1,035	329	492	1,856	0	1,861,976
1995	0	436,042	0	601,951	910	203	308	1,421	0	2,031,423
1996	0	593,380	0	888,970	820	257	360	1,437	0	2,543,472
1997	0	721,810	1,850	1,003,254	1,005	185	231	1,421	0	2,405,444
1998	0	410,065	1,850	665,746	1,054	527	0	1,581	0	1,764,963
1999	0	852,617	1,850	1,122,518	1,096	286	0	1,382	0	2,896,973
2000	0	1,541,942	4,050	1,825,314	901	586	0	1,487	0	3,591,680
2001	0	1,023,169	1,850	1,188,614	2,880	1,050	662	4,592	0	2,177,999
2002	1,100	1,446,749	3,998	1,799,234	2,979	1,375	1,188	5,542	0	2,876,472
2003	5,000	1,571,526	20,000	2,014,926	9,600	1,200	1,690	12,490	0	3,555,390
2004	6,000	1,595,022	20,000	2,046,422	9,600	1,200	1,750	12,550	0	3,596,863
2005	6,500	1,625,920	20,000	2,084,820	9,600	1,200	1,810	12,610	0	3,636,424
2006	7,000	1,570,375	20,000	2,036,775	9,600	27,500	1,880	38,980	0	3,615,692
2007	7,500	1,811,500	20,000	2,373,400	9,600	27,500	1,950	39,050	0	3,993,636
2008	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,020	39,120	0	3,966,921
2009	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,090	39,190	0	3,967,366
2010	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,160	39,260	0	3,967,811
2011	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,240	39,340	0	3,968,266
2012	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,320	39,420	0	3,968,721
2013	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,410	39,510	0	3,969,136
2014	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,500	39,600	0	3,969,651
2015	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,600	39,700	0	3,970,476
2016	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,971,201
2017	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,971,826
2018	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,972,451
2019	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,076
2020	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,676
2021	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2022	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2023	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2024	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2025	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2026	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2027	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2028	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2029	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2030	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2031	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2032	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2033	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2034	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
2035	17,300	1,811,500	20,000	2,383,200	9,600	27,500	2,700	39,800	0	3,973,776
Total	517,500	79,693,249	681,272	102,750,793	332,919	840,493	93,742	1,267,154	0	188,775,358

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	North Bay Aqueduct											
	Barker Slough Pumping Plant				Cordelia Pumping Plant Solano County Water Agency				Cordelia Pumping Plant Napa County FC&WCD			
	Initial Fill Water (1)	Operational Losses (2)	Water Supply Delivery (3)	Total (4)	Initial Fill Water (5)	Operational Losses (6)	Water Supply Delivery (7)	Total (8)	Initial Fill Water (9)	Operational Losses (10)	Water Supply Delivery[a] (11)	Total (12)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
				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
				0				0				
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
				0				0				
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	537	8,352	8,889	0	(124)	3,855	3,731	0	192	1,380	1,572
1992	0	1,640	18,774	20,414	0	0	9,220	9,220	0	(3)	4,001	3,998
1993	0	1,154	34,466	35,620	0	0	14,471	14,471	0	1	5,286	5,287
1994	0	5,177	32,048	37,225	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	38,052	39,905	0	4	20,751	20,755	0	180	4,958	5,138
2001	0	1,693	30,426	32,119	0	456	11,435	11,891	0	0	9,345	9,345
2002	0	51	48,335	48,386	0	0	13,446	13,446	0	5	17,928	17,933
2003	0	51	67,771	67,822	0	0	18,150	18,150	0	5	21,475	21,480
2004	0	51	68,836	68,887	0	0	19,930	19,930	0	5	21,850	21,855
2005	0	51	69,431	69,482	0	0	20,100	20,100	0	5	22,225	22,230
2006	0	51	69,806	69,857	0	0	20,100	20,100	0	5	22,550	22,555
2007	0	51	70,281	70,332	0	0	20,200	20,200	0	5	22,875	22,880
2008	0	51	70,596	70,647	0	0	18,530	18,530	0	5	23,200	23,205
2009	0	51	70,971	71,022	0	0	18,580	18,580	0	5	23,525	23,530
2010	0	51	71,346	71,397	0	0	18,630	18,630	0	5	23,850	23,855
2011	0	51	71,721	71,772	0	0	18,680	18,680	0	5	24,175	24,180
2012	0	51	72,096	72,147	0	0	18,730	18,730	0	5	24,500	24,505
2013	0	51	72,421	72,472	0	0	18,780	18,780	0	5	24,775	24,780
2014	0	51	72,846	72,897	0	0	18,830	18,830	0	5	25,150	25,155
2015	0	51	73,571	73,622	0	0	18,880	18,880	0	5	25,825	25,830
2016	0	51	74,196	74,247	0	0	18,880	18,880	0	5	26,450	26,455
2017	0	51	74,821	74,872	0	0	18,880	18,880	0	5	27,075	27,080
2018	0	51	75,446	75,497	0	0	18,880	18,880	0	5	27,700	27,705
2019	0	51	76,071	76,122	0	0	18,880	18,880	0	5	28,325	28,330
2020	0	51	76,671	76,722	0	0	18,880	18,880	0	5	28,925	28,930
2021	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2022	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2023	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2024	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2025	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2026	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2027	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2028	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2029	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2030	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2031	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2032	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2033	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2034	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030
2035	0	51	76,771	76,822	0	0	18,880	18,880	0	5	29,025	29,030

[a]For the period 1968 through 1987, deliveries are non-SWP water pumped through an interim facility.

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	South Bay Aqueduct						California Aqueduct							
	South Bay Pumping Plant						North San Joaquin Division							
							Banks Pumping Plant							
				Deliveries			Transportation Water							
	Initial Fill Water (13)	Operational Losses (14)	Reservoir Storage Changes (15)	Water Supply[b] (16)	Recreation (17)	Total (18)	Initial Fill Water (19)	Operational Losses (20)	Reservoir Storage Changes (21)	Deliveries: Water Supply (22)	Deliveries: Recreation (23)	Deliveries: Total (24)	Conservation Water (25)	Total (26)
1961	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	9	272	0	8,906	0	9,187	0	0	0	0	0	0	0	0
1963	71	185	0	12,645	0	12,901	0	0	0	0	0	0	0	0
1964	171	152	0	20,911	0	21,234	0	0	0	0	0	0	0	0
1965	93	729	0	34,026	0	34,848	0	0	0	0	0	0	0	0
1966	0	1,746	0	54,913	0	56,659	0	0	0	0	0	0	0	0
1967	0	1,677	0	56,763	0	58,440	5,746	1,183	0	11,538	0	18,467	2,957	21,424
1968	0	1,847	0	101,055	0	102,902	11,079	74,464	0	293,243	0	378,786	531,275	910,061
1969	3,449	2,668	0	69,712	0	75,829	7,336	44,287	0	265,417	0	317,040	531,185	848,225
1970	16,279	1,086	(5,355)	89,560	0	101,570	23,947	20,767	(5,355)	365,771	0	405,130	(12,995)	392,135
1971	0	1,815	8,854	98,584	0	109,253	23,207	(10,754)	8,854	651,665	8	672,980	7,708	680,688
1972	0	3,557	2,273	138,426	0	144,256	145,066	9,057	(4,285)	1,033,432	6,489	1,189,759	48,300	1,238,059
1973	0	(33)	(1,510)	94,078	0	92,535	214,941	(4,951)	2,902	733,008	1,155	947,055	55,846	1,002,901
1974	0	1,287	(10,056)	89,318	0	80,549	247,894	(11,526)	(32,510)	873,302	2,118	1,079,278	54,683	1,133,961
1975	0	320	8,550	93,604	0	102,474	110,149	(8,092)	16,101	1,223,332	3,377	1,344,867	(102,625)	1,242,242
1976	0	2,431	1,391	126,431	141	130,394	67,834	5,443	(244,124)	1,372,093	1,745	1,202,991	(442,348)	760,643
1977	0	2,866	2,685	107,704	112	113,367	0	39,897	(157,543)	573,146	1,111	456,611	(13,507)	443,104
1978	0	2,165	(11,249)	112,574	126	103,616	67,457	(36,898)	35,129	1,451,842	1,177	1,518,707	752,075	2,270,782
1979	0	2,401	1,069	122,190	89	125,749	17,397	60,958	(32,307)	1,659,265	1,398	1,706,711	(112,053)	1,594,658
1980	0	1,758	(6,563)	115,824	123	111,142	3,159	58,484	(275,538)	1,529,187	2,131	1,317,423	186,601	1,504,024
1981	0	2,627	13,742	129,507	121	145,997	0	85,350	(903,443)	1,908,986	4,974	1,095,867	12,101	1,107,968
1982	0	2,344	(23,928)	107,439	129	85,984	0	68,582	53,695	1,749,010	4,646	1,875,933	347,983	2,223,916
1983	0	1,643	(28,942)	94,656	132	67,489	6,071	55,313	(238,558)	1,184,282	7,849	1,014,957	833,990	1,848,947
1984	0	2,088	4,361	98,122	158	104,729	0	92,202	(254,050)	1,587,936	5,874	1,431,962	21,875	1,453,837
1985	0	2,817	1,509	122,088	152	126,566	0	111,377	92,064	1,985,632	5,452	2,194,525	(110,569)	2,083,956
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	78,053	2,507,143	3,902	2,712,600	288,646	3,001,246
1997	0	1,575	5,016	102,186	155	108,932	927	135,106	(98,597)	2,366,152	2,594	2,406,182	(49,736)	2,356,446
1998	0	1,551	3,595	70,876	114	76,136	0	91,319	(347,538)	1,728,257	2,107	1,474,145	122,385	1,596,530
1999	0	2,274	12,313	100,497	139	115,223	0	134,996	(17,558)	2,855,534	4,323	2,977,295	(309,485)	2,667,810
2000	0	2,346	(7,086)	135,533	145	130,938	0	115,298	57,091	3,532,268	5,182	3,709,839	(194,345)	3,515,494
2001	0	2,756	23,712	95,335	0	121,803	0	245,105	(80,040)	2,002,311	1,786	2,169,162	304,534	2,473,696
2002	0	3,321	36	127,995	400	131,752	0	137,743	(108,363)	2,822,595	8,660	2,860,635	0	2,860,635
2003	0	3,286	36	202,198	400	205,920	0	134,333	(7,925)	3,475,129	8,660	3,610,197	0	3,610,197
2004	0	3,287	0	211,050	400	214,737	0	129,042	76,561	3,515,477	8,660	3,729,740	(26,887)	3,702,853
2005	0	3,351	0	211,558	400	215,309	0	128,606	(59,387)	3,554,383	8,660	3,632,262	(121,668)	3,510,594
2006	0	3,351	0	212,126	400	215,877	0	127,993	(36,988)	3,506,906	8,660	3,606,571	(253,589)	3,352,982
2007	0	3,351	0	209,384	400	213,135	0	129,168	22,514	3,884,305	8,660	4,044,647	(77,232)	3,967,415
2008	0	3,351	0	201,884	400	205,635	0	128,939	6,985	3,857,205	8,660	4,001,789	222,755	4,224,544
2009	0	3,351	0	201,884	400	205,635	0	129,619	(15,186)	3,857,205	8,660	3,980,298	(140,708)	3,839,590
2010	0	3,351	0	201,884	400	205,635	0	128,523	4,288	3,857,205	8,660	3,998,676	182,970	4,181,646
2011	0	3,351	0	201,884	400	205,635	0	128,364	64,678	3,857,205	8,660	4,058,907	137,242	4,196,149
2012	0	3,351	0	201,884	400	205,635	0	128,100	(67,943)	3,857,205	8,660	3,926,022	(260,827)	3,665,195
2013	0	3,351	0	201,884	400	205,635	0	128,264	9,749	3,857,205	8,660	4,003,878	145,525	4,149,403
2014	0	3,351	0	201,884	400	205,635	0	130,280	16,625	3,857,205	8,660	4,012,770	(186,678)	3,826,092
2015	0	3,351	0	201,884	400	205,635	0	130,445	32,003	3,857,205	8,660	4,028,313	(31,516)	3,996,797
2016	0	3,351	0	201,884	400	205,635	0	128,415	(28,401)	3,857,205	8,660	3,965,879	205,134	4,171,013
2017	0	3,351	0	201,884	400	205,635	0	128,602	61,309	3,857,205	8,660	4,055,776	119,885	4,175,661
2018	0	3,351	0	201,884	400	205,635	0	128,369	(80,817)	3,857,205	8,660	3,913,417	(194,534)	3,718,883
2019	0	3,351	0	201,884	400	205,635	0	128,613	50,179	3,857,205	8,660	4,044,657	77,224	4,121,881
2020	0	3,351	0	201,884	400	205,635	0	128,690	(366)	3,857,205	8,660	3,994,189	(8,687)	3,985,502
2021	0	3,351	0	201,884	400	205,635	0	128,769	10,725	3,857,205	8,660	4,005,359	(1,095)	4,004,264
2022	0	3,351	0	201,884	400	205,635	0	128,846	(3,483)	3,857,205	8,660	3,991,228	(185,907)	3,805,321
2023	0	3,351	0	201,884	400	205,635	0	128,818	(18,971)	3,857,205	8,660	3,975,712	115,791	4,091,503
2024	0	3,351	0	201,884	400	205,635	0	128,625	11,289	3,857,205	8,660	4,005,779	79,858	4,085,637
2025	0	3,351	0	201,884	400	205,635	0	130,380	(12,518)	3,857,205	8,660	3,983,727	(247,205)	3,736,522
2026	0	3,351	0	201,884	400	205,635	0	128,700	24,308	3,857,205	8,660	4,018,873	246,850	4,265,723
2027	0	3,351	0	201,884	400	205,635	0	128,692	(17,799)	3,857,205	8,660	3,976,758	(12,304)	3,964,454
2028	0	3,351	0	201,884	400	205,635	0	128,783	12,291	3,857,205	8,660	4,006,939	15,430	4,022,369
2029	0	3,351	0	201,884	400	205,635	0	128,671	(9,046)	3,857,205	8,660	3,985,490	(10,778)	3,974,712
2030	0	3,351	0	201,884	400	205,635	0	128,777	20,756	3,857,205	8,660	4,015,398	124,586	4,139,984
2031	0	3,351	0	201,884	400	205,635	0	128,134	(97,726)	3,857,205	8,660	3,896,273	(259,831)	3,636,442
2032	0	3,351	0	201,884	400	205,635	0	128,005	84,999	3,857,205	8,660	4,078,869	138,527	4,217,396
2033	0	3,351	0	201,884	400	205,635	0	127,876	(94,652)	3,857,205	8,660	3,899,089	(184,372)	3,714,717
2034	0	3,351	0	201,884	400	205,635	0	127,725	69,593	3,857,205	8,660	4,063,183	120,375	4,183,558
2035	0	3,351	0	201,884	400	205,635	0	127,379	(242,659)	3,857,205	8,660	3,750,585	(587,531)	3,163,054

[b]For the period June 1962 through November 1967, deliveries were supplied by non-SWP water.

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	San Luis Division						South San Joaquin Division					
	Dos Amigos Pumping Plant						Buena Vista Pumping Plant					
				Deliveries						Deliveries		
	Initial Fill Water (27)	Operational Losses (28)	Reservoir Storage Changes (29)	Water Supply (30)	Recreation (31)	Total (32)	Initial Fill Water (33)	Operational Losses (34)	Reservoir Storage Changes (35)	Water Supply (36)	Recreation (37)	Total (38)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	11,079	25,126	0	189,104	0	225,309	0	0	0	0	0	0
1969	3,887	9,922	0	192,689	0	206,498	0	0	0	0	0	0
1970	7,668	1,901	0	270,300	0	279,869	4,779	1,012	0	3	0	5,794
1971	23,207	(12,030)	0	545,869	0	557,046	7,853	8,399	0	101,512	0	117,764
1972	145,066	(6,635)	(6,558)	886,840	6,481	1,025,194	100,274	20,044	(6,558)	223,626	6,481	343,867
1973	214,941	(6,778)	1,329	635,716	1,147	846,355	204,638	35,695	1,329	311,096	1,147	553,905
1974	247,894	(16,765)	(15,295)	780,513	2,108	998,455	237,554	19,672	(15,295)	388,949	2,108	632,988
1975	110,149	(12,144)	(693)	1,126,152	3,358	1,226,822	103,352	26,342	(693)	672,531	3,358	804,890
1976	67,834	(456)	(152,171)	1,241,550	1,581	1,158,338	61,122	29,428	(152,171)	785,055	1,581	725,015
1977	0	26,359	(116,219)	463,970	737	374,847	0	25,173	(116,219)	271,944	560	181,458
1978	67,457	1,905	79,308	1,335,362	680	1,484,712	65,027	17,751	121,904	762,043	674	967,399
1979	17,397	33,884	(51,299)	1,530,926	685	1,531,593	12,302	46,157	(51,299)	737,714	502	745,376
1980	3,159	34,391	(272,825)	1,407,663	1,514	1,173,902	0	49,025	(134,009)	778,059	1,262	694,337
1981	0	36,964	23,359	1,775,179	4,348	1,839,850	0	38,942	23,359	1,077,322	4,112	1,143,735
1982	0	56,423	77,623	1,637,733	4,205	1,775,984	0	29,424	104,329	996,728	4,045	1,134,526
1983	6,071	75,360	(190,303)	1,085,804	7,475	984,407	0	44,239	(138,703)	593,920	7,291	506,747
1984	0	108,568	(282,414)	1,484,114	5,391	1,315,659	0	35,552	(115,160)	781,955	5,244	707,591
1985	0	87,188	111,164	1,858,111	4,936	2,061,399	0	44,045	140,847	992,606	4,804	1,182,302
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	927	107,033	(66,814)	2,247,628	2,090	2,290,864	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	94,416	(41,283)	2,750,166	3,285	2,806,584	0	47,202	(2,751)	1,131,826	3,279	1,179,556
2000	0	134,231	(115,278)	3,319,947	4,222	3,343,122	0	37,514	10,403	1,814,020	4,216	1,866,153
2001	0	69,089	109,854	1,756,497	1,383	1,936,823	0	27,688	(15,202)	1,318,631	1,187	1,332,304
2002	0	74,785	(376)	2,689,807	7,210	2,771,426	0	45,323	(376)	1,913,863	7,010	1,965,820
2003	0	75,353	(376)	3,267,231	7,210	3,349,418	0	45,891	(376)	2,187,716	7,010	2,240,241
2004	0	75,355	76,561	3,298,727	7,210	3,457,853	0	45,893	76,561	2,219,212	7,010	2,348,676
2005	0	70,341	(59,387)	3,337,125	7,210	3,355,289	0	40,879	(59,387)	2,257,610	7,010	2,246,112
2006	0	69,959	(36,988)	3,289,080	7,210	3,329,261	0	40,497	(36,988)	2,209,565	7,010	2,220,084
2007	0	70,076	22,514	3,669,221	7,210	3,769,021	0	40,614	22,514	2,457,900	7,010	2,528,038
2008	0	70,205	6,985	3,649,621	7,210	3,734,021	0	40,743	6,985	2,467,700	7,010	2,522,438
2009	0	70,102	(15,186)	3,649,621	7,210	3,711,747	0	40,640	(15,186)	2,467,700	7,010	2,500,164
2010	0	70,198	4,288	3,649,621	7,210	3,731,317	0	40,736	4,288	2,467,700	7,010	2,519,734
2011	0	70,389	64,678	3,649,621	7,210	3,791,898	0	40,927	64,678	2,475,875	7,010	2,588,490
2012	0	70,279	(67,943)	3,649,621	7,210	3,659,167	0	40,817	(67,943)	2,477,700	7,010	2,457,584
2013	0	70,217	9,749	3,649,621	7,210	3,736,797	0	40,755	9,749	2,477,700	7,010	2,535,214
2014	0	70,525	16,625	3,649,621	7,210	3,743,981	0	41,063	16,625	2,477,700	7,010	2,542,398
2015	0	70,654	32,003	3,649,621	7,210	3,759,488	0	41,192	32,003	2,477,700	7,010	2,557,905
2016	0	70,354	(28,401)	3,649,621	7,210	3,698,784	0	40,892	(28,401)	2,477,700	7,010	2,497,201
2017	0	70,586	61,309	3,649,621	7,210	3,788,726	0	41,124	61,309	2,477,700	7,010	2,587,143
2018	0	70,740	(80,817)	3,649,621	7,210	3,646,754	0	41,278	(80,817)	2,477,700	7,010	2,445,171
2019	0	70,564	50,179	3,649,621	7,210	3,777,574	0	41,102	50,179	2,477,700	7,010	2,575,991
2020	0	70,628	(366)	3,649,621	7,210	3,727,093	0	41,166	(366)	2,477,700	7,010	2,525,510
2021	0	70,711	10,725	3,649,621	7,210	3,738,267	0	41,249	10,725	2,477,700	7,010	2,536,684
2022	0	70,705	(3,483)	3,649,621	7,210	3,724,053	0	41,243	(3,483)	2,477,700	7,010	2,522,470
2023	0	70,696	(18,971)	3,649,621	7,210	3,708,556	0	41,234	(18,971)	2,477,700	7,010	2,506,973
2024	0	70,575	11,289	3,649,621	7,210	3,738,695	0	41,113	11,289	2,477,700	7,010	2,537,112
2025	0	70,638	(12,518)	3,649,621	7,210	3,714,951	0	41,176	(12,518)	2,477,700	7,010	2,513,368
2026	0	70,650	24,308	3,649,621	7,210	3,751,789	0	41,188	24,308	2,477,700	7,010	2,550,206
2027	0	70,563	(17,799)	3,649,621	7,210	3,709,595	0	41,101	(17,799)	2,477,700	7,010	2,508,012
2028	0	70,703	12,291	3,649,621	7,210	3,739,825	0	41,241	12,291	2,477,700	7,010	2,538,242
2029	0	70,630	(9,046)	3,649,621	7,210	3,718,415	0	41,168	(9,046)	2,477,700	7,010	2,516,832
2030	0	70,694	20,756	3,649,621	7,210	3,748,281	0	41,232	20,756	2,477,700	7,010	2,546,698
2031	0	70,566	(97,726)	3,649,621	7,210	3,629,671	0	41,104	(97,726)	2,477,700	7,010	2,428,088
2032	0	70,168	84,999	3,649,621	7,210	3,811,998	0	40,706	84,999	2,477,700	7,010	2,610,415
2033	0	70,373	(94,652)	3,649,621	7,210	3,632,552	0	40,911	(94,652)	2,477,700	7,010	2,430,969
2034	0	69,865	69,593	3,649,621	7,210	3,796,289	0	40,403	69,593	2,477,700	7,010	2,594,706
2035	0	69,205	(242,659)	3,649,621	7,210	3,483,377	0	39,743	(242,659)	2,477,700	7,010	2,281,794

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued) — South San Joaquin Division (continued) — Teerink Pumping Plant — Initial Fill Water (39)	Operational Losses (40)	Reservoir Storage Changes (41)	Deliveries — Water Supply (42)	Deliveries — Recreation (43)	Total (44)	Chrisman Pumping Plant — Initial Fill Water (45)	Operational Losses (46)	Reservoir Storage Changes (47)	Deliveries — Water Supply (48)	Deliveries — Recreation (49)	Total (50)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	198	2	0	0	0	200	0	0	0	0	0	0
1971	7,533	(112)	0	3,552	0	10,973	7,366	(159)	0	0	0	7,207
1972	100,274	12,765	(6,558)	84,955	6,481	197,917	100,274	13,160	(6,558)	78,891	6,481	192,248
1973	204,638	21,543	1,329	229,685	1,147	458,342	204,638	32,414	1,329	209,769	1,147	449,297
1974	237,554	11,843	(15,295)	336,198	2,108	572,408	237,554	17,655	(15,295)	318,198	2,108	560,220
1975	103,352	19,763	(693)	621,706	3,358	747,486	103,352	25,326	(693)	586,286	3,358	717,629
1976	61,122	18,552	(152,171)	740,486	1,581	669,570	61,122	21,468	(152,171)	700,935	1,581	632,935
1977	0	16,415	(116,219)	246,349	560	147,105	0	15,698	(116,219)	240,191	560	140,230
1978	65,027	28,820	121,904	631,121	674	847,546	65,027	26,705	121,904	599,973	674	814,283
1979	12,302	50,663	(51,299)	625,561	502	637,729	12,302	50,580	(51,299)	586,959	502	599,044
1980	0	48,825	(134,009)	696,405	1,262	612,483	0	58,085	(134,009)	658,588	1,262	583,926
1981	0	51,600	23,359	998,307	4,112	1,077,378	0	48,844	23,359	959,274	4,112	1,035,589
1982	0	44,876	104,329	884,351	4,045	1,037,601	0	34,009	104,329	836,569	4,045	978,952
1983	0	47,388	(138,703)	487,915	7,291	403,891	0	38,159	(138,703)	450,489	7,291	357,236
1984	0	42,960	(115,160)	632,262	5,244	565,306	0	30,089	(115,160)	582,414	5,244	502,587
1985	0	51,597	140,847	854,684	4,804	1,051,932	0	56,303	140,847	810,606	4,804	1,012,560
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	76,034	(2,751)	1,011,608	3,279	1,088,170	0	54,214	(2,751)	974,807	3,279	1,029,549
2000	0	87,084	10,403	1,690,455	4,216	1,792,158	0	49,690	10,403	1,650,392	4,216	1,714,701
2001	0	67,915	(15,202)	1,233,658	1,187	1,287,558	0	51,084	(15,202)	1,202,466	1,187	1,239,535
2002	0	41,693	(376)	1,852,248	7,010	1,900,575	0	41,443	(376)	1,810,892	7,010	1,858,969
2003	0	42,261	(376)	2,073,516	7,010	2,122,411	0	42,011	(376)	2,037,216	7,010	2,085,861
2004	0	42,263	76,561	2,105,012	7,010	2,230,846	0	42,013	76,561	2,068,712	7,010	2,194,296
2005	0	37,249	(59,387)	2,143,410	7,010	2,128,282	0	36,999	(59,387)	2,107,110	7,010	2,091,732
2006	0	36,867	(36,988)	2,095,365	7,010	2,102,254	0	36,617	(36,988)	2,059,065	7,010	2,065,704
2007	0	36,984	22,514	2,328,200	7,010	2,394,708	0	36,734	22,514	2,287,900	7,010	2,354,158
2008	0	37,113	6,985	2,338,000	7,010	2,389,108	0	36,863	6,985	2,297,700	7,010	2,348,558
2009	0	37,010	(15,186)	2,338,000	7,010	2,366,834	0	36,760	(15,186)	2,297,700	7,010	2,326,284
2010	0	37,106	4,288	2,338,000	7,010	2,386,404	0	36,856	4,288	2,297,700	7,010	2,345,854
2011	0	37,297	64,678	2,346,175	7,010	2,455,160	0	37,047	64,678	2,305,875	7,010	2,414,610
2012	0	37,187	(67,943)	2,348,000	7,010	2,324,254	0	36,937	(67,943)	2,307,700	7,010	2,283,704
2013	0	37,125	9,749	2,348,000	7,010	2,401,884	0	36,875	9,749	2,307,700	7,010	2,361,334
2014	0	37,433	16,625	2,348,000	7,010	2,409,068	0	37,183	16,625	2,307,700	7,010	2,368,518
2015	0	37,562	32,003	2,348,000	7,010	2,424,575	0	37,312	32,003	2,307,700	7,010	2,384,025
2016	0	37,262	(28,401)	2,348,000	7,010	2,363,871	0	37,012	(28,401)	2,307,700	7,010	2,323,321
2017	0	37,494	61,309	2,348,000	7,010	2,453,813	0	37,244	61,309	2,307,700	7,010	2,413,263
2018	0	37,648	(80,817)	2,348,000	7,010	2,311,841	0	37,398	(80,817)	2,307,700	7,010	2,271,291
2019	0	37,472	50,179	2,348,000	7,010	2,442,661	0	37,222	50,179	2,307,700	7,010	2,402,111
2020	0	37,536	(366)	2,348,000	7,010	2,392,180	0	37,286	(366)	2,307,700	7,010	2,351,630
2021	0	37,619	10,725	2,348,000	7,010	2,403,354	0	37,369	10,725	2,307,700	7,010	2,362,804
2022	0	37,613	(3,483)	2,348,000	7,010	2,389,140	0	37,363	(3,483)	2,307,700	7,010	2,348,590
2023	0	37,604	(18,971)	2,348,000	7,010	2,373,643	0	37,354	(18,971)	2,307,700	7,010	2,333,093
2024	0	37,483	11,289	2,348,000	7,010	2,403,782	0	37,233	11,289	2,307,700	7,010	2,363,232
2025	0	37,546	(12,518)	2,348,000	7,010	2,380,038	0	37,296	(12,518)	2,307,700	7,010	2,339,488
2026	0	37,558	24,308	2,348,000	7,010	2,416,876	0	37,308	24,308	2,307,700	7,010	2,376,326
2027	0	37,471	(17,799)	2,348,000	7,010	2,374,682	0	37,221	(17,799)	2,307,700	7,010	2,334,132
2028	0	37,611	12,291	2,348,000	7,010	2,404,912	0	37,361	12,291	2,307,700	7,010	2,364,362
2029	0	37,538	(9,046)	2,348,000	7,010	2,383,502	0	37,288	(9,046)	2,307,700	7,010	2,342,952
2030	0	37,602	20,756	2,348,000	7,010	2,413,368	0	37,352	20,756	2,307,700	7,010	2,372,818
2031	0	37,474	(97,726)	2,348,000	7,010	2,294,758	0	37,224	(97,726)	2,307,700	7,010	2,254,208
2032	0	37,076	84,999	2,348,000	7,010	2,477,085	0	36,826	84,999	2,307,700	7,010	2,436,535
2033	0	37,281	(94,652)	2,348,000	7,010	2,297,639	0	37,031	(94,652)	2,307,700	7,010	2,257,089
2034	0	36,773	69,593	2,348,000	7,010	2,461,376	0	36,523	69,593	2,307,700	7,010	2,420,826
2035	0	36,113	(242,659)	2,348,000	7,010	2,148,464	0	35,863	(242,659)	2,307,700	7,010	2,107,914

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	Tehachapi Division						Mojave Divsion					
	Edmonston Pumping Plant						Alamo Power Plant					
	Initial Fill Water (51)	Operational Losses (52)	Reservoir Storage Changes (53)	Deliveries: Water Supply (54)	Deliveries: Recreation (55)	Total (56)	Initial Fill Water (57)	Operational Losses (58)	Reservoir Storage Changes (59)	Deliveries: Water Supply (60)	Deliveries: Recreation (61)	Total (62)
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	5,446	8	0	0	0	5,454	0	0	0	0	0	0
1972	100,274	16,067	(6,558)	74,123	6,481	190,387	0	0	0	0	0	0
1973	204,638	34,051	1,329	207,808	1,147	448,973	0	0	0	0	0	0
1974	237,554	18,181	(15,295)	313,634	2,108	556,182	0	0	0	0	0	0
1975	103,352	20,183	(693)	573,219	3,358	699,419	0	0	0	0	0	0
1976	61,122	21,096	(152,171)	685,768	1,581	617,396	0	0	0	0	0	0
1977	0	18,424	(116,219)	236,086	560	138,851	0	0	0	0	0	0
1978	65,027	20,887	121,904	590,329	674	798,821	0	0	0	0	0	0
1979	12,302	46,332	(51,299)	568,338	502	576,175	0	0	0	0	0	0
1980	0	52,967	(134,009)	639,743	1,262	559,963	0	0	0	0	0	0
1981	0	40,602	23,359	938,482	4,112	1,006,555	0	0	0	0	0	0
1982	0	37,731	104,329	818,071	4,045	964,176	0	0	0	0	0	0
1983	0	43,956	(138,703)	431,182	7,291	343,726	0	0	0	0	0	0
1984	0	38,947	(115,160)	556,830	5,244	485,861	0	0	0	0	0	0
1985	0	46,771	140,847	792,477	4,804	984,899	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	51,426	(2,751)	947,420	3,279	999,374	0	26,644	(9,730)	589,756	396	607,066
2000	0	43,072	10,403	1,626,458	4,216	1,684,149	0	8,983	(7,795)	958,332	449	959,969
2001	0	35,885	(15,202)	1,187,096	1,187	1,208,966	0	11,526	7,106	709,781	430	728,843
2002	0	39,893	(376)	1,787,635	7,010	1,834,162	0	23,039	(447)	1,055,902	1,630	1,080,124
2003	0	40,461	(376)	2,014,926	7,010	2,062,021	0	23,044	(447)	1,235,709	1,630	1,259,936
2004	0	40,463	76,561	2,046,422	7,010	2,170,456	0	23,046	20,133	1,255,591	1,630	1,300,400
2005	0	35,449	(59,387)	2,084,820	7,010	2,067,892	0	21,116	(11,777)	1,262,751	1,630	1,273,720
2006	0	35,067	(36,988)	2,036,775	7,010	2,041,864	0	20,801	(25,870)	1,212,705	1,630	1,209,266
2007	0	35,184	22,514	2,263,400	7,010	2,328,108	0	20,894	25,284	1,181,007	1,630	1,228,815
2008	0	35,313	6,985	2,273,200	7,010	2,322,508	0	21,000	(934)	1,190,807	1,630	1,212,503
2009	0	35,210	(15,186)	2,273,200	7,010	2,300,234	0	20,905	(9,404)	1,190,807	1,630	1,203,938
2010	0	35,306	4,288	2,273,200	7,010	2,319,804	0	21,001	3,921	1,190,807	1,630	1,217,359
2011	0	35,497	64,678	2,281,375	7,010	2,388,560	0	20,971	26,001	1,190,807	1,630	1,239,409
2012	0	35,387	(67,943)	2,283,200	7,010	2,257,654	0	20,962	(41,797)	1,190,807	1,630	1,171,602
2013	0	35,325	9,749	2,283,200	7,010	2,335,284	0	20,835	4,742	1,190,807	1,630	1,218,014
2014	0	35,633	16,625	2,283,200	7,010	2,342,468	0	21,002	2,759	1,190,807	1,630	1,216,198
2015	0	35,762	32,003	2,283,200	7,010	2,357,975	0	21,066	22,604	1,190,807	1,630	1,236,107
2016	0	35,462	(28,401)	2,283,200	7,010	2,297,271	0	20,829	(21,084)	1,190,807	1,630	1,192,182
2017	0	35,694	61,309	2,283,200	7,010	2,387,213	0	20,895	33,266	1,190,807	1,630	1,246,598
2018	0	35,848	(80,817)	2,283,200	7,010	2,245,241	0	20,998	(50,078)	1,190,807	1,630	1,163,357
2019	0	35,672	50,179	2,283,200	7,010	2,376,061	0	20,924	31,508	1,190,807	1,630	1,244,869
2020	0	35,736	(366)	2,283,200	7,010	2,325,580	0	20,947	(3,398)	1,190,807	1,630	1,209,986
2021	0	35,819	10,725	2,283,200	7,010	2,336,754	0	20,946	(1,117)	1,190,807	1,630	1,212,266
2022	0	35,813	(3,483)	2,283,200	7,010	2,322,540	0	20,940	(3,434)	1,190,807	1,630	1,209,943
2023	0	35,804	(18,971)	2,283,200	7,010	2,307,043	0	20,939	(18,638)	1,190,807	1,630	1,194,738
2024	0	35,683	11,289	2,283,200	7,010	2,337,182	0	20,881	21,309	1,190,807	1,630	1,234,627
2025	0	35,746	(12,518)	2,283,200	7,010	2,313,438	0	20,965	(11,624)	1,190,807	1,630	1,201,778
2026	0	35,758	24,308	2,283,200	7,010	2,350,276	0	20,930	13,030	1,190,807	1,630	1,226,397
2027	0	35,671	(17,799)	2,283,200	7,010	2,308,082	0	20,861	(6,161)	1,190,807	1,630	1,207,137
2028	0	35,811	12,291	2,283,200	7,010	2,338,312	0	20,961	4,006	1,190,807	1,630	1,217,404
2029	0	35,738	(9,046)	2,283,200	7,010	2,316,902	0	20,955	(913)	1,190,807	1,630	1,212,479
2030	0	35,802	20,756	2,283,200	7,010	2,346,768	0	20,930	8,528	1,190,807	1,630	1,221,895
2031	0	35,674	(97,726)	2,283,200	7,010	2,228,158	0	20,956	(31,057)	1,190,807	1,630	1,182,336
2032	0	35,276	84,999	2,283,200	7,010	2,410,485	0	20,865	43,953	1,190,807	1,630	1,257,255
2033	0	35,481	(94,652)	2,283,200	7,010	2,231,039	0	20,854	(37,929)	1,190,807	1,630	1,175,362
2034	0	34,973	69,593	2,283,200	7,010	2,394,776	0	20,769	28,588	1,190,807	1,630	1,241,794
2035	0	34,313	(242,659)	2,283,200	7,010	2,081,864	0	20,892	(49,219)	1,190,807	1,630	1,164,110

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	Mojave Division (continued)											
	Pearblossom Pumping Plant						Mojave Siphon Power Plant					
	Initial Fill Water (63)	Operational Losses (64)	Reservoir Storage Changes (65)	Deliveries		Total (68)	Initial Fill Water (69)	Operational Losses (70)	Reservoir Storage Changes (71)	Deliveries		Total (74)
				Water Supply (66)	Recreation (67)					Water Supply (72)	Recreation (73)	
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	21	0	0	0	0	21	0	0	0	0	0	0
1972	35,243	5,282	(153)	1,794	0	42,166	0	0	0	0	0	0
1973	80,177	21,522	(2,700)	52,201	72	151,272	0	0	0	0	0	0
1974	76,694	10,847	(11,149)	102,839	44	179,275	0	0	0	0	0	0
1975	10,000	2,364	(8,397)	190,351	70	194,388	0	0	0	0	0	0
1976	4,168	7,040	(16,055)	236,713	152	232,018	0	0	0	0	0	0
1977	0	11,398	(17,534)	102,326	580	96,770	0	0	0	0	0	0
1978	19,922	5,696	69,130	374,845	498	470,091	0	0	0	0	0	0
1979	12,302	6,836	(32,518)	362,114	502	349,236	0	0	0	0	0	0
1980	0	16,200	6,159	401,214	781	424,354	0	0	0	0	0	0
1981	0	4,992	(36,278)	574,573	933	544,220	0	0	0	0	0	0
1982	0	4,891	44,305	406,902	1,919	458,017	0	0	0	0	0	0
1983	0	12,156	(27,249)	231,188	1,180	217,275	0	0	0	0	0	0
1984	0	18,477	22,981	252,066	1,494	295,018	0	0	0	0	0	0
1985	0	25,153	42,853	350,758	1,076	419,840	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	0	0	0	0	0
1989	0	31,500	(20,363)	661,189	1,407	673,733	0	0	0	0	0	0
1990	0	32,672	(5,916)	730,560	1,388	758,704	0	0	0	0	0	0
1991	0	15,209	34,774	163,913	394	214,290	0	0	0	0	0	0
1992	0	13,989	(17,451)	338,249	423	335,210	0	0	0	0	0	0
1993	0	9,779	(3,455)	255,117	443	261,884	0	0	0	0	0	0
1994	0	150	3,395	409,928	430	413,903	0	0	0	0	0	0
1995	0	6,820	(29,282)	328,882	427	306,847	0	0	0	0	0	0
1996	0	9,514	(11,410)	424,252	565	422,921	0	0	0	0	0	0
1997	0	(1,124)	38,960	461,563	507	499,906	0	0	0	0	0	0
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)	(7,795)	864,334	449	833,692	0	4,896	(7,795)	854,315	449	851,865
2001	0	(12,304)	7,106	635,468	430	630,700	0	7,403	7,106	632,420	430	647,359
2002	0	17,689	(447)	932,223	1,430	950,895	0	14,219	(447)	915,170	1,430	930,372
2003	0	17,694	(447)	1,070,709	1,430	1,089,386	0	14,224	(447)	1,055,709	1,430	1,070,916
2004	0	17,696	20,133	1,090,591	1,430	1,129,850	0	14,226	20,133	1,070,591	1,430	1,106,380
2005	0	15,766	(11,777)	1,097,751	1,430	1,103,170	0	12,296	(11,777)	1,072,751	1,430	1,074,700
2006	0	15,451	(25,870)	1,047,705	1,430	1,038,716	0	11,981	(25,870)	1,017,705	1,430	1,005,246
2007	0	15,544	25,284	1,016,007	1,430	1,058,265	0	12,074	25,284	940,207	1,430	978,995
2008	0	15,650	(934)	1,025,807	1,430	1,041,953	0	12,180	(934)	950,007	1,430	962,683
2009	0	15,555	(9,404)	1,025,807	1,430	1,033,388	0	12,085	(9,404)	950,007	1,430	954,118
2010	0	15,651	3,921	1,025,807	1,430	1,046,809	0	12,181	3,921	950,007	1,430	967,539
2011	0	15,621	26,001	1,025,807	1,430	1,068,859	0	12,151	26,001	950,007	1,430	989,589
2012	0	15,612	(41,797)	1,025,807	1,430	1,001,052	0	12,142	(41,797)	950,007	1,430	921,782
2013	0	15,485	4,742	1,025,807	1,430	1,047,464	0	12,015	4,742	950,007	1,430	968,194
2014	0	15,652	2,759	1,025,807	1,430	1,045,648	0	12,182	2,759	950,007	1,430	966,378
2015	0	15,716	22,604	1,025,807	1,430	1,065,557	0	12,246	22,604	950,007	1,430	986,287
2016	0	15,479	(21,084)	1,025,807	1,430	1,021,632	0	12,009	(21,084)	950,007	1,430	942,362
2017	0	15,545	33,266	1,025,807	1,430	1,076,048	0	12,075	33,266	950,007	1,430	996,778
2018	0	15,648	(50,078)	1,025,807	1,430	992,807	0	12,178	(50,078)	950,007	1,430	913,537
2019	0	15,574	31,508	1,025,807	1,430	1,074,319	0	12,104	31,508	950,007	1,430	995,049
2020	0	15,597	(3,398)	1,025,807	1,430	1,039,436	0	12,127	(3,398)	950,007	1,430	960,166
2021	0	15,596	(1,117)	1,025,807	1,430	1,041,716	0	12,126	(1,117)	950,007	1,430	962,446
2022	0	15,590	(3,434)	1,025,807	1,430	1,039,393	0	12,120	(3,434)	950,007	1,430	960,123
2023	0	15,589	(18,638)	1,025,807	1,430	1,024,188	0	12,119	(18,638)	950,007	1,430	944,918
2024	0	15,531	21,309	1,025,807	1,430	1,064,077	0	12,061	21,309	950,007	1,430	984,807
2025	0	15,615	(11,624)	1,025,807	1,430	1,031,228	0	12,145	(11,624)	950,007	1,430	951,958
2026	0	15,580	13,030	1,025,807	1,430	1,055,847	0	12,110	13,030	950,007	1,430	976,577
2027	0	15,511	(6,161)	1,025,807	1,430	1,036,587	0	12,041	(6,161)	950,007	1,430	957,317
2028	0	15,611	4,006	1,025,807	1,430	1,046,854	0	12,141	4,006	950,007	1,430	967,584
2029	0	15,605	(913)	1,025,807	1,430	1,041,929	0	12,135	(913)	950,007	1,430	962,659
2030	0	15,580	8,528	1,025,807	1,430	1,051,345	0	12,110	8,528	950,007	1,430	972,075
2031	0	15,606	(31,057)	1,025,807	1,430	1,011,786	0	12,136	(31,057)	950,007	1,430	932,516
2032	0	15,515	43,953	1,025,807	1,430	1,086,705	0	12,045	43,953	950,007	1,430	1,007,435
2033	0	15,504	(37,929)	1,025,807	1,430	1,004,812	0	12,034	(37,929)	950,007	1,430	925,542
2034	0	15,419	28,588	1,025,807	1,430	1,071,244	0	11,949	28,588	950,007	1,430	991,974
2035	0	15,542	(49,219)	1,025,807	1,430	993,560	0	12,072	(49,219)	950,007	1,430	914,290

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	Santa Ana Division						West Branch, California Aqueduct					
	Devil Canyon Power Plant						Oso Pumping Plant					
	Initial Fill Water (75)	Operational Losses (76)	Reservoir Storage Changes (77)	Deliveries		Total (80)	Initial Fill Water (81)	Operational Losses (82)	Reservoir Storage Changes (83)	Deliveries		Total (86)
				Water Supply (78)	Recreation (79)					Water Supply (84)	Recreation (85)	
1961	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	2,444	133	0	0	0	2,577
1972	37	0	0	1,275	0	1,312	63,883	6,557	(6,405)	71,991	6,481	142,507
1973	40,848	14,745	0	51,812	0	107,405	124,461	16,995	4,029	155,317	1,075	301,877
1974	74,666	8,367	(4,925)	102,198	0	180,306	160,860	12,702	(4,146)	209,172	2,064	380,652
1975	10,000	1,995	(6,719)	189,526	0	194,802	93,352	23,008	7,704	374,306	3,288	501,658
1976	4,168	5,180	(9,182)	235,711	23	235,900	56,954	15,845	(136,116)	420,708	1,429	358,820
1977	0	8,082	(5,235)	101,137	469	104,453	0	4,407	(98,685)	122,447	(20)	28,149
1978	14,820	3,754	21,686	373,636	481	414,377	45,105	9,061	52,774	171,139	176	278,255
1979	12,302	5,620	(27,107)	356,854	485	348,154	0	25,355	(18,781)	145,598	0	152,172
1980	0	9,468	12,714	395,975	742	418,899	0	24,576	(140,168)	165,931	481	50,820
1981	0	8,401	(23,448)	569,088	807	554,848	0	15,894	59,637	283,264	3,179	361,974
1982	0	6,038	44,443	395,164	1,798	447,443	0	24,608	60,024	360,878	2,126	447,636
1983	0	8,717	5,188	230,277	1,078	245,260	0	24,848	(111,454)	166,995	6,111	86,500
1984	0	12,855	(844)	250,938	1,414	264,363	0	10,814	(135,030)	272,101	3,750	151,635
1985	0	14,327	34,679	349,336	956	399,298	0	28,389	142,450	403,097	3,728	577,664
1986	0	9,486	8,339	392,650	1,378	411,853	0	22,387	25,288	393,203	1,777	442,655
1987	0	7,923	(11,335)	375,451	1,118	373,157	0	18,164	(10,252)	433,452	5,698	447,062
1988	0	11,090	2,238	499,285	861	513,474	0	20,461	(30,848)	507,169	3,389	500,171
1989	0	13,116	(5,487)	658,730	1,301	667,660	0	27,914	(40,463)	611,681	6,083	605,215
1990	0	13,439	(4,622)	728,723	1,281	738,821	0	33,666	(9,176)	791,355	7,491	823,336
1991	0	10,836	18,308	161,032	340	190,516	0	16,460	70,754	263,909	4,166	355,289
1992	0	9,157	(9,084)	328,354	371	328,798	0	8,238	(75,008)	435,661	1,572	370,463
1993	0	5,602	5,593	244,678	364	256,237	0	2,674	(124,283)	451,263	1,233	330,887
1994	0	10,915	(11,045)	393,690	357	393,917	0	18,688	(91,606)	490,819	2,488	420,389
1995	0	11,268	2,331	320,978	358	334,935	0	21,775	14,330	157,629	1,242	194,976
1996	0	9,496	13,015	417,656	494	440,661	0	30,121	26,848	286,066	2,363	345,398
1997	0	8,087	(19,685)	451,874	416	440,692	0	30,468	1,892	323,212	1,569	357,141
1998	0	6,700	16,643	332,198	310	355,851	0	26,851	(122,848)	208,916	1,222	114,141
1999	0	9,784	(4,177)	497,787	341	503,735	0	24,390	6,979	357,664	2,883	391,916
2000	0	7,407	(11,040)	853,121	375	849,863	0	33,658	18,198	668,126	3,767	723,749
2001	0	9,324	8,183	631,363	354	649,224	0	23,892	(22,308)	477,315	757	479,656
2002	0	10,036	(447)	911,400	1,250	922,239	0	16,804	71	731,733	5,380	753,988
2003	0	10,041	(447)	1,049,909	1,250	1,060,753	0	17,367	71	779,217	5,380	802,035
2004	0	10,041	4,466	1,064,791	1,250	1,080,548	0	17,367	56,428	790,831	5,380	870,006
2005	0	8,561	(16,027)	1,066,951	1,250	1,060,735	0	14,283	(47,610)	822,069	5,380	794,122
2006	0	8,512	(9,315)	1,011,905	1,250	1,012,352	0	14,216	(11,118)	824,070	5,380	832,548
2007	0	8,531	6,931	934,407	1,250	951,119	0	14,240	(2,770)	1,082,393	5,380	1,099,243
2008	0	8,481	(2,332)	944,207	1,250	951,606	0	14,263	7,919	1,082,393	5,380	1,109,955
2009	0	8,508	3,506	944,207	1,250	957,471	0	14,255	(5,782)	1,082,393	5,380	1,096,246
2010	0	8,504	10,523	944,207	1,250	964,484	0	14,255	367	1,082,393	5,380	1,102,395
2011	0	8,519	1,352	944,207	1,250	955,328	0	14,476	38,677	1,090,568	5,380	1,149,101
2012	0	8,482	(22,894)	944,207	1,250	931,045	0	14,375	(26,146)	1,092,393	5,380	1,086,002
2013	0	8,499	16,733	944,207	1,250	970,689	0	14,440	5,007	1,092,393	5,380	1,117,220
2014	0	8,522	(4,585)	944,207	1,250	949,394	0	14,581	13,866	1,092,393	5,380	1,126,220
2015	0	8,499	2,964	944,207	1,250	956,920	0	14,646	9,399	1,092,393	5,380	1,121,818
2016	0	8,483	(1,269)	944,207	1,250	952,671	0	14,583	(7,317)	1,092,393	5,380	1,105,039
2017	0	8,502	9,828	944,207	1,250	963,787	0	14,749	28,043	1,092,393	5,380	1,140,565
2018	0	8,484	(19,777)	944,207	1,250	934,164	0	14,800	(30,739)	1,092,393	5,380	1,081,834
2019	0	8,492	17,408	944,207	1,250	971,357	0	14,698	18,671	1,092,393	5,380	1,131,142
2020	0	8,483	(17,305)	944,207	1,250	936,635	0	14,739	3,032	1,092,393	5,380	1,115,544
2021	0	8,486	(398)	944,207	1,250	953,545	0	14,823	11,842	1,092,393	5,380	1,124,438
2022	0	8,486	13,735	944,207	1,250	967,678	0	14,823	(49)	1,092,393	5,380	1,112,547
2023	0	8,482	(8,417)	944,207	1,250	945,522	0	14,815	(333)	1,092,393	5,380	1,112,255
2024	0	8,462	689	944,207	1,250	954,608	0	14,752	(10,020)	1,092,393	5,380	1,102,505
2025	0	8,489	4,591	944,207	1,250	958,537	0	14,731	(894)	1,092,393	5,380	1,111,610
2026	0	8,475	(3,819)	944,207	1,250	950,113	0	14,778	11,278	1,092,393	5,380	1,123,829
2027	0	8,479	745	944,207	1,250	954,681	0	14,760	(11,638)	1,092,393	5,380	1,100,895
2028	0	8,481	(5,355)	944,207	1,250	948,583	0	14,800	8,285	1,092,393	5,380	1,120,858
2029	0	8,481	2,909	944,207	1,250	956,847	0	14,733	(8,133)	1,092,393	5,380	1,104,373
2030	0	8,480	296	944,207	1,250	954,233	0	14,822	12,228	1,092,393	5,380	1,124,823
2031	0	8,475	(1,976)	944,207	1,250	951,956	0	14,668	(66,669)	1,092,393	5,380	1,045,772
2032	0	8,449	18,821	944,207	1,250	972,727	0	14,361	41,046	1,092,393	5,380	1,153,180
2033	0	8,449	(23,419)	944,207	1,250	930,487	0	14,577	(56,723)	1,092,393	5,380	1,055,627
2034	0	8,443	21,651	944,207	1,250	975,551	0	14,154	41,005	1,092,393	5,380	1,152,932
2035	0	8,451	(31,434)	944,207	1,250	922,474	0	13,371	(193,440)	1,092,393	5,380	917,704

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)											
	West Branch, California Aqueduct (continued)											
	Warne Power Plant						Castaic Power Plant					
	Initial Fill Water (87)	Operational Losses (88)	Reservoir Storage Changes (89)	Deliveries		Total (92)	Initial Fill Water (93)	Operational Losses (94)	Reservoir Storage Changes (95)	Deliveries		Total (98)
				Water Supply (90)	Recreation (91)					Water Supply (96)	Recreation (97)	
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	16,023	59,637	283,264	3,179	362,103	0	(44,416)	47,244	283,264	2,704	288,796
1982	0	24,407	60,024	360,878	2,126	447,435	0	(60,135)	59,069	360,878	1,187	360,999
1983	0	22,247	(111,454)	166,995	6,111	83,899	0	(45,537)	(85,106)	166,995	2,618	38,970
1984	0	11,287	(135,030)	272,101	3,750	152,108	0	(31,996)	(137,166)	272,101	3,468	106,407
1985	0	28,201	142,450	403,097	3,728	577,476	0	(5,677)	135,558	403,097	2,233	535,211
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	22,963	6,979	357,664	2,883	390,489	0	(2,529)	5,139	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	16,745	(22,308)	477,315	757	472,509	0	(6,608)	(16,588)	477,315	744	454,863
2002	0	14,894	71	731,733	5,380	752,078	0	9,169	71	731,733	2,330	743,303
2003	0	15,457	71	779,217	5,380	800,125	0	9,732	71	776,067	2,330	788,200
2004	0	15,457	56,428	790,831	5,380	868,096	0	9,732	56,428	787,681	2,330	856,171
2005	0	12,373	(47,610)	822,069	5,380	792,212	0	6,088	(47,610)	818,919	2,330	779,727
2006	0	12,306	(11,118)	824,070	5,380	830,638	0	6,021	(11,118)	820,920	2,330	818,153
2007	0	12,330	(2,770)	1,082,393	5,380	1,097,333	0	6,045	(2,770)	1,079,243	2,330	1,084,848
2008	0	12,353	7,919	1,082,393	5,380	1,108,045	0	6,068	7,919	1,079,243	2,330	1,095,560
2009	0	12,345	(5,782)	1,082,393	5,380	1,094,336	0	6,060	(5,782)	1,079,243	2,330	1,081,851
2010	0	12,345	367	1,082,393	5,380	1,100,485	0	6,060	367	1,079,243	2,330	1,088,000
2011	0	12,566	38,677	1,090,568	5,380	1,147,191	0	6,281	38,677	1,087,418	2,330	1,134,706
2012	0	12,465	(26,146)	1,092,393	5,380	1,084,092	0	6,180	(26,146)	1,089,243	2,330	1,071,607
2013	0	12,530	5,007	1,092,393	5,380	1,115,310	0	6,245	5,007	1,089,243	2,330	1,102,825
2014	0	12,671	13,866	1,092,393	5,380	1,124,310	0	6,386	13,866	1,089,243	2,330	1,111,825
2015	0	12,736	9,399	1,092,393	5,380	1,119,908	0	6,451	9,399	1,089,243	2,330	1,107,423
2016	0	12,673	(7,317)	1,092,393	5,380	1,103,129	0	6,388	(7,317)	1,089,243	2,330	1,090,644
2017	0	12,839	28,043	1,092,393	5,380	1,138,655	0	6,554	28,043	1,089,243	2,330	1,126,170
2018	0	12,890	(30,739)	1,092,393	5,380	1,079,924	0	6,605	(30,739)	1,089,243	2,330	1,067,439
2019	0	12,788	18,671	1,092,393	5,380	1,129,232	0	6,503	18,671	1,089,243	2,330	1,116,747
2020	0	12,829	3,032	1,092,393	5,380	1,113,634	0	6,544	3,032	1,089,243	2,330	1,101,149
2021	0	12,913	11,842	1,092,393	5,380	1,122,528	0	6,628	11,842	1,089,243	2,330	1,110,043
2022	0	12,913	(49)	1,092,393	5,380	1,110,637	0	6,628	(49)	1,089,243	2,330	1,098,152
2023	0	12,905	(333)	1,092,393	5,380	1,110,345	0	6,620	(333)	1,089,243	2,330	1,097,860
2024	0	12,842	(10,020)	1,092,393	5,380	1,100,595	0	6,557	(10,020)	1,089,243	2,330	1,088,110
2025	0	12,821	(894)	1,092,393	5,380	1,109,700	0	6,536	(894)	1,089,243	2,330	1,097,215
2026	0	12,868	11,278	1,092,393	5,380	1,121,919	0	6,583	11,278	1,089,243	2,330	1,109,434
2027	0	12,850	(11,638)	1,092,393	5,380	1,098,985	0	6,565	(11,638)	1,089,243	2,330	1,086,500
2028	0	12,890	8,285	1,092,393	5,380	1,118,948	0	6,605	8,285	1,089,243	2,330	1,106,463
2029	0	12,823	(8,133)	1,092,393	5,380	1,102,463	0	6,538	(8,133)	1,089,243	2,330	1,089,978
2030	0	12,912	12,228	1,092,393	5,380	1,122,913	0	6,627	12,228	1,089,243	2,330	1,110,428
2031	0	12,758	(66,669)	1,092,393	5,380	1,043,862	0	6,473	(66,669)	1,089,243	2,330	1,031,377
2032	0	12,451	41,046	1,092,393	5,380	1,151,270	0	6,166	41,046	1,089,243	2,330	1,138,785
2033	0	12,667	(56,723)	1,092,393	5,380	1,053,717	0	6,382	(56,723)	1,089,243	2,330	1,041,232
2034	0	12,244	41,005	1,092,393	5,380	1,151,022	0	5,959	41,005	1,089,243	2,330	1,138,537
2035	0	11,461	(193,440)	1,092,393	5,380	915,794	0	5,176	(193,440)	1,089,243	2,330	903,309

Table B-6

Annual Water Quantities Conveyed through Each Pumping and Power Recovery Plant of Project Transportation Facilities

(Acre-Feet)

Calendar Year	California Aqueduct (continued)							
	Coastal Branch, California Aqueduct							
	Las Perillas and Badger Hill Pumping Plants				Devil's Den, Bluestone, and Polonio Pass Pumping Plants			
	Initial Fill Water (99)	Operational Losses (100)	Water Supply Delivery (101)	Total (102)	Initial Fill Water (103)	Operational Losses (104)	Water Supply Delivery (105)	Total (106)
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	210	873	79,039	80,122	0	0	0	0
1969	0	1,042	62,064	63,106	0	0	0	0
1970	0	638	83,649	84,287	0	0	0	0
1971	0	3,455	110,971	114,426	0	0	0	0
1972	0	1,745	121,755	123,500	0	0	0	0
1973	0	5,479	78,645	84,124	0	0	0	0
1974	0	7,344	78,174	85,518	0	0	0	0
1975	0	5,819	85,216	91,035	0	0	0	0
1976	0	6,562	90,058	96,620	0	0	0	0
1977	0	5,777	40,579	46,356	0	0	0	0
1978	0	9,085	92,604	101,689	0	0	0	0
1979	0	10,896	123,155	134,051	0	0	0	0
1980	0	9,449	111,379	120,828	0	0	0	0
1981	0	13,232	109,754	122,986	0	0	0	0
1982	0	7,984	95,776	103,760	0	0	0	0
1983	0	5,690	100,518	106,208	0	0	0	0
1984	0	5,740	131,839	137,579	0	0	0	0
1985	0	7,563	122,223	129,786	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	0	23,880	23,880
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	802	128,059	128,861	0	212	50,054	50,266
2003	0	802	152,986	153,788	0	212	70,486	70,698
2004	0	802	152,986	153,788	0	212	70,486	70,698
2005	0	802	152,986	153,788	0	212	70,486	70,698
2006	0	802	152,986	153,788	0	212	70,486	70,698
2007	0	802	195,586	196,388	0	212	70,486	70,698
2008	0	802	195,586	196,388	0	212	70,486	70,698
2009	0	802	195,586	196,388	0	212	70,486	70,698
2010	0	802	195,586	196,388	0	212	70,486	70,698
2011	0	802	187,411	188,213	0	212	70,486	70,698
2012	0	802	185,586	186,388	0	212	70,486	70,698
2013	0	802	185,586	186,388	0	212	70,486	70,698
2014	0	802	185,586	186,388	0	212	70,486	70,698
2015	0	802	185,586	186,388	0	212	70,486	70,698
2016	0	802	185,586	186,388	0	212	70,486	70,698
2017	0	802	185,586	186,388	0	212	70,486	70,698
2018	0	802	185,586	186,388	0	212	70,486	70,698
2019	0	802	185,586	186,388	0	212	70,486	70,698
2020	0	802	185,586	186,388	0	212	70,486	70,698
2021	0	802	185,586	186,388	0	212	70,486	70,698
2022	0	802	185,586	186,388	0	212	70,486	70,698
2023	0	802	185,586	186,388	0	212	70,486	70,698
2024	0	802	185,586	186,388	0	212	70,486	70,698
2025	0	802	185,586	186,388	0	212	70,486	70,698
2026	0	802	185,586	186,388	0	212	70,486	70,698
2027	0	802	185,586	186,388	0	212	70,486	70,698
2028	0	802	185,586	186,388	0	212	70,486	70,698
2029	0	802	185,586	186,388	0	212	70,486	70,698
2030	0	802	185,586	186,388	0	212	70,486	70,698
2031	0	802	185,586	186,388	0	212	70,486	70,698
2032	0	802	185,586	186,388	0	212	70,486	70,698
2033	0	802	185,586	186,388	0	212	70,486	70,698
2034	0	802	185,586	186,388	0	212	70,486	70,698
2035	0	802	185,586	186,388	0	212	70,486	70,698

Table B-7

Reconciliation of Capital Costs Allocated to Water Supply and Power Generation

(Thousands of Dollars)

Item	Project Costs Allocated to Water Supply and Power Generation							Capital Costs Allocated to Other Purposes (8)	Total State Water Project Capital Cost (9)
	Miscellaneous Income Credited to Construction[a] (1)	Allowance for Future Price Escalation[b] (2)	Costs of Construction of Delivery Structures[c] (3)	Costs of Requested Excess Capacity and Future Enlargement[d] (4)	Capital Cost Component of Delta Water Charge[e] (5)	Capital Cost Component of Transportation Water Charge[f] (6)	Water Supply and Power Total (7)		
Conservation Facilities									
Upper Feather Division									
Frenchman Dam and Lake	180	0	0	0	604	0	784	2,888	3,672
Grizzly Valley Dam and Lake Davis	65	0	0	0	39	0	104	7,378	7,482
Antelope Dam and Lake	1	0	0	0	0	0	1	5,534	5,535
Abbey Bridge Dam and Reservoir	0	0	0	0	0	0	0	519	519
Dixie Refuge Dam and Reservoir	0	0	0	0	0	0	0	236	236
Total, Upper Feather Division	246	0	0	0	643	0	889	16,555	17,444
Oroville Division									
Multipurpose Facilities	3,152	0	0	0	375,902	0	379,054	90,795	469,849
Specific Power Facilities	230	0	0	0	98,684	0	98,914	6,850	105,764
Total, Oroville Division	3,382	0	0	0	474,586	0	477,968	97,645	575,613
California Aqueduct									
North San Joaquin Division	1,210	0	0	0	79,128	0	80,338	2,880	83,218
San Luis Division	13,152	0	0	0	104,610	0	117,762	3,827	121,589
Total, California Aqueduct	14,362	0	0	0	183,738	0	198,100	6,707	204,807
Delta Facilities	37,311	0	0	0	259,464	0	296,775	42,268	339,043
Planning and Pre-operation	5,302	0	0	0	86,855	0	92,157	0	92,157
Total, Conservation Facilities	60,603	0	0	0	1,005,286	0	1,065,889	163,175	1,229,064
Transportation Facilities									
Upper Feather Division									
Grizzly Valley Pipeline	0	0	181	0	0	342	523	0	523
North Bay Aqueduct	266	0	676	0	0	93,125	94,067	0	94,067
South Bay Aqueduct	1,955	0	1,813	0	0	57,461	61,229	21,466	82,695
California Aqueduct									
North San Joaquin Division	2,469	0	57	0	0	176,899	179,425	6,417	185,842
San Luis Division	9,439	0	0	0	0	128,207	137,646	6,513	144,159
South San Joaquin Division	2,058	0	3,590	2,093	0	287,119	294,860	17,329	312,189
Tehachapi Division	177	0	0	5,230	0	303,764	309,171	18,290	327,461
Mojave Division	1,271	0	735	0	0	282,138	284,144	37,941	322,085
Santa Ana Division	1,343	0	10,653	5,331	0	206,451	223,778	31,396	255,174
West Branch	40,137	0	440	37	0	468,711	509,325	31,326	540,651
Coastal Branch	(279)	0	93	0	0	479,517	479,331	0	479,331
Total, California Aqueduct	56,615	0	15,568	12,691	0	2,332,806	2,417,680	149,212	2,566,892
Total, Transportation Facilities	58,836	0	18,238	12,691	0	2,483,734	2,573,499	170,678	2,744,177
East Branch Enlargement	0	0	0	0	0	449,053	449,053	0	449,053
East Branch Extension	21	0	0	0	0	124,646	124,667	0	124,667
Coastal Branch Extension	0	0	0	0	0	32,680	32,680	0	32,680
San Joaquin Drainage Facilities	69	0	0	0	0	0	69	90,861	90,930
Off-Aqueduct Power Generation Facilities	0	0	0	0	0	465,732	465,732	0	465,732
Small Hydro Power Generation Facilities	0	0	0	0	14,095	90,103	104,198	0	104,198
Land Purchase - Kern Water Bank	0	0	0	0	34,686	0	34,686	0	34,686
Unassigned/Miscellaneous	0	0	0	0	19,326	0	19,326	44,529	63,855
Davis - Grunsky	0	0	0	0	0	0	0	130,000	130,000
Total through 2015	119,529	0	18,238	12,691	1,073,393	3,645,948	4,869,799	599,243	5,469,042

[a] Miscellaneous project receipts that are applied for accounting purposes to reduce the capital costs of the particular facilities.
[b] These allowances are included for planning the future financial program, but not for determining current water charges. The costs shown in this appendix are based on prices prevailing on December 31, 2001.
[c] See Table B-8.
[d] See Table B-9.
[e] See Table B-13. A portion of these costs will be offset by power generation sales and credits. Planning and Preoperation line item includes $50,534.00 of planning costs financed from Systems Revenues and not included in Table 14-3. Planning and Preoperation total does not include $16,389,000 of projected costs that are included in Table 14-3. Delta Facilities total costs does not include $49,814,000 of projected costs that are included in Table 14-3. Unassigned/Miscellaneous total does not include $18,174,000 of costs that are included in Table 14-3.
[f] See Table B-10. Mojave Division total reduced by $90,103,000 for costs included in Small-Hydro Power Generation Facilities line.

Table B-8

State Water Project Capital Costs of Requested Delivery Structures

(Dollars)

Project Service Area and Water Supply Contractor	Calendar Year Capital Costs[a]						Total
	1952-1999 (1)	2000 (2)	2001 (3)	2002 (4)	2003 (5)	2004 (6)	(7)
Feather River Area							
County of Butte	136,546	0	0	0	60,000	0	196,546
Plumas County Flood Control and Water Conservation District	645	0	0	0	0	0	645
Thermalito Irrigation District[b]	43,939	0	0	0	0	0	43,939
Subtotal	181,130	0	0	0	60,000	0	241,130
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	268,698	14,549	27,234	124,306	5,000	0	439,787
Alameda County Water District	232,484	0	0	37,100	15,000	0	284,584
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	1,589,362	14,549	27,234	161,406	20,000	0	1,812,551
Central Coastal Area							
San Luis Obispo County Flood Control and Water Conservation District	26,204	0	0	0	0	0	26,204
Santa Barbara County Flood Control and Water Conservation District	67,058	0	0	0	0	0	67,058
Subtotal	93,262	0	0	0	0	0	93,262
San Joaquin Valley Area							
Castaic Lake Water Agency	82,567	0	0	0	0	0	82,567
Dudley Ridge Water District	304,541	0	0	0	30,000	0	334,541
Empire West Side Irrigation District	6,358	0	0	0	0	0	6,358
Green Valley Water District[c]	5,292	0	0	0	0	0	5,292
Kern County Water Agency	2,831,252	36,202	91,022	13,300	0	0	2,971,776
Oak Flat Water District	46,882	0	0	0	0	0	46,882
Tracy Golf and Country Club[c]	1,028	3,659	2,245	0	0	0	6,932
Tulare Lake Basin Water Storage District	277,483	0	0	0	0	0	277,483
Veterans Administration Cemetery[b]	3,342	0	0	0	0	0	3,342
Subtotal	3,558,745	39,861	93,267	13,300	30,000	0	3,735,173
Southern California Area							
Antelope Valley-East Kern Water Agency	400,663	2,219	0	0	0	0	402,882
Castaic Lake Water Agency	354,745	0	0	0	0	0	354,745
Coachella Valley Water District	14,206	0	0	0	0	0	14,206
Crestline-Lake Arrowhead Water Agency	25,298	0	0	0	0	0	25,298
Desert Water Agency	23,438	0	0	0	0	0	23,438
Littlerock Creek Irrigation District	23,732	0	0	0	0	0	23,732
Mojave Water Agency	211,765	0	0	0	0	0	211,765
Palmdale Water District	34,173	0	0	0	0	0	34,173
San Bernardino Valley Municipal Water District	823,030	129,224	0	10,750	0	0	963,004
San Gabriel Valley Municipal Water District	131,052	0	0	0	0	0	131,052
San Gorgonio Pass Water Agency	66,530	0	0	0	0	0	66,530
The Metropolitan Water District of Southern California	4,804,760	8,696	622	0	5,000	0	4,819,078
Ventura County Flood Control District	79,699	0	0	0	0	0	79,699
Subtotal	6,993,091	140,139	622	10,750	5,000	0	7,149,602
Total	13,091,293	194,549	121,123	185,456	115,000	0	13,707,421

[a]Approximate only, not to be construed as invoice amounts.
[b]Not an SWP water supply contractor.
[c]Not an SWP water supply contractor, but has contracted for water.

Table B-9

Capital Costs of Requested Excess Peaking Capacity

(Dollars)

Calendar Year	Total Advance Payments and Credits for Excess Capacity (1)	Incremental Costs for Excess Capacity (2)	Overpayment (+) or Underpayment (-)[a] (3)	Annual Surplus Money Investment Fund Interest Rate[b] January-June (4)	Annual Surplus Money Investment Fund Interest Rate[b] July-December (5)	Net Over or Underpayment With Interest[c] (6)
	Metropolitan Water District of Southern California					
1965	0	158,000	(158,000)	3.968%	4.184%	(163,412)
1966	8,056,000	435,800	7,620,200	4.540%	5.057%	7,701,103
1967	9,094,963	1,878,270	7,216,693	4.815%	4.744%	15,524,533
1968	1,523,252	2,887,351	(1,364,099)	5.330%	5.540%	14,959,187
1969	8,310,651	3,059,310	5,251,341	5.946%	6.389%	21,369,973
1970	3,426,736	2,397,102	1,029,634	7.071%	7.125%	23,986,083
1971	1,086,045	1,146,648	(60,603)	5.154%	5.580%	25,238,017
1972	(4,244,807)	487,394	(4,732,201)	4.477%	4.977%	21,532,965
1973	(15,913,829)	25,041	(15,938,870)	6.023%	8.717%	6,014,116
1974	0	37,775	(37,775)	9.222%	10.351%	6,576,393
1975	0	2,085	(2,085)	7.089%	6.791%	7,038,515
1976	0	0	0	6.048%	6.021%	7,469,662
1977	0	0	0	5.788%	6.182%	7,923,403
1978	0	0	0	7.171%	8.096%	8,539,736
1979	0	0	0	8.979%	9.671%	9,354,605
1980	0	0	0	11.500%	11.500%	10,461,314
Total	11,339,011	12,514,776	(1,175,765)	-	-	10,461,314
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
1968	85,495	1,645	83,850	5.330%	5.540%	86,962
1969	52,625	6,326	46,299	5.946%	6.389%	140,964
1970	101,648	15,076	86,572	7.071%	7.125%	243,222
1971	34,062	11,748	22,314	5.154%	5.580%	279,673
1972	(12,794)	2,018	(14,812)	4.477%	4.977%	277,552
1973	(205,354)	308	(205,662)	6.023%	8.717%	77,288
1974	0	96	(96)	9.222%	10.351%	84,933
1975	0	0	0	7.089%	6.791%	90,929
1976	0	190	(190)	6.048%	6.021%	96,300
1977	0	0	0	5.788%	6.182%	102,150
1978	0	0	0	7.171%	8.096%	110,096
1979	0	0	0	8.979%	9.671%	120,601
1980	0	0	0	11.500%	11.500%	134,869
Total	55,682	37,407	18,275	-	-	134,869

[a]Overpayment or underpayment for each calendar year - column (1) minus column (2).
[b]Interest rates shown are annual rates. Interest is credited daily at applicable rates on funds deposited in the State's Surplus Money Investment Fund.
[c]Amounts shown are end-of-year balances. Interest on overpayments is credited at applicable Surplus Money Investment Fund Interest Rates shown in columns (4) and (5). Interest on underpayments is charged at the 1980 Project Interest Rate of 4.584 percent.

Table B-9

Capital Costs of Requested Excess Peaking Capacity

(Dollars)

Reach Number	Annual Required Advance Of Funds — Incremental Costs and Advance Payments by Calendar Year: 1965 (7)	1966 (8)	1967 (9)	1968 (10)	1969 (11)	1970 (12)	1971 (13)	1972 (14)	1973 (15)	1974 (16)	1975 (17)	1976 (18)	1981 (19)	Reach Total (20)
	Metropolitan Water District of Southern California													
	Incremental Costs													
8C		1,000	1,000											2,000
8D		43,500	43,500											87,000
9		27,000	27,000	13,500										67,500
10A		29,700	29,700	14,800										74,200
11B	10,100	18,300	18,300	9,200										55,900
12D	1,800		19,300	25,800	12,900									59,800
12E	1,800		12,400	18,800	10,800									43,800
13B			12,600	37,800	31,600									82,000
14A	2,500	500	11,100	80,216	107,504	124,069	37,519	6,413	381	87				370,289
14B	1,200	1,800		19,100	19,100	12,800								54,000
14C	1,800	900		13,500	13,500	9,000								38,700
15A	700		14,000	66,947	133,357	128,099	54,821	5,327	946	2,076				406,273
16A	700		18,900	137,894	182,000	211,608	133,927	26,203	5,767	6,156				723,155
17E		51,500	444,600	537,247	860,024	998,985	699,281	193,286	17,947	29,456	2,085			3,834,411
17F	109,100	261,600	261,600	261,600	261,600	239,500								1,395,000
25			964,270	1,650,947	1,426,925	673,041	221,100	256,165						5,192,448
28J		304,612	13,706	296,668	65,966	230,169	1,209,586	2,017,134	235,900	4,900				4,378,641
Total	129,700	740,412	1,891,976	3,184,019	3,125,276	2,627,271	2,356,234	2,504,528	260,941	42,675	2,085			16,865,117
	Current Adjustment													
8C through 25	1. Advance Payments Applied to Incremental Costs Amendment 2[d]													
	0	8,056,000	9,094,963	1,523,252	8,310,651	3,426,736	1,086,045	(4,244,807)	(14,381,396)				(356,668)	12,514,778
	2. Interest Credits-Amendment 2[e]													
28J									(1,532,433)				(10,104,646)	(11,637,079)
	3. Advance Payments Applied to Incremental Costs Amendment 5[f]													
	0	1,240,000	1,483,180	2,469,325	(927,035)	1,729,160	3,215,258	2,967,475	1,690,000	(9,488,722)				4,378,641
	4. Interest Credits-Amendment 5[g]													
										(2,721,803)				(2,721,803)
	5. Net Required Advance of Funds													
	0	9,296,000	10,578,143	3,992,577	7,383,616	5,155,896	4,301,303	(1,277,32)	(14,233,829)	(12,210,545)			(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 Adjustment													
	1. Advance Payments Applied to Incremental Costs[d]													
			0	184,422	49,052	44,911	61,588	(20,263)	(174,133)				(7,025)	138,552
	2. Interest Credit													
									(6,332)				(79,108)	(85,440)
	3. Net Required Advance of Funds													
			0	184,422	49,052	44,911	61,588	(20,263)	(180,465)				(86,133)[h]	53,112
	Antelope Valley-East Kern Water Agency													
	Incremental Costs													
29A				1,645	6,326	13,376	10,048	2,018	308	96	190			34,007
29F						1,700	1,700							3,400
	Total Unadjusted Incremental Costs for Past Payments													
				1,645	6,326	13,376	10,048	2,018	308	96	190			37,407
	Current Adjustment													
	1. Advance Payments Applied to Incremental Costs[d]													
				85,495	52,625	101,648	34,062	(12,794)	(189,120)	0		0	(34,509)	37,407
	2. Interest Credit													
									(16,234)				(100,360)	(116,594)
	3. Net Required Advance of Funds													
				85,495	52,625	101,648	34,062	(12,794)	(205,354)	0		0	(134,869)[h]	(79,187)

[d] Actual payments are shown for 1965 through 1976, with 1981 adjusted to reflect overpayments and underpayments without interest for prior years.
[e] Interest for overpayments and underpayments under provisions of Amendment 2 of the contract.
[f] Actual payments are shown for 1965 through 1973, with 1974 adjusted to reflect overpayments and underpayments without interest for prior years.
[g] Interest for overpayments and underpayments under provisions of Amendment 5 of the contract.
[h] Amounts in excess of incremental costs, under the provisions of the contract, reduce the Transportation Charge capital cost component of the Agency's Statement of Charges for January 1981.

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	Upper Feather Division (1)	North Bay Aqueduct					South Bay Aqueduct			
		Reach 1 (2)	Reach 2 (3)	Reach 3A (4)	Reach 3B (5)	Total (6)	Reach 1 (7)	Reach 2 (8)	Reach 4 (9)	Reach 5 (10)
1952	0	0	0	0	0	0	97	34	30	57
1953	0	0	0	0	0	0	477	166	144	297
1954	0	0	0	0	0	0	1,466	508	437	959
1955	0	0	0	0	0	0	1,944	674	560	1,266
1956	0	0	0	0	0	0	18,789	6,515	5,090	12,545
1957	0	13,290	3,391	0	9,953	26,634	45,090	15,639	12,285	33,218
1958	2	19,202	5,011	0	25,798	50,011	195,985	80,961	7,714	21,930
1959	14	7,517	2,118	0	17,653	27,288	496,140	148,516	24,945	17,118
1960	28	8,797	4,292	0	4,838	17,927	1,130,378	67,351	71,779	68,028
1961	10	1,551	10,318	0	2,526	14,395	3,273,247	180,596	307,885	74,398
1962	32	217	(1,751)	0	414	(1,120)	1,548,884	203,535	695,446	35,102
1963	51	2,510	(1,063)	0	983	2,430	480,716	69,182	2,284,291	206,587
1964	7,791	39,879	12,046	0	21,934	73,859	2,549,118	15,903	181,900	264,410
1965	3,139	72,793	17,900	0	170,361	261,054	807,505	153,454	85,425	447,830
1966	(48)	59,615	12,972	0	438,949	511,536	898,074	149,529	142,096	1,690,200
1967	47	47,257	11,597	0	1,551,023	1,609,877	607,614	50,423	293,304	3,496,284
1968	51,573	70,586	19,560	0	831,158	921,304	965,119	19,543	89,300	2,931,101
1969	234,232	63,650	23,628	0	46,428	133,706	455,173	9,618	3,860	896,727
1970	16,227	59,090	42,733	0	9,415	111,238	52,481	3,380	10,517	154,358
1971	27,204	20,819	31,516	0	8,480	60,815	24,505	4,645	5,035	20,395
1972	9	15,538	12,952	0	10,058	38,548	26,918	825	2,945	26,090
1973	25	18,488	29,018	0	39,878	87,384	24,468	4,010	6,016	12,708
1974	45	67,352	29,978	0	134,332	231,662	17,108	1,192	1,765	65,587
1975	21	62,855	73,112	0	45,091	181,058	57,619	561	1,165	7,291
1976	51	52,419	75,611	218	13,168	141,416	104,242	2,846	8,915	12,701
1977	28	53,274	65,662	2,240	23,138	144,314	176,062	3,625	3,225	16,158
1978	38	61,936	57,158	2,955	28,987	151,036	264,581	4,494	3,668	14,028
1979	23	316,620	91,367	3,953	62,240	474,180	111,106	17,151	8,515	31,725
1980	26	422,804	111,600	19,910	96,125	650,439	368,942	17,708	8,249	38,045
1981	34	430,992	147,295	(10,752)	43,157	610,692	(145,428)	3,600	6,533	12,448
1982	11	934,812	357,720	(7,165)	134,408	1,419,775	(44,778)	18,971	7,451	37,824
1983	19	1,091,091	1,076,627	2,628	517,615	2,687,961	429,225	73,925	38,185	72,415
1984	26	1,875,968	2,317,661	3,290	1,068,363	5,265,282	506,951	36,354	9,610	92,846
1985	29	2,248,491	7,849,886	27,815	3,416,370	13,542,562	34,103	2,822	5,034	27,138
1986	31	16,420,238	10,020,277	1,309,599	1,819,349	29,569,463	85,732	14,715	17,144	13,982
1987	32	11,873,826	7,214,307	1,628,932	1,670,596	22,387,661	126,377	15,693	27,881	32,931
1988	55	3,287,756	1,648,431	1,015,971	686,821	6,638,979	290,505	36,744	51,786	25,078
1989	44	1,056,583	950,985	224,567	374,886	2,607,021	130,609	16,848	35,518	12,582
1990	63	493,522	537,881	145,694	71,938	1,249,035	275,732	32,387	99,251	40,263
1991	54	76,599	17,130	24,846	70,542	189,117	1,153,109	26,900	53,613	21,889
1992	42	56,492	6,525	18,333	37,778	119,128	401,906	53,036	61,799	51,386
1993	30	104,317	24,579	40,129	82,032	251,057	313,476	55,679	79,149	39,293
1994	14	68,065	13,463	27,107	45,909	154,544	(211,712)	29,017	362,585	36,350
1995	3	26,002	5,920	7,337	20,617	59,876	265,751	42,516	48,189	21,436
1996	0	14,790	3,334	6,614	14,606	39,344	139,573	13,049	25,751	10,677
1997	3	67,264	35,545	38,585	(13,571)	127,823	203,476	31,135	36,986	16,906
1998	7	15,301	6,392	6,749	10,314	38,756	67,158	6,120	14,731	4,590
1999	2	71,942	35,374	33,949	32,609	173,874	162,803	25,320	35,680	24,362
2000	24	14,990	8,102	6,340	6,036	35,468	99,959	18,939	30,626	19,009
2001	20	1,942	1,116	924	947	4,929	313,395	4,614	88,218	4,064
2002	0	3,741	2,052	990	1,089	7,872	22,468	2,525	4,321	6,946
2003	0	3,741	2,052	990	1,089	7,872	22,468	2,525	4,321	6,946
2004	0	3,741	2,052	990	1,089	7,872	22,468	2,525	4,321	6,946
2005	0	3,741	2,052	990	1,089	7,872	22,468	2,525	4,321	6,946
2006	0	0	0	0	0	0	23,151	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	341,111	41,804,006	33,027,484	4,584,728	13,708,608	93,124,826	19,414,793	1,801,068	5,419,510	11,242,396

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	South Bay Aqueduct (continued)					California Aqueduct			
						North San Joaquin Division			
	Reach 6 (11)	Reach 7 (12)	Reach 8 (13)	Reach 9 (14)	Total (15)	Reach 1 (16)	Reach 2A (17)	Reach 2B (18)	Subtotal (19)
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	93,867	719,622	33,695	16,670	769,987
1999	1,530	3,283	12,698	31,555	297,231	2,214,578	88,790	90,527	2,393,895
2000	1,060	2,328	10,679	19,796	202,396	(764,563)	67,972	62,016	(634,575)
2001	21,467	708	291,919	857,969	1,582,354	318,993	90,914	12,903	422,810
2002	260	660	1,091	2,337	40,608	99,271	17,513	13,628	130,412
2003	260	660	1,091	2,337	40,608	99,271	17,513	13,628	130,412
2004	260	660	1,091	2,337	40,608	99,271	17,513	13,628	130,412
2005	260	660	1,091	2,337	40,608	99,271	17,513	13,628	130,412
2006	0	0	0	0	23,151	177,357	0	0	177,357
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	586,671	3,886,022	5,224,465	9,886,065	57,460,990	110,776,880	42,647,249	23,474,538	176,898,667

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	San Luis Division						South San Joaquin Division		
	Reach 3 (20)	Reach 4 (21)	Reach 5 (22)	Reach 6 (23)	Reach 7 (24)	Subtotal (25)	Reach 8C (26)	Reach 8D (27)	Reach 9 (28)
1952	2,492	3,549	3,987	1,010	1,390	12,428	13	727	1,109
1953	6,999	10,144	10,986	2,834	3,869	34,832	45	2,671	4,185
1954	8,704	12,545	13,693	3,520	4,766	43,228	50	2,719	4,026
1955	4,273	6,055	6,813	1,728	2,325	21,194	19	888	1,100
1956	3,295	5,600	5,857	1,445	3,556	19,753	98	3,850	4,376
1957	3,543	6,115	6,357	1,565	3,998	21,578	234	10,604	13,209
1958	11,927	19,393	22,037	5,509	7,512	66,378	375	19,033	25,073
1959	21,979	37,358	39,689	9,813	19,679	128,518	436	20,578	25,697
1960	207,025	45,419	41,044	12,074	37,633	343,195	1,673	44,565	25,290
1961	184,443	292,639	170,559	38,338	70,068	756,047	3,949	75,726	30,852
1962	495,836	549,984	252,698	22,397	26,967	1,347,882	6,131	159,481	62,375
1963	2,772,189	2,034,351	2,498,712	66,353	30,647	7,402,252	5,861	161,252	81,343
1964	4,348,311	4,932,301	1,053,227	161,422	251,461	10,746,722	4,014	90,622	117,907
1965	3,860,997	5,688,252	2,869,931	1,072,111	667,768	14,159,059	15,049	491,042	564,036
1966	2,312,372	8,527,843	5,765,798	4,230,221	7,708,334	28,544,568	201,274	5,197,322	2,539,278
1967	(44,527)	2,062,305	6,942,522	222,885	6,675,398	15,858,583	212,285	4,982,844	3,363,650
1968	119,884	395,689	973,956	179,917	461,031	2,130,477	64,234	611,192	940,074
1969	(6,065)	126,946	98,492	107,486	160,668	487,527	58,960	116,146	85,130
1970	32,387	(20,243)	105,385	(827,457)	1,215,966	506,038	23,011	106,810	84,116
1971	99,945	230,624	305,227	26,995	341,010	1,003,801	8,813	33,099	23,088
1972	15,990	90,852	17,053	14,621	281,343	419,859	10,818	13,349	16,603
1973	6,753	103,707	41,549	13,810	41,427	207,246	5,145	11,089	13,249
1974	6,618	117,165	55,978	16,199	71,796	267,756	5,434	24,433	16,567
1975	18,921	107,275	23,671	8,797	152,574	311,238	5,424	15,960	12,966
1976	17,485	79,554	13,041	5,138	41,687	156,905	19,931	76,280	62,164
1977	35,707	84,669	9,412	4,028	9,655	143,471	21,096	70,005	97,952
1978	8,539	428,395	7,006	3,536	6,994	454,470	7,584	40,453	17,395
1979	(35,394)	543,225	19,463	9,485	(242,253)	294,526	10,474	6,181	6,227
1980	66,622	3,450,695	191,307	75,209	185,384	3,969,217	2,158	17,492	17,706
1981	28,491	(2,244,127)	(44,017)	(15,456)	918,984	(1,356,125)	1,151	9,642	9,541
1982	100,629	(1,616,569)	20,184	10,359	3,525,738	2,040,341	2,469	8,283	6,956
1983	75,639	33,881	11,785	6,638	1,811,638	1,939,581	7,955	13,782	11,090
1984	31,748	87,083	26,712	12,754	3,053,662	3,211,959	26,489	9,959	6,268
1985	53,251	56,732	13,685	6,934	582,910	713,512	7,220	9,762	7,688
1986	73,979	201,509	50,668	19,223	1,282,469	1,627,848	8,902	25,011	20,503
1987	(7,829)	116,268	40,009	15,946	518,349	682,743	12,744	18,927	56,042
1988	(149,385)	224,154	(406,398)	(137,353)	923,622	454,640	9,833	(119,741)	(60,639)
1989	39,652	594,894	232,852	80,090	575,855	1,523,343	5,279	91,501	278,061
1990	39,270	259,895	79,589	29,606	461,219	869,579	5,814	41,345	2,016,434
1991	4,916,134	397,959	98,847	35,860	511,519	5,960,319	4,588	43,140	41,348
1992	(757,001)	545,729	211,854	74,544	396,398	471,524	3,546	103,695	109,225
1993	110,233	724,929	186,271	70,815	720,283	1,812,531	15,016	101,634	90,929
1994	1,151,976	288,018	63,862	27,812	710,770	2,242,438	6,770	42,455	40,696
1995	285,776	441,479	130,761	58,640	1,914,186	2,830,842	12,548	49,963	43,251
1996	31,942	(110,471)	34,529	12,219	588,712	556,931	6,444	29,863	27,050
1997	73,224	513,793	(277,781)	42,881	5,016,215	5,368,332	11,497	49,111	43,799
1998	19,692	295,590	34,319	16,542	2,819,556	3,185,699	2,562	11,115	8,955
1999	30,033	77,821	95,452	41,083	2,031,632	2,276,021	5,706	25,138	23,475
2000	57,711	268,481	53,622	25,461	588,907	994,182	6,717	26,989	24,868
2001	19,926	86,582	551,529	6,686	(72,887)	591,836	3,698	15,233	13,149
2002	8,402	52,003	11,150	6,773	9,265	87,593	997	3,349	4,074
2003	8,402	52,003	11,150	6,773	9,265	87,593	997	3,349	4,074
2004	8,402	52,003	11,150	6,773	9,265	87,593	997	3,349	4,074
2005	8,402	52,003	11,150	6,773	9,265	87,593	997	3,349	4,074
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	20,845,949	31,424,048	22,818,384	5,959,365	47,159,450	128,207,196	865,524	13,026,616	11,091,728

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	South San Joaquin Division (continued)								
	Reach 10A (29)	Reach 11B (30)	Reach 12D 31)	Reach 12E (32)	Reach 13B (33)	Reach 14A (34)	Reach 14B (35)	Reach 14C (36)	Reach 15A (37)
1952	695	1,279	1,980	995	1,663	794	212	212	1,911
1953	2,569	4,790	7,480	3,745	6,236	2,599	733	741	7,016
1954	2,821	4,855	7,565	3,792	6,319	2,880	810	817	7,073
1955	1,097	1,557	2,404	1,211	2,025	1,183	325	327	2,253
1956	4,428	6,223	9,233	4,737	8,054	7,026	1,638	1,584	9,939
1957	13,269	18,772	29,082	14,615	24,411	15,651	3,834	3,864	26,871
1958	25,086	48,191	78,564	39,087	61,715	33,726	12,330	11,813	49,499
1959	25,787	67,246	107,781	53,836	86,478	64,824	22,102	21,828	70,838
1960	47,492	66,317	77,936	39,867	63,517	84,363	23,260	22,305	73,305
1961	68,505	46,073	88,274	51,457	28,015	242,753	91,290	65,565	150,205
1962	57,705	56,056	69,189	44,851	49,179	208,180	61,489	47,608	133,653
1963	52,585	91,914	173,985	86,405	67,733	425,626	104,436	77,970	102,072
1964	124,014	333,621	291,013	174,469	86,271	1,093,795	684,005	485,033	571,173
1965	622,257	1,053,029	1,524,848	1,044,851	196,487	3,385,205	1,655,024	1,436,258	476,830
1966	2,800,056	3,709,779	673,429	466,228	418,141	4,916,319	974,862	724,354	1,829,852
1967	3,652,342	4,636,627	1,881,333	1,244,265	1,238,428	2,788,299	525,653	400,183	1,721,304
1968	1,025,969	1,323,302	4,726,074	3,145,775	8,343,706	10,210,266	1,330,361	1,405,117	7,522,015
1969	145,111	229,185	706,272	529,080	3,704,065	15,112,041	1,223,457	1,134,395	9,523,012
1970	74,366	85,151	70,725	72,798	320,797	11,031,255	987,213	738,955	8,836,897
1971	15,595	45,006	43,988	42,624	339,078	2,925,191	193,255	36,514	3,275,227
1972	19,736	32,657	43,939	24,748	81,937	1,388,348	101,784	20,165	1,003,380
1973	14,283	16,448	9,980	16,320	25,090	680,834	19,584	13,469	798,805
1974	22,111	14,951	19,555	32,240	29,582	524,504	30,735	16,333	778,696
1975	15,865	13,479	10,793	13,678	25,827	269,197	25,164	21,048	370,265
1976	76,202	54,217	37,464	59,842	105,332	507,519	59,753	42,776	434,574
1977	75,628	52,919	22,826	54,444	81,293	301,515	49,972	30,152	235,514
1978	48,754	16,469	(2,816)	27,331	43,126	348,674	(653)	1,500	297,817
1979	241	6,906	13,401	14,229	25,411	293,786	9,846	7,856	245,590
1980	18,165	18,813	15,608	27,498	34,190	1,676,267	29,169	23,023	1,719,775
1981	10,309	14,885	26,473	20,972	25,515	(1,076,221)	27,551	33,674	(1,142,721)
1982	8,237	6,608	7,680	8,346	16,339	(745,914)	9,886	29,393	(804,147)
1983	14,488	9,792	14,174	13,050	35,872	419,650	17,389	24,933	115,983
1984	7,533	27,613	87,907	49,271	22,732	54,590	75,453	63,060	63,537
1985	9,215	6,949	5,263	8,013	8,875	(49,408)	9,523	5,867	54,782
1986	22,335	16,664	16,014	25,031	20,483	140,642	25,960	13,913	154,089
1987	16,704	13,512	12,369	20,023	15,435	101,453	20,411	8,581	227,047
1988	(159,357)	(73,648)	(151,040)	(51,401)	(120,104)	161,077	(75,276)	(75,307)	144,369
1989	70,153	65,216	63,382	120,925	73,037	2,778,880	119,559	36,660	2,952,046
1990	34,841	29,230	27,269	49,082	34,048	715,031	44,187	14,537	440,017
1991	36,888	32,195	30,146	55,119	34,144	423,235	50,345	12,116	353,596
1992	103,321	99,765	98,178	192,455	97,638	991,603	185,311	9,210	387,615
1993	90,291	70,131	63,247	118,440	80,530	687,462	109,792	38,960	942,211
1994	65,737	29,221	26,997	50,234	35,154	400,534	44,481	17,426	324,942
1995	435,909	32,487	25,516	49,885	41,733	524,524	48,740	29,125	450,952
1996	253,433	19,489	15,020	30,202	29,333	403,125	26,945	16,405	253,622
1997	73,458	30,890	25,368	48,767	40,900	451,910	47,815	29,878	809,848
1998	14,618	7,107	5,773	10,697	9,676	284,393	10,799	6,819	115,129
1999	47,323	16,974	13,322	34,382	31,525	263,925	24,603	14,842	268,114
2000	55,944	18,657	19,194	35,588	26,561	209,025	18,391	13,353	203,722
2001	44,061	9,119	8,590	27,296	5,693	47,922	3,827	3,384	48,163
2002	5,428	2,901	1,445	3,926	6,042	35,990	4,359	2,415	30,792
2003	5,428	2,901	1,445	3,926	6,042	35,990	4,359	2,415	30,792
2004	5,428	2,901	1,445	3,926	6,042	35,990	4,359	2,415	30,792
2005	5,428	2,901	1,445	3,926	6,042	35,990	4,359	2,415	30,792
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	10,329,887	12,550,292	11,188,527	8,267,099	16,093,393	65,874,018	9,084,771	7,148,254	46,761,445

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	South San Joaquin (contd.)		Tehachapi Division			Mojave Division			
	Reach 16A (38)	Subtotal (39)	Reach 17E (40)	Reach 17F (41)	Subtotal (42)	Reach 18A (43)	Reach 19 (44)	Reach 19C (45)	Reach 20A (46)
1952	4,440	16,030	9,703	4,072	13,775	4,090	1,520	0	2,561
1953	16,513	59,323	31,337	13,284	44,621	12,610	4,685	0	7,246
1954	16,601	60,328	46,243	20,010	66,253	16,642	6,184	0	9,506
1955	5,223	19,612	25,880	11,362	37,242	5,612	2,086	0	2,529
1956	21,754	82,940	47,487	17,609	65,096	6,038	2,244	0	2,440
1957	62,657	237,073	119,673	49,130	168,803	22,348	8,304	0	9,035
1958	133,083	537,575	164,056	72,091	236,147	37,917	14,166	123	15,391
1959	205,748	773,179	151,389	57,883	209,272	38,620	23,450	1,102	23,605
1960	204,788	774,678	203,222	45,323	248,545	21,356	26,093	5,318	40,523
1961	206,305	1,148,969	387,819	85,558	473,377	35,664	32,281	2,262	34,918
1962	171,396	1,127,293	353,119	82,610	435,729	68,508	266,284	1,841	10,323
1963	481,941	1,913,123	1,191,633	124,757	1,316,390	37,379	435,881	4,137	39,706
1964	1,778,952	5,834,889	1,866,000	775,005	2,641,005	95,693	706,369	8,564	43,342
1965	1,268,176	13,733,092	2,574,824	2,284,869	4,859,693	121,060	716,092	9,156	108,519
1966	2,896,274	27,347,168	5,537,412	9,323,517	14,860,929	366,116	1,644,699	13,373	159,282
1967	3,442,021	30,089,234	26,239,390	12,398,708	38,638,098	1,312,022	903,880	24,103	645,078
1968	7,578,498	48,226,583	33,363,479	7,416,464	40,779,943	136,804	7,109,653	71,388	1,889,601
1969	13,136,056	45,702,910	40,368,425	6,883,206	47,251,631	213,805	2,465,641	7,423	5,939,151
1970	13,890,751	36,322,845	35,446,706	6,786,231	42,232,937	2,211,077	1,210,665	6,217	3,652,478
1971	7,903,937	14,885,415	20,141,395	6,835,303	26,976,698	1,496,843	284,738	6,994	1,074,759
1972	3,025,555	5,783,019	10,002,935	34,791	10,037,726	129,417	409,903	3,620	471,963
1973	1,472,313	3,096,609	3,090,140	36,207	3,126,347	23,931	75,638	2,539	88,416
1974	1,031,843	2,546,984	4,798,348	152,494	4,950,842	28,399	205,581	2,703	138,673
1975	489,545	1,289,211	2,144,178	411,404	2,555,582	44,774	70,652	5,066	68,157
1976	618,049	2,154,103	1,124,357	174,629	1,298,986	121,043	84,593	6,786	59,967
1977	580,209	1,673,525	655,047	31,512	686,559	261,400	133,767	7,521	117,878
1978	582,775	1,428,409	1,900,843	27,956	1,928,799	553,014	57,150	5,872	51,615
1979	542,554	1,182,702	2,099,385	61,381	2,160,766	626,615	339,536	10,831	37,085
1980	3,772,498	7,372,362	17,433,610	6,046	17,439,656	1,130,429	1,073,430	3,604	308,188
1981	(2,527,211)	(4,566,440)	(3,848,206)	6,908	(3,841,298)	1,218,824	845,702	4,498	48,625
1982	(1,850,736)	(3,296,600)	11,370,112	6,054	11,376,166	6,968,683	746,900	3,920	33,869
1983	166,232	864,390	8,862,914	8,269	8,871,183	10,909,386	64,660	2,596	40,793
1984	119,387	613,799	3,227,937	31,701	3,259,638	8,340,371	309,491	3,124	17,505
1985	82,117	165,866	1,926,289	10,460	1,936,749	5,264,156	227,986	3,885	68,422
1986	186,348	675,895	1,381,955	33,788	1,415,743	2,049,111	2,069,663	4,261	2,331,707
1987	194,936	718,184	671,183	13,807	684,990	1,347,722	(6,453)	4,684	562,540
1988	262,334	(308,900)	1,408,760	(49,734)	1,359,026	847,954	(104,961)	13,409	(159,892)
1989	5,955,356	12,610,055	504,715	64,660	569,375	376,980	207,150	50,953	31,173
1990	640,283	4,092,118	783,219	25,218	808,437	202,065	(402,573)	61,192	(637,062)
1991	774,129	1,890,989	691,578	33,405	724,983	273,021	22,218	81,545	(188,732)
1992	731,512	3,113,074	741,986	24,369	766,355	620,962	384,568	86,644	225,398
1993	857,038	3,265,681	1,223,402	35,370	1,258,772	1,131,166	248,287	72,746	110,869
1994	853,328	1,937,975	806,213	16,681	822,894	998,126	164,096	60,147	51,340
1995	628,941	2,373,574	1,538,497	19,443	1,557,940	390,433	157,481	45,990	92,925
1996	388,064	1,498,995	2,571,039	10,797	2,581,836	91,593	69,281	22,188	35,656
1997	481,458	2,144,699	1,009,249	18,265	1,027,514	135,402	92,607	13,590	65,433
1998	431,016	918,659	891,183	6,843	898,026	47,486	36,170	4,164	29,900
1999	369,447	1,138,776	688,726	12,023	700,749	113,032	49,062	5,329	171,867
2000	306,178	965,187	499,783	6,095	505,878	102,489	80,737	936	189,052
2001	68,080	298,215	160,547	1,242	161,789	54,158	178,801	2,223	363,991
2002	44,687	146,405	92,341	1,422	93,763	11,064	4,903	0	6,873
2003	44,687	146,405	92,341	1,422	93,763	11,064	4,903	0	6,873
2004	44,687	146,405	92,341	1,422	93,763	11,064	4,903	0	6,873
2005	44,687	146,405	92,341	1,422	93,763	11,064	4,903	0	6,873
2006	0	0	0	201,133	201,133	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	74,837,440	287,118,994	248,998,480	54,765,897	303,764,377	50,706,602	23,775,650	758,567	18,564,806

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Mojave Division (continued)							Santa Ana Division	
	Reach 20B (47)	Reach 21 (48)	Reach 22A (49)	Reach 22B (50)	Reach 23 (51)	Reach 24 (52)	Subtotal (53)	Reach 25 (54)	Reach 26A (55)
1952	892	5,788	35	2,013	2,074	2,413	21,386	3,334	5,599
1953	3,402	17,846	71	5,752	6,886	7,438	65,936	10,275	17,264
1954	4,548	23,558	369	8,560	7,849	9,820	87,036	13,566	22,790
1955	2,213	7,947	178	2,754	2,725	3,313	29,357	4,575	7,687
1956	2,655	8,542	216	2,905	2,961	3,561	31,562	4,917	8,264
1957	9,826	31,616	800	10,757	10,962	13,177	116,825	18,205	30,586
1958	16,752	53,569	1,397	18,717	18,578	22,627	199,237	31,001	52,019
1959	18,604	56,724	1,844	25,421	20,372	45,646	255,388	39,325	58,137
1960	37,179	43,893	11,029	136,751	17,152	109,816	449,110	65,655	93,700
1961	37,102	21,532	14,517	215,859	9,546	373,473	777,154	26,979	56,734
1962	10,730	8,197	4,186	164,168	4,336	279,421	817,994	9,964	36,235
1963	40,865	26,670	17,081	237,695	7,228	358,503	1,205,145	31,013	112,271
1964	71,116	33,912	22,793	262,996	6,863	244,003	1,495,651	69,669	202,642
1965	343,506	91,095	65,689	827,655	11,836	621,566	2,916,174	279,237	206,356
1966	1,311,628	160,388	178,538	1,746,245	31,078	1,018,628	6,629,975	415,066	364,004
1967	1,718,942	498,257	367,961	3,146,128	62,135	2,331,106	11,009,612	3,184,296	638,539
1968	2,291,691	1,141,929	1,145,768	4,588,850	102,207	2,600,293	21,078,184	8,264,126	1,268,194
1969	5,626,284	2,358,737	1,515,147	7,750,478	260,659	11,131,406	37,268,731	6,807,783	1,768,456
1970	5,304,372	3,232,911	2,081,810	23,451,612	1,240,798	16,885,193	59,277,133	2,169,051	7,229,429
1971	1,091,123	825,070	432,464	16,772,680	1,922,115	5,385,721	29,292,507	1,135,248	9,811,736
1972	635,507	484,772	324,865	3,788,894	48,049	788,479	7,085,469	1,095,740	5,528,987
1973	83,840	63,774	36,179	1,623,274	24,333	4,225,877	6,247,801	136,994	1,810,729
1974	118,639	103,545	54,198	5,699,605	130,567	766,562	7,248,472	68,180	1,922,999
1975	169,294	167,240	19,453	4,793,580	19,467	373,783	5,731,466	166,653	3,787,797
1976	102,909	44,896	24,732	3,103,916	84,188	204,705	3,837,735	475,176	1,494,750
1977	120,160	71,389	49,445	1,654,122	60,112	232,230	2,708,024	76,255	776,085
1978	68,838	32,855	18,183	677,448	36,484	210,198	1,711,657	57,463	131,076
1979	36,225	18,948	10,675	560,506	10,634	103,615	1,754,670	29,960	80,482
1980	284,545	133,526	121,171	2,239,224	60,229	559,963	5,914,309	31,462	181,638
1981	32,214	13,223	6,466	(774,614)	138,917	203,941	1,737,796	5,864	69,031
1982	77,988	13,158	14,459	432,274	346,905	79,819	8,717,975	9,224	159,280
1983	58,714	25,900	10,363	451,428	2,029,405	58,989	13,652,234	4,304	528,764
1984	35,378	845,423	6,052	(83,811)	1,290,740	34,764	10,799,037	3,850	270,455
1985	(232,549)	(481,017)	1,945,477	608,583	966,160	51,634	8,422,737	5,555	62,571
1986	(2,046,222)	(1,334,975)	3,260,280	1,097,122	230,510	51,994	7,713,451	9,927	114,561
1987	(344,829)	55,519	64,264	3,631,282	146,850	91,223	5,552,802	4,908	27,208
1988	(147,290)	(70,564)	351,489	552,546	558,557	197,761	2,039,009	7,358	161,957
1989	60,657	30,217	534,658	4,161,037	1,496,776	433,072	7,382,673	8,092	(2,297,399)
1990	(403,413)	(635,623)	(97,841)	8,794,258	1,394,698	344,367	8,620,068	176,854	(1,657,576)
1991	(18,809)	(147,369)	(17,234)	7,985,326	3,624,824	139,105	11,753,895	202,286	(1,316,160)
1992	338,098	(263,897)	75,210	4,849,560	8,364,426	127,829	14,808,798	333,934	(1,878,502)
1993	180,598	133,941	49,144	2,094,764	15,390,366	159,211	19,571,092	1,506,787	3,979,221
1994	114,273	65,260	26,546	933,021	8,082,401	81,869	10,577,079	2,104,588	2,493,097
1995	121,499	66,503	30,918	1,096,953	5,924,175	123,653	8,050,530	3,310,564	500,791
1996	48,699	44,953	17,787	1,736,686	2,181,669	96,339	4,344,851	19,019,751	(100,474)
1997	39,973	55,881	27,865	809,666	(342,563)	102,390	1,000,244	7,645,602	(662,524)
1998	27,626	20,285	12,816	269,800	3,392,776	36,135	3,877,158	993,619	1,613,505
1999	58,327	37,630	18,087	1,012,172	2,115,749	37,200	3,618,455	223,882	843,461
2000	69,264	44,071	24,324	771,339	1,252,577	83,258	2,618,047	120,418	1,274,727
2001	116,077	75,071	54,191	511,111	336,356	26,054	1,718,033	67,802	422,244
2002	5,299	4,282	426	52,836	2,412	12,224	100,319	154	26,677
2003	5,299	4,282	426	52,836	2,412	12,224	100,319	154	26,677
2004	5,299	4,282	426	52,836	2,412	12,224	100,319	154	26,677
2005	5,299	4,282	426	52,836	2,412	12,224	100,319	154	26,677
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	17,770,856	8,379,844	12,937,819	124,670,412	63,154,345	51,522,039	372,240,940	60,486,953	42,420,131

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Santa Ana Division (continued)				West Branch				
	Reach 28G[a] (56)	Reach 28H (57)	Reach 28J (58)	Subtotal (59)	Reach 29A (60)	Reach 29F (61)	Reach 29G (62)	Reach 29H (63)	Reach 29J (64)
1952	4,785	4,055	3,020	20,793	2,924	136	175	459	553
1953	15,580	11,511	9,476	64,106	9,093	344	237	1,754	1,683
1954	18,015	18,100	12,160	84,631	7,389	1,201	2,229	2,350	4,162
1955	6,052	6,081	4,151	28,546	1,019	585	1,086	1,147	2,029
1956	6,496	6,525	4,480	30,682	490	698	1,297	1,366	2,420
1957	24,044	24,156	16,585	113,576	1,809	2,583	4,792	5,057	8,952
1958	40,844	41,033	28,470	193,367	3,256	4,516	8,714	8,878	15,847
1959	45,746	45,946	44,331	233,485	7,953	9,150	19,414	18,243	35,583
1960	59,102	58,548	118,969	395,974	21,753	14,990	34,447	29,764	69,752
1961	32,226	34,382	674,787	825,108	22,442	12,775	21,559	20,086	39,761
1962	21,383	20,530	47,484	135,596	40,237	28,729	86,938	58,215	108,962
1963	43,884	41,698	1,506,440	1,735,306	91,959	69,162	163,347	110,015	211,592
1964	89,710	45,762	98,569	506,352	150,670	66,420	207,977	143,340	291,404
1965	96,956	76,899	146,095	805,543	361,811	77,914	403,115	127,430	589,638
1966	170,878	308,756	589,107	1,847,811	489,512	203,497	1,233,640	348,918	3,231,797
1967	233,968	283,126	987,832	5,327,761	1,589,715	882,096	1,117,243	891,607	31,088,491
1968	871,337	266,295	780,587	11,450,539	3,899,363	300,921	396,190	1,104,832	36,157,768
1969	1,117,873	1,444,654	756,442	11,895,208	6,592,580	336,480	693,348	1,184,454	9,655,871
1970	1,843,621	1,013,468	2,829,523	15,085,092	7,986,733	6,089,401	2,624,747	3,002,968	8,463,475
1971	16,095,702	6,401,303	12,111,623	45,555,612	4,247,037	3,768,699	1,120,231	8,244,651	5,844,024
1972	1,537,880	11,960,791	21,542,747	41,666,145	1,871,831	426,932	985,512	18,787,722	(23,015,734)
1973	209,664	247,769	3,673,344	6,078,500	775,824	168,064	399,856	9,408,706	1,821,206
1974	162,178	101,638	1,980,991	4,235,986	560,657	168,878	169,717	3,901,261	(3,454,239)
1975	157,365	124,399	1,626,274	5,862,488	353,670	421,176	925,693	664,113	609,891
1976	178,287	118,748	1,497,465	3,764,426	396,809	650,417	1,274,484	706,244	650,209
1977	127,106	89,036	323,091	1,391,573	390,637	3,018,637	2,152,961	196,012	1,135,148
1978	147,112	153,867	347,482	837,000	1,427,190	2,219,135	6,694,615	57,817	149,932
1979	29,723	19,225	225,947	385,337	940,013	2,168,382	19,813,742	597,858	331,313
1980	137,833	154,821	1,077,900	1,583,654	1,276,793	4,108,143	24,537,814	550,337	204,751
1981	28,815	22,654	61,349	187,713	(711,751)	2,699,873	19,806,531	94,944	28,852
1982	16,069	58,900	55,841	299,314	(465,217)	351,251	17,964,617	215,678	42,587
1983	18,213	89,581	(264,804)	376,058	100,394	180,971	6,751,649	220,029	24,295
1984	14,462	12,259	49,547	350,573	71,759	68,930	2,870,259	335,942	17,285
1985	17,816	11,481	54,070	151,493	142,244	25,386	2,126,670	102,366	21,971
1986	31,564	25,037	86,794	267,883	133,914	62,294	274,660	141,894	36,149
1987	17,141	8,005	45,528	102,790	13,936	453,949	711,773	192,511	27,931
1988	41,892	21,113	90,784	323,104	427,544	118,010	1,660,959	203,130	95,930
1989	28,708	12,619	51,556	(2,196,424)	207,067	430,662	584,186	241,811	97,472
1990	27,478	12,817	55,408	(1,385,019)	197,428	355,480	386,882	813,211	54,269
1991	142,139	15,524	62,794	(893,417)	219,321	344,386	453,336	1,132,520	55,176
1992	34,185	13,422	69,479	(1,427,482)	541,026	295,312	464,421	4,402,524	47,182
1993	44,300	27,047	162,854	5,720,209	464,987	320,182	643,189	3,361,457	74,198
1994	16,351	11,673	54,581	4,680,290	203,666	231,527	362,717	306,148	33,758
1995	35,402	28,202	164,254	4,039,213	344,358	392,647	536,253	468,656	34,007
1996	76,723	73,629	344,747	19,414,376	150,901	161,394	427,223	203,201	15,357
1997	50,662	20,720	268,293	7,322,753	298,002	71,310	432,940	276,180	50,095
1998	10,268	8,970	479,138	3,105,500	344,208	21,003	2,028,979	181,951	49,377
1999	84,563	45,203	324,045	1,521,154	298,681	37,791	1,080,369	125,121	50,944
2000	25,377	42,716	111,337	1,574,575	192,226	38,513	183,800	130,874	34,735
2001	7,685	13,131	83,273	594,135	18,148	4,452	84,598	110,267	10,416
2002	4,074	3,808	10,774	45,487	30,229	3,919	27,154	13,406	2,116
2003	4,074	3,808	10,774	45,487	30,229	3,919	27,154	13,406	2,116
2004	4,074	3,808	10,774	45,487	30,229	3,919	27,154	13,406	2,116
2005	4,074	3,808	10,774	45,487	30,229	3,919	27,154	13,406	2,116
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0
Total	24,311,459	23,713,057	55,519,336	206,450,936	36,834,927	31,901,060	125,039,747	63,489,643	75,166,691

[a]Includes excess capacity costs (not shown in Table B-9) allocated to MWD in the following years and repaid under Article 24(c) of its contract: 1970 - $362,000; 1971 - $6,198,000; 1972 - $139.000.

Table B-10

Capital Costs of Each Aqueduct Reach to Be Reimbursed through Capital Cost Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)									Grand Total (74)
	West Branch (continued)		Coastal Branch						Total (73)	
	Reach 30 (65)	Subtotal (66)	Reach 31A (67)	Reach 33A (68)	Reach 33B (69)	Reach 34 (70)	Reach 35 (71)	Subtotal (72)		
1952	1,408	5,655	0	0	0	0	0	0	0	0
1953	4,346	17,457	0	0	0	0	0	0	0	0
1954	5,743	23,074	0	0	0	0	0	0	0	0
1955	1,943	7,809	0	0	0	0	0	0	0	0
1956	2,077	8,348	0	0	0	0	0	0	0	0
1957	7,684	30,877	0	0	0	0	0	0	0	0
1958	13,931	55,142	0	0	0	0	0	0	0	0
1959	44,384	134,727	28,046	49,114	0	7,441	8,236	0	0	92,837
1960	84,703	255,409	34,404	70,450	0	8,507	14,265	0	0	127,626
1961	123,330	239,953	13,801	17,868	0	1,501	3,931	0	0	37,101
1962	348,366	671,447	10,121	7,798	0	524	1,689	0	0	20,132
1963	521,491	1,167,566	20,470	14,299	0	880	2,943	0	0	38,592
1964	1,372,464	2,232,275	315,418	26,963	0	1,687	5,639	0	0	349,707
1965	3,383,950	4,943,858	747,023	36,178	0	2,118	7,060	0	0	792,379
1966	9,364,753	14,872,117	2,258,915	35,864	0	1,736	5,764	0	0	2,302,279
1967	17,618,827	53,187,979	6,310,419	38,331	0	1,891	6,213	0	0	6,356,854
1968	15,736,691	57,595,765	2,707,580	30,784	0	1,324	4,369	0	0	2,744,057
1969	16,228,175	34,690,908	423,797	26,549	0	907	2,905	0	0	454,158
1970	22,330,328	50,497,652	269,194	24,368	0	851	2,787	0	0	297,200
1971	16,890,503	40,115,145	164,446	32,230	0	1,315	3,804	0	0	201,795
1972	3,818,001	2,874,264	131,332	17,601	0	522	1,660	0	0	151,115
1973	13,426,222	25,999,878	182,493	16,154	0	542	1,758	0	0	200,947
1974	2,988,318	4,334,592	190,866	18,799	0	463	1,405	0	0	211,533
1975	1,808,235	4,782,778	64,582	36,012	0	2,255	6,656	0	0	109,505
1976	1,253,067	4,931,230	198,266	68,898	0	5,088	14,988	0	0	287,240
1977	345,023	7,238,418	918,473	81,305	0	1,834	5,387	0	0	1,006,999
1978	763,445	11,312,134	52,994	83,300	0	1,302	3,852	0	0	141,448
1979	282,145	24,133,453	38,182	108,951	0	1,505	4,433	0	0	153,071
1980	2,055,206	32,733,044	189,070	376,036	0	1,152	3,449	0	0	569,707
1981	275,460	22,193,909	19,897	(157,537)	0	1,427	4,261	0	0	(131,952)
1982	351,376	18,460,292	(16,381)	(96,449)	0	588	1,787	0	0	(110,455)
1983	566,545	7,843,883	85,496	67,106	0	794	2,398	0	0	155,794
1984	1,118,954	4,483,129	28,568	54,074	0	986	2,959	0	0	86,587
1985	284,243	2,702,880	36,834	54,314	0	2,111	6,263	0	0	99,522
1986	213,353	862,264	82,358	223,134	0	17,458	51,279	0	0	374,229
1987	158,313	1,558,413	53,817	1,061,939	0	92,506	272,968	0	0	1,481,230
1988	222,068	2,727,641	183,853	1,141,272	0	99,456	293,612	0	0	1,718,193
1989	148,674	1,709,872	84,678	893,765	0	77,283	228,038	0	0	1,283,764
1990	119,438	1,926,708	133,868	1,100,167	0	103,785	277,889	0	0	1,615,709
1991	229,315	2,434,054	164,610	1,635,283	0	123,603	363,889	0	0	2,287,385
1992	206,495	5,956,960	183,240	1,278,346	1,563,851	592,460	251,464	102,051	74,162	4,045,574
1993	296,349	5,160,362	344,928	5,410,377	5,168,893	1,385,959	690,091	268,937	358,367	13,627,552
1994	168,426	1,306,242	282,150	16,096,379	21,534,036	9,015,121	2,290,128	678,753	1,315,559	51,212,126
1995	304,983	2,080,904	1,196,326	46,160,025	64,054,496	24,420,669	18,027,795	7,029,108	7,117,197	168,005,616
1996	98,522	1,056,598	948,730	42,348,773	53,614,098	26,137,467	13,478,115	7,213,823	6,616,310	150,357,316
1997	233,956	1,362,483	562,583	10,539,423	13,209,679	9,934,319	2,969,186	545,378	798,606	38,559,174
1998	67,874	2,693,392	248,210	2,249,933	3,997,914	3,244,815	611,786	192,567	280,779	10,826,004
1999	117,470	1,710,376	288,569	2,892,252	4,365,995	2,598,172	307,740	36,680	51,648	10,541,055
2000	203,748	783,896	183,160	242,309	2,930,217	2,715,257	0	0	0	6,070,943
2001	15,600	243,481	122,647	11,346	512,940	0	0	0	0	646,933
2002	13,227	90,051	24,478	53	0	0	0	0	0	24,531
2003	13,227	90,051	24,478	53	0	0	0	0	0	24,531
2004	13,227	90,051	24,478	53	0	0	0	0	0	24,531
2005	13,227	90,051	24,478	53	0	0	0	0	0	24,531
2006	0	0	20,494	0	0	0	0	0	0	20,494
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	136,278,829	468,710,897	20,606,439	134,424,294	170,952,119	80,609,581	40,244,841	16,067,297	16,612,628	479,517,199

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	Upper Feather Division (1)	North Bay Aqueduct					South Bay Aqueduct			
		Reach 1 (2)	Reach 2 (3)	Reach 3A (4)	Reach 3B (5)	Total (6)	Reach 1 (7)	Reach 2 (8)	Reach 4 (9)	Reach 5 (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	37,396	5,522	0	0
1963	0	0	0	0	0	0	147,719	20,639	0	0
1964	0	0	0	0	0	0	149,750	15,574	19,405	0
1965	0	0	0	0	0	0	259,939	45,718	46,485	0
1966	0	0	0	0	0	0	270,890	23,799	63,921	0
1967	0	0	0	0	0	0	438,050	32,798	108,127	0
1968	0	0	0	0	130	130	410,919	44,277	66,973	706
1969	0	0	0	0	80,875	80,875	487,377	48,339	75,644	706
1970	0	0	0	0	94,872	94,872	381,734	44,852	64,833	71,376
1971	54	0	0	0	45,579	45,579	357,850	25,666	50,344	38,735
1972	40	0	0	0	37,895	37,895	347,941	30,606	56,800	100,106
1973	1	0	0	0	32,993	32,993	386,897	36,172	58,288	28,810
1974	143	0	0	0	46,498	46,498	456,381	57,081	83,120	61,623
1975	1,069	0	0	0	37,707	37,707	624,989	46,111	81,361	36,682
1976	139	0	0	0	60,786	60,786	614,362	47,862	123,838	91,096
1977	892	0	0	0	78,400	78,400	511,065	48,926	104,280	102,083
1978	39	0	0	0	56,318	56,318	671,195	125,224	176,855	50,289
1979	3,235	0	0	0	73,852	73,852	650,826	76,849	212,826	91,380
1980	416	0	0	0	81,769	81,769	1,128,840	212,974	242,118	110,786
1981	3,847	0	0	0	101,340	101,340	884,763	130,126	167,118	204,772
1982	11,075	0	0	0	191,987	191,987	1,156,605	141,718	249,447	96,020
1983	1,928	0	0	0	80,215	80,215	1,258,144	84,360	373,875	152,255
1984	3,765	0	0	0	139,121	139,121	1,998,984	113,797	340,344	34,461
1985	2,888	0	0	0	259,515	259,515	2,044,121	207,478	427,930	247,308
1986	2,787	0	0	0	229,508	229,508	1,834,838	285,908	305,149	159,054
1987	2,388	0	0	0	310,683	310,683	2,118,974	163,714	400,547	283,067
1988	545	0	(94)	0	330,156	330,062	2,068,655	186,275	299,934	370,212
1989	1,800	473,408	178,069	237,480	373,427	1,262,384	2,164,688	163,481	320,734	497,038
1990	788	556,610	244,897	123,144	427,257	1,351,908	2,233,036	251,434	355,022	571,415
1991	3,654	651,307	302,327	205,516	428,470	1,587,620	1,806,699	152,509	95,745	93,986
1992	647	443,912	189,330	265,462	280,505	1,179,209	2,064,907	405,932	409,435	363,964
1993	3,630	435,240	294,416	213,267	289,206	1,232,129	3,925,050	621,712	480,832	399,558
1994	2,279	430,117	198,322	206,594	365,646	1,200,679	4,673,275	302,115	404,705	407,980
1995	2,906	428,313	282,898	151,703	295,326	1,158,240	3,849,620	316,905	566,447	330,706
1996	8,007	796,526	272,743	240,106	260,001	1,569,376	3,526,989	254,075	664,485	493,300
1997	7,449	504,476	210,763	213,211	315,374	1,243,824	3,010,809	189,269	591,540	230,371
1998	798	405,030	227,564	204,964	251,183	1,088,741	2,965,468	426,872	532,033	303,322
1999	416	664,771	322,405	312,776	271,090	1,571,042	3,673,905	466,604	421,478	401,780
2000	505	735,622	255,736	782,598	243,551	2,017,507	3,751,604	605,617	544,003	514,855
2001	319	900,475	204,054	397,798	136,069	1,638,396	2,765,864	739,280	695,485	434,798
2002	4,216	1,646,089	245,338	461,267	211,656	2,564,350	4,813,224	445,928	515,216	605,751
2003	4,216	1,594,602	245,266	685,243	211,387	2,736,498	4,711,338	414,012	514,757	599,468
2004	4,216	1,525,512	240,548	431,623	208,018	2,405,701	4,543,491	413,610	501,983	571,583
2005	2,139	821,875	134,038	220,031	131,535	1,307,479	2,635,675	242,530	271,646	320,299
2006	4,354	1,034,388	288,629	516,765	435,749	2,275,531	4,578,861	534,847	863,098	744,754
2007	4,349	1,033,387	288,285	516,271	435,291	2,273,234	4,573,588	534,224	862,118	744,132
2008	4,350	1,033,859	288,375	516,509	435,466	2,274,209	4,575,132	534,402	862,419	744,538
2009	4,348	1,033,630	288,267	516,399	435,346	2,273,642	4,573,541	534,213	862,129	744,442
2010	4,349	1,033,334	288,300	516,240	435,286	2,273,160	4,573,731	534,243	862,140	744,049
2011	4,347	1,037,307	289,278	518,220	436,759	2,281,564	4,588,643	536,106	865,198	749,849
2012	4,348	1,037,592	289,322	518,367	436,860	2,282,141	4,589,452	536,197	865,361	750,111
2013	4,348	1,038,506	289,340	518,842	437,117	2,283,805	4,590,420	536,292	865,596	751,135
2014	4,346	1,039,244	289,181	519,243	437,224	2,284,892	4,588,913	536,091	865,399	752,235
2015	4,349	1,040,016	289,406	519,627	437,553	2,286,602	4,592,466	536,507	866,066	752,776
2016	4,345	1,038,598	289,101	518,910	437,006	2,283,615	4,587,361	535,916	865,083	751,611
2017	4,346	1,039,193	289,209	519,213	437,225	2,284,840	4,589,236	536,132	865,449	752,131
2018	4,347	1,040,265	289,231	519,773	437,525	2,286,794	4,590,375	536,244	865,728	753,335
2019	4,342	1,038,701	288,963	518,975	436,959	2,283,598	4,585,639	535,703	864,796	751,942
2020	4,347	1,039,555	289,267	519,398	437,356	2,285,576	4,590,272	536,248	865,655	752,460
2021	4,350	1,039,924	289,491	519,571	437,578	2,286,564	4,593,472	536,632	866,231	752,538
2022	4,346	1,040,003	289,188	519,639	437,430	2,286,260	4,589,590	536,154	865,574	753,097
2023	4,345	1,038,651	289,140	518,934	437,044	2,283,769	4,587,890	535,980	865,178	751,612
2024	4,345	1,039,229	289,137	519,237	437,196	2,284,799	4,588,321	536,019	865,297	752,282
2025	4,350	1,040,269	289,470	519,753	437,657	2,287,149	4,593,467	536,622	866,256	752,968
2026	4,341	1,038,395	288,882	518,822	436,833	2,282,932	4,584,331	535,550	864,549	751,716
2027	4,356	1,041,654	289,887	520,444	438,260	2,290,245	4,600,000	537,389	867,481	753,923
2028	4,340	1,038,367	288,807	518,815	436,785	2,282,774	4,583,337	535,429	864,376	751,800
2029	4,348	1,039,557	289,323	519,391	437,386	2,285,657	4,591,002	536,338	865,780	752,374
2030	4,345	1,038,459	289,105	518,836	436,973	2,283,373	4,587,287	535,909	865,059	751,445
2031	4,355	1,042,207	289,825	520,736	438,373	2,291,141	4,599,641	537,331	867,463	754,657
2032	4,338	1,037,799	288,630	518,533	436,535	2,281,497	4,580,587	535,106	863,863	751,418
2033	4,349	1,039,553	289,446	519,381	437,454	2,285,834	4,592,598	536,533	866,053	752,178
2034	4,348	1,039,965	289,355	519,604	437,511	2,286,435	4,591,731	536,418	865,935	752,796
2035	4,338	1,037,931	288,680	518,597	436,598	2,281,806	4,581,339	535,196	864,003	751,494
Total	213,645	44,163,423	12,721,140	20,915,828	20,178,235	97,978,626	216,427,069	24,790,221	38,034,441	31,997,499

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	South Bay Aqueduct (continued)					California Aqueduct			
						North San Joaquin Division			
	Reach 6 (11)	Reach 7 (12)	Reach 8 (13)	Reach 9 (14)	Total (15)	Reach 1 (16)	Reach 2A (17)	Reach 2B (18)	Subtotal (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	42,918	0	0	0	0
1963	0	0	0	0	168,358	0	0	0	0
1964	0	0	0	0	184,729	0	0	0	0
1965	2,634	6,490	4,704	12,904	378,874	0	0	0	0
1966	4,707	10,328	9,233	25,519	408,397	0	0	0	0
1967	2,712	7,659	10,812	34,347	634,505	0	0	0	0
1968	3,109	7,960	10,166	40,372	584,482	1,001,998	228,359	103,116	1,333,473
1969	3,944	5,975	8,795	38,566	669,346	933,116	301,596	188,194	1,422,906
1970	2,464	(1,991)	6,870	28,210	598,348	971,602	306,198	151,539	1,429,339
1971	3,116	9,394	9,895	31,068	526,068	1,103,021	254,786	113,694	1,471,501
1972	5,125	10,247	12,054	44,699	607,578	1,107,855	230,906	110,109	1,448,870
1973	4,178	7,500	4,890	43,816	570,551	1,150,864	221,445	100,221	1,472,530
1974	7,812	7,564	5,523	48,054	727,158	1,272,034	231,383	117,156	1,620,573
1975	18,120	14,683	18,325	68,377	908,648	1,434,736	455,110	201,075	2,090,921
1976	10,873	5,557	19,920	49,921	963,429	1,519,801	217,348	453,400	2,190,549
1977	(240)	2,228	8,391	89,579	866,312	1,913,643	292,380	196,564	2,402,587
1978	(1,404)	16,766	(5,313)	104,078	1,137,690	1,860,456	306,503	188,214	2,355,173
1979	1,269	29,294	7,351	106,835	1,176,630	1,848,109	231,339	145,205	2,224,653
1980	3,621	24,270	17,404	110,852	1,850,865	2,365,292	472,660	247,608	3,085,560
1981	4,038	20,109	17,586	98,143	1,526,655	2,649,730	435,226	154,191	3,239,147
1982	2,236	22,870	21,919	202,590	1,893,405	3,192,710	599,793	244,664	4,037,167
1983	(2,047)	48,781	45,573	216,434	2,177,375	4,244,937	802,908	273,081	5,320,926
1984	4,449	44,017	23,563	455,054	3,014,669	4,373,157	808,917	290,728	5,472,802
1985	13,097	74,565	57,920	238,067	3,310,486	4,717,323	629,825	189,199	5,536,347
1986	11,614	31,084	46,864	363,350	3,037,861	5,217,491	929,919	359,365	6,506,775
1987	15,273	25,182	37,949	416,375	3,461,081	5,292,200	958,927	362,065	6,613,192
1988	30,207	41,047	49,156	335,408	3,380,894	5,329,317	822,300	360,336	6,511,953
1989	9,740	54,881	114,203	179,323	3,504,088	5,753,966	851,745	907,609	7,513,320
1990	31,161	69,416	119,309	247,781	3,878,574	6,788,986	1,066,314	883,822	8,739,122
1991	22,434	(18,690)	99,577	262,052	2,514,312	6,796,247	1,067,078	585,008	8,448,333
1992	26,787	332,012	98,670	186,640	3,888,347	9,415,121	1,419,603	673,833	11,508,557
1993	24,845	181,592	94,169	316,045	6,043,803	10,274,070	1,371,074	900,996	12,546,140
1994	28,383	90,791	80,963	416,061	6,404,273	8,451,193	1,325,416	802,190	10,578,799
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	611,289	658,090	5,577,652	11,410,435	1,449,378	5,364,351	18,224,164
1999	49,125	33,362	422,955	2,022,986	7,492,195	11,652,802	1,383,975	1,319,613	14,356,390
2000	194,282	50,059	328,929	764,937	6,754,286	12,206,692	1,114,837	997,933	14,319,462
2001	463,059	141,303	433,499	982,611	6,655,899	17,486,248	1,573,928	965,670	20,025,846
2002	105,458	240,299	253,372	7,218,104	14,197,352	23,988,165	1,780,566	1,905,656	27,674,387
2003	105,479	240,338	253,023	6,042,640	12,881,055	23,124,190	1,737,364	1,736,116	26,597,670
2004	105,352	239,368	251,622	4,871,885	11,498,894	21,321,194	1,771,771	1,537,967	24,630,932
2005	54,767	124,339	137,283	2,462,133	6,248,672	12,324,208	1,062,812	887,941	14,274,961
2006	101,478	94,034	114,302	560,892	7,592,266	12,679,723	2,415,441	805,114	15,900,278
2007	101,357	93,922	114,166	560,222	7,583,729	12,670,034	2,413,913	804,590	15,888,537
2008	101,389	93,951	114,201	560,395	7,586,427	12,673,444	2,414,775	804,867	15,893,086
2009	101,350	93,915	114,158	560,183	7,583,931	12,670,753	2,414,484	804,762	15,889,999
2010	101,362	93,927	114,172	560,250	7,583,874	12,670,041	2,413,768	804,547	15,888,356
2011	101,704	94,247	114,559	562,144	7,612,450	12,711,333	2,423,118	807,295	15,941,746
2012	101,720	94,261	114,576	562,228	7,613,906	12,713,236	2,423,658	807,469	15,944,363
2013	101,724	94,266	114,582	562,257	7,616,272	12,717,347	2,425,624	808,073	15,951,044
2014	101,665	94,211	114,515	561,931	7,614,960	12,717,852	2,427,564	808,639	15,954,055
2015	101,745	94,284	114,605	562,371	7,620,820	12,724,688	2,428,817	809,059	15,962,564
2016	101,638	94,186	114,485	561,780	7,612,060	12,713,877	2,426,300	808,239	15,948,416
2017	101,676	94,221	114,526	561,988	7,615,359	12,718,085	2,427,397	808,592	15,954,074
2018	101,682	94,226	114,533	562,020	7,618,143	12,722,912	2,429,708	809,301	15,961,921
2019	101,588	94,139	114,428	561,505	7,609,740	12,712,091	2,426,802	808,370	15,947,263
2020	101,695	94,239	114,550	562,098	7,617,217	12,720,510	2,428,077	808,808	15,957,395
2021	101,775	94,312	114,639	562,536	7,622,135	12,725,624	2,428,437	808,956	15,963,017
2022	101,667	94,211	114,516	561,935	7,616,744	12,721,101	2,429,215	809,145	15,959,461
2023	101,651	94,199	114,500	561,853	7,612,863	12,714,690	2,426,338	808,256	15,949,284
2024	101,649	94,196	114,497	561,843	7,614,104	12,717,069	2,427,616	808,646	15,953,331
2025	101,766	94,305	114,629	562,490	7,622,503	12,726,716	2,429,239	809,197	15,965,152
2026	101,560	94,113	114,396	561,345	7,607,560	12,709,506	2,426,288	808,201	15,943,995
2027	101,913	94,440	114,795	563,303	7,633,244	12,739,181	2,431,465	809,945	15,980,591
2028	101,533	94,089	114,365	561,198	7,606,127	12,708,194	2,426,377	808,214	15,942,785
2029	101,715	94,258	114,572	562,208	7,618,247	12,721,415	2,427,963	808,783	15,958,161
2030	101,639	94,187	114,486	561,786	7,611,798	12,713,342	2,425,987	808,145	15,947,474
2031	101,891	94,420	114,768	563,175	7,633,346	12,740,505	2,432,799	810,341	15,983,645
2032	101,471	94,031	114,296	560,854	7,601,626	12,702,999	2,425,480	807,912	15,936,391
2033	101,759	94,298	114,621	562,452	7,620,492	12,723,363	2,427,710	808,727	15,959,800
2034	101,726	94,267	114,583	562,265	7,619,721	12,723,613	2,428,800	809,045	15,961,458
2035	101,488	94,047	114,316	560,951	7,602,834	12,704,347	2,425,672	807,977	15,937,996
Total	4,493,784	5,350,249	7,290,391	47,707,684	376,091,338	646,903,607	107,562,060	51,930,365	806,396,032

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	San Luis Division						South San Joaquin Division		
	Reach 3 (20)	Reach 4 (21)	Reach 5 (22)	Reach 6 (23)	Reach 7 (24)	Subtotal (25)	Reach 8C (26)	Reach 8D (27)	Reach 9 (28)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	120,038	428,308	130,105	44,591	104,033	827,075	0	0	0
1969	90,033	460,907	184,467	35,696	235,322	1,006,425	22,013	134,760	86,103
1970	89,547	484,300	226,002	66,070	192,582	1,058,501	26,207	156,981	128,273
1971	99,917	541,574	175,592	64,193	158,170	1,039,446	32,312	190,753	118,372
1972	116,708	647,979	174,519	73,670	154,783	1,167,659	35,031	187,242	130,396
1973	116,791	611,705	158,145	58,344	153,955	1,098,940	51,150	225,747	127,530
1974	120,309	671,455	150,835	63,905	150,230	1,156,734	34,752	199,127	131,298
1975	133,593	839,285	178,974	81,478	157,586	1,390,916	78,523	250,377	159,006
1976	54,938	883,956	220,832	90,305	174,835	1,424,866	39,348	133,933	123,424
1977	73,331	1,114,465	270,734	98,132	196,311	1,752,973	38,086	121,348	178,078
1978	45,867	898,992	203,261	106,938	203,079	1,458,137	45,552	178,805	129,928
1979	223,973	842,508	144,055	99,670	180,734	1,490,940	69,973	150,679	129,756
1980	243,507	1,176,463	222,942	127,625	281,860	2,052,397	57,726	274,848	185,155
1981	265,766	1,065,358	193,048	90,533	1,612,157	3,226,862	80,121	198,256	144,187
1982	279,250	1,241,285	209,371	114,421	1,433,180	3,277,507	59,424	269,086	233,494
1983	214,468	1,949,017	339,809	131,377	2,143,678	4,778,349	49,448	383,476	223,078
1984	241,273	2,233,969	335,166	163,858	2,111,386	5,085,652	42,062	458,489	300,924
1985	322,068	2,882,583	360,431	176,577	1,603,532	5,345,191	58,820	495,500	213,368
1986	416,027	2,996,792	472,551	252,188	601,250	4,738,808	90,730	478,786	596,800
1987	362,738	3,104,592	424,107	236,349	439,232	4,567,018	113,962	412,042	446,067
1988	365,209	2,954,186	456,864	231,754	639,242	4,647,255	96,728	379,073	417,991
1989	263,171	3,182,472	393,589	332,986	633,419	4,805,637	83,282	389,698	400,853
1990	397,353	4,011,110	579,073	464,639	729,132	6,181,307	111,019	436,849	515,611
1991	256,473	4,388,184	543,760	728,156	765,765	6,682,338	104,414	496,794	465,940
1992	302,021	3,792,401	795,587	363,134	815,590	6,068,733	118,315	511,982	417,871
1993	439,725	4,337,616	1,008,394	551,849	734,796	7,072,380	230,338	745,885	490,159
1994	284,348	4,376,288	815,858	396,671	492,730	6,365,895	125,396	602,275	572,430
1995	107,995	5,026,076	1,066,971	440,006	1,356,668	7,997,716	185,681	657,282	432,072
1996	1,003,229	4,738,221	931,944	683,323	1,034,376	8,391,093	112,062	416,294	472,350
1997	859,665	5,761,996	924,289	254,934	646,209	8,447,093	128,190	449,316	728,436
1998	690,845	5,522,567	1,242,589	534,931	654,538	8,645,470	115,748	457,845	429,433
1999	682,241	5,665,432	1,195,278	518,132	652,308	8,713,391	102,948	389,737	400,734
2000	777,231	6,164,475	1,130,756	559,466	850,512	9,482,440	132,794	522,132	490,887
2001	2,893,968	6,089,174	759,336	307,868	434,961	10,485,307	71,675	540,079	521,040
2002	957,114	8,551,306	1,599,498	649,809	890,137	12,647,864	2,296,305	496,925	668,265
2003	957,309	8,409,843	1,584,269	647,595	884,251	12,483,267	2,095,917	496,735	668,331
2004	947,525	7,951,224	1,671,950	633,456	858,777	12,062,932	1,382,322	489,715	660,778
2005	521,268	4,662,282	968,244	356,946	477,299	6,986,039	441,493	267,464	355,344
2006	902,783	5,105,828	1,093,930	515,048	703,383	8,320,972	305,516	1,160,744	951,971
2007	902,559	5,101,904	1,092,621	514,612	702,769	8,314,465	305,158	1,159,652	951,108
2008	903,115	5,104,904	1,092,960	514,887	703,136	8,319,002	305,256	1,160,204	951,585
2009	903,247	5,104,474	1,092,546	514,819	703,025	8,318,111	305,144	1,159,969	951,415
2010	902,349	5,101,181	1,092,677	514,557	702,703	8,313,467	305,170	1,159,578	951,032
2011	911,844	5,130,378	1,098,290	517,687	706,923	8,365,122	306,218	1,164,318	955,011
2012	912,241	5,132,340	1,098,457	517,864	707,155	8,368,057	306,268	1,164,656	955,308
2013	914,267	5,140,603	1,098,512	518,549	708,021	8,379,952	306,304	1,165,802	956,373
2014	917,001	5,150,062	1,097,875	519,273	708,907	8,393,118	306,162	1,166,816	957,401
2015	917,416	5,153,711	1,098,734	519,650	709,423	8,398,934	306,400	1,167,679	958,104
2016	915,973	5,145,261	1,097,580	518,852	708,361	8,386,027	306,068	1,166,038	956,708
2017	916,705	5,149,135	1,097,985	519,207	708,827	8,391,859	306,188	1,166,739	957,313
2018	919,089	5,158,831	1,098,049	520,010	709,846	8,405,825	306,232	1,168,082	958,565
2019	917,077	5,148,426	1,097,042	519,065	708,604	8,390,214	305,935	1,166,240	956,966
2020	917,197	5,151,603	1,098,200	519,429	709,119	8,395,548	306,252	1,167,165	957,687
2021	916,669	5,151,503	1,099,057	519,494	709,242	8,395,965	306,480	1,167,516	957,910
2022	918,739	5,157,054	1,097,883	519,851	709,635	8,403,162	306,182	1,167,771	958,293
2023	915,862	5,145,146	1,097,723	518,854	708,371	8,385,956	306,108	1,166,084	956,734
2024	917,238	5,150,610	1,097,704	519,305	708,936	8,393,793	306,117	1,166,817	957,425
2025	917,614	5,155,077	1,098,968	519,781	709,598	8,401,038	306,466	1,167,962	958,340
2026	916,864	5,146,854	1,096,731	518,910	708,393	8,387,752	305,848	1,165,893	956,679
2027	918,286	5,161,453	1,100,555	520,446	710,514	8,411,254	306,905	1,169,506	959,589
2028	917,263	5,147,770	1,096,444	518,962	708,443	8,388,882	305,775	1,165,898	956,717
2029	916,848	5,150,727	1,098,417	519,375	709,059	8,394,426	306,308	1,167,136	957,634
2030	915,626	5,143,911	1,097,594	518,742	708,222	8,384,095	306,069	1,165,863	956,540
2031	919,964	5,167,601	1,100,306	520,930	711,115	8,419,916	306,854	1,170,234	960,303
2032	917,026	5,145,252	1,095,772	518,696	708,074	8,384,820	305,588	1,165,269	956,211
2033	916,074	5,148,740	1,098,892	519,251	708,928	8,391,885	306,428	1,167,070	957,513
2034	917,616	5,154,054	1,098,529	519,659	709,425	8,399,283	306,346	1,167,638	958,090
2035	917,028	5,145,708	1,095,962	518,749	708,152	8,385,599	305,639	1,165,411	956,320
Total	43,768,412	274,910,447	55,359,190	26,386,089	47,074,914	447,499,052	18,141,251	48,616,065	41,584,607

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	South San Joaquin Division (continued)								
Calendar Year	*Reach 10A (29)*	*Reach 11B (30)*	*Reach 12D (31)*	*Reach 12E (32)*	*Reach 13B (33)*	*Reach 14A (34)*	*Reach 14B (35)*	*Reach 14C (36)*	*Reach 15A (37)*
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	83,706	59,077	0	0	0	0	0	0	0
1970	118,046	85,758	94,171	123,374	152,424	0	0	0	0
1971	129,811	80,282	95,075	91,389	167,142	691,791	151,979	111,623	529,723
1972	117,625	84,287	98,647	115,592	146,096	877,535	124,831	101,479	609,058
1973	117,706	92,257	74,238	114,843	221,385	961,855	120,106	99,429	692,748
1974	141,658	98,103	74,914	193,523	141,540	898,272	143,866	115,649	853,098
1975	207,908	124,105	61,799	117,194	108,154	1,156,757	180,614	119,889	988,045
1976	139,134	69,715	33,655	147,908	134,063	1,124,051	177,086	114,133	1,037,799
1977	194,086	108,644	91,547	175,039	137,975	1,397,006	203,837	119,467	1,339,196
1978	168,634	106,702	72,585	170,578	151,120	1,254,043	139,662	132,224	1,265,813
1979	175,107	85,942	56,331	174,147	150,029	1,490,461	201,935	260,981	1,216,126
1980	284,207	120,896	123,120	167,249	164,749	1,988,619	189,132	238,607	1,437,614
1981	199,927	76,965	33,322	113,202	171,669	1,741,488	163,934	161,182	1,799,832
1982	264,947	158,178	142,631	224,170	224,051	1,793,867	195,086	15,768	1,933,859
1983	308,801	136,350	124,724	203,733	217,324	2,421,794	199,708	181,879	2,550,842
1984	396,448	163,331	108,212	188,724	245,764	3,312,127	329,490	204,332	3,215,901
1985	298,337	198,368	154,995	194,327	360,308	3,463,178	237,127	180,068	3,427,049
1986	422,493	248,170	242,660	346,410	349,369	3,781,427	320,984	360,156	3,574,451
1987	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	703,360	346,521	239,755	482,219	445,771	4,012,431	414,731	254,263	3,727,961
1995	881,902	405,045	242,253	622,654	507,102	4,607,154	309,283	315,905	3,973,757
1996	984,784	367,570	238,622	519,560	604,736	4,892,967	214,773	187,784	4,331,630
1997	1,864,113	309,696	254,080	516,115	429,771	5,094,202	261,221	275,610	4,011,366
1998	1,011,284	295,927	170,556	384,226	484,072	4,753,508	309,440	248,178	4,695,541
1999	1,112,347	368,053	168,539	392,059	491,166	5,047,001	341,642	227,024	4,771,979
2000	1,072,564	394,566	217,194	620,721	598,869	6,219,414	345,592	142,590	5,903,527
2001	861,152	360,571	764,687	3,082,409	598,998	4,412,028	(153,953)	(113,419)	5,831,309
2002	1,901,655	544,572	1,125,203	584,867	615,874	7,812,247	363,558	424,622	6,699,631
2003	1,900,860	544,650	1,125,209	584,981	616,096	7,788,824	363,893	424,588	8,201,544
2004	1,625,116	539,848	1,122,427	577,858	606,080	7,422,634	359,444	419,834	8,833,703
2005	717,859	289,250	571,558	312,460	341,932	3,797,891	210,205	226,217	5,307,049
2006	968,152	724,612	658,092	1,024,239	1,076,512	6,658,564	908,505	627,572	6,343,763
2007	966,995	723,906	657,569	1,023,185	1,075,467	6,651,668	907,701	627,030	6,336,801
2008	967,293	724,239	657,947	1,023,616	1,075,958	6,654,421	908,165	627,356	6,339,165
2009	966,929	724,077	657,880	1,023,345	1,075,718	6,652,640	908,017	627,264	6,337,194
2010	967,045	723,872	657,485	1,023,161	1,075,413	6,651,529	907,621	626,970	6,336,845
2011	970,309	726,770	660,439	1,027,088	1,079,721	6,674,345	911,468	629,660	6,357,483
2012	970,457	726,971	660,685	1,027,339	1,080,016	6,675,942	911,760	629,866	6,358,786
2013	970,504	727,610	661,694	1,028,019	1,080,960	6,680,191	912,841	630,657	6,361,385
2014	969,943	728,123	662,828	1,028,401	1,081,718	6,682,409	913,923	631,472	6,361,241
2015	970,701	728,665	663,299	1,029,177	1,082,522	6,687,450	914,591	631,929	6,366,109
2016	969,681	727,670	662,231	1,027,854	1,081,047	6,678,938	913,233	630,977	6,358,558
2017	970,039	728,088	662,719	1,028,391	1,081,666	6,682,371	913,828	631,395	6,361,467
2018	970,096	728,838	663,900	1,029,190	1,082,775	6,687,358	915,099	632,322	6,364,513
2019	969,206	727,741	662,599	1,027,799	1,081,149	6,678,448	913,523	631,206	6,357,062
2020	970,230	728,342	663,026	1,028,707	1,082,041	6,684,393	914,197	631,660	6,363,127
2021	970,987	728,598	663,039	1,029,187	1,082,425	6,687,594	914,377	631,760	6,366,924
2022	969,950	728,652	663,680	1,028,956	1,082,501	6,685,860	914,829	632,133	6,363,271
2023	969,808	727,706	662,223	1,027,929	1,081,101	6,679,428	913,255	630,984	6,359,168
2024	969,791	728,112	662,889	1,028,347	1,081,701	6,682,025	913,957	631,499	6,360,632
2025	970,907	728,840	663,472	1,029,414	1,082,782	6,689,003	914,817	632,088	6,367,540
2026	968,932	727,528	662,399	1,027,499	1,080,831	6,676,500	913,250	631,015	6,355,229
2027	972,309	729,813	664,301	1,030,818	1,084,228	6,698,140	915,999	632,900	6,376,430
2028	968,677	727,508	662,501	1,027,408	1,080,800	6,675,860	913,303	631,065	6,354,207
2029	970,421	728,340	662,923	1,028,761	1,082,042	6,684,785	914,129	631,604	6,363,846
2030	969,693	727,572	662,066	1,027,758	1,080,903	6,678,327	913,063	630,849	6,358,233
2031	972,090	730,197	665,042	1,031,162	1,084,796	6,700,208	916,741	633,449	6,377,074
2032	968,084	727,110	662,174	1,026,828	1,080,208	6,672,079	912,827	630,739	6,350,493
2033	970,841	728,339	662,698	1,028,875	1,082,043	6,685,616	913,980	631,478	6,365,397
2034	970,520	728,627	663,334	1,029,086	1,082,465	6,686,842	914,587	631,936	6,365,293
2035	968,251	727,202	662,233	1,026,972	1,080,346	6,673,021	912,927	630,807	6,351,470
Total	51,913,551	31,020,668	29,578,105	45,567,721	45,156,404	323,495,223	37,272,513	26,726,513	313,562,585

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

	California Aqueduct (continued)								
	South San Joaquin Division (continued)		Tehachapi Division			Mojave Division			
Calendar Year	Reach 16A (38)	Subtotal (39)	Reach 17E (40)	Reach 17F (41)	Subtotal (42)	Reach 18A (43)	Reach 19 (44)	Reach 19C (45)	Reach 20A (46)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	385,659	0	0	0	0	0	0	0
1970	0	885,234	0	0	0	0	0	0	0
1971	10,291	2,400,543	3,471	0	3,471	0	0	0	0
1972	1,106,884	3,734,703	1,424,782	28,127	1,452,909	36,699	135,675	0	130,711
1973	1,243,941	4,142,935	1,777,260	49,949	1,827,209	36,207	146,739	0	161,838
1974	1,343,972	4,369,772	2,298,091	16,259	2,314,350	30,525	90,404	0	115,571
1975	1,537,862	5,090,233	2,403,430	35,193	2,438,623	40,588	122,584	0	137,684
1976	1,727,428	5,001,677	2,776,194	126,653	2,902,847	118,610	201,215	0	182,927
1977	1,961,081	6,065,390	3,845,464	83,936	3,929,400	93,565	226,906	0	180,884
1978	1,922,950	5,738,596	2,954,313	42,637	2,996,950	91,815	200,759	0	215,673
1979	1,798,566	5,960,033	3,539,402	45,997	3,585,399	99,670	307,386	0	261,205
1980	2,231,456	7,463,378	4,749,245	54,806	4,804,051	116,487	446,175	0	290,719
1981	2,762,773	7,646,858	5,485,957	64,886	5,550,843	316,590	585,003	0	325,112
1982	2,961,383	8,475,944	6,349,080	55,997	6,405,077	447,739	638,615	0	275,763
1983	4,302,165	11,303,322	14,153,033	96,397	14,249,430	345,229	564,698	0	368,139
1984	5,077,824	14,043,628	18,448,383	77,201	18,525,584	267,497	563,588	0	413,443
1985	5,683,454	14,964,899	18,134,698	137,928	18,272,626	298,932	475,028	0	450,444
1986	5,780,666	16,593,102	19,297,129	109,938	19,407,067	703,413	350,906	0	347,690
1987	5,636,043	17,063,245	17,398,908	98,355	17,497,263	1,261,056	558,996	0	818,475
1988	5,150,238	15,704,693	17,697,838	138,405	17,836,243	1,242,139	560,911	0	585,014
1989	5,458,633	16,336,263	17,641,151	88,488	17,729,639	1,049,615	283,065	0	366,590
1990	6,440,643	18,959,051	19,995,760	99,868	20,095,628	1,298,537	229,083	0	469,502
1991	5,805,189	18,565,503	19,903,346	131,558	20,034,904	1,432,360	665,443	0	1,025,089
1992	6,471,964	19,838,439	18,194,788	279,610	18,474,398	1,167,898	738,238	0	666,181
1993	7,583,165	23,092,943	19,051,939	199,640	19,251,579	1,868,745	606,763	0	1,232,409
1994	7,141,764	19,068,877	17,354,702	204,958	17,559,660	1,699,467	763,489	0	1,145,599
1995	6,540,575	19,680,665	19,360,033	191,516	19,551,549	1,284,146	614,314	0	1,941,939
1996	7,065,052	20,408,184	19,041,451	237,846	19,279,297	1,163,708	576,674	0	1,335,804
1997	7,387,904	21,710,020	19,724,881	176,120	19,901,001	1,330,450	730,628	0	1,401,562
1998	7,531,886	20,887,644	23,229,552	182,754	23,412,306	1,513,824	309,052	0	7,568,901
1999	8,811,836	22,625,065	20,128,027	149,204	20,277,231	3,075,970	623,413	0	5,289,762
2000	11,422,078	28,082,928	22,883,546	134,048	23,017,594	1,766,747	764,858	0	2,246,927
2001	13,937,597	30,714,173	22,955,393	367,251	23,322,644	2,102,951	2,437,643	0	2,338,308
2002	15,126,506	38,660,230	34,655,546	501,188	35,156,734	5,645,293	1,370,650	0	2,460,170
2003	14,534,256	39,345,884	33,426,536	500,998	33,927,534	5,317,004	1,387,165	0	2,469,399
2004	13,813,461	37,853,220	35,291,966	495,281	35,787,247	5,050,866	1,361,873	0	2,329,010
2005	8,410,359	21,249,081	26,932,079	263,000	27,195,079	2,678,301	785,392	0	1,242,270
2006	9,158,288	30,566,530	25,976,429	381,180	26,357,609	2,191,108	1,168,166	0	1,760,782
2007	9,148,880	30,535,120	25,947,179	380,790	26,327,969	2,188,982	1,169,152	0	1,760,203
2008	9,152,708	30,547,913	25,956,381	380,951	26,337,332	2,189,977	1,171,016	0	1,761,714
2009	9,150,308	30,539,900	25,947,807	380,854	26,328,661	2,189,489	1,172,217	0	1,762,103
2010	9,148,673	30,534,394	25,947,695	380,781	26,328,476	2,188,880	1,168,271	0	1,759,691
2011	9,178,169	30,640,999	26,001,657	382,250	26,383,907	2,197,690	1,178,552	0	1,769,686
2012	9,180,399	30,648,453	26,006,594	382,341	26,388,935	2,198,293	1,180,073	0	1,770,818
2013	9,186,477	30,668,817	26,014,522	382,602	26,397,124	2,200,210	1,188,718	0	1,776,423
2014	9,189,882	30,680,319	26,009,760	382,751	26,392,511	2,201,731	1,201,173	0	1,783,840
2015	9,196,807	30,703,433	26,029,789	383,037	26,412,826	2,203,372	1,201,797	0	1,785,032
2016	9,185,024	30,664,027	25,999,934	382,547	26,382,481	2,200,378	1,197,436	0	1,781,166
2017	9,189,803	30,680,007	26,011,163	382,747	26,393,910	2,201,641	1,200,026	0	1,783,202
2018	9,196,930	30,703,900	26,020,472	383,047	26,403,519	2,203,883	1,210,038	0	1,789,692
2019	9,184,522	30,662,396	25,991,901	382,531	26,374,432	2,200,593	1,203,072	0	1,784,290
2020	9,192,633	30,689,460	26,017,466	382,865	26,400,331	2,202,404	1,201,869	0	1,784,582
2021	9,196,918	30,703,715	26,034,367	383,041	26,417,408	2,203,196	1,198,424	0	1,783,161
2022	9,194,855	30,696,933	26,015,719	382,963	26,398,682	2,203,341	1,209,068	0	1,788,918
2023	9,185,690	30,666,218	26,002,689	382,574	26,385,263	2,200,500	1,196,944	0	1,780,983
2024	9,189,421	30,678,733	26,006,813	382,733	26,389,546	2,201,717	1,202,874	0	1,784,770
2025	9,198,966	30,710,597	26,035,545	383,131	26,418,676	2,203,916	1,202,576	0	1,785,747
2026	9,181,852	30,653,455	25,984,454	382,420	26,366,874	2,199,951	1,202,756	0	1,783,799
2027	9,211,491	30,752,429	26,072,256	383,651	26,455,907	2,206,857	1,203,156	0	1,787,581
2028	9,181,040	30,650,759	25,979,516	382,387	26,361,903	2,199,878	1,204,749	0	1,784,817
2029	9,193,118	30,691,047	26,021,033	382,885	26,403,918	2,202,419	1,200,206	0	1,783,717
2030	9,184,159	30,661,095	25,999,078	382,509	26,381,587	2,200,104	1,196,190	0	1,780,375
2031	9,214,547	30,762,697	26,072,437	383,783	26,456,220	2,208,007	1,210,734	0	1,792,223
2032	9,175,857	30,633,467	25,964,115	382,172	26,346,287	2,198,676	1,204,676	0	1,784,149
2033	9,194,138	30,694,416	26,028,799	382,923	26,411,722	2,202,423	1,196,260	0	1,781,618
2034	9,196,026	30,700,790	26,026,017	383,008	26,409,025	2,203,272	1,203,264	0	1,785,784
2035	9,177,136	30,637,735	25,968,249	382,225	26,350,474	2,198,968	1,204,648	0	1,784,303
Total	481,236,562	1,493,871,768	1,312,597,210	16,939,671	1,329,536,881	110,984,499	56,271,432	0	94,175,883

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Mojave Division (continued)							Santa Ana Division	
	Reach 20B (47)	Reach 21 (48)	Reach 22A (49)	Reach 22B (50)	Reach 23 (51)	Reach 24 (52)	Subtotal (53)	Reach 25 (54)	Reach 26A (55)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	120,271	75,768	80,436	1,036,831	51,520	362,153	2,030,064	26	578
1973	148,631	60,641	66,539	1,283,816	65,475	353,262	2,323,148	20,541	679,328
1974	88,200	65,007	77,667	1,477,946	96,340	334,302	2,375,962	24,380	799,400
1975	118,898	135,462	77,825	1,630,554	111,141	419,450	2,794,186	29,337	885,021
1976	151,555	106,314	131,007	1,598,071	107,787	304,638	2,902,124	51,356	1,103,139
1977	112,589	98,757	86,279	1,882,080	71,228	48,359	2,800,647	62,584	1,412,740
1978	120,584	109,271	71,763	2,211,965	72,179	637,401	3,731,410	67,186	1,159,950
1979	194,104	203,078	121,586	2,104,832	76,960	202,566	3,571,387	84,462	1,235,189
1980	237,250	156,794	117,274	2,670,387	147,009	688,605	4,870,700	72,651	1,532,535
1981	292,081	181,062	119,602	3,030,407	134,895	47,750	5,032,502	35,662	1,575,444
1982	330,502	186,109	125,429	3,248,883	299,712	623,755	6,176,507	26,852	1,822,250
1983	326,767	219,943	140,523	3,899,769	223,626	384,292	6,472,986	19,017	1,663,599
1984	329,933	266,919	146,866	4,783,997	59,337	1,104,149	7,935,729	11,319	2,325,661
1985	388,327	799,514	125,780	5,330,501	261,135	811,346	8,941,007	17,764	2,707,662
1986	315,566	242,158	178,847	6,190,812	156,053	515,945	9,001,390	31,012	2,768,728
1987	357,971	298,190	236,263	5,731,239	151,796	732,607	10,146,593	19,362	2,847,390
1988	400,005	331,099	149,876	6,910,472	253,833	970,052	11,403,401	36,576	3,087,873
1989	345,614	194,047	138,825	5,963,386	349,544	1,242,144	9,932,830	30,881	3,190,809
1990	202,412	273,748	49,174	6,905,442	436,785	1,891,053	11,755,736	25,518	3,330,913
1991	516,257	478,555	231,223	7,488,366	263,723	1,561,051	13,662,067	32,172	3,847,589
1992	696,623	585,072	168,251	7,076,997	317,042	622,116	12,038,418	55,819	4,043,878
1993	818,675	509,309	207,818	7,765,751	359,632	1,708,915	15,078,017	72,464	5,638,325
1994	957,231	873,175	241,671	7,690,314	1,220,795	1,258,741	15,850,482	105,373	5,139,776
1995	2,411,412	355,198	179,930	6,994,639	842,041	746,371	15,369,990	96,781	4,357,648
1996	1,713,145	790,618	136,397	8,590,347	889,842	(78,782)	15,117,753	156,395	4,051,744
1997	2,043,179	640,177	189,241	8,138,580	1,586,227	3,355,446	19,415,490	177,217	4,585,198
1998	508,030	297,621	115,100	8,888,912	1,925,089	1,134,837	22,261,366	142,703	4,857,213
1999	1,575,128	1,337,595	159,177	9,550,759	1,661,140	818,131	24,091,075	187,768	5,892,126
2000	1,468,266	1,011,828	227,667	9,780,729	1,777,136	1,497,001	20,541,159	292,330	4,117,563
2001	1,419,501	1,026,963	497,272	6,273,696	2,207,443	15,431	18,319,208	239,292	1,943,391
2002	1,372,952	981,187	2,573,475	11,705,654	1,068,341	2,000,746	29,178,468	1,634,762	3,247,309
2003	1,382,805	987,845	2,584,654	12,945,606	2,361,290	1,873,957	31,309,725	1,640,183	5,248,103
2004	2,223,187	969,996	2,575,301	13,274,206	3,342,610	1,717,151	32,844,200	1,641,772	7,080,983
2005	1,615,380	535,426	2,122,553	7,814,827	2,518,092	945,678	20,257,919	1,416,760	5,477,401
2006	1,030,986	775,631	427,132	9,275,911	503,013	1,046,119	18,178,848	76,308	6,796,854
2007	1,031,280	775,566	427,302	9,271,192	502,819	2,450,165	19,576,661	76,216	6,789,272
2008	1,032,566	776,355	427,861	9,278,116	503,239	1,803,001	18,943,845	76,241	6,791,724
2009	1,033,229	776,656	428,169	9,279,004	503,330	2,422,029	19,566,226	76,212	6,789,527
2010	1,030,729	775,266	427,055	9,269,058	502,661	1,980,447	19,102,058	76,221	6,789,376
2011	1,038,344	780,201	430,337	9,311,911	504,250	2,493,875	19,704,846	76,479	6,810,527
2012	1,039,365	780,803	430,786	9,316,880	504,547	2,129,815	19,351,380	76,490	6,811,859
2013	1,044,933	783,958	433,250	9,340,430	506,067	1,122,539	18,396,528	76,494	6,814,188
2014	1,052,772	788,278	436,747	9,370,522	508,094	2,937,260	20,280,417	76,450	6,813,334
2015	1,053,394	788,784	436,999	9,376,933	508,420	1,116,251	18,470,982	76,509	6,818,568
2016	1,050,295	786,827	435,657	9,358,629	507,320	3,201,834	20,519,542	76,429	6,810,650
2017	1,052,063	787,898	436,431	9,367,837	507,876	1,869,934	19,206,908	76,457	6,813,654
2018	1,058,512	791,555	439,286	9,395,227	509,657	2,203,665	19,601,515	76,461	6,816,389
2019	1,053,778	788,701	437,217	9,370,687	508,134	3,184,560	20,531,032	76,392	6,808,727
2020	1,053,298	788,634	436,972	9,373,967	508,247	1,947,851	19,297,824	76,472	6,815,352
2021	1,051,307	787,660	436,067	9,369,467	507,875	865,541	18,202,698	76,532	6,819,649
2022	1,057,845	791,149	438,995	9,391,483	509,395	2,036,396	19,426,590	76,450	6,815,114
2023	1,050,017	786,696	435,531	9,357,964	507,239	3,145,474	20,461,348	76,439	6,811,347
2024	1,053,817	788,840	437,216	9,373,800	508,268	1,863,462	19,214,764	76,437	6,812,604
2025	1,053,953	789,137	437,240	9,380,163	508,580	2,072,589	19,433,901	76,525	6,820,084
2026	1,053,494	788,487	437,102	9,367,990	507,967	3,260,418	20,601,964	76,370	6,806,771
2027	1,054,731	789,860	437,545	9,390,599	509,114	1,679,219	19,058,662	76,636	6,829,667
2028	1,054,704	789,118	437,644	9,371,837	508,257	902,254	18,253,258	76,350	6,805,551
2029	1,052,290	788,102	436,518	9,370,616	507,995	3,078,038	20,419,901	76,487	6,816,227
2030	1,049,496	786,379	435,302	9,355,158	507,063	3,201,766	20,511,833	76,430	6,810,381
2031	1,059,536	792,529	439,681	9,409,592	510,363	252,035	17,674,700	76,619	6,829,945
2032	1,054,482	788,877	437,562	9,367,895	508,064	3,050,177	20,394,558	76,303	6,801,535
2033	1,049,874	786,821	435,434	9,362,612	507,428	1,606,365	18,928,835	76,521	6,818,128
2034	1,054,282	789,251	437,401	9,379,512	508,569	1,377,344	18,738,679	76,495	6,817,620
2035	1,054,512	788,927	437,572	9,368,703	508,070	4,710,513	22,056,216	76,317	6,802,604
Total	56,762,915	38,961,392	27,499,302	482,444,468	40,678,719	95,861,555	1,003,640,165	10,851,019	307,963,684

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Santa Ana Division (continued)				West Branch				
	Reach 28G (56)	Reach 28H (57)	Reach 28I (58)	Subtotal (59)	Reach 29A (60)	Reach 29F (61)	Reach 29G (62)	Reach 29H (63)	Reach 29I (64)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	109	30	0	743	719,255	159,249	199,145	234,196	88,198
1973	136,352	79	0	836,300	779,949	339,363	122,664	264,850	119,743
1974	155,262	34,693	854,637	1,868,372	883,312	158,366	112,458	350,160	(4,525)
1975	110,729	69,082	723,814	1,817,983	1,049,990	176,676	194,724	801,457	75,870
1976	138,575	100,400	635,853	2,029,323	1,220,429	215,588	202,591	624,614	98,268
1977	127,543	92,647	825,880	2,521,394	1,268,813	116,939	218,129	684,679	184
1978	166,919	68,363	835,082	2,297,500	1,174,708	342,479	267,308	415,641	17,764
1979	142,586	92,812	265,525	1,820,574	1,366,942	285,575	284,188	972,584	29,850
1980	158,340	129,897	1,120,131	3,013,554	1,698,215	224,472	455,619	874,259	288,303
1981	160,053	111,722	333,550	2,216,431	1,783,405	123,264	615,047	2,305,110	8,794
1982	205,350	135,463	1,518,759	3,708,674	1,919,979	190,500	702,265	2,208,264	414,230
1983	244,720	124,651	412,806	2,464,793	2,739,814	149,333	888,475	745,939	579,882
1984	240,496	190,924	769,068	3,537,468	3,463,038	81,260	2,358,495	537,207	719,282
1985	451,600	182,242	871,492	4,230,760	3,866,946	295,836	3,047,591	975,729	614,735
1986	439,048	256,526	982,332	4,477,646	3,791,427	457,604	2,893,171	1,480,015	1,032,216
1987	278,094	218,717	1,118,529	4,482,092	3,423,494	213,106	2,933,342	944,604	459,398
1988	271,868	200,811	1,176,659	4,773,787	3,447,403	255,113	3,017,463	883,714	446,468
1989	230,953	281,861	1,130,035	4,864,539	4,025,641	405,583	2,738,143	1,398,165	865,738
1990	437,812	308,144	1,538,449	5,640,836	4,088,481	383,655	3,232,445	3,153,869	777,713
1991	843,388	632,912	1,630,321	6,986,382	3,862,056	304,143	3,550,063	639,527	763,037
1992	281,864	5,636,464	1,102,519	11,120,544	4,286,050	327,802	3,892,480	1,014,551	872,953
1993	382,195	570,563	994,721	7,658,268	3,969,075	343,304	4,515,385	1,670,952	852,208
1994	617,136	415,603	1,020,211	7,298,099	3,649,849	296,166	3,359,381	1,878,175	872,624
1995	1,308,828	704,154	894,338	7,361,749	4,137,046	883,315	4,750,275	1,588,080	754,904
1996	1,001,063	1,041,697	1,316,493	7,567,392	4,511,858	966,044	3,593,671	4,208,195	877,111
1997	493,841	949,188	953,590	7,159,034	4,543,506	1,030,809	2,429,066	3,755,901	1,597,361
1998	379,997	991,426	(67,444)	6,303,895	4,872,244	464,376	3,474,463	2,398,630	1,996,114
1999	485,075	1,955,447	820,873	9,341,289	4,756,543	4,331,664	4,863,363	1,365,710	991,264
2000	526,893	1,024,793	1,147,781	7,109,360	5,471,045	879,720	3,845,330	3,091,644	338,843
2001	1,350,800	839,465	5,641,041	10,013,989	4,760,560	1,377,941	4,464,726	4,578,422	599,861
2002	2,020,065	1,293,988	1,633,647	9,829,771	7,763,597	667,193	6,650,455	4,554,391	4,695,177
2003	1,989,297	1,292,817	1,634,539	11,804,939	8,084,848	666,746	6,414,170	4,400,559	4,624,105
2004	2,009,087	1,278,182	1,533,767	13,543,791	8,161,422	653,847	6,109,033	4,979,973	4,366,313
2005	1,067,300	663,724	802,027	9,427,212	4,849,328	355,490	3,230,406	3,207,792	2,129,996
2006	708,533	493,993	1,822,302	9,897,990	6,866,437	728,324	3,348,797	4,038,630	810,228
2007	707,685	493,402	2,418,408	10,484,983	6,858,732	730,052	3,345,556	4,042,547	809,259
2008	707,904	493,554	2,193,884	10,263,307	6,861,180	731,930	3,347,085	4,049,543	809,509
2009	707,637	493,368	2,253,072	10,319,816	6,858,929	733,411	3,346,345	4,054,197	809,203
2010	707,721	493,428	2,609,217	10,675,963	6,858,865	729,041	3,345,394	4,039,593	809,301
2011	709,992	495,094	2,147,001	10,239,093	6,879,392	738,408	3,357,247	4,077,671	811,028
2012	710,100	495,169	2,350,058	10,443,676	6,880,712	739,889	3,358,168	4,082,846	811,152
2013	710,136	495,193	2,645,290	10,741,301	6,882,889	749,157	3,361,118	4,114,676	811,192
2014	709,724	494,906	2,215,591	10,310,005	6,881,753	763,032	3,363,498	4,161,371	810,722
2015	710,280	495,293	2,496,712	10,597,362	6,887,049	763,199	3,365,994	4,163,101	811,355
2016	709,533	494,773	2,141,480	10,232,865	6,879,119	758,962	3,361,403	4,146,808	810,503
2017	709,796	494,956	2,820,743	10,915,606	6,882,115	761,526	3,363,330	4,156,148	810,803
2018	709,836	494,985	2,284,945	10,382,616	6,884,671	772,382	3,366,791	4,193,295	810,851
2019	709,186	494,530	2,844,071	10,932,906	6,877,059	765,209	3,361,733	4,167,079	810,106
2020	709,935	495,053	2,005,418	10,102,230	6,883,801	763,411	3,364,492	4,162,134	810,962
2021	710,489	495,439	2,354,866	10,456,975	6,888,231	759,257	3,365,687	4,149,206	811,595
2022	709,730	494,910	3,271,101	11,367,305	6,883,407	771,175	3,365,933	4,188,512	810,728
2023	709,627	494,838	2,289,912	10,382,163	6,879,847	758,241	3,361,567	4,144,054	810,610
2024	709,613	494,829	2,645,646	10,739,129	6,880,996	764,630	3,363,438	4,165,905	810,595
2025	710,430	495,398	1,925,019	10,027,456	6,888,582	763,778	3,366,794	4,164,316	811,528
2026	708,985	494,391	3,182,770	11,269,287	6,875,090	764,900	3,360,740	4,165,356	809,877
2027	711,456	496,114	1,625,186	9,739,059	6,898,280	763,582	3,371,291	4,165,760	812,701
2028	708,799	494,261	2,555,699	10,640,660	6,873,804	767,352	3,360,656	4,173,968	809,665
2029	710,075	495,150	2,414,039	10,511,978	6,884,722	761,369	3,364,491	4,155,120	811,122
2030	709,542	494,779	2,486,841	10,577,973	6,878,889	757,440	3,360,950	4,141,095	810,514
2031	711,296	496,002	3,317,561	11,431,423	6,898,399	771,834	3,373,072	4,193,920	812,517
2032	708,365	493,958	1,825,736	9,905,897	6,869,739	767,626	3,358,817	4,173,997	809,169
2033	710,381	495,365	2,686,381	10,786,776	6,886,735	756,851	3,364,481	4,140,428	811,472
2034	710,146	495,201	2,434,263	10,533,725	6,886,072	764,686	3,365,817	4,167,285	811,205
2035	708,488	494,044	3,228,187	11,309,640	6,870,825	767,215	3,359,236	4,172,114	809,309
Total	40,138,658	36,731,863	109,662,424	505,347,648	326,756,589	40,810,390	190,445,451	187,298,233	57,282,763

Table B-11

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)									Grand Total (74)
	West Branch (cont'd.)		Coastal Branch						Total (73)	
	Reach 30 (65)	Subtotal (66)	Reach 31A[a] (67)	Reach 33A (68)	Reach 33B (69)	Reach 34 (70)	Reach 35 (71)	Subtotal (72)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	42,918
1963	0	0	0	0	0	0	0	0	0	168,358
1964	0	0	0	0	0	0	0	0	0	184,729
1965	0	0	0	0	0	0	0	0	0	378,874
1966	0	0	0	0	0	0	0	0	0	408,397
1967	0	0	0	0	0	0	0	0	0	634,505
1968	0	0	0	0	0	0	0	0	2,160,548	2,745,160
1969	0	0	509,728	0	0	0	0	509,728	3,324,718	4,074,939
1970	0	0	609,988	0	0	0	0	609,988	3,983,062	4,676,282
1971	0	0	699,052	0	0	0	0	699,052	5,614,013	6,185,714
1972	420,789	1,820,832	697,576	0	0	0	0	697,576	12,353,356	12,998,869
1973	621,431	2,248,000	641,626	0	0	0	0	641,626	14,590,688	15,194,233
1974	723,949	2,223,720	669,279	0	0	0	0	669,279	16,598,762	17,372,561
1975	841,991	3,140,708	806,429	0	0	0	0	806,429	19,569,999	20,517,423
1976	(650,944)	1,710,546	840,927	0	0	0	0	840,927	19,002,859	20,027,213
1977	634,581	2,923,325	872,169	0	0	0	0	872,169	23,267,885	24,213,489
1978	3,088,954	5,306,854	934,119	0	0	0	0	934,119	24,818,739	26,012,786
1979	958,068	3,897,207	871,688	0	0	0	0	871,688	23,421,881	24,675,598
1980	222,549	3,763,417	1,047,396	4,790	0	30	75	1,052,291	30,105,348	32,038,398
1981	1,093,897	5,929,517	1,037,469	4,790	0	30	75	1,042,364	33,884,524	35,516,366
1982	978,624	6,413,862	1,015,555	4,790	0	30	75	1,020,450	39,515,188	41,611,655
1983	3,698,681	8,802,124	1,146,269	4,957	0	30	77	1,151,333	54,543,263	56,802,781
1984	755,136	7,914,418	1,427,192	5,051	0	31	78	1,432,352	63,947,633	67,105,188
1985	1,753,355	10,554,192	1,849,827	5,051	0	31	78	1,854,987	69,700,009	73,272,898
1986	1,338,657	10,993,090	1,714,723	5,051	0	31	78	1,719,883	73,437,761	76,707,917
1987	1,406,519	9,380,463	1,689,141	4,324	0	26	67	1,693,558	71,443,424	75,217,576
1988	1,452,589	9,502,750	1,964,428	4,509	0	28	70	1,969,035	72,349,117	76,060,618
1989	1,505,029	10,938,299	1,768,942	4,509	0	28	70	1,773,549	73,894,076	78,662,348
1990	847,500	12,483,663	2,274,772	0	0	0	0	2,274,772	86,130,115	91,361,385
1991	1,191,090	10,309,916	2,187,841	0	0	0	0	2,187,841	86,877,284	90,982,870
1992	2,259,032	12,652,868	2,465,364	0	0	0	0	2,465,364	94,167,321	99,235,524
1993	1,157,876	12,508,800	2,811,441	0	0	0	0	2,811,441	100,019,568	107,299,130
1994	1,699,254	11,755,449	3,894,600	0	0	0	0	3,894,600	92,371,861	99,979,092
1995	(421,879)	11,691,741	3,481,049	0	0	0	0	3,481,049	98,887,435	105,659,504
1996	1,574,098	15,730,977	5,144,684	0	0	0	0	5,144,684	105,119,193	112,018,784
1997	1,521,491	14,878,134	2,523,741	(33)	0	0	0	2,523,708	107,647,058	113,385,326
1998	1,291,185	14,497,012	4,303,206	1,878,551	1,386	160,400	88,026	6,431,569	120,663,426	127,330,617
1999	2,026,505	18,335,049	4,147,517	2,014,455	11,222	191,186	94,845	6,459,225	124,198,715	133,262,368
2000	1,538,276	15,164,858	3,631,089	2,603,307	2,833	275,135	133,969	6,646,333	124,364,134	133,136,432
2001	(1,160,713)	14,620,797	3,424,452	2,078,564	5,538	109,548	49,189	5,667,291	133,169,255	141,463,869
2002	3,735,999	28,066,812	4,483,014	4,080,788	150	448,090	168,845	9,180,887	190,395,153	207,161,071
2003	3,990,995	28,181,423	4,467,595	4,124,264	0	446,964	167,837	9,206,660	192,857,102	208,478,871
2004	16,284,769	40,555,357	4,373,958	4,042,544	0	425,487	147,287	8,989,276	206,266,955	220,175,766
2005	14,543,503	28,316,515	2,426,781	2,330,424	0	213,308	73,933	5,044,446	132,751,252	140,309,542
2006	2,579,461	18,371,877	4,474,182	2,168,474	0	1,787	4,752	6,649,195	134,243,299	144,115,450
2007	3,080,196	18,866,342	4,469,361	2,166,099	0	1,824	4,848	6,642,132	136,636,209	146,497,521
2008	3,260,731	19,059,978	4,471,087	2,166,909	0	1,851	4,915	6,644,762	136,009,225	145,874,211
2009	3,367,869	19,169,954	4,469,759	2,166,236	0	1,876	4,982	6,642,853	136,775,520	146,637,441
2010	3,265,160	19,047,354	4,469,352	2,166,112	0	1,807	4,801	6,642,072	136,532,140	146,393,523
2011	3,452,355	19,316,101	4,485,341	2,172,152	0	1,920	5,107	6,664,520	137,256,334	147,154,695
2012	3,260,363	19,133,130	4,486,309	2,172,597	0	1,942	5,164	6,666,012	136,944,006	146,844,401
2013	3,715,404	19,634,436	4,488,472	2,173,496	0	2,085	5,543	6,669,596	136,838,798	146,743,223
2014	3,364,534	19,344,910	4,488,885	2,173,467	0	2,306	6,126	6,670,784	138,026,119	147,930,317
2015	3,208,619	19,199,317	4,492,304	2,175,128	0	2,302	6,113	6,675,847	136,421,265	146,333,036
2016	3,830,577	19,787,372	4,486,851	2,172,544	0	2,243	5,963	6,667,601	138,588,331	148,488,351
2017	3,632,719	19,606,641	4,488,984	2,173,541	0	2,279	6,058	6,670,862	137,819,867	147,724,412
2018	3,532,166	19,560,156	4,491,522	2,174,596	0	2,446	6,504	6,675,068	137,694,520	147,603,804
2019	4,132,762	20,113,948	4,486,028	2,172,039	0	2,345	6,228	6,666,640	139,618,831	149,516,511
2020	3,914,484	19,899,284	4,490,218	2,174,112	0	2,306	6,129	6,672,765	137,414,837	147,321,977
2021	3,037,970	19,011,946	4,492,724	2,175,403	0	2,236	5,939	6,676,302	135,828,026	145,741,075
2022	3,061,916	19,081,671	4,490,603	2,174,170	0	2,429	6,456	6,673,658	138,007,462	147,914,812
2023	3,462,025	19,416,344	4,487,247	2,172,751	0	2,231	5,926	6,668,155	138,314,731	148,215,708
2024	4,325,781	20,311,345	4,488,511	2,173,259	0	2,329	6,188	6,670,287	138,350,928	148,254,176
2025	2,362,093	18,357,091	4,493,324	2,175,618	0	2,306	6,128	6,677,376	135,991,287	145,905,289
2026	4,357,297	20,333,260	4,484,733	2,171,414	0	2,342	6,222	6,664,711	140,221,298	150,116,131
2027	41,540	16,053,154	4,499,553	2,178,656	0	2,289	6,085	6,686,583	133,137,639	143,065,484
2028	7,896,020	23,881,465	4,484,104	2,171,071	0	2,379	6,327	6,663,881	140,783,593	150,676,834
2029	1,981,425	17,958,249	4,490,645	2,174,353	0	2,272	6,043	6,673,313	137,010,993	146,919,245
2030	3,483,610	19,432,498	4,486,562	2,172,431	0	2,219	5,899	6,667,111	138,563,666	148,463,182
2031	106,395	16,156,137	4,500,309	2,178,882	0	2,421	6,429	6,688,041	133,572,779	143,501,621
2032	7,876,522	23,855,870	4,481,511	2,169,800	0	2,391	6,355	6,660,057	142,117,347	152,004,808
2033	2,324,835	18,284,802	4,491,568	2,174,879	0	2,197	5,843	6,674,487	136,132,723	146,043,398
2034	3,387,351	19,382,416	4,491,784	2,174,852	0	2,324	6,174	6,675,134	136,800,510	146,711,014
2035	4,421,258	20,399,957	4,482,178	2,170,135	0	2,384	6,334	6,661,031	141,738,648	151,627,626
Total	176,646,274	979,239,700	213,438,638	88,375,862	21,129	2,336,481	1,100,255	305,272,365	6,870,803,611	7,345,087,220

[a]Includes certain costs to be assigned directly to Kern County Water Agency. Refer to Appendix B text discussion of Table B-16A under "Project Water Charges."

Table B-12

Variable OMP&R Costs to Be Reimbursed through Variable OMP&R Component of Transportation Charge[a]

(Dollars)

Calendar Year	North Bay Aqueduct				South Bay Aqueduct	California Aqueduct			
	Reach 1	Reach 3A	Reach 3B		Reach 1	Reach 1	Reach 4	Reach 14A	Reach 15A
	Barker Slough Pumping Plant (1)	Cordelia Pumping Plant (Solano) (2)	Cordelia Pumping Plant (Napa)[b] (3)	Total (4)	South Bay & Del Valle Pumping Plants[c] (5)	Banks Pumping Plant (6)	Dos Amigos Pumping Plant (7)	Buena Vista Pumping Plant (8)	Wheeler Ridge Pumping Plant (9)
1962	0	0	0	0	36,970	0	0	0	0
1963	0	0	0	0	57,711	0	0	0	0
1964	0	0	0	0	74,134	0	0	0	0
1965	0	0	0	0	142,609	0	0	0	0
1966	0	0	0	0	192,605	0	0	0	0
1967	0	0	0	0	223,117	13,881	0	0	0
1968	0	0	6,989	6,989	336,671	452,630	202,947	0	0
1969	0	0	8,551	8,551	257,579	293,741	135,425	0	0
1970	0	0	13,598	13,598	396,358	346,215	211,197	1	0
1971	0	0	10,609	10,609	381,662	574,015	225,188	138,001	17,664
1972	0	0	14,434	14,434	598,702	933,292	502,196	241,714	97,004
1973	0	0	14,449	14,449	493,490	688,030	381,232	306,268	278,923
1974	0	0	17,473	17,473	565,575	783,562	447,772	358,739	367,266
1975	0	0	14,779	14,779	349,758	1,341,019	518,816	550,860	595,252
1976	0	0	20,856	20,856	571,361	1,638,453	641,115	755,747	756,175
1977	0	0	22,635	22,635	512,996	1,013,307	284,828	298,300	337,889
1978	0	0	21,692	21,692	586,355	2,339,502	607,042	732,036	658,404
1979	0	0	16,237	16,237	605,136	3,554,256	1,008,564	818,816	791,488
1980	0	0	19,945	19,945	523,369	2,083,336	1,129,152	1,051,629	1,047,495
1981	0	0	23,842	23,842	567,692	3,952,931	1,939,189	1,336,867	1,319,739
1982	0	0	12,157	12,157	605,780	3,082,031	1,363,705	1,200,226	1,213,660
1983	0	0	2,342	2,342	82,222	879,916	343,597	341,584	304,715
1984	0	0	4,822	4,822	271,543	1,695,568	885,941	678,307	602,408
1985	0	0	10,188	10,188	451,020	3,171,920	1,613,745	1,397,490	1,397,098
1986	0	0	15,501	15,501	807,984	6,601,752	2,627,407	2,405,224	2,432,322
1987	0	0	27,223	27,223	886,956	5,753,132	2,523,544	2,240,552	2,223,371
1988	17,813	0	24,020	41,833	909,300	6,280,898	2,611,297	2,562,330	2,560,462
1989	29,819	43,846	26,519	100,184	1,161,160	9,748,180	3,910,492	3,964,188	3,974,290
1990	52,210	67,109	40,775	160,094	1,834,626	10,467,177	4,501,309	5,785,069	6,019,952
1991	10,429	10,118	5,252	25,799	378,966	1,923,595	490,766	903,923	1,031,345
1992	13,319	13,070	9,406	35,795	311,251	3,211,086	1,168,304	1,255,567	1,314,358
1993	(11,941)	(8,753)	(5,392)	(26,086)	(158,214)	532,899	345,215	(124,821)	(102,311)
1994	46,538	39,910	29,105	115,553	799,370	5,658,038	2,298,300	2,504,629	2,516,185
1995	20,014	20,620	11,791	52,425	247,645	4,017,881	1,513,362	919,965	841,178
1996	57,320	47,288	23,483	128,091	619,160	8,305,492	4,016,045	2,503,370	2,310,456
1997	67,416	52,935	21,955	142,306	986,312	6,946,568	2,842,755	2,583,689	2,411,361
1998	(10,647)	(9,488)	(4,554)	(24,689)	(125,142)	243,272	(316,027)	(248,827)	(223,550)
1999	36,079	25,334	9,651	71,064	568,848	6,305,526	1,918,411	1,729,616	1,679,572
2000	83,763	58,963	21,557	164,283	991,936	10,758,870	4,337,740	4,091,378	4,318,694
2001	360,154	248,528	217,580	826,262	3,502,397	26,213,100	9,835,816	15,100,251	15,492,910
2002	173,374	32,651	177,357	383,382	1,494,913	13,928,770	4,505,382	5,944,338	6,962,852
2003	375,358	195,728	307,464	878,550	3,654,509	20,583,703	9,677,923	11,103,047	12,857,177
2004	388,821	219,767	319,123	927,711	3,854,441	24,561,259	9,983,405	11,362,445	13,149,172
2005	207,827	198,539	216,563	622,929	3,121,051	20,744,009	9,339,988	10,994,106	10,737,213
2006	214,391	203,187	225,879	643,457	3,229,994	22,250,565	9,716,100	11,579,785	11,327,149
2007	211,908	199,330	225,715	636,953	3,168,309	21,431,076	9,653,185	11,607,308	11,364,510
2008	190,780	178,091	205,491	574,362	2,829,246	21,934,687	8,678,113	10,484,433	10,271,354
2009	200,099	185,311	217,693	603,103	2,944,302	19,692,946	9,093,093	11,036,653	10,818,874
2010	212,132	194,945	233,199	640,276	3,097,034	24,974,782	9,642,144	11,747,212	11,522,226
2011	213,850	195,027	237,526	646,403	3,098,327	22,607,530	9,646,383	11,746,071	11,519,661
2012	223,756	202,518	251,081	677,355	3,217,338	21,525,799	10,118,551	12,384,776	12,157,109
2013	249,612	224,507	282,362	756,481	3,566,657	28,211,421	11,347,090	13,950,489	13,704,010
2014	272,259	242,789	311,492	826,540	3,857,120	25,285,880	12,399,242	15,310,049	15,050,288
2015	280,733	246,801	328,079	855,613	3,920,839	28,381,876	12,615,380	15,578,089	15,314,101
2016	287,456	249,568	342,533	879,557	3,964,813	32,551,998	12,999,478	16,185,841	15,933,766
2017	286,423	245,617	347,762	879,802	3,902,031	28,862,956	12,622,174	15,614,020	15,353,410
2018	299,097	253,415	370,551	923,063	4,025,932	28,227,442	13,084,967	16,235,038	15,972,942
2019	310,865	260,272	392,851	963,988	4,134,856	33,309,581	13,804,968	17,293,467	17,040,220
2020	295,663	244,693	380,531	920,887	3,887,348	29,420,224	12,941,763	16,206,419	15,968,643
2021	295,810	244,251	381,692	921,753	3,880,340	28,959,645	12,994,255	16,310,599	16,077,711
2022	285,279	235,556	368,104	888,939	3,742,200	26,653,563	12,530,559	15,728,126	15,503,293
2023	287,152	237,101	370,518	894,771	3,766,746	28,873,356	12,668,508	15,933,186	15,710,903
2024	299,359	247,181	386,270	932,810	3,926,887	31,757,138	13,145,884	16,494,748	16,258,098
2025	297,807	245,898	384,267	927,972	3,906,523	26,455,119	13,075,366	16,411,968	16,177,666
2026	300,162	247,844	387,306	935,312	3,937,414	33,188,641	13,195,048	16,560,359	16,323,235
2027	294,947	243,537	380,576	919,060	3,868,998	29,562,336	13,018,690	16,376,145	16,148,216
2028	297,311	245,489	383,627	926,427	3,900,012	30,220,940	13,049,712	16,373,483	16,138,406
2029	292,944	241,884	377,994	912,822	3,842,741	28,779,578	12,915,990	16,239,105	16,011,644
2030	295,675	244,139	381,515	921,329	3,878,546	30,124,109	12,974,634	16,276,758	16,042,569
2031	291,006	240,284	375,491	906,781	3,817,308	26,480,439	12,540,719	15,627,036	15,385,803
2032	297,713	245,821	384,148	927,682	3,905,301	29,701,012	12,986,646	16,231,981	15,987,847
2033	314,984	260,082	406,431	981,497	4,131,841	30,710,362	13,678,162	17,096,329	16,840,872
2034	301,736	249,143	389,337	940,216	3,958,059	29,522,943	13,215,482	16,549,471	16,305,857
2035	294,641	243,285	380,183	918,109	3,864,995	29,111,697	13,032,121	16,406,626	16,180,895
Total	10,113,216	8,253,731	11,840,181	30,207,128	145,903,941	1,050,392,453	453,957,492	549,362,194	546,703,467

[a]Includes 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

(Dollars)

Calendar Year	California Aqueduct (continued)								
	Reach 16A	Reach 17E	Reach 18A	Reach 22B	Reach 23	Reach 24	Reach 26A	Reach 28J	Reach 29A
	Chrisman Pumping Plant (10)	Edmonston Pumping Plant (11)	Alamo Power Plant (12)	Pearblossom Pumping Plant (13)	Mojave Siphon Power Plant (14)	Silverwood Lake[d] (15)	Devil Canyon Power Plant (16)	Lake Perris[d] (17)	Oso Pumping Plant (18)
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	180,602	542,625	0	25,568	0	0	(3,024)	0	102,315
1973	441,598	1,548,428	0	231,389	0	0	(436,768)	0	158,587
1974	618,864	2,164,223	0	354,093	0	0	(521,656)	0	193,311
1975	1,149,731	4,010,395	0	604,161	0	0	(1,071,023)	0	350,436
1976	1,561,385	5,443,936	0	932,444	0	0	(1,519,156)	0	362,767
1977	703,802	2,360,624	0	358,028	0	0	(1,175,966)	0	111,135
1978	1,186,696	4,180,131	0	1,551,015	0	0	(3,038,194)	0	125,183
1979	1,581,250	5,475,688	0	1,881,587	0	0	(3,419,581)	0	138,384
1980	2,102,439	7,028,235	0	1,762,063	0	0	(3,318,152)	0	236,768
1981	2,838,773	9,351,931	0	2,296,771	0	0	(3,842,971)	0	444,280
1982	2,424,920	8,352,207	0	1,498,620	0	0	(2,736,072)	0	539,245
1983	540,330	1,582,582	0	341,957	0	384,275	(5,478,830)	0	71,197
1984	1,129,131	3,448,759	0	622,123	0	0	(7,326,265)	(10,080)	240,134
1985	2,781,953	9,261,674	0	1,195,768	0	0	(10,477,567)	(56,570)	874,069
1986	4,999,949	16,956,023	(1,013,756)	2,359,599	0	0	(11,484,996)	0	1,269,590
1987	4,456,059	14,684,476	(1,026,193)	1,831,238	0	131,606	(10,814,483)	53,242	1,325,936
1988	5,126,229	16,819,159	(744,374)	2,375,784	0	0	(14,495,967)	0	1,421,097
1989	8,369,623	28,090,313	(766,443)	4,102,557	0	686,468	(18,532,961)	89,890	2,013,335
1990	13,630,073	48,369,421	(834,673)	6,504,876	0	89,075	(20,911,839)	147,163	2,857,409
1991	2,426,220	8,641,086	(269,625)	996,352	0	0	(4,884,013)	0	534,818
1992	2,642,161	8,854,347	(934,311)	1,167,670	0	156,847	(9,513,281)	(61,233)	717,740
1993	(582,580)	(2,649,876)	(56,908)	(253,503)	0	(34,870)	(7,502,549)	0	68,719
1994	5,276,189	18,302,830	(58,712)	2,572,826	0	0	(11,662,318)	147,989	1,203,006
1995	1,677,210	5,571,517	(1,242,189)	1,025,717	0	467,095	(9,742,248)	0	247,869
1996	4,899,576	17,115,554	(2,811,564)	2,673,483	(923,213)	906,220	(12,358,465)	0	895,929
1997	5,410,787	19,364,138	(2,478,032)	3,022,354	(1,672,148)	0	(13,227,863)	125,510	897,657
1998	(497,603)	(1,715,651)	(2,014,963)	(413,513)	(1,252,047)	(4,361)	(10,183,555)	0	(25,895)
1999	4,501,301	14,621,522	(2,980,122)	2,261,839	(2,587,958)	0	(15,232,207)	0	738,127
2000	9,740,264	34,984,791	(5,123,988)	5,187,013	(4,402,610)	0	(25,758,437)	0	1,755,603
2001	34,909,230	128,989,295	(3,295,344)	19,734,730	(3,628,767)	0	(19,510,751)	0	6,556,320
2002	14,703,872	51,611,221	(3,727,674)	8,809,580	(5,975,276)	0	(19,053,937)	(315,936)	2,432,508
2003	27,376,655	96,626,264	(5,429,546)	15,811,782	(10,400,221)	0	(29,329,449)	(587,314)	4,659,140
2004	27,982,130	98,758,051	(5,447,589)	16,488,164	(10,369,361)	0	(29,614,262)	0	4,616,610
2005	25,259,289	94,638,158	(5,237,953)	15,091,813	(6,146,467)	0	(29,830,242)	333,815	4,503,161
2006	26,662,382	99,930,724	(5,310,277)	15,733,140	(6,232,453)	1,136,092	(30,120,350)	(25,920)	4,859,890
2007	26,761,436	100,319,296	(5,273,629)	15,371,429	(6,142,301)	0	(30,416,227)	0	5,044,761
2008	24,191,995	90,698,988	(5,484,053)	14,336,681	(6,446,533)	0	(30,897,433)	(273,662)	4,421,149
2009	25,487,297	95,568,428	(5,478,554)	15,008,482	(6,410,070)	674,625	(31,128,736)	0	4,699,634
2010	27,150,113	101,816,521	(5,493,576)	15,993,650	(6,432,081)	219,199	(31,191,091)	0	5,012,013
2011	27,144,213	101,792,235	(5,469,906)	15,942,673	(6,384,250)	0	(31,813,472)	0	5,039,866
2012	28,653,697	107,474,515	(5,674,687)	17,135,236	(6,729,166)	1,285,652	(32,066,476)	665,293	5,217,713
2013	32,309,276	121,204,730	(5,589,180)	19,061,365	(6,632,614)	799,714	(31,936,046)	0	5,989,353
2014	35,492,520	133,167,378	(5,656,117)	20,785,686	(6,713,980)	0	(32,444,628)	(365,089)	6,670,270
2015	36,115,339	135,504,854	(5,672,873)	21,260,681	(6,803,890)	0	(32,946,600)	0	6,732,092
2016	37,594,484	141,098,055	(5,839,260)	22,410,183	(7,054,811)	1,842,195	(33,658,156)	(665,805)	6,953,901
2017	36,212,098	135,876,025	(5,642,507)	21,324,780	(6,837,714)	0	(33,288,301)	0	6,761,054
2018	37,678,762	141,397,697	(5,853,591)	22,741,407	(7,386,286)	3,066,853	(33,657,669)	799,833	6,848,804
2019	40,220,356	150,984,767	(5,755,502)	23,166,270	(7,097,778)	0	(33,756,773)	0	7,761,577
2020	37,689,798	141,484,311	(5,805,339)	22,189,157	(7,227,118)	0	(34,305,918)	574,371	7,091,691
2021	37,952,595	142,482,835	(5,900,366)	22,557,775	(7,399,909)	(349,340)	(34,455,915)	(711,057)	7,092,105
2022	36,596,419	137,391,474	(5,858,829)	21,406,821	(7,283,584)	1,448,588	(33,965,392)	0	6,946,632
2023	37,090,844	139,258,241	(5,941,136)	21,891,311	(7,426,538)	708,542	(34,446,094)	(97,088)	6,988,136
2024	38,377,616	144,076,588	(5,815,850)	22,430,250	(7,281,277)	0	(34,424,345)	0	7,286,518
2025	38,188,313	143,368,341	(5,865,944)	22,355,376	(7,307,882)	1,403,293	(33,998,242)	0	7,250,025
2026	38,532,101	144,657,843	(5,870,674)	22,770,322	(7,394,581)	0	(34,765,276)	(464,379)	7,233,801
2027	38,123,532	143,136,272	(5,907,574)	22,475,623	(7,360,328)	360,698	(34,387,023)	0	7,192,437
2028	38,094,984	143,015,080	(5,844,740)	22,467,526	(7,317,049)	0	(34,457,926)	(336,552)	7,170,677
2029	37,800,188	141,919,571	(5,885,779)	22,275,648	(7,378,655)	(1,350)	(34,351,095)	0	7,130,779
2030	37,868,403	142,163,476	(5,849,655)	22,365,193	(7,324,678)	0	(34,449,253)	0	7,119,399
2031	36,302,980	136,256,563	(5,891,257)	21,986,990	(7,699,462)	2,811,629	(34,100,045)	(582,764)	6,590,733
2032	37,731,984	141,631,329	(5,754,980)	21,823,049	(7,457,494)	0	(33,754,609)	0	7,242,402
2033	39,743,422	149,186,117	(5,926,227)	23,960,207	(7,827,255)	1,325,020	(34,251,120)	1,181,531	7,271,295
2034	38,486,454	144,473,385	(5,821,991)	22,403,055	(7,643,687)	0	(33,573,878)	0	7,352,884
2035	38,201,390	143,439,530	(5,955,747)	22,578,419	(7,602,422)	1,750,269	(34,633,587)	1,895,531	7,192,223
Total	1,270,003,099	4,718,159,246	(217,583,759)	743,214,333	(259,593,914)	21,264,034	(1,365,650,724)	1,460,719	238,800,304

[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

(Dollars)

Calendar Year	California Aqueduct (continued)							
	Reach 29G	Reach 29H	Reach 29J	Reach 30	Reach 31A	Reach 33A		
	Warne Power Plant (19)	Pyramid Lake[d] (20)	Castaic Power Plant (21)	Castaic Lake[d] (22)	Las Perillas & Badger Hill Pumping Plants (23)	Devil's Den, Bluestone, & Polonio Pumping Plants (24)	Total (25)	Grand Total (26)
1962	0	0	0	0	0	0	0	36,970
1963	0	0	0	0	0	0	0	57,711
1964	0	0	0	0	0	0	0	74,134
1965	0	0	0	0	0	0	0	142,609
1966	0	0	0	0	0	0	0	192,605
1967	0	0	0	0	0	0	13,881	236,998
1968	0	0	0	0	118,676	0	774,253	1,117,913
1969	0	0	0	0	78,350	0	507,516	773,646
1970	0	0	0	0	136,429	0	693,842	1,103,798
1971	0	0	0	0	166,296	0	1,121,164	1,513,435
1972	0	0	(211,144)	0	237,638	0	2,648,786	3,261,922
1973	0	0	(1,057,564)	0	120,913	0	2,661,036	3,168,975
1974	0	0	(1,547,884)	0	118,582	0	3,336,872	3,919,920
1975	0	0	(2,455,461)	0	94,848	0	5,689,034	6,053,571
1976	0	0	(2,827,557)	0	141,260	0	7,886,569	8,478,786
1977	0	0	(3,734,462)	0	71,311	0	628,796	1,164,427
1978	0	0	(1,542,479)	0	179,925	0	6,979,261	7,587,308
1979	0	0	(2,773,323)	0	192,126	0	9,249,255	9,870,628
1980	0	0	(3,408,863)	0	168,458	0	9,882,560	10,425,874
1981	0	0	(2,834,322)	0	169,177	0	16,972,365	17,563,899
1982	(783,626)	0	(3,463,971)	0	168,390	0	12,859,335	13,477,272
1983	(495,041)	65,741	(3,260,764)	(3,176,515)	17,920	0	(7,537,336)	(7,452,772)
1984	(2,027,345)	0	(2,336,089)	(2,151,129)	112,679	0	(4,435,858)	(4,159,493)
1985	(5,930,176)	0	(15,698,638)	0	146,843	0	(10,322,391)	(9,861,183)
1986	(5,579,301)	0	(11,072,448)	0	297,886	0	10,799,251	11,622,736
1987	(6,304,539)	68,410	(11,562,269)	(41,897)	245,082	0	5,787,267	6,701,446
1988	(6,993,235)	54,038	(12,292,638)	(211,526)	214,519	0	5,288,073	6,239,206
1989	(8,235,085)	14,390	(14,514,469)	126,791	282,180	0	23,323,739	24,585,083
1990	(11,011,065)	0	(20,116,506)	245,180	416,832	0	46,159,453	48,154,173
1991	(3,600,495)	439,068	(6,579,194)	0	3,610	0	2,057,456	2,462,221
1992	(5,508,780)	0	(9,493,502)	(935,650)	101,665	0	(5,857,012)	(5,509,966)
1993	(4,525,955)	(13,291)	(9,266,007)	(446,527)	(111,306)	0	(24,723,671)	(24,907,971)
1994	(5,813,538)	20,518	(10,547,914)	(86,993)	206,258	0	12,537,293	13,452,216
1995	(1,934,202)	0	(4,049,615)	0	243,434	0	(443,026)	(142,956)
1996	(4,248,531)	0	(8,457,232)	0	296,170	0	15,123,290	15,870,541
1997	(4,797,589)	0	(8,727,328)	(897)	298,483	208,816	13,208,261	14,336,879
1998	(740,480)	(931,305)	(3,360,851)	(2,108,804)	(51,634)	(87,016)	(23,932,810)	(24,082,641)
1999	(5,738,474)	0	(9,655,135)	(87,667)	160,633	(12,528)	(2,377,544)	(1,737,632)
2000	(10,161,472)	0	(17,461,286)	0	309,851	515,629	13,092,040	14,248,259
2001	(7,997,746)	0	(13,990,430)	0	1,106,148	2,198,685	211,713,447	216,042,106
2002	(6,944,418)	0	(12,595,444)	0	478,158	1,288,183	62,052,179	63,930,474
2003	(11,530,610)	0	(20,796,961)	0	856,981	2,929,380	124,407,951	128,941,010
2004	(11,064,033)	0	(19,648,624)	0	896,793	3,071,701	134,725,861	139,508,013
2005	(13,431,679)	0	(22,083,433)	1,489,054	1,095,701	2,978,961	120,475,494	124,219,474
2006	(13,979,497)	0	(23,183,720)	120,482	1,072,736	3,048,717	128,585,545	132,458,996
2007	(14,893,219)	0	(24,396,296)	(235,811)	1,000,049	2,990,844	124,186,411	127,991,673
2008	(14,670,787)	0	(23,952,957)	0	893,490	2,672,155	106,857,620	110,261,228
2009	(14,994,756)	0	(24,461,364)	(99,181)	929,711	2,780,482	113,217,564	116,764,969
2010	(15,111,342)	0	(24,763,816)	0	978,048	2,925,041	128,989,043	132,726,353
2011	(15,180,090)	0	(24,827,729)	0	978,282	2,926,263	125,667,730	129,412,460
2012	(15,097,966)	0	(24,808,659)	840,944	1,015,815	3,038,663	137,136,809	141,031,502
2013	(15,603,215)	0	(25,631,347)	0	1,126,108	3,368,582	165,679,736	170,002,874
2014	(16,066,138)	0	(26,345,460)	0	1,217,814	3,642,914	181,430,629	186,114,289
2015	(15,977,292)	0	(26,176,649)	0	1,237,932	3,703,093	188,866,133	193,642,585
2016	(16,291,598)	0	(26,723,218)	(99,940)	1,251,816	3,744,628	202,233,557	207,077,927
2017	(16,058,222)	0	(26,368,517)	0	1,231,995	3,685,331	189,348,582	194,130,415
2018	(15,779,550)	0	(25,938,251)	1,595,295	1,271,114	3,802,353	204,107,160	209,056,155
2019	(17,169,683)	0	(28,443,437)	0	1,305,506	3,905,228	216,568,767	221,667,611
2020	(16,820,460)	0	(27,719,511)	0	1,227,359	3,671,464	196,586,854	201,395,089
2021	(16,823,795)	0	(27,751,708)	0	1,225,147	3,664,845	195,925,422	200,727,515
2022	(17,078,051)	0	(28,182,118)	(578,151)	1,181,531	3,534,375	185,975,256	190,606,395
2023	(17,068,905)	0	(28,166,692)	(576,042)	1,189,282	3,557,560	190,147,374	194,808,891
2024	(17,071,571)	0	(28,173,948)	79,811	1,239,843	3,708,806	202,088,309	206,948,006
2025	(17,074,307)	0	(28,176,467)	(551,247)	1,233,414	3,689,574	196,634,366	201,468,861
2026	(16,902,132)	0	(27,888,980)	0	1,243,167	3,718,751	204,137,246	209,009,972
2027	(17,102,518)	0	(28,224,176)	190,296	1,221,566	3,654,135	198,478,327	203,266,385
2028	(16,919,650)	0	(27,914,643)	0	1,231,357	3,683,425	198,655,030	203,481,469
2029	(17,072,333)	0	(28,174,890)	(50,124)	1,213,275	3,629,335	195,000,887	199,756,450
2030	(16,887,194)	0	(27,864,113)	0	1,224,580	3,663,152	197,447,380	202,247,255
2031	(15,968,600)	0	(26,304,702)	3,928,197	1,205,246	3,605,314	192,174,819	196,898,908
2032	(16,941,594)	0	(28,082,571)	0	1,233,027	3,688,419	196,266,448	201,099,431
2033	(16,159,268)	0	(26,768,736)	3,758,084	1,304,553	3,902,381	219,025,729	224,139,067
2034	(16,963,348)	0	(28,128,105)	0	1,249,685	3,738,250	201,166,457	206,064,732
2035	(17,057,151)	0	(28,296,799)	13,598,733	1,220,302	3,650,352	214,712,382	219,495,486
Total	(632,181,647)	(282,431)	(1,095,263,386)	14,534,766	44,941,015	118,086,243	6,200,323,504	6,376,434,573

Table B-13

Capital and Operating Costs of Project Conservation Facilities to Be Reimbursed through Delta Water Charge

(Dollars)

Calendar Year	Initial Project Conservation Facilities (Portions of Upper Feather Lakes, Oroville-Thermalito, and California Aqueduct Facilities)					Planning and Pre-operating Costs[a, f]	Total
				Application of Oroville Power Revenues to:			
	Capital Costs[a]	Capital Cost Credits[b]	Operating Costs[c]	Capital Costs[d]	Operating Costs[e]		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1952	171,322	0	0	0	0	0	171,322
1953	312,190	0	0	0	0	0	312,190
1954	308,624	0	0	0	0	0	308,624
1955	194,645	0	0	0	0	0	194,645
1956	1,357,077	0	0	0	0	0	1,357,077
1957	6,210,709	0	0	0	0	0	6,210,709
1958	9,510,916	0	0	0	0	0	9,510,916
1959	11,390,586	0	0	0	0	0	11,390,586
1960	14,456,356	(4,850,000)	0	0	0	0	9,606,356
1961	18,682,616	(431,527)	0	0	0	0	18,251,089
1962	9,012,960	(479,280)	0	0	0	0	8,533,680
1963	72,965,728	(478,743)	(14,000)	0	0	0	72,472,985
1964	62,493,755	(751,330)	(14,000)	0	0	107,780	61,836,205
1965	70,920,988	(763,541)	(14,000)	0	0	551,850	70,695,297
1966	125,265,788	(748,649)	(14,000)	0	0	1,081,023	125,584,162
1967	94,374,172	(812,145)	(13,446)	0	0	1,189,212	94,737,793
1968	39,889,088	(431,574)	1,303,821	(951,000)	0	793,399	40,603,734
1969	5,279,981	(259,015)	2,890,772	(11,007,000)	0	601,867	(2,493,395)
1970	4,130,490	(203,733)	4,818,634	(14,650,000)	(1,500,000)	516,659	(6,887,950)
1971	3,877,493	(193,631)	6,026,480	(14,650,000)	(1,500,000)	408,754	(6,030,904)
1972	4,569,024	(196,361)	5,393,011	(14,650,000)	(1,500,000)	287,374	(6,096,952)
1973	3,985,414	(136,997)	6,135,774	(14,650,000)	(1,500,000)	203,384	(5,962,425)
1974	6,660,000	(137,503)	6,944,723	(17,950,000)	(1,500,000)	201,907	(5,780,873)
1975	8,084,450	(234,567)	7,697,390	(14,650,000)	(1,500,000)	146,188	(456,539)
1976	5,870,531	(204,944)	7,067,037	(14,650,000)	(1,500,000)	205,234	(3,212,142)
1977	21,285,849	(150,214)	10,547,977	(14,650,000)	(1,500,000)	857,419	16,391,031
1978	7,713,252	(64,566)	12,851,158	(14,650,000)	(1,500,000)	2,131,286	6,481,130
1979	9,030,801	0	9,547,014	(14,650,000)	(1,500,000)	2,131,884	4,559,699
1980	10,372,763	0	13,258,298	(14,650,000)	(1,500,000)	3,638,851	11,119,912
1981	11,194,479	0	10,326,538	(14,650,000)	(1,500,000)	4,597,474	9,968,491
1982	16,634,428	0	16,154,872	(14,650,000)	(1,500,000)	4,594,682	21,233,982
1983	12,037,206	0	22,253,515	(34,705,000)	(8,735,000)	3,751,993	(5,397,286)
1984	8,706,748	0	22,700,224	(14,650,000)	(10,348,000)	2,979,126	9,388,098
1985	11,921,382	0	23,464,019	(14,650,000)	(8,079,000)	2,069,024	14,725,425
1986	20,464,281	0	26,479,379	(14,650,000)	(9,107,000)	1,602,419	24,789,079
1987	30,814,266	0	23,514,665	(14,650,000)	(9,451,000)	1,762,179	31,990,110
1988	31,587,615	0	26,003,911	(14,650,000)	(8,677,000)	1,808,899	36,073,425
1989	10,125,424	0	28,442,946	(14,650,000)	(8,104,000)	2,678,007	18,492,377
1990	27,882,191	0	37,255,751	(14,650,000)	(8,497,000)	1,436,712	43,427,654
1991	35,966,870	0	76,428,061	(14,650,000)	(9,487,000)	1,727,664	89,985,595
1992	27,622,044	0	32,284,164	(14,650,000)	(8,526,000)	1,707,822	38,438,030
1993	21,156,123	0	36,071,890	(14,650,000)	(8,768,000)	1,708,490	35,518,503
1994	13,755,771	0	39,332,454	(14,650,000)	(7,484,000)	2,134,392	33,088,617
1995	14,253,704	0	44,519,764	(14,650,000)	(7,041,000)	2,042,481	39,124,949
1996	10,536,189	0	49,167,138	(14,650,000)	(7,288,000)	2,448,692	40,214,019
1997	13,959,817	0	50,303,842	(14,650,000)	(7,009,000)	1,699,730	44,304,389
1998	3,768,045	0	52,622,518	(14,650,000)	(8,155,000)	1,193,198	34,778,761
1999	6,108,990	0	55,317,776	(14,650,000)	(9,198,000)	9,863	37,588,629
2000	8,566,610	0	55,508,778	(14,650,000)	(7,643,620)	13,511	41,795,279
2001	7,549,445	0	70,064,045	(14,650,000)	7,365,250	23,866	70,352,606
2002	725,194	0	81,525,758	(14,650,000)	(7,365,250)	4,179,000	64,414,702
2003	725,194	0	82,047,838	(14,650,000)	(7,365,250)	3,679,000	64,436,782
2004	725,194	0	78,137,542	(14,650,000)	(7,365,250)	3,179,000	60,026,486
2005	725,194	0	43,464,707	(14,650,000)	(7,365,250)	3,129,000	25,303,651
2006	614,697	0	56,948,885	(14,650,000)	(7,365,250)	3,129,000	38,677,332
2007	614,697	0	55,780,205	(14,650,000)	(7,365,250)	3,129,000	37,508,652
2008	330,897	0	53,801,802	(14,650,000)	(7,365,250)	3,129,000	35,246,449
2009	330,897	0	53,786,586	(14,650,000)	(7,365,250)	3,129,000	35,231,233
2010	330,897	0	53,045,042	(14,650,000)	(7,365,250)	3,129,000	34,489,689
2011	330,897	0	52,146,265	(14,650,000)	(7,365,250)	0	30,461,912
2012	330,897	0	50,786,075	(14,650,000)	(7,365,250)	0	29,101,722
2013	330,897	0	53,601,262	(14,650,000)	(7,365,250)	0	31,916,909
2014	330,897	0	52,246,768	(14,650,000)	(7,365,250)	0	30,562,415
2015	330,897	0	50,449,620	(14,650,000)	(7,365,250)	0	28,765,267
2016	330,897	0	53,793,088	(14,650,000)	(7,365,250)	0	32,108,735
2017	330,897	0	53,049,914	(14,650,000)	(7,365,250)	0	31,365,561
2018	330,897	0	53,447,092	(14,650,000)	(7,365,250)	0	31,762,739
2019	330,897	0	52,414,144	(14,650,000)	(7,365,250)	0	30,729,791
2020	330,897	0	50,188,756	(14,650,000)	(7,365,250)	0	28,504,403
2021	330,897	0	53,950,824	(14,650,000)	(7,365,250)	0	32,266,471
2022	330,897	0	52,836,342	(14,650,000)	(7,365,250)	0	31,151,989
2023	330,897	0	50,151,411	(14,650,000)	(7,365,250)	0	28,467,058
2024	330,897	0	51,002,608	(14,650,000)	(7,365,250)	0	29,318,255
2025	330,897	0	55,092,487	(14,650,000)	(7,365,250)	0	33,408,134
2026	330,897	0	52,718,700	(14,650,000)	(7,365,250)	0	31,034,347
2027	330,897	0	49,770,712	(14,650,000)	(7,365,250)	0	28,086,359
2028	330,897	0	50,184,118	(14,650,000)	(7,365,250)	0	28,499,765
2029	330,897	0	55,637,691	(14,650,000)	(7,365,250)	0	33,953,338
2030	330,897	0	51,798,046	(14,650,000)	(7,365,250)	0	30,113,693
2031	330,897	0	50,097,821	(14,650,000)	(7,365,250)	0	28,413,468
2032	330,897	0	49,654,475	(14,650,000)	(7,365,250)	0	27,970,122
2033	330,897	0	54,190,153	(14,650,000)	(7,365,250)	0	32,505,800
2034	330,897	0	51,257,531	(14,650,000)	(7,365,250)	0	29,573,178
2035	330,897	0	51,749,509	(14,650,000)	(7,365,250)	0	30,065,156
Total	986,384,482	(11,528,320)	2,753,382,670	(1,002,213,000)	(414,150,870)	86,855,295	2,398,730,257

[a]Reimbursed through the capital cost component of the Delta Water Charge.
[b]Negotiated settlements as to the magnitude of SWP planning costs from 1952 through 1978.
[c]Reimbursed through the minimum OMP&R component of the Delta Water Charge. Credits for Gianelli power generation are reflected in these net costs.
[d]Revenues credited through the capital cost component of the Delta Water Charge.
[e]Revenues credited through the minimum OMP&R component of the Delta Water Charge.
[f]Under amendments of Articles 22(e) and 22(g), planning and pre-operating costs of additional Project Conservation Facilities incurred through the previous year (1999) are reflected in the Delta Water Charge.

Table B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency[a] (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1952	0	0	0	83	114	410	607	122	224	346
1953	0	0	0	323	479	1,808	2,610	336	620	956
1954	0	0	0	819	1,306	5,150	7,275	421	777	1,198
1955	0	0	0	977	1,570	6,297	8,844	211	390	601
1956	0	0	0	8,844	14,459	63,816	87,119	227	418	645
1957	15,199	11,436	26,635	21,564	35,240	649,596	706,400	291	536	827
1958	33,420	16,591	50,011	67,764	71,717	733,414	872,895	720	1,328	2,048
1959	20,697	6,591	27,288	154,255	143,730	493,050	791,035	10,636	69,139	79,775
1960	9,097	8,830	17,927	296,492	275,610	1,018,661	1,590,763	15,255	99,794	115,049
1961	6,950	7,445	14,395	853,506	802,675	1,914,709	3,570,890	10,163	36,681	46,844
1962	(194)	(926)	(1,120)	545,123	615,141	1,686,041	2,846,305	17,281	39,570	56,851
1963	1,319	1,111	2,430	657,426	1,281,271	3,243,838	5,182,535	68,821	140,841	209,662
1964	38,393	35,466	73,859	712,650	1,747,783	7,251,800	9,712,233	138,614	282,003	420,617
1965	198,833	62,221	261,054	360,779	606,025	3,414,457	4,381,261	250,706	497,152	747,858
1966	461,619	49,917	511,536	592,714	592,598	2,245,215	3,430,527	587,951	1,117,486	1,705,437
1967	1,569,498	40,379	1,609,877	796,995	803,951	2,401,862	4,002,808	936,412	1,762,694	2,699,106
1968	859,613	61,691	921,304	736,470	696,075	1,997,924	3,430,469	351,131	675,220	1,026,351
1969	74,388	59,318	133,706	269,698	293,275	764,950	1,327,923	76,966	164,583	241,549
1970	43,361	67,877	111,238	58,676	61,200	135,569	255,445	47,891	109,224	157,115
1971	26,763	34,052	60,815	12,086	18,227	84,089	114,402	28,638	80,715	109,353
1972	19,643	18,905	38,548	12,293	12,763	63,610	88,666	19,289	50,230	69,519
1973	56,510	30,874	87,384	10,494	12,136	39,380	62,010	23,010	56,178	79,188
1974	165,830	65,832	231,662	15,722	24,402	73,119	113,243	25,037	61,383	86,420
1975	91,824	89,234	181,058	16,730	15,806	41,394	73,930	14,740	61,416	76,156
1976	57,765	83,651	141,416	34,004	34,663	109,610	178,277	33,638	130,440	164,078
1977	64,167	80,147	144,314	46,229	45,115	133,375	224,719	108,324	264,720	373,044
1978	69,319	81,717	151,036	71,234	66,008	174,898	312,140	21,415	103,822	125,237
1979	191,273	282,907	474,180	45,468	42,943	110,665	199,076	22,941	125,669	148,610
1980	264,433	386,006	650,439	134,522	124,352	304,614	563,488	103,258	462,895	566,153
1981	227,606	383,086	610,692	(33,738)	(29,856)	(65,637)	(129,231)	(15,416)	(135,240)	(150,656)
1982	549,164	870,611	1,419,775	7,876	8,321	27,065	43,262	4,102	(58,882)	(54,780)
1983	1,254,900	1,433,061	2,687,961	138,413	131,515	339,246	609,174	32,196	110,287	142,483
1984	2,547,878	2,750,040	5,297,918	152,992	140,971	351,921	645,884	35,448	107,723	143,171
1985	7,143,123	6,443,613	13,586,736	19,776	19,245	53,491	92,512	17,424	78,896	96,320
1986	10,565,937	16,926,630	27,492,567	32,034	31,581	88,070	151,685	44,135	306,452	350,587
1987	7,979,832	12,599,507	20,579,339	50,153	48,675	138,959	237,787	126,995	1,342,116	1,469,111
1988	2,312,909	4,343,513	6,656,422	116,181	112,294	302,461	530,936	156,473	1,479,545	1,636,018
1989	1,224,538	1,553,352	2,777,890	108,320	102,804	260,092	471,216	152,173	1,210,940	1,363,113
1990	443,002	824,055	1,267,057	224,283	224,188	625,213	1,073,684	222,208	1,559,457	1,781,665
1991	99,848	89,269	189,117	413,426	383,368	946,246	1,743,040	298,398	2,184,088	2,482,486
1992	57,045	62,083	119,128	182,231	169,968	442,055	794,254	380,283	3,529,381	3,909,664
1993	122,423	128,634	251,057	129,344	125,312	342,416	597,072	1,329,747	12,541,367	13,871,114
1994	71,274	83,270	154,544	46,042	58,050	229,649	333,741	5,213,419	50,650,468	55,863,887
1995	30,605	29,271	59,876	97,808	97,063	257,484	452,355	14,948,998	150,238,730	165,187,728
1996	20,275	19,069	39,344	49,854	48,056	127,493	225,403	11,392,189	132,228,362	143,620,551
1997	20,039	107,784	127,823	82,598	78,996	209,517	371,111	3,230,766	36,276,565	39,507,331
1998	17,309	21,447	38,756	27,020	23,863	62,441	113,324	846,094	9,776,876	10,622,970
1999	67,542	106,333	173,875	74,358	73,714	208,601	356,673	877,153	9,505,796	10,382,949
2000	13,596	21,872	35,468	25,190	27,671	86,860	139,721	577,243	5,372,341	5,949,584
2001	1,952	2,977	4,929	93,499	172,210	1,286,383	1,552,092	65,747	511,562	577,309
2002	2,987	4,884	7,871	8,479	8,384	22,573	39,436	3,806	7,059	10,865
2003	2,987	4,884	7,871	8,479	8,384	22,573	39,436	3,806	7,059	10,865
2004	2,987	4,884	7,871	8,479	8,384	22,573	39,436	3,806	7,059	10,865
2005	2,987	4,884	7,871	4,714	4,625	12,319	21,658	3,806	7,059	10,865
2006	0	0	0	6,925	6,332	15,088	28,345	3,110	5,737	8,847
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	39,122,465	50,400,285	89,522,750	8,608,676	10,524,752	35,578,473	54,711,901	42,868,554	425,246,951	468,115,505

Note: Allocated capital costs as a result of permanent water transfers under Monterey are not reflected on this Table.

[a]Costs from Table B-10 allocated to Solano County Water Agency are reduced herein by $2,102,700 in 1986 and $1,823,500 in 1987 under provisions of Amendment No. 10 to its water supply contract.

Table B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area									Total (20)
				Kern County Water Agency						
	Dudley Ridge Water District (11)	Empire West Side Irrigation District[b] (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Municipal and Industrial[c] (15)	Agricultural (16)	County of Kings (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	
1952	389	20	58	938	119	9,129	20	12	785	11,470
1953	1,076	53	161	2,887	345	27,383	55	33	2,157	34,150
1954	1,350	68	201	3,373	417	32,369	69	43	2,718	40,608
1955	677	34	101	1,497	197	14,721	35	23	1,371	18,656
1956	726	34	108	2,702	273	24,255	35	25	1,416	29,574
1957	932	38	139	6,048	494	49,932	39	29	1,707	59,358
1958	2,308	102	344	14,374	1,153	119,049	104	61	4,368	141,863
1959	7,384	364	2,517	26,218	2,597	253,891	372	381	14,757	308,481
1960	12,940	630	3,666	34,054	4,155	352,166	644	498	25,696	434,449
1961	21,848	1,063	3,954	51,407	6,500	538,707	1,087	598	43,377	668,541
1962	49,320	2,410	7,867	94,933	13,834	1,017,146	2,465	1,879	98,141	1,287,995
1963	208,757	10,687	32,172	364,014	55,715	3,934,636	10,932	5,990	425,330	5,048,233
1964	328,286	16,961	64,890	600,152	88,904	6,636,279	17,350	11,942	672,013	8,436,777
1965	538,215	27,481	117,996	1,098,999	152,930	11,999,892	28,116	21,802	1,095,126	15,080,557
1966	1,107,757	52,586	279,172	2,218,832	339,222	24,857,487	53,789	38,891	2,173,090	31,120,826
1967	852,537	39,537	445,562	2,012,744	286,990	23,629,026	40,444	34,775	1,653,429	28,995,044
1968	198,739	9,739	166,267	1,104,132	70,086	11,544,942	9,962	12,238	396,075	13,512,180
1969	94,436	4,793	35,473	616,516	27,216	6,416,147	4,903	7,302	191,574	7,398,360
1970	54,344	2,720	21,686	414,659	15,520	4,145,046	2,782	3,999	109,470	4,770,226
1971	25,462	1,291	12,094	190,552	7,114	1,622,274	1,320	540	51,618	1,912,265
1972	11,589	589	8,354	82,886	3,409	723,623	602	343	23,526	854,921
1973	6,657	335	10,201	39,973	1,980	458,527	343	221	13,448	531,685
1974	9,478	469	11,044	45,420	2,766	483,866	479	326	18,979	572,827
1975	13,329	677	5,246	36,467	3,710	382,743	692	425	27,048	470,337
1976	17,506	837	12,615	53,085	5,621	654,026	856	1,152	34,455	780,153
1977	9,672	436	47,790	36,478	3,753	886,672	446	494	18,497	1,004,238
1978	23,499	(30,406)	6,178	54,219	6,579	575,169	1,209	1,402	47,446	685,295
1979	25,051	1,295	5,664	53,866	6,610	559,746	1,325	1,862	51,293	706,712
1980	144,980	(4,617)	31,160	321,890	38,126	3,211,810	7,682	7,144	297,215	4,055,390
1981	(5,427)	(15,464)	200	(44,773)	(1,223)	(385,275)	(296)	1,752	(11,324)	(461,830)
1982	49,916	2,584	6,600	83,283	13,142	654,692	2,638	1,252	102,287	916,394
1983	52,429	(35,295)	12,125	110,465	13,872	1,073,500	2,769	1,327	107,337	1,338,529
1984	86,345	4,474	14,303	154,799	22,764	1,617,225	4,572	2,678	177,020	2,084,180
1985	25,435	1,311	5,649	47,055	6,766	484,485	1,341	1,176	52,013	625,231
1986	38,309	(41,067)	9,862	71,661	10,320	796,097	2,009	778	78,142	966,111
1987	28,769	1,476	7,004	55,537	7,969	616,845	1,509	1,491	58,679	779,279
1988	52,329	2,831	17,078	70,572	12,049	909,046	2,894	4,620	109,713	1,181,132
1989	156,099	8,019	27,551	352,103	42,943	3,834,481	8,201	12,134	318,604	4,760,135
1990	292,361	15,142	50,360	553,394	87,199	6,094,021	15,487	22,729	599,233	7,729,926
1991	349,413	18,103	60,419	580,572	91,765	6,447,565	18,515	23,486	716,292	8,306,130
1992	125,891	6,439	28,019	241,559	34,559	2,711,639	6,585	10,883	256,370	3,421,944
1993	86,113	4,375	30,245	174,630	23,840	2,059,168	4,474	4,698	174,772	2,562,315
1994	64,762	3,323	23,894	124,518	17,633	1,488,418	3,398	2,173	132,095	1,860,214
1995	82,969	(1,000)	72,734	167,698	24,390	2,472,332	4,355	2,824	169,318	2,995,620
1996	27,611	(61,913)	51,990	68,870	8,812	1,233,548	1,437	1,590	56,092	1,388,037
1997	136,503	7,041	48,721	241,400	36,417	2,951,687	7,195	3,706	279,205	3,711,875
1998	70,416	(121,021)	23,012	122,223	18,538	1,467,342	3,725	1,261	144,305	1,729,801
1999	82,290	4,249	26,824	144,882	21,945	1,736,415	4,343	3,856	168,404	2,193,208
2000	7,652	372	10,381	24,038	2,535	345,177	379	(1,159)	15,182	404,557
2001	18,220	932	8,906	34,350	5,111	434,632	953	692	37,099	540,895
2002	3,895	199	1,816	7,932	1,084	98,387	204	196	7,930	121,643
2003	3,895	199	1,816	7,932	1,084	98,387	204	196	7,930	121,643
2004	3,895	199	1,816	7,932	1,084	98,387	204	196	7,930	121,643
2005	3,895	199	1,816	7,932	1,084	98,387	204	196	7,930	121,643
2006	3,029	157	1,486	4,863	790	65,328	161	296	6,216	82,326
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	5,616,258	(53,910)	1,877,307	12,998,742	1,652,807	144,662,575	285,617	259,457	11,274,899	178,573,752

[b]Costs from Table B-10 allocated to Empire West Side Irrigation District are reduced herein by $31,588 in 1978; $12,129 in 1980; $15,173 in 1981; $38,004 in 1983; $43,033 in 1986; $5,261 in 1995; $63,318 in 1996; and $124,667 in 1998 in accordance with letters of agreement with the district.
[c]Costs related to maximum annual Table A of 15,000 acre-feet under Amendment No. 18 of the water supply contract with Kern County Water Agency.

Table B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (21)	*Castaic Lake Water Agency[d] (22)*	*Coachella Valley Water District (23)*	*Crestline-Lake Arrowhead Water Agency (24)*	*Desert Water Agency (25)*	*Littlerock Creek Irrigation District (26)*	*Mojave Water Agency (27)*	*Palmdale Water District (28)*	*San Bernardino Valley Municipal Water District (29)*	*San Gabriel Valley Municipal Water District (30)*
1952	3,158	1,042	850	254	1,402	70	1,695	418	6,079	1,550
1953	10,026	3,327	2,668	799	4,401	222	5,318	1,328	19,058	4,852
1954	12,742	4,193	3,465	1,031	5,714	285	6,908	1,691	24,608	6,290
1955	5,411	1,881	1,374	401	2,267	115	2,756	715	9,229	2,377
1956	9,775	3,590	2,196	612	3,622	191	4,449	1,267	13,138	3,438
1957	26,306	9,255	6,343	1,816	10,461	540	12,767	3,450	40,646	10,534
1958	49,204	17,599	11,581	3,290	19,099	991	23,360	6,414	72,708	18,898
1959	70,247	29,740	15,869	4,616	26,171	1,347	31,759	9,030	98,596	25,519
1960	84,552	38,760	22,068	6,797	36,395	1,547	43,260	10,772	147,170	37,469
1961	126,542	54,262	34,613	12,530	57,086	2,245	63,709	16,437	236,164	57,707
1962	198,558	85,352	43,719	13,861	72,102	3,344	84,709	24,943	253,435	64,330
1963	580,138	255,252	116,797	33,149	192,624	9,828	234,926	73,256	610,277	160,624
1964	1,094,365	501,858	209,462	55,445	345,446	18,442	429,605	137,769	1,026,066	276,118
1965	1,908,076	947,523	385,533	103,757	635,825	32,819	786,986	244,587	1,913,090	512,862
1966	3,960,302	2,150,972	812,655	215,858	1,340,235	69,325	1,664,584	517,269	3,943,586	1,062,417
1967	4,976,538	4,100,531	1,077,422	296,069	1,776,892	88,301	2,182,240	653,250	5,821,681	1,550,239
1968	5,924,474	3,998,942	1,350,742	368,156	2,227,646	107,350	2,738,009	783,940	7,982,824	2,122,940
1969	5,822,708	3,079,426	1,690,259	539,851	2,787,631	121,303	3,256,507	865,455	10,898,185	2,769,647
1970	5,032,959	3,277,778	2,050,788	695,345	3,382,251	106,381	3,872,367	736,775	13,795,809	3,457,109
1971	2,577,507	2,146,954	1,071,523	338,581	1,767,179	48,337	2,087,223	347,057	8,137,053	1,987,120
1972	973,436	283,257	331,759	92,079	547,138	19,134	668,550	134,360	2,691,137	697,957
1973	354,407	914,303	158,579	82,223	261,557	6,304	238,094	46,102	1,760,570	403,582
1974	451,450	280,861	259,175	74,113	427,433	8,143	518,453	59,145	1,617,394	425,927
1975	253,438	246,492	193,632	52,821	319,337	4,954	392,110	33,995	1,533,664	407,913
1976	237,539	255,238	136,751	37,235	225,529	4,245	277,807	31,002	962,280	255,901
1977	199,554	371,469	91,384	25,858	150,711	3,757	183,609	26,834	591,445	155,537
1978	302,111	470,176	78,573	22,226	129,584	5,233	157,815	38,654	428,989	111,769
1979	357,678	938,985	81,807	21,795	134,915	5,965	166,931	44,410	403,569	108,408
1980	1,867,517	1,777,294	423,755	113,166	698,855	32,435	864,104	240,899	2,040,757	548,085
1981	(158,728)	610,795	(47,102)	(8,865)	(77,678)	(2,576)	(102,568)	(19,588)	(143,875)	(43,557)
1982	1,557,934	861,928	298,770	78,903	492,728	26,237	613,587	196,672	1,421,407	388,261
1983	2,062,512	521,349	396,033	115,678	653,134	34,699	803,945	259,939	2,126,313	581,672
1984	1,518,361	295,783	297,559	85,097	490,731	27,272	606,124	188,562	1,546,628	423,408
1985	896,226	158,810	217,115	62,532	358,064	13,104	441,299	107,533	1,115,498	304,903
1986	841,555	104,860	221,194	58,152	364,790	9,038	454,702	93,309	1,048,625	286,302
1987	333,052	105,625	166,099	43,992	273,928	5,566	340,485	40,716	783,725	213,202
1988	259,234	174,155	65,831	22,723	108,570	3,384	128,339	26,743	429,498	113,644
1989	1,045,999	434,394	323,138	97,036	532,920	16,777	649,616	125,344	1,375,722	372,048
1990	678,053	374,313	332,566	97,789	548,468	7,335	672,344	67,179	1,509,745	409,710
1991	831,687	401,961	367,196	120,925	605,579	11,966	733,443	92,625	1,979,364	540,210
1992	633,272	356,952	270,826	131,328	446,647	9,556	501,634	76,760	2,093,387	573,386
1993	634,283	332,089	222,347	171,095	366,700	10,194	353,470	73,955	3,848,084	1,046,752
1994	467,409	165,607	132,599	93,839	218,685	7,255	218,494	53,209	2,347,599	637,733
1995	459,990	293,308	132,690	78,390	218,835	7,436	232,377	54,544	1,957,900	530,656
1996	299,764	206,742	110,520	44,965	182,270	4,885	211,872	35,808	3,627,189	972,829
1997	438,898	249,699	103,382	24,640	170,497	7,397	214,534	54,452	1,482,252	397,103
1998	231,085	201,192	61,801	40,961	101,923	3,934	104,579	29,137	1,114,623	302,406
1999	272,187	177,666	88,999	38,450	146,777	4,878	169,400	35,895	844,096	228,739
2000	124,702	72,733	54,904	23,931	90,548	2,541	103,354	18,227	634,302	170,766
2001	115,391	38,803	46,942	14,606	77,416	2,739	94,309	19,122	331,978	90,037
2002	21,192	12,370	5,782	1,601	9,535	383	11,697	2,796	32,550	8,636
2003	21,192	12,370	5,782	1,601	9,535	383	11,697	2,796	32,550	8,636
2004	21,192	12,370	5,782	1,601	9,535	383	11,697	2,796	32,550	8,636
2005	21,192	12,370	5,782	1,601	9,535	383	11,697	2,796	32,550	8,636
2006	15,955	8,041	2,886	730	4,760	267	5,978	2,004	12,908	3,545
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	51,114,307	32,442,597	14,554,765	4,657,035	24,003,940	918,569	28,598,715	6,734,555	98,696,375	25,825,418

[d]Costs from Table B-10 allocated to Castaic Lake Water Agency are reduced herein by $14,088 in 1978 in accordance with a letter of agreement with the district.

Table B-14

Capital Costs of Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (39)	Grand Total (40)
	San Gorgonio Pass Water Agency (31)	Metropolitan Water District of Southern California[e] (32)	Ventura County Flood Control District (33)	Total (34)	City of Yuba City (35)	County of Butte (36)	Plumas County FC&WCD (37)	Total (38)		
1952	962	69,020	370	86,870	0	0	0	0	59	99,352
1953	3,011	217,634	1,187	273,831	0	0	0	0	264	311,811
1954	3,904	279,967	1,496	352,294	0	0	0	0	766	402,141
1955	1,474	111,602	670	140,272	0	0	0	0	969	169,342
1956	2,127	179,335	1,299	225,039	0	0	0	0	9,172	351,549
1957	6,526	516,050	3,367	648,061	0	0	0	0	23,172	1,464,453
1958	11,701	945,684	6,390	1,186,919	0	0	2	2	32,888	2,286,626
1959	15,815	1,364,298	9,894	1,702,901	0	0	14	14	57,918	2,967,412
1960	23,307	1,914,521	12,798	2,379,416	0	0	28	28	123,202	4,660,834
1961	36,153	3,212,125	18,770	3,928,343	0	0	10	10	316,220	8,545,243
1962	40,012	3,543,471	29,069	4,456,905	0	0	32	32	228,202	8,875,170
1963	99,266	11,185,928	86,807	13,638,872	0	0	51	51	528,496	24,610,279
1964	170,012	18,065,455	164,709	22,494,752	0	0	7,791	7,791	590,034	41,736,063
1965	316,082	33,763,577	307,475	41,858,192	0	0	3,139	3,139	332,680	62,664,741
1966	654,194	74,485,027	681,898	91,558,322	0	0	(48)	(48)	783,728	129,110,328
1967	958,406	130,599,417	1,279,076	155,360,062	0	0	47	47	1,479,421	194,146,365
1968	1,314,841	147,502,290	1,360,687	177,782,841	0	0	51,573	51,573	1,254,192	197,978,910
1969	1,726,891	140,096,646	1,085,026	174,739,535	0	0	234,232	234,232	398,183	184,473,488
1970	2,160,122	161,983,078	1,147,609	201,698,371	0	0	16,227	16,227	74,028	207,082,650
1971	1,237,573	133,903,316	738,822	156,388,245	0	0	27,204	27,204	12,457	158,624,741
1972	434,507	43,931,880	66,878	50,872,072	0	0	9	9	13,182	51,936,917
1973	256,711	39,723,010	290,020	44,495,462	0	0	25	25	8,099	45,263,853
1974	264,349	18,896,593	86,362	23,369,398	0	0	45	45	28,570	24,402,165
1975	253,838	16,732,939	83,975	20,509,108	0	0	21	21	8,226	21,318,836
1976	158,850	13,545,451	84,623	16,212,451	0	0	51	51	16,486	17,492,912
1977	96,517	11,769,352	110,833	13,776,860	0	0	28	28	21,181	15,544,384
1978	69,152	15,781,696	174,876	17,770,854	0	0	38	38	28,876	19,073,476
1979	66,847	27,627,424	343,361	30,302,095	0	0	23	23	26,668	31,857,364
1980	337,811	59,493,774	641,586	69,080,038	0	0	26	26	59,169	74,974,703
1981	-26,356	15,661,179	224,257	15,865,338	0	0	34	34	(6,746)	15,727,601
1982	238,792	30,873,857	316,107	37,365,183	0	0	11	11	16,086	39,705,931
1983	357,812	25,056,047	187,121	33,156,254	0	0	19	19	72,225	38,006,645
1984	260,327	16,317,441	103,160	22,160,453	0	0	26	26	83,252	30,414,884
1985	187,454	10,236,155	56,162	14,154,855	0	0	29	29	16,338	28,572,021
1986	176,057	8,365,310	34,777	12,058,671	0	0	31	31	16,248	41,035,900
1987	131,163	6,955,356	36,142	9,429,051	0	0	32	32	29,062	32,523,661
1988	70,260	6,626,545	57,117	8,086,043	0	0	55	55	50,083	18,140,689
1989	227,772	18,531,680	153,200	23,885,646	0	0	44	44	43,324	33,301,368
1990	251,185	17,430,869	125,376	22,504,932	0	0	63	63	96,419	34,453,746
1991	331,235	20,792,168	132,558	26,940,917	0	0	54	54	149,922	39,811,666
1992	351,492	21,196,762	116,999	26,759,001	0	0	42	42	80,900	35,084,933
1993	646,980	29,471,748	105,693	37,283,390	0	0	30	30	59,324	54,624,302
1994	394,936	16,392,019	50,941	21,180,325	0	0	14	14	34,208	79,426,933
1995	328,687	16,078,395	72,214	20,445,422	0	0	3	3	42,395	189,183,399
1996	610,055	23,237,696	49,282	29,593,877	0	0	0	0	21,388	174,888,600
1997	248,560	13,530,777	72,335	16,994,526	0	0	3	3	34,976	60,747,645
1998	187,517	11,230,187	65,228	13,674,573	0	0	7	7	11,128	26,190,559
1999	141,251	8,999,050	55,105	11,202,493	0	0	2	2	34,683	24,343,883
2000	105,973	5,141,336	21,032	6,564,349	0	0	0	0	15,490	13,109,169
2001	55,671	2,648,262	10,319	3,545,595	0	0	0	0	35,759	6,256,579
2002	5,342	466,199	3,749	581,832	0	0	0	0	5,389	767,036
2003	5,342	466,199	3,749	581,832	0	0	0	0	5,389	767,036
2004	5,342	466,199	3,749	581,832	0	0	0	0	5,389	767,036
2005	5,342	466,199	3,749	581,832	0	0	0	0	2,865	746,734
2006	2,176	238,693	2,330	300,273	0	0	0	0	2,344	422,135
2007	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0
Total	16,021,328	1,438,316,888	10,882,384	1,752,766,876	0	0	341,067	341,067	7,414,348	2,551,446,199

[e]Costs from Table B-10 allocated to MWD are reduced herein by $16,425,374 in 1972 under provisions of Amendment No. 7 to its water contract.

Table B-15

Capital Cost Component of Transportation Charge for Each Contractor[a, b]

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County WA (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	148,048	105,727	365,021	618,796	0	0	0
1964	0	0	0	208,476	171,014	530,309	909,799	6,055	20,495	26,549
1965	0	0	0	274,852	260,071	899,819	1,434,742	11,420	31,733	43,153
1966	18,073	0	18,073	310,187	290,950	1,073,801	1,674,938	20,173	49,647	69,820
1967	41,595	0	41,595	380,323	321,146	1,188,204	1,889,673	37,961	84,135	122,096
1968	121,546	(31)	121,515	496,269	362,111	1,310,589	2,168,969	51,705	111,280	162,984
1969	165,325	(64)	165,261	597,652	397,579	1,412,392	2,407,623	55,025	118,803	173,828
1970	169,106	(78)	169,028	631,664	412,522	1,451,370	2,495,556	56,666	122,982	179,647
1971	171,298	(102)	171,196	638,389	415,641	1,458,277	2,512,307	57,657	125,874	183,531
1972	172,626	(153)	172,473	639,562	416,569	1,462,562	2,518,693	58,231	128,354	186,585
1973	173,611	33,377	206,988	640,825	417,220	1,465,803	2,523,848	58,507	129,610	188,117
1974	176,476	34,991	211,467	641,742	417,838	1,467,810	2,527,390	58,697	130,661	189,358
1975	184,899	38,531	223,430	643,938	419,081	1,471,536	2,534,555	58,946	131,894	190,840
1976	189,566	43,267	232,833	645,183	419,887	1,473,645	2,538,715	165,643	330,482	496,125
1977	192,491	47,680	240,171	647,718	421,653	1,479,230	2,548,601	167,356	337,128	504,485
1978	195,740	51,910	247,650	651,106	423,952	1,486,026	2,561,084	172,875	350,617	523,492
1979	199,251	56,249	255,500	656,161	427,315	1,494,938	2,578,414	173,966	355,907	529,873
1980	208,975	71,688	280,663	659,790	429,503	1,500,577	2,589,870	175,135	362,310	537,445
1981	222,425	92,729	315,154	669,605	435,840	1,516,098	2,621,543	180,396	385,897	566,293
1982	234,000	113,650	347,650	667,494	434,318	1,512,754	2,614,566	179,611	379,006	558,617
1983	261,958	161,087	423,045	668,659	434,742	1,514,133	2,617,534	179,820	376,006	555,825
1984	325,883	237,716	563,599	679,357	441,444	1,531,419	2,652,220	181,460	381,625	563,085
1985	455,686	384,056	839,742	691,346	448,627	1,549,351	2,689,324	183,266	387,114	570,380
1986	819,638	719,838	1,539,476	693,137	449,607	1,552,076	2,694,820	184,154	391,134	575,288
1987	1,360,921	1,641,938	3,002,859	695,560	451,225	1,556,588	2,703,373	186,413	406,836	593,249
1988	1,772,054	2,331,058	4,103,112	699,596	453,733	1,563,748	2,717,077	192,946	475,997	668,943
1989	1,891,926	2,567,311	4,459,237	708,182	459,554	1,579,426	2,747,162	201,046	552,700	753,746
1990	1,955,786	2,651,917	4,607,703	716,056	464,916	1,592,993	2,773,965	208,976	615,873	824,849
1991	1,979,049	2,696,882	4,675,931	732,896	476,689	1,625,823	2,835,408	220,632	697,773	918,405
1992	1,984,329	2,701,867	4,686,196	762,685	496,961	1,675,860	2,935,506	236,398	813,280	1,049,678
1993	1,987,367	2,705,371	4,692,738	776,703	506,015	1,699,409	2,982,127	256,479	998,450	1,254,929
1994	1,993,940	2,712,643	4,706,583	786,832	512,743	1,717,793	3,017,368	321,171	1,622,855	1,944,026
1995	1,997,798	2,717,391	4,715,189	791,176	515,885	1,730,223	3,037,284	555,355	4,045,239	4,600,594
1996	1,999,469	2,719,082	4,718,551	798,832	521,185	1,744,282	3,064,299	1,241,814	11,717,834	12,959,649
1997	2,000,586	2,720,186	4,720,772	802,757	523,833	1,751,307	3,077,897	1,857,845	18,589,381	20,447,226
1998	2,001,701	2,726,426	4,728,127	809,298	528,228	1,762,964	3,100,490	2,026,117	22,305,160	24,331,277
1999	2,002,674	2,727,689	4,730,363	811,443	529,569	1,766,473	3,107,485	2,073,909	22,832,989	24,906,898
2000	2,006,511	2,733,997	4,740,508	968,767	533,757	1,778,325	3,280,849	2,126,533	23,346,013	25,472,546
2001	2,326,042	2,780,673	5,106,714	1,096,587	535,347	1,783,316	3,415,250	2,154,422	23,660,017	25,814,439
2002	2,326,171	2,780,853	5,107,023	1,105,335	545,363	1,858,135	3,508,833	2,158,586	24,489,172	26,647,759
2003	2,326,373	2,781,156	5,107,528	1,106,236	545,857	1,859,465	3,511,558	2,158,810	25,143,359	27,302,170
2004	2,326,578	2,781,461	5,108,039	1,107,151	546,358	1,860,813	3,514,322	2,159,038	25,112,983	27,272,021
2005	2,326,784	2,781,772	5,108,556	1,108,080	546,866	1,862,180	3,517,126	2,159,268	25,114,224	27,273,492
2006	2,326,994	2,782,088	5,109,082	1,108,791	547,150	1,862,938	3,518,879	2,159,502	25,114,939	27,274,441
2007	2,326,994	2,782,088	5,109,082	1,109,459	547,546	1,863,881	3,520,886	2,159,697	25,115,798	27,275,494
2008	2,326,994	2,782,088	5,109,082	1,109,459	547,546	1,863,881	3,520,886	2,159,697	26,071,657	28,231,354
2009	2,326,994	2,782,088	5,109,082	1,109,459	547,546	1,863,881	3,520,886	2,159,697	25,052,657	27,212,354
2010	2,326,994	2,782,088	5,109,082	1,109,459	547,546	1,863,881	3,520,886	2,159,697	25,177,844	27,337,541
2011	2,326,994	2,782,088	5,109,082	1,109,459	547,546	1,863,881	3,520,886	2,159,697	25,053,250	27,212,947
2012	2,326,994	2,782,088	5,109,082	1,109,459	547,546	1,863,881	3,520,886	2,159,697	26,254,463	28,414,160
2013	2,326,994	2,782,088	5,109,082	941,717	441,819	1,498,860	2,882,396	2,159,697	26,345,987	28,505,684
2014	2,326,994	2,782,088	5,109,082	873,756	376,533	1,333,573	2,583,862	2,153,642	26,314,312	28,467,954
2015	2,326,994	2,782,088	5,109,082	800,221	287,475	964,062	2,051,758	2,148,277	26,606,410	28,754,687
2016	2,306,410	2,782,088	5,088,498	762,069	256,596	790,081	1,808,746	2,139,523	26,674,152	28,813,675
2017	2,279,677	2,782,088	5,061,765	688,547	226,400	675,677	1,590,624	2,121,735	26,695,414	28,817,150
2018	2,188,822	2,782,088	4,970,910	569,509	185,436	553,292	1,308,237	2,107,992	26,051,394	28,159,387
2019	2,139,049	2,782,088	4,921,137	464,725	149,968	451,489	1,066,182	2,104,672	26,049,793	28,154,465
2020	2,134,723	2,782,088	4,916,811	429,236	135,024	412,512	976,772	2,103,031	26,041,220	28,144,251
2021	2,132,190	2,782,088	4,914,278	422,087	131,906	405,604	959,597	2,102,040	26,528,155	28,630,195
2022	2,130,629	2,782,088	4,912,717	420,746	130,977	401,319	953,042	2,101,466	26,527,870	28,629,336
2023	2,129,485	2,748,534	4,878,019	419,359	130,327	398,078	947,764	2,101,190	26,238,317	28,339,507
2024	2,126,204	2,746,899	4,873,103	418,327	129,708	396,071	944,106	2,100,999	26,093,063	28,194,062
2025	2,116,584	2,743,320	4,859,904	416,007	128,465	392,346	936,818	2,100,751	25,959,104	28,059,854
2026	2,111,237	2,738,564	4,849,801	414,570	127,659	390,236	932,465	1,994,054	25,769,485	27,763,538
2027	2,107,865	2,734,127	4,841,992	411,664	125,893	384,651	922,208	1,992,340	25,762,510	27,754,851
2028	2,104,123	2,729,866	4,833,989	407,778	123,594	377,855	909,227	1,986,821	28,789,397	30,776,218
2029	2,100,083	2,725,496	4,825,579	401,963	120,231	368,943	891,137	1,985,730	25,912,669	27,898,400
2030	2,088,922	2,710,027	4,798,949	397,894	118,043	363,305	879,242	1,984,562	21,521,328	23,505,890
2031	2,073,498	2,688,950	4,762,448	386,701	111,707	347,783	846,191	1,979,300	21,497,741	23,477,042
2032	2,060,195	2,667,996	4,728,191	389,140	113,228	351,128	853,496	1,980,086	21,504,632	23,484,718
2033	2,028,120	2,620,523	4,648,643	387,932	112,804	349,749	850,485	1,979,877	21,507,633	23,487,510
2034	1,954,989	2,543,869	4,498,858	376,023	106,103	332,462	814,588	1,978,237	21,502,013	23,480,250
2035	1,806,775	2,397,498	4,204,273	362,610	98,919	314,531	776,060	1,976,431	21,496,524	23,472,955
Total	108,655,746	134,437,178	243,092,924	49,293,782	26,569,682	90,236,694	166,100,158	87,470,622	992,992,562	1,080,463,184

[a]Unadjusted for prior overpayments or underpayments of charges.
[b]Determined at the current Project Interest Rate of 4.615 percent per annum.

Table B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area									
				Kern County Water Agency						
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Municipal and Industrial[c] (15)	Agricultural (16)	County of Kings (17)	Oak Flat Water District (18)	Tulare Lake Basin Water Storage District (19)	Total (20)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	2,726	0	0	0	0	0	0	2,726
1965	0	0	6,032	64,317	9,289	0	0	0	0	79,638
1966	0	0	12,045	120,316	17,082	0	0	0	0	149,443
1967	0	0	26,270	233,375	34,366	0	0	0	0	294,011
1968	76,580	1,706	48,973	335,933	48,990	419,836	8,508	4,683	64,578	1,009,788
1969	76,664	5,118	57,445	392,193	52,561	862,207	9,016	5,091	244,347	1,704,642
1970	84,046	5,118	59,253	423,607	53,948	1,048,703	9,265	5,294	180,822	1,870,056
1971	95,828	5,118	60,358	444,736	54,739	1,392,856	9,407	5,701	192,421	2,261,163
1972	106,966	5,118	60,974	454,445	55,101	2,085,681	9,474	10,926	593,603	3,382,288
1973	117,779	5,118	61,399	458,669	55,275	2,405,517	9,505	6,312	229,598	3,349,172
1974	178,748	5,118	61,919	460,705	55,376	2,693,821	9,523	7,068	381,092	3,853,370
1975	217,107	5,118	62,482	463,020	55,517	3,226,456	9,547	7,282	454,733	4,501,263
1976	165,539	5,118	62,749	464,878	55,706	3,478,092	9,582	8,224	325,305	4,575,193
1977	162,751	5,118	63,392	467,583	55,992	3,810,991	9,626	7,534	311,035	4,894,023
1978	173,994	0	65,827	469,442	56,183	4,236,237	9,649	7,941	333,704	5,352,977
1979	206,357	5,118	66,142	472,204	56,518	4,651,575	9,710	8,145	375,566	5,851,335
1980	219,512	5,118	66,431	474,949	56,855	5,075,916	9,778	11,607	377,986	6,298,152
1981	219,506	5,118	68,018	491,351	58,798	5,555,214	10,169	8,756	400,655	6,817,585
1982	219,499	5,118	68,029	489,069	58,736	5,997,587	10,154	9,163	422,797	7,280,152
1983	229,778	5,118	68,365	493,313	59,405	6,501,211	10,288	7,677	50,335	7,425,490
1984	241,485	5,118	68,983	498,942	60,112	6,823,954	10,429	9,774	330,072	8,048,869
1985	252,760	5,118	69,712	506,829	61,272	7,266,311	10,662	9,978	240,124	8,422,766
1986	263,933	5,118	69,999	509,227	61,617	7,384,842	10,731	10,385	512,417	8,828,269
1987	275,176	5,118	70,505	512,898	62,146	8,151,943	10,834	10,588	534,558	9,633,766
1988	286,418	5,118	70,866	515,760	62,556	8,569,082	10,911	10,996	556,699	10,088,407
1989	297,661	5,118	71,751	519,418	63,181	8,869,992	11,061	11,403	579,368	10,428,953
1990	154,363	5,118	73,188	537,784	65,421	9,182,626	11,489	11,607	624,706	10,666,301
1991	285,923	5,118	75,832	566,843	70,000	9,182,626	12,302	11,607	624,706	10,834,956
1992	308,896	5,118	79,027	597,544	74,852	9,182,626	13,281	11,607	624,706	10,897,657
1993	308,896	5,118	80,520	610,412	76,693	9,182,626	13,632	11,607	624,706	10,914,210
1994	308,896	5,118	82,144	619,787	77,973	9,182,626	13,872	11,607	624,706	10,926,729
1995	308,896	5,118	83,437	626,528	78,927	9,182,626	14,056	11,607	624,706	10,935,901
1996	285,700	5,118	87,408	635,684	80,259	8,874,925	14,294	11,607	624,706	10,619,701
1997	285,700	5,118	90,273	639,479	80,745	8,874,925	14,373	11,607	624,706	10,626,926
1998	285,700	5,118	92,984	652,909	82,771	8,612,258	14,774	11,607	624,706	10,382,827
1999	285,700	5,118	94,277	659,779	83,813	8,612,258	14,983	11,607	624,706	10,392,241
2000	285,700	5,118	95,801	668,010	85,059	7,970,873	15,230	11,607	624,706	9,762,104
2001	285,700	5,118	96,397	669,391	85,205	7,841,223	15,252	11,607	624,706	9,634,599
2002	307,562	5,118	96,915	671,389	85,502	7,841,223	15,307	11,607	586,404	9,621,027
2003	330,758	5,118	97,022	671,856	85,566	8,148,924	15,319	11,607	586,404	9,952,574
2004	330,758	5,118	97,131	672,330	85,631	8,148,924	15,331	11,607	586,404	9,953,234
2005	330,758	5,118	97,241	672,811	85,697	8,148,924	15,343	11,607	586,404	9,953,903
2006	330,758	5,118	97,353	673,298	85,763	8,148,924	15,356	11,607	586,404	9,954,581
2007	330,758	5,118	97,445	673,602	85,813	8,148,924	15,366	11,607	586,404	9,955,037
2008	330,758	5,118	97,445	673,602	85,813	8,148,924	15,366	11,607	586,404	9,955,037
2009	330,758	5,118	97,445	673,602	85,813	8,148,924	15,366	11,607	586,404	9,955,037
2010	330,758	5,118	97,445	673,602	85,813	8,148,924	15,366	11,607	586,404	9,955,037
2011	330,758	5,118	97,445	673,602	85,813	8,148,924	15,366	11,607	586,404	9,955,037
2012	330,758	5,118	97,445	673,602	85,813	8,148,924	15,366	11,607	586,404	9,955,037
2013	330,758	5,118	97,445	673,602	85,813	8,148,924	15,366	11,607	586,404	9,955,037
2014	330,758	5,118	94,720	673,602	85,813	8,148,924	15,366	11,607	586,404	9,952,312
2015	330,758	5,118	91,413	609,286	76,524	8,148,924	15,366	11,607	586,404	9,875,400
2016	330,758	5,118	85,401	553,287	68,731	8,148,924	15,366	11,607	586,404	9,805,596
2017	330,758	5,118	71,176	440,228	51,446	8,148,924	15,366	11,607	586,404	9,661,027
2018	330,758	5,118	48,472	337,670	36,823	8,148,924	6,858	11,607	586,404	9,512,634
2019	330,758	5,118	40,000	281,409	33,252	8,148,924	6,351	11,607	586,404	9,443,823
2020	330,758	5,118	38,193	249,995	31,865	8,148,924	6,101	11,607	586,404	9,408,965
2021	330,758	5,118	37,088	228,867	31,074	8,148,924	5,959	11,607	586,404	9,385,799
2022	330,758	5,118	36,472	219,157	30,712	8,148,924	5,892	11,607	586,404	9,375,044
2023	330,758	5,118	36,046	214,934	30,538	8,148,924	5,861	11,607	586,404	9,370,190
2024	330,758	5,118	35,526	212,897	30,437	8,148,924	5,844	11,607	586,404	9,367,515
2025	330,758	5,118	34,963	210,583	30,296	8,148,924	5,819	11,607	586,404	9,364,472
2026	330,758	5,118	34,696	208,724	30,107	8,148,924	5,784	11,607	586,404	9,362,122
2027	330,758	5,118	34,053	206,019	29,821	8,148,924	5,740	11,607	586,404	9,358,444
2028	330,758	5,118	31,618	204,161	29,629	8,148,924	5,718	11,607	586,404	9,353,937
2029	330,758	5,118	31,303	201,398	29,294	8,148,924	5,656	11,607	586,404	9,350,462
2030	330,758	5,118	31,015	198,653	28,957	8,148,924	5,588	11,607	586,404	9,347,024
2031	330,758	5,118	29,427	182,252	27,015	8,148,924	5,197	11,607	586,404	9,326,702
2032	330,758	5,118	29,417	184,533	27,077	8,148,924	5,212	11,607	586,404	9,329,050
2033	330,758	5,118	29,081	180,290	26,407	8,148,924	5,078	11,607	586,404	9,323,667
2034	330,758	5,118	28,463	174,661	25,701	8,148,924	4,937	11,607	586,404	9,316,573
2035	330,758	5,118	27,734	166,773	24,541	8,148,924	4,704	11,607	586,404	9,306,563
Total	18,780,736	339,494	4,625,987	32,437,606	4,107,949	483,145,956	733,348	718,450	35,126,019	580,015,545

[c]Charges under Amendment No. 18 of the water supply contract with Kern County Water Agency.

Table B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (21)	Castaic Lake Water Agency (22)	Coachella Valley Water District (23)	Crestline-Lake Arrowhead Water Agency (24)	Desert Water Agency (25)	Littlerock Creek Irrigation District (26)	Mojave Water Agency (27)	Palmdale Water District (28)	San Bernardino Valley Municipal Water District (29)	San Gabriel Valley Municipal Water District (30)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,339	0	0	0	0	0	0	0	51,757	0
1964	62,900	27,462	14,434	4,372	36,574	1,143	28,452	8,209	82,854	34,413
1965	118,663	53,033	25,107	7,198	40,790	2,083	50,342	15,229	135,136	35,362
1966	215,887	101,314	44,752	12,484	73,188	3,755	90,443	27,692	232,616	61,495
1967	417,682	210,915	86,160	23,483	141,479	7,288	175,260	54,049	433,559	115,629
1968	679,662	419,782	141,059	38,569	232,019	11,787	286,828	87,329	730,199	194,621
1969	987,043	623,469	209,885	57,328	345,527	17,257	426,720	127,268	1,136,958	302,794
1970	1,289,029	780,346	296,011	84,836	487,569	23,438	592,817	171,365	1,692,268	443,919
1971	1,550,145	947,302	400,508	120,267	659,910	28,858	790,438	208,901	2,396,170	620,074
1972	1,683,912	1,056,579	455,107	137,519	749,955	31,321	897,398	226,576	2,826,977	721,326
1973	1,734,516	1,070,957	472,011	142,211	777,834	32,296	931,743	233,417	2,964,465	756,890
1974	1,752,889	1,117,495	480,092	146,401	791,161	32,617	944,125	235,761	3,054,173	777,454
1975	1,776,314	1,131,713	493,298	150,177	812,941	33,032	971,011	238,769	3,136,587	799,157
1976	1,789,477	1,144,230	503,164	152,869	829,213	33,285	991,208	240,497	3,214,734	819,942
1977	1,801,787	1,157,176	510,132	154,766	840,704	33,501	1,005,658	242,072	3,263,766	832,981
1978	1,812,120	1,176,031	514,788	156,083	848,384	33,693	1,015,384	243,433	3,293,902	840,907
1979	1,827,768	1,199,916	518,792	157,216	854,987	33,959	1,023,786	245,398	3,315,761	846,602
1980	1,846,307	1,247,688	522,961	158,326	861,861	34,263	1,032,666	247,654	3,336,325	852,126
1981	1,943,119	1,338,165	544,553	164,093	897,471	35,916	1,077,122	259,922	3,440,310	880,053
1982	1,934,861	1,369,210	542,153	163,641	893,513	35,785	1,072,275	258,917	3,432,979	877,834
1983	2,015,853	1,413,042	557,376	167,661	918,619	37,121	1,103,983	268,932	3,505,406	897,617
1984	2,122,943	1,439,551	577,556	173,556	951,899	38,890	1,141,419	282,173	3,613,751	927,256
1985	2,201,737	1,454,547	592,718	177,892	976,904	40,279	1,172,694	291,775	3,692,558	948,830
1986	2,248,222	1,462,562	603,781	181,078	995,149	40,947	1,204,342	297,247	3,749,472	964,386
1987	2,292,017	1,467,857	615,113	184,057	1,013,838	41,410	1,219,249	302,021	3,803,194	979,054
1988	2,309,435	1,473,226	623,671	186,324	1,027,952	41,697	1,237,155	304,113	3,843,575	990,039
1989	2,323,048	1,482,201	627,083	187,502	1,033,579	41,872	1,244,077	305,495	3,865,838	995,930
1990	2,378,374	1,504,806	643,939	192,563	1,061,378	42,747	1,278,230	312,029	3,937,599	1,015,337
1991	2,414,189	1,524,461	661,402	197,698	1,090,178	43,132	1,313,535	315,556	4,016,876	1,036,851
1992	2,458,363	1,545,717	680,819	204,093	1,122,201	43,765	1,352,320	320,454	4,121,545	1,065,417
1993	2,492,445	1,564,732	695,247	211,089	1,145,994	44,274	1,379,042	324,543	4,233,062	1,095,962
1994	2,526,940	1,582,561	707,184	220,274	1,165,682	44,821	1,398,019	328,514	4,439,656	1,152,159
1995	2,552,564	1,591,525	714,361	225,354	1,177,519	45,214	1,409,846	331,394	4,566,730	1,186,679
1996	2,577,974	1,607,540	721,606	229,634	1,189,467	45,620	1,422,534	334,372	4,673,632	1,215,653
1997	2,594,748	1,618,931	727,696	232,112	1,199,511	45,889	1,434,208	336,345	4,873,494	1,269,257
1998	2,619,382	1,632,824	733,448	233,482	1,208,996	46,301	1,959,185	339,375	5,075,943	1,291,350
1999	2,632,492	1,644,132	736,921	235,785	1,214,725	46,522	1,965,967	341,012	5,179,876	1,308,347
2000	2,648,089	2,798,500	741,978	237,969	1,223,064	46,799	1,976,484	404,781	6,828,102	1,321,342
2001	2,655,367	2,804,133	745,133	239,344	1,228,267	46,945	1,983,113	405,939	6,862,781	1,331,156
2002	2,678,581	2,806,834	747,863	240,194	1,232,770	47,104	1,988,806	407,083	6,882,996	1,336,392
2003	2,679,847	2,807,797	748,204	240,288	1,233,332	47,127	1,989,614	407,267	7,325,097	1,336,901
2004	2,681,129	2,808,771	748,549	240,384	1,233,901	47,150	1,990,432	407,454	7,325,922	1,337,417
2005	2,682,430	2,809,761	748,899	240,481	1,234,479	47,173	1,991,263	407,642	7,328,696	1,337,940
2006	2,683,752	2,810,765	749,255	240,579	1,235,065	47,197	1,992,105	407,835	7,330,781	1,338,471
2007	2,684,763	2,811,470	749,435	240,625	1,235,363	47,213	1,992,596	407,980	7,330,270	1,338,693
2008	2,684,763	2,811,470	749,435	240,625	1,235,363	47,213	1,992,596	407,980	7,330,437	1,338,693
2009	2,684,763	2,811,470	749,435	240,625	1,235,363	47,213	1,992,596	407,980	7,331,657	1,338,693
2010	2,684,763	2,811,470	749,435	240,625	1,235,363	47,213	1,992,596	407,980	7,333,878	1,338,693
2011	2,684,763	2,811,470	749,435	240,625	1,235,363	47,213	1,992,596	407,980	7,330,627	1,338,693
2012	2,684,763	2,811,470	749,435	240,625	1,235,363	47,213	1,992,596	407,980	7,331,079	1,338,693
2013	2,651,424	2,811,470	749,435	240,625	1,221,990	47,213	1,992,596	407,980	7,343,346	1,325,584
2014	2,621,863	2,777,310	735,001	236,253	1,212,175	46,070	1,959,679	399,073	7,310,541	1,317,400
2015	2,566,100	2,746,474	724,328	233,427	1,194,573	45,130	1,934,140	391,474	7,257,636	1,303,331
2016	2,468,876	2,689,312	704,683	228,140	1,162,175	43,458	1,886,639	377,875	7,162,057	1,277,198
2017	2,267,081	2,555,351	663,275	217,142	1,093,884	39,926	1,787,079	349,422	6,957,222	1,223,063
2018	2,005,088	2,267,400	608,376	202,056	1,003,343	35,426	1,649,438	312,182	6,662,498	1,144,072
2019	1,697,670	1,971,219	539,550	183,296	889,835	29,957	1,472,025	266,053	6,257,297	1,035,899
2020	1,395,697	1,740,399	453,424	155,789	747,793	23,776	1,264,814	215,098	5,698,835	894,773
2021	1,134,578	1,493,203	348,927	120,358	575,453	18,355	1,032,222	171,687	4,997,225	718,619
2022	1,000,729	1,333,591	294,328	103,106	485,408	15,892	906,792	150,827	4,565,129	617,366
2023	950,199	1,325,863	277,424	98,414	457,529	14,917	865,543	142,786	4,428,500	581,802
2024	931,795	1,266,961	269,344	94,224	444,201	14,596	850,621	139,974	4,341,514	561,238
2025	908,356	1,249,089	256,137	90,448	422,422	14,181	820,809	136,397	4,257,668	539,535
2026	895,218	1,230,831	246,271	87,756	406,150	13,929	799,091	134,376	4,179,664	518,750
2027	882,912	1,212,312	239,303	85,859	394,658	13,712	783,493	132,563	4,129,199	505,711
2028	872,574	1,184,463	234,647	84,542	386,979	13,521	773,191	131,045	4,098,777	497,786
2029	856,918	1,146,132	230,643	83,409	380,376	13,254	763,665	128,832	4,077,491	492,091
2030	838,379	1,068,881	226,475	82,298	373,502	12,950	753,643	126,317	1,794,639	486,567
2031	741,561	925,759	204,882	76,532	337,892	11,298	698,227	112,148	1,690,654	458,640
2032	749,815	874,230	207,282	76,984	341,850	11,429	707,256	113,781	1,697,985	460,859
2033	668,900	801,645	192,059	72,963	316,743	10,092	672,093	103,111	1,625,558	441,076
2034	561,752	759,388	171,879	67,069	283,463	8,324	626,614	89,115	1,517,213	411,437
2035	482,976	737,656	156,717	62,733	258,458	6,934	593,949	79,213	1,438,406	389,862
Total	130,986,380	114,867,319	36,455,769	11,578,405	60,092,579	2,312,891	88,100,492	18,615,017	310,725,080	63,728,139

Table B-15

Capital Cost Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (39)	Grand Total (40)
	San Gorgonio Pass Water Agency (31)	Metropolitan Water District of Southern California (32)	Ventura County Flood Control District (33)	Total (34)	City of Yuba City (35)	County of Butte (36)	Plumas County FC&WCD (37)	Total (38)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	691,184	0	776,280	0	0	0	0	0	1,395,076
1964	21,378	1,261,155	9,383	1,592,729	0	0	0	0	0	2,531,803
1965	21,877	2,181,669	17,775	2,704,264	0	0	405	405	0	4,262,202
1966	37,983	3,902,069	33,443	4,837,121	0	0	565	565	0	6,749,960
1967	71,317	7,697,403	68,188	9,502,412	0	0	562	562	0	11,850,349
1968	120,152	14,352,008	133,363	17,427,378	0	0	565	565	0	20,891,199
1969	187,149	21,867,888	202,696	26,491,982	0	0	3,193	3,193	0	30,946,529
1970	275,141	29,006,418	257,982	35,401,139	0	0	15,128	15,128	0	40,130,555
1971	385,209	37,277,656	316,458	45,701,896	0	0	15,955	15,955	0	50,846,048
1972	448,269	44,400,235	354,104	53,989,278	0	0	17,341	17,341	0	60,266,658
1973	470,409	46,645,474	357,512	56,589,735	0	0	17,341	17,341	0	62,875,201
1974	483,489	48,669,533	372,290	58,857,480	0	0	17,342	17,342	0	65,656,407
1975	496,959	49,632,396	376,690	60,049,044	0	0	17,345	17,345	0	67,516,476
1976	509,893	50,485,011	380,969	61,094,492	0	0	17,346	17,346	0	68,954,704
1977	517,987	51,175,211	385,281	61,921,022	0	0	17,348	17,348	0	70,125,649
1978	522,905	51,774,910	390,928	62,623,468	0	0	17,350	17,350	0	71,326,021
1979	526,429	52,579,056	399,839	63,529,509	0	0	17,352	17,352	0	72,761,983
1980	529,835	53,986,792	417,335	65,074,139	0	0	17,353	17,353	0	74,797,622
1981	547,048	57,018,258	450,026	68,596,056	0	0	17,354	17,354	0	78,933,985
1982	545,705	57,816,262	461,453	69,404,588	0	0	17,356	17,356	0	80,222,929
1983	557,872	59,389,419	477,560	71,310,461	0	0	17,357	17,357	0	82,349,712
1984	576,104	60,666,133	487,095	72,998,326	0	0	17,358	17,358	0	84,843,457
1985	589,369	61,497,577	492,351	74,129,231	0	0	17,359	17,359	0	86,668,803
1986	598,933	62,019,542	495,213	74,860,874	0	0	17,360	17,360	0	88,516,087
1987	607,953	62,448,107	496,995	75,470,865	0	0	17,362	17,362	0	91,421,474
1988	614,711	62,806,476	498,857	75,957,231	0	0	17,364	17,364	0	93,552,134
1989	618,353	63,149,958	501,817	76,376,753	0	0	17,366	17,366	0	94,783,217
1990	630,234	64,116,619	509,809	77,623,664	0	0	17,369	17,369	0	96,513,851
1991	643,424	65,031,925	516,392	78,805,619	0	0	17,372	17,372	0	98,087,691
1992	660,939	66,131,408	523,402	80,230,443	0	0	17,375	17,375	0	99,816,855
1993	679,664	67,260,589	529,635	81,656,278	0	0	17,377	17,377	0	101,517,659
1994	714,399	68,842,850	535,309	83,658,368	0	0	17,379	17,379	0	104,270,453
1995	735,776	69,730,144	538,066	84,805,172	0	0	17,379	17,379	0	108,111,519
1996	753,723	70,608,026	542,009	85,921,790	0	0	17,380	17,380	0	117,301,370
1997	787,337	71,888,448	544,725	87,552,701	0	0	17,380	17,380	0	126,442,902
1998	966,858	72,641,235	548,749	89,297,128	0	0	17,380	17,380	0	131,857,229
1999	1,017,362	73,272,429	552,415	90,147,985	0	0	17,380	17,380	0	133,302,352
2000	2,900,848	73,783,699	555,546	95,467,201	0	0	17,380	17,380	0	138,740,588
2001	2,904,821	74,079,147	556,755	95,842,901	0	0	17,380	17,380	0	139,831,283
2002	2,909,153	74,233,176	557,355	96,068,307	0	0	17,380	17,380	0	140,970,329
2003	3,429,507	74,260,640	557,576	97,063,197	0	0	17,380	17,380	0	142,954,407
2004	3,428,508	74,288,478	557,800	97,095,895	0	0	17,380	17,380	0	142,960,891
2005	3,429,779	74,316,720	558,027	97,133,290	0	0	17,380	17,380	0	143,003,747
2006	3,430,206	74,345,395	558,257	97,169,663	0	0	17,380	17,380	0	143,044,026
2007	3,428,785	74,360,317	558,403	97,185,913	0	0	17,380	17,380	0	143,063,792
2008	3,428,981	74,360,317	558,403	97,186,276	0	0	17,380	17,380	0	144,020,015
2009	3,430,423	74,360,317	558,403	97,188,938	0	0	17,380	17,380	0	143,003,677
2010	3,433,046	74,360,317	558,403	97,193,782	0	0	17,380	17,380	0	143,133,708
2011	3,429,206	74,360,317	558,403	97,186,691	0	0	17,380	17,380	0	143,002,023
2012	3,429,740	74,360,317	558,403	97,187,677	0	0	17,380	17,380	0	144,204,222
2013	3,497,224	73,669,132	558,403	96,516,422	0	0	17,380	17,380	0	142,986,001
2014	3,490,148	73,099,161	549,020	95,753,694	0	0	17,380	17,380	0	141,884,284
2015	3,480,748	72,178,648	540,627	94,596,636	0	0	16,975	16,975	0	140,404,538
2016	3,466,889	70,458,248	524,960	92,450,510	0	0	16,816	16,816	0	137,983,841
2017	3,428,955	66,662,914	490,215	87,735,529	0	0	16,818	16,818	0	132,882,913
2018	3,382,384	60,008,308	425,040	79,705,611	0	0	16,816	16,816	0	123,673,595
2019	3,317,228	52,492,429	355,707	70,508,165	0	0	14,188	14,188	0	114,107,960
2020	3,225,513	45,353,899	300,421	61,470,231	0	0	2,253	2,253	0	104,919,283
2021	3,118,153	37,082,661	241,945	51,053,386	0	0	1,426	1,426	0	94,944,681
2022	3,053,569	29,960,082	204,299	42,691,118	0	0	40	40	0	86,561,297
2023	3,032,445	27,714,843	200,891	40,091,156	0	0	39	39	0	83,626,675
2024	3,022,581	25,690,784	186,113	37,813,946	0	0	38	38	0	81,192,770
2025	3,007,418	24,727,921	181,713	36,612,094	0	0	36	36	0	79,833,178
2026	2,994,653	23,875,305	177,434	35,559,428	0	0	35	35	0	78,467,389
2027	2,984,867	23,185,106	173,122	34,722,817	0	0	32	32	0	77,600,344
2028	2,979,610	22,585,406	167,475	34,010,016	0	0	30	30	0	79,883,417
2029	2,976,763	21,781,261	158,564	33,089,399	0	0	29	29	0	76,055,006
2030	300,645	20,373,524	141,068	26,578,888	0	0	27	27	0	65,110,020
2031	283,432	17,342,059	108,377	22,991,461	0	0	26	26	0	61,403,870
2032	284,775	16,544,054	96,950	22,167,250	0	0	24	24	0	60,562,729
2033	272,608	14,970,898	80,843	20,228,589	0	0	24	24	0	58,538,918
2034	254,376	13,694,184	71,308	18,516,122	0	0	23	23	0	56,626,414
2035	241,111	12,862,740	66,052	17,376,807	0	0	21	21	0	55,136,679
Total	117,581,243	3,615,704,197	27,428,395	4,598,175,906	0	0	868,914	868,914	0	6,668,716,630

Table B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	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	100,750	185,871	286,621
1980	81,769	0	81,769	389,575	372,185	1,010,830	1,772,590	125,109	234,324	359,433
1981	101,340	0	101,340	317,408	302,272	834,257	1,453,937	139,105	260,146	399,251
1982	191,987	0	191,987	386,742	369,633	1,098,844	1,855,219	140,822	263,314	404,136
1983	80,215	0	80,215	438,536	428,973	1,269,373	2,136,882	169,744	316,792	486,536
1984	106,485	0	106,485	591,243	565,721	1,817,629	2,974,593	200,559	373,711	574,270
1985	215,341	0	215,341	674,975	655,490	1,840,211	3,170,676	241,705	449,621	691,326
1986	203,704	0	203,704	613,273	583,077	1,784,056	2,980,406	231,778	431,306	663,084
1987	295,505	0	295,505	687,629	652,468	2,000,817	3,340,914	229,528	465,206	694,734
1988	312,677	(58)	312,619	676,847	655,274	1,910,092	3,242,213	257,657	562,174	819,831
1989	403,330	688,185	1,091,515	716,831	712,354	1,897,149	3,326,334	243,684	669,735	913,419
1990	658,942	674,944	1,333,886	782,589	780,305	2,129,966	3,692,860	310,382	677,321	987,703
1991	726,717	860,903	1,587,620	543,178	524,741	1,520,569	2,588,488	302,575	674,237	976,812
1992	483,580	712,313	1,195,893	796,058	855,050	2,253,496	3,904,604	340,104	725,352	1,065,456
1993	524,000	708,129	1,232,129	1,280,736	1,261,431	3,338,742	5,880,909	386,509	734,967	1,121,476
1994	573,815	658,277	1,232,092	1,368,651	1,312,740	3,560,294	6,241,685	482,255	889,405	1,371,660
1995	539,407	660,770	1,200,177	1,232,272	1,187,201	3,216,470	5,635,943	477,768	881,026	1,358,794
1996	604,992	1,011,298	1,616,290	1,185,220	1,124,968	3,007,330	5,317,518	641,585	1,183,204	1,824,789
1997	563,579	741,881	1,305,460	1,029,670	968,999	2,667,649	4,666,318	406,664	749,802	1,156,466
1998	461,929	661,478	1,123,407	1,064,804	1,174,966	3,502,898	5,742,668	806,750	3,045,558	3,852,308
1999	587,003	1,005,525	1,592,528	1,212,342	1,253,143	5,043,759	7,509,244	790,979	3,142,173	3,933,152
2000	553,216	1,483,966	2,037,182	2,218,134	1,350,686	4,016,460	7,585,280	803,386	3,690,995	4,494,381
2001	550,277	1,256,959	1,807,236	4,454,481	1,313,014	4,148,539	9,916,034	759,153	3,005,989	3,765,142
2002	885,020	1,909,218	2,794,238	8,534,231	1,610,521	11,087,412	21,232,164	1,159,079	5,567,869	6,726,948
2003	868,658	2,095,477	2,964,135	3,109,074	1,576,263	9,830,118	14,515,455	1,154,891	5,587,320	6,742,211
2004	825,016	1,753,800	2,578,816	2,927,447	1,492,977	8,460,094	12,880,518	1,102,142	5,423,136	6,525,278
2005	467,355	937,215	1,404,570	1,674,220	853,380	4,512,561	7,040,161	622,221	3,063,913	3,686,134
2006	916,467	1,501,043	2,417,510	2,931,700	1,469,271	4,089,575	8,490,546	831,606	3,085,811	3,917,417
2007	915,519	1,499,562	2,415,081	2,928,611	1,467,650	4,085,019	8,481,280	830,751	3,082,670	3,913,421
2008	915,892	1,500,218	2,416,110	2,929,686	1,468,158	4,086,414	8,484,258	831,070	3,083,925	3,914,995
2009	915,646	1,499,864	2,415,510	2,928,823	1,467,682	4,085,064	8,481,569	830,840	3,083,109	3,913,949
2010	915,503	1,499,500	2,415,003	2,928,619	1,467,680	4,085,115	8,481,414	830,744	3,082,604	3,913,348
2011	918,774	1,505,192	2,423,966	2,940,352	1,472,987	4,099,841	8,513,180	833,656	3,092,682	3,926,338
2012	918,989	1,505,585	2,424,574	2,940,953	1,473,260	4,100,584	8,514,797	833,837	3,093,409	3,927,246
2013	919,557	1,506,770	2,426,327	2,942,212	1,473,691	4,101,668	8,517,571	834,273	3,095,354	3,929,627
2014	919,835	1,507,632	2,427,467	2,942,304	1,473,416	4,100,714	8,516,434	834,420	3,096,376	3,930,796
2015	920,523	1,508,752	2,429,275	2,944,477	1,474,525	4,103,818	8,522,820	835,033	3,098,674	3,933,707
2016	919,366	1,506,754	2,426,120	2,941,059	1,472,875	4,099,253	8,513,187	834,034	3,094,790	3,928,824
2017	919,832	1,507,581	2,427,413	2,942,385	1,473,494	4,100,955	8,516,834	834,429	3,096,355	3,930,784
2018	920,496	1,508,975	2,429,471	2,943,866	1,474,001	4,102,229	8,520,096	834,941	3,098,639	3,933,580
2019	919,289	1,506,808	2,426,097	2,940,458	1,472,423	4,097,909	8,510,790	833,919	3,094,570	3,928,489
2020	920,109	1,508,080	2,428,189	2,943,148	1,473,843	4,101,906	8,518,897	834,660	3,097,281	3,931,941
2021	920,557	1,508,680	2,429,237	2,944,795	1,474,782	4,104,590	8,524,167	835,087	3,098,740	3,933,827
2022	920,295	1,508,612	2,428,907	2,943,296	1,473,739	4,101,511	8,518,546	834,770	3,097,957	3,932,727
2023	919,439	1,506,843	2,426,282	2,941,322	1,473,028	4,099,694	8,514,044	834,100	3,095,013	3,929,113
2024	919,781	1,507,586	2,427,367	2,942,047	1,473,251	4,100,233	8,515,531	834,360	3,096,200	3,930,560
2025	920,740	1,509,112	2,429,852	2,945,119	1,474,843	4,104,701	8,524,663	835,218	3,099,383	3,934,601
2026	919,024	1,506,369	2,425,393	2,939,638	1,472,011	4,096,759	8,508,408	833,685	3,093,684	3,927,369
2027	921,994	1,511,131	2,433,125	2,949,085	1,476,878	4,110,398	8,536,361	836,332	3,103,547	3,939,879
2028	918,932	1,506,292	2,425,224	2,939,208	1,471,735	4,095,955	8,506,898	833,586	3,093,393	3,926,979
2029	920,166	1,508,111	2,428,277	2,943,445	1,474,042	4,102,490	8,519,977	834,725	3,097,459	3,932,184
2030	919,289	1,506,576	2,425,865	2,940,895	1,472,828	4,099,144	8,512,867	833,974	3,094,514	3,928,488
2031	922,261	1,511,805	2,434,066	2,949,466	1,476,881	4,110,298	8,536,645	836,511	3,104,494	3,941,005
2032	918,413	1,505,462	2,423,875	2,937,555	1,470,882	4,093,564	8,502,001	833,122	3,091,671	3,924,793
2033	920,289	1,508,177	2,428,466	2,944,087	1,474,475	4,103,764	8,522,326	834,867	3,097,831	3,932,698
2034	920,440	1,508,656	2,429,096	2,944,128	1,474,315	4,103,209	8,521,652	834,947	3,098,398	3,933,345
2035	918,542	1,505,659	2,424,201	2,937,986	1,471,112	4,094,211	8,503,309	833,240	3,092,100	3,925,340
Total	40,087,723	63,011,667	103,099,390	129,453,472	70,351,579	216,904,346	416,709,397	38,492,717	137,651,581	176,144,298

Table B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	37,806	1,963	5,639	60,701	678,086	2,008	2,073	77,591	865,867
1969	45,479	2,235	30,158	80,554	1,197,126	2,286	2,085	90,773	1,450,696
1970	46,969	2,292	35,450	96,673	1,381,493	2,344	2,158	93,408	1,660,787
1971	47,997	2,314	35,366	106,654	1,643,163	2,366	2,288	94,874	1,935,022
1972	49,866	2,414	37,844	122,313	1,729,169	2,469	2,254	98,777	2,045,106
1973	50,006	2,385	36,180	125,553	1,719,873	2,440	2,310	98,330	2,037,077
1974	52,818	2,556	36,570	135,661	1,823,065	2,614	2,529	104,609	2,160,422
1975	66,963	3,243	44,251	162,738	2,235,242	3,317	3,191	132,663	2,651,608
1976	66,504	3,328	45,364	159,303	2,215,999	3,404	2,919	133,940	2,630,761
1977	75,595	3,812	49,192	189,661	2,522,290	3,898	3,708	152,838	3,000,994
1978	70,688	3,503	49,725	174,897	2,427,163	3,583	3,644	141,672	2,874,875
1979	68,879	3,436	48,142	173,677	2,378,315	3,514	3,492	138,493	2,817,948
1980	95,898	4,722	59,551	235,741	3,146,570	4,830	4,777	191,582	3,743,671
1981	118,448	5,965	66,183	266,353	3,440,557	6,099	5,187	239,323	4,148,115
1982	134,083	6,711	67,061	311,879	3,848,922	6,862	6,382	270,061	4,651,961
1983	184,902	9,242	80,869	426,485	5,030,031	9,450	8,494	372,182	6,121,655
1984	194,228	9,656	95,555	471,854	5,636,134	9,874	8,719	389,892	6,815,912
1985	200,694	9,957	115,227	486,162	6,042,593	10,182	8,982	402,457	7,276,254
1986	207,028	10,302	110,479	530,803	6,372,710	10,536	10,341	415,776	7,667,975
1987	205,002	10,259	109,401	533,451	6,378,437	10,493	10,517	412,889	7,670,449
1988	203,711	10,223	122,903	516,432	6,388,497	10,455	10,341	410,868	7,673,430
1989	224,049	11,269	116,197	564,169	6,747,046	11,526	11,102	452,406	8,137,764
1990	271,051	13,666	148,238	664,040	8,111,616	13,976	13,206	547,974	9,783,767
1991	275,748	13,854	144,486	662,755	8,111,610	14,168	13,218	556,474	9,792,313
1992	317,889	16,027	162,466	764,224	9,115,453	16,393	18,209	642,672	11,053,333
1993	359,879	17,989	184,477	831,662	10,372,245	18,399	19,560	724,397	12,528,608
1994	309,099	15,487	224,254	738,622	9,789,905	15,840	16,434	622,912	11,732,553
1995	395,441	19,918	220,899	898,339	11,190,121	20,373	21,551	799,070	13,565,712
1996	362,634	19,968	301,835	902,162	11,868,342	20,424	21,664	796,711	14,293,740
1997	366,489	20,154	186,450	942,987	10,627,433	20,613	19,344	806,084	12,989,554
1998	453,093	24,563	288,941	1,098,336	12,288,048	25,125	21,596	995,325	15,195,027
1999	380,897	21,018	270,710	967,497	11,014,711	21,497	21,887	837,737	13,535,954
2000	395,186	21,697	246,957	1,036,152	10,599,030	22,191	22,338	866,946	13,210,497
2001	500,871	27,616	253,582	1,341,777	12,408,351	28,246	31,904	1,101,206	15,693,553
2002	745,597	38,476	338,081	1,727,032	16,621,825	39,355	43,105	1,438,535	20,992,006
2003	775,218	37,178	333,573	1,692,084	16,898,097	38,027	41,589	1,390,272	21,206,038
2004	717,609	34,387	320,811	1,508,562	15,878,232	35,172	38,642	1,286,387	19,819,802
2005	408,723	19,596	179,468	864,578	8,919,575	20,043	22,404	732,896	11,167,283
2006	479,533	22,199	292,667	1,086,580	11,993,573	22,706	25,353	843,737	14,766,348
2007	479,165	22,182	292,372	1,085,651	11,983,058	22,689	25,335	843,094	14,753,546
2008	479,348	22,190	292,485	1,086,079	11,987,761	22,698	25,342	843,414	14,759,317
2009	479,268	22,187	292,407	1,085,862	11,985,249	22,694	25,337	843,274	14,756,278
2010	479,141	22,181	292,369	1,085,607	11,982,620	22,688	25,334	843,053	14,752,993
2011	481,222	22,278	293,466	1,089,990	12,031,179	22,787	25,419	846,720	14,813,061
2012	481,334	22,283	293,530	1,090,248	12,033,984	22,792	25,424	846,915	14,816,510
2013	481,708	22,300	293,692	1,091,052	12,042,515	22,810	25,434	847,568	14,827,079
2014	482,033	22,315	293,758	1,091,677	12,048,780	22,825	25,438	848,137	14,834,963
2015	482,322	22,328	293,971	1,092,387	12,056,746	22,838	25,452	848,641	14,844,685
2016	481,777	22,303	293,619	1,091,097	12,042,495	22,813	25,429	847,688	14,827,221
2017	482,008	22,313	293,759	1,091,636	12,048,404	22,824	25,438	848,093	14,834,475
2018	482,447	22,334	293,949	1,092,580	12,058,420	22,844	25,450	848,860	14,846,884
2019	481,838	22,306	293,586	1,091,168	12,042,960	22,816	25,427	847,794	14,827,895
2020	482,149	22,320	293,841	1,091,961	12,051,955	22,830	25,443	848,340	14,838,839
2021	482,271	22,326	293,985	1,092,315	12,056,155	22,836	25,453	848,553	14,843,894
2022	482,344	22,329	293,888	1,092,342	12,055,812	22,839	25,446	848,680	14,843,680
2023	481,793	22,304	293,642	1,091,147	12,043,104	22,814	25,431	847,717	14,827,952
2024	482,032	22,315	293,739	1,091,656	12,048,467	22,825	25,437	848,135	14,834,606
2025	482,416	22,332	294,035	1,092,615	12,059,275	22,843	25,456	848,807	14,847,779
2026	481,722	22,300	293,505	1,090,887	12,039,830	22,810	25,422	847,593	14,824,069
2027	482,933	22,356	294,422	1,093,893	12,073,624	22,867	25,480	849,711	14,865,286
2028	481,720	22,300	293,473	1,090,852	12,039,304	22,810	25,420	847,589	14,823,468
2029	482,142	22,320	293,862	1,091,969	12,052,160	22,830	25,445	848,328	14,839,056
2030	481,719	22,300	293,597	1,090,975	12,041,213	22,810	25,428	847,587	14,825,629
2031	483,169	22,367	294,493	1,094,369	12,078,523	22,878	25,485	850,122	14,871,406
2032	481,510	22,291	293,313	1,090,328	12,033,412	22,800	25,410	847,221	14,816,285
2033	482,124	22,319	293,906	1,091,984	12,052,561	22,829	25,448	848,296	14,839,467
2034	482,306	22,327	293,942	1,092,332	12,056,056	22,838	25,450	848,614	14,843,865
2035	481,558	22,293	293,353	1,090,451	12,034,815	22,803	25,412	847,305	14,817,990
Total	23,930,089	1,152,179	14,009,161	55,294,213	619,951,086	1,178,478	1,266,822	44,480,588	761,262,615

Table B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	65,074	28,085	11,697	2,958	19,291	1,089	24,380	8,173	52,315	14,399
1969	86,339	70,342	15,522	3,925	25,598	1,445	32,348	10,844	69,419	19,106
1970	107,807	84,577	19,392	4,904	31,981	1,804	40,391	13,540	86,727	23,865
1971	178,820	105,979	32,228	8,150	53,151	2,992	66,999	22,459	144,136	39,636
1972	363,555	202,625	106,740	30,967	176,037	6,601	213,032	48,102	548,123	144,113
1973	404,661	222,765	121,341	34,674	200,116	7,346	243,320	53,975	724,535	190,156
1974	434,868	235,528	130,627	37,062	215,432	7,677	262,735	56,383	786,107	207,019
1975	504,791	289,501	151,031	43,176	249,082	9,082	303,108	65,580	905,424	238,842
1976	559,013	262,420	160,686	44,454	265,004	10,030	325,512	73,253	964,524	256,570
1977	675,504	335,749	184,813	47,743	304,792	11,890	381,161	87,355	1,069,446	289,793
1978	600,343	376,946	187,028	54,156	308,449	10,711	373,192	78,304	1,148,279	300,751
1979	661,123	349,072	196,264	52,211	323,677	12,124	401,469	87,126	1,125,452	302,508
1980	858,039	415,571	253,090	71,921	417,398	15,435	508,379	112,853	1,518,405	401,223
1981	1,001,503	511,087	284,970	73,534	469,970	18,046	588,024	131,992	1,548,350	420,523
1982	1,128,643	557,494	320,938	89,560	529,292	20,193	649,204	148,012	1,870,559	497,871
1983	1,744,932	832,687	450,049	119,275	742,218	30,643	922,072	225,793	2,373,149	639,682
1984	2,105,780	943,524	548,784	150,179	905,055	36,810	1,112,196	271,187	3,018,294	803,394
1985	2,157,936	1,055,744	584,697	157,841	964,282	38,972	1,191,309	277,250	3,230,403	860,780
1986	2,311,841	1,102,466	618,750	162,748	1,020,438	40,051	1,268,806	295,987	3,318,638	893,069
1987	2,366,343	1,032,918	628,222	167,262	1,036,061	41,773	1,283,836	307,844	3,400,838	913,933
1988	2,303,274	1,042,113	649,276	175,694	1,070,784	40,604	1,321,553	298,438	3,587,873	960,968
1989	2,280,051	1,088,176	613,266	169,993	1,011,401	39,501	1,240,888	292,775	3,499,964	932,519
1990	2,636,186	1,275,150	708,829	201,242	1,169,006	45,472	1,424,445	336,069	4,084,211	1,078,392
1991	2,737,441	1,454,172	763,989	210,644	1,259,974	48,936	1,546,583	358,165	4,348,900	1,150,633
1992	2,781,586	1,579,025	750,248	198,232	1,237,307	49,829	1,538,733	362,844	4,131,745	1,115,632
1993	3,109,819	1,689,775	850,589	234,719	1,402,796	56,125	1,722,415	411,539	5,023,595	1,338,111
1994	2,825,181	1,609,511	795,078	225,270	1,311,244	51,258	1,634,795	376,175	4,797,440	1,268,058
1995	3,121,440	1,720,649	848,101	231,718	1,398,686	58,749	1,766,297	444,998	4,828,432	1,272,345
1996	3,093,678	1,966,634	862,720	228,008	1,422,789	56,813	1,817,427	423,444	4,707,473	1,256,549
1997	3,250,394	1,810,292	918,428	281,067	1,514,687	59,547	1,853,224	446,127	5,705,741	1,477,757
1998	3,876,893	2,050,491	1,070,620	299,667	1,765,661	73,841	3,208,176	561,294	6,077,011	1,635,115
1999	3,781,815	2,082,643	1,095,020	299,538	1,805,899	74,616	3,186,951	541,275	6,225,723	1,682,822
2000	3,783,963	3,443,505	1,062,775	298,750	1,752,728	70,197	3,123,513	607,956	5,961,784	1,600,201
2001	4,402,832	3,705,567	1,065,996	288,763	1,758,031	80,258	3,220,788	695,697	5,494,530	1,488,798
2002	6,142,062	5,375,226	1,574,157	429,521	2,596,102	106,163	4,586,029	930,369	8,380,097	2,241,911
2003	6,040,039	5,327,125	1,594,028	442,898	2,628,872	104,460	4,606,490	915,856	8,914,650	2,389,174
2004	5,884,600	5,606,619	1,610,770	449,005	2,656,481	105,011	4,567,067	905,296	9,297,613	2,494,344
2005	3,697,375	3,589,196	1,010,961	283,589	1,667,276	65,936	2,846,314	572,091	6,056,990	1,632,070
2006	4,151,801	3,808,673	1,080,971	287,459	1,782,736	73,503	3,279,092	637,390	6,145,868	1,652,153
2007	4,148,062	3,821,557	1,094,567	304,830	1,805,168	73,442	3,276,366	636,831	6,453,424	1,711,797
2008	4,149,968	3,829,131	1,088,551	296,889	1,795,242	73,479	3,278,046	637,134	6,312,661	1,684,582
2009	4,149,176	3,831,888	1,094,815	304,618	1,805,577	73,469	3,277,590	637,023	6,449,666	1,711,262
2010	4,147,826	3,827,371	1,089,619	298,916	1,797,005	73,436	3,276,077	636,789	6,348,338	1,691,247
2011	4,162,467	3,846,674	1,099,177	306,441	1,812,771	73,712	3,288,549	639,087	6,485,273	1,719,715
2012	4,163,654	3,841,475	1,095,861	301,991	1,807,300	73,736	3,289,639	639,278	6,406,393	1,704,490
2013	4,167,652	3,859,772	1,087,254	289,829	1,793,099	73,826	3,293,744	639,949	6,190,557	1,663,031
2014	4,171,186	3,851,461	1,107,796	313,049	1,826,990	73,918	3,297,967	640,579	6,603,029	1,744,208
2015	4,174,170	3,849,065	1,089,894	290,451	1,797,452	73,971	3,300,314	641,035	6,202,222	1,666,337
2016	4,168,537	3,864,211	1,109,548	316,112	1,829,881	73,864	3,295,489	640,149	6,657,075	1,754,376
2017	4,170,964	3,859,941	1,096,703	299,649	1,808,687	73,912	3,297,653	640,536	6,364,944	1,697,704
2018	4,175,627	3,860,791	1,102,116	304,344	1,817,617	74,016	3,302,435	641,318	6,448,736	1,714,807
2019	4,169,295	3,874,627	1,110,053	316,075	1,830,714	73,891	3,296,756	640,307	6,656,081	1,754,414
2020	4,172,453	3,870,394	1,098,016	300,757	1,810,852	73,942	3,299,012	640,776	6,384,886	1,701,798
2021	4,173,644	3,843,028	1,086,897	287,201	1,792,507	73,953	3,299,495	640,930	6,144,645	1,654,957
2022	4,174,608	3,844,550	1,100,074	302,165	1,814,248	73,997	3,301,537	641,157	6,409,830	1,707,084
2023	4,168,733	3,852,384	1,108,971	315,406	1,828,928	73,866	3,295,575	640,175	6,644,640	1,751,956
2024	4,171,294	3,882,692	1,096,968	299,655	1,809,124	73,924	3,298,252	640,608	6,364,869	1,697,801
2025	4,175,202	3,822,426	1,100,003	302,500	1,814,131	73,990	3,301,192	641,198	6,416,586	1,708,285
2026	4,168,135	3,880,851	1,110,529	316,946	1,831,499	73,870	3,295,833	640,129	6,671,278	1,757,251
2027	4,180,502	3,751,804	1,097,269	297,909	1,809,619	74,082	3,305,297	642,004	6,336,453	1,693,213
2028	4,168,132	3,995,835	1,086,546	287,480	1,791,930	73,875	3,296,077	640,144	6,147,395	1,655,100
2029	4,172,375	3,807,507	1,109,428	314,858	1,829,681	73,936	3,298,748	640,752	6,635,630	1,750,663
2030	4,167,971	3,852,396	1,109,300	316,047	1,829,472	73,851	3,294,901	640,054	6,655,883	1,754,050
2031	4,183,064	3,756,147	1,083,927	280,380	1,787,605	74,145	3,308,179	642,450	6,024,928	1,632,909
2032	4,165,969	3,993,257	1,108,039	314,231	1,827,392	73,838	3,294,422	639,816	6,622,205	1,747,507
2033	4,172,126	3,818,477	1,093,936	296,330	1,804,122	73,922	3,298,072	640,684	6,306,668	1,686,350
2034	4,174,101	3,854,741	1,092,682	293,749	1,802,052	73,973	3,300,438	641,036	6,260,672	1,677,773
2035	4,166,505	3,881,419	1,125,173	335,042	1,855,659	73,848	3,294,823	639,897	6,992,225	1,819,749
Total	209,090,743	170,965,494	55,806,403	15,396,327	92,036,108	3,727,217	154,234,731	31,055,635	321,769,955	85,739,201

Table B-16A

Minimum OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	3,219	42,918
1963	0	0	0	0	0	0	0	0	12,626	168,358
1964	0	0	0	0	0	0	0	0	13,938	184,729
1965	0	0	0	0	0	0	0	0	28,937	378,875
1966	0	0	0	0	0	0	0	0	31,321	408,396
1967	0	0	0	0	0	0	0	0	47,718	634,505
1968	8,821	972,734	9,504	1,218,520	0	0	0	0	46,945	2,745,159
1969	11,704	1,295,607	12,610	1,654,809	0	0	0	0	52,963	4,074,937
1970	14,623	1,624,569	15,746	2,069,926	0	0	0	0	69,744	4,676,285
1971	24,302	2,716,584	26,118	3,421,554	0	0	54	54	55,532	6,185,714
1972	89,131	8,038,463	68,369	10,035,858	0	0	40	40	80,412	12,998,870
1973	117,779	9,890,316	78,313	12,289,297	0	0	1	1	54,219	15,194,233
1974	128,169	11,581,491	83,453	14,166,551	0	0	143	143	76,783	17,372,560
1975	147,899	13,584,548	101,893	16,593,957	0	0	1,069	1,069	84,547	20,517,423
1976	158,664	12,862,489	94,799	16,037,418	0	0	139	139	106,717	20,027,212
1977	178,774	16,203,699	121,966	19,892,685	0	0	892	892	98,618	24,213,491
1978	186,384	17,811,770	132,435	21,568,748	0	0	39	39	100,786	26,012,788
1979	186,688	16,414,289	126,756	20,238,759	0	0	3,235	3,235	119,352	24,675,600
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	35,516,696
1982	307,955	27,994,510	209,141	34,323,372	0	0	11,075	11,075	173,894	41,611,644
1983	394,524	38,953,367	326,258	47,754,649	0	0	1,928	1,928	220,926	56,802,791
1984	496,808	45,597,671	382,104	56,371,786	0	0	3,765	3,765	225,959	67,072,770
1985	531,765	50,064,444	416,652	61,532,075	0	0	2,888	2,888	340,322	73,228,882
1986	551,066	52,858,915	442,334	64,885,109	0	0	2,787	2,787	279,227	76,682,292
1987	564,352	50,737,631	411,276	62,892,289	0	0	2,388	2,388	345,116	75,241,395
1988	593,787	51,262,231	406,248	63,712,843	0	0	545	545	365,207	76,126,688
1989	576,852	52,638,942	431,020	64,815,348	0	0	1,800	1,800	422,329	78,708,509
1990	667,687	61,053,824	494,721	75,175,234	0	0	788	788	474,284	91,448,522
1991	711,803	60,874,529	470,139	75,935,908	0	0	3,654	3,654	214,683	91,099,478
1992	688,558	67,460,598	502,131	82,396,468	0	0	647	647	443,676	100,060,077
1993	828,208	68,749,547	538,751	85,955,989	0	0	3,630	3,630	599,571	107,322,312
1994	784,017	63,928,225	474,133	80,080,385	0	0	2,279	2,279	609,932	101,270,586
1995	785,191	68,079,888	523,512	85,080,006	0	0	2,906	2,906	534,971	107,378,509
1996	773,653	72,757,439	561,100	89,927,727	0	0	8,007	8,007	571,857	113,559,928
1997	917,372	75,655,465	564,455	94,454,556	0	0	7,449	7,449	428,638	115,008,441
1998	1,000,665	80,549,464	608,366	102,777,264	0	0	798	798	465,140	129,156,612
1999	1,032,104	84,430,537	630,768	106,869,711	0	0	415	415	551,655	133,992,659
2000	982,029	83,101,296	637,699	106,426,396	0	0	4,000	4,000	0	133,757,736
2001	908,225	89,440,736	684,262	113,234,483	0	0	4,250	4,250	0	144,420,698
2002	1,368,832	127,224,740	1,013,469	161,968,678	0	0	4,415	4,415	0	213,718,449
2003	1,460,819	129,538,439	1,005,026	164,967,876	0	0	4,850	4,850	0	210,400,565
2004	1,534,687	142,151,128	1,104,518	178,367,139	0	0	4,524	4,524	0	220,176,077
2005	1,003,440	93,860,305	723,712	117,009,255	0	0	4,524	4,524	0	140,311,927
2006	1,020,616	89,890,500	708,514	114,519,276	0	0	4,524	4,524	0	144,115,621
2007	1,059,747	91,831,852	712,201	116,929,844	0	0	4,524	4,524	0	146,497,696
2008	1,041,880	91,393,537	714,079	116,295,179	0	0	4,524	4,524	0	145,874,383
2009	1,059,369	91,956,455	714,881	117,065,789	0	0	4,524	4,524	0	146,637,619
2010	1,046,288	91,879,766	713,739	116,826,417	0	0	4,524	4,524	0	146,393,699
2011	1,064,701	92,257,438	717,799	117,473,804	0	0	4,524	4,524	0	147,154,873
2012	1,054,702	92,062,046	716,361	117,156,926	0	0	4,524	4,524	0	146,844,577
2013	1,027,444	92,231,116	721,000	117,038,273	0	0	4,524	4,524	0	146,743,401
2014	1,080,537	92,786,879	718,714	118,216,313	0	0	4,524	4,524	0	147,930,497
2015	1,029,466	91,765,956	717,868	116,598,201	0	0	4,524	4,524	0	146,333,212
2016	1,087,252	93,269,940	722,221	118,788,655	0	0	4,524	4,524	0	148,488,531
2017	1,050,072	92,928,843	720,950	118,010,558	0	0	4,524	4,524	0	147,724,588
2018	1,061,173	92,645,485	720,960	117,869,425	0	0	4,524	4,524	0	147,603,980
2019	1,087,244	94,284,458	724,985	119,818,900	0	0	4,524	4,524	0	149,516,695
2020	1,052,727	92,470,533	723,618	117,599,764	0	0	4,524	4,524	0	147,322,154
2021	1,022,030	91,270,043	716,272	116,005,602	0	0	4,524	4,524	0	145,741,251
2022	1,056,131	93,044,482	716,745	118,186,608	0	0	4,524	4,524	0	147,914,992
2023	1,085,665	93,028,588	719,084	118,513,971	0	0	4,524	4,524	0	148,215,886
2024	1,050,120	93,429,502	726,958	118,541,767	0	0	4,524	4,524	0	148,254,355
2025	1,056,936	91,040,811	710,783	116,164,043	0	0	4,524	4,524	0	145,905,462
2026	1,089,120	94,864,401	726,708	120,426,550	0	0	4,524	4,524	0	150,116,313
2027	1,046,983	88,359,553	691,787	113,286,475	0	0	4,524	4,524	0	143,065,650
2028	1,022,176	96,068,201	757,032	120,989,923	0	0	4,524	4,524	0	150,677,016
2029	1,084,754	91,770,042	707,032	117,195,406	0	0	4,524	4,524	0	146,919,424
2030	1,087,051	93,265,877	719,134	118,765,987	0	0	4,524	4,524	0	148,463,360
2031	1,007,402	89,240,166	692,842	113,714,144	0	0	4,524	4,524	0	143,501,790
2032	1,082,758	96,707,571	756,513	122,333,518	0	0	4,524	4,524	0	152,004,996
2033	1,042,631	91,372,884	709,888	116,316,090	0	0	4,524	4,524	0	146,043,571
2034	1,036,955	92,051,143	719,389	116,978,704	0	0	4,524	4,524	0	146,711,186
2035	1,130,088	95,911,015	727,005	121,952,448	0	0	4,524	4,524	0	151,627,812
Total	52,948,998	4,671,697,435	36,339,507	5,900,807,754	0	0	229,907	229,907	8,715,923	7,366,969,284

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	10,070	0	10,070	47,473	31,446	863,937	942,856	0	0	0
1984	29,957	0	29,957	157,280	77,388	2,040,188	2,274,856	0	0	0
1985	54,709	0	54,709	458,427	582,679	2,696,449	3,737,555	0	0	0
1986	45,886	0	45,886	312,937	365,147	2,595,766	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	89,213	247,977	337,190	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	235,606	332,448	833,226	492,579	796,524	2,122,329	0	0	0
1996	59,556	192,297	251,853	340,762	284,184	1,110,780	1,735,726	672	(94)	578
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	58,129	195,941	254,070	560,986	447,522	1,041,588	2,050,096	147,490	793,482	940,972
2000	28,834	103,318	132,152	375,782	237,754	750,765	1,364,301	82,843	475,500	558,343
2001	83,875	110,352	194,227	407,057	239,511	590,240	1,236,808	138,213	611,392	749,605
2002	163,820	146,671	310,491	734,812	385,363	937,396	2,057,571	530,588	1,113,873	1,644,461
2003	164,627	177,519	342,146	709,394	477,223	1,136,245	2,322,862	689,062	1,253,707	1,942,769
2004	168,610	187,788	356,398	815,334	480,381	1,143,764	2,439,479	693,622	1,262,003	1,955,625
2005	181,459	199,964	381,423	868,806	508,263	1,210,151	2,587,220	733,881	1,335,253	2,069,134
2006	188,278	204,607	392,885	895,491	519,763	1,237,530	2,652,784	750,485	1,365,462	2,115,947
2007	173,340	186,438	359,778	752,575	555,963	1,123,157	2,431,695	681,125	1,239,266	1,920,391
2008	207,892	212,180	420,072	889,942	557,830	1,328,166	2,775,938	805,450	1,465,468	2,270,918
2009	210,652	212,401	423,053	889,301	557,428	1,327,210	2,773,939	804,870	1,464,413	2,269,283
2010	193,425	192,735	386,160	809,386	504,867	1,202,064	2,516,317	728,977	1,326,330	2,055,307
2011	215,559	212,251	427,810	885,550	555,077	1,321,611	2,762,238	801,475	1,458,236	2,259,711
2012	218,839	212,994	431,833	887,096	556,046	1,323,919	2,767,061	802,875	1,460,782	2,263,657
2013	106,239	102,433	208,672	425,874	266,945	635,583	1,328,402	385,441	701,288	1,086,729
2014	34,580	32,902	67,482	136,554	85,595	203,796	425,945	123,590	224,864	348,454
2015	15,749	14,619	30,368	60,567	37,964	90,391	188,922	54,817	99,736	154,553
2016	10,327	9,359	19,686	38,776	24,306	57,870	120,952	35,095	63,853	98,948
2017	6,981	6,180	13,161	25,606	16,050	38,215	79,871	23,175	42,165	65,340
2018	7,172	6,207	13,379	25,716	16,119	38,378	80,213	23,274	42,346	65,620
2019	7,369	6,237	13,606	25,839	16,196	38,563	80,598	23,386	42,549	65,935
2020	7,581	6,283	13,864	26,030	16,316	38,848	81,194	23,559	42,864	66,423
2021	4,760	3,931	8,691	16,288	10,210	24,308	50,806	14,741	26,821	41,562
2022	4,771	3,941	8,712	16,326	10,234	24,366	50,926	14,776	26,885	41,661
2023	7,542	6,229	13,771	25,808	16,177	38,516	80,501	23,358	42,498	65,856
2024	7,541	6,228	13,769	25,804	16,174	38,510	80,488	23,354	42,491	65,845
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	3,564,777	4,976,796	8,541,573	18,602,410	13,836,706	41,867,619	74,306,735	9,403,358	19,516,569	28,919,927

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

	San Joaquin Valley Area							
			Kern County Water Agency					
Calendar Year	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Municipal and Industrial (13)	Agricultural (14)	County of Kings (15)	Oak Flat Water District (16)	Tulare Lake Basin Water Storage District (17)	Total (18)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	159,191	0	34,366	2,964,185	13,174	9,673	3,733	3,184,322
1984	389,518	0	816,103	9,095,509	26,774	33,576	49,601	10,411,081
1985	527,952	59,324	1,053,957	11,978,046	38,810	42,297	1,253,257	14,953,643
1986	552,171	12,858	885,988	11,788,715	40,659	38,275	872,009	14,190,675
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	13,935	706,155	5,788,599	18,587	15,716	480,903	7,268,525
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	41,276	36,378	1,051,178	15,747,925
1996	382,688	12,550	958,123	8,683,413	26,880	22,476	1,591,881	11,678,011
1997	423,144	(6)	794,476	7,471,645	(31)	22,025	137,304	8,848,557
1998	471,993	4,597	847,544	8,356,501	127	25,458	175,371	9,881,591
1999	361,254	19,219	890,473	7,725,034	24,206	20,104	1,753,318	10,793,608
2000	216,775	5,777	364,111	4,326,702	11,560	9,873	668,860	5,603,658
2001	186,975	6,740	286,704	3,206,585	7,731	12,141	419,891	4,126,767
2002	345,575	7,280	419,610	3,995,499	13,390	16,493	425,309	5,223,156
2003	242,726	12,699	548,821	4,622,048	16,932	16,456	472,080	5,931,762
2004	244,332	12,783	552,453	4,652,634	17,044	16,564	475,204	5,971,014
2005	258,514	13,525	584,519	4,922,684	18,033	17,526	502,786	6,317,587
2006	264,363	13,831	597,743	5,034,058	18,441	17,922	514,161	6,460,519
2007	239,930	12,552	572,673	4,834,820	16,736	16,266	466,643	6,159,620
2008	283,724	14,844	677,203	5,571,847	19,791	19,235	551,818	7,138,462
2009	283,520	14,833	676,715	5,567,835	19,777	19,221	551,421	7,133,322
2010	238,995	13,434	612,906	5,135,890	17,912	17,409	530,652	6,567,198
2011	282,324	14,770	673,861	5,544,349	19,694	19,140	549,095	7,103,233
2012	282,817	14,796	675,037	5,554,031	19,728	19,174	550,054	7,115,637
2013	135,774	7,103	324,070	2,666,362	9,471	9,205	264,068	3,416,053
2014	43,535	2,278	103,911	854,955	3,037	2,951	84,672	1,095,339
2015	19,310	1,010	46,089	379,205	1,347	1,309	37,555	485,825
2016	12,362	647	29,507	242,774	862	838	24,044	311,034
2017	8,163	427	19,485	160,316	569	553	15,877	205,390
2018	8,198	429	19,568	161,003	572	556	15,945	206,271
2019	8,238	431	19,662	161,776	575	558	16,022	207,262
2020	8,299	434	19,808	162,974	579	563	16,140	208,797
2021	5,193	272	12,394	101,977	362	352	10,099	130,649
2022	5,205	272	12,424	102,218	363	353	10,123	130,958
2023	8,228	430	19,639	161,582	574	558	16,003	207,014
2024	8,227	430	19,636	161,557	574	558	16,000	206,982
2025	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0
Total	9,954,275	436,188	22,396,854	205,940,237	632,682	659,639	19,192,304	259,212,179

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (19)	Castaic Lake Water Agency (20)	Coachella Valley Water District (21)	Crestline-Lake Arrowhead Water Agency (22)	Desert Water Agency (23)	Littlerock Creek Irrigation District (24)	Mojave Water Agency (25)	Palmdale Water District (26)	San Bernardino Valley Municipal Water District (27)	San Gabriel Valley Municipal Water District (28)
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	1,083,881	411,247	565,798	35,432	894,572	1,250	0	0	233,134	28,548
1984	2,499,848	1,122,640	1,427,428	102,114	2,263,172	77	0	0	502,967	693,074
1985	3,775,658	1,572,025	2,032,672	170,137	3,230,452	0	0	131,200	884,188	601,582
1986	3,159,858	1,694,487	2,097,407	173,460	3,340,188	15,872	0	301,486	739,563	1,088,902
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	3,559,486	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	4,324,008	1,901,361	2,498,461	44,237	4,120,838	43,893	881,146	636,540	75,278	1,397,624
1996	3,355,414	1,413,141	4,382,187	34,086	7,227,837	29,381	508,426	680,648	426,812	1,125,748
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	3,704,142	1,698,138	3,201,882	71,801	3,685,209	18,340	502,458	712,053	816,581	1,378,243
2000	2,378,291	996,979	1,424,496	40,187	1,960,025	0	375,946	257,814	619,269	487,196
2001	2,760,531	1,456,528	472,702	54,906	779,698	0	215,817	457,929	1,375,925	122,591
2002	4,300,112	2,840,638	824,999	199,375	1,360,984	66,845	979,103	1,085,692	3,727,884	1,238,450
2003	5,290,849	1,609,664	1,024,882	257,330	1,690,390	86,275	665,508	812,144	4,552,074	1,277,775
2004	5,325,861	1,701,332	1,031,664	259,033	1,701,576	86,846	893,216	817,519	4,582,198	1,286,231
2005	5,634,986	1,885,799	1,091,545	274,067	1,800,340	91,886	1,181,325	864,969	4,848,159	1,360,887
2006	5,762,475	2,016,122	1,116,240	280,268	1,841,072	93,965	1,449,663	884,539	4,957,847	1,391,676
2007	5,242,922	3,457,639	1,013,077	254,366	1,670,920	85,281	3,324,297	789,775	4,499,642	1,263,057
2008	6,199,906	4,088,758	1,197,993	300,795	1,975,911	100,847	3,931,077	933,932	5,320,957	1,493,602
2009	6,195,442	4,085,814	1,197,130	300,578	1,974,488	100,775	3,928,246	933,260	5,317,125	1,492,526
2010	5,492,208	3,700,553	1,084,250	157,240	1,788,309	91,272	1,866,609	845,260	4,815,761	1,351,792
2011	6,169,308	4,385,285	1,192,081	299,310	1,966,159	100,349	3,911,676	929,323	5,294,696	1,486,231
2012	6,180,082	4,463,769	1,194,163	299,833	1,969,593	100,525	3,918,507	930,946	5,303,943	1,488,826
2013	2,966,914	2,142,952	573,290	143,943	945,556	48,260	1,881,185	446,926	2,546,300	714,751
2014	951,326	687,127	183,822	46,155	303,188	15,474	603,192	143,304	816,458	229,181
2015	421,949	304,766	81,532	20,471	134,475	6,863	267,538	63,561	362,130	101,650
2016	270,140	195,118	52,199	13,106	86,094	4,394	171,283	40,693	231,843	65,079
2017	178,387	128,846	34,469	8,655	56,852	2,902	113,107	26,872	153,097	42,975
2018	179,151	129,398	34,617	8,692	57,095	2,914	113,592	26,987	153,753	43,159
2019	180,011	130,019	34,783	8,733	57,370	2,928	114,137	27,116	154,491	43,366
2020	181,344	130,982	35,041	8,798	57,794	2,950	114,982	27,317	155,636	43,687
2021	113,472	81,959	21,926	5,505	36,163	1,846	71,947	17,093	97,385	27,336
2022	113,740	82,153	21,978	5,518	36,249	1,850	72,117	17,133	97,615	27,401
2023	179,795	129,863	34,741	8,723	57,301	2,925	114,000	27,084	154,306	43,314
2024	179,767	129,843	34,736	8,722	57,292	2,924	113,982	27,080	154,282	43,307
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	124,215,392	64,860,956	55,534,779	4,865,080	80,158,493	1,789,774	37,776,441	18,802,775	73,366,061	33,769,861

Table B-16B

Minimum OMP&R Component of Transportation Charge for Each Contractor for Off-Aqueduct Power Facilities

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				Total State Water Project[a]
	San Gorgonio Pass Water Agency (29)	Metropolitan Water District of Southern California (30)	Ventura County Flood Control District (31)	Total (32)	City of Yuba City (33)	County of Butte (34)	Plumas County FC&WCD (35)	Total (36)	(37)
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0
1983	0	12,791,358	0	16,045,220	0	0	0	0	20,182,468
1984	0	39,229,567	0	47,840,887	0	0	0	0	60,556,781
1985	0	77,446,522	0	89,844,436	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	92,174,235
1993	0	55,312,617	0	69,847,380	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	40,862,810	0	56,786,196	0	0	0	0	74,988,898
1996	0	33,951,986	(75)	53,135,591	0	0	0	0	66,801,759
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	42,339,535	106,432	58,234,814	0	0	0	0	72,273,560
2000	0	44,093,142	123,638	52,756,983	0	0	0	0	60,415,437
2001	0	50,741,236	87,163	58,525,026	0	0	0	0	64,832,433
2002	58,173	73,207,532	191,772	90,081,559	0	0	0	0	99,317,238
2003	221,836	66,757,006	804,832	85,050,565	0	0	0	0	95,590,104
2004	267,965	68,208,193	810,158	86,971,792	0	0	0	0	97,694,308
2005	307,145	73,498,706	857,181	93,696,995	0	0	0	0	105,052,359
2006	338,255	72,477,532	876,575	93,486,229	0	0	0	0	105,108,364
2007	328,921	71,493,169	795,562	94,218,628	0	0	0	0	105,090,112
2008	897,198	84,542,731	940,775	111,924,482	0	0	0	0	124,529,872
2009	896,552	84,481,854	940,097	111,843,887	0	0	0	0	124,443,484
2010	959,867	82,320,179	717,349	105,190,649	0	0	0	0	116,715,631
2011	892,770	84,125,495	936,132	111,688,815	0	0	0	0	124,241,807
2012	894,330	84,272,405	937,767	111,954,689	0	0	0	0	124,532,877
2013	429,347	40,457,227	450,200	53,746,851	0	0	0	0	59,786,707
2014	137,668	12,972,406	144,354	17,233,655	0	0	0	0	19,170,875
2015	61,061	5,753,749	64,027	7,643,772	0	0	0	0	8,503,440
2016	39,092	3,683,664	40,991	4,893,696	0	0	0	0	5,444,316
2017	25,815	2,432,508	27,068	3,231,553	0	0	0	0	3,595,315
2018	25,925	2,442,928	27,184	3,245,395	0	0	0	0	3,610,878
2019	26,050	2,454,658	27,315	3,260,977	0	0	0	0	3,628,378
2020	26,243	2,472,836	27,517	3,285,127	0	0	0	0	3,655,405
2021	16,421	1,547,316	17,218	2,055,587	0	0	0	0	2,287,295
2022	16,460	1,550,974	17,259	2,060,447	0	0	0	0	2,292,704
2023	26,018	2,451,710	27,282	3,257,062	0	0	0	0	3,624,204
2024	26,014	2,451,330	27,278	3,256,557	0	0	0	0	3,623,641
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	6,919,126	1,968,474,519	10,690,874	2,481,224,131	0	0	0	0	2,852,204,545

[a]Costs allocated to contractors in 1989 through 1998 are reduced by credits for Off-Aqueduct Power Facility costs allocated to the pumping of non-SWP water..

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

Calendar Year	North Bay Aqueduct						South Bay Aqueduct		California Aqueduct	
	Reach 1		Reach 3A		Reach 3B		Reach 1		Reach 1	
	Barker Slough Pumping Plant		Cordelia Pumping Plant Solano County Water Agency		Cordelia Pumping Plant Napa County FC&WCD[a]		South Bay and Del Valle Pumping Plants[b]		Banks Pumping Plant	
	Unit Rate (1)	Cumulative Unit Rate (2)	Unit Rate (3)	Cumulative Unit Rate (4)	Unit Rate (5)	Cumulative Unit Rate (6)	Unit Rate (7)	Cumulative Unit Rate (8)	Unit Rate (9)	Cumulative Unit Rate (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	4.1511341	4.1511341	0	0
1963	0	0	0	0	0	0	4.5639383	4.5639383	0	0
1964	0	0	0	0	0	0	3.5452154	3.5452154	0	0
1965	0	0	0	0	0	0	4.1911773	4.1911773	0	0
1966	0	0	0	0	0	0	3.5074573	3.5074573	0	0
1967	0	0	0	0	0	0	3.9306767	4.1752198	0.2445431	0.2445431
1968	0	0	0	0	5.7570017	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	1.4521343	1.4521343	2.6761886	4.1283229	4.2851885	5.7373228	7.9485522	11.2384516	3.2898994	3.2898994
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	-0.3031174	-0.3031174	-0.5212041	-0.8243216	-0.8497854	-1.1529029	-1.7656471	-1.6140874	0.1515596	0.1515596
1999	0.5681347	0.5681347	0.9299274	1.4980621	1.3809879	1.9491226	3.9200578	5.4983134	1.5782556	1.5782556
2000	2.1579386	2.1579386	2.8904024	5.0483410	4.4198709	6.5778095	7.9793158	10.9457610	2.9664452	2.9664452
2001	11.8370555	11.8370555	21.7339545	33.5710100	23.2830230	35.1200785	36.7377846	49.8292072	13.0914226	13.0914226
2002	3.5869260	3.5869260	2.4283058	6.0152318	9.8927118	13.4796377	11.6794660	16.8114220	5.1319560	5.1319560
2003	5.5386158	5.5386158	10.7839119	16.3225276	14.3173184	19.8559342	18.0739122	24.0107819	5.9368697	5.9368697
2004	5.6485113	5.6485113	11.0269443	16.6754556	14.6051704	20.2536818	18.2631638	25.2497717	6.9866079	6.9866079
2005	2.9932932	2.9932932	9.8775622	12.8708554	9.7441296	12.7374228	14.7526950	20.6952668	5.9425719	5.9425719
2006	3.0712455	3.0712455	10.1088060	13.1800515	10.0168034	13.0880489	15.2267727	21.6391907	6.4124181	6.4124181
2007	3.0151567	3.0151567	9.8678218	12.8829785	9.8673077	12.8824644	15.1315739	20.6528627	5.5212888	5.5212888
2008	2.7024219	2.7024219	9.6109552	12.3133771	8.8573583	11.5597802	14.0142145	19.7043339	5.6901193	5.6901193
2009	2.8194503	2.8194503	9.9736814	12.7931317	9.2536762	12.0731265	14.5841272	19.7144853	5.1303581	5.1303581
2010	2.9732902	2.9732902	10.4640365	13.4373267	9.7777405	12.7510307	15.3406619	21.8266025	6.4859406	6.4859406
2011	2.9816920	2.9816920	10.4404176	13.4221096	9.8252688	12.8069608	15.3470664	21.2081834	5.8611170	5.8611170
2012	3.1035802	3.1035802	10.8124933	13.9160735	10.2481943	13.3517744	15.9365672	21.6173039	5.6807366	5.6807366
2013	3.4466829	3.4466829	11.9545793	15.4012622	11.3970541	14.8437369	17.6668612	25.0036235	7.3367623	7.3367623
2014	3.7374652	3.7374652	12.8937334	16.6311986	12.3853707	16.1228359	19.1056240	25.6689187	6.5632947	6.5632947
2015	3.8158159	3.8158159	13.0720869	16.8879028	12.7039489	16.5197648	19.4212464	26.7793921	7.3581457	7.3581457
2016	3.8742845	3.8742845	13.2186441	17.0929286	12.9502174	16.8245018	19.6390644	28.1409355	8.5018711	8.5018711
2017	3.8281066	3.8281066	13.0093750	16.8374816	12.8443870	16.6724936	19.3280862	26.8109543	7.4828681	7.4828681
2018	3.9643827	3.9643827	13.4224047	17.3867874	13.3772965	17.3416792	19.9418095	27.4165292	7.4747197	7.4747197
2019	4.0865059	4.0865059	13.7855932	17.8720991	13.8693964	17.9559023	20.4813480	29.1170262	8.6356781	8.6356781
2020	3.8562603	3.8562603	12.9604343	16.8166946	13.1557898	17.0120501	19.2553554	26.9170714	7.6617161	7.6617161
2021	3.8531540	3.8531540	12.9370233	16.7901774	13.1504650	17.0036191	19.2206434	26.7307535	7.5101101	7.5101101
2022	3.7159798	3.7159798	12.4764831	16.1924629	12.6822942	16.3982740	18.5363873	25.4774428	6.9410555	6.9410555
2023	3.7403739	3.7403739	12.5583157	16.2986895	12.7654840	16.5058578	18.6579717	26.1805344	7.5225628	7.5225628
2024	3.8993778	3.8993778	13.0922140	16.9915918	13.3081984	17.2075762	19.4512024	27.7058452	8.2546429	8.2546429
2025	3.8791622	3.8791622	13.0242585	16.9034207	13.2391664	17.1183286	19.3503343	26.2395160	6.8891817	6.8891817
2026	3.9098305	3.9098305	13.1273305	17.0371610	13.3438856	17.2537162	19.5033482	28.1161996	8.6128514	8.6128514
2027	3.8419073	3.8419073	12.8992055	16.7411128	13.1120221	16.9539293	19.1644613	26.8656717	7.7012104	7.7012104
2028	3.8727057	3.8727057	13.0025953	16.8753011	13.2171202	17.0898260	19.3180830	27.1639077	7.8458247	7.8458247
2029	3.8158210	3.8158210	12.8116525	16.6274735	13.0230451	16.8388661	19.0344008	26.5188499	7.4844491	7.4844491
2030	3.8513837	3.8513837	12.9310911	16.7824748	13.1443679	16.9957516	19.2117538	27.0215822	7.8098283	7.8098283
2031	3.7905678	3.7905678	12.7269068	16.5174746	12.9368240	16.7273918	18.9084203	25.9520663	7.0436461	7.0436461
2032	3.8779386	3.8779386	13.0201801	16.8981187	13.2350672	17.1130058	19.3442799	27.0444181	7.7001382	7.7001382
2033	4.1029002	4.1029002	13.7755297	17.8784299	14.0027902	18.1056904	20.4664138	28.6285214	8.1621076	8.1621076
2034	3.9303325	3.9303325	13.1961335	17.1264659	13.4138477	17.3441802	19.6056119	27.2595849	7.6539730	7.6539730
2035	3.8379240	3.8379240	12.8858581	16.7237821	13.0984499	16.9363739	19.1446349	27.1986745	8.0540396	8.0540396

[a]For the period 1968 through 1987, rates are for an interim facility.
[b]The relatively minor costs of Del Valle Pumping Plant have been combined with those of South Bay Pumping Plant to simplify the allocation procedure.

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

Calendar Year	California Aqueduct (continued)									
	Reach 4		Reach 14A		Reach 15A		Reach 16A		Reach 17E	
	Dos Amigos Pumping Plant		Buena Vista Pumping Plant		Teerink Pumping Plant		Chrisman Pumping Plant		Edmonston Pumping Plant	
	Unit Rate (11)	Cumulative Unit Rate (12)	Unit Rate (13)	Cumulative Unit Rate (14)	Unit Rate (15)	Cumulative Unit Rate (16)	Unit Rate (17)	Cumulative Unit Rate (18)	Unit Rate (19)	Cumulative Unit Rate (20)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	1.0732031	2.6167353	0	0	0	0	0	0	0	0
1969	0.7028165	1.8095316	0	0	0	0	0	0	0	0
1970	0.7813430	1.7278778	0.3333333	2.0612111	0	0	0	0	0	0
1971	0.4125312	1.2933749	1.1407617	2.4341366	0.7218469	3.1559834	0	0	0	0
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	1.4220553	4.7119547	2.5074599	7.2194145	2.7989861	10.0184007	6.0684073	16.0868079	21.4679840	37.5547919
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	-0.2050857	-0.0535261	-0.3945877	-0.4481138	-0.4188957	-0.8670095	-0.9854414	-1.8524509	-3.5434867	-5.3959376
1999	0.6650213	2.2432769	1.0840705	3.3273474	0.9682303	4.2955777	2.6272710	6.9228487	10.5699483	17.4927970
2000	1.3396507	4.3060959	2.2957443	6.6018402	2.5231647	9.1250050	5.9479972	15.0730021	21.9501879	37.0231900
2001	5.5996774	18.6911000	11.4514609	30.1425609	12.5585130	42.7010739	29.0313653	71.7324392	108.6595309	180.3919701
2002	1.6752618	6.8072178	3.1066629	9.9138807	3.7600431	13.6739238	8.1216895	21.7956133	28.8784508	50.6740641
2003	2.9625230	8.8993927	5.0762146	13.9756073	6.2020014	20.1776087	13.4412173	33.6188260	47.9658830	81.5847090
2004	3.0264418	10.0130498	5.1200357	15.1330855	6.2466020	21.3796874	13.5263538	34.9060412	48.2588885	83.1649297
2005	2.8532219	8.7957938	5.0110489	13.8068426	5.1626852	18.9695278	12.3609607	31.3304885	46.8231518	78.1536403
2006	2.9876462	9.4000643	5.3299767	14.7300410	5.5029516	20.2329926	13.1856413	33.4186339	49.9706837	83.3893175
2007	2.6328418	8.1541306	4.7277774	12.8819080	4.8870576	17.7689656	11.7111218	29.4800874	44.3766986	73.8567860
2008	2.3793324	8.0694517	4.2526849	12.3221366	4.3976087	16.7197453	10.5394842	27.2592295	39.9402288	67.1994583
2009	2.5043434	7.6347015	4.5065812	12.1412826	4.6646989	16.8059815	11.1835047	27.9894862	42.3899264	70.3794126
2010	2.6467454	9.1326860	4.7731590	13.9058450	4.9421959	18.8480408	11.8502626	30.6983035	44.9204144	75.6187179
2011	2.6431191	8.5042361	4.7442099	13.2484461	4.9099753	18.1584214	11.7717627	29.9301841	44.6188088	74.5489929
2012	2.8250867	8.5058233	5.1394292	13.6452525	5.3319319	18.9771844	12.7932171	31.7704015	48.5155967	80.2859982
2013	3.1193635	10.4561257	5.6578001	16.1139258	5.8664199	21.9803457	14.0737681	36.0541137	53.3657315	89.4198452
2014	3.4016789	9.9649735	6.1905933	16.1555668	6.4223741	22.5779410	15.4106589	37.9885999	58.4422460	96.4308458
2015	3.4566273	10.8147731	6.2873183	17.1020914	6.5221897	23.6242810	15.6499282	39.2742092	59.3486572	98.6228664
2016	3.5898063	12.0916774	6.6083563	18.7000337	6.8691900	25.5692237	16.4938801	42.0631038	62.5767774	104.6398812
2017	3.4584890	10.9413571	6.3018202	17.2431773	6.5389310	23.7821083	15.6918566	39.4739650	59.5112233	98.9851883
2018	3.6664853	11.1412050	6.7733962	17.9146012	7.0452812	24.9598824	16.9199557	41.8798381	64.2021378	106.0819759
2019	3.7825758	12.4182539	6.9796451	19.3978991	7.2573337	26.6552328	17.4287629	44.0839956	66.1285771	110.2125727
2020	3.5629508	11.2246669	6.5869175	17.8115844	6.8514510	24.6630353	16.4555887	41.1186240	62.4408066	103.5594306
2021	3.5615297	11.0716398	6.5859287	17.6575685	6.8506658	24.5082343	16.4540339	40.9622681	62.4354305	103.3976987
2022	3.4496609	10.3907164	6.3922949	16.7830112	6.6515416	23.4345528	15.9776061	39.4121589	60.6322001	100.0443590
2023	3.4893223	11.0118850	6.4802529	17.4921379	6.7456880	24.2378259	16.2058696	40.4436955	61.5036027	101.9472981
2024	3.6119026	11.8665454	6.6843139	18.5508593	6.9539081	25.5047674	16.7027681	42.2075354	63.3810730	105.5886084
2025	3.5995382	10.4887199	6.6699294	17.1586492	6.9405501	24.0991993	16.6718167	40.7710160	63.2668064	104.0378223
2026	3.6192443	12.2320957	6.6940808	18.9261765	6.9632997	25.8894762	16.7248660	42.6143423	63.4636524	106.0779946
2027	3.5853523	11.2865627	6.6592544	17.9458171	6.9321833	24.8780005	16.6539686	41.5319690	63.2044213	104.7363903
2028	3.5808890	11.4267137	6.6226530	18.0493667	6.8889677	24.9383343	16.5461668	41.4845011	62.7852554	104.2697565
2029	3.5506255	11.0350746	6.5858818	17.6209563	6.8541675	24.4751239	16.4653254	40.9404492	62.4853641	103.4258133
2030	3.5550635	11.3648918	6.5693015	17.9341933	6.8324400	24.7666333	16.4095864	41.1762197	62.2650121	103.4412319
2031	3.5307123	10.5743584	6.5660532	17.1404116	6.8373022	23.9777138	16.4268812	40.4045950	62.3464579	102.7510529
2032	3.5583547	11.2584929	6.5512292	17.8097221	6.8091341	24.6188562	16.3504719	40.9693281	62.0319417	103.0012698
2033	3.8476179	12.0097255	7.1741437	19.1838692	7.4737111	26.6575803	17.9586804	44.6162607	68.1667102	112.7829709
2034	3.6210560	11.2750290	6.6793683	17.9543973	6.9445729	24.8989702	16.6774076	41.5763778	63.2767102	104.8530880
2035	3.8251441	11.8791837	7.3406377	19.2198214	7.6856410	26.9054624	18.4990953	45.4045577	70.2948531	115.6994107

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

Calendar Year	California Aqueduct (continued)									
	Reach 18A		Reach 22B		Reach 23		Reach 26A		Reach 29A	
	Alamo Power Plant		Pearblossom Pumping Plant		Mojave Siphon Power Plant		Devil Canyon Power Plant		Oso Pumping Plant	
	Unit Rate (21)	Cumulative Unit Rate (22)	Unit Rate (23)	Cumulative Unit Rate (24)	Unit Rate (25)	Cumulative Unit Rate (26)	Unit Rate (27)	Cumulative Unit Rate (28)	Unit Rate (29)	Cumulative Unit Rate (30)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0
1972	0	12.2948591	1.9331104	14.2279695	0	14.2279695	-2.3717647	11.8562048	1.1017349	13.3965941
1973	0	12.7125113	3.8751940	16.5877053	0	16.5877053	-8.9027252	7.6849801	0.7905574	13.5030687
1974	0	11.9242227	3.1602116	15.0844343	0	15.0844343	-5.3440968	9.7403376	0.7530214	12.6772442
1975	0	12.0662794	3.0210558	15.0873353	0	15.0873353	-5.7803309	9.3070043	0.8405850	12.9068644
1976	0	13.6711369	3.7579009	17.4290378	0	17.4290378	-6.6439666	10.7850713	0.7771828	14.4483197
1977	0	17.3305737	3.0796474	20.4102211	0	20.4102211	-12.0911833	8.3190378	0.6152458	17.9458194
1978	0	12.9149206	4.0233030	16.9382236	0	16.9382236	-8.2569506	8.6812730	0.5222831	13.4372037
1979	0	17.2862572	5.0776468	22.3639040	0	22.3639040	-9.7140035	12.6499005	0.7045701	17.9908273
1980	0	19.1986521	4.3918283	23.5904804	0	23.5904804	-8.3797007	15.2107797	1.4269064	20.6255585
1981	0	18.6502296	3.9973528	22.6475824	0	22.6475824	-6.7528590	15.8947235	1.5684309	20.2186605
1982	0	18.2796606	3.6829998	21.9626604	0	21.9626604	-6.9238898	15.0387706	1.4942585	19.7739190
1983	0	10.1262825	1.7205305	11.8468130	0	11.8468130	-23.7923457	-11.9455328	1.2818887	11.4081712
1984	0	14.8750006	2.4763871	17.3513877	0	17.3513877	-29.2940447	-11.9426570	1.7796296	16.6546302
1985	0	20.8369718	3.4967556	24.3337274	0	24.3337274	-30.7672356	-6.4335082	2.1683838	23.0053556
1986	-2.3583180	34.0359544	5.9864597	40.0224141	0	40.0224141	-29.2499580	10.7724561	3.2288411	39.6231134
1987	-2.5482255	29.3442686	5.0535029	34.3977715	0	34.3977715	-29.7006534	4.6971181	3.1272967	35.0197908
1988	-1.3847067	28.6178385	4.7392460	33.3570844	0	33.3570844	-29.0334518	4.3236326	2.9878581	32.9904032
1989	-1.1019487	38.3465243	6.4066114	44.7531357	0	44.7531357	-28.3706997	16.3824360	3.5262089	42.9746819
1990	-1.0673268	51.7406253	8.9787944	60.7194197	0	60.7194197	-28.8797266	31.8396931	3.6810660	56.4890182
1991	-1.5206590	33.9038630	6.0785417	39.9824047	0	39.9824047	-30.3294563	9.6529484	2.1853025	37.6098245
1992	-2.6080003	19.4065859	3.6219501	23.0285360	0	23.0285360	-29.7938993	-6.7653633	1.9048343	23.9194204
1993	-0.1885524	-4.4223656	-1.0192774	-5.4416430	0	-5.4416430	-30.6629489	-36.1045919	0.1569728	-4.0768404
1994	-0.1279266	37.4268653	6.4500766	43.8769419	0	43.8769419	-30.4781656	13.3987763	3.0563161	40.6111080
1995	-3.4425314	16.0979836	3.3643070	19.4622905	0	19.4622905	-30.3517624	-10.8894719	1.5724835	21.1129984
1996	-5.9839345	33.4220040	6.6794995	40.1015035	-2.3423415	37.7591620	-29.5900574	8.1691046	3.1318961	42.5378346
1997	-4.7847600	34.0059734	6.8397922	40.8457656	-3.8632009	36.9825646	-30.6066647	6.3758999	2.7928728	41.5836062
1998	-5.0614104	-10.4573480	-1.2355351	-11.6928831	-3.7700558	-15.4629389	-30.6550762	-46.1180151	-0.3008626	-5.6968001
1999	-4.7679511	12.7248459	2.7059707	15.4308166	-4.9754645	10.4553522	-29.6766184	-19.2212663	1.5235250	19.0163220
2000	-5.3376304	31.6855596	6.2726518	37.9582114	-5.1682506	32.7899609	-30.3093113	2.4806495	2.5590860	39.5822760
2001	-4.6427616	175.7492084	31.0554267	206.8046351	-5.7379068	201.0667283	-30.9025885	170.1641398	13.7358341	194.1278041
2002	-3.5318167	47.1422473	9.4546117	56.5968590	-6.5323333	50.0645257	-20.9164869	29.1480388	3.3243115	53.9983756
2003	-4.3954614	77.1892476	14.7737487	91.9629963	-9.8555816	82.1074147	-27.9471281	54.1602866	5.9792590	87.5639680
2004	-4.3386650	78.8262646	15.1185591	93.9448237	-9.6856415	84.2591823	-27.8122767	56.4469055	5.8376689	89.0025986
2005	-4.2013731	73.9522672	13.9516303	87.9038975	-5.8165302	82.0873673	-28.3847757	53.7025916	5.8145889	83.9682292
2006	-4.4743175	78.9150000	15.3969478	94.3119478	-6.2837604	88.0281874	-30.0425396	57.9856479	5.9780769	89.3673945
2007	-4.4653662	69.3914197	15.1292550	84.5206747	-6.5329241	77.9877506	-32.5513684	45.4363822	4.6727057	78.5294916
2008	-4.6143614	62.5850970	14.0078468	76.5929438	-6.8024729	69.7904709	-32.8041753	36.9862956	4.0846061	71.2840645
2009	-4.6511315	65.7282811	14.8173822	80.5456633	-6.8403489	73.7053145	-32.9681265	40.7371880	4.3652109	74.7446236
2010	-4.6390416	70.9796763	15.6922801	86.6719564	-6.8179422	79.8540141	-33.0341665	46.8198477	4.6304927	80.2492106
2011	-4.5934449	69.9555480	15.5415916	85.4971396	-6.7202142	78.7769254	-33.6933231	45.0836023	4.6213222	79.1703152
2012	-4.9387625	75.3472357	17.4136808	92.7609165	-7.4092627	85.3516538	-34.8051920	50.5464618	4.8935315	85.1795297
2013	-4.7413503	84.6784950	18.8016018	103.4800968	-7.0708970	96.4091998	-33.8231401	62.5860597	5.4827823	94.9026275
2014	-4.7681776	91.6626683	20.3537385	112.0164068	-7.1015690	104.9148379	-34.5294472	70.3853906	6.1061080	102.5369539
2015	-4.7638894	93.8589771	20.7258101	114.5847871	-7.1619366	107.4228505	-34.8934080	72.5294425	6.1627011	104.7855675
2016	-4.9920021	99.6478791	22.3048368	121.9527159	-7.5946133	114.3581026	-35.6949828	78.6631197	6.4086761	111.0485572
2017	-4.7383888	94.2467995	20.7882966	115.0350961	-7.1975405	107.8375556	-35.2553002	72.5822554	6.1892141	105.1744024
2018	-5.1314472	100.9505287	23.3070939	124.2576226	-8.2076314	116.0499912	-36.4091048	79.6408863	6.4510701	112.5330460
2019	-4.8332788	105.3792939	22.5834589	127.9627528	-7.4712904	120.4914624	-35.7514539	84.7400085	7.1051141	117.3176868
2020	-4.9470209	98.6124097	22.0020954	120.6145051	-7.7485820	112.8659231	-37.0113758	75.8545473	6.4918865	110.0513171
2021	-4.9595831	98.4381155	22.0142438	120.4523593	-7.7984895	112.6538699	-36.5072965	76.1465734	6.4922655	109.8899641
2022	-4.9920236	95.0523354	21.2234920	116.2758274	-7.8079840	108.4678434	-35.9723999	72.4954435	6.3593817	106.4037407
2023	-5.0684979	96.8788003	21.7354890	118.6142893	-7.9737871	110.6405021	-36.8096406	73.8308615	6.3990407	108.3463388
2024	-4.8839569	100.7046516	21.8659552	122.5706068	-7.6644459	114.9061609	-36.4584730	78.4476878	6.7319840	112.3205924
2025	-4.9940272	99.0437952	22.1429810	121.1867761	-7.8260280	113.3607481	-36.0071912	77.3535569	6.6422648	110.6800872
2026	-4.9458577	101.1321370	22.2804204	123.4125573	-7.8151288	115.5974286	-36.9690763	78.6283523	6.6219763	112.6999709
2027	-4.9899224	99.7464678	22.0586917	121.8051595	-7.8043898	114.0007697	-36.4189452	77.5818245	6.6550116	111.3914019
2028	-4.9303896	99.3393669	22.0172297	121.3565966	-7.7457616	113.6108350	-36.7021916	76.9086434	6.5641919	110.8339484
2029	-4.9585956	98.4672177	21.7964525	120.2636703	-7.7983222	112.4653481	-36.3808948	76.0844534	6.5766322	110.0024455
2030	-4.9123452	98.5288867	21.8025349	120.3314215	-7.7101304	112.6212912	-36.4848522	76.1364389	6.5172503	109.9584821
2031	-5.0797650	97.6712880	22.1030307	119.7743186	-8.3785426	111.3957761	-36.1907483	75.2050278	6.4254446	109.1764975
2032	-4.8328406	98.1684292	21.2740302	119.4424594	-7.8499357	111.5925237	-35.7491619	75.8433618	6.6298505	109.6311203
2033	-5.1403763	107.6425946	24.2542167	131.8968113	-8.5817824	123.3150289	-37.1976180	86.1174109	7.0208606	119.8038315
2034	-4.8891137	99.9639744	21.8394446	121.8034190	-8.0459266	113.7574924	-35.5577515	78.1997409	6.7309876	111.5840756
2035	-5.2170723	110.4823385	23.1196979	133.6020363	-8.4397456	125.1622907	-37.9432645	87.2190262	8.0006669	123.7000776

Table B-17

Unit Variable OMP&R Component of Transportation Charge

(Dollars per Acre-Foot)

Calendar Year	California Aqueduct (continued)							
	Reach 29G		Reach 29J		Reach 31A		Reach 33A	
	Warne Power Plant		Castaic Power Plant		Las Perillas and Badger Hill Pumping Plants		Devil's Den, Bluestone, and Polonio Pass Pumping Plants, and San Luis Obispo Power Plant	
	Unit Rate (31)	Cumulative Unit Rate (32)	Unit Rate (33)	Cumulative Unit Rate (34)	Unit Rate (35)	Cumulative Unit Rate (36)	Unit Rate (37)	Cumulative Unit Rate (38)
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	1.5014866	4.1182219	0	0
1969	0	0	0	0	1.2624066	3.0719381	0	0
1970	0	0	0	0	1.6309699	3.3588477	0	0
1971	0	0	0	0	1.4985537	2.7919286	0	0
1972	0	13.3965941	-2.9350830	10.4615111	1.9517720	3.4211474	0	0
1973	0	13.5030687	-6.8099448	6.6931239	1.5374531	3.0757814	0	0
1974	0	12.6772442	-7.4013274	5.2759168	1.5168982	2.9878282	0	0
1975	0	12.9068644	-6.5604921	6.3463723	1.1130304	2.6699305	0	0
1976	0	14.4483197	-6.7213324	7.7269873	1.5685447	3.2790543	0	0
1977	0	17.9458194	-30.4985994	-12.5527800	1.7573375	4.1392043	0	0
1978	0	13.4372037	-9.0130187	4.4241850	1.9429506	4.0089431	0	0
1979	0	17.9908273	-19.0478097	-1.0569824	1.5600341	4.3608941	0	0
1980	0	20.6255585	-20.5438586	0.0816999	1.5124754	3.6770034	0	0
1981	0	20.2186605	-10.0059379	10.2127225	1.5414199	4.7045073	0	0
1982	-2.1714430	17.6024760	-9.5987314	8.0037446	1.7581649	4.3530008	0	0
1983	-8.9130752	2.4950960	-39.8193120	-37.3242160	0.1782765	1.3888171	0	0
1984	-15.0246012	1.6300290	-17.3126964	-15.6826674	0.8546712	2.6822403	0	0
1985	-14.7115359	8.2938197	-38.9450629	-30.6512432	1.2014351	3.6785929	0	0
1986	-14.1893653	25.4337481	-28.1596224	-2.7258742	2.2635886	6.9752505	0	0
1987	-14.8696165	20.1501743	-27.0536484	-6.9034741	1.9135072	5.9486162	0	0
1988	-14.7032843	18.2871189	-25.6857024	-7.3985835	1.7733386	5.6554272	0	0
1989	-14.4231503	28.5515316	-25.3986130	3.1529186	2.4159040	7.4317239	0	0
1990	-14.1850383	42.3039798	-26.0776142	16.2263657	3.7962150	9.8240367	0	0
1991	-14.7118704	22.8979541	-25.0234633	-2.1255092	2.4131016	7.1520492	0	0
1992	-14.6199430	9.2994774	-25.1951357	-15.8956583	1.2766372	4.5092789	0	0
1993	-10.3386607	-14.4155011	-21.1218973	-35.5373984	-1.1726172	-0.7762411	0	0
1994	-14.7696788	25.8414291	-26.7437304	-0.9023013	2.3664839	7.0784385	0	0
1995	-12.2705974	8.8424010	-25.6907993	-16.8483983	2.5750402	5.4022971	0	0
1996	-14.8515762	27.6862584	-29.5639188	-1.8776604	2.5837041	7.6010922	0	0
1997	-14.9272063	26.6563999	-27.1541858	-0.4977859	2.7029648	6.9426653	24.4572499	31.3999152
1998	-8.6041243	-14.3009244	-22.2303491	-36.5312735	-0.4719744	-0.5255005	-3.9178748	-4.4433753
1999	-15.4517685	3.5645535	-27.8324731	-24.2679196	0.9594812	3.2027581	7.0630264	10.2657845
2000	-14.1625277	25.4197483	-26.9670053	-1.5472571	2.7040089	7.0101048	20.0579560	27.0680608
2001	-16.7556980	177.3721061	-29.3106858	148.0614203	12.5820216	31.2731216	94.6525942	125.9257158
2002	-9.4903720	44.5080036	-17.2131688	27.2948348	3.7338916	10.5411093	25.7358652	36.2769745
2003	-14.7976879	72.7662801	-26.7978939	45.9683862	5.6016984	14.5010911	41.5597471	56.0608382
2004	-13.9903882	75.0122104	-24.9449000	50.0673104	5.8619268	15.8749766	43.5788848	59.4538614
2005	-17.3433058	66.6249234	-28.6311106	37.9938128	7.1620998	15.9578935	42.2631616	58.2210551
2006	-17.1959686	72.1714258	-28.6288750	43.5425508	7.0119905	16.4120548	43.2528077	59.6648625
2007	-13.7948326	64.7346591	-22.6631749	42.0714842	5.1130925	13.2672230	42.4317520	55.6989750
2008	-13.5540299	57.7300346	-22.1942203	35.5358143	4.5682730	12.6377247	37.9104359	50.5481607
2009	-13.9277379	60.8168856	-22.7873802	38.0295055	4.7534625	12.3881640	39.4472970	51.8354609
2010	-13.9610490	66.2881616	-22.9455423	43.3426193	5.0006009	14.1332868	41.4981895	55.6314763
2011	-13.9194345	65.2508807	-22.8318172	42.4190634	5.2199795	13.7242156	41.5155167	55.2397323
2012	-14.1599145	71.0196152	-23.3362137	47.6834015	5.4735552	13.9793785	43.1101587	57.0895372
2013	-14.2835176	80.6191099	-23.5313400	57.0877699	6.0678477	16.5239734	47.7908003	64.3147737
2014	-14.7072871	87.8296667	-24.1869449	63.6427218	6.5619943	16.5269679	51.6828057	68.2097736
2015	-14.6259559	90.1596116	-24.0319643	66.1276473	6.6703972	17.4851703	52.5365781	70.0217484
2016	-15.0142458	96.0343114	-24.6996729	71.3346386	6.7452089	18.8368863	53.1258451	71.9627314
2017	-14.7000408	90.4743616	-24.2081125	66.2662491	6.6384048	17.5797619	52.2845767	69.8643386
2018	-14.8631756	97.6698704	-24.5046321	73.1652383	6.8491909	17.9903959	53.9447934	71.9351893
2019	-15.7174965	101.6001903	-26.1130319	75.4871585	7.0345087	19.4527626	55.4043113	74.8570739
2020	-15.3978102	94.6535068	-25.4484180	69.2050889	6.6134247	17.8380915	52.0878526	69.9259441
2021	-15.4008631	94.4891011	-25.4779770	69.0111241	6.6015033	17.6731431	51.9939461	69.6670892
2022	-15.6343162	90.7694245	-25.8742870	64.8951375	6.3664882	16.7572046	50.1429319	66.9001365
2023	-15.6300069	92.7163319	-25.8668683	66.8494637	6.4082505	17.4201355	50.4718663	67.8920018
2024	-15.7723550	96.5482375	-26.1057706	70.4424669	6.6806930	18.5472384	52.6176271	71.1648655
2025	-15.6429891	95.0370981	-25.8891831	69.1479150	6.6460502	17.1347700	52.3447764	69.4795464
2026	-15.4725742	97.2273967	-25.6040017	71.6233950	6.6986018	18.9306976	52.7587202	71.6894178
2027	-15.8246018	95.5668001	-26.1915785	69.3752216	6.5822102	17.8687729	51.8419899	69.7107628
2028	-15.4886107	95.3453376	-25.6275628	69.7177749	6.6349658	18.0616794	52.2575462	70.3192256
2029	-15.7456078	94.2568377	-26.0610765	68.1957612	6.5375346	17.5726092	51.4901553	69.0627645
2030	-15.4589002	94.4995819	-25.5811723	68.9184096	6.5984505	17.9633424	51.9699284	69.9332708
2031	-15.5681259	93.6083716	-25.7240078	67.8843638	6.4942700	17.0686284	51.1493677	68.2179961
2032	-15.5086991	94.1224212	-25.7817323	68.3406889	6.6439631	17.9024560	52.3283968	70.2308529
2033	-15.6027188	104.2011127	-25.9256343	78.2754785	7.0293742	19.0390997	55.3639141	74.4030138
2034	-15.5286128	96.0554628	-25.8235349	70.2319278	6.7337221	18.0087511	53.0353475	71.0440987
2035	-18.9744637	104.7256139	-31.5881941	73.1374199	6.5753965	18.4545802	51.7883250	70.2429052

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	2,051	34,919	0	36,970	0	0	0
1963	0	0	0	7,900	49,811	0	57,711	0	0	0
1964	0	0	0	5,931	68,203	0	74,134	0	0	0
1965	0	0	0	10,918	68,765	62,926	142,609	0	0	0
1966	0	0	0	19,330	52,135	121,141	192,606	0	0	0
1967	0	0	0	19,958	53,785	163,255	236,998	0	0	0
1968	6,989	0	6,989	29,899	120,985	341,768	492,652	0	0	0
1969	8,551	0	8,551	31,859	3,904	298,968	334,731	0	0	0
1970	13,598	0	13,598	49,687	0	431,443	481,130	0	0	0
1971	10,609	0	10,609	23,842	28,328	416,329	468,499	0	0	0
1972	14,434	0	14,434	54,838	144,669	524,208	723,715	0	0	0
1973	14,449	0	14,449	18,398	15,590	547,807	581,795	0	0	0
1974	17,473	0	17,473	9,499	29	636,186	645,714	0	0	0
1975	14,779	0	14,779	22,318	4,765	425,284	452,367	0	0	0
1976	20,856	0	20,856	97,874	121,693	502,769	722,336	0	0	0
1977	22,635	0	22,635	82,578	123,044	497,792	703,414	0	0	0
1978	21,692	0	21,692	74,911	39,986	652,860	767,757	0	0	0
1979	16,237	0	16,237	137,101	77,145	652,629	866,875	0	0	0
1980	19,945	0	19,945	98,743	64,891	517,531	681,165	0	0	0
1981	23,842	0	23,842	126,437	141,456	567,968	835,861	0	0	0
1982	12,157	0	12,157	97,117	46,742	651,246	795,105	0	0	0
1983	2,342	0	2,342	8,171	5,412	148,743	162,326	0	0	0
1984	4,822	0	4,822	26,707	13,141	349,314	389,162	0	0	0
1985	10,188	0	10,188	79,863	102,790	466,291	648,944	0	0	0
1986	15,501	0	15,501	112,370	131,118	932,090	1,175,578	0	0	0
1987	27,223	0	27,223	216,211	234,290	812,631	1,263,132	0	0	0
1988	31,265	11,533	42,798	229,578	297,129	779,537	1,306,244	0	0	0
1989	37,874	66,850	104,724	306,533	304,275	1,051,562	1,662,370	0	0	0
1990	54,736	105,421	160,157	524,114	502,545	1,456,008	2,482,667	0	0	0
1991	8,159	18,824	26,983	105,736	142,105	316,839	564,680	0	(2,636)	(2,636)
1992	12,515	23,808	36,323	93,772	122,436	273,849	490,057	0	0	0
1993	(7,223)	(17,293)	(24,516)	(36,162)	(12,912)	(78,024)	(127,098)	0	0	0
1994	38,968	77,344	116,312	231,756	257,484	641,884	1,131,124	0	0	0
1995	15,701	36,724	52,425	160,663	93,610	151,287	405,560	0	0	0
1996	31,526	96,570	128,096	214,883	186,694	735,431	1,137,008	502	0	502
1997	29,683	116,555	146,238	351,185	219,799	912,861	1,483,845	34,932	233,584	268,516
1998	(6,178)	(18,511)	(24,689)	(6,218)	(16,448)	(65,208)	(87,874)	(15,961)	(82,727)	(98,688)
1999	10,338	37,936	48,274	194,350	154,616	358,407	707,373	38,425	206,722	245,147
2000	32,613	131,394	164,007	482,654	304,968	958,777	1,746,399	107,244	615,555	722,799
2001	328,197	498,065	826,262	1,525,108	897,125	2,387,915	4,810,148	539,340	2,385,789	2,925,129
2002	241,663	141,719	383,382	610,531	412,909	1,165,362	2,188,802	585,873	1,229,935	1,815,808
2003	426,406	452,144	878,550	1,498,797	1,008,453	2,401,078	4,908,328	1,401,521	2,549,983	3,951,504
2004	442,543	485,168	927,711	1,803,575	1,060,490	2,524,977	5,389,042	1,486,347	2,704,318	4,190,665
2005	283,089	339,840	622,929	1,492,296	869,201	2,069,527	4,431,024	1,455,526	2,648,243	4,103,769
2006	295,136	348,322	643,458	1,573,870	908,846	2,163,919	4,646,635	1,491,622	2,713,916	4,205,538
2007	294,686	342,267	636,953	1,392,650	1,022,317	2,065,286	4,480,253	1,392,474	2,533,524	3,925,998
2008	268,187	306,175	574,362	1,334,230	827,582	1,970,433	4,132,245	1,263,704	2,299,234	3,562,938
2009	284,020	319,083	603,103	1,326,527	828,008	1,971,449	4,125,984	1,295,887	2,357,788	3,653,675
2010	304,112	336,164	640,276	1,481,645	916,717	2,182,660	4,581,022	1,390,787	2,530,453	3,921,240
2011	309,608	336,795	646,403	1,432,598	890,744	2,120,818	4,444,160	1,380,993	2,512,634	3,893,627
2012	327,118	350,236	677,354	1,457,128	907,927	2,161,730	4,526,785	1,427,238	2,596,775	4,024,013
2013	367,754	388,728	756,482	1,697,196	1,050,152	2,500,362	5,247,710	1,607,869	2,925,422	4,533,291
2014	405,489	421,051	826,540	1,727,648	1,078,095	2,566,892	5,372,635	1,705,244	3,102,590	4,807,834
2015	426,623	428,991	855,614	1,810,392	1,124,734	2,677,939	5,613,065	1,750,544	3,185,009	4,935,553
2016	445,008	434,550	879,558	1,916,336	1,181,919	2,814,094	5,912,349	1,799,068	3,273,297	5,072,365
2017	451,408	428,394	879,802	1,814,702	1,126,060	2,681,095	5,621,857	1,746,608	3,177,849	4,924,457
2018	480,365	442,698	923,063	1,854,787	1,151,494	2,741,653	5,747,934	1,798,380	3,272,044	5,070,424
2019	508,601	455,386	963,987	1,981,031	1,222,915	2,911,703	6,115,649	1,871,427	3,404,949	5,276,376
2020	492,074	428,814	920,888	1,826,473	1,130,517	2,691,707	5,648,697	1,748,149	3,180,651	4,928,800
2021	493,530	428,224	921,754	1,812,390	1,122,692	2,673,075	5,608,157	1,741,677	3,168,877	4,910,554
2022	475,960	412,979	888,939	1,724,320	1,070,053	2,547,744	5,342,117	1,672,503	3,043,020	4,715,523
2023	479,083	415,689	894,772	1,778,298	1,099,582	2,618,053	5,495,933	1,697,300	3,088,136	4,785,436
2024	499,450	433,361	932,811	1,885,978	1,163,646	2,770,585	5,820,209	1,779,122	3,237,005	5,016,127
2025	496,859	431,112	927,971	1,771,830	1,102,060	2,623,952	5,497,842	1,736,989	3,160,347	4,897,336
2026	500,789	434,523	935,312	1,917,539	1,180,880	2,811,620	5,910,039	1,792,235	3,260,865	5,053,100
2027	492,088	426,973	919,061	1,824,578	1,128,358	2,686,567	5,639,503	1,742,769	3,170,864	4,913,633
2028	496,032	430,395	926,427	1,845,117	1,140,884	2,716,391	5,702,392	1,757,981	3,198,540	4,956,521
2029	488,748	424,074	912,822	1,799,001	1,113,792	2,651,885	5,564,678	1,726,569	3,141,389	4,867,958
2030	493,302	428,027	921,329	1,835,412	1,134,906	2,702,158	5,672,476	1,748,332	3,180,985	4,929,317
2031	485,513	421,268	906,781	1,756,253	1,089,987	2,595,207	5,441,447	1,705,450	3,102,964	4,808,414
2032	496,705	430,977	927,682	1,834,745	1,135,866	2,704,442	5,675,053	1,755,771	3,194,521	4,950,292
2033	525,518	455,979	981,497	1,943,968	1,202,398	2,862,852	6,009,218	1,860,075	3,384,295	5,244,370
2034	503,415	436,801	940,216	1,847,946	1,144,903	2,725,958	5,718,807	1,776,102	3,231,512	5,007,614
2035	491,578	426,531	918,109	1,855,848	1,142,344	2,719,867	5,718,059	1,756,073	3,195,069	4,951,142
Total	15,388,956	14,808,658	30,197,614	63,308,098	40,892,453	105,395,344	209,595,895	55,552,691	103,313,290	158,865,981

Note: B-18 includes Extra Peaking Charges for additional power shown in Table 8.

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Kern County Water Agency		County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
				Municipal and Industrial (14)	Agricultural (15)				
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	68,977	5,176	0	0	440,922	2,355	4,760	65,680	587,871
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	569,640
1971	53,097	7,747	0	0	769,054	4,785	6,353	158,419	999,456
1972	62,365	8,515	0	0	1,151,788	2,057	7,375	379,686	1,611,786
1973	33,931	4,615	0	0	770,121	2,307	3,017	77,630	891,621
1974	49,114	4,413	0	46,752	677,660	2,206	3,114	106,332	889,591
1975	63,140	4,671	0	34,580	848,249	2,491	3,920	134,295	1,091,346
1976	70,851	5,132	0	94,653	966,820	2,737	4,910	100,597	1,245,701
1977	26,565	1,758	0	84,875	498,624	3,644	2,602	43,067	661,135
1978	108,944	938	0	190,675	1,616,975	4,319	6,294	24,901	1,953,046
1979	107,956	4,871	0	194,048	2,371,175	5,602	13,172	434,472	3,131,296
1980	88,746	1,935	0	121,603	1,731,588	4,762	7,766	163,301	2,119,701
1981	129,687	18,533	0	263,077	2,398,339	7,275	8,904	263,922	3,089,737
1982	108,561	937	0	145,246	2,375,404	4,541	6,763	48,137	2,689,589
1983	61,443	0	0	13,954	929,183	5,662	3,232	1,218	1,014,692
1984	82,423	0	0	216,437	1,996,259	5,946	7,475	10,496	2,319,036
1985	114,571	12,938	0	242,645	2,567,184	8,422	8,815	271,970	3,226,545
1986	236,756	5,513	0	377,798	4,876,960	17,433	16,927	376,088	5,907,475
1987	187,090	10,273	0	504,168	4,230,949	16,140	15,529	375,604	5,339,753
1988	188,170	14,894	0	524,965	4,250,194	15,528	11,928	374,528	5,380,207
1989	285,261	15,450	0	681,238	6,158,648	20,063	21,693	649,604	7,831,957
1990	218,786	7,710	0	845,877	4,778,185	12,056	12,072	344,008	6,218,694
1991	4,393	1,047	0	185,013	47,869	0	521	10,331	249,174
1992	76,840	4,426	0	227,332	1,699,824	6,059	5,222	151,055	2,170,758
1993	20,064	4,843	0	78,585	340,588	2,090	1,467	123,913	571,550
1994	135,671	7,857	0	471,391	3,418,219	9,971	10,103	293,847	4,347,059
1995	181,772	4,611	0	409,656	3,437,735	11,619	10,492	288,010	4,343,895
1996	286,064	9,577	0	715,404	6,328,965	21,039	16,403	1,196,303	8,573,755
1997	308,515	0	0	650,416	5,627,735	0	15,559	94,838	6,697,063
1998	19,652	(28)	0	63,221	63,450	(1)	1,318	(1,107)	146,505
1999	133,917	7,125	0	401,885	2,739,831	8,973	7,688	656,878	3,956,297
2000	260,678	7,747	0	485,649	5,653,627	15,502	13,373	896,934	7,333,510
2001	690,711	25,420	0	1,000,579	13,032,283	29,158	47,024	1,583,622	16,408,797
2002	466,240	9,823	0	510,673	5,177,889	18,066	24,597	573,814	6,781,102
2003	510,318	26,698	0	1,155,978	9,745,200	35,598	33,840	992,523	12,500,155
2004	574,178	30,039	0	1,290,445	10,757,885	40,052	39,824	1,116,725	13,849,148
2005	504,377	26,387	0	1,135,900	9,694,185	35,183	33,873	980,968	12,410,873
2006	539,028	28,200	0	1,213,713	10,301,654	37,600	36,551	1,048,361	13,205,107
2007	467,582	24,462	0	1,113,743	9,399,531	32,617	31,471	909,406	11,978,812
2008	462,727	24,208	0	1,091,196	8,882,051	32,278	32,434	899,962	11,424,856
2009	437,797	22,904	0	1,044,980	8,596,888	30,539	29,243	851,475	11,013,826
2010	523,696	27,398	0	1,234,062	10,021,825	36,531	36,970	1,018,541	12,899,023
2011	487,658	25,513	0	1,156,855	9,485,595	34,017	33,408	948,452	12,171,498
2012	487,749	25,517	0	1,167,509	9,634,955	34,023	32,380	948,629	12,330,762
2013	599,586	31,368	0	1,418,043	11,571,808	41,825	41,820	1,166,140	14,870,590
2014	571,421	29,895	0	1,372,188	11,355,329	39,860	37,411	1,111,364	14,517,468
2015	620,152	32,444	0	1,478,022	12,143,722	43,259	41,941	1,206,139	15,565,679
2016	693,373	36,275	0	1,641,872	13,372,202	48,367	48,461	1,348,549	17,189,099
2017	627,410	32,824	0	1,493,823	12,255,875	43,765	42,652	1,220,257	15,716,606
2018	638,870	33,424	0	1,530,661	12,597,958	44,565	42,606	1,242,545	16,130,629
2019	712,100	37,255	0	1,691,267	13,803,265	49,673	49,223	1,384,971	17,727,754
2020	643,656	33,674	0	1,535,974	12,588,841	44,899	43,672	1,251,853	16,142,569
2021	634,881	33,215	0	1,517,346	12,452,644	44,287	42,808	1,234,787	15,959,968
2022	595,835	31,172	0	1,429,559	11,769,573	41,563	39,564	1,158,845	15,066,111
2023	631,455	33,036	0	1,507,427	12,347,072	44,048	42,879	1,228,123	15,834,040
2024	680,463	35,600	0	1,616,578	13,190,106	47,466	47,051	1,323,440	16,940,704
2025	601,455	31,466	0	1,448,690	11,970,452	41,955	39,268	1,169,775	15,303,061
2026	701,425	36,696	0	1,661,269	13,516,424	48,928	49,093	1,364,209	17,378,044
2027	647,205	33,860	0	1,545,481	12,661,857	45,146	43,897	1,258,756	16,236,202
2028	655,242	34,280	0	1,561,479	12,779,656	45,707	44,721	1,274,387	16,395,472
2029	632,784	33,105	0	1,512,964	12,413,558	44,140	42,661	1,230,709	15,909,921
2030	651,697	34,095	0	1,552,557	12,705,108	45,460	44,516	1,267,492	16,300,925
2031	606,365	31,723	0	1,456,491	11,998,006	42,297	40,149	1,179,326	15,354,357
2032	645,596	33,775	0	1,539,068	12,610,862	45,034	43,891	1,255,626	16,173,852
2033	688,674	36,029	0	1,646,896	13,502,963	48,039	46,524	1,339,409	17,308,534
2034	646,544	33,825	0	1,544,446	12,674,077	45,100	43,628	1,257,470	16,245,090
2035	681,188	35,638	0	1,636,064	13,390,232	47,517	45,908	1,324,850	17,161,397
Total	24,860,030	1,261,379	0	56,724,941	480,955,909	1,654,327	1,683,659	48,820,963	615,961,209

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	30,401	0	0	0	0	0	0	0	0
1969	0	30,627	0	0	0	0	0	0	0	0
1970	0	39,430	0	0	0	0	0	0	0	0
1971	0	34,871	0	0	0	0	0	0	0	0
1972	780	47,571	0	12,785	0	4,496	1,515	0	32,107	0
1973	286	28,968	102,812	6,896	159,536	3,855	0	0	301,444	0
1974	15,558	28,982	100,955	9,890	157,742	4,932	221	0	177,173	5,961
1975	99,186	28,568	108,253	12,758	170,111	6,391	0	0	136,066	50,723
1976	385,090	38,365	135,276	17,835	213,594	8,164	0	0	139,354	65,476
1977	199,166	21,006	0	23,598	0	1,974	1,702	0	239,663	74,838
1978	581,729	45,550	174,116	20,875	264,178	2,731	0	0	37,043	67,462
1979	1,058,904	83,940	228,437	28,603	340,510	2,328	90,803	0	236	3,668
1980	1,390,117	51,143	256,759	29,229	401,038	3,667	94,362	0	0	16,504
1981	1,480,362	118,583	274,149	33,632	430,304	23,861	90,590	0	254,649	57,523
1982	923,973	132,575	292,674	27,190	461,216	0	230,608	0	126,461	189,895
1983	333,772	(335,712)	172,336	10,792	272,477	385	0	0	(71,602)	(8,768)
1984	485,847	(142,910)	273,597	19,572	433,785	15	0	0	(66,353)	(91,433)
1985	821,069	(335,343)	413,406	34,603	657,011	0	0	32,464	(47,544)	(32,348)
1986	1,109,047	54,812	728,808	60,274	1,160,650	5,548	0	105,375	69,170	101,843
1987	1,019,605	(40,745)	668,383	63,601	1,083,530	32,651	585	157,843	88,076	49,930
1988	1,019,793	(74,006)	688,891	66,914	1,134,141	11,991	300	50,654	92,465	38,688
1989	1,736,901	178,359	978,885	97,114	1,633,489	38,269	8,951	350,953	340,460	210,334
1990	2,442,558	422,502	1,402,619	110,934	2,313,410	90,472	0	446,408	599,573	530,099
1991	286,485	(3,054)	277,078	33,945	456,999	17,978	128,405	132,700	35,339	52,116
1992	587,340	(208,900)	240,119	11,952	396,022	4,871	241,338	78,306	(22,718)	(53,500)
1993	(190,611)	(491,161)	(809,033)	(2,389)	(1,334,429)	(3,246)	(61,112)	(29,466)	(157,452)	(519,798)
1994	1,839,643	65,577	188,950	34,443	311,615	41,151	730,391	315,059	122,398	204,063
1995	761,209	(247,735)	(251,547)	7,960	(414,889)	7,727	165,622	114,342	(7,579)	(140,714)
1996	1,883,530	72,171	508,274	18,313	838,330	16,510	289,044	385,745	49,537	133,848
1997	2,121,818	22,440	365,342	24,076	330,153	15,099	414,596	438,212	61,553	115,882
1998	(553,432)	(722,825)	(3,952,729)	(2,892)	(3,258,099)	(4,225)	(44,233)	(80,469)	(86,610)	(429,359)
1999	878,943	(686,145)	(970,290)	11,835	(1,116,756)	4,352	121,775	180,537	(247,455)	(367,572)
2000	2,648,184	15,921	104,989	39,151	144,458	0	423,427	287,071	45,641	35,907
2001	11,047,068	4,584,350	1,548,494	212,528	2,554,164	0	860,396	1,783,327	4,507,308	401,587
2002	4,533,858	1,651,923	454,709	188,743	750,125	70,478	1,046,608	1,144,708	2,054,674	682,589
2003	10,887,466	1,838,735	1,251,103	476,223	2,063,507	177,535	1,379,445	1,671,224	5,556,845	1,559,816
2004	11,118,366	2,102,827	1,303,924	488,703	2,150,627	181,300	1,878,896	1,706,667	5,791,453	1,625,671
2005	10,430,893	1,671,728	1,240,530	476,107	2,046,069	170,090	2,197,597	1,601,141	5,509,886	1,546,635
2006	11,130,882	2,002,957	1,339,468	510,563	2,209,253	181,505	2,829,358	1,708,589	5,949,327	1,669,987
2007	9,811,947	3,717,163	1,049,580	452,329	1,731,126	159,600	6,406,667	1,478,037	4,661,773	1,308,568
2008	8,849,533	3,154,029	854,383	404,785	1,409,178	143,946	5,805,745	1,333,063	3,794,794	1,065,205
2009	9,293,979	3,363,996	941,029	427,491	1,552,087	151,175	6,105,361	1,400,012	4,179,635	1,173,231
2010	10,036,526	3,834,124	1,081,538	463,153	1,783,836	163,253	6,569,734	1,511,867	4,803,716	1,348,412
2011	9,891,714	3,985,927	1,041,431	456,906	1,717,685	160,898	6,480,683	1,490,053	4,625,578	1,298,408
2012	10,654,099	4,539,460	1,167,623	495,040	1,925,820	173,299	7,031,277	1,604,896	5,186,067	1,455,738
2013	11,973,539	5,434,756	1,445,738	559,173	2,384,529	194,761	7,843,791	1,803,652	6,421,330	1,802,479
2014	12,961,101	6,058,787	1,625,903	608,506	2,681,683	210,824	8,490,844	1,952,415	7,221,541	2,027,099
2015	13,271,659	6,295,352	1,675,430	623,053	2,763,372	215,876	8,685,527	1,999,196	7,441,521	2,088,848
2016	14,090,210	6,791,058	1,817,118	663,277	2,997,065	229,190	9,244,016	2,122,500	8,070,836	2,265,498
2017	13,326,497	6,308,547	1,676,650	625,458	2,765,384	216,768	8,719,660	2,007,457	7,446,939	2,090,369
2018	14,274,405	6,965,331	1,839,704	673,090	3,034,318	232,186	9,418,728	2,150,246	8,171,155	2,293,658
2019	14,900,632	7,186,377	1,957,494	698,850	3,228,594	242,372	9,699,577	2,244,579	8,694,325	2,440,512
2020	13,943,795	6,588,324	1,752,240	654,622	2,890,058	226,809	9,142,579	2,100,444	7,782,677	2,184,611
2021	13,919,150	6,569,859	1,758,986	653,392	2,901,184	226,408	9,130,289	2,096,732	7,812,638	2,193,021
2022	13,440,400	6,178,017	1,674,645	629,113	2,762,076	218,620	8,813,708	2,024,615	7,438,033	2,087,869
2023	13,698,662	6,364,069	1,705,493	641,715	2,812,956	222,821	8,990,963	2,063,518	7,575,046	2,126,329
2024	14,239,638	6,706,123	1,812,142	666,456	2,988,857	231,621	9,290,852	2,145,009	8,048,733	2,259,293
2025	14,004,793	6,582,882	1,786,867	657,492	2,947,171	227,801	9,185,958	2,109,633	7,936,475	2,227,782
2026	14,300,084	6,818,547	1,816,315	670,465	2,995,740	232,604	9,354,672	2,154,115	8,067,269	2,264,497
2027	14,104,151	6,604,521	1,792,140	661,204	2,955,868	229,417	9,232,831	2,124,600	7,959,895	2,234,357
2028	14,046,586	6,637,132	1,776,590	658,943	2,930,219	228,481	9,198,830	2,115,929	7,890,827	2,214,969
2029	13,923,265	6,492,236	1,757,551	652,299	2,898,818	226,475	9,115,986	2,097,352	7,806,265	2,191,232
2030	13,931,985	6,561,033	1,758,752	653,203	2,900,798	226,616	9,121,122	2,098,665	7,811,599	2,192,729
2031	13,810,720	6,462,591	1,737,236	646,096	2,865,312	224,644	9,078,893	2,080,398	7,716,036	2,165,905
2032	13,881,016	6,506,034	1,751,982	647,237	2,889,632	225,787	9,053,738	2,090,988	7,781,529	2,184,289
2033	15,220,663	7,451,826	1,989,312	715,227	3,281,073	247,578	9,997,778	2,292,787	8,835,646	2,480,181
2034	14,134,906	6,686,080	1,806,414	659,793	2,979,410	229,917	9,232,699	2,129,233	8,023,293	2,252,153
2035	15,622,203	6,962,682	2,014,760	725,941	3,323,045	254,109	10,127,034	2,353,274	8,948,672	2,511,908
Total	464,073,244	185,963,208	56,704,783	20,960,665	96,710,766	7,296,711	261,690,732	69,756,655	239,764,431	66,276,704

Table B-18

Variable OMP&R Component of Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	36,970
1963	0	0	0	0	0	0	0	0	0	57,711
1964	0	0	0	0	0	0	0	0	0	74,134
1965	0	0	0	0	0	0	0	0	0	142,609
1966	0	0	0	0	0	0	0	0	0	192,606
1967	0	0	0	0	0	0	0	0	0	236,998
1968	0	0	0	30,401	0	0	0	0	0	1,117,912
1969	0	0	0	30,627	0	0	0	0	0	773,646
1970	0	0	0	39,430	0	0	0	0	0	1,103,798
1971	0	0	0	34,871	0	0	0	0	0	1,513,435
1972	0	848,011	0	947,267	0	0	0	0	0	3,297,202
1973	0	1,083,328	0	1,687,126	0	0	0	0	0	3,174,991
1974	0	1,872,297	0	2,373,712	0	0	0	0	0	3,926,490
1975	0	3,887,152	0	4,499,209	0	0	0	0	0	6,057,701
1976	0	5,485,263	0	6,488,418	0	0	0	0	0	8,477,311
1977	0	(796,686)	0	(234,739)	0	0	0	0	0	1,152,445
1978	0	3,696,428	0	4,890,111	0	0	0	0	0	7,632,606
1979	0	4,021,960	0	5,859,390	0	0	0	0	0	9,873,798
1980	0	5,362,245	0	7,605,064	0	0	0	0	0	10,425,875
1981	0	10,862,932	0	13,626,585	0	0	0	0	0	17,576,025
1982	0	7,685,168	0	10,069,760	0	0	0	0	0	13,566,611
1983	0	(8,994,497)	0	(8,620,817)	0	0	0	0	0	(7,441,457)
1984	0	(7,633,741)	0	(6,721,621)	0	0	0	0	0	(4,008,601)
1985	0	(15,213,299)	0	(13,669,981)	0	0	0	0	0	(9,784,304)
1986	0	1,135,478	0	4,531,005	0	0	0	0	0	11,629,559
1987	0	(3,007,097)	0	116,362	0	0	0	0	0	6,746,470
1988	0	(3,407,929)	0	(378,098)	0	0	0	0	0	6,351,151
1989	0	9,488,536	0	15,062,251	0	0	0	0	0	24,661,302
1990	0	30,759,725	204,582	39,322,882	0	0	0	0	0	48,184,400
1991	0	184,870	22,623	1,625,484	0	0	0	0	0	2,463,685
1992	0	(9,471,028)	0	(8,196,198)	0	0	0	0	0	(5,499,060)
1993	0	(21,473,875)	0	(25,072,572)	0	0	0	0	0	(24,652,636)
1994	0	4,018,533	0	7,871,823	0	0	0	0	0	13,466,318
1995	0	(4,895,977)	0	(4,901,581)	0	0	0	0	0	(99,701)
1996	0	1,859,275	0	6,054,577	0	0	0	0	0	15,893,938
1997	0	2,428,729	(921)	6,336,979	0	0	0	0	0	14,932,641
1998	0	(14,440,371)	(67,583)	(23,642,827)	0	0	0	0	0	(23,707,573)
1999	0	(14,367,945)	(44,896)	(16,603,617)	0	0	0	0	0	(11,646,526)
2000	0	1,538,163	53,061	5,335,973	0	0	0	0	0	15,302,688
2001	0	163,298,634	273,914	191,071,770	0	0	0	0	0	216,042,106
2002	32,063	40,925,112	109,125	53,644,715	0	0	0	0	0	64,813,809
2003	270,801	79,222,545	1,003,781	107,359,026	0	0	0	0	0	129,597,563
2004	338,681	85,384,409	1,079,923	115,151,447	0	0	0	0	0	139,508,013
2005	349,067	75,407,779	850,064	103,497,586	0	0	0	0	0	125,066,181
2006	405,900	80,110,333	961,032	111,009,154	0	0	0	0	0	133,709,892
2007	340,773	75,291,626	912,819	107,322,008	0	0	0	0	0	128,344,024
2008	639,863	62,691,590	780,628	90,926,742	0	0	0	0	0	110,621,143
2009	704,753	67,839,239	832,370	97,964,358	0	0	0	0	0	117,360,946
2010	809,983	77,647,515	939,131	110,992,788	0	0	0	0	0	133,034,349
2011	779,946	75,407,240	920,301	108,256,770	0	0	0	0	0	129,412,458
2012	874,454	84,563,089	1,027,177	120,698,039	0	0	0	0	0	142,256,953
2013	1,082,739	102,788,764	1,215,879	144,951,130	0	0	0	0	0	170,359,203
2014	1,217,667	114,872,205	1,349,043	161,277,618	0	0	0	0	0	186,802,095
2015	1,254,759	118,959,829	1,398,254	166,672,676	0	0	0	0	0	193,642,587
2016	1,360,872	128,679,757	1,504,497	179,835,894	0	0	0	0	0	208,889,265
2017	1,255,673	119,146,709	1,401,581	166,987,692	0	0	0	0	0	194,130,414
2018	1,377,787	131,091,540	1,540,494	183,062,642	0	0	0	0	0	210,934,692
2019	1,466,002	137,232,530	1,591,999	191,583,843	0	0	0	0	0	221,667,609
2020	1,312,284	124,449,720	1,464,264	174,492,427	0	0	0	0	0	202,133,381
2021	1,317,336	124,459,313	1,460,478	174,498,786	0	0	0	0	0	201,899,219
2022	1,254,171	117,688,057	1,379,407	165,588,731	0	0	0	0	0	191,601,421
2023	1,277,274	120,640,535	1,418,470	169,537,851	0	0	0	0	0	196,548,032
2024	1,357,145	127,627,226	1,491,083	178,864,178	0	0	0	0	0	207,574,029
2025	1,338,217	125,420,989	1,464,509	175,890,569	0	0	0	0	0	202,516,779
2026	1,360,270	128,950,439	1,513,121	180,498,138	0	0	0	0	0	209,774,633
2027	1,342,166	125,890,514	1,470,008	176,601,672	0	0	0	0	0	204,310,071
2028	1,330,520	125,744,948	1,475,082	176,249,056	0	0	0	0	0	204,229,868
2029	1,316,261	123,613,275	1,446,008	173,537,023	0	0	0	0	0	200,792,402
2030	1,317,160	124,390,597	1,458,949	174,423,208	0	0	0	0	0	202,247,255
2031	1,301,047	122,617,139	1,438,718	172,144,735	0	0	0	0	0	198,655,734
2032	1,312,090	123,600,204	1,448,026	173,372,552	0	0	0	0	0	201,099,431
2033	1,489,831	140,927,840	1,647,175	196,576,917	0	0	0	0	0	226,120,536
2034	1,352,856	127,180,268	1,485,983	178,153,005	0	0	0	0	0	206,064,732
2035	1,508,889	136,702,835	1,562,251	192,617,603	0	0	0	0	0	221,366,310
Total	36,049,300	3,832,979,993	43,482,410	5,381,709,604	0	0	0	0	0	6,396,330,303

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	11,750	43,787	21,132	76,669	0	0	0
1963	0	0	0	193,996	190,326	447,917	832,239	0	0	0
1964	0	0	0	255,555	277,540	621,629	1,154,724	6,055	20,495	26,549
1965	0	0	0	364,299	404,452	1,158,538	1,927,289	11,420	31,733	43,153
1966	18,073	0	18,073	409,270	421,864	1,413,485	2,244,619	20,173	49,647	69,820
1967	41,595	0	41,595	528,177	498,598	1,686,683	2,713,458	37,961	84,135	122,096
1968	128,665	(31)	128,634	652,226	603,659	1,985,863	3,241,748	63,505	133,050	196,554
1969	254,751	(64)	254,687	774,922	539,533	2,083,945	3,398,400	118,138	235,238	353,376
1970	277,576	(78)	277,498	810,344	532,767	2,203,477	3,546,588	130,853	259,849	390,701
1971	227,486	(102)	227,384	775,302	552,315	2,170,610	3,498,227	131,668	262,415	394,083
1972	224,955	(153)	224,802	816,807	678,721	2,321,136	3,816,664	137,427	274,461	411,888
1973	221,053	33,377	254,430	781,961	549,595	2,339,336	3,670,892	134,221	269,293	403,514
1974	240,447	34,991	275,438	805,676	564,796	2,507,076	3,877,548	135,227	271,850	407,077
1975	237,385	38,531	275,916	855,431	605,933	2,410,643	3,872,007	151,551	302,739	454,290
1976	271,208	43,267	314,475	946,121	735,015	2,501,227	4,182,363	260,578	505,626	766,204
1977	293,526	47,680	341,206	910,165	713,762	2,477,123	4,101,050	270,301	527,050	797,352
1978	273,750	51,910	325,660	965,318	692,793	2,786,714	4,444,825	276,935	542,595	819,530
1979	289,340	56,249	345,589	1,030,248	736,565	2,814,309	4,581,122	274,716	541,778	816,494
1980	310,689	71,688	382,377	1,148,108	866,579	3,028,938	5,043,625	300,244	596,634	896,878
1981	347,607	92,729	440,336	1,113,450	879,568	2,918,323	4,911,341	319,501	646,043	965,544
1982	438,144	113,650	551,794	1,151,353	850,693	3,262,844	5,264,890	320,433	642,320	962,753
1983	354,585	161,087	515,672	1,162,839	900,573	3,796,186	5,859,598	349,564	692,798	1,042,361
1984	467,147	237,716	704,863	1,454,587	1,097,694	5,738,550	8,290,831	382,019	755,336	1,137,355
1985	735,924	384,056	1,119,980	1,904,611	1,789,586	6,552,302	10,246,499	424,971	836,735	1,261,706
1986	1,084,729	719,838	1,804,567	1,731,717	1,528,949	6,863,988	10,124,654	415,932	822,440	1,238,372
1987	1,774,034	1,641,938	3,415,972	2,221,429	2,012,094	6,676,115	10,909,638	415,941	872,042	1,287,983
1988	2,231,966	2,456,729	4,688,695	2,222,886	2,210,742	6,369,613	10,803,241	450,603	1,038,171	1,488,774
1989	2,397,714	3,460,586	5,858,300	2,138,899	1,872,252	5,917,484	9,928,635	444,730	1,222,435	1,667,165
1990	2,746,590	3,571,087	6,317,677	2,558,028	2,262,138	6,669,217	11,489,383	519,358	1,293,194	1,812,552
1991	2,749,103	3,821,790	6,570,893	1,737,388	1,621,418	4,528,719	7,887,525	523,207	1,535,304	2,058,511
1992	2,554,997	3,668,704	6,223,701	2,057,759	2,003,566	5,386,671	9,447,996	576,502	1,538,632	2,115,134
1993	2,593,357	3,644,184	6,237,541	2,862,660	2,011,464	6,512,689	11,386,813	642,988	1,733,417	2,376,405
1994	2,718,665	3,677,862	6,396,527	2,889,051	2,642,650	7,315,209	12,846,910	803,426	2,512,260	3,315,686
1995	2,649,748	3,650,491	6,300,239	3,017,337	2,289,275	5,894,504	11,201,116	1,033,123	4,926,265	5,959,388
1996	2,695,543	4,019,247	6,714,790	2,539,697	2,117,031	6,597,823	11,254,551	1,884,573	12,900,944	14,785,518
1997	2,642,366	3,771,877	6,414,243	2,639,363	2,007,582	6,552,314	11,199,259	2,344,229	19,871,753	22,215,982
1998	2,539,769	3,620,610	6,160,379	2,248,205	2,067,028	6,304,316	10,619,549	3,015,282	26,296,211	29,311,493
1999	2,658,144	3,967,091	6,625,235	2,779,121	2,384,850	8,210,227	13,374,198	3,050,803	26,975,366	30,026,169
2000	2,621,174	4,452,675	7,073,849	4,045,337	2,427,165	7,504,327	13,976,829	3,120,006	28,128,063	31,248,069
2001	3,288,391	4,646,049	7,934,439	7,483,233	2,984,997	8,910,010	19,378,240	3,591,128	29,663,187	33,254,315
2002	3,616,674	4,978,461	8,595,134	10,984,909	2,954,156	15,048,305	28,987,370	4,434,126	32,400,849	36,834,976
2003	3,786,064	5,506,296	9,292,359	6,423,501	3,607,796	15,226,906	25,258,203	5,404,284	34,534,369	39,938,654
2004	3,762,747	5,208,217	8,970,964	6,653,507	3,580,206	13,989,648	24,223,361	5,441,149	34,502,440	39,943,589
2005	3,258,687	4,258,791	7,517,478	5,143,402	2,777,710	9,654,419	17,575,531	4,970,896	32,161,633	37,132,529
2006	3,726,875	4,836,060	8,562,935	6,509,852	3,445,030	9,353,962	19,308,844	5,233,215	32,280,128	37,513,343
2007	3,710,539	4,810,355	8,520,894	6,183,295	3,593,476	9,137,343	18,914,114	5,064,047	31,971,258	37,035,304
2008	3,718,965	4,800,661	8,519,626	6,263,317	3,401,116	9,248,894	18,913,327	5,059,921	32,920,284	37,980,205
2009	3,737,312	4,813,436	8,550,748	6,254,110	3,400,664	9,247,604	18,902,378	5,091,294	31,957,967	37,049,261
2010	3,740,034	4,810,487	8,550,521	6,329,109	3,436,810	9,333,720	19,099,639	5,110,205	32,117,231	37,227,436
2011	3,770,935	4,836,326	8,607,261	6,367,959	3,466,354	9,406,151	19,240,464	5,175,821	32,116,802	37,292,623
2012	3,791,940	4,850,903	8,642,843	6,394,636	3,484,779	9,450,114	19,329,529	5,223,647	33,405,429	38,629,076
2013	3,720,544	4,780,019	8,500,563	6,006,999	3,232,607	8,736,473	17,976,079	4,987,280	33,068,051	38,055,331
2014	3,686,898	4,743,673	8,430,571	5,680,262	3,013,639	8,204,975	16,898,876	4,816,896	32,738,142	37,555,038
2015	3,689,889	4,734,450	8,424,339	5,615,657	2,924,698	7,836,210	16,376,565	4,788,671	32,989,829	37,778,500
2016	3,681,111	4,732,751	8,413,862	5,658,240	2,935,696	7,761,298	16,355,234	4,807,720	33,106,092	37,913,812
2017	3,657,898	4,724,243	8,382,141	5,471,240	2,842,004	7,495,942	15,809,186	4,725,947	33,011,783	37,737,731
2018	3,596,855	4,739,968	8,336,823	5,393,878	2,827,050	7,435,552	15,656,480	4,764,587	32,464,423	37,229,011
2019	3,574,308	4,750,519	8,324,827	5,412,053	2,861,502	7,499,664	15,773,219	4,833,404	32,591,861	37,425,265
2020	3,554,487	4,725,265	8,279,752	5,224,887	2,755,700	7,244,973	15,225,560	4,709,399	32,362,016	37,071,415
2021	3,551,037	4,722,923	8,273,960	5,195,560	2,739,590	7,207,577	15,142,727	4,693,545	32,822,593	37,516,138
2022	3,531,655	4,707,620	8,239,275	5,104,688	2,685,003	7,074,940	14,864,631	4,623,515	32,695,732	37,319,247
2023	3,535,549	4,677,295	8,212,844	5,164,787	2,719,114	7,154,341	15,038,242	4,655,948	32,463,964	37,119,912
2024	3,552,976	4,694,074	8,247,050	5,272,156	2,782,779	7,305,399	15,360,334	4,737,835	32,468,759	37,206,594
2025	3,534,183	4,683,544	8,217,727	5,132,956	2,705,368	7,120,999	14,959,323	4,672,958	32,218,834	36,891,791
2026	3,531,050	4,679,456	8,210,506	5,271,747	2,780,550	7,298,615	15,350,912	4,619,974	32,124,034	36,744,007
2027	3,521,947	4,672,231	8,194,178	5,185,327	2,731,129	7,181,616	15,098,072	4,571,441	32,036,921	36,608,363
2028	3,519,087	4,666,553	8,185,640	5,192,103	2,736,213	7,190,201	15,118,517	4,578,388	35,081,330	39,659,718
2029	3,508,997	4,657,681	8,166,678	5,144,409	2,708,065	7,123,318	14,975,792	4,547,024	32,151,517	36,698,542
2030	3,501,513	4,644,630	8,146,143	5,174,201	2,725,777	7,164,607	15,064,585	4,566,868	27,796,827	32,363,695
2031	3,481,272	4,622,023	8,103,295	5,092,420	2,678,575	7,053,288	14,824,283	4,521,261	27,705,199	32,226,461
2032	3,475,313	4,604,435	8,079,748	5,161,440	2,719,976	7,149,134	15,030,550	4,568,979	27,790,824	32,359,803
2033	3,473,927	4,584,679	8,058,606	5,275,987	2,789,677	7,316,365	15,382,029	4,674,819	27,989,759	32,664,578
2034	3,378,844	4,489,326	7,868,170	5,168,097	2,725,321	7,161,629	15,055,047	4,589,286	27,831,923	32,421,209
2035	3,216,895	4,329,688	7,546,583	5,156,444	2,712,375	7,128,609	14,997,428	4,565,744	27,783,693	32,349,437
Total	167,697,202	217,234,299	384,931,501	260,657,762	151,650,420	454,404,003	866,712,185	190,919,388	1,253,474,002	1,444,393,390

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								Total (19)
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	2,726	0	0	0	0	0	2,726
1965	0	0	6,032	73,606	0	0	0	0	79,638
1966	0	0	12,045	137,398	0	0	0	0	149,443
1967	0	0	26,270	267,741	0	0	0	0	294,011
1968	183,363	8,845	54,612	445,624	1,538,844	12,871	11,516	207,849	2,463,525
1969	178,917	7,454	87,603	525,308	2,380,720	11,483	10,514	353,076	3,555,075
1970	200,833	14,221	94,703	574,228	2,901,062	11,609	13,047	290,780	4,100,484
1971	196,922	15,179	95,724	606,129	3,805,073	16,558	14,342	445,714	5,195,641
1972	219,197	16,047	98,818	631,859	4,966,638	14,000	20,555	1,072,066	7,039,180
1973	201,716	12,118	97,579	639,497	4,895,511	14,252	11,639	405,558	6,277,870
1974	280,680	12,087	98,489	698,494	5,194,546	14,343	12,711	592,033	6,903,384
1975	347,210	13,032	106,733	715,855	6,309,947	15,355	14,393	721,691	8,244,217
1976	302,894	13,578	108,113	774,540	6,660,911	15,723	16,053	559,842	8,451,654
1977	264,911	10,688	112,584	798,111	6,831,905	17,168	13,844	506,940	8,556,151
1978	353,626	4,441	115,552	891,197	8,280,376	17,551	17,879	500,277	10,180,898
1979	383,192	13,425	114,284	896,447	9,401,065	18,826	24,809	948,531	11,800,579
1980	404,156	11,775	125,982	889,148	9,954,074	19,370	24,150	732,869	12,161,524
1981	467,641	29,616	134,201	1,079,579	11,394,110	23,543	22,847	903,900	14,055,437
1982	462,143	12,766	135,090	1,004,930	12,221,913	21,557	22,308	740,995	14,621,702
1983	635,314	14,360	149,234	1,027,523	15,424,610	38,574	29,076	427,468	17,746,159
1984	907,654	14,774	164,538	2,063,448	23,551,856	53,023	59,544	780,061	27,594,898
1985	1,095,977	87,337	184,939	2,350,865	27,854,134	68,076	70,072	2,167,808	33,879,208
1986	1,259,888	33,791	180,478	2,365,433	30,423,227	79,359	75,928	2,176,290	36,594,394
1987	1,118,209	50,586	179,906	2,805,051	29,209,392	76,601	74,172	2,234,989	35,748,906
1988	1,103,560	61,381	193,769	2,750,701	29,117,823	72,745	60,044	2,192,320	35,552,344
1989	1,138,823	49,063	187,948	2,435,914	29,176,669	65,609	68,504	2,435,385	35,557,915
1990	863,581	34,225	221,426	2,541,604	27,288,989	49,610	48,931	1,861,631	32,909,996
1991	579,112	23,130	220,318	2,055,553	17,488,381	26,470	26,700	1,222,196	21,641,859
1992	948,255	39,506	241,493	2,370,107	25,786,502	54,320	50,754	1,899,336	31,390,273
1993	1,160,545	53,493	264,997	2,799,807	31,300,671	71,397	69,437	2,632,924	38,353,271
1994	1,015,695	43,623	306,398	2,809,236	29,176,958	58,940	57,205	2,108,986	35,577,041
1995	1,512,323	46,477	304,336	3,499,944	36,300,037	87,324	80,028	2,762,964	44,593,433
1996	1,317,086	47,213	389,243	3,291,632	35,755,645	82,637	72,150	4,209,601	45,165,207
1997	1,383,849	25,266	276,723	3,108,103	32,601,738	34,955	68,535	1,662,932	39,162,100
1998	1,230,438	34,250	381,925	2,744,781	29,320,257	40,025	59,979	1,794,295	35,605,950
1999	1,161,769	52,480	364,987	3,003,447	30,091,834	69,659	61,286	3,872,639	38,678,100
2000	1,158,340	40,339	342,758	2,638,981	28,550,232	64,483	57,191	3,057,446	35,909,769
2001	1,664,258	64,894	349,979	3,383,656	36,488,442	80,387	102,676	3,729,425	45,863,716
2002	1,864,974	60,697	434,996	3,414,206	33,636,436	86,118	95,802	3,024,062	42,617,291
2003	1,859,020	81,693	430,595	4,154,305	39,414,269	105,876	103,492	3,441,279	49,590,529
2004	1,866,877	82,327	417,942	4,109,421	39,437,675	107,599	106,637	3,464,720	49,593,198
2005	1,502,372	64,626	276,709	3,343,505	31,685,368	88,602	85,410	2,803,054	39,849,646
2006	1,613,682	69,348	390,020	3,657,097	35,478,209	94,103	91,433	2,992,663	44,386,555
2007	1,517,435	64,314	389,817	3,531,482	34,366,333	87,408	84,679	2,805,547	42,847,015
2008	1,556,557	66,360	389,930	3,613,893	34,590,583	90,133	88,618	2,881,598	43,277,672
2009	1,531,343	65,042	389,852	3,566,972	34,298,896	88,376	85,408	2,832,574	42,858,463
2010	1,572,590	68,131	389,814	3,691,990	35,289,259	92,497	91,320	2,978,650	44,174,251
2011	1,581,962	67,679	390,911	3,680,121	35,210,047	91,864	89,574	2,930,671	44,042,829
2012	1,582,658	67,714	390,975	3,692,209	35,371,894	91,909	88,585	2,932,002	44,217,946
2013	1,547,826	65,889	391,137	3,592,580	34,429,609	89,472	88,066	2,864,180	43,068,759
2014	1,427,747	59,606	388,478	3,327,191	32,407,988	81,088	77,407	2,630,577	40,400,082
2015	1,452,542	60,900	385,384	3,302,308	32,728,597	82,810	80,309	2,678,739	40,771,589
2016	1,518,270	64,343	379,020	3,384,494	33,806,395	87,408	86,335	2,806,685	42,132,950
2017	1,448,339	60,682	364,935	3,096,618	32,613,519	82,524	80,250	2,670,631	40,417,498
2018	1,460,273	61,305	342,421	3,017,302	32,966,305	74,839	80,219	2,693,754	40,696,418
2019	1,532,934	65,110	333,586	3,116,758	34,156,925	79,415	86,815	2,835,191	42,206,734
2020	1,464,862	61,546	332,034	2,929,603	32,952,694	74,409	81,285	2,702,737	40,599,170
2021	1,453,103	60,931	331,073	2,881,996	32,759,700	73,444	80,220	2,679,843	40,320,310
2022	1,414,142	58,891	330,360	2,784,194	32,076,527	70,657	76,970	2,604,052	39,415,793
2023	1,452,234	60,888	329,688	2,863,685	32,700,682	73,297	80,475	2,678,247	40,239,196
2024	1,501,480	63,463	329,265	2,971,204	33,549,054	76,709	84,653	2,773,979	41,349,807
2025	1,414,629	58,916	328,998	2,782,184	32,178,651	70,617	76,331	2,604,986	39,515,312
2026	1,513,905	64,114	328,201	2,990,987	33,705,178	77,522	86,122	2,798,206	41,564,235
2027	1,460,896	61,334	328,475	2,875,214	32,884,405	73,753	80,984	2,694,871	40,459,932
2028	1,467,720	61,698	325,091	2,886,121	32,967,884	74,235	81,748	2,708,380	40,572,877
2029	1,445,684	60,543	325,165	2,835,625	32,614,642	72,626	79,713	2,665,441	40,099,439
2030	1,464,174	61,513	324,612	2,871,142	32,895,245	73,858	81,551	2,701,483	40,473,578
2031	1,420,292	59,208	323,920	2,760,127	32,225,453	70,372	77,241	2,615,852	39,552,465
2032	1,457,864	61,184	322,730	2,841,006	32,793,198	73,046	80,908	2,689,251	40,319,187
2033	1,501,556	63,466	322,987	2,945,577	33,704,448	75,946	83,579	2,774,109	41,471,668
2034	1,459,608	61,270	322,405	2,837,140	32,879,057	72,875	80,685	2,692,488	40,405,528
2035	1,493,504	63,049	321,087	2,917,829	33,573,971	75,024	82,927	2,758,559	41,285,950
Total	77,525,130	3,189,240	18,635,148	170,961,563	1,789,993,188	4,198,835	4,328,570	147,619,875	2,216,451,549

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,339	0	0	0	0	0	0	0	51,757	0
1964	62,900	27,462	14,434	4,372	36,574	1,143	28,452	8,209	82,854	34,413
1965	118,663	53,033	25,107	7,198	40,790	2,083	50,342	15,229	135,136	35,362
1966	215,887	101,314	44,752	12,484	73,188	3,755	90,443	27,692	232,616	61,495
1967	417,682	210,915	86,160	23,483	141,479	7,288	175,260	54,049	433,559	115,629
1968	744,736	478,268	152,756	41,527	251,310	12,876	311,208	95,502	782,514	209,020
1969	1,073,382	724,438	225,407	61,253	371,125	18,702	459,068	138,112	1,206,377	321,900
1970	1,396,836	904,353	315,403	89,740	519,550	25,242	633,208	184,905	1,778,995	467,784
1971	1,728,965	1,088,152	432,736	128,417	713,061	31,850	857,437	231,360	2,540,306	659,710
1972	2,048,247	1,306,775	561,847	181,271	925,992	42,418	1,111,945	274,678	3,407,207	865,439
1973	2,139,463	1,322,690	696,164	183,781	1,137,486	43,497	1,175,063	287,392	3,990,444	947,046
1974	2,203,315	1,382,005	711,674	193,353	1,164,335	45,226	1,207,081	292,144	4,017,453	990,434
1975	2,380,291	1,449,782	752,582	206,111	1,232,134	48,505	1,274,119	304,349	4,178,077	1,088,722
1976	2,733,580	1,445,015	799,126	215,158	1,307,811	51,479	1,316,720	313,750	4,318,612	1,141,988
1977	2,676,457	1,513,931	694,945	226,107	1,145,496	47,365	1,388,521	329,427	4,572,875	1,197,612
1978	2,994,192	1,598,527	875,932	231,114	1,421,011	47,135	1,388,576	321,737	4,479,224	1,209,120
1979	3,547,795	1,632,928	943,493	238,030	1,519,174	48,411	1,516,058	332,524	4,441,449	1,152,778
1980	4,094,463	1,714,402	1,032,810	259,476	1,680,297	53,365	1,635,407	360,507	4,854,730	1,269,853
1981	4,424,984	1,967,835	1,103,672	271,259	1,797,745	77,823	1,755,736	391,914	5,243,309	1,358,099
1982	3,987,477	2,059,279	1,155,765	280,391	1,884,021	55,978	1,952,087	406,929	5,429,999	1,565,600
1983	5,178,438	2,321,264	1,745,559	333,160	2,827,886	69,399	2,026,055	494,725	6,040,087	1,557,079
1984	7,214,418	3,362,805	2,827,365	445,421	4,553,911	75,792	2,253,615	553,360	7,068,659	2,332,291
1985	8,956,400	3,746,973	3,623,493	540,473	5,828,649	79,251	2,364,003	732,689	7,759,605	2,378,844
1986	8,828,968	4,314,327	4,048,746	577,560	6,516,425	102,418	2,473,148	1,000,095	7,876,843	3,048,200
1987	8,845,724	4,154,728	3,903,559	605,069	6,363,853	211,828	2,505,456	1,026,427	9,243,907	3,034,608
1988	8,320,615	4,217,804	3,901,994	616,088	6,427,014	124,687	2,559,854	779,844	9,524,577	2,829,469
1989	8,697,669	4,097,542	3,546,097	586,685	5,896,985	170,590	2,507,122	1,442,647	8,963,594	2,930,870
1990	9,985,743	4,537,799	4,218,839	620,485	6,957,539	289,369	2,702,675	1,639,848	9,814,380	3,678,590
1991	6,486,529	3,506,739	2,724,874	567,543	4,493,455	175,157	3,461,814	1,294,628	8,941,234	3,036,131
1992	8,587,488	4,464,314	2,795,961	470,262	4,610,595	121,356	4,263,267	1,129,600	8,592,804	2,980,596
1993	8,971,139	4,095,738	2,993,141	472,917	4,935,853	157,768	4,142,144	1,347,535	9,525,174	3,320,530
1994	11,155,746	4,707,977	3,036,357	554,866	5,006,952	225,779	5,134,321	1,698,624	10,230,852	4,077,021
1995	10,759,221	4,965,800	3,809,376	509,269	6,282,154	155,583	4,222,911	1,527,274	9,462,861	3,715,934
1996	10,910,596	5,059,486	6,474,787	510,041	10,678,423	148,324	4,037,431	1,824,209	9,857,454	3,731,798
1997	11,378,339	4,920,612	6,306,169	579,390	7,363,557	144,854	4,593,219	1,869,336	11,266,128	4,038,452
1998	9,920,831	4,559,884	5,406,249	546,881	5,890,589	146,282	5,631,376	1,478,006	11,233,296	3,324,756
1999	10,997,392	4,738,768	4,063,533	618,959	5,589,077	143,830	5,777,151	1,774,877	11,974,725	4,001,840
2000	11,458,527	7,254,905	3,334,238	616,057	5,080,275	116,996	5,899,370	1,557,622	13,454,796	3,444,646
2001	20,865,798	12,550,578	3,832,325	795,541	6,320,160	127,203	6,280,114	3,342,892	18,240,544	3,344,132
2002	17,654,613	12,674,621	3,601,728	1,057,833	5,939,981	290,590	8,600,546	3,567,852	21,045,651	5,499,342
2003	24,898,201	11,583,321	4,618,217	1,416,739	7,616,101	415,397	8,641,057	3,806,491	26,348,666	6,563,666
2004	25,009,956	12,219,549	4,694,907	1,437,125	7,742,585	420,307	9,329,611	3,836,936	26,997,186	6,743,663
2005	22,445,684	9,956,484	4,091,935	1,274,244	6,748,164	375,085	8,216,499	3,445,843	23,743,731	5,877,532
2006	23,728,910	10,638,517	4,285,934	1,318,869	7,068,126	396,170	9,550,218	3,638,353	24,383,823	6,052,287
2007	21,887,694	13,807,829	3,906,659	1,252,150	6,442,577	365,536	14,999,926	3,312,623	22,945,109	5,622,115
2008	21,884,170	13,883,388	3,890,362	1,243,094	6,415,694	365,485	15,007,464	3,312,109	22,758,849	5,582,082
2009	22,323,360	14,093,168	3,982,409	1,273,312	6,567,515	372,632	15,303,793	3,378,275	23,278,083	5,715,712
2010	22,361,323	14,173,518	4,004,842	1,159,934	6,604,513	375,174	13,705,016	3,401,896	23,301,693	5,730,144
2011	22,908,252	15,029,356	4,082,124	1,303,282	6,731,978	382,172	15,673,504	3,466,443	23,736,174	5,843,047
2012	23,682,598	15,656,174	4,207,082	1,337,489	6,938,076	394,773	16,232,019	3,583,100	24,227,482	5,987,747
2013	21,759,529	14,248,950	3,855,717	1,233,570	6,345,174	364,060	15,011,316	3,298,507	22,501,533	5,505,845
2014	20,705,476	13,374,685	3,652,522	1,203,963	6,024,036	346,286	14,351,682	3,135,371	21,951,569	5,317,888
2015	20,433,878	13,195,657	3,571,184	1,167,402	5,889,872	341,840	14,187,519	3,095,266	21,263,509	5,160,166
2016	20,997,763	13,539,699	3,683,548	1,220,635	6,075,215	350,906	14,597,427	3,181,217	22,121,811	5,362,151
2017	19,942,929	12,852,685	3,471,097	1,150,904	5,724,807	333,508	13,917,499	3,024,287	20,922,202	5,054,111
2018	20,634,271	13,222,920	3,584,813	1,188,182	5,912,373	344,542	14,484,193	3,130,733	21,436,142	5,195,696
2019	20,947,608	13,162,242	3,641,880	1,206,954	6,006,513	349,148	14,582,495	3,178,055	21,762,194	5,274,191
2020	19,693,289	12,330,099	3,338,721	1,119,966	5,506,497	327,477	13,821,387	2,983,635	20,022,034	4,824,869
2021	19,340,844	11,988,049	3,216,736	1,066,456	5,305,307	320,562	13,533,953	2,926,442	19,051,893	4,593,933
2022	18,729,477	11,438,311	3,091,025	1,039,902	5,097,981	310,359	13,094,154	2,833,732	18,510,607	4,439,720
2023	18,997,389	11,672,179	3,126,629	1,064,258	5,156,714	314,529	13,266,081	2,873,563	18,802,492	4,503,401
2024	19,522,494	11,985,619	3,213,190	1,069,057	5,299,474	323,065	13,553,707	2,952,671	18,909,398	4,561,639
2025	19,088,351	11,654,397	3,143,007	1,050,440	5,183,724	315,972	13,307,959	2,887,228	18,610,729	4,475,602
2026	19,363,437	11,930,229	3,173,115	1,075,167	5,233,389	320,403	13,449,596	2,928,620	18,918,211	4,540,498
2027	19,167,565	11,568,637	3,128,712	1,044,972	5,160,145	317,211	13,321,621	2,899,167	18,425,547	4,433,281
2028	19,087,292	11,817,430	3,097,783	1,030,965	5,109,128	315,877	13,268,098	2,887,118	18,136,999	4,367,855
2029	18,952,558	11,445,875	3,097,622	1,050,566	5,108,875	313,665	13,178,399	2,866,936	18,519,386	4,433,986
2030	18,938,335	11,482,310	3,094,527	1,051,548	5,103,772	313,417	13,169,666	2,865,036	16,262,121	4,433,346
2031	18,735,345	11,144,497	3,026,045	1,003,008	4,990,809	310,087	13,085,299	2,834,996	15,431,618	4,257,454
2032	18,796,800	11,373,521	3,067,303	1,038,452	5,058,874	311,054	13,055,416	2,844,585	16,101,719	4,392,655
2033	20,061,689	12,071,948	3,275,307	1,084,520	5,401,938	331,592	13,967,943	3,036,582	16,767,872	4,607,607
2034	18,870,759	11,300,209	3,070,975	1,020,611	5,064,925	312,214	13,159,751	2,859,384	15,801,178	4,341,363
2035	20,271,684	11,581,757	3,296,650	1,123,716	5,437,162	334,891	14,015,806	3,072,384	17,379,303	4,721,519
Total	928,365,760	536,656,977	204,501,734	52,800,477	328,997,946	15,126,593	541,802,396	138,230,082	945,625,527	249,513,905

Table B-19

Total Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	3,219	79,888
1963	0	691,184	0	776,280	0	0	0	0	12,626	1,621,145
1964	21,378	1,261,155	9,383	1,592,729	0	0	0	0	13,938	2,790,666
1965	21,877	2,181,669	17,775	2,704,264	0	0	405	405	28,937	4,783,686
1966	37,983	3,902,069	33,443	4,837,121	0	0	565	565	31,321	7,350,962
1967	71,317	7,697,403	68,188	9,502,412	0	0	562	562	47,718	12,721,852
1968	128,973	15,324,742	142,867	18,676,299	0	0	565	565	46,945	24,754,270
1969	198,853	23,163,495	215,306	28,177,418	0	0	3,193	3,193	52,963	35,795,112
1970	289,764	30,630,987	273,728	37,510,495	0	0	15,128	15,128	69,744	45,910,637
1971	409,511	39,994,240	342,576	49,158,321	0	0	16,009	16,009	55,532	58,545,197
1972	537,400	53,286,709	422,473	64,972,403	0	0	17,381	17,381	80,412	76,562,730
1973	588,188	57,619,118	435,825	70,566,158	0	0	17,342	17,342	54,219	81,244,425
1974	611,658	62,123,321	455,743	75,397,743	0	0	17,485	17,485	76,783	86,955,458
1975	644,858	67,104,096	478,583	81,142,210	0	0	18,414	18,414	84,547	94,091,601
1976	668,557	68,832,763	475,768	83,620,328	0	0	17,485	17,485	106,717	97,459,226
1977	696,761	66,582,224	507,247	81,578,968	0	0	18,240	18,240	98,618	95,491,585
1978	709,289	73,283,108	523,363	89,082,327	0	0	17,389	17,389	100,786	104,971,415
1979	713,117	73,015,305	526,595	89,627,658	0	0	20,587	20,587	119,352	107,311,381
1980	778,234	80,275,935	571,431	98,580,910	0	0	17,769	17,769	178,812	117,261,895
1981	806,292	91,612,214	636,618	111,447,500	0	0	21,201	21,201	185,347	132,026,706
1982	853,660	93,495,940	670,594	113,797,720	0	0	28,431	28,431	173,894	135,401,184
1983	952,396	102,139,647	803,818	126,489,513	0	0	19,285	19,285	220,926	151,893,514
1984	1,072,912	137,859,630	869,199	170,489,378	0	0	21,123	21,123	225,959	208,464,407
1985	1,121,134	173,795,244	909,003	211,835,761	0	0	20,247	20,247	340,322	258,703,724
1986	1,149,999	193,595,222	937,547	234,469,498	0	0	20,147	20,147	279,227	284,530,859
1987	1,172,305	179,117,836	908,271	221,093,571	0	0	19,750	19,750	345,116	272,820,936
1988	1,208,498	190,597,087	905,105	232,012,636	0	0	17,909	17,909	365,207	284,928,806
1989	1,195,205	193,588,982	932,837	234,556,825	0	0	19,166	19,166	422,329	288,010,335
1990	1,297,921	239,894,577	1,486,997	287,124,762	0	0	18,157	18,157	474,284	340,146,811
1991	1,355,227	180,305,553	1,141,363	217,490,247	0	0	21,026	21,026	214,683	255,884,744
1992	1,349,497	196,522,032	1,025,533	236,913,305	0	0	18,022	18,022	443,676	286,552,107
1993	1,507,872	169,848,878	1,068,386	212,387,075	0	0	21,007	21,007	599,571	271,361,683
1994	1,498,416	209,628,229	1,009,442	257,964,582	0	0	19,658	19,658	609,932	316,730,336
1995	1,520,967	173,776,865	1,061,578	221,769,793	0	0	20,285	20,285	534,971	290,379,225
1996	1,527,376	179,176,726	1,103,034	235,039,685	0	0	25,387	25,387	571,857	313,556,995
1997	1,704,709	187,094,021	1,216,818	242,475,604	0	0	24,829	24,829	428,638	321,920,655
1998	1,967,523	169,091,937	1,238,702	220,436,312	0	0	18,178	18,178	465,140	302,617,001
1999	2,049,466	185,674,556	1,244,719	238,648,893	0	0	17,795	17,795	551,655	327,922,046
2000	3,882,877	202,516,300	1,369,944	259,986,553	0	0	21,380	21,380	0	348,216,449
2001	3,813,046	377,559,753	1,602,094	458,674,180	0	0	21,630	21,630	0	565,126,520
2002	4,368,221	315,590,560	1,871,721	401,763,259	0	0	21,795	21,795	0	518,819,825
2003	5,382,963	349,778,630	3,371,215	454,440,664	0	0	22,230	22,230	0	578,542,639
2004	5,569,841	370,032,208	3,552,399	477,586,273	0	0	21,904	21,904	0	600,339,289
2005	5,089,431	317,083,510	2,988,984	411,337,126	0	0	21,904	21,904	0	513,434,214
2006	5,194,977	316,823,760	3,104,378	416,184,322	0	0	21,904	21,904	0	525,977,903
2007	5,158,226	312,976,964	2,978,985	415,656,393	0	0	21,904	21,904	0	522,995,624
2008	6,007,922	312,988,175	2,993,885	416,332,679	0	0	21,904	21,904	0	525,045,413
2009	6,091,097	318,637,865	3,045,751	424,062,972	0	0	21,904	21,904	0	531,445,726
2010	6,249,184	326,207,777	2,928,622	430,203,636	0	0	21,904	21,904	0	539,277,387
2011	6,166,623	326,150,490	3,132,635	434,606,080	0	0	21,904	21,904	0	543,811,161
2012	6,253,226	335,257,857	3,239,708	446,997,331	0	0	21,904	21,904	0	557,838,629
2013	6,036,754	309,146,239	2,945,482	412,252,676	0	0	21,904	21,904	0	519,875,312
2014	5,926,020	293,730,651	2,761,131	392,481,280	0	0	21,904	21,904	0	495,787,751
2015	5,826,034	288,658,182	2,720,776	385,511,285	0	0	21,499	21,499	0	488,883,777
2016	5,954,105	296,091,609	2,792,669	395,968,755	0	0	21,340	21,340	0	500,805,953
2017	5,760,515	281,170,974	2,639,814	375,965,332	0	0	21,342	21,342	0	478,333,230
2018	5,847,269	286,188,261	2,713,678	383,883,073	0	0	21,340	21,340	0	485,823,145
2019	5,896,524	286,464,075	2,700,006	385,171,885	0	0	18,712	18,712	0	488,920,642
2020	5,616,767	264,746,988	2,515,820	356,847,549	0	0	6,777	6,777	0	458,030,223
2021	5,473,940	254,359,333	2,435,913	343,613,361	0	0	5,950	5,950	0	444,872,446
2022	5,380,331	242,243,595	2,317,710	328,526,904	0	0	4,564	4,564	0	428,370,414
2023	5,421,402	243,835,676	2,365,727	331,400,040	0	0	4,563	4,563	0	432,014,797
2024	5,455,860	249,198,842	2,431,432	338,476,448	0	0	4,562	4,562	0	440,644,795
2025	5,402,571	241,189,721	2,357,005	328,666,706	0	0	4,560	4,560	0	428,255,419
2026	5,444,043	247,690,145	2,417,263	336,484,116	0	0	4,559	4,559	0	438,358,335
2027	5,374,016	237,435,173	2,334,917	324,610,964	0	0	4,556	4,556	0	424,976,065
2028	5,332,306	244,398,555	2,399,589	331,248,995	0	0	4,554	4,554	0	434,790,301
2029	5,377,778	237,164,578	2,311,604	323,821,828	0	0	4,553	4,553	0	423,766,832
2030	2,704,856	238,029,998	2,319,151	319,768,083	0	0	4,551	4,551	0	415,820,635
2031	2,591,881	229,199,364	2,239,937	308,850,340	0	0	4,550	4,550	0	403,561,394
2032	2,679,623	236,851,829	2,301,489	317,873,320	0	0	4,548	4,548	0	413,667,156
2033	2,805,070	247,271,622	2,437,906	333,121,596	0	0	4,548	4,548	0	430,703,025
2034	2,644,187	232,925,595	2,276,680	313,647,831	0	0	4,547	4,547	0	409,402,332
2035	2,880,088	245,476,590	2,355,308	331,946,858	0	0	4,545	4,545	0	428,130,801
Total	213,498,667	14,088,856,144	117,941,186	18,361,917,395	0	0	1,098,821	1,098,821	8,715,923	23,284,220,763

Table B-20A

Calculation of Delta Water Rates

Calculation in accordance with Article 53(i) of the Monterey Amendment

(Values in millions of dollars [$] or in millions of acre-feet [AF] discounted to 2002 at 4.613 percent per annum)

Procedure	*Capital Cost Component (1)*		*Minimum Operation Maintenance, Power and Replacement Component*[a] *(2)*		*Total Delta Water Rate (3)*	
Commencing in 2003						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Table A Amounts during the Project Repayment Period	$3,901.21[b]	248.15 AF	2,550.92[c]	248.15 AF	6,452.13	248.15 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period	(1,447.00)		(440.75)		(1,887.75)	
Less, Delta Water Charges Paid and Project Table A Amounts, Prior to 2003	(1,694.67)[d]	(178.27) AF	(1,173.84)	(178.27)	(2,868.51)	(178.27) AF
Total	$759.54	69.88 AF	936.33		1,695.87	69.88 AF
Rate Applicable in 2003	$10.87	per acre-foot	13.40	per acre-foot	24.27	per acre-foot

Calculation under original provisions, without the Monterey Amendment

(for Plumas County and Empire)

Procedure	*Capital Cost Component (4)*		*Minimum Operation Maintenance, Power and Replacement Component*[a] *(5)*		*Total Delta Water Rate (6)*	
Commencing in 2003						
Total Costs of "Initial" Project Conservation Facilities to be Reimbursed and Table A Amounts during the Project Repayment Period	$3,892.42[b]	248.15 AF	$2,539.66[c]	248.15 AF	$6,432.08	248.15 AF
Less, Project Power Revenues to be Realized During the Project Repayment Period	(1,447.00)		(440.75)		(1,887.75)	
Less, Delta Water Charges Paid and Table A Amounts, Prior to 2003	(1,694.67)[d]	(178.27) AF	(1,173.84)	(178.27) AF	(2,868.51)	(178.27) AF
Total	$750.75	69.88 AF	$925.07	69.88 AF	$1,675.82	69.88 AF
Rate Applicable in 2003	$10.74	per acre-foot	13.24	per acre-foot	$23.98	per acre-foot

[a] Considering that all operating costs of Project Conservation Facilities will not vary with annual amounts of Project water delivered, and therefore are properly classified as "Minimum" OMP&R Costs.

[b] Including net credits of $4,850,000 for settlements as to the magnitude of Project Capital costs incurred prior to December 31, 1960, and net credits of $6,678,320 for settlement as to the magnitude of Project Capital costs incurred during the 1961 through 1978 period.

[c] Includes conservation power costs and credits at San Luis.

[d] Applying all Delta Water Charges paid prior to 1970 to reimburse Capital costs (the charge was not divided into components until 1970).

Table B-20B

Delta Water Rates by Facility

(Dollars per Acre-Foot)

Item	*Capital Cost Component (1)*	*Minimum Operation, Maintenance, Power and Replacement Component (2)*	*Total Delta Water Rate (3)*
Initial Conservation Facilities			
Oroville Division			
Water Supply and Power Costs[a]	34.55	19.15	53.70
Less, Oroville Power Revenues	-20.71	-6.31	-27.02
Subtotal	*13.84*	*12.84*	*26.68*
Delta Facilities[b]	8.75	8.03	16.77
California Aqueduct, portion			
Reach 1	2.19	3.57	5.75
Reach 2A	1.32	0.59	1.91
Reach 2B	0.67	0.34	1.01
Reach 3	0.48	0.20	0.67
Subtotal	*4.65*	*4.70*	*9.35*
San Luis Facilities	6.65	4.47	11.12
Planning and preoperating costs through 2001	2.05	0.00	2.05
45,000 AF relinquished costs	0.13	0.16	0.29
Less, Capital Cost Credits	-0.93	0.00	-0.93
Less, Delta Water Charges paid prior to 2003	-24.25	-16.80	-41.05
Rate applicable in 2003	10.87	13.40	24.27

[a]Includes revenue received from non-contractors.
[b]Includes (1) Delta Facility planning costs, (2) Delta Studies costs, and (3) Suisun Marsh Facilities costs.

Table B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	14,000	50,050	177,100	241,150	0	0	0
1968	0	0	0	19,156	29,701	193,245	242,102	0	0	0
1969	0	0	0	30,324	44,096	215,483	289,903	0	0	0
1970	0	0	0	80,908	107,730	585,200	773,838	0	0	0
1971	0	0	0	57,320	123,080	637,120	817,520	0	0	0
1972	0	0	0	99,668	143,877	707,328	950,873	0	0	0
1973	0	0	0	120,880	167,099	782,167	1,070,146	0	0	0
1974	0	0	0	137,684	182,339	818,664	1,138,687	0	0	0
1975	0	0	0	146,204	187,324	804,123	1,137,651	0	0	0
1976	0	0	0	168,489	208,652	862,036	1,239,177	0	0	0
1977	0	0	0	172,931	208,645	827,062	1,208,638	0	0	0
1978	0	0	0	206,378	243,231	926,594	1,376,203	0	0	0
1979	0	0	0	237,771	273,208	1,005,955	1,516,934	0	0	0
1980	0	18,325	18,325	272,717	307,426	1,090,867	1,671,010	12,396	3,479	15,875
1981	0	25,440	25,440	415,564	469,768	1,589,984	2,475,316	18,068	10,414	28,482
1982	0	34,917	34,917	457,988	519,053	1,679,289	2,656,330	38,166	99,788	137,954
1983	0	12,035	12,035	316,703	359,775	1,114,795	1,791,273	38,004	68,902	106,906
1984	0	22,453	22,453	334,587	380,914	1,132,448	1,847,949	57,909	105,498	163,407
1985	0	22,001	22,001	381,970	435,728	1,244,939	2,062,637	106,103	192,937	299,040
1986	35,358	21,767	57,125	423,378	485,372	1,330,615	2,239,365	151,206	275,347	426,553
1987	0	22,984	22,984	430,024	493,786	1,304,900	2,228,710	185,355	336,664	522,019
1988	88,878	150,466	239,344	464,114	533,731	1,361,400	2,359,245	239,792	436,607	676,399
1989	102,688	305,328	408,016	513,853	591,760	1,491,833	2,597,446	331,518	602,402	933,920
1990	112,723	355,132	467,855	534,787	616,676	1,537,512	2,688,975	417,802	760,166	1,177,968
1991	129,296	395,515	524,811	603,028	681,067	1,667,194	2,951,289	443,403	806,745	1,250,148
1992	158,879	489,808	648,687	729,545	808,579	1,945,453	3,483,577	506,628	921,780	1,428,408
1993	172,457	530,778	703,235	771,894	840,958	1,990,673	3,603,525	507,825	923,957	1,431,782
1994	177,824	546,610	724,434	778,647	817,579	1,946,615	3,542,841	486,654	885,437	1,372,091
1995	203,738	713,497	917,235	874,946	874,946	2,083,205	3,833,097	520,801	947,567	1,468,368
1996	213,506	774,152	987,658	901,129	860,168	2,048,020	3,809,317	512,005	931,562	1,443,567
1997	250,558	866,141	1,116,699	1,041,633	951,056	2,264,420	4,257,109	566,105	1,029,994	1,596,099
1998	266,952	882,469	1,149,421	1,048,658	957,470	2,279,691	4,285,819	141,683	888,760	1,030,443
1999	290,688	923,459	1,214,147	1,084,480	990,178	2,357,566	4,432,224	589,391	1,072,362	1,661,753
2000	390,936	948,784	1,339,720	1,628,402	1,005,778	2,394,709	5,028,889	598,677	1,089,257	1,687,934
2001	496,412	1,097,880	1,594,292	1,868,283	1,005,998	2,395,234	5,269,515	598,809	1,089,496	1,688,305
2002	512,928	1,125,429	1,638,357	1,896,134	1,020,996	2,430,942	5,348,072	607,736	1,105,738	1,713,474
2003	521,211	1,134,796	1,656,007	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2004	530,312	1,145,717	1,676,029	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2005	539,414	1,146,931	1,686,345	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2006	547,302	1,148,144	1,695,446	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2007	555,190	1,149,358	1,704,548	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2008	563,078	1,150,572	1,713,650	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2009	570,966	1,151,785	1,722,751	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2010	578,854	1,152,999	1,731,853	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2011	586,741	1,154,212	1,740,953	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2012	594,629	1,155,426	1,750,055	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2013	601,304	1,156,639	1,757,943	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2014	610,405	1,157,853	1,768,258	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2015	626,788	1,159,066	1,785,854	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2016	641,957	1,159,066	1,801,023	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2017	657,126	1,159,066	1,816,192	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2018	672,295	1,159,066	1,831,361	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2019	687,464	1,159,066	1,846,530	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2020	702,027	1,159,066	1,861,093	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2021	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2022	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2023	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2024	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2025	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2026	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2027	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2028	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2029	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2030	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2031	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2032	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2033	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2034	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
2035	704,454	1,159,066	1,863,520	1,893,106	1,019,365	2,427,059	5,339,530	606,765	1,103,972	1,710,737
Total	24,957,694	48,430,188	73,387,882	81,736,675	51,616,839	129,317,328	262,670,842	27,699,281	51,015,935	78,715,216

Table B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0
1968	40,695	10,469	0	0	165,522	3,177	8,073	98,608	326,544
1969	61,267	3,281	0	0	337,686	4,200	8,805	102,478	517,717
1970	104,405	19,950	0	0	964,915	8,645	17,290	228,095	1,343,300
1971	129,596	21,720	0	0	1,377,772	9,412	20,272	264,260	1,823,032
1972	160,756	24,113	0	0	2,175,835	11,253	43,131	905,057	3,320,145
1973	195,541	26,664	0	386,638	2,373,167	13,333	27,553	373,307	3,396,203
1974	224,202	27,909	0	446,545	2,781,595	13,954	29,770	445,138	3,969,113
1975	329,688	27,413	0	481,560	3,041,048	14,620	33,702	827,591	4,755,622
1976	414,245	29,388	0	549,549	3,931,785	15,673	35,966	877,151	5,853,757
1977	312,532	28,195	0	569,545	4,071,218	15,977	40,289	626,210	5,663,966
1978	342,208	31,588	0	674,939	4,950,959	20,006	41,065	666,516	6,727,281
1979	395,523	34,294	0	772,757	5,901,986	22,863	45,725	771,613	7,944,761
1980	555,341	37,679	0	881,371	6,984,026	27,272	70,658	933,481	9,489,828
1981	740,789	54,204	0	1,351,487	11,140,730	41,556	77,692	1,373,168	14,779,626
1982	782,396	57,248	0	1,518,993	12,703,436	47,707	85,873	1,530,443	16,726,096
1983	543,462	38,004	0	1,057,789	9,141,315	35,471	58,273	78,506	10,952,820
1984	580,379	13,572	0	1,333,200	9,741,623	39,893	61,770	756,132	12,526,569
1985	667,740	42,441	0	1,540,611	11,403,920	48,100	69,320	644,383	14,416,515
1986	745,447	45,362	0	1,714,679	12,925,113	55,946	77,115	1,469,725	17,033,387
1987	762,180	44,485	0	1,766,065	13,410,817	59,314	77,108	1,503,601	17,623,570
1988	827,669	46,411	0	1,916,790	14,707,763	61,882	83,540	1,633,680	19,277,735
1989	921,621	49,728	0	2,125,033	16,312,361	66,304	92,825	1,821,693	21,389,565
1990	964,288	50,136	0	1,998,766	17,276,959	66,848	95,259	1,980,383	22,432,639
1991	1,023,374	53,208	0	2,121,239	18,335,590	70,944	101,096	2,101,729	23,807,180
1992	1,169,299	60,795	0	2,727,688	20,646,125	81,061	115,511	2,401,419	27,201,898
1993	1,172,060	60,939	0	2,734,129	20,694,874	81,252	115,784	2,407,089	27,266,127
1994	1,123,198	58,398	0	2,156,809	20,295,455	77,865	110,957	2,306,739	26,129,421
1995	1,202,009	62,497	0	2,803,995	21,223,694	83,328	118,743	2,468,598	27,962,864
1996	534,818	69,191	0	2,756,635	19,492,814	81,921	102,219	2,426,904	25,464,502
1997	1,208,521	67,162	0	3,047,908	22,148,973	90,576	129,072	2,683,338	29,375,550
1998	1,216,671	77,807	0	2,726,511	22,070,376	91,188	129,942	2,820,148	29,132,643
1999	1,258,233	69,974	0	2,819,648	22,824,299	94,303	134,381	2,793,715	29,994,553
2000	1,278,056	70,943	0	3,223,279	21,220,235	95,788	136,498	2,837,730	28,862,529
2001	1,278,336	71,058	0	2,864,700	21,110,372	95,809	136,528	2,838,352	28,395,155
2002	1,393,975	72,121	0	3,272,056	21,060,431	97,237	138,564	2,711,156	28,745,540
2003	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2004	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2005	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2006	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2007	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2008	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2009	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2010	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2011	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2012	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2013	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2014	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2015	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2016	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2017	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2018	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2019	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2020	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2021	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2022	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2023	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2024	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2025	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2026	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2027	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2028	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2029	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2030	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2031	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2032	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2033	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2034	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
2035	1,391,748	71,951	0	3,266,821	21,026,800	97,082	138,342	2,706,826	28,699,570
Total	70,588,204	3,932,730	0	162,146,007	1,112,829,189	4,948,384	7,235,655	140,033,394	1,501,713,563

Table B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Municipal Water District (29)
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	0
1968	0	13,060	0	0	0	0	0	0	0	0
1969	0	17,804	0	0	0	0	0	0	0	0
1970	0	37,905	0	0	0	0	0	0	0	0
1971	0	48,508	0	0	0	0	0	0	0	0
1972	160,756	74,751	41,797	4,662	64,303	1,367	67,518	13,021	369,739	85,202
1973	222,207	107,163	51,552	7,279	79,994	2,577	95,104	26,131	54,908	14,338
1974	279,090	143,266	59,539	10,791	93,030	3,721	121,869	39,631	465,150	114,427
1975	319,822	166,307	63,964	13,250	100,515	4,752	140,722	50,989	479,733	119,705
1976	431,018	207,673	74,449	17,045	117,550	6,269	174,366	67,591	538,772	137,142
1977	469,922	226,502	79,144	19,079	122,180	6,861	189,848	77,255	540,410	139,097
1978	600,180	274,819	97,313	24,428	147,413	9,687	236,913	98,345	631,768	165,313
1979	720,173	320,077	115,033	29,836	171,470	11,889	284,640	117,285	714,457	189,760
1980	857,818	376,845	134,920	35,949	210,736	14,256	337,177	138,590	811,952	215,694
1981	1,355,100	592,631	218,713	57,637	343,292	22,946	534,813	211,396	1,237,658	330,644
1982	1,551,434	664,082	254,298	66,408	400,739	26,335	313,057	235,100	1,341,923	364,482
1983	1,110,994	472,521	184,283	47,759	291,367	19,002	434,517	163,925	943,775	252,096
1984	450,405	509,602	202,914	52,247	321,718	20,719	472,282	174,500	1,003,760	266,383
1985	565,881	591,346	240,344	61,540	381,970	24,474	551,734	200,605	1,152,983	308,405
1986	635,066	659,259	275,347	70,160	438,498	27,822	625,994	223,785	1,285,253	350,799
1987	652,450	676,176	288,131	73,104	467,095	29,064	648,002	228,654	1,319,729	364,779
1988	711,641	742,582	319,496	80,756	525,996	32,024	711,641	248,146	1,438,752	402,232
1989	2,083,593	830,453	362,565	91,333	605,021	36,301	803,932	276,155	1,607,864	454,180
1990	2,207,667	869,029	386,049	96,930	636,731	38,438	848,974	289,119	1,696,277	481,308
1991	2,454,678	961,298	409,704	102,869	675,746	40,793	900,994	306,835	1,819,725	510,800
1992	2,804,695	1,098,371	468,125	117,538	772,102	46,610	1,029,469	350,587	2,079,203	583,636
1993	2,811,318	1,100,964	469,230	117,815	773,925	46,720	1,031,900	351,415	2,084,113	585,014
1994	2,694,116	1,055,065	449,668	112,905	741,661	44,772	988,880	336,766	1,997,227	560,625
1995	2,883,156	1,129,097	481,220	120,826	793,702	47,914	1,058,269	360,394	2,137,369	599,963
1996	2,834,460	1,110,027	473,093	118,785	780,296	47,104	1,040,394	354,307	2,101,269	589,830
1997	3,133,957	1,227,316	523,081	131,336	862,744	52,082	1,150,325	391,745	2,323,295	652,153
1998	3,155,093	1,235,593	526,609	132,222	868,562	52,433	1,728,006	394,387	2,338,963	656,551
1999	3,262,870	1,277,800	544,598	136,739	898,233	54,224	1,787,034	407,859	2,418,863	678,979
2000	3,314,278	2,279,763	553,178	138,893	912,384	55,078	1,815,190	510,073	2,456,972	689,676
2001	3,315,004	2,280,263	553,299	138,924	912,584	55,090	1,815,587	510,185	2,457,510	689,827
2002	3,437,351	2,314,256	561,548	140,995	926,188	55,912	1,842,654	517,791	2,494,146	700,112
2003	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2004	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2005	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2006	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2007	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2008	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2009	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2010	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2011	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2012	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2013	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2014	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2015	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2016	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2017	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2018	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2019	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2020	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2021	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2022	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2023	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2024	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2025	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2026	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2027	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2028	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2029	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2030	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2031	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2032	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2033	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2034	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
2035	3,431,861	2,310,560	560,651	140,769	924,709	55,822	1,839,711	516,964	2,490,162	698,993
Total	164,737,606	101,940,654	27,964,687	7,015,417	45,953,142	2,779,362	84,492,268	24,732,379	126,518,864	35,319,921

Table B-21

Total Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1964	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0	0	241,150
1968	0	0	0	13,060	0	1,050	875	1,925	0	583,631
1969	0	0	0	17,804	0	1,225	929	2,154	0	827,578
1970	0	0	0	37,905	0	3,848	1,995	5,843	0	2,160,886
1971	0	0	0	48,508	0	4,546	3,186	7,732	0	2,696,792
1972	0	2,043,211	0	2,926,327	0	4,929	3,778	8,707	0	7,206,052
1973	0	2,317,893	0	2,979,146	0	7,059	4,444	11,503	0	7,456,998
1974	0	4,231,933	0	5,562,447	0	8,336	4,931	13,267	0	10,683,514
1975	0	5,073,286	0	6,533,045	0	9,416	5,117	14,533	0	12,440,851
1976	0	6,422,167	0	8,194,042	0	7,004	5,780	12,784	0	15,299,760
1977	0	7,104,278	0	8,974,576	0	16,917	5,827	22,744	0	15,869,924
1978	0	9,016,389	0	11,302,568	0	12,635	6,844	19,479	0	19,425,531
1979	0	10,935,192	0	13,609,812	0	16,575	7,773	24,348	0	23,095,855
1980	84,294	13,102,796	12,396	16,333,423	0	19,834	8,801	28,635	0	27,557,096
1981	140,930	20,910,099	36,136	25,991,995	0	21,682	13,370	35,052	0	43,335,911
1982	167,929	23,998,560	57,248	29,441,595	0	16,117	14,694	30,811	0	49,027,703
1983	124,148	17,203,307	50,672	21,298,366	0	15,202	10,134	25,336	0	34,186,736
1984	138,982	18,766,458	64,344	22,444,314	20,590	15,442	10,681	46,713	0	37,051,405
1985	166,935	22,050,974	84,882	26,382,073	24,050	16,976	12,166	53,192	0	43,235,458
1986	195,056	25,089,658	120,965	29,997,662	31,753	18,145	13,457	63,355	0	49,817,447
1987	207,598	26,095,043	148,284	31,198,109	37,071	17,794	13,642	68,507	0	51,663,899
1988	233,604	28,781,238	201,116	34,429,224	46,722	18,565	14,852	80,139	0	57,062,086
1989	268,530	32,505,376	265,215	40,190,518	61,184	19,891	16,576	97,651	0	65,617,116
1990	289,119	33,616,369	334,242	41,790,252	63,506	20,055	17,381	100,942	0	68,658,631
1991	306,835	35,676,185	354,722	44,521,184	170,267	21,283	19,155	210,705	0	73,265,317
1992	350,587	40,763,329	405,303	50,869,555	194,545	24,318	22,697	241,560	0	83,873,685
1993	351,415	40,859,579	406,260	50,989,668	195,005	24,376	23,563	242,944	0	84,237,281
1994	336,766	39,156,173	389,323	48,863,947	186,875	23,360	23,360	233,595	0	80,866,329
1995	360,394	41,903,674	416,641	52,292,619	199,987	24,999	26,040	251,026	0	86,725,209
1996	0	41,195,923	409,604	51,055,092	196,610	24,576	26,624	247,810	0	83,007,946
1997	0	45,548,810	447,746	56,444,590	214,918	27,173	30,223	272,314	0	93,062,361
1998	0	45,855,992	450,529	57,394,940	107,459	27,356	31,537	166,352	0	93,159,618
1999	47,152	47,422,430	466,491	59,403,272	226,327	28,291	33,820	288,438	0	96,994,387
2000	71,841	48,169,576	478,942	61,445,844	229,892	69,207	35,708	334,807	0	98,699,723
2001	95,809	48,180,135	479,047	61,483,264	229,942	83,833	37,187	350,962	0	98,781,493
2002	97,237	48,898,394	486,188	62,472,772	233,371	85,083	39,185	357,639	0	100,275,854
2003	121,353	48,820,288	485,412	62,397,255	232,998	84,947	40,532	358,477	0	100,161,576
2004	145,624	48,820,288	485,412	62,421,526	232,998	84,947	41,971	359,916	0	100,207,308
2005	157,759	48,820,288	485,412	62,433,661	232,998	667,441	43,410	943,849	0	100,813,692
2006	169,894	48,820,288	485,412	62,445,796	232,998	667,441	45,089	945,528	0	100,836,607
2007	182,029	48,820,288	485,412	62,457,931	232,998	667,441	46,768	947,207	0	100,859,523
2008	419,881	48,820,288	485,412	62,695,783	232,998	667,441	48,447	948,886	0	101,108,156
2009	419,881	48,820,288	485,412	62,695,783	232,998	667,441	50,126	950,565	0	101,118,936
2010	419,881	48,820,288	485,412	62,695,783	232,998	667,441	51,805	952,244	0	101,129,717
2011	419,881	48,820,288	485,412	62,695,783	232,998	667,441	53,723	954,162	0	101,140,735
2012	419,881	48,820,288	485,412	62,695,783	232,998	667,441	55,642	956,081	0	101,151,756
2013	419,881	48,820,288	485,412	62,695,783	232,998	667,441	57,801	958,240	0	101,161,803
2014	419,881	48,820,288	485,412	62,695,783	232,998	667,441	59,959	960,398	0	101,174,276
2015	419,881	48,820,288	485,412	62,695,783	232,998	667,441	62,357	962,796	0	101,194,270
2016	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,211,838
2017	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,227,007
2018	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,242,176
2019	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,257,345
2020	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,271,908
2021	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2022	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2023	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2024	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2025	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2026	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2027	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2028	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2029	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2030	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2031	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2032	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2033	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2034	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
2035	419,881	48,820,288	485,412	62,695,783	232,998	667,441	64,756	965,195	0	101,274,335
Total	16,568,488	2,443,963,931	22,584,892	3,104,571,611	10,359,008	21,617,663	2,499,082	34,475,753	0	5,055,534,867

Table B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	29,131	40,505	69,636	25,436	30,176	100,035	155,647	13,126	24,392	37,518
1989	48,804	69,621	118,425	43,343	51,681	170,303	265,327	26,828	49,634	76,462
1990	41,166	60,482	101,648	38,407	51,185	149,440	239,032	27,956	51,795	79,751
1991	63,389	92,401	155,790	62,470	81,991	235,712	380,173	44,887	83,709	128,596
1992	84,320	126,227	210,547	89,247	115,208	325,629	530,084	61,137	113,925	175,062
1993	90,152	137,473	227,625	98,432	125,174	347,457	571,063	67,725	126,662	194,387
1994	91,785	141,222	233,007	102,021	126,216	352,415	580,652	81,420	159,156	240,576
1995	108,311	181,787	290,098	126,000	149,378	416,955	692,333	131,674	270,727	402,401
1996	132,304	232,343	364,647	158,514	180,787	505,043	844,344	242,654	534,448	777,102
1997	135,556	237,492	373,048	171,263	187,162	522,127	880,552	141,810	846,616	988,426
1998	130,346	228,366	358,712	164,682	179,971	502,065	846,718	136,361	814,087	950,448
1999	182,507	316,416	498,923	227,072	248,031	691,830	1,166,933	188,835	1,124,110	1,312,945
2000	238,571	364,418	602,989	260,766	284,875	794,730	1,340,371	218,359	1,364,019	1,582,378
2001	234,773	358,616	593,389	561,965	280,341	782,078	1,624,384	214,883	1,342,304	1,557,187
2002	419,120	637,746	1,056,866	993,163	470,317	1,312,067	2,775,547	360,501	2,251,940	2,612,441
2003	431,225	656,165	1,087,390	1,021,847	483,901	1,349,962	2,855,710	370,913	2,316,979	2,687,892
2004	433,852	660,163	1,094,015	1,028,072	486,849	1,358,186	2,873,107	373,173	2,331,094	2,704,267
2005	432,756	658,495	1,091,251	1,025,476	485,619	1,354,756	2,865,851	372,230	2,325,207	2,697,437
2006	429,301	653,238	1,082,539	1,017,289	481,742	1,343,940	2,842,971	369,258	2,306,644	2,675,902
2007	428,569	652,125	1,080,694	1,015,554	480,921	1,341,648	2,838,123	368,629	2,302,711	2,671,340
2008	430,335	654,811	1,085,146	1,019,738	482,902	1,347,176	2,849,816	370,147	2,312,197	2,682,344
2009	430,846	655,588	1,086,434	1,020,948	483,475	1,348,774	2,853,197	370,587	2,314,941	2,685,528
2010	431,152	656,055	1,087,207	1,021,675	483,820	1,349,735	2,855,230	370,851	2,316,589	2,687,440
2011	432,120	657,527	1,089,647	1,023,967	484,905	1,352,762	2,861,634	371,682	2,321,786	2,693,468
2012	432,598	658,254	1,090,852	1,025,100	485,441	1,354,259	2,864,800	372,094	2,324,355	2,696,449
2013	432,188	657,631	1,089,819	1,024,130	484,982	1,352,978	2,862,090	371,742	2,322,156	2,693,898
2014	440,426	670,165	1,110,591	1,043,649	494,225	1,378,764	2,916,638	378,827	2,366,414	2,745,241
2015	435,703	662,979	1,098,682	1,032,458	488,926	1,363,980	2,885,364	374,765	2,341,039	2,715,804
2016	435,120	662,092	1,097,212	1,031,077	488,272	1,362,156	2,881,505	374,263	2,337,908	2,712,171
2017	434,264	660,789	1,095,053	1,029,048	487,311	1,359,475	2,875,834	373,527	2,333,306	2,706,833
2018	434,580	661,270	1,095,850	1,029,797	487,666	1,360,464	2,877,927	373,799	2,335,005	2,708,804
2019	435,446	662,589	1,098,035	1,031,850	488,638	1,363,177	2,883,665	374,544	2,339,660	2,714,204
2020	435,984	663,406	1,099,390	1,033,123	489,241	1,364,859	2,887,223	375,006	2,342,548	2,717,554
2021	468,435	712,785	1,181,220	1,110,021	525,656	1,466,449	3,102,126	402,919	2,516,909	2,919,828
2022	407,537	620,121	1,027,658	965,714	457,319	1,275,805	2,698,838	350,538	2,189,702	2,540,240
2023	459,823	699,680	1,159,503	1,089,613	515,992	1,439,488	3,045,093	395,511	2,470,635	2,866,146
2024	429,435	653,442	1,082,877	1,017,605	481,892	1,344,358	2,843,855	369,373	2,307,362	2,676,735
2025	341,304	519,338	860,642	808,766	382,996	1,068,461	2,260,223	293,568	1,833,831	2,127,399
2026	299,794	456,176	755,970	710,404	336,415	938,514	1,985,333	257,864	1,610,800	1,868,664
2027	277,853	422,790	700,643	658,411	311,794	869,827	1,840,032	238,992	1,492,909	1,731,901
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	12,510,881	19,172,789	31,683,670	27,958,113	14,323,393	40,017,839	82,299,345	10,972,958	65,470,211	76,443,169

Table B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0
1988	33,986	1,657	0	67,288	726,501	2,228	2,851	66,748	901,259
1989	59,273	2,785	0	116,689	1,251,452	3,733	4,927	116,736	1,555,595
1990	53,349	2,419	0	287,811	947,351	3,248	4,367	109,118	1,407,663
1991	82,252	3,731	0	359,380	1,564,983	5,035	6,771	168,217	2,190,369
1992	112,566	5,127	0	452,691	2,153,423	6,927	9,285	230,217	2,970,236
1993	119,670	5,459	0	272,449	2,491,672	7,381	9,894	244,813	3,151,338
1994	118,265	5,379	0	244,671	2,485,820	7,300	9,766	241,933	3,113,134
1995	139,227	6,339	0	317,885	2,894,182	8,598	11,490	284,798	3,662,519
1996	169,333	7,703	0	354,341	2,722,241	10,460	13,978	346,366	3,624,422
1997	165,364	7,980	0	366,285	2,673,847	10,826	14,465	357,986	3,596,753
1998	159,011	7,672	0	352,211	2,571,110	10,410	13,909	344,232	3,458,555
1999	218,784	10,373	0	485,897	3,371,115	14,376	19,166	476,017	4,595,728
2000	251,339	11,735	0	557,296	3,620,348	16,500	21,990	546,406	5,025,614
2001	247,338	11,547	0	548,424	3,461,158	16,238	21,640	537,707	4,844,052
2002	445,195	19,374	0	920,073	5,689,856	27,240	36,304	849,011	7,987,053
2003	458,053	19,933	0	946,646	5,854,187	28,027	37,352	873,531	8,217,729
2004	460,844	20,054	0	952,413	5,889,852	28,198	37,580	878,853	8,267,794
2005	459,680	20,004	0	950,007	5,874,977	28,127	37,485	876,633	8,246,913
2006	456,010	19,844	0	942,423	5,828,074	27,902	37,186	869,635	8,181,074
2007	455,233	19,810	0	940,816	5,818,136	27,855	37,122	868,152	8,167,124
2008	457,108	19,892	0	944,692	5,842,106	27,969	37,275	871,729	8,200,771
2009	457,650	19,916	0	945,813	5,849,037	28,003	37,320	872,763	8,210,502
2010	457,976	19,930	0	946,486	5,853,203	28,022	37,346	873,384	8,216,347
2011	459,004	19,974	0	948,610	5,866,332	28,085	37,430	875,344	8,234,779
2012	459,511	19,996	0	949,659	5,872,823	28,116	37,471	876,312	8,243,888
2013	459,077	19,978	0	948,761	5,867,267	28,090	37,436	875,483	8,236,092
2014	467,826	20,358	0	966,843	5,979,092	28,625	38,149	892,169	8,393,062
2015	462,810	20,140	0	956,476	5,914,979	28,318	37,740	882,602	8,303,065
2016	462,191	20,113	0	955,197	5,907,068	28,280	37,690	881,422	8,291,961
2017	461,281	20,074	0	953,317	5,895,441	28,225	37,616	879,687	8,275,641
2018	461,617	20,088	0	954,011	5,899,733	28,245	37,643	880,327	8,281,664
2019	462,537	20,128	0	955,913	5,911,495	28,302	37,718	882,083	8,298,176
2020	463,108	20,153	0	957,092	5,918,792	28,336	37,765	883,171	8,308,417
2021	497,578	21,653	0	1,028,331	6,359,340	30,446	40,576	948,908	8,926,832
2022	432,891	18,838	0	894,644	5,532,602	26,488	35,301	825,546	7,766,310
2023	488,430	21,255	0	1,009,425	6,242,421	29,886	39,830	931,462	8,762,709
2024	456,152	19,850	0	942,716	5,829,888	27,911	37,197	869,905	8,183,619
2025	362,538	15,777	0	749,246	4,633,443	22,183	29,564	691,378	6,504,129
2026	318,446	13,858	0	658,123	4,069,921	19,485	25,968	607,292	5,713,093
2027	295,140	12,844	0	609,956	3,772,054	18,059	24,067	562,846	5,294,966
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	13,507,643	593,740	0	28,711,007	180,907,322	831,683	1,108,630	26,150,922	251,810,947

Table B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	64,266	57,111	27,032	7,656	44,492	2,154	55,996	16,240	151,182	39,907
1989	205,668	98,720	46,993	13,263	78,104	3,763	97,138	27,981	259,860	69,104
1990	185,010	87,808	42,449	11,905	69,970	3,385	87,327	24,956	231,650	61,851
1991	296,854	140,371	65,947	18,548	108,704	5,236	135,623	38,641	363,310	96,172
1992	402,015	234,421	89,358	25,192	147,297	7,053	183,813	52,160	491,537	130,372
1993	424,871	247,076	93,981	26,566	154,919	7,437	193,361	55,045	517,379	137,298
1994	424,023	247,222	94,502	26,865	155,776	7,431	194,191	54,968	525,394	139,422
1995	500,083	290,999	111,729	31,823	184,169	8,769	229,530	64,852	623,848	165,594
1996	606,387	353,131	135,428	38,635	223,236	10,640	278,178	78,696	760,333	201,821
1997	626,151	362,776	139,565	39,802	230,058	10,972	286,779	81,146	808,482	207,472
1998	602,091	348,838	134,202	38,273	221,218	10,550	275,761	78,028	777,418	199,501
1999	826,108	479,470	184,524	52,650	304,166	14,475	642,815	107,060	1,041,566	277,200
2000	940,325	1,150,965	210,453	60,212	346,906	16,486	736,157	121,898	1,191,538	316,860
2001	925,355	1,132,642	207,102	59,254	341,384	16,224	724,438	135,581	1,172,568	311,816
2002	1,586,532	1,900,196	347,449	99,408	572,728	27,219	1,215,366	226,341	1,967,180	523,123
2003	1,632,353	1,955,077	357,483	102,279	589,269	28,005	1,250,467	232,878	2,023,994	538,231
2004	1,642,298	1,966,988	359,661	102,902	592,859	28,175	1,258,085	234,297	2,036,325	541,510
2005	1,638,150	1,962,020	358,753	102,642	591,362	28,104	1,254,908	233,705	2,031,182	540,143
2006	1,625,072	1,946,356	355,889	101,823	586,640	27,880	1,244,889	231,839	2,014,966	535,831
2007	1,622,301	1,943,037	355,282	101,649	585,640	27,832	1,242,767	231,444	2,011,531	534,917
2008	1,628,985	1,951,042	356,746	102,068	588,053	27,947	1,247,887	232,398	2,019,818	537,121
2009	1,630,917	1,953,357	357,169	102,189	588,751	27,980	1,249,367	232,673	2,022,214	537,758
2010	1,632,079	1,954,748	357,423	102,262	589,170	28,000	1,250,257	232,839	2,023,654	538,141
2011	1,635,740	1,959,133	358,225	102,491	590,491	28,063	1,253,061	233,361	2,028,194	539,348
2012	1,637,550	1,961,301	358,621	102,605	591,145	28,094	1,254,448	233,619	2,030,438	539,945
2013	1,636,000	1,959,445	358,282	102,508	590,586	28,067	1,253,261	233,398	2,028,517	539,434
2014	1,667,181	1,996,790	365,111	104,461	601,842	28,602	1,277,147	237,847	2,067,179	549,715
2015	1,649,304	1,975,379	361,196	103,341	595,388	28,295	1,263,452	235,296	2,045,012	543,821
2016	1,647,098	1,972,737	360,713	103,203	594,592	28,258	1,261,763	234,982	2,042,278	543,093
2017	1,643,856	1,968,854	360,003	103,000	593,421	28,202	1,259,279	234,519	2,038,258	542,024
2018	1,645,053	1,970,287	360,265	103,075	593,853	28,223	1,260,196	234,690	2,039,741	542,419
2019	1,648,333	1,974,216	360,983	103,280	595,037	28,279	1,262,708	235,158	2,043,808	543,500
2020	1,650,367	1,976,652	361,429	103,408	595,772	28,314	1,264,267	235,448	2,046,331	544,171
2021	1,773,207	2,123,779	388,330	111,105	640,116	30,421	1,358,369	252,973	2,198,643	584,675
2022	1,542,684	1,847,680	337,846	96,661	556,899	26,466	1,181,776	220,086	1,912,812	508,665
2023	1,740,606	2,084,732	381,191	109,062	628,348	29,862	1,333,395	248,322	2,158,221	573,926
2024	1,625,578	1,946,962	356,000	101,855	586,823	27,888	1,245,277	231,912	2,015,594	535,997
2025	1,291,967	1,547,395	282,939	80,951	466,392	22,165	989,714	184,317	1,601,941	425,997
2026	1,134,837	1,359,200	248,528	71,106	409,669	19,469	869,344	161,900	1,407,112	374,187
2027	1,051,781	1,259,723	230,339	65,902	379,686	18,044	805,719	150,051	1,304,129	346,801
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	48,289,036	54,648,636	10,619,121	3,035,880	17,504,931	832,429	35,728,276	6,823,545	60,075,137	15,958,883

Table B-22

Water System Revenue Bond Surcharge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1971	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0
1988	24,019	2,642,354	18,118	3,150,527	1,336	552	853	2,741	0	4,317,328
1989	42,040	4,587,641	34,565	5,564,840	0	918	1,454	2,372	0	7,583,021
1990	38,023	4,037,980	34,994	4,917,308	2,535	800	1,283	4,618	0	6,750,020
1991	59,122	6,259,893	54,115	7,642,536	9,945	1,243	2,027	13,215	0	10,510,679
1992	80,131	8,435,312	72,892	10,351,553	13,671	1,710	2,806	18,187	0	14,255,669
1993	84,371	8,885,273	76,858	10,904,435	14,608	1,827	3,026	19,461	0	15,068,309
1994	85,698	8,926,755	76,794	10,959,041	14,409	1,801	3,070	19,280	0	15,145,690
1995	101,792	10,539,433	90,436	12,943,057	16,957	2,119	3,704	22,780	0	18,013,188
1996	124,074	12,810,361	109,783	15,730,703	20,640	2,580	4,621	27,841	0	21,369,059
1997	28,259	13,168,230	112,960	16,102,652	21,382	2,674	4,872	28,928	0	21,970,359
1998	27,174	12,662,268	108,619	15,483,941	20,562	2,571	4,685	27,818	0	21,126,192
1999	53,545	17,454,651	149,123	21,587,353	28,348	3,543	6,765	38,656	0	29,200,538
2000	70,117	19,805,800	168,259	25,135,976	32,271	9,794	7,996	50,061	0	33,737,389
2001	69,001	19,490,499	165,580	24,751,444	31,757	9,638	7,869	49,264	0	33,419,720
2002	115,759	32,698,563	277,789	41,557,653	53,278	16,169	13,202	82,649	0	56,072,209
2003	119,103	33,642,945	285,812	42,757,896	54,816	16,636	13,583	85,035	0	57,691,652
2004	119,828	33,847,912	287,553	43,018,393	55,150	16,737	13,666	85,553	0	58,043,129
2005	119,526	33,762,421	286,827	42,909,743	55,011	16,695	13,632	85,338	0	57,896,533
2006	118,571	33,492,879	284,537	42,567,172	54,572	16,562	13,523	84,657	0	57,434,315
2007	118,369	33,435,768	284,052	42,494,589	54,479	16,534	13,500	84,513	0	57,336,383
2008	118,857	33,573,521	285,222	42,669,665	54,703	16,602	13,555	84,860	0	57,572,602
2009	118,998	33,613,349	285,561	42,720,283	54,768	16,621	13,572	84,961	0	57,640,905
2010	119,083	33,637,291	285,764	42,750,711	54,807	16,633	13,581	85,021	0	57,681,956
2011	119,350	33,712,741	286,405	42,846,603	54,930	16,670	13,612	85,212	0	57,811,343
2012	119,482	33,750,048	286,722	42,894,018	54,991	16,689	13,627	85,307	0	57,875,314
2013	119,369	33,718,112	286,451	42,853,430	54,939	16,673	13,614	85,226	0	57,820,555
2014	121,644	34,360,755	291,910	43,670,184	55,986	16,991	13,873	86,850	0	58,922,566
2015	120,339	33,992,306	288,780	43,201,909	55,386	16,809	13,725	85,920	0	58,290,744
2016	120,179	33,946,848	288,394	43,144,138	55,311	16,786	13,706	85,803	0	58,212,790
2017	119,942	33,880,025	287,826	43,059,209	55,203	16,753	13,679	85,635	0	58,098,205
2018	120,029	33,904,689	288,036	43,090,556	55,243	16,765	13,689	85,697	0	58,140,498
2019	120,269	33,972,288	288,610	43,176,469	55,353	16,799	13,716	85,868	0	58,256,417
2020	120,417	34,014,220	288,966	43,229,762	55,421	16,820	13,733	85,974	0	58,328,320
2021	129,380	36,545,968	310,474	46,447,440	59,546	18,071	14,756	92,373	0	62,669,819
2022	112,560	31,794,857	270,112	40,409,104	51,805	15,722	12,837	80,364	0	54,522,514
2023	127,001	35,874,057	304,766	45,593,489	58,452	17,739	14,484	90,675	0	61,517,615
2024	118,608	33,503,304	284,626	42,580,424	54,589	16,567	13,527	84,683	0	57,452,193
2025	94,267	26,627,555	226,213	33,841,813	43,386	13,167	10,751	67,304	0	45,661,510
2026	82,802	23,389,100	198,701	29,725,955	38,109	11,566	9,443	59,118	0	40,108,133
2027	76,742	21,677,312	184,158	27,550,387	35,320	10,719	8,752	54,791	0	37,172,720
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	3,897,840	1,000,075,284	8,497,363	1,265,986,361	1,613,975	462,265	398,369	2,474,609	0	1,710,698,101

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	North Bay Area			South Bay Area				Central Coastal Area		
	Napa County FC&WCD (1)	Solano County Water Agency (2)	Total (3)	Alameda County FC&WCD, Zone 7 (4)	Alameda County Water District (5)	Santa Clara Valley Water District (6)	Total (7)	San Luis Obispo County FC&WCD (8)	Santa Barbara County FC&WCD (9)	Total (10)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	11,750	43,787	21,132	76,669	0	0	0
1963	0	0	0	193,996	190,326	447,917	832,239	0	0	0
1964	0	0	0	255,555	277,540	621,629	1,154,724	6,055	20,495	26,549
1965	0	0	0	364,299	404,452	1,158,538	1,927,289	11,420	31,733	43,153
1966	18,073	0	18,073	409,270	421,864	1,413,485	2,244,619	20,173	49,647	69,820
1967	41,595	0	41,595	542,177	548,648	1,863,783	2,954,608	37,961	84,135	122,096
1968	128,665	(31)	128,634	671,382	633,360	2,179,108	3,483,850	63,505	133,050	196,554
1969	254,751	(64)	254,687	805,246	583,629	2,299,428	3,688,303	118,138	235,238	353,376
1970	277,576	(78)	277,498	891,252	640,497	2,788,677	4,320,426	130,853	259,849	390,701
1971	227,486	(102)	227,384	832,622	675,395	2,807,730	4,315,747	131,668	262,415	394,083
1972	224,955	(153)	224,802	916,475	822,598	3,028,464	4,767,537	137,427	274,461	411,888
1973	221,053	33,377	254,430	902,841	716,694	3,121,503	4,741,038	134,221	269,293	403,514
1974	240,447	34,991	275,438	943,360	747,135	3,325,740	5,016,235	135,227	271,850	407,077
1975	237,385	38,531	275,916	1,001,635	793,257	3,214,766	5,009,658	151,551	302,739	454,290
1976	271,208	43,267	314,475	1,114,610	943,667	3,363,263	5,421,540	260,578	505,626	766,204
1977	293,526	47,680	341,206	1,083,096	922,407	3,304,185	5,309,688	270,301	527,050	797,352
1978	273,750	51,910	325,660	1,171,696	936,024	3,713,308	5,821,028	276,935	542,595	819,530
1979	289,340	56,249	345,589	1,268,019	1,009,773	3,820,264	6,098,056	274,716	541,778	816,494
1980	310,689	90,013	400,702	1,420,825	1,174,005	4,119,805	6,714,635	312,640	600,113	912,753
1981	347,607	118,169	465,776	1,529,014	1,349,336	4,508,307	7,386,657	337,569	656,457	994,026
1982	438,144	148,567	586,711	1,609,341	1,369,746	4,942,133	7,921,220	358,599	742,108	1,100,707
1983	354,585	173,122	527,707	1,479,542	1,260,348	4,910,981	7,650,871	387,568	761,700	1,149,267
1984	467,147	260,169	727,316	1,789,174	1,478,608	6,870,998	10,138,780	439,928	860,834	1,300,762
1985	735,924	406,057	1,141,981	2,286,581	2,225,314	7,797,241	12,309,136	531,074	1,029,672	1,560,746
1986	1,120,087	741,605	1,861,692	2,155,095	2,014,321	8,194,603	12,364,019	567,138	1,097,787	1,664,925
1987	1,774,034	1,664,922	3,438,956	2,651,453	2,505,880	7,981,015	13,138,348	601,296	1,208,706	1,810,002
1988	2,349,975	2,647,700	4,997,675	2,712,436	2,774,649	7,831,048	13,318,133	703,521	1,499,170	2,202,691
1989	2,549,206	3,835,535	6,384,741	2,696,095	2,515,693	7,579,620	12,791,408	803,076	1,874,471	2,677,547
1990	2,900,479	3,986,701	6,887,180	3,131,222	2,929,999	8,356,169	14,417,390	965,116	2,105,155	3,070,271
1991	2,941,788	4,309,706	7,251,494	2,402,886	2,384,476	6,431,625	11,218,987	1,011,497	2,425,758	3,437,255
1992	2,798,196	4,284,739	7,082,935	2,876,551	2,927,353	7,657,753	13,461,657	1,144,267	2,574,337	3,718,604
1993	2,855,966	4,312,435	7,168,401	3,732,986	2,977,596	8,850,819	15,561,401	1,218,538	2,784,036	4,002,574
1994	2,988,274	4,365,694	7,353,968	3,769,719	3,586,445	9,614,239	16,970,403	1,371,500	3,556,853	4,928,353
1995	2,961,797	4,545,775	7,507,572	4,018,283	3,313,599	8,394,664	15,726,546	1,685,598	6,144,559	7,830,157
1996	3,041,353	5,025,742	8,067,095	3,599,340	3,157,986	9,150,886	15,908,212	2,639,232	14,366,954	17,006,187
1997	3,028,480	4,875,510	7,903,990	3,852,259	3,145,800	9,338,861	16,336,920	3,052,144	21,748,363	24,800,507
1998	2,937,067	4,731,445	7,668,512	3,461,545	3,204,469	9,086,072	15,752,086	3,293,326	27,999,058	31,292,384
1999	3,131,339	5,206,966	8,338,305	4,090,673	3,623,059	11,259,623	18,973,355	3,829,029	29,171,838	33,000,867
2000	3,250,681	5,765,877	9,016,558	5,934,505	3,717,818	10,693,766	20,346,089	3,937,042	30,581,339	34,518,381
2001	4,019,576	6,102,545	10,122,120	9,913,481	4,271,336	12,087,322	26,272,139	4,404,820	32,094,987	36,499,807
2002	4,548,722	6,741,636	11,290,357	13,874,206	4,445,469	18,791,314	37,110,989	5,402,363	35,758,527	41,160,891
2003	4,738,500	7,297,257	12,035,756	9,338,454	5,111,062	19,003,927	33,453,443	6,381,962	37,955,320	44,337,282
2004	4,726,911	7,014,097	11,741,008	9,574,685	5,086,420	17,774,893	32,435,998	6,421,087	37,937,506	44,358,593
2005	4,230,857	6,064,217	10,295,074	8,061,984	4,282,694	13,436,234	25,780,912	5,949,891	35,590,812	41,540,703
2006	4,703,478	6,637,442	11,340,920	9,420,247	4,946,137	13,124,961	27,491,345	6,209,238	35,690,744	41,899,982
2007	4,694,298	6,611,838	11,306,136	9,091,955	5,093,762	12,906,050	27,091,767	6,039,441	35,377,941	41,417,381
2008	4,712,378	6,606,044	11,318,422	9,176,161	4,903,383	13,023,129	27,102,673	6,036,833	36,336,453	42,373,286
2009	4,739,124	6,620,809	11,359,933	9,168,164	4,903,504	13,023,437	27,095,105	6,068,646	35,376,880	41,445,526
2010	4,750,040	6,619,541	11,369,581	9,243,890	4,939,995	13,110,514	27,294,399	6,087,821	35,537,792	41,625,613
2011	4,789,796	6,648,065	11,437,861	9,285,032	4,970,624	13,185,972	27,441,628	6,154,268	35,542,560	41,696,828
2012	4,819,167	6,664,583	11,483,750	9,312,842	4,989,585	13,231,432	27,533,859	6,202,506	36,833,756	43,036,262
2013	4,754,036	6,594,289	11,348,325	8,924,235	4,736,954	12,516,510	26,177,699	5,965,787	36,494,179	42,459,966
2014	4,737,729	6,571,691	11,309,420	8,617,017	4,527,229	12,010,798	25,155,044	5,802,488	36,208,528	42,011,016
2015	4,752,380	6,556,495	11,308,875	8,541,221	4,432,989	11,627,249	24,601,459	5,770,201	36,434,840	42,205,041
2016	4,758,188	6,553,909	11,312,097	8,582,423	4,443,333	11,550,513	24,576,269	5,788,748	36,547,972	42,336,720
2017	4,749,288	6,544,098	11,293,386	8,393,394	4,348,680	11,282,476	24,024,550	5,706,239	36,449,061	42,155,301
2018	4,703,730	6,560,304	11,264,034	8,316,781	4,334,081	11,223,075	23,873,937	5,745,151	35,903,400	41,648,552
2019	4,697,218	6,572,174	11,269,392	8,337,009	4,369,505	11,289,900	23,996,414	5,814,713	36,035,493	41,850,206
2020	4,692,498	6,547,737	11,240,235	8,151,116	4,264,306	11,036,891	23,452,313	5,691,170	35,808,536	41,499,706
2021	4,723,926	6,594,774	11,318,700	8,198,687	4,284,611	11,101,085	23,584,383	5,703,229	36,443,474	42,146,703
2022	4,643,646	6,486,807	11,130,453	7,963,508	4,161,687	10,777,804	22,902,999	5,580,818	35,989,406	41,570,224
2023	4,699,826	6,536,041	11,235,867	8,147,506	4,254,471	11,020,888	23,422,865	5,658,224	36,038,571	41,696,795
2024	4,686,865	6,506,582	11,193,447	8,182,867	4,284,036	11,076,816	23,543,719	5,713,973	35,880,093	41,594,066
2025	4,579,941	6,361,948	10,941,889	7,834,828	4,107,729	10,616,519	22,559,076	5,573,291	35,156,637	40,729,927
2026	4,535,298	6,294,698	10,829,996	7,875,257	4,136,330	10,664,188	22,675,775	5,484,603	34,838,806	40,323,408
2027	4,504,254	6,254,087	10,758,341	7,736,844	4,062,288	10,478,502	22,277,634	5,417,198	34,633,802	40,051,001
2028	4,223,541	5,825,619	10,049,160	7,085,209	3,755,578	9,617,260	20,458,047	5,185,153	36,185,302	41,370,455
2029	4,213,451	5,816,747	10,030,198	7,037,515	3,727,430	9,550,377	20,315,322	5,153,789	33,255,489	38,409,279
2030	4,205,967	5,803,696	10,009,663	7,067,307	3,745,142	9,591,666	20,404,115	5,173,633	28,900,799	34,074,432
2031	4,185,726	5,781,089	9,966,815	6,985,526	3,697,940	9,480,347	20,163,813	5,128,026	28,809,171	33,937,198
2032	4,179,767	5,763,501	9,943,268	7,054,546	3,739,341	9,576,193	20,370,080	5,175,744	28,894,796	34,070,540
2033	4,178,381	5,743,745	9,922,126	7,169,093	3,809,042	9,743,424	20,721,559	5,281,584	29,093,731	34,375,315
2034	4,083,298	5,648,392	9,731,690	7,061,203	3,744,686	9,588,688	20,394,577	5,196,051	28,935,895	34,131,946
2035	3,921,349	5,488,754	9,410,103	7,049,550	3,731,740	9,555,668	20,336,958	5,172,509	28,887,665	34,060,174
Total	205,165,777	284,837,276	490,003,053	370,352,550	217,590,652	623,739,170	1,211,682,372	229,591,627	1,369,960,148	1,599,551,774

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	San Joaquin Valley Area								
				Kern County Water Agency					
	Dudley Ridge Water District (11)	Empire West Side Irrigation District (12)	Future Contractor San Joaquin Valley (13)	Municipal and Industrial (14)	Agricultural (15)	County of Kings (16)	Oak Flat Water District (17)	Tulare Lake Basin Water Storage District (18)	Total (19)
1961	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	2,726	0	0	0	0	0	2,726
1965	0	0	6,032	73,606	0	0	0	0	79,638
1966	0	0	12,045	137,398	0	0	0	0	149,443
1967	0	0	26,270	267,741	0	0	0	0	294,011
1968	224,058	19,314	54,612	445,624	1,704,366	16,048	19,589	306,457	2,790,069
1969	240,184	10,735	87,603	525,308	2,718,406	15,683	19,319	455,554	4,072,792
1970	305,238	34,171	94,703	574,228	3,865,977	20,254	30,337	518,875	5,443,784
1971	326,518	36,899	95,724	606,129	5,182,845	25,970	34,614	709,974	7,018,673
1972	379,953	40,160	98,818	631,859	7,142,473	25,253	63,686	1,977,123	10,359,325
1973	397,257	38,782	97,579	1,026,135	7,268,678	27,585	39,192	778,865	9,674,073
1974	504,882	39,996	98,489	1,145,039	7,976,141	28,297	42,481	1,037,171	10,872,497
1975	676,898	40,445	106,733	1,197,415	9,350,995	29,975	48,095	1,549,282	12,999,839
1976	717,139	42,966	108,113	1,324,089	10,592,696	31,396	52,019	1,436,993	14,305,411
1977	577,443	38,883	112,584	1,367,656	10,903,123	33,145	54,133	1,133,150	14,220,117
1978	695,834	36,029	115,552	1,566,136	13,231,335	37,557	58,944	1,166,793	16,908,179
1979	778,715	47,719	114,284	1,669,204	15,303,051	41,689	70,534	1,720,144	19,745,340
1980	959,497	49,454	125,982	1,770,519	16,938,100	46,642	94,808	1,666,350	21,651,352
1981	1,208,430	83,820	134,201	2,431,066	22,534,840	65,099	100,539	2,277,068	28,835,063
1982	1,244,539	70,014	135,090	2,523,923	24,925,349	69,264	108,181	2,271,438	31,347,798
1983	1,178,776	52,364	149,234	2,085,312	24,565,925	74,045	87,349	505,974	28,698,979
1984	1,488,033	28,346	164,538	3,396,648	33,293,479	92,916	121,314	1,536,193	40,121,467
1985	1,763,717	129,778	184,939	3,891,476	39,258,054	116,176	139,392	2,812,191	48,295,723
1986	2,005,335	79,153	180,478	4,080,112	43,348,340	135,305	153,043	3,646,015	53,627,781
1987	1,880,389	95,071	179,906	4,571,116	42,620,209	135,915	151,280	3,738,590	53,372,476
1988	1,965,215	109,449	193,769	4,734,779	44,552,087	136,855	146,435	3,892,748	55,731,338
1989	2,119,717	101,576	187,948	4,677,636	46,740,482	135,646	166,256	4,373,814	58,503,075
1990	1,881,218	86,780	221,426	4,828,181	45,513,299	119,706	148,557	3,951,132	56,750,298
1991	1,684,738	80,069	220,318	4,536,172	37,388,954	102,449	134,567	3,492,142	47,639,408
1992	2,230,120	105,428	241,493	5,550,486	48,586,050	142,308	175,550	4,530,972	61,562,407
1993	2,452,275	119,891	264,997	5,806,385	54,487,217	160,030	195,115	5,284,826	68,770,736
1994	2,257,158	107,400	306,398	5,210,716	51,958,233	144,105	177,928	4,657,658	64,819,596
1995	2,853,559	115,313	304,336	6,621,824	60,417,913	179,250	210,261	5,516,360	76,218,816
1996	2,021,237	124,107	389,243	6,402,608	57,970,700	175,018	188,347	6,982,871	74,254,131
1997	2,757,734	100,408	276,723	6,522,296	57,424,558	136,357	212,072	4,704,256	72,134,403
1998	2,606,120	119,729	381,925	5,823,503	53,961,743	141,623	203,830	4,958,675	68,197,148
1999	2,638,786	132,827	364,987	6,308,992	56,287,248	178,338	214,833	7,142,371	73,268,381
2000	2,687,735	123,017	342,758	6,419,556	53,390,815	176,771	215,679	6,441,582	69,797,912
2001	3,189,932	147,499	349,979	6,796,780	61,059,972	192,434	260,844	7,105,484	79,102,923
2002	3,704,144	152,192	434,996	7,606,335	60,386,723	210,595	270,670	6,584,229	79,349,884
2003	3,708,821	173,577	430,595	8,367,772	66,295,256	230,985	279,186	7,021,636	86,507,828
2004	3,719,469	174,332	417,942	8,328,655	66,354,327	232,879	282,559	7,050,399	86,560,562
2005	3,353,800	156,581	276,709	7,560,333	58,587,145	213,811	261,237	6,386,513	76,796,129
2006	3,461,440	161,143	390,020	7,866,341	62,333,083	219,087	266,961	6,569,124	81,267,199
2007	3,364,416	156,075	389,817	7,739,119	61,211,269	212,345	260,143	6,380,525	79,713,709
2008	3,405,413	158,203	389,930	7,825,406	61,459,489	215,184	264,235	6,460,153	80,178,013
2009	3,380,741	156,909	389,852	7,779,606	61,174,733	213,461	261,070	6,412,163	79,768,535
2010	3,422,314	160,012	389,814	7,905,297	62,169,262	217,601	267,008	6,558,860	81,090,168
2011	3,432,714	159,604	390,911	7,895,552	62,103,179	217,031	265,346	6,512,841	80,977,178
2012	3,433,917	159,661	390,975	7,908,689	62,271,517	217,107	264,398	6,515,140	81,161,404
2013	3,398,651	157,818	391,137	7,808,162	61,323,676	214,644	263,844	6,446,489	80,004,421
2014	3,287,321	151,915	388,478	7,560,855	59,413,880	206,795	253,898	6,229,572	77,492,714
2015	3,307,100	152,991	385,384	7,525,605	59,670,376	208,210	256,391	6,268,167	77,774,224
2016	3,372,209	156,407	379,020	7,606,512	60,740,263	212,770	262,367	6,394,933	79,124,481
2017	3,301,368	152,707	364,935	7,316,756	59,535,760	207,831	256,208	6,257,144	77,392,709
2018	3,313,638	153,344	342,421	7,238,134	59,892,838	200,166	256,204	6,280,907	77,677,652
2019	3,387,219	157,189	333,586	7,339,492	61,095,220	204,799	262,875	6,424,100	79,204,480
2020	3,319,718	153,650	332,034	7,153,516	59,898,286	199,827	257,392	6,292,734	77,607,157
2021	3,342,429	154,535	331,073	7,177,148	60,145,840	200,972	259,138	6,335,577	77,946,712
2022	3,238,781	149,680	330,360	6,945,659	58,635,929	194,227	250,613	6,136,424	75,881,673
2023	3,332,412	154,094	329,688	7,139,931	59,969,903	200,265	258,647	6,316,535	77,701,475
2024	3,349,380	155,264	329,265	7,180,741	60,405,742	201,702	260,192	6,350,710	78,232,996
2025	3,168,915	146,644	328,998	6,798,251	57,838,894	189,882	244,237	6,003,190	74,719,011
2026	3,224,099	149,923	328,201	6,915,931	58,801,899	194,089	250,432	6,112,324	75,976,898
2027	3,147,784	146,129	328,475	6,751,991	57,683,259	188,894	243,393	5,964,543	74,454,468
2028	2,859,468	133,649	325,091	6,152,942	53,994,684	171,317	220,090	5,415,206	69,272,447
2029	2,837,432	132,494	325,165	6,102,446	53,641,442	169,708	218,055	5,372,267	68,799,009
2030	2,855,922	133,464	324,612	6,137,963	53,922,045	170,940	219,893	5,408,309	69,173,148
2031	2,812,040	131,159	323,920	6,026,948	53,252,253	167,454	215,583	5,322,678	68,252,035
2032	2,849,612	133,135	322,730	6,107,827	53,819,998	170,128	219,250	5,396,077	69,018,757
2033	2,893,304	135,417	322,987	6,212,398	54,731,248	173,028	221,921	5,480,935	70,171,238
2034	2,851,356	133,221	322,405	6,103,961	53,905,857	169,957	219,027	5,399,314	69,105,098
2035	2,885,252	135,000	321,087	6,184,650	54,600,771	172,106	221,269	5,465,385	69,985,520
Total	161,620,977	7,715,710	18,635,148	361,818,577	3,083,729,699	9,978,902	12,672,855	313,804,191	3,969,976,059

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area									
	Antelope Valley-East Kern Water Agency (20)	Castaic Lake Water Agency (21)	Coachella Valley Water District (22)	Crestline-Lake Arrowhead Water Agency (23)	Desert Water Agency (24)	Littlerock Creek Irrigation District (25)	Mojave Water Agency (26)	Palmdale Water District (27)	San Bernardino Valley Municipal Water District (28)	San Gabriel Valley Municipal Water District (29)
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0
1963	33,339	0	0	0	0	0	0	0	51,757	0
1964	62,900	27,462	14,434	4,372	36,574	1,143	28,452	8,209	82,854	34,413
1965	118,663	53,033	25,107	7,198	40,790	2,083	50,342	15,229	135,136	35,362
1966	215,887	101,314	44,752	12,484	73,188	3,755	90,443	27,692	232,616	61,495
1967	417,682	210,915	86,160	23,483	141,479	7,288	175,260	54,049	433,559	115,629
1968	744,736	491,328	152,756	41,527	251,310	12,876	311,208	95,502	782,514	209,020
1969	1,073,382	742,242	225,407	61,253	371,125	18,702	459,068	138,112	1,206,377	321,900
1970	1,396,836	942,258	315,403	89,740	519,550	25,242	633,208	184,905	1,778,995	467,784
1971	1,728,965	1,136,660	432,736	128,417	713,061	31,850	857,437	231,360	2,540,306	659,710
1972	2,209,003	1,381,526	603,644	185,933	990,295	43,785	1,179,463	287,699	3,776,946	950,641
1973	2,361,670	1,429,853	747,716	191,060	1,217,480	46,074	1,270,167	313,523	4,045,352	961,384
1974	2,482,405	1,525,271	771,213	204,144	1,257,365	48,947	1,328,950	331,775	4,482,603	1,104,861
1975	2,700,113	1,616,089	816,546	219,361	1,332,649	53,257	1,414,841	355,338	4,657,810	1,208,427
1976	3,164,598	1,652,688	873,575	232,203	1,425,361	57,748	1,491,086	381,341	4,857,384	1,279,130
1977	3,146,379	1,740,433	774,089	245,186	1,267,676	54,226	1,578,369	406,682	5,113,285	1,336,709
1978	3,594,372	1,873,346	973,245	255,542	1,568,424	56,822	1,625,489	420,082	5,110,992	1,374,433
1979	4,267,968	1,953,005	1,058,526	267,866	1,690,644	60,300	1,800,698	449,809	5,155,906	1,342,538
1980	4,952,281	2,091,247	1,167,730	295,425	1,891,033	67,621	1,972,584	499,097	5,666,682	1,485,547
1981	5,780,084	2,560,466	1,322,385	328,896	2,141,037	100,769	2,290,549	603,310	6,480,967	1,688,743
1982	5,538,911	2,723,361	1,410,063	346,799	2,284,760	82,313	2,265,144	642,029	6,771,922	1,930,082
1983	6,289,432	2,793,785	1,929,842	380,919	3,119,253	88,401	2,460,572	658,650	6,983,862	1,809,175
1984	7,664,823	3,872,407	3,030,279	497,668	4,875,629	96,511	2,725,897	727,860	8,072,419	2,598,674
1985	9,522,281	4,338,319	3,863,837	602,013	6,210,619	103,725	2,915,737	933,294	8,912,588	2,687,249
1986	9,464,034	4,973,586	4,324,093	647,720	6,954,923	130,240	3,099,142	1,223,880	9,162,096	3,398,999
1987	9,498,174	4,830,904	4,191,690	678,173	6,830,948	240,892	3,153,458	1,255,081	10,563,636	3,399,387
1988	9,096,522	5,017,497	4,248,522	704,500	6,997,502	158,865	3,327,491	1,044,230	11,114,511	3,271,608
1989	10,986,930	5,026,715	3,955,655	691,281	6,580,110	210,654	3,408,192	1,746,783	10,831,318	3,454,154
1990	12,378,420	5,494,636	4,647,337	729,320	7,664,240	331,192	3,638,976	1,953,923	11,742,307	4,221,749
1991	9,238,061	4,608,408	3,200,525	688,960	5,277,905	221,186	4,498,431	1,640,104	11,124,269	3,643,103
1992	11,794,198	5,797,106	3,353,444	612,992	5,529,994	175,019	5,476,549	1,532,347	11,163,544	3,694,604
1993	12,207,328	5,443,778	3,556,352	617,298	5,864,697	211,925	5,367,405	1,753,995	12,126,666	4,042,842
1994	14,273,885	6,010,264	3,580,527	694,636	5,904,389	277,982	6,317,392	2,090,358	12,753,473	4,777,068
1995	14,142,460	6,385,896	4,402,325	661,918	7,260,025	212,266	5,510,710	1,952,520	12,224,078	4,481,491
1996	14,351,443	6,522,644	7,083,308	667,461	11,681,955	206,068	5,356,003	2,257,212	12,719,056	4,523,449
1997	15,138,447	6,510,704	6,968,815	750,528	8,456,359	207,908	6,030,323	2,342,227	14,397,905	4,898,077
1998	13,678,015	6,144,315	6,067,060	717,376	6,980,369	209,265	7,635,143	1,950,421	14,349,677	4,180,808
1999	15,086,370	6,496,038	4,792,655	808,348	6,791,476	212,529	8,207,000	2,289,796	15,435,154	4,958,019
2000	15,713,130	10,685,633	4,097,869	815,162	6,339,565	188,560	8,450,717	2,189,593	17,103,306	4,451,182
2001	25,106,157	15,963,483	4,592,726	993,719	7,574,128	198,517	8,820,139	3,988,658	21,870,622	4,345,775
2002	22,678,496	16,889,073	4,510,725	1,298,236	7,438,897	373,721	11,658,566	4,311,984	25,506,977	6,722,577
2003	29,962,415	15,848,958	5,536,351	1,659,787	9,130,079	499,224	11,731,235	4,556,333	30,862,822	7,800,890
2004	30,084,115	16,497,097	5,615,219	1,680,796	9,260,153	504,304	12,427,407	4,588,197	31,523,673	7,984,166
2005	27,515,695	14,229,064	5,011,339	1,517,655	8,264,235	459,011	11,311,118	4,196,512	28,265,075	7,116,668
2006	28,785,843	14,895,433	5,202,474	1,561,461	8,579,475	479,872	12,634,818	4,387,156	28,888,951	7,287,111
2007	26,941,856	18,061,426	4,822,592	1,494,568	7,952,926	449,190	18,082,404	4,061,031	27,446,802	6,856,025
2008	26,945,016	18,144,990	4,807,759	1,485,931	7,928,456	449,254	18,095,062	4,061,471	27,268,829	6,818,196
2009	27,386,138	18,357,085	4,900,229	1,516,270	8,080,975	456,434	18,392,871	4,127,912	27,790,459	6,952,463
2010	27,425,263	18,438,826	4,922,916	1,402,965	8,118,392	458,996	16,794,984	4,151,699	27,815,509	6,967,278
2011	27,975,853	19,299,049	5,001,000	1,546,542	8,247,178	466,057	18,766,276	4,216,768	28,254,530	7,081,388
2012	28,752,009	19,928,035	5,126,354	1,580,863	8,453,930	478,689	19,326,178	4,333,683	28,748,082	7,226,685
2013	26,827,390	18,518,955	4,774,650	1,476,847	7,860,469	447,949	18,104,288	4,048,869	27,020,212	6,744,272
2014	25,804,518	17,682,035	4,578,284	1,449,193	7,550,587	430,710	17,468,540	3,890,182	26,508,910	6,566,596
2015	25,515,043	17,481,596	4,493,031	1,411,512	7,409,969	425,957	17,290,682	3,847,526	25,798,683	6,402,980
2016	26,076,722	17,822,996	4,604,912	1,464,607	7,594,516	434,986	17,698,901	3,933,163	26,654,251	6,604,237
2017	25,018,646	17,132,099	4,391,751	1,394,673	7,242,937	417,532	17,016,489	3,775,770	25,450,622	6,295,128
2018	25,711,185	17,503,767	4,505,729	1,432,026	7,430,935	428,587	17,584,100	3,882,387	25,966,045	6,437,108
2019	26,027,802	17,447,018	4,563,514	1,451,003	7,526,259	433,249	17,684,914	3,930,177	26,296,164	6,516,684
2020	24,775,517	16,617,311	4,260,801	1,364,143	7,026,978	411,613	16,925,365	3,736,047	24,558,527	6,068,033
2021	24,545,912	16,422,388	4,165,717	1,318,330	6,870,132	406,805	16,732,033	3,696,379	23,740,698	5,877,601
2022	23,704,022	15,596,551	3,989,522	1,277,332	6,579,589	392,647	16,115,641	3,570,782	22,913,581	5,647,378
2023	24,169,856	16,067,471	4,068,471	1,314,089	6,709,771	400,213	16,439,187	3,638,849	23,450,875	5,776,320
2024	24,579,933	16,243,141	4,129,841	1,311,681	6,811,006	406,775	16,638,695	3,701,547	23,415,154	5,796,629
2025	23,812,179	15,512,352	3,986,597	1,272,160	6,574,825	393,959	16,137,384	3,588,509	22,702,832	5,600,592
2026	23,930,135	15,599,989	3,982,294	1,287,042	6,567,767	395,694	16,158,651	3,607,484	22,815,485	5,613,678
2027	23,651,207	15,138,920	3,919,702	1,251,643	6,464,540	391,077	15,967,051	3,566,182	22,219,838	5,479,075
2028	22,519,153	14,127,990	3,658,434	1,171,734	6,033,837	371,699	15,107,809	3,404,082	20,627,161	5,066,848
2029	22,384,419	13,756,435	3,658,273	1,191,335	6,033,584	369,487	15,018,110	3,383,900	21,009,548	5,132,979
2030	22,370,196	13,792,870	3,655,178	1,192,317	6,028,481	369,239	15,009,377	3,382,000	18,752,283	5,132,339
2031	22,167,206	13,455,057	3,586,696	1,143,777	5,915,518	365,909	14,925,010	3,351,960	17,921,780	4,956,447
2032	22,228,661	13,684,081	3,627,954	1,179,221	5,983,583	366,876	14,895,127	3,361,549	18,591,881	5,091,648
2033	23,493,550	14,382,508	3,835,958	1,225,289	6,326,647	387,414	15,807,654	3,553,546	19,258,034	5,306,600
2034	22,302,620	13,610,769	3,631,626	1,161,380	5,989,634	368,036	14,999,462	3,376,348	18,291,340	5,040,356
2035	23,703,545	13,892,317	3,857,301	1,264,485	6,361,871	390,713	15,855,517	3,589,348	19,869,465	5,420,512
Total	1,141,392,402	693,246,267	243,085,542	62,851,774	392,456,019	18,738,384	662,022,940	169,786,006	1,132,219,528	300,792,709

Table B-23

Total Transportation and Delta Water Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area (continued)				Feather River Area				South Bay Area Future Contractor (38)	Grand Total (39)
	San Gorgonio Pass Water Agency (30)	Metropolitan Water District of Southern California (31)	Ventura County Flood Control District (32)	Total (33)	City of Yuba City (34)	County of Butte (35)	Plumas County FC&WCD (36)	Total (37)		
1961	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	3,219	79,888
1963	0	691,184	0	776,280	0	0	0	0	12,626	1,621,145
1964	21,378	1,261,155	9,383	1,592,729	0	0	0	0	13,938	2,790,666
1965	21,877	2,181,669	17,775	2,704,264	0	0	405	405	28,937	4,783,686
1966	37,983	3,902,069	33,443	4,837,121	0	0	565	565	31,321	7,350,962
1967	71,317	7,697,403	68,188	9,502,412	0	0	562	562	47,718	12,963,002
1968	128,973	15,324,742	142,867	18,689,359	0	1,050	1,440	2,490	46,945	25,337,901
1969	198,853	23,163,495	215,306	28,195,222	0	1,225	4,122	5,347	52,963	36,622,690
1970	289,764	30,630,987	273,728	37,548,400	0	3,848	17,123	20,971	69,744	48,071,523
1971	409,511	39,994,240	342,576	49,206,829	0	4,546	19,195	23,741	55,532	61,241,989
1972	537,400	55,329,920	422,473	67,898,730	0	4,929	21,159	26,088	80,412	83,768,782
1973	588,188	59,937,011	435,825	73,545,304	0	7,059	21,786	28,845	54,219	88,701,423
1974	611,658	66,355,254	455,743	80,960,190	0	8,336	22,416	30,752	76,783	97,638,972
1975	644,858	72,177,382	478,583	87,675,255	0	9,416	23,531	32,947	84,547	106,532,452
1976	668,557	75,254,930	475,768	91,814,370	0	7,004	23,265	30,269	106,717	112,758,986
1977	696,761	73,686,502	507,247	90,553,544	0	16,917	24,067	40,984	98,618	111,361,509
1978	709,289	82,299,497	523,363	100,384,895	0	12,635	24,233	36,868	100,786	124,396,946
1979	713,117	83,950,497	526,595	103,237,470	0	16,575	28,360	44,935	119,352	130,407,236
1980	862,528	93,378,731	583,827	114,914,333	0	19,834	26,570	46,404	178,812	144,818,991
1981	947,222	112,522,313	672,754	137,439,495	0	21,682	34,571	56,253	185,347	175,362,617
1982	1,021,589	117,494,500	727,842	143,239,315	0	16,117	43,125	59,242	173,894	184,428,887
1983	1,076,544	119,342,954	854,490	147,787,879	0	15,202	29,419	44,621	220,926	186,080,250
1984	1,211,894	156,626,088	933,543	192,933,692	20,590	15,442	31,804	67,836	225,959	245,515,812
1985	1,288,069	195,846,218	993,885	238,217,834	24,050	16,976	32,413	73,439	340,322	301,939,182
1986	1,345,055	218,684,880	1,058,512	264,467,160	31,753	18,145	33,604	83,502	279,227	334,348,306
1987	1,379,903	205,212,879	1,056,555	252,291,680	37,071	17,794	33,392	88,257	345,116	324,484,835
1988	1,466,121	222,020,679	1,124,339	269,592,387	48,058	19,117	33,614	100,789	365,207	346,308,220
1989	1,505,775	230,681,999	1,232,617	280,312,183	61,184	20,809	37,196	119,189	422,329	361,210,472
1990	1,625,063	277,548,926	1,856,233	333,832,322	66,041	20,855	36,821	123,717	474,284	415,555,462
1991	1,721,184	222,241,631	1,550,200	269,653,967	180,212	22,526	42,208	244,946	214,683	339,660,740
1992	1,780,215	245,720,673	1,503,728	298,134,413	208,216	26,028	43,525	277,769	443,676	384,681,461
1993	1,943,658	219,593,730	1,551,504	274,281,178	209,613	26,203	47,596	283,412	599,571	370,667,273
1994	1,920,880	257,711,157	1,475,559	317,787,570	201,284	25,161	46,088	272,533	609,932	412,742,355
1995	1,983,153	226,219,972	1,568,655	287,005,469	216,944	27,118	50,029	294,091	534,971	395,117,622
1996	1,651,450	233,183,010	1,622,421	301,825,480	217,250	27,156	56,632	301,038	571,857	417,934,000
1997	1,732,968	245,811,061	1,777,524	315,022,846	236,300	29,847	59,924	326,071	428,638	436,953,375
1998	1,994,697	227,610,197	1,797,850	293,315,193	128,021	29,927	54,400	212,348	465,140	416,902,811
1999	2,150,163	250,551,637	1,860,333	319,639,518	254,675	31,834	58,380	344,889	551,655	454,116,971
2000	4,024,835	270,491,676	2,017,145	346,568,373	262,163	79,001	65,084	406,248	0	480,653,561
2001	3,977,856	445,230,387	2,246,721	544,908,888	261,699	93,471	66,686	421,856	0	697,327,733
2002	4,581,217	397,187,517	2,635,698	505,793,684	286,649	101,252	74,182	462,083	0	675,167,888
2003	5,623,419	432,241,863	4,142,439	559,595,815	287,814	101,583	76,345	465,742	0	736,395,866
2004	5,835,293	452,700,408	4,325,364	583,026,192	288,148	101,684	77,541	467,373	0	758,589,726
2005	5,366,716	399,666,219	3,761,223	516,680,530	288,009	684,136	78,946	1,051,091	0	672,144,439
2006	5,483,442	399,136,927	3,874,327	521,197,290	287,570	684,003	80,516	1,052,089	0	684,248,825
2007	5,458,624	395,233,020	3,748,449	520,608,913	287,477	683,975	82,172	1,053,624	0	681,191,530
2008	6,546,660	395,381,984	3,764,519	521,698,127	287,701	684,043	83,906	1,055,650	0	683,726,171
2009	6,629,976	401,071,502	3,816,724	529,479,038	287,766	684,062	85,602	1,057,430	0	690,205,567
2010	6,788,148	408,665,356	3,699,798	535,650,130	287,805	684,074	87,290	1,059,169	0	698,089,060
2011	6,705,854	408,683,519	3,904,452	540,148,466	287,928	684,111	89,239	1,061,278	0	702,763,239
2012	6,792,589	417,828,193	4,011,842	552,587,132	287,989	684,130	91,173	1,063,292	0	716,865,699
2013	6,576,004	391,684,639	3,717,345	517,801,889	287,937	684,114	93,319	1,065,370	0	678,857,670
2014	6,467,545	376,911,694	3,538,453	498,847,247	288,984	684,432	95,736	1,069,152	0	655,884,593
2015	6,366,254	371,470,776	3,494,968	491,408,977	288,384	684,250	97,581	1,070,215	0	648,368,791
2016	6,494,165	378,858,745	3,566,475	501,808,676	288,309	684,227	99,802	1,072,338	0	660,230,581
2017	6,300,338	363,871,287	3,413,052	481,720,324	288,201	684,194	99,777	1,072,172	0	637,658,442
2018	6,387,179	368,913,238	3,487,126	489,669,412	288,241	684,206	99,785	1,072,232	0	645,205,819
2019	6,436,674	369,256,651	3,474,028	491,044,137	288,351	684,240	97,184	1,069,775	0	648,434,404
2020	6,157,065	347,581,496	3,290,198	462,773,094	288,419	684,261	85,266	1,057,946	0	617,630,451
2021	6,023,201	339,725,589	3,231,799	452,756,584	292,544	685,512	85,462	1,063,518	0	608,816,600
2022	5,912,772	322,858,740	3,073,234	431,631,791	284,803	683,163	82,157	1,050,123	0	584,167,263
2023	5,968,284	328,530,021	3,155,905	439,689,312	291,450	685,180	83,803	1,060,433	0	594,806,747
2024	5,994,349	331,522,434	3,201,470	443,752,655	287,587	684,008	82,845	1,054,440	0	599,371,323
2025	5,916,719	316,637,564	3,068,630	425,204,302	276,384	680,608	80,067	1,037,059	0	575,191,264
2026	5,946,726	319,899,533	3,101,376	428,905,854	271,107	679,007	78,758	1,028,872	0	579,740,803
2027	5,870,639	307,932,773	3,004,487	414,857,134	268,318	678,160	78,064	1,024,542	0	563,423,120
2028	5,752,187	293,218,843	2,885,001	393,944,778	232,998	667,441	69,310	969,749	0	536,064,636
2029	5,797,659	285,984,866	2,797,016	386,517,611	232,998	667,441	69,309	969,748	0	525,041,167
2030	3,124,737	286,850,286	2,804,563	382,463,866	232,998	667,441	69,307	969,746	0	517,094,970
2031	3,011,762	278,019,652	2,725,349	371,546,123	232,998	667,441	69,306	969,745	0	504,835,729
2032	3,099,504	285,672,117	2,786,901	380,569,103	232,998	667,441	69,304	969,743	0	514,941,491
2033	3,224,951	296,091,910	2,923,318	395,817,379	232,998	667,441	69,304	969,743	0	531,977,360
2034	3,064,068	281,745,883	2,762,092	376,343,614	232,998	667,441	69,303	969,742	0	510,676,667
2035	3,299,969	294,296,878	2,840,720	394,642,641	232,998	667,441	69,301	969,740	0	529,405,136
Total	233,964,995	17,532,895,359	149,023,441	22,732,475,367	11,972,983	22,079,928	3,996,272	38,049,183	8,715,923	30,050,453,731

Table B-24

Equivalent Unit Charge for Water Supply for Each Contractor[a]

(Dollars per Acre-Foot)

Project Service Area and Water Supply Contractor	Transportation Charge					Delta Water Charge (6)	Water System Revenue Bond Surcharge (7)	Total Equivalent Unit Charge (8)
	Capital Cost Component (1)	Minimum OMP&R Component (2)	Off-Aqueduct Component (3)	Variable OMP&R Component (4)	Total (5)			
Feather River Area								
City of Yuba City	0.00	0.00	0.00	0.00	0.00	32.75	4.30	37.05
County of Butte	0.00	0.00	0.00	0.00	0.00	14.80	1.94	16.74
Plumas County Flood Control and Water Conservation District	21.85	3.20	0.00	0.00	25.05	21.82	8.77	55.64
Feather River Area	2.11	0.31	0.00	0.00	2.42	18.62	3.02	24.06
North Bay Area								
Napa County Flood Control and Water Conservation District	115.54	38.14	4.86	9.36	167.90	16.54	33.40	217.84
Solano County Water Agency	87.22	32.02	4.04	5.86	129.14	24.58	26.80	180.52
North Bay Area	98.41	34.44	4.33	7.24	144.42	21.40	29.41	195.23
South Bay Area								
Alameda County Flood Control and Water Conservation District, Zone 7	15.19	33.10	9.50	13.27	71.06	18.51	6.54	96.11
Alameda County Water District	20.83	26.50	7.72	10.86	65.91	20.46	8.32	94.69
Santa Clara Valley Water District	18.90	19.65	6.88	9.20	54.63	15.04	7.08	76.75
South Bay Area	21.05	24.49	7.43	9.90	62.87	16.60	7.87	87.34
San Joaquin Valley Area								
County of Kings	4.62	4.15	3.85	4.49	17.11	19.00	3.74	39.85
Dudley Ridge Water District	5.26	4.67	3.27	3.95	17.15	15.98	3.52	36.65
Empire West Side Irrigation District	2.01	3.87	2.52	3.73	12.13	16.64	2.73	31.50
Kern County Water Agency	9.02	8.45	5.05	5.56	28.08	20.88	5.18	54.14
Oak Flat Water District	1.99	2.20	2.03	2.58	8.80	15.22	2.54	26.56
Tulare Lake Basin Water Storage District	5.29	4.73	3.20	4.21	17.43	16.31	3.57	37.31
San Joaquin Valley Area	8.93	8.61	4.74	5.27	27.55	18.82	4.89	51.26
Central Coastal Area								
San Luis Obispo County Flood Control and Water Conservation District	142.55	61.52	16.15	52.48	272.70	42.80	44.15	359.65
Santa Barbara County Flood Control and Water Conservation District	636.46	93.35	22.77	50.45	803.03	40.59	177.35	1,020.97
Central Coastal Area	469.33	82.58	20.49	51.14	623.54	41.33	132.27	797.14
Southern California Area								
Antelope Valley-East Kern Water Agency	40.50	35.98	27.50	46.26	150.24	28.41	14.68	193.33
Castaic Lake Water Agency	39.42	38.21	19.60	19.17	116.40	18.69	13.11	148.20
Coachella Valley Water District	36.77	32.13	53.48	21.63	144.01	16.85	12.15	173.01
Crestline-Lake Arrowhead Water Agency	93.73	73.48	25.38	26.01	218.60	34.92	29.92	283.44
Desert Water Agency	40.31	35.23	51.36	24.88	151.78	18.27	13.29	183.34
Littlerock Creek Irrigation District	49.05	42.86	32.15	50.24	174.30	33.41	17.65	225.36
Mojave Water Agency	74.36	82.52	26.04	73.47	256.39	38.46	25.15	320.00
Palmdale Water District	44.96	42.79	39.78	55.65	183.18	33.14	16.50	232.82
San Bernardino Valley Municipal Water District	129.48	102.01	27.42	35.33	294.24	43.89	40.76	378.89
San Gabriel Valley Municipal Water District	89.59	72.40	36.52	27.01	225.52	32.27	28.45	286.24
San Gorgonio Pass Water Agency	213.43	171.61	22.57	47.05	454.66	49.67	64.21	568.54
The Metropolitan Water District of Southern California	77.29	56.75	35.20	21.10	190.34	31.18	24.98	246.50
Ventura County Flood Control District	105.71	77.32	26.69	40.64	250.36	43.26	34.25	327.87
Southern California Area	74.28	56.31	34.45	24.35	189.39	30.66	24.10	244.15
All Areas	45.46	33.33	19.05	15.09	112.93	24.61	15.52	153.06

[a]Hypothetical charges, which, if assessed on all Table A water delivered to date, all surplus water delivered prior to May 1, 1973, and all Table A water now estimated to be delivered during the remainder of the project repayment period (Table B-5B), would provide a sum at the end of the period financially equivalent to all Transportation Charge and Delta Water Charge payments required under a water supply contract, considering interest at the Project Interest Rate, 4.615 percent per annum.

Table B-25

Equivalent Unit Transportation Costs of Water Delivered from or through Each Aqueduct Reach[a]

(Dollars per Acre-Foot)

Aqueduct Reach	Unit Costs of Reach[b]						Cumulative Unit Costs from the Delta					
	Capital Costs (1)	Water System Revenue Bond Surcharge[c] (2)	Minimum OMP&R (3)	Aqueduct Costs (4)	Variable OMP&R (5)	Total (6)	Capital Costs (7)	Water System Revenue Bond Surcharge[c] (8)	Minimum OMP&R (9)	Aqueduct Costs (10)	Variable OMP&R (11)	Total (12)
North Bay Aqueduct												
1	39.70	10.72	12.56	1.35	2.00	66.33	39.70	10.72	12.56	1.35	2.00	66.33
2	42.25	11.41	5.49	0.00	0.00	59.15	81.95	22.13	18.05	1.35	2.00	125.48
3A	7.53	2.03	10.92	2.51	3.23	26.22	89.48	24.16	28.97	3.86	5.23	151.70
3B	48.44	13.08	24.68	3.23	7.18	96.61	130.39	35.21	42.73	4.58	9.18	222.09
South Bay Aqueduct												
1	6.94	1.87	14.72	5.53	7.49	36.55	8.88	2.39	17.62	7.34	10.99	47.22
2	0.65	0.18	1.66	0.00	0.00	2.49	9.53	2.57	19.28	7.34	10.99	49.71
4	2.18	0.59	2.84	0.00	0.00	5.61	11.71	3.16	22.12	7.34	10.99	55.32
5	4.58	1.24	2.22	0.00	0.00	8.04	16.29	4.40	24.34	7.34	10.99	63.36
6	0.27	0.07	0.23	0.00	0.00	0.57	16.56	4.47	24.57	7.34	10.99	63.93
7	2.03	0.55	0.43	0.00	0.00	3.01	18.59	5.02	25.00	7.34	10.99	66.94
8	2.75	0.74	0.71	0.00	0.00	4.20	21.34	5.76	25.71	7.34	10.99	71.14
9	5.69	1.54	2.67	0.00	0.00	9.90	27.03	7.30	28.38	7.34	10.99	81.04
California Aqueduct												
1	1.94	0.52	2.90	1.81	3.50	10.67	1.94	0.52	2.90	1.81	3.50	10.67
2A	1.23	0.33	0.57	0.00	0.00	2.13	3.17	0.85	3.47	1.81	3.50	12.80
2B	0.63	0.17	0.29	0.00	0.00	1.09	3.80	1.02	3.76	1.81	3.50	13.89
3	0.55	0.15	0.21	0.00	0.00	0.91	4.35	1.17	3.97	1.81	3.50	14.80
4	0.88	0.24	1.44	0.84	1.58	4.98	5.23	1.41	5.41	2.65	5.08	19.78
5	0.67	0.18	0.29	0.00	0.00	1.14	5.90	1.59	5.70	2.65	5.08	20.92
6	0.17	0.05	0.14	0.00	0.00	0.36	6.07	1.64	5.84	2.65	5.08	21.28
7	1.01	0.27	0.35	0.00	0.00	1.63	7.08	1.91	6.19	2.65	5.08	22.91
8C	0.02	0.01	0.06	0.00	0.00	0.09	7.10	1.92	6.25	2.65	5.08	23.00
8D	0.39	0.11	0.28	0.00	0.00	0.78	7.49	2.03	6.53	2.65	5.08	23.78
9	0.33	0.09	0.26	0.00	0.00	0.68	7.82	2.12	6.79	2.65	5.08	24.46
10A	0.35	0.09	0.34	0.00	0.00	0.78	8.17	2.21	7.13	2.65	5.08	25.24
11B	0.51	0.14	0.21	0.00	0.00	0.86	8.68	2.35	7.34	2.65	5.08	26.10
12D	0.48	0.13	0.19	0.00	0.00	0.80	9.16	2.48	7.53	2.65	5.08	26.90
12E	0.34	0.09	0.33	0.00	0.00	0.76	9.50	2.57	7.86	2.65	5.08	27.66
13B	0.72	0.19	0.38	0.00	0.00	1.29	10.22	2.76	8.24	2.65	5.08	28.95
14A	2.80	0.76	2.91	1.43	2.98	10.88	13.02	3.52	11.15	4.08	8.06	39.83
14B	0.44	0.12	0.36	0.00	0.00	0.92	13.46	3.64	11.51	4.08	8.06	40.75
14C	0.37	0.10	0.27	0.00	0.00	0.74	13.83	3.74	11.78	4.08	8.06	41.49
15A	2.07	0.56	3.03	1.72	3.23	10.61	15.90	4.30	14.81	5.80	11.29	52.10
16A	3.43	0.93	4.69	3.72	7.55	20.32	19.33	5.23	19.50	9.52	18.84	72.42
17E	11.57	3.12	13.18	13.02	27.87	68.76	30.90	8.35	32.68	22.54	46.71	141.18
17F	3.00	0.81	0.16	0.00	0.00	3.97	33.90	9.16	32.84	22.54	46.71	145.15
18A	2.69	0.73	1.58	0.00	-2.93	2.07	36.59	9.89	34.42	22.54	43.78	147.22
19	1.99	0.54	0.96	0.00	0.00	3.49	38.58	10.43	35.38	22.54	43.78	150.71
19C	2.16	0.58	0.00	0.00	0.00	2.74	40.74	11.01	35.38	22.54	43.78	153.45
20A	1.58	0.43	1.58	0.00	0.00	3.59	42.32	11.44	36.96	22.54	43.78	157.04
20B	1.92	0.52	1.04	0.00	0.00	3.48	44.24	11.96	38.00	22.54	43.78	160.52
21	0.97	0.26	0.72	0.00	0.00	1.95	45.21	12.22	38.72	22.54	43.78	162.47
22A	1.01	0.27	0.38	0.00	0.00	1.66	46.22	12.49	39.10	22.54	43.78	164.13
22B	9.92	2.68	10.20	4.20	9.19	36.19	56.14	15.17	49.30	26.74	52.97	200.32
23	2.72	0.73	0.70	0.00	-3.73	0.42	58.86	15.90	50.00	26.74	49.24	200.74
24	5.28	1.43	1.98	0.00	0.00	8.69	64.14	17.33	51.98	26.74	49.24	209.43
25	3.86	1.04	0.11	0.00	0.00	5.01	68.00	18.37	52.09	26.74	49.24	214.44
26A	4.21	1.14	6.61	0.00	-25.48	(13.52)	72.21	19.51	58.70	26.74	23.76	200.92
28G	7.85	2.12	2.50	0.00	0.00	12.47	80.06	21.63	61.20	26.74	23.76	213.39
28H	7.55	2.04	2.62	0.00	0.00	12.21	87.61	23.67	63.82	26.74	23.76	225.60
28J	84.69	22.87	36.45	0.00	0.00	144.01	172.30	46.54	100.27	26.74	23.76	369.61
West Branch												
29A	3.93	1.06	7.57	1.60	3.27	17.43	37.83	10.22	40.41	24.14	49.98	162.58
29F	2.87	0.77	0.91	0.00	0.00	4.55	40.70	10.99	41.32	24.14	49.98	167.13
29G	9.52	2.57	4.31	0.00	-11.78	4.62	50.22	13.56	45.63	24.14	38.20	171.75
29H	5.93	1.60	4.08	0.00	0.00	11.61	56.15	15.16	49.71	24.14	38.20	183.36
29J	9.94	2.68	1.17	0.00	-22.04	(8.25)	66.09	17.84	50.88	24.14	16.16	175.11
30	15.95	4.31	3.66	0.00	0.00	23.92	82.04	22.15	54.54	24.14	16.16	199.03
Coastal Branch												
31A	7.21	1.95	17.28	1.78	2.82	31.04	14.70	3.98	23.81	4.43	7.90	54.82
33A	269.51	72.77	32.59	15.06	36.81	426.74	284.21	76.75	56.40	19.49	44.71	481.56
34	192.56	51.99	0.91	0.00	0.00	245.46	476.77	128.74	57.31	19.49	44.71	727.02
35	0.00	0.00	0.00	0.00	0.00	0.00	476.77	128.74	57.31	19.49	44.71	727.02

[a] Representative of transportation unit costs only; does not include a unit cost of conservation. The Delta Water Rate should be added to these values in order to approximate unit costs at canal-side. Includes surplus water prior to May 1,1973.

[b] Hypothetical charges which, if assessed on all Table A water delivered to date, all surplus water delivered prior to May 1, 1973, and all Table A water now estimated to be delivered during the remainder of the Project repayment period (Table B-5B), would provide a sum at the end of the period financially equivalent to all Transportation Charges required under the water supply contract considering interest rate at the Project Interest Rate of 4.615 percent per annum.

[c] The Water System Revenue Bond Surcharge equivalent unit rate is calculated by dividing the WSRB surcharge for 2003 (from 132-02, Table B-22) by the total Transportation Capital (132-02, B-15) and the Capital component of the Delta Water Charge (132-02, B-4 * 11.77671248). This rate is multiplied by the equivalent rate for the Transportation Capital cost (column 1).

Table B-26

Capital Costs of Each Aqueduct Reach to Be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct							
	Mojave Division							
	Reach 18A (1)	Reach 19 (2)	Reach 20A (3)	Reach 20B (4)	Reach 21 (5)	Reach 22A (6)	Reach 22B (7)	Reach 23B (8)
1952	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	117,000	0	0	0	0	0	0	0
1980	200,000	0	0	0	0	0	0	74,000
1981	135,000	0	0	0	0	0	0	385,000
1982	1,503,000	0	0	0	0	0	0	1,586,000
1983	2,260,000	0	0	0	0	0	0	2,965,000
1984	735,000	0	0	0	0	0	796,000	1,380,000
1985	93,000	435,000	75,000	544,000	859,000	703,000	970,000	146,000
1986	784,000	4,477,000	3,144,000	2,234,000	1,569,000	1,203,000	1,808,000	34,000
1987	11,000	951,000	1,076,000	666,000	399,000	47,000	16,421,000	43,000
1988	1,000	125,000	1,681,000	1,730,000	2,024,000	40,000	13,326,000	70,000
1989	0	206,000	2,089,000	2,174,000	2,510,000	61,000	11,242,000	229,000
1990	1,000	577,000	903,000	735,000	928,000	194,000	20,131,000	887,000
1991	1,000	280,000	413,000	333,000	422,000	93,000	20,702,000	1,215,000
1992	0	40,000	41,000	39,000	35,000	13,000	9,599,000	3,719,000
1993	0	19,000	16,000	19,000	12,000	6,000	2,319,000	19,654,000
1994	0	2,000	3,000	2,000	4,000	3,000	803,000	3,173,000
1995	0	0	0	0	0	0	223,000	1,465,000
1996	0	0	0	0	0	0	6,014,000	478,000
1997	0	0	0	0	0	0	404,000	1,327,000
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	5,841,000	7,112,000	9,441,000	8,476,000	8,762,000	2,363,000	104,758,000	38,830,000

Table B-26

Capital Costs of Each Aqueduct Reach to Be Reimbursed through the Capital Cost Component of the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)							Grand Total (16)
	Mojave Division (continued)			Santa Ana Division				
	Reach 23C (9)	Reach 24 (10)	Total (11)	Reach 25 (12)	Reach 26A (13)	Reach 26B (14)	Total (15)	
1952	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	117,000	0	0	0	0	117,000
1980	0	0	274,000	0	0	0	0	274,000
1981	0	0	520,000	0	0	0	0	520,000
1982	0	0	3,089,000	0	0	0	0	3,089,000
1983	0	0	5,225,000	0	0	0	0	5,225,000
1984	0	0	2,911,000	0	0	0	0	2,911,000
1985	0	0	3,825,000	0	528,000	89,000	617,000	4,442,000
1986	25,000	0	15,278,000	0	1,926,000	154,000	2,080,000	17,358,000
1987	178,000	0	19,792,000	0	3,699,000	437,000	4,136,000	23,928,000
1988	632,000	0	19,629,000	0	5,667,000	3,329,000	8,996,000	28,625,000
1989	1,130,000	0	19,641,000	0	40,879,000	1,650,000	42,529,000	62,170,000
1990	2,066,000	0	26,422,000	0	29,853,000	1,650,000	31,503,000	57,925,000
1991	4,980,000	0	28,439,000	0	26,027,000	999,000	27,026,000	55,465,000
1992	11,920,000	0	25,406,000	0	15,317,000	299,000	15,616,000	41,022,000
1993	16,303,000	0	38,348,000	0	4,878,000	0	4,878,000	43,226,000
1994	7,081,000	0	11,071,000	0	3,151,000	0	3,151,000	14,222,000
1995	5,350,000	0	7,038,000	0	2,137,000	0	2,137,000	9,175,000
1996	1,706,000	0	8,198,000	0	9,181,000	0	9,181,000	17,379,000
1997	1,905,000	0	3,636,000	0	175,000	0	175,000	3,811,000
1998	28,000	0	28,000	0	0	0	0	28,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	53,304,000	0	238,887,000	0	143,418,000	8,607,000	152,025,000	390,912,000

Table B-27

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct							
	Mojave Division							
	Reach 18A (1)	Reach 19 (2)	Reach 20A (3)	Reach 20B (4)	Reach 21 (5)	Reach 22A (6)	Reach 22B (7)	Reach 23B (8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	1,048,625	0
1995	0	0	0	0	0	0	953,814	0
1996	0	0	0	0	0	0	1,171,411	0
1997	0	0	0	0	0	0	1,110,038	0
1998	0	0	0	0	0	0	1,213,002	0
1999	1,229	517	646	409	383	169	668,466	0
2000	4,452	1,875	2,340	1,484	1,386	614	1,325,892	0
2001	347	146	183	116	108	48	853,304	0
2002	0	0	0	0	0	0	1,862,401	0
2003	0	0	0	0	0	0	1,765,310	0
2004	0	0	0	0	0	0	1,810,119	0
2005	0	0	0	0	0	0	1,866,505	0
2006	0	0	0	0	0	0	1,330,930	0
2007	0	0	0	0	0	0	1,330,930	0
2008	0	0	0	0	0	0	1,330,930	0
2009	0	0	0	0	0	0	1,330,930	0
2010	0	0	0	0	0	0	1,330,930	0
2011	0	0	0	0	0	0	1,330,930	0
2012	0	0	0	0	0	0	1,330,930	0
2013	0	0	0	0	0	0	1,330,930	0
2014	0	0	0	0	0	0	1,330,930	0
2015	0	0	0	0	0	0	1,330,930	0
2016	0	0	0	0	0	0	1,330,930	0
2017	0	0	0	0	0	0	1,330,930	0
2018	0	0	0	0	0	0	1,330,930	0
2019	0	0	0	0	0	0	1,330,930	0
2020	0	0	0	0	0	0	1,330,930	0
2021	0	0	0	0	0	0	1,330,930	0
2022	0	0	0	0	0	0	1,330,930	0
2023	0	0	0	0	0	0	1,330,930	0
2024	0	0	0	0	0	0	1,330,930	0
2025	0	0	0	0	0	0	1,330,930	0
2026	0	0	0	0	0	0	1,330,930	0
2027	0	0	0	0	0	0	1,330,930	0
2028	0	0	0	0	0	0	1,330,930	0
2029	0	0	0	0	0	0	1,330,930	0
2030	0	0	0	0	0	0	1,330,930	0
2031	0	0	0	0	0	0	1,330,930	0
2032	0	0	0	0	0	0	1,330,930	0
2033	0	0	0	0	0	0	1,330,930	0
2034	0	0	0	0	0	0	1,330,930	0
2035	0	0	0	0	0	0	1,330,930	0
Total	6,028	2,538	3,169	2,009	1,877	831	55,576,787	0

Table B-27

Minimum OMP&R Costs of Each Aqueduct Reach to Be Reimbursed through Minimum OMP&R Component of the East Branch Enlargement Transportation Charge

(Dollars)

Calendar Year	California Aqueduct (continued)							Total (16)
	Mojave Division (continued)			Santa Ana Division				
	Reach 23C (9)	Reach 24 (10)	Subtotal (11)	Reach 25 (12)	Reach 26A[a] (13)	Reach 26B (14)	Subtotal (15)	
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	763,762	0	2,101,805	0	1,379,366	0	1,379,366	3,481,171
2001	947,495	0	1,801,747	0	620,114	0	620,114	2,421,861
2002	821,132	0	2,683,533	0	1,263,764	0	1,263,764	3,947,297
2003	852,194	0	2,617,504	0	1,335,697	0	1,335,697	3,953,201
2004	1,272,291	0	3,082,410	0	1,946,171	0	1,946,171	5,028,581
2005	1,303,850	0	3,170,355	0	2,006,688	0	2,006,688	5,177,043
2006	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2007	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2008	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2009	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2010	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2011	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2012	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2013	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2014	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2015	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2016	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2017	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2018	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2019	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2020	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2021	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2022	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2023	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2024	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2025	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2026	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2027	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2028	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2029	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2030	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2031	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2032	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2033	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2034	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
2035	1,109,108	0	2,440,038	0	1,802,805	0	1,802,805	4,242,843
Total	41,121,006	0	96,714,245	0	71,256,146	0	71,256,146	167,970,391

[a]Units 3 and 4 at Devil Canyon Power Plant were operational in 1993. These minimum OMP&R costs for Reach 26A will be revised to reflect operational date of those units

Table B-28

Capital Costs of East Branch Enlargement Transportation Facilities Allocated to Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total
	Antelope Valley-East Kern Water Agency (1)	Coachella Valley Water District (2)	Desert Water Agency (3)	Mojave Water Agency (4)	Palmdale Water District (5)	San Bernardino Valley Municipal Water District (6)	Metropolitan Water District of Southern California (7)	(8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	11,731	1,010	10,566	466	0	93,227	117,000
1980	0	28,241	4,708	27,495	797	0	212,759	274,000
1981	0	56,134	16,676	61,271	538	0	385,381	520,000
1982	0	326,180	76,872	337,913	5,988	0	2,342,047	3,089,000
1983	0	554,658	138,964	582,070	9,004	0	3,940,304	5,225,000
1984	0	306,514	68,842	314,468	2,928	0	2,218,248	2,911,000
1985	49,675	447,266	65,773	347,262	4,514	21,614	3,505,896	4,442,000
1986	185,353	1,757,633	236,324	1,363,586	41,900	78,842	13,694,362	17,358,000
1987	49,735	2,455,279	378,535	1,774,447	10,615	151,421	19,107,968	23,928,000
1988	124,534	2,689,959	500,466	1,712,431	13,783	231,982	23,351,845	28,625,000
1989	155,446	7,118,094	2,423,000	1,671,088	17,419	1,673,409	49,111,544	62,170,000
1990	62,786	6,459,229	1,943,918	2,234,452	8,680	1,222,053	45,993,882	57,925,000
1991	28,686	6,265,822	1,875,066	2,168,712	4,024	1,065,433	44,057,257	55,465,000
1992	2,911	4,826,764	1,610,921	1,359,335	471	627,012	32,594,586	41,022,000
1993	1,205	5,094,237	1,828,410	2,722,156	212	199,684	33,380,096	43,226,000
1994	273	1,726,376	631,816	478,543	27	128,988	11,255,977	14,222,000
1995	0	1,130,963	423,243	206,978	0	87,480	7,326,336	9,175,000
1996	0	2,025,987	645,296	606,205	0	375,830	13,725,682	17,379,000
1997	0	451,011	154,366	205,796	0	7,164	2,992,663	3,811,000
1998	0	3,551	1,293	0	0	0	23,156	28,000
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
Total	660,604	43,735,629	13,025,499	18,184,774	121,366	5,870,912	309,313,216	390,912,000

Table B-29

Capital Cost Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total
	Antelope Valley-East Kern Water Agency (1)	Coachella Valley Water District (2)	Desert Water Agency (3)	Mojave Water Agency (4)	Palmdale Water District (5)	San Bernardino Valley Municipal Water District[a] (6)	Metropolitan Water District of Southern California (7)	(8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	18,266	1,209,293	360,156	502,810	3,356	0	8,552,530	10,646,411
1989	19,175	1,269,524	378,094	527,854	3,523	0	8,978,505	11,176,675
1990	19,186	1,270,244	378,308	528,153	3,525	0	8,983,596	11,183,012
1991	19,187	1,270,261	378,314	528,160	3,525	0	8,983,718	11,183,165
1992	38,420	2,543,616	757,549	1,057,606	7,059	0	17,989,316	22,393,566
1993	40,029	2,650,136	789,273	1,101,896	7,354	0	18,742,663	23,331,351
1994	39,705	2,628,706	782,890	1,092,986	7,295	0	18,591,100	23,142,682
1995	39,632	2,623,828	781,438	1,090,958	7,281	0	18,556,604	23,099,741
1996	39,825	2,636,667	785,261	1,096,296	7,317	0	18,647,406	23,212,772
1997	41,743	2,763,629	823,074	1,149,085	7,669	0	19,545,322	24,330,522
1998	42,642	2,823,126	840,793	1,173,824	7,834	0	19,966,108	24,854,327
1999	44,738	2,961,888	882,120	1,231,519	8,219	0	20,947,476	26,075,960
2000	49,031	3,246,109	966,768	1,349,695	9,008	0	22,957,586	28,578,197
2001	56,492	3,828,395	1,151,864	1,555,083	10,379	0	22,968,460	29,570,673
2002	56,111	3,802,669	1,144,133	1,544,604	10,309	0	26,818,734	33,376,560
2003	70,380	4,747,159	1,425,402	1,937,382	12,930	0	33,498,628	41,691,881
2004	67,852	4,585,010	1,377,802	1,867,788	12,466	0	32,347,389	40,258,307
2005	67,815	4,582,466	1,377,030	1,866,772	12,459	0	32,329,477	40,236,019
2006	68,981	4,651,259	1,396,408	1,898,869	12,673	0	32,823,189	40,851,379
2007	68,795	4,657,281	1,400,621	1,893,763	12,639	0	32,850,136	40,883,235
2008	67,383	4,552,966	1,368,121	1,854,894	12,380	0	32,121,643	39,977,387
2009	67,475	4,559,228	1,370,007	1,857,431	12,397	0	32,165,792	40,032,330
2010	67,597	4,567,391	1,372,455	1,860,774	12,419	0	32,223,416	40,104,052
2011	67,932	4,590,393	1,379,413	1,870,000	12,481	0	32,385,406	40,305,625
2012	68,032	4,597,256	1,381,487	1,872,757	12,499	0	32,433,742	40,365,773
2013	68,229	4,597,802	1,379,995	1,878,187	12,535	0	32,448,297	40,385,045
2014	67,261	4,533,413	1,360,786	1,851,519	12,357	0	31,993,132	39,818,468
2015	68,061	4,586,605	1,376,651	1,873,560	12,505	0	32,369,168	40,286,550
2016	68,130	4,591,330	1,378,083	1,875,450	12,517	0	32,402,431	40,327,941
2017	68,584	4,624,367	1,388,314	1,887,952	12,601	0	32,633,541	40,615,359
2018	68,693	4,631,790	1,390,555	1,890,947	12,621	0	32,685,855	40,680,461
2019	68,641	4,626,520	1,388,741	1,889,523	12,611	0	32,650,156	40,636,192
2020	68,774	4,635,618	1,391,489	1,893,183	12,635	0	32,714,254	40,715,953
2021	69,880	4,709,181	1,413,442	1,923,631	12,839	0	33,234,227	41,363,200
2022	69,933	4,734,234	1,423,752	1,925,090	12,848	0	33,392,994	41,558,851
2023	58,005	3,938,889	1,186,135	1,596,735	10,657	0	27,772,855	34,563,276
2024	58,260	3,956,249	1,191,370	1,603,752	10,704	0	27,895,220	34,715,555
2025	47,139	3,215,923	970,343	1,297,631	8,661	0	22,662,872	28,202,569
2026	23,241	1,622,886	494,464	639,777	4,270	0	11,405,651	14,190,289
2027	18,156	1,257,350	381,787	499,779	3,336	0	8,845,098	11,005,506
2028	15,801	1,079,667	325,991	434,951	2,903	0	7,607,069	9,466,382
2029	15,873	1,084,754	327,542	436,951	2,916	0	7,642,811	9,510,847
2030	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0
Total	2,169,085	146,045,078	43,818,221	59,709,577	398,512	0	1,026,763,573	1,278,904,046

[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 2002, $6,347,938 has been received from the San Bernardino Valley Municipal Water District.

Table B-30

Minimum OMP&R Component of East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total
	Antelope Valley-East Kern Water Agency (1)	Coachella Valley Water District (2)	Desert Water Agency (3)	Mojave Water Agency (4)	Palmdale Water District (5)	San Bernardino Valley Municipal Water District (6)	Metropolitan Water District of Southern California (7)	(8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0
1994	0	320,415	101,486	95,075	0	70,133	2,174,775	2,761,884
1995	0	278,176	86,604	86,479	0	59,461	1,895,643	2,406,363
1996	0	287,293	82,991	106,208	0	55,287	1,990,213	2,521,992
1997	0	389,636	123,446	100,643	0	62,571	2,642,077	3,318,373
1998	0	429,772	135,927	109,979	0	66,278	2,915,152	3,657,108
1999	37	236,006	75,040	60,907	11	39,144	1,599,082	2,010,227
2000	132	404,512	121,252	121,300	40	56,465	2,777,469	3,481,170
2001	10	283,910	84,597	77,451	3	25,385	1,950,504	2,421,860
2002	0	450,093	122,213	168,858	0	51,733	3,154,402	3,947,299
2003	0	453,278	126,685	160,055	0	54,678	3,158,505	3,953,201
2004	0	587,618	179,395	164,117	0	79,668	4,017,782	5,028,580
2005	0	604,886	184,605	169,230	0	82,145	4,136,178	5,177,044
2006	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2007	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2008	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2009	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2010	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2011	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2012	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2013	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2014	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2015	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2016	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2017	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2018	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2019	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2020	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2021	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2022	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2023	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2024	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2025	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2026	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2027	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2028	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2029	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2030	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2031	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2032	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2033	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2034	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2035	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
Total	179	19,746,835	6,223,491	5,040,432	54	2,916,918	134,042,482	167,970,391

Table B-31

Total East Branch Enlargement Facilities Transportation Charge for Each Contractor

(Dollars)

Calendar Year	Southern California Area							Total
	Antelope Valley-East Kern Water Agency (1)	Coachella Valley Water District (2)	Desert Water Agency (3)	Mojave Water Agency (4)	Palmdale Water District (5)	San Bernardino Valley Municipal WaterDistrict (6)	Metropolitan Water District of Southern California (7)	(8)
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0
1988	18,266	1,209,293	360,156	502,810	3,356	0	8,552,530	10,646,411
1989	19,175	1,269,524	378,094	527,854	3,523	0	8,978,505	11,176,675
1990	19,186	1,270,244	378,308	528,153	3,525	0	8,983,596	11,183,012
1991	19,187	1,270,261	378,314	528,160	3,525	0	8,983,718	11,183,165
1992	38,420	2,543,616	757,549	1,057,606	7,059	0	17,989,316	22,393,566
1993	40,029	2,650,136	789,273	1,101,896	7,354	0	18,742,663	23,331,351
1994	39,705	2,949,121	884,376	1,188,061	7,295	70,133	20,765,875	25,904,566
1995	39,632	2,902,004	868,042	1,177,437	7,281	59,461	20,452,247	25,506,104
1996	39,825	2,923,960	868,252	1,202,504	7,317	55,287	20,637,619	25,734,764
1997	41,743	3,153,265	946,519	1,249,729	7,669	62,571	22,187,399	27,648,895
1998	42,642	3,252,898	976,720	1,283,802	7,834	66,278	22,881,260	28,511,434
1999	44,774	3,197,893	957,159	1,292,426	8,230	39,144	22,546,558	28,086,184
2000	49,163	3,650,621	1,088,020	1,470,995	9,048	56,465	25,735,055	32,059,367
2001	56,502	4,112,306	1,236,461	1,632,534	10,382	25,385	24,918,964	31,992,534
2002	56,111	4,252,762	1,266,346	1,713,462	10,309	51,733	29,973,136	37,323,859
2003	70,380	5,200,437	1,552,087	2,097,436	12,930	54,678	36,657,133	45,645,081
2004	67,852	5,172,629	1,557,197	2,031,905	12,466	79,668	36,365,171	45,286,888
2005	67,815	5,187,351	1,561,635	2,036,002	12,459	82,145	36,465,655	45,413,062
2006	68,981	5,151,967	1,556,383	2,019,540	12,673	73,799	36,210,878	45,094,221
2007	68,795	5,157,989	1,560,596	2,014,434	12,639	73,799	36,237,826	45,126,078
2008	67,383	5,053,674	1,528,096	1,975,565	12,380	73,799	35,509,332	44,220,229
2009	67,475	5,059,936	1,529,983	1,978,102	12,397	73,799	35,553,482	44,275,174
2010	67,597	5,068,099	1,532,430	1,981,445	12,419	73,799	35,611,106	44,346,895
2011	67,932	5,091,102	1,539,388	1,990,671	12,481	73,799	35,773,095	44,548,468
2012	68,032	5,097,964	1,541,463	1,993,428	12,499	73,799	35,821,432	44,608,617
2013	68,229	5,098,510	1,539,971	1,998,858	12,535	73,799	35,835,987	44,627,889
2014	67,261	5,034,121	1,520,761	1,972,190	12,357	73,799	35,380,822	44,061,311
2015	68,061	5,087,313	1,536,627	1,994,231	12,505	73,799	35,756,857	44,529,393
2016	68,130	5,092,038	1,538,058	1,996,121	12,517	73,799	35,790,120	44,570,783
2017	68,584	5,125,075	1,548,290	2,008,623	12,601	73,799	36,021,231	44,858,203
2018	68,693	5,132,498	1,550,530	2,011,618	12,621	73,799	36,073,545	44,923,304
2019	68,641	5,127,228	1,548,716	2,010,194	12,611	73,799	36,037,846	44,879,035
2020	68,774	5,136,326	1,551,465	2,013,854	12,635	73,799	36,101,944	44,958,797
2021	69,880	5,209,889	1,573,417	2,044,302	12,839	73,799	36,621,917	45,606,043
2022	69,933	5,234,942	1,583,727	2,045,761	12,848	73,799	36,780,684	45,801,694
2023	58,005	4,439,597	1,346,111	1,717,406	10,657	73,799	31,160,545	38,806,120
2024	58,260	4,456,957	1,351,345	1,724,423	10,704	73,799	31,282,910	38,958,398
2025	47,139	3,716,631	1,130,318	1,418,302	8,661	73,799	26,050,562	32,445,412
2026	23,241	2,123,594	654,439	760,448	4,270	73,799	14,793,341	18,433,132
2027	18,156	1,758,058	541,762	620,450	3,336	73,799	12,232,788	15,248,349
2028	15,801	1,580,375	485,966	555,622	2,903	73,799	10,994,758	13,709,224
2029	15,873	1,585,462	487,517	557,622	2,916	73,799	11,030,501	13,753,690
2030	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2031	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2032	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2033	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2034	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
2035	0	500,708	159,975	120,671	0	73,799	3,387,690	4,242,843
Total	2,169,263	165,791,914	50,041,717	64,750,008	398,566	2,916,918	1,160,806,049	1,446,874,435