

**SAN DIEGO  
COUNTY WATER AUTHORITY**



**FORTY-FIRST ANNUAL REPORT**

**1987**

SAN DIEGO COUNTY WATER AUTHORITY

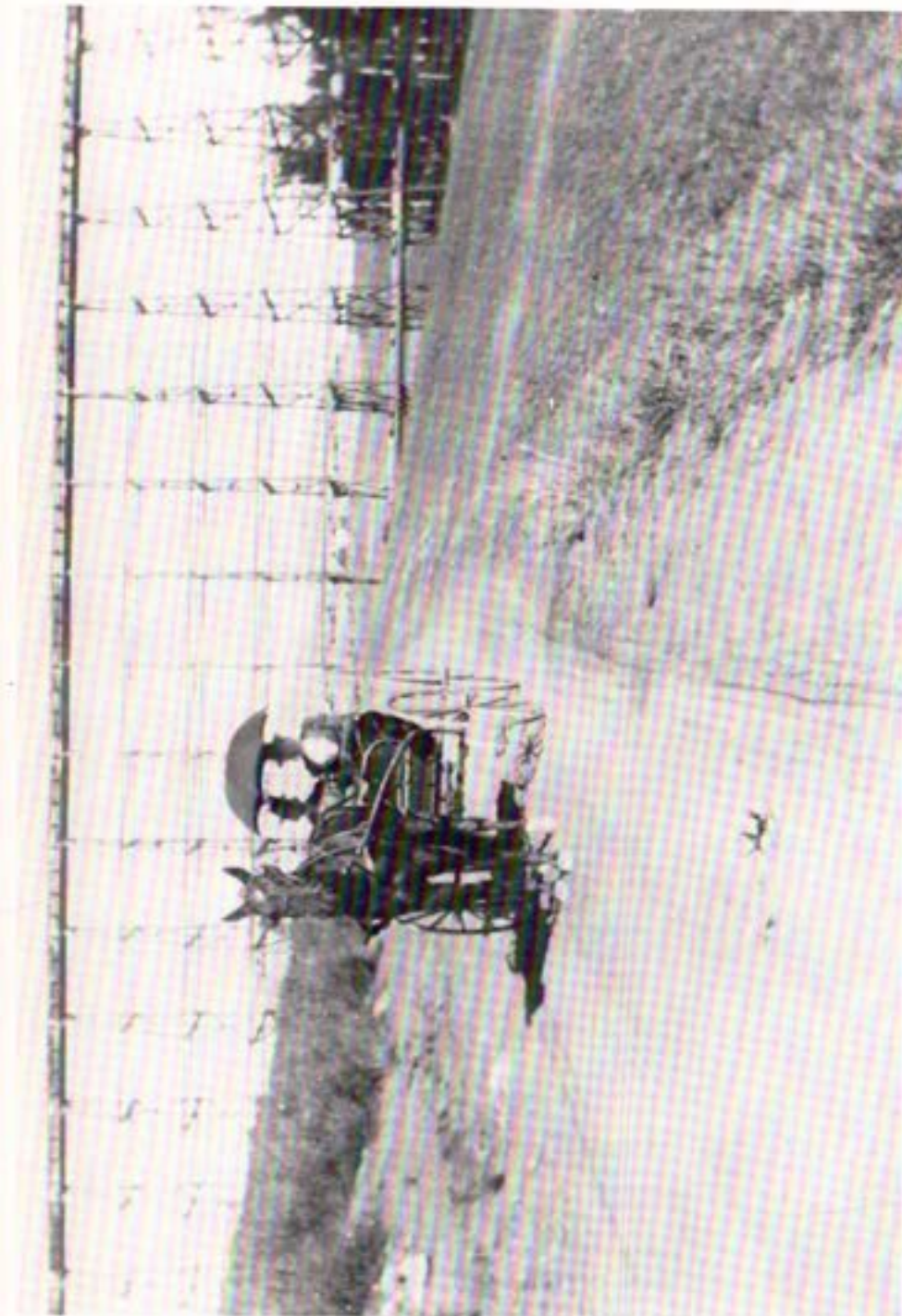
Organized June 9, 1944

# FORTY-FIRST ANNUAL REPORT

of Authority Operations  
for Fiscal Year Ending June 30, 1987

Ralph B. Grahl  
*Acting General Manager*

SAN DIEGO, CALIFORNIA  
1987



*San Diego Flume - Dehesa Valley, East of El Cajon - Circa 1900  
San Diego Historical Society - Title Insurance and Trust Collection*

## TABLE OF CONTENTS

BOARD OF DIRECTORS . . . . .	15
General . . . . .	15
Significant Board Actions . . . . .	16
Administration . . . . .	27
EMPLOYEE RELATIONS . . . . .	28
WATER AUTHORITY COMPOSITION . . . . .	31
General and Area . . . . .	31
Population and Assessed Valuation . . . . .	32
WATER SUPPLY AND CONSUMPTION . . . . .	34
Source and MWD Facilities . . . . .	34
Authority Facilities . . . . .	35
Deliveries and Rates . . . . .	36
Water Production of Member Agencies . . . . .	41
Water Quality . . . . .	43
Agricultural Water Use . . . . .	44
Water Treatment . . . . .	45
Allocation of Water to Member Agencies . . . . .	45
Future Supplies . . . . .	47
PUBLIC INFORMATION . . . . .	50
School and Speakers Programs . . . . .	50
Conferences-Seminars-Workshops . . . . .	50
Garden-Tours-Displays . . . . .	51
Water Conservation Contests . . . . .	51
Government Relations . . . . .	52
OPERATION AND MAINTENANCE . . . . .	53
General . . . . .	53
Operations . . . . .	54
Maintenance . . . . .	57
Force Construction . . . . .	58
Shutdowns . . . . .	58
DESIGN AND CONSTRUCTION . . . . .	60
General . . . . .	60
Pamo Project . . . . .	60
Alvarado and Miramar Hydroelectric Plants . . . . .	62
Water Reclamation . . . . .	64
San Diego Water Reuse Study . . . . .	65
LEGAL DEPARTMENT . . . . .	66
Routine Matters . . . . .	66
MWD Matters . . . . .	67
Section 8 Financing - Pamo Dam . . . . .	68
In Lieu Taxes . . . . .	68
FINANCIAL REPORT . . . . .	70
METROPOLITAN WATER DISTRICT MEMBERSHIP . . . . .	73
Water Sales . . . . .	75
Tax Rate . . . . .	75
COLORADO RIVER BOARD MEMBERSHIP . . . . .	76

## FIGURES

A. Authority Area Within San Diego County . . . . .	13
B. Water Production of Authority Member Agencies . . . . .	40
C. Rainfall Record at San Diego, California . . . . .	46
D. Composition of The Metropolitan Water District of Southern California . . . . .	72
E. Member Agencies of Metropolitan Water District . . . . .	77

## TABLES

INDEX TO TABLES, APPENDIX A AND APPENDIX B . . . . .	79
--	----

**SAN DIEGO COUNTY WATER AUTHORITY**

*Member Agencies, Date of Entry and  
Representative on Board of Directors on June 30, 1987*

**CITIES**

Del Mar	Nov. 23, 1962
Bob Stevens	
Escondido	Oct. 9, 1950
George M. Lohnes, Jr.	
National City	June 9, 1944
Tom Crownover	
Occanside	June 9, 1944
James F. Turner	
Poway	April 21, 1954
Alan D. Archibald	
San Diego	June 9, 1944
Craig S. Andrews, Dr. Charles F. Cooper, Lawrence Hirsch, Francesca M. Krauel, John M. Leach, Michael D. Madigan, Joseph Parker, Paul A. Peterson, Philip R. Pryde, John P. Starkey	

**WATER DISTRICTS**

Helix	June 9, 1944
Nat L. Eggert, Harry Griffen	
Otay	Oct. 26, 1956
Mark W. Watton	
San Dieguito	Dec. 13, 1948
Anne Ormsted	

**IRRIGATION DISTRICTS**

Santa Fe	Dec. 13, 1948
John M. Cranston	
South Bay	Nov. 3, 1952
Wayne W. Smith	
(Includes City of Chula Vista, an independent member agency, from June 9, 1944 to November 3, 1952)	

**MUNICIPAL WATER DISTRICTS**

Bueno Colorado	June 11, 1954
Frank G. Tiesen	
Costa Real	June 16, 1954
Margaret J. Bonas	
De Luz Heights	June 28, 1967
Phil Berg	
Olivenhain	July 25, 1960
William Hollingsworth	
Padre Dam	June 7, 1956
W. E. Klostermann	
(Includes Lakeside I.D., an independent member agency, from June 9, 1944 to June 7, 1956)	

Rainbow	April 10, 1954
Herbert H. Stickney	
Ramona	August 27, 1957
Vernon L. Leming	
Rincon del Diablo	June 14, 1954
Sherwood A. Anderson	
Valley Center	May 9, 1955
John F. Hennigar	
Yuima	Dec. 16, 1963
James H. Singer	

**PUBLIC UTILITY DISTRICT**

Fallbrook	June 9, 1944
Gordon W. Tinker	

**FEDERAL AGENCY**

Pendleton Military Reservation	Dec. 16, 1977
Lawrence E. Carlson	

**COUNTY WATER DISTRICT**

San Marcos	Feb. 25, 1980
Dale Mason	

<b>COUNTY OF SAN DIEGO (ex officio)</b>	Feb. 13, 1986
Susan Golding	

**OFFICERS OF BOARD OF DIRECTORS  
1986-87**



**Chairman**  
**FRANCESCA M. KRAUEL**  
*San Diego*  
7-78 to 6-87



**Vice Chairman**  
**DALE MASON**  
*San Marcos County Water District*  
3-80 to 6-87



**Secretary**  
**MICHAEL D. MADIGAN**  
*San Diego*  
5-79 to 6-87



**S.D. ANDERSON**  
*Rincon Del Diablo*  
*Municipal Water District*  
8-78 to 6-87



**CRAIG S. ANDREWS**  
*San Diego*  
5-83 to 6-87



**ALAN D. ARCHIBALD**  
*City of Poway*  
10-82 to 6-87



**PHILIP BERG**  
*De Luz Heights*  
*Municipal Water District*  
3-86 to 6-87



**MARGARET J. BONAS**  
*Costa Real*  
*Municipal Water District*  
3-87 to 6-87



**LINDEN R. BURZELL**  
*Yuima Municipal*  
*Water District*  
2-86 to 5-87

BOARD OF DIRECTORS  
1986-87



PAUL L. V. CAMPO  
*Pendleton Military  
Reservation*  
1-78 to 12-86



LAWRENCE E. CARLSON  
*Pendleton Military  
Reservation*  
12-86 to 6-87



DR. CHARLES F. COOPER  
*San Diego*  
4-73 to 6-87



JOHN M. CRANSTON  
*Santa Fe  
Irrigation District*  
10-64 to 6-87



TOM CROWNOVER  
*National City  
Water District*  
6-76 to 6-87



LAENA DASHIELL  
*San Dieguito  
Water District*  
1-78 to 2-87



HANS H. DOE  
*Bueno Colorado  
Municipal Water District*  
6-54 to 1-87



NAT L. EGGERT  
*Helix Water District*  
10-77 to 6-87



JAMES A. FERRARA  
*City of Del Mar*  
9-83 to 1-87

BOARD OF DIRECTORS  
1986-87  
(Continued)



SUSAN GOLDING  
*County of San Diego*  
2-86 to 6-87



HARRY GRIFFEN  
*Helix  
Water District*  
7-56 to 6-87



JOHN F. HENNIGAR  
*Valley Center  
Municipal Water District*  
10-76 to 6-87



LAWRENCE HIRSCH  
*San Diego*  
5-73 to 6-87



WILLIAM HOLLINGSWORTH  
*Olivenhain MWD*  
5-86 to 6-87



W. E. KLOSTERMANN  
*Padre Dam Municipal  
Water District*  
2-83 to 6-87



JOHN M. LEACH  
*City of San Diego*  
5-86 to 6-87



VERNON LEE LEMING  
*Ramona  
Water District*  
2-87 to 6-87



GEORGE M. LOHNES, JR.  
*City of Escondido*  
6-86 to 6-87

BOARD OF DIRECTORS  
1986-87  
(Continued)



**FRED W. MAERKLE**  
*Costa Real Municipal  
Water District*  
11-78 to 7-86



**WILLIAM C. MEADOWS**  
*Costa Real Municipal  
Water District*  
7-86 to 3-87



**WARD ODEN**  
*Ramona Municipal  
Water District*  
4-86 to 2-87



**ANNE OMSTED**  
*San Dieguito  
Water District*  
2-87 to 6-87



**JOSEPH PARKER**  
*City of San Diego*  
3-77 to 6-83  
5-86 to 6-87



**PAUL A. PETERSON**  
*San Diego*  
6-83 to 6-87



**PHILIP R. PRYDE**  
*City of San Diego*  
9-85 to 6-87



**DAVID RORICK, JR.**  
*Oceanside*  
8-73 to 8-86



**JAMES H. SINGER**  
*Yuima  
Municipal Water District*  
5-86 to 6-87

BOARD OF DIRECTORS  
1986-87  
(Continued)



**WAYNE W. SMITH**  
*South Bay  
Irrigation District*  
6-87 to 6-87



**JOHN P. STARKEY**  
*San Diego*  
10-75 to 6-87



**BOB STEVENS**  
*City of Del Mar*  
2-87 to 6-87



**HERBERT H. STICKNEY**  
*Rainbow Municipal  
Water District*  
3-85 to 6-87



**FRANK G. TIESEN**  
*Buena Colorado  
Municipal Water District*  
1-87 to 6-87



**GORDON W. TINKER**  
*Fallbrook Public  
Utility District*  
4-83 to 6-87



**JAMES F. TURNER**  
*City of Oceanside*  
8-86 to 6-87



**MARK W. WATTON**  
*Otay Water District*  
2-86 to 6-87



**RICHARD G. ZOGOB**  
*South Bay  
Irrigation District*  
7-85 to 6-87

DIRECTORS REPRESENTING SDCWA  
ON METROPOLITAN WATER DISTRICT  
BOARD OF DIRECTORS



JOHN M. CRANSTON  
12-74 to 12-86



HANS H. DOE  
7-59 to 10-86



HARRY GRIFFEN  
1-63 to 6-87



JOHN F. HENNIGAR  
10-86 to 6-87



FRANCESCA M. KRAUEL  
10-83 to 6-87



MICHAEL D. MADIGAN  
7-82 to 6-87



DALE MASON  
12-86 to 6-87



JOHN P. STARKEY  
1-81 to 6-87

AUTHORITY MANAGEMENT  
ON JUNE 30, 1987



PAUL D. ENGSTRAND  
*General Counsel*



RALPH B. GRAHL  
*Acting General Manager*



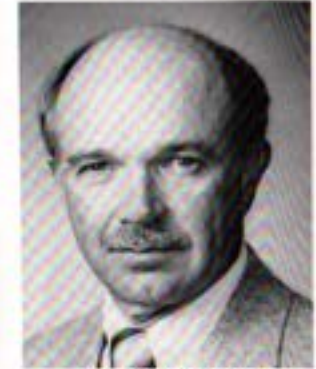
ROBERT E. MELBOURNE  
*Acting Chief Engineer*



CINDY M. HEINZ  
*Executive Secretary*



HENRY LOZANO  
*Director of Finance  
and Treasurer*



LARRY HOBSON  
*Project Construction Engineer*



I. E. NICHOLS  
*Superintendent*



PETE RIOS  
*Director of  
Public Information*

SAN DIEGO COUNTY WATER AUTHORITY  
ROSTER OF STANDING COMMITTEES  
AS OF JUNE 30, 1987

**Administrative Policy**

Mark W. Watton, Chairman  
Nat L. Eggert, Vice Chairman  
Craig S. Andrews  
Tom Crownover  
W. E. Klostermann  
George M. Lohnes  
Dale Mason  
Anne Omsted  
Joseph Parker  
James F. Turner

**Engineering and Operations**

Joseph Parker, Chairman  
John F. Hennigar, Vice Chairman  
Sherwood D. Anderson  
Alan D. Archibald  
Margaret J. Bonas  
Charles F. Cooper  
Lawrence Hirsch  
Vernon Lee Leming  
George M. Lohnes  
Michael D. Madigan  
Anne Omsted  
James H. Singer

**Long Range Planning**

John M. Leach, Chairman  
Philip R. Pryde, Vice Chairman  
Philip E. Berg  
Lawrence E. Carlson  
William Hollingsworth  
W. E. Klostermann  
Michael D. Madigan  
Paul A. Peterson  
James H. Singer  
Wayne W. Smith  
Herbert H. Stickney  
Gordon W. Tinker

**Fiscal Policy**

John P. Starkey, Chairman  
Craig S. Andrews, Vice Chairman  
Philip E. Berg  
John M. Cranston  
Nat L. Eggert  
Harry Griffen  
Lawrence Hirsch  
William Hollingsworth  
John M. Leach  
Paul A. Peterson  
Bob Stevens

**Public Information**

Susan Golding, Chairman  
Alan D. Archibald  
Margaret J. Bonas  
Lawrence E. Carlson  
Tom Crownover  
Vernon Lee Leming  
Dale Mason  
Philip R. Pryde  
Wayne W. Smith  
Bob Stevens  
Frank G. Tiesen  
James F. Turner  
Mark W. Watton

**Water Policy**

Harry Griffen, Chairman  
Charles F. Cooper, Vice Chairman  
Sherwood D. Anderson  
John M. Cranston  
John F. Hennigar  
Michael D. Madigan  
Dale Mason  
John P. Starkey  
Herbert H. Stickney  
Frank G. Tiesen  
Gordon W. Tinker

SAN DIEGO COUNTY WATER AUTHORITY  
ROSTER OF TEMPORARY (AD HOC) COMMITTEES  
AS OF JUNE 30, 1987

**Pamo Dam Steering Committee**

Michael D. Madigan, Chairman  
Harry Griffen, Vice Chairman  
Craig S. Andrews  
John M. Cranston  
Francesca M. Krauel  
Paul A. Peterson  
Philip R. Pryde  
Gordon W. Tinker

**SDCWA Headquarters Office Sitting Ad Hoc Committee**

Paul A. Peterson, Chairman  
Tom Crownover  
Lawrence Hirsch  
W. E. Klostermann  
Dale Mason  
John P. Starkey  
Mark W. Watton

**Water Reclamation Ad Hoc Committee**

Dale Mason, Chairman  
John M. Leach, Vice Chairman  
Margaret J. Bonas  
Charles F. Cooper  
Susan Golding  
Anne Omsted  
Joseph Parker  
Philip R. Pryde

**Subcommittee (of Administrative Policy Committee)  
on Discharge and Disciplinary Procedures**

Herbert H. Stickney



# San Diego County Water Authority

2750 Fourth Avenue, San Diego, California 92103-6295 (619) 297-3218

1st Public Agency Organized June 9, 1968  
FAX 619-297-2511

Frankie W. Kruel, Chairman  
Dan Mason, Vice Chairman  
Michael S. Michgen, Secretary  
Ralph S. Grahl, Acting General Manager  
Robert E. Melbourne, Acting Chief Engineer  
Paul O. Engstrand, General Counsel

December 30, 1987

Board of Directors  
San Diego County Water Authority

The Forty-first Annual Report of the Water Authority, covering activities during the fiscal year ending June 30, 1987, has been prepared and is transmitted herewith.

Rainfall throughout the County was about 70 percent of normal. The pattern and timing of the rainfall produced very little runoff which left several key reservoirs virtually empty at the beginning of the summer. Rainfall state-wide was about 65 percent of normal, and the snowmelt runoff averaged about 45 percent of normal which reduced State reservoir storage by late summer to well-below average. Flow on the Colorado River continued above average thereby insuring full utilization of the Colorado River Aqueduct for at least another year.

The Water Authority delivered 503,678 acre-feet of water this fiscal year which included 9,317 acre feet into storage. Local water production by member agencies was 88,798 acre feet and included 9,368 acre feet from the Ponderosa Military Reservation for the first time. The water in storage on June 30, 1987 totaled 292,906 acre feet which was 52 percent of capacity and 86 percent of last year's storage. The population served by the Water Authority grew by 75,300 to 2,181,000.

The 1987 Water Distribution Study has clearly identified a number of near-term and long-term capital improvements that are necessary to maintain an adequate level of service to member agencies. Three segments of pipeline that add to the backbone of the Water Authority's system and a northerly intertie between the First and Second Aqueducts should be built within five years. Another key project, the Ramona Pipeline, will be designed by an engineering consultant with completion scheduled for June 1989.

Further delays were experienced in the issuance of a "404" permit for Pamo Dam by the Corps of Engineers. The Corps has taken a conciliatory attitude toward the opposition of the United States Fish and Wildlife Service and the Environmental Protection Agency and reopened discussions on mitigation and alternatives to the project.

Since the resignation of former General Manager and Chief Engineer Lawrence E. Michaels on March 12, 1987, the Water Authority has been administered by an Acting General Manager, Ralph S. Grahl and an Acting Chief Engineer, Robert E. Melbourne. The Board of Directors hired an executive search firm to locate, screen, and present a group of candidates for the position of General Manager.

The Acting General Manager has been engaged in a series of "Meet and Confer" sessions with representatives of the employees over wages and working conditions. These have been more formal and demanding than any previous negotiations, and at the end of this fiscal year, all of the issues had not been resolved.

Ralph S. Grahl  
Acting General Manager

### MEMBER AGENCIES

- CITIES**
- Del Mar
  - Escondido
  - National City
  - Poway
  - Oceanside
  - San Diego

- IRRIGATION DISTRICTS**
- Santa Fe
  - South Bay

- COUNTY WATER DISTRICT**
- San Marcos

- PUBLIC UTILITY DISTRICT**
- Fallbrook

- MILITARY RESERVATION**
- Camp Pendleton

- MUNICIPAL WATER DISTRICTS**
- Barro Colorado
  - Bonita
  - Carlsbad
  - Escondido
  - Imperial Valley
  - Jamul
  - Lakeside
  - Miramar
  - Poway
  - Rancho del Estero
  - Valley Center
  - Yuma

- WATER DISTRICTS**
- Hahn
  - Otay
  - San Diego

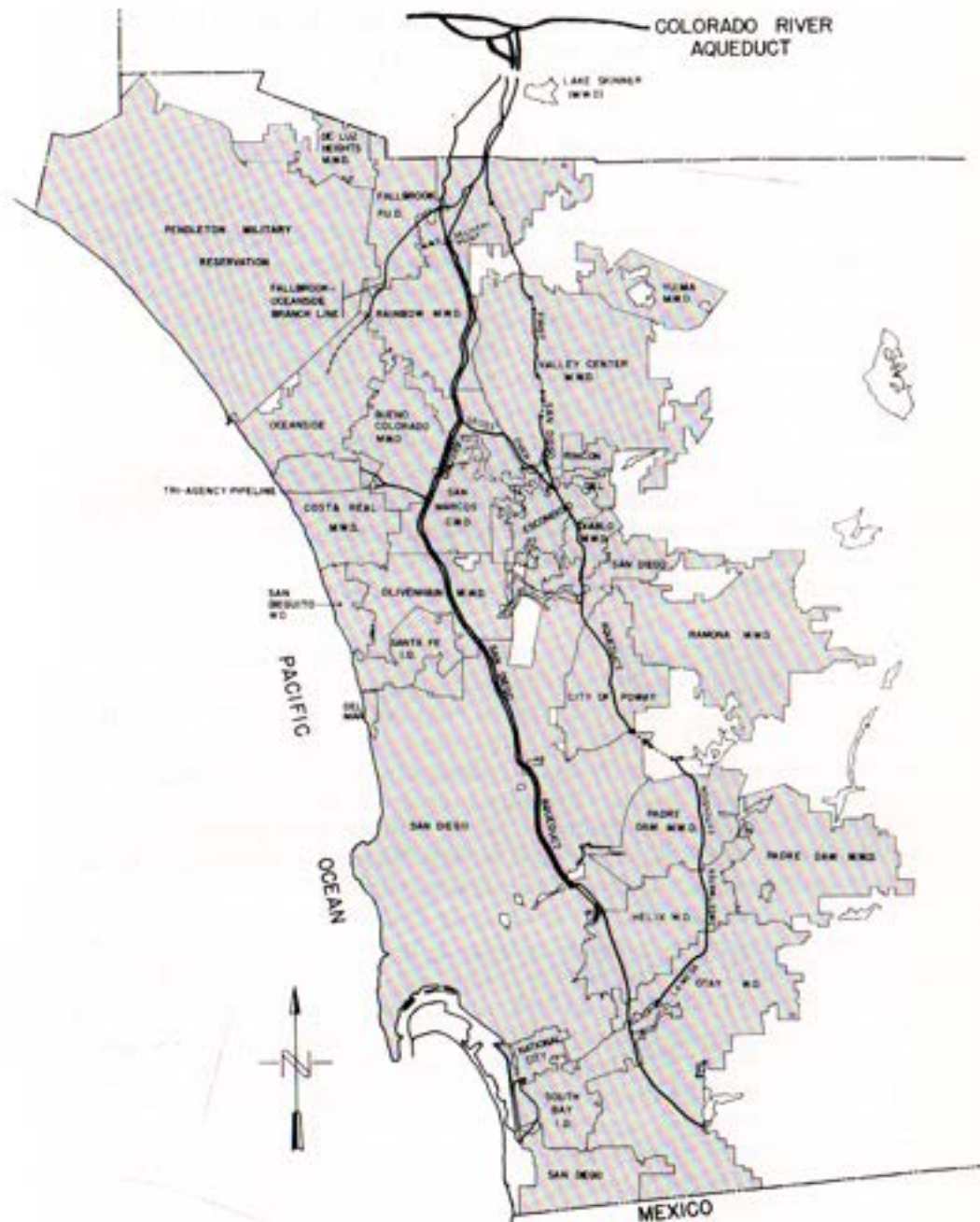


Figure A. Authority Area Within San Diego County

SAN DIEGO COUNTY WATER AUTHORITY  
REPORT OF ACTIVITIES

## FISCAL YEAR 1986-1987

In its July 1, 1986 county population estimate, The United States Department of Commerce ranked San Diego the fifth largest county in the nation. The residents increased by 339,454 between 1980 and 1986 which ranked San Diego County fourth nationally in this category and passed Orange County as the second largest county in California.

The recent growth, along with reliable projections by the San Diego Association of Governments (SANDAG), is cause for concern over the capability of the Water Authority's pipelines to meet peak demands. The 1987 Water Distribution Study is not scheduled for release until this fall but a preliminary draft indicates the importance of the completion of several pipeline projects before any significant improvement can be made in the delivery of water to some service areas. Four projects are identified as near-term but because of their size and complexity, the design and construction of these projects will require four or five years.

Early in the next fiscal year, staff will select and engage engineering consultants to prepare the preliminary engineering design of these projects and will hire a consultant for an environmental impact report that addresses the four projects in detail and the overall importance of projects that will follow. A second-phase of projects will be required to complete the gaps in the first-phase projects and to provide added capability to deliver water into the North County from the Metropolitan Water District facilities. The staff of the Water Authority and Metropolitan are working together to determine the best possible route, the scheduling of the projects, and an analysis of alternatives.

A major project that will be designed during fiscal year 1987-1988, and is scheduled for completion about July 1, 1989, is the Ramona Pipeline. This 41,000 foot, \$17-18 million pipeline will not only supply Ramona with treated water but will probably become the basic supply line for the City of San Diego's Rancho Bernardo community as water can be delivered more directly and at a higher head. Olivenhain Municipal Water District will benefit from direct services to the 4-S Ranch. The environmental studies were initiated this year, and the Notice of Preparation will be distributed in August 1987.

## BOARD OF DIRECTORS

## General

The San Diego County Water Authority is comprised of 24 member agencies. Each member agency is represented by at least one person. A member agency is entitled to one additional representative for each full five percent of total assessed valuation contained within its boundaries. Assessed valuation is determined by the County of San Diego's Assessor's Officer. These representatives are appointed by the chief executive officer of the respective agencies with approval of the agencies' governing bodies. During the year, only two agencies were represented by more than one representative: The City of San Diego by ten; Helix Water District by two. Directors serve without pay from the Authority.

Officers of the Board of Directors are elected in July of even-numbered years. In July 1986, Francesca M. Krauel was elected Chairman; Dale Mason, Vice Chairman; and Michael D. Madigan, Secretary.

To facilitate matters, most business coming before the board is first considered by one of its committees. Each committee then reports to the full Board which makes the necessary decisions. There are six standing committees:

Administrative Policy	Long Range Planning
Engineering and Operations	Public Information
Fiscal Policy	Water Policy

Temporary committees that existed sometime during this year were:

Pamo Dam Steering	Headquarters Office Siting
Hoover Power Allocation	Water Reclamation
Land and/or Easement	Discharge & Disciplinary
Acquisition Policy	Procedures

During the fiscal year 1986-1987, the following Directors were presented with service emblems:

<u>Director</u>	<u>Length of Service</u>
Harry Griffen	30 years
Tom Crownover	10 years
John F. Hennigar	10 years
Dale Mason	6 years
Craig S. Andrews	3 years
James A. Ferrara	3 years
W.E. Klostermann	3 years
Paul A. Peterson	3 years
Gordon W. Tinker	3 years

SAN DIEGO COUNTY WATER AUTHORITY

During the year, the following Directors were seated or reseated

<u>Date</u>	<u>Director</u>	<u>Agency</u>	<u>Term Expires</u>
July 10, 1986	William C. Meadows (replaces Fred W. Maerkle)	Costa Real M.W.D.	June 17, 1990
Aug. 14, 1986	James Turner (replaces David Rorick, Jr.)	City of Oceanside	July 15, 1992
Oct. 9, 1986	George M. Lohnes, Jr.	City of Escondido	Oct. 18, 1992
Dec. 18, 1986	Lawrence E. Carlson (replaces Paul L. V. Campo)	Pendleton Military Reservation	Jan. 12, 1990
Jan. 8, 1987	Frank G. Tiesen (replaces Hans H. Doe)	Bueno Colorado M.W.D.	June 15, 1990
Feb. 12, 1987	Vernon L. Leming (replaces Ward Oden)	Ramona M.W.D.	Dec. 1, 1987
Feb. 12, 1987	Anne Omsted (replaces Laena Dashiell)	San Dieguito W.D.	Dec. 21, 1990
Feb. 12, 1987	Bob Stevens (replaces James A. Ferrara)	City of Del Mar	March 3, 1987
March 12, 1987	Margaret J. Bonas (replaces William C. Meadows)	Costa Real M.W.D.	June 17, 1990
May 14, 1987	James H. Singer (replaces Linden R. Burzell)	Yuima M.W.D.	Jan. 9, 1988
June 11, 1987	Wayne W. Smith (replaces Richard G. Zogob)	South Bay I.D.	Nov. 11, 1988

SIGNIFICANT BOARD ACTION

July 10, 1986

- Motion: Elected new officers for 1986-1988:  
Francesca M. Krauel, Chairman  
Dale Mason, Vice Chairman  
Michael D. Madigan, Secretary
- Resolution: Amended Article 3 (Organization of Staff) and Article 9 (Working Hours, Leaves of Absence, Holidays) of the Administrative Code.
- Motion: Authorized to forward \$650 prize money to Mesa College for promotion of low-water use landscape and related projects.
- Resolution: Honored former Director Charles C. Price for 40 years of service to the water industry in San Diego County.

BOARD OF DIRECTORS

- Motion: Instructed Water Authority staff and legal counsel to (1) review and make recommendations for updating the Water Authority's existing easement and encroachment documents; (2) review and report regarding present policies for land acquisition and easement in light of comments made at the July 10 committee meeting; (3) report and recommend on the issue of protection of future rights of way through the planning process and exaction of rights of way and easements through specific permitting processes, and (4) report and recommend on a uniform policy of imposing surcharges for connections to Water Authority facilities.
- Resolution: Authorized execution of agreement regarding billing and payment for water exchanged between Rainbow Municipal Water District and Fallbrook Public Utility District.
- Resolution: Approved the request of Olivenhain Municipal Water District to annex the 4-S Ranch.
- Resolution: Supported the settlement of the water rights dispute between the City of Escondido; the Escondido Mutual Water Company; The Vista Irrigation District; the La Jolla, Rincon, San Pasqual, Pauma, and Pala Bands of Mission Indians; and the United States of America.
- Motion: Approved a \$5,000 Water Authority contribution to the study of the Coordinate Chemical Bonding Absorption process by the San Diego Region Water Reclamation Agency.

August 14, 1986

- Appointment: Chairman Krauel appointed Directors Mason (Chairman), Cooper, Golding, and Parker to a new subcommittee on water reclamation that will report to the Long Range Planning Committee.
- Action: Chairman Krauel dissolved the Ad Hoc Committee on Hoover Power Allocations as Hoover power would only be given those agencies which had existing power contracts.

## SAN DIEGO COUNTY WATER AUTHORITY

- Resolution: Authorized the installation of cathodic protection on the Fallbrook-Oceanside Pipeline, approved Work Order 1-23, and appropriated \$22,000 from the General Fund.
- Resolution: Opposed Proposition 61 - "The California Fair Pay Initiative" which placed a ceiling on compensation of public officials and consultants to government agencies.
- Resolution: Authorized the execution and delivery for Amendment No. 1 to Trust Agreement in connection with certificates of participation and certain other actions in connection therewith.
- Motion: Authorized a \$1,000 contribution to help sponsor a reception at the Annual Conference of California League of Cities in Los Angeles in October 21, 1986.

### August 20, 1986

- Resolution: Honored Jack W. Keating upon his retirement as Executive Manager of the California Water Resources Association.
- Resolution: Established vote of representatives of member agencies as determined by assessed valuation for fiscal year 1986-87.
- Resolution: Fixed the tax rate for fiscal year 1986-87 at \$0.00485 per \$100 of assessed valuation.
- Motion: Approved appointment of Director Herbert H. Stickney to represent the Water Authority to the California Water Resources Association.

### September 11, 1986

- Resolution: Rescinded Resolution No. 86-37 and established vote of representatives of member agencies as determined by assessed valuations for fiscal year 1986-87.
- Resolution: Rescinded Resolution No. 86-9 and adopted the Southern California Water Policy as its official position of regional water supply issues.

## BOARD OF DIRECTORS

- Resolution: Consented to the annexation of the 4-S Ranch to the Water Authority concurrently with its annexation to Olivenhain Municipal Water District.

### October 9, 1986

- Resolution: Approved the appointment of John F. Hennigar as a representative of the Water Authority on the Board of Directors of the Metropolitan Water District replacing Director Hans H. Doe.
- Resolution: Approved settlement of the two remaining parcels of the southern section of Pipeline 3, authorized Revision 2 to Work Order 11-44, and appropriated \$60,000 from the Capital Outlay Fund.
- Resolution: Amended Article 2 of the Administrative Code to clarify the definition of a quorum relative to the Brown act.
- Resolution: Opposed the adoption of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, which would appear on the November 4, 1986 California General Election ballot. There would be potential costs of \$590,000,000 to change water treatment processes to reduce to insignificant levels of risks.

### November 13, 1986

- Resolution: Amended Article 15 (Association Membership) and Article 16 (Payment of Expenses Incurred on Authority Business) of the Administrative Code.
- Resolution: Approved an amendment to the contract between the Public Employees Retirement System and the Water Authority.
- Motion: For the adoption of a Revised San Diego County Water Authority Grant of Easement Document.
- Resolution: Acknowledged receipt of Certificate of Completion by the Executive Officer of the San Diego County Local Agency Formation Commission relating to the annexation of the "4-S Ranch."

## SAN DIEGO COUNTY WATER AUTHORITY

- Resolution: Approved Revision 6 to Work Order 11-39 for the Pamo Project and appropriated \$476,000 from the Capital Outlay Fund for pipeline design, legal services, and preparation and distribution of the Environmental Impact Statement and biological mitigation studies.
- Motion: Extended Mr. William R. Gianelli's contract for one year at the existing terms of a \$600 per month retainer plus retainer plus \$75 per hour for time spent in excess of one day per month.
- Motion: Approved the employment of Mrs. Lois Brozey at her usual hourly rate up to a maximum of \$2,500 to assist the Audit Subcommittee.

### December 18, 1986

- Resolution: Approved the reappointment of John F. Hennigar as a representative of the Water Authority on the Board of Directors of the Metropolitan Water District.
- Resolution: Approved the reappointment of Michael D. Madigan as a representative of the Water Authority on the Board of Directors of the Metropolitan Water District.
- Resolution: Approved the appointment of Dale Mason as a representative of the Water Authority on the Board of Directors of the Metropolitan Water District.
- Resolution: Authorized an amendment to the contract with the Public Employees Retirement System to provide for an option of pre-retirement death benefit.
- Resolution: Approved Work Order 11-45 for modifications to Pipelines 1 and 2 to prepare for the introduction of filtered water into the First Aqueduct and appropriated \$520,000 from the Capital Outlay Fund.
- Resolution: Approved Work Order 11-47 for the design of the Pomerado Pipeline (4B) and appropriated \$250,000 from the Capital Outlay Fund.

## BOARD OF DIRECTORS

- Resolution: Approved Work Order 1-66 for the design and construction of the Otay Water District's No. 9 Service Connection upon the advancement of \$260,000 by the Otay Water District.
- Motion: Approved the appointment of Mrs. Marilyn Estey as the Chief Secretary and Executive Secretary to the Board of Directors.
- Motion: Rehired Lois A. Brozey, CPA, to do an independent audit for the Water Authority for the 1986-87 fiscal year.

### January 8, 1987

- Resolution: Approved Revision No. 1 to Work Order 1-22 for the relocation of the La Mesa-Sweetwater Extension in CALTRANS Highway 54 and appropriated \$60,000 from the General Fund.
- Resolution: Approved Work Order 11-48 for an aqueduct water quality monitoring and alarm system and appropriated \$100,000 from the Capital Outlay Fund.
- Motion: Approved the six-month extension of the Galloway Option to July 15, 1987 as offered to the Water Authority by the Galloway Group.
- Motion: Approved the expenditure of \$2,000 to help the Department of Water Resources toward the printing costs connected with the Xeriscape Conference.
- Motion: Provided sponsorship for two students and one advisor from each school that did not receive sponsorship to the Southern California Water Committee Regional Water Conference. The maximum cost not to exceed \$3,600.
- Motion: Accepted the proposal of Performance Systems, Inc. for review of the Water Authority's management and organization.
- Resolution: Adopted a revised mitigation plan, which would include the U.S. Fish and Wildlife Service conditions to prevent jeopardy to the least Bell's vireo, for the Pamo Dam and Reservoir Project.

## SAN DIEGO COUNTY WATER AUTHORITY

**Motion:** Adopted the recommendations of the Audit Subcommittee of the Fiscal Policy Committee to implement new internal controls, a reporting system and executive summary, and establish a permanent Audit Subcommittee.

### February 12, 1987

**Motion:** Authorized the General Manager to execute an agreement among the City of San Diego, the County of San Diego, and the Water Authority regarding reclamation.

**Motion:** Approved the establishment of the treated water surcharge for the 1987-88 fiscal year at \$40 per acre foot.

### March 12, 1987

**Motion:** Adopted the draft Mission Statement and Objectives as written by the Long Range Planning Committee.

**Motion:** Authorized the purchase of a Xerox copying machine and three Minolta word processors for approximately \$49,000.

After a closed session of the Board of Directors, it was announced that General Manager and Chief Engineer Lawrence R. Michaels had resigned, and Assistant Chief Engineer Robert E. Melbourne would act as temporary General Manager and Chief Engineer. The Administrative Policy Committee had been instructed to retain an executive search firm to find a new General Manager. The Executive Committee convened to hire an interim General Manager and Chief Engineer.

### April 9, 1987

**Motion:** Engaged Linden R. Burzell for engineering consulting services pursuant to a letter agreement dated March 28, 1987.

**Motion:** Ratified the hiring, by the Executive Committee, of Ralph B. Grahl as the Water Authority's Acting General Manager at a salary of \$7,000 per month.

## BOARD OF DIRECTORS

**Motion:** Ratified the Executive Committee's approval of a temporary salary increase for Acting Chief Engineer Robert E. Melbourne of \$72,000 per year.

**Resolution:** Authorized the Chairman and Secretary of the Board of Directors to execute an agreement with the City of San Diego regarding the "in lieu" cash payments for all ad valorem taxes levied by the Water Authority on property within the boundaries of the City of San Diego.

**Motion:** Authorized the Acting General Manager to hire a Human Resources Consultant to assist in salary negotiations with the Employee's Association.

**Motion:** Approved the addition of several positions for the 1987-88 budget and to meet the labor requirements of current and projected work orders.

**Motion:** Authorized staff to enter into contracts with Fallbrook Public Utility District and Costa Real Municipal Water District to provide \$2,000 in assistance to each district for their low-water use demonstration gardens.

**Motion:** Authorized a letter of support for the Greater Mountain Empire Resource Conservation District to be sent to the California Office of Water Conservation from the Water Authority's Board Chairman.

**Motion:** Adopted the Water Authority Objectives as written by the Long Range Planning Committee.

**Resolution:** Approved Work Order 11-46 for the design of the Ramona Pipeline, authorized the General Manager and/or the Chief Engineer to solicit proposals from engineering consultants, and to select a design for the project and appropriated \$500,000 from the Capital Outlay Fund.

**Resolution:** Approved Work Order 11-49 for the preliminary design of the extension of Pipeline 4 from the Alvarado Filtration Plant to Lower Otay and appropriated \$450,000 from the Capital Outlay Fund.

**Motion:** Adopted a position of support on the Delta Package (SB 32, SB 34, SB 35, and SB 36 by Ayala and AB 1705, AB

## SAN DIEGO COUNTY WATER AUTHORITY

1707, AB 1710 by Costa) as long as it met the following criteria: increase State Project water supplies, offset fishery impacts of State Project exports, improve export drinking water quality, and provide protection of Delta levees.

Motion: Adopted a position of opposition to AB 859 (Sher) the Safe Drinking Water Act, and a position in support of AB 1122 (Ayala) pertaining to drinking water standards.

Motion: Adopted a position in opposition to AB 734 (Johnston) pertaining to the long-term transfer of water rights.

Motion: Adopted a position of support for AB 1484 (Bergeson) relating to water conservation and its effect in the Salton Sea.

Motion: Adopted a position of support for AB 262 (Peace) which would create an International Border Control Authority.

Motion: Adopted a position of support for AB 930 (Brown) which would finance a program of wastewater and toxic cleanup in the International Border Region through the sale of bonds of the State of California.

### May 14, 1987

Motion: Approved the expenditure of \$500 to purchase pins designed to promote Water Awareness Week.

Motion: Approved the expenditure of \$500 for a contribution to the Southern California Water Awareness Committee.

Resolution: Approved Work Order 11-50 for the fabrication of a 69-inch diameter emergency repair section for Pipeline 3 and appropriated \$20,000 from the Capital Outlay Fund.

Motion: Authorized the contribution of \$10,000 to the Mission Resource Conservation District that promotes the efficient use of agricultural water.

## BOARD OF DIRECTORS

Motion: Adopted a position in opposition to SB 553 (Russell) which would change the current law which presumes that the use of condemned property by public agencies has a higher priority than the use of investor-owned utilities.

Resolution: Approved Work Order 1-24 for the preparation and presentation of documentation for the Bay-Delta hearings and appropriated \$98,000 from the General Fund.

Motion: Approved the engagement of the services of Orrick, Herrington and Sutcliffe as Bond Counsel and E.F. Hutton as Financial Consultants in relation to Pamo financing.

Resolution: Approved Revision 7 to Work Order 11-39 for pipeline design, printing of permit documents, and labor for permit work and additional appraisals and appropriated \$200,000 from the Capital Outlay Fund.

### June 11, 1987

Resolution: Approved and established the budget of the San Diego County Water Authority for fiscal year 1987-88 and appropriated the money to be expended pursuant thereto from the appropriate funds.

Resolution: Authorized the prepayment of \$100,000,000 Certificate of Participation, the distribution of a contract of indebtedness, and certain other actions in connection therewith. Later, \$92,000,000 was prepaid, and \$8,000,000 was retained in debt.

Resolution: Amended the fiscal year 1986-87 budget of the San Diego County Water Authority to account for approximately \$14 million in additional water sales.

Motion: Adopted the long-term, strategic policies developed by the Long Range Planning Committee.

Resolution: Approved Work Order 1-25 authorizing the General Manager to execute a contract with SourcePoint for completion of various tasks on the San Diego Water Reuse Study and appropriated \$30,000 from the General Fund.

SAN DIEGO COUNTY WATER AUTHORITY

Motion: Approved the hiring of an environmental consultant to advise the Water Authority on the scope of Environmental Impact Reports for several capital projects at a cost not to exceed \$5,000.

Resolution: Encouraged increased awareness of water conservation by member agencies.

Motion: Authorized the Acting General Manager to proceed with the allocation of costs of the Ramona Pipeline based on existing Water Authority policies.

Resolution: Authorized the General Manager to commit the Water Authority to the Delta Drinking Water Quality Study and approved Work Order 1-26 appropriating \$20,000 from the general fund.

BOARD OF DIRECTORS

Administration

Executive Officers

Lawrence R. Michaels	General Manager and Chief Engineer (to 3-12-87)
Ralph B. Grahl	Acting General Manager (from 4-1-87)
Robert E. Melbourne	Acting Chief Engineer (from 3-12-87)
Paul D. Engstrand	General Counsel
Janet M. Raviart	Executive Secretary (to 12-31-86)
Cindy M. Heinz	Executive Secretary (from 2-2-87)

Administrative Staff

Arthur R. Bullock	Assistant General Manager (to 1-23-87)
Robert E. Melbourne	Assistant Chief Engineer (to 3-12-87)
Henry G. Lozano	Director of Finance
Larry G. Hobson	Project Construction Engineer
Irwin E. Nichols	Superintendent
Pete Rios	Government/Community Affairs Officer

Administrative offices of the Authority are located at 2750 Fourth Avenue, San Diego. Field headquarters are at the Fred A. Heilbron Operations Center, 610 West Fifth Avenue, Escondido.

**EMPLOYEE RELATIONS**

On June 30, 1987 the Authority had forty-five regular full-time employees and two part-time employees. One secretary was on long-term disability. Fourteen were employed in the San Diego Office and thirty-one worked at the Fred A. Heilbron Operations Center in Escondido. The longevity of the employees is as follows:

Years of Service	Number of Employees
over 30	2
over 25	3
over 20	2
over 15	13
over 10	2
over 5	6
under 5	17

The Authority is a member of the Public Employees Retirement System of the State of California. Contributions to the system are made by the employee and the Authority, and the plan is coordinated with Social Security. The Authority pays for employee's P.E.R.S. contribution except for the older employees. The basic formula provides for retirement at age 60 based upon 2% of the highest annual salary for each year of service. Social Security benefits will be received as well.

Other benefits the employees receive are a Blue Shield administered health plan, a Delta Dental Plan of California, a Vision Care Plan, a long-term disability plan, and a \$50,000 life insurance benefit.

The employees, through their Employees' Association, express their position as to salaries, fringe benefits and working conditions. The Association organizes a summer picnic, a Christmas party and other occasional functions for the employees.

The Administrative Code provides for vacation leaves of twelve working days for the first five years of service and increases to 25 days of vacation after 25 years of service. The Authority recognizes eleven paid holidays each year. Sick leave is granted on the basis of twelve days per year of service and can be accumulated. The Code provides for partial payment of unused sick leave upon retirement and the conversion of sick leave in excess of 60 days to annual leave on a two for one basis. Employees may also choose to convert sick leave in excess of 60 days to cash at half value.

Every spring, in conjunction with preparation of the budget for the following fiscal year, a list of the classified positions to meet the needs of the Authority along with the appropriate salary range is recommended to the Board of Directors by the General Manager and Chief Engineer. After consideration of the staffing requirements within the framework of the budget, anticipated capital improvement projects, and the current changes in the cost of living index, the salaries are established by the Board. The General Manager and Chief Engineer is authorized to make a limited number of semi-annual merit increases within the constraints of the established salary range and the budget.



*Employees' Association 1986 Christmas Party.*

## WATER AUTHORITY COMPOSITION

### General

The San Diego County Water Authority consists of six cities, three water districts, two irrigation districts, ten municipal water districts, one public utility district, one federal agency, and one county water district. It was organized on June 9, 1944, under the "County Water Authority Act" of 1943. The act was requested by San Diego City and County officials, prepared by the distinguished water attorney, Phil D. Swing, and introduced by Senator Ed Fletcher. The measure was approved by the Governor on May 17, 1943.

The original incorporators of the Water Authority were the City of Chula Vista, City of Coronado, City of National City, City of Oceanside, City of San Diego, Fallbrook Public Utility District, Lakeside Irrigation District, La Mesa, Lemon Grove and Spring Valley Irrigation District, and Ramona Irrigation District.

Such an organization was needed for the prime purpose of importing Colorado River water to San Diego in order to augment local water supplies which were rapidly becoming inadequate.

### Area

The Authority encompasses 907,288 acres (1,417.6 square miles), a net increase of 3,282 acres during the fiscal year. Area changes, addition of member agencies, and percentage of area each member agency serves are contained in Table 3. The City of San Diego is the largest area with 210,180 acres; the smallest area is the City of Del Mar consisting of 1,159 acres.

Each calendar year the Authority is required by state law to file a Statement of Change of Boundary. The statement was filed with Metropolitan Water District, the San Diego County Assessor, and the State Board of Equalization on December 31, 1986.

The statement for calendar year 1986 contained five annexations which changed the Authority and MWD boundary, in addition to annexations and detachments that affected the area of the Authority's member agencies.

The Statement of Change of Boundary is used by the County Assessor to determine the total assessed valuation within each member agency and the Authority for tax purposes.

## SAN DIEGO COUNTY WATER AUTHORITY

### Population

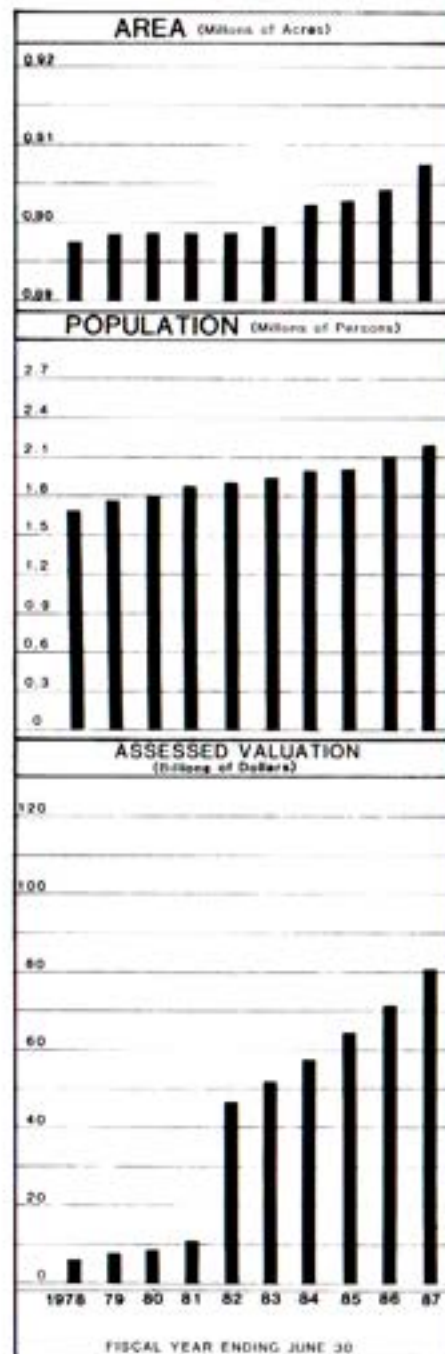
The population of San Diego County on June 30, 1987, was estimated to be 2,240,659 people of which 97 percent live within the Authority service area. The average annual growth rate within the Authority service area for the period from 1946 to 1987 was 3.98 percent. The population within the Authority service area was estimated to be 2,181,000 persons on June 30, 1987, an increase of 75,500 or 3.6 percent from the June 30, 1986, estimate of 2,105,500. Population statistics are contained in Table 2 and Table 3.

The City of San Diego, largest member agency of the Authority in area, leads the member agencies in population with 1,026,519 persons, approximately 47 percent of the Authority total. De Luz Heights Municipal Water District has the smallest population with 269 persons and the lowest density of 0.02 persons per acre. The highest population density within an agency is 9.09 persons per acre in the City of National City.

The average population density of the Authority increased during the fiscal year from 2.33 to 2.40 persons per acre or 1,538 persons per square mile.

### Assessed Valuation

The assessed valuation of taxable property within the Authority, both secured and unsecured, and the Authority's debt service requirements provide the basis for the



## WATER AUTHORITY COMPOSITION

annual determination of the Authority tax rate by the Board of Directors. The number of directors and the number of votes to which each member agency is entitled are determined by the total assessed valuation within each member agency. The valuations are determined by the San Diego County Assessor who collects these taxes for the Authority.

Total assessed valuation of taxable property within the Authority for 1986-87, according to the County Auditor's certification was \$80,633,362,973, and increase of \$9,245,219,657 or 13.0 percent from the 1985-86 certified valuation of \$71,388,143,316.

The average assessed valuation of property within the Authority service area increased from \$78,969 per acre in 1985-86 to \$88,873 per acre in 1986-87. This increase was the result of higher value of secured and unsecured property in the Authority service area.

The assessed valuation for each member agency, the Authority, and San Diego County is contained in Table 5.

## WATER SUPPLY AND CONSUMPTION

### Source

The Metropolitan Water District of Southern California (MWD) is the sole source of supplemental water to the Authority and provides an average of 90% of its water. The member agencies of the Water Authority used approximately 28.5 percent of MWD's supply in 1986-87. The Authority has a preferential right to 11.23 percent of MWD's total supply, but MWD has never invoked preferential rights as a basis for curtailment of water deliveries.

### MWD Facilities

Metropolitan Water District supplies a blend of Colorado River water and State Project water. Water from the Colorado River Aqueduct to the terminus at Lake Havasu is carried through the Colorado River Aqueduct to the terminus at Lake Mathews in Riverside County. Supplies for San Diego are diverted from the aqueduct near the west portal of the San Jacinto Tunnel into the First San Diego Aqueduct (Pipelines 1 and 2). A few miles west, the San Diego Canal receives water from the Casa Loma Canal. Pipelines 1 and 2 enter and traverse San Diego County without going through any other major facilities.

The State Water Project Water is delivered to MWD at Lake Perris, terminus of the 444-mile California Aqueduct. From there, it flows through the Lakeview Pipeline to the San Diego Canal where it is blended with Colorado River water which then flows into Lake Skinner. A portion of the water from Lake Skinner flows directly into Pipelines 3 and 5 while another portion is processed through the Skinner Filtration Plant before entering Pipeline 4. By the end of June 1987, the blend in Lake Skinner was 60 percent Colorado River water and 40 percent State Water Project water.

Lake Skinner is the major storage facility for the San Diego Aqueduct with a maximum capacity of 44,000 acre-feet of storage. The maximum water elevation for storage is 1,479 feet above sea level. The Skinner Treatment Plant, located at the reservoir, had a treatment capacity of 340 million gallons per day (mgd.) These facilities are located in Riverside County south of Winchester.

### Authority Facilities

The Authority takes delivery of water from MWD in the five pipelines of the San Diego Aqueducts approximately six miles south of the Riverside-San Diego County line.

San Vicente Reservoir, which is owned and operated by the City of San Diego, is the terminus of the First Aqueduct. The Fallbrook-Oceanside Branch originates from the First Aqueduct at Rainbow. The Authority operates and maintains approximately 12.5 miles of this branch from Rainbow to Morro Reservoir. The La Mesa-Sweetwater Branch extends from the First Aqueduct at Slaughterhouse Canyon through Lakeside and El Cajon to Sweetwater Reservoir. The two pipelines of the First Aqueduct share common tunnels and inverted siphons and are operated as a single unit.

The three pipelines of the Second Aqueduct (Pipelines 3, 4, and 5), although in common right of way for most of their length, do not share any facilities south of Lake Skinner and are operated separately. The treated water pipeline terminates in Lower Otay Reservoir. One untreated water pipeline ends at the City of San Diego's Alvarado Treatment Plant near Lake Murray. The terminus of Pipeline 5, the other untreated pipeline, is the crossover diversion structure at San Marcos. The Tri-Agencies Pipeline, a branch line that extends about 4.4 miles westerly from San Marcos, delivers treated water to service areas of Buena Colorado Municipal Water District, and the City of Oceanside at an elevation that previously would require pumping.

To maximize the flexibility of the system, several crossover connections have been constructed since 1965. One such facility is the pipeline from the Second Aqueduct at the diversion structure in Twin Oaks Valley to the First Aqueduct in Escondido. This connection permits the refilling of the First Aqueduct with untreated water after agencies to the north have used a portion of its capacity.

Just upstream of the Twin Oaks Diversion is an interconnection which permits the transfer of Pipeline 3 flows into Pipeline 4 and vice versa. Member agencies have also increased the flexibility of their operations by increasing the number of aqueduct pipelines to which they are connected.

Flows in the First Aqueduct are chlorinated at a station in Rainbow Pass just north of the Riverside-San Diego County line. Treated water is chlorinated during the treatment process at the Skinner Plant, and raw water in Pipeline 3 is chlorinated at the Rainbow Chlorination Station.

The design capabilities of the Authority Pipelines at the point of delivery from the Metropolitan Water District are:

Pipelines 1 and 2 combined	196 cubic feet/second
Pipeline 3	250 cubic feet/second
Pipeline 4	380 cubic feet/second
Pipeline 5	450 cubic feet/second

One cubic foot equals 7.48 gallons. One cubic foot per second flowing twenty-four hours will produce nearly two acre-feet. An acre-foot contains approximately 326,000 gallons.

No storage facilities are owned or operated by the Authority. However, it does have the contractual right to store up to 40,000 acre-feet (af) in San Vicente Reservoir, the terminus of the First Aqueduct. An agreement with the City of San Diego, which owns the reservoir, provides for payment to the City of San Diego in the amount of \$2.20 per af for the maximum amount of water in storage each year. In addition, the Authority pays the City of San Diego \$4.00 per af for pumping water from storage into the City's system. The agreement also provides that the first water which may be lost over the spillway is that stored by the Authority. During the fiscal year, water was placed in storage at San Vicente Reservoir by the Authority for the account of member agencies. San Vicente storage statistics are shown in Table 4.

Another Authority-City of San Diego agreement permits storage up to 2,500 af in Lower Otay Reservoir, terminus of Pipeline 3. Storage here is for operational purposes only. No storage is provided for member agencies. The City is paid \$1.00 per af for the maximum storage in any twelve-month period subject to a minimum annual fee of \$1,000. The Authority also pays pumping charges which vary from \$1.50 to \$2.25 per af depending on water elevation.

In July 1985, two hydroelectric plants were completed. The Miramar Plant has two turbine/generator units with a name plate generating capacity of 400 kilowatts per unit. The Alvarado Plant has two units with generator ratings of 1,050 kilowatts per unit.

Supervision and control of the San Diego Aqueduct system and the hydroelectric plants are conducted from the Fred A. Heilbron Operations Center, Escondido, where delivery requests from member agencies are received. Aqueduct flows and deliveries are monitored and controlled through a computer and telemetering system. Communications with operating and maintenance field staff and with MWD's East Valley Operations Section at Lake Skinner is by two-way radio.

#### Deliveries and Rates

The San Diego County Water Authority aqueducts received 519,411 af from MWD during the fiscal year. Untreated water accounted for 359,700 af, and the balance of 159,711 af of water was treated at the Skinner Treatment Plant in Riverside County. The total flow of 519,411 af was 31,287 af more than the previous fiscal year which represents a 6.4 percent increase. The lowest flow rate averaged 441 cubic feet per second (cfs) in March 1987. The highest average delivery of 967 cfs occurred during June 1987. The average for the entire year was 696 cfs.

Water deliveries to member agencies and others during the fiscal year are shown in Table 8. Purchases by member agencies totaled 503,678 af, of which 411,636 af was treated water from the Skinner plant and treatment plants owned by member agencies. Annual water sales to individual agencies for the eight-year period 1979-1980 through 1986-87, and total water sales from 1947-1987, are shown on Table 7.

The operation and maintenance of the Authority is financed by a surcharge rate of \$5 per af on water delivered to its member agencies plus other miscellaneous general fund revenues.

Capital costs for the First and Second Pipelines have been financed by the United States Government. The Third and Fourth Pipelines were financed by the sale of General Obligation Bonds. The debt service on this voter-approved debt is funded by an ad valorem tax on all property within the San Diego County Water Authority service area.

Construction of the Fifth Pipeline was financed through a borrowing from California First Bank under Section 8 of the Water Authority Act and accrued reserves from general purpose revenues including property tax allocations from the County of San Diego from the 1 percent general purpose levy. The debt service on borrowings under Section 8 of the County Water Authority Act is funded by a surcharge rate of \$5 per acre foot which is included in the total surcharge of \$10 per acre foot. The tax revenues from assessed valuations of property within the Authority for fiscal year 1986-87, as determined by the County Assessor, was set at \$.00461 per \$100 of assessed valuation for retirement of voter-approved bonded indebtedness.

The Metropolitan Water District generally announces water rates two years in advance. Since 1975 when water was \$58 an acre foot, water rates have been increased yearly to \$197 an acre foot in fiscal year 1983-84. For the years 1984-85 and 1985-86, the rate remained the same at \$197 an acre foot due to the leveling off of inflation and the cost of energy for pumping. With a return to a higher demand for water because of lower rainfall and increased water sales, MWD decreased the water rate \$5 to \$192 per acre foot for the fiscal year 1985-86. The projected rate for 1986-87 and 1987-88 remained at \$197 per acre foot.

The MWD rate for untreated, non-interruptible water for municipal and industrial use was \$197 for 1986-87 to which was added the Authority's surcharge of \$10 per acre foot. Treatment charges by MWD at the Skinner Treatment Plant were \$33 per acre foot for the same period. Contracts between the Authority and some of its member agencies which have treatment plants provide for service by these plants. This treated water is then sold to agencies which do not have treatment facilities and with limited or no access to the filtered water pipelines. The commodity charge by the Authority for treatment of water for fiscal 1986-87 was \$40 per acre foot.



*Original Flume From Old Mission Dam -- Circa 1913  
San Diego Historical Society -- Title Insurance and Trust Collection*

WATER SUPPLY AND CONSUMPTION

SUMMARY OF UNTREATED WATER RATES

(Dollars Per Acre Foot)

From	To	MWD	Authority	Total	Agricultural Rebate	Resulting Agricultural Rate	Municipal and Industrial Interruptible Water Rate
7/01/58	1/01/61	15.00	2.00	17.00	3.00	14.00	-
1/01/61	1/01/62	17.00	2.00	19.00	4.25	14.75	-
1/01/62	1/01/63	19.00	2.00	21.00	5.50	15.50	-
1/01/63	1/01/64	21.00	2.00	23.00	6.75	16.25	-
1/01/64	7/01/64	24.00	2.00	26.00	9.00	17.00	-
7/01/64	9/01/64	25.00	2.00	27.00	9.75	17.25	-
9/01/64	7/01/65	25.00	1.25	26.25	9.75	16.50	-
7/01/65	7/01/66	28.00	1.25	29.25	12.00	17.25	-
7/01/66	7/01/67	31.00	1.25	32.25	14.00	18.25	-
7/01/67	7/01/68	34.00	1.25	35.25	16.00	19.25	-
7/01/68	7/01/69	37.00	1.25	38.25	18.00	20.25	-
7/01/69	7/01/70	40.00	1.25	41.25	20.00	21.25	-
7/01/70	7/01/71	44.00	1.25	45.25	23.00	22.25	-
7/01/71	7/01/72	48.00	1.25	49.25	26.00	23.25	-
7/01/72	8/13/73	52.00	1.25	53.25	28.50	24.75	-
8/13/73	7/01/75	56.00	1.25	57.25	31.00	26.25	-
7/01/75	7/01/76	58.00	1.25	59.25	33.00	26.25	-
7/01/76	7/01/77	62.00	2.00	64.00	33.00	31.00	-
7/01/77	7/01/78	67.00	2.00	69.00	34.00	35.00	-
7/01/78	1/01/79	74.00	2.50	76.50	34.00	42.50	-
1/01/79	7/01/79	79.00	3.00	82.00	34.00	48.00	-
7/01/79	7/01/80	79.00	5.00	84.00	34.00	50.00	-
7/01/80	7/01/81	90.00	9.00	99.00	39.00	60.00	-
7/01/81	7/01/82	96.00	9.00	105.00	35.00	70.00	70.00
7/01/82	7/01/83	114.00	10.00	124.00	35.00	89.00	89.00
7/01/83	12/31/83	144.00	10.00	154.00	44.00	110.00	110.00
1/01/84	7/01/84	197.00	10.00	207.00	44.00	163.00	163.00
7/01/84	7/01/85	197.00	10.00	207.00	44.00	163.00	163.00
7/01/85	7/01/86	192.00	10.00	202.00	44.00	158.00	158.00
7/01/86	7/01/87	197.00	10.00	207.00	44.00	163.00	163.00
7/01/87	7/01/88	197.00	10.00	207.00	44.00	163.00	163.00

NOTE: The above summary of water rates shows prices for untreated Colorado River and State Project water: \$13.00/af for the period 7/01/76 to 7/01/77; \$17.00/af for the period 7/01/77 to 7/01/78; \$21.00/af for the period 7/01/78 to 7/01/79; \$25.00/af for the period 7/01/79 to 7/01/82; \$26.00 for period 7/1/82 to 7/1/83; \$28.00 for the period 7/1/83 to 7/1/84; \$32.00 for the period 7/1/84 to 7/1/86; and \$33.00 for the period 7/1/86 to 7/1/87 must be added to the above rates for treated water deliveries to the Authority from MWD.

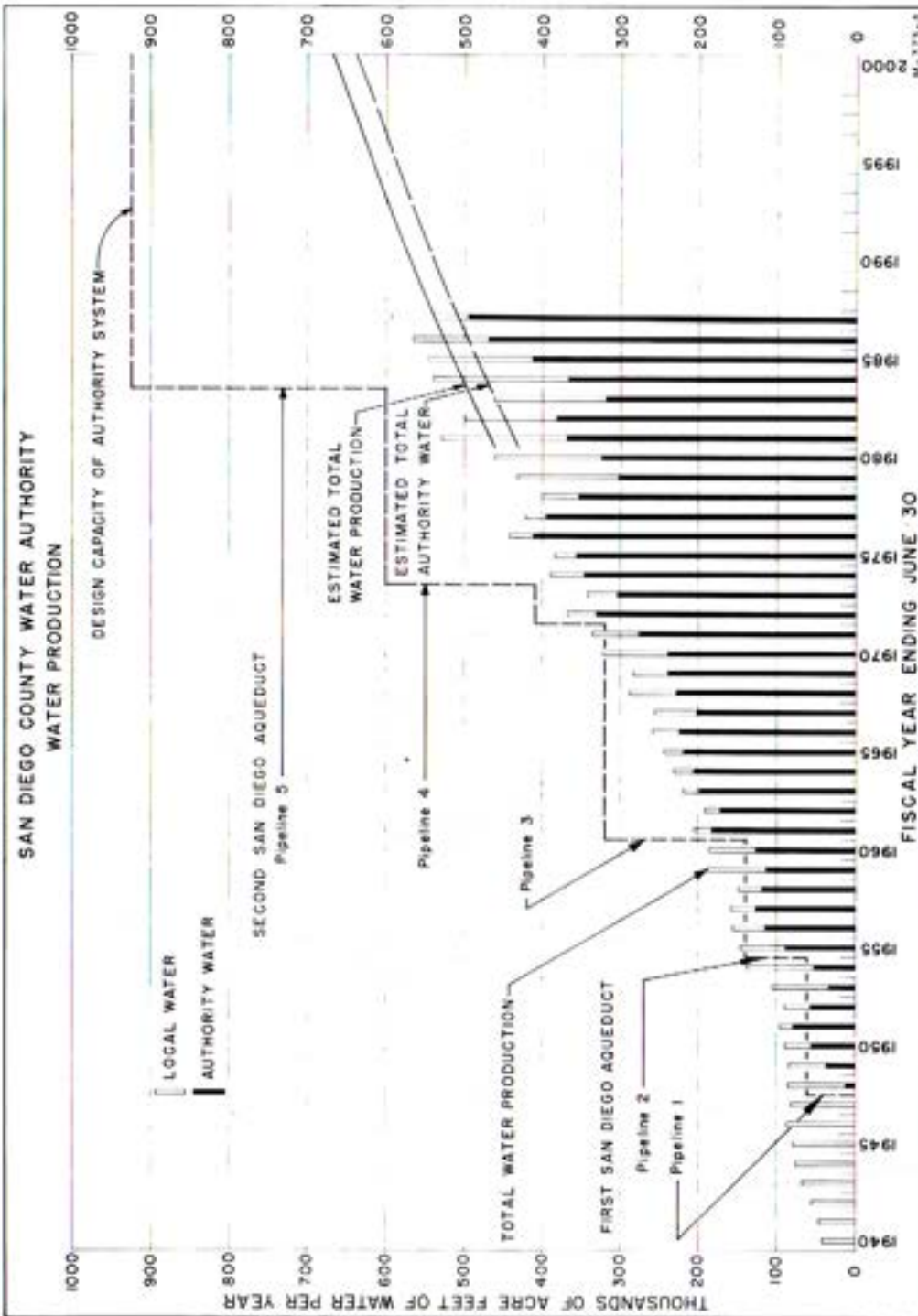


Figure B. Water Production of Authority Member Agencies

As shown in the summary above, MWD now gives encouragement to better local control and management of water supplies through an interruptible water rate. To obtain the interruptible rebate, the Authority certifies the quantities of water in storage which qualify as interruptible water to MWD. Rebates are shared with member agencies in proportion to the interruptible water they have in storage. The total storage that qualifies for the municipal and industrial interruptible rate was 120,000 acre feet.

**Water Production of Member Agencies**

The term "Water Production" describes the quantity of water an agency obtains from all sources to meet its consumers' needs. It includes losses between the source and the consumer. These losses may result from pipeline breaks, evaporation from operating reservoirs, and metering discrepancies. Sources include impounding reservoirs, wells, and the Authority system.

Total water production from each of the 24 member agencies of the Authority is shown in Table 4. During 1985-86, the total water production was 565,600.7 af. The water production for the current year 1986-87 is 591,819.7 af of which is an increase of 26,219.0 af or 4.6 percent. The highest monthly production occurred during August 1986 when 72,930.3 af of water were used. This was more than the record high month of July 1985 when 70,248.7 af were used. The lowest monthly production occurred during March 1987 when 31,963.3 af of water were used. The Authority supplied a high of 88.3 percent of the water production during the month of June 1987 and 83.5 percent of the production for the fiscal year 1986-87.

Rainfall for 1986-87 was below normal as shown below:

Location	Rainfall	Percent of Normal
Lindberg Field	9.61 in.	103%
Lake Cuyamaca	26.14 in.	69%
Lake Henshaw	19.67 in.	76%

Local and imported water stored in regional reservoirs decreased from 339,511 acre-feet on June 30, 1986, to 292,906 acre-feet on June 30, 1987, which is a decrease of 13.7 percent.

The City of San Diego maintains the most extensive system of impounding reservoirs in the Authority service area. This system produced 39,559.5 af of water during the fiscal year, and out of this the City of San Diego sold 5,247.0 af to the California-American Water Company for delivery to Coronado and Imperial Beach. Helix Water District produced 3,478.5 af from Lake Cuyamaca and its wells in the El Monte Basin. The Vista Irrigation District (part of Buena Colorado Municipal Water District) produced 12,809.3 af from Lake Henshaw and the Warner Ranch wells. The City of Escondido produced 8,139.3 af from

## SAN DIEGO COUNTY WATER AUTHORITY

the Henshaw-Wolford system, and 1,798.9 af were produced within Yuima Municipal Water District from the Pauma Valley wells. Sweetwater Authority produced 9,730.6 af from the Sweetwater system and wells for use in National City and South Bay Irrigation District.

Eleven of the 24 member agencies are 100 percent dependent on imported water. The thirteen remaining agencies vary from 99.2 percent (Valley Center) to 1.2 percent (Pendleton Military Reservation) dependence on Authority Water.

## WATER SUPPLY AND CONSUMPTION

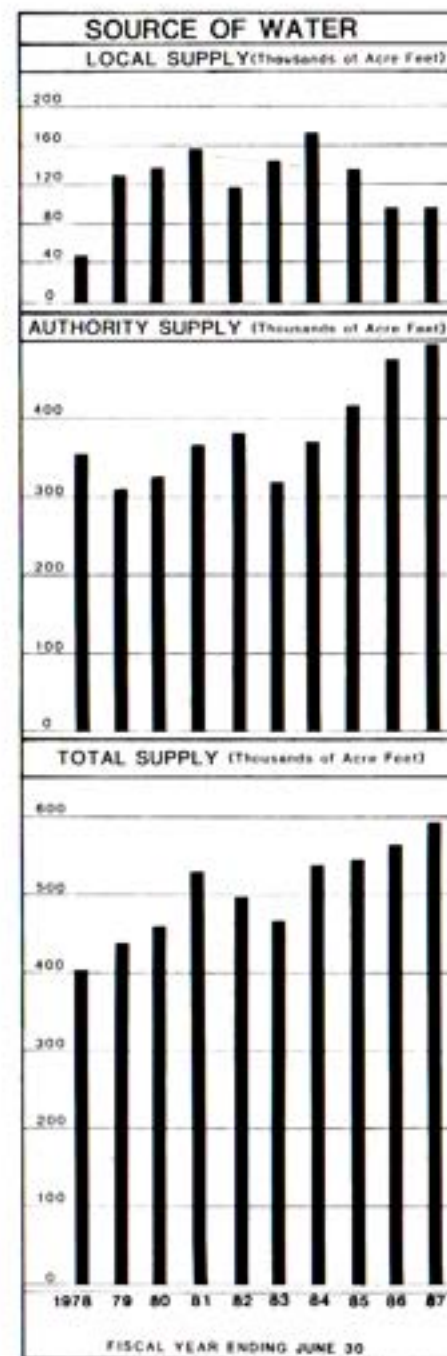
Water production per unit area is highest in the urbanized portions of the County. However, the per capita use of water is generally less in areas of greater population density such as Helix Water District, National City, and the City of San Diego. Water production per unit area in the less densely populated areas, such as Rainbow Municipal Water District, Valley Center Municipal Water District, and De Luz Heights Municipal Water District is similar to more urbanized areas but per capita use is considerably higher.

Average daily per capital consumption of municipal and industrial water for fiscal year 1986-87 was 192 gallons per day. This is the same as the previous year but an increase from the 189 gallons per capita per day two years ago. It is estimated that the Authority serves approximately 49% of the geographical area within its boundaries.

The combined water production of Authority member agencies is shown in Figure B. The unshaded area indicates the proportion obtained from local sources compared with that supplied by the Authority. Present transmission facilities are adequate to meet water production demands until 1995.

### Water Quality

The general quality of water entering the Authority system continues to improve. However, some variation in raw water turbidity still occurs due to seasonally high algae levels. This is serious



only for users of Colorado River water which is not filtered prior to distribution. Turbidity at Miramar Treatment Plant normally ranged from 1.3 to 9.0 Turbidity Units (TU).

Algae growth in Authority pipelines is controlled through a program of chlorination. The rate of chlorine applied during the year was 0.75 parts per million (ppm) to flows in Pipelines 1, 2, and 3 at the Rainbow Chlorination Station. This program has effectively controlled the residual algae from the Colorado River Aqueduct and provides continuous chlorination of untreated water in Pipeline 3 from Lake Skinner. Pipeline 5 is chlorinated periodically at Lake Skinner to control the algae inside the pipe. Treated water is delivered to the Authority from the Robert A. Skinner Treatment Plant where it is chlorinated and filtered.

Chemical constituents of the dissolved solids in the Colorado River water are shown in Table 10. The analyses are based on samples taken from West Portal of San Jacinto Tunnel and treated by MWD. Total hardness ranged from a high of 273 milligrams per liter (mg/l) to a low of 259 mg/l. Water temperature varied from a high of 78.8°F (26.0°C) in August 1986 to a low of 52.6°F (11.5°C) reported in February 1987.

The chemical constituents of the dissolved solids of treated, blended water at Lake Skinner are shown in Table 11. Total hardness ranged from a high of 252 mg/l to a low of 172 mg/l. Water temperature ranged from a high of 80.6°F (27.0°C) recorded in August 1986 to a low of 51.8°F (11.0°C) in January 1987.

#### Agricultural Water Use

Agricultural water use by member agencies of the Authority during 1986-87 was 115,836 af which is 3,787 af more than the previous year's use of 112,049 af. The percentage of agricultural water to the total water production was 19.6 percent, a decrease from 19.8 percent in 1985-86. About 92% of water used for agricultural purposes is supplied by the Authority while only 83% of the total amount of water produced is from the Authority. This occurs because agencies with a high percentage of agricultural water have little or no local production. For example, Rainbow Municipal Water District uses approximately 86% of its water for agricultural purposes but it has no local production. On the other hand, the City of San Diego uses less than 1 percent of its water for agricultural purposes but its local production is 16.9 percent of its total water needs. A complete summary of agricultural water use is contained in Table 4.

#### Water Treatment

The Robert A. Skinner Treatment Plant began operations in September 1976. Initial capacity of the facility was 150 million gallons per day (mgd). A 90 mgd expansion of the plant was completed and put into operation in May 1979. This expansion, together with the 100 mgd Skinner No. 2 Plant completed in 1985-86, will provide treated water to 13 agencies within the Water Authority requiring treated water.

Member agencies of the Authority that own and operate treatment plants within the County are: The City of San Diego, the City of Escondido (joint ownership with Vista Irrigation District), San Dieguito Water District-Santa Fe Irrigation District (joint ownership), Helix Water District, City of Oceanside, City of Poway, Ramona Municipal Water District, and Sweetwater Authority (operating agency for South Bay Irrigation District and National City). The Authority purchases treated water from Helix and Poway to supply Otay Water District, Padre Dam Municipal Water District and Ramona Municipal Water District. The cost of all treated water delivered by the Authority to its member agencies is the same regardless of the treatment source.

Several agencies on the First Aqueduct still use Colorado River water with dual chlorination as the only treatment provided. The Authority provides the first chlorine application in its pipelines, and the agencies are responsible for the second chlorination after delivery. The enlarged Skinner Treatment Plant and the Auld Valley Pipeline connection to the First Aqueduct will provide treated, blended water in these pipelines in late 1989 as requested by the State Department of Health. This treated water is disinfected by the relatively new chloramination method which introduces ammonia and chlorine into the water and prevents the formation of trihalomethanes (THM). The abrupt termination of a filtered water line at Escondido without the benefit of a regulatory reservoir to take the pipeline surges, presents serious operating problems that will require modification of existing facilities.

#### Allocation of Water to Member Agencies

The County Water Authority Act (Section 5.11) provides a preferential entitlement for the purchase of water by each of the Authority member agencies. This preferential right is established by the proportion of all payments by each agency to the Authority to meet capital costs, including the annexation fees, taxes and that portion of water purchases related to capital expenditures.

Voluntary agreement between the member agencies has made it unnecessary to invoke these provisions when shortages have developed. When water and capacity are available, agencies are permitted to pur-



million, and the Authority's population will increase from the present 2 million to 2.70 million persons by the year 2000.

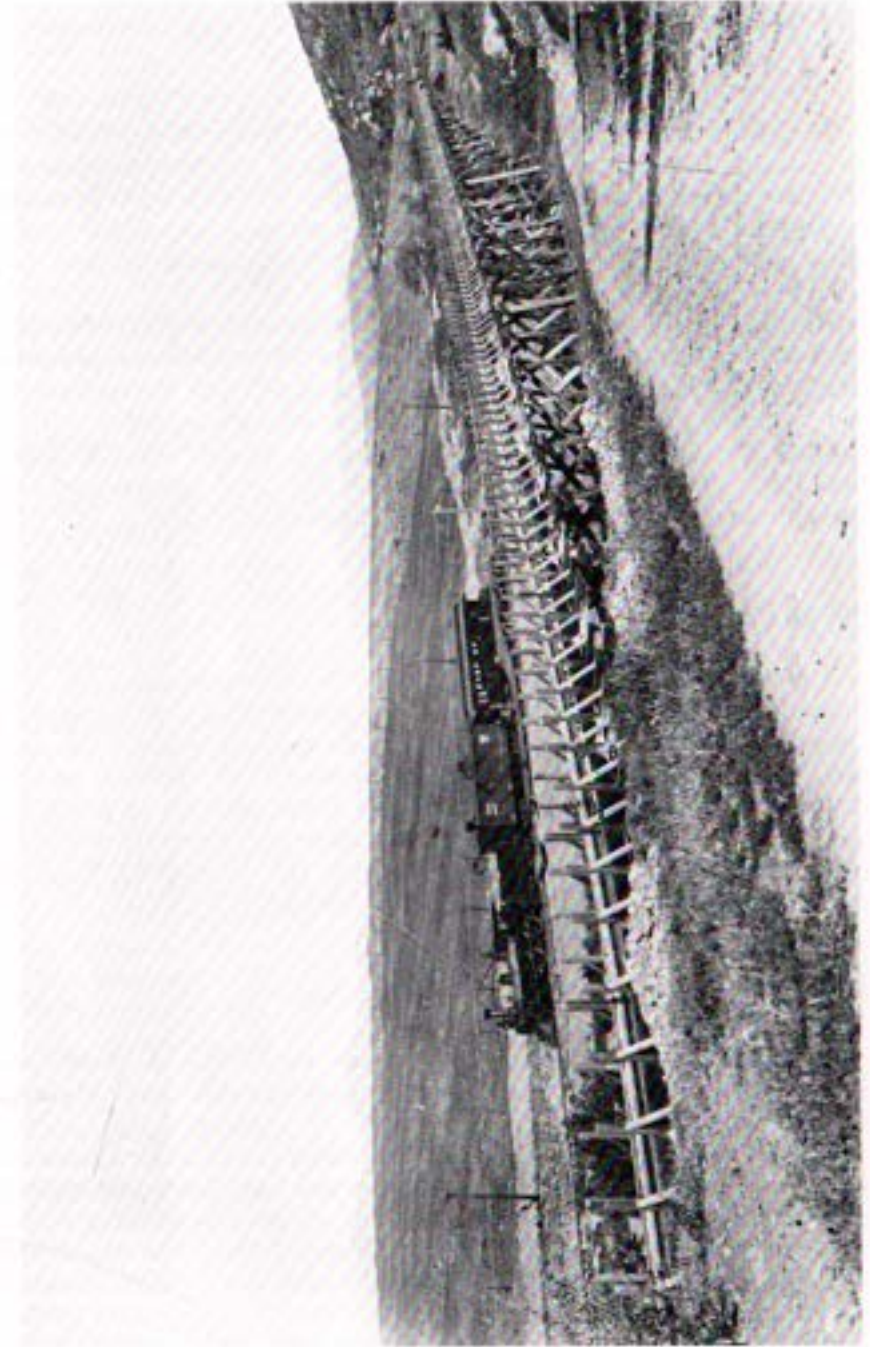
The MWD Board has adopted a policy to provide additional water and/or facilities, as needed, to meet the demands of its member agencies. To fulfill that policy, MWD contracted with the State of California in 1960 for 1.5 million acre-feet annually from the State Water Project. When faced with a loss of over half its annual Colorado River Supply of 1,212,000 af because of the U.S. Supreme Court's decision in *Arizona vs. California* in 1964, MWD amended its contract with the State to provide an additional 500,000 af per year. Annexations and other changes have increased that MWD-State contract to 2,011,500 af per year.

The California Aqueduct, a key water supply feature of the State Water Project, was completed in 1973. MWD takes delivery of State Project water at several points. Supplies destined for San Diego County are delivered to MWD at Lake Perris, terminus of the 444-mile aqueduct. Water then flows through Lakeview Pipeline which parallels the Colorado River Aqueduct. Northern California water is mixed with Colorado River water at the existing turnout for the San Diego Canal. The blended water then flows south into Lake Skinner.

Additional water resources must be developed during the 1980's as a result of the failure of the voters to approve the completion of the State Water Project. The Authority, MWD, the State of California, various federal agencies, and many private organizations are presently conducting investigations of feasible alternate water sources. The Board of Directors of the San Diego County Water Authority supports local projects of member agencies such as the City of San Diego's Aquaculture Project.

The Pamo Project, which would add reliability to the Authority's system and provide for the delivery of water to the northerly half of the City of San Diego and to other agencies in the event of an emergency, is well along on its final design and awaiting issuance of the Corps of Engineers' "404" permit.

Figure B shows the increase in water requirements within the Authority since 1940.



San Diego Flume Parallel To A Segment of San Diego and Cuyamaca Railroad  
Alta Station on Parker Ranch Between La Mesa and El Cajon - Circa 1890  
San Diego Historical Society - Title Insurance And Trust Collection

## PUBLIC INFORMATION

The primary objective of the San Diego County Water Authority is to enhance the quality of life of the people of this area by providing a reliable, high-quality, imported water supply. The Board of Directors is committed to keeping the public informed and responsive to the tenuous water supply of this semi-arid region which must meet the demands of an expanding population.

It will take many years to construct the necessary pipelines and perhaps decades to develop the new sources of water to meet these growing demands. The citizens of San Diego must understand the restrictions of our water supply system and be involved in overcoming these limitations through the wise use of water. The Water Authority's Public Information Program educates the public concerning these limitations and suggests measures they can take to stretch the available water.

### School Program

Three full-time Education Resource Specialists manage the School Program, which has offered classroom presentations on water to San Diego County schools since 1975. The Program is available to elementary, junior, and senior high schools; colleges; universities; and adult education classes. The subject matter is diverse enough to relate to the various fields of study and meets curriculum requirements of the California Department of Education. During the 1986-1987 fiscal year, over 27,000 students participated in the program.

### Speakers Program

During the year, representatives from the Water Authority made presentations to community, service, professional, and educational organizations.

Water quality, earthquakes, and other water issues created great media interest. Water Authority board members and staff participated in numerous radio, television, and print media interviews, responding to concern over the water supply. Throughout the year, news releases kept the media informed of the latest water issues. Editorials, newspaper articles, and general information news items reported the activities of the Water Authority and its member agencies.

### Conferences-Seminars and Workshops

The San Diego County Water Authority co-sponsored the first San Diego County Xeriscape Conference. Xeriscape is a popular concept used to promote water conservation through sound landscape practices.

Assistance to the Southern California Water Committee which held a water conference in San Diego included coordination of the attendance of high school students to the conference.

A leak detection workshop in San Diego, offered by the California Department of Water Resources, Office of Water Conservation, was sponsored by the Water Authority and its member agencies.

### Garden-Tours-Displays

The low-water use demonstration garden, established at the Del Mar Fairgrounds, attracted several thousand fairgoers during the 1987 Del Mar Fair. A companion garden program for Water Authority member agencies has produced five demonstration gardens. The City of San Diego, Helix Water District, Costa Real Municipal Water District, South Bay Irrigation District, and the County of San Diego are currently participating in the program. With fifty percent of residential water being used outdoors. Low-water use landscape can result in major water savings. The goal is to have similar gardens in every community in the region.

Tours of water facilities and displays in malls and other public spaces have been very effective in imparting information on a one-to-one basis. Director John Starkey sponsored a tour to the Colorado River Aqueduct for area teachers and school administrators, which encouraged greater acceptance of the Water Authority School Program.

Displays were made available to member agencies, military commands, community organizations, and local government for use in their water and energy awareness activities.

### Water Conservation Contests

To stimulate and share water-saving ideas, awards are given for the best ideas in water conservation. A Garden Design Contest, co-sponsored by the American Society of Landscape Architects and the Landscape Contractors Association, was added to the water conservation contest held each year. The 1987 winners in the various contests who were presented their awards at the Low Water Use Demonstration Garden were:

Community Conservation Awards

Individual – Edwin O. Reed  
 Individual – Mr. and Mrs. Robert Cook  
 Local Government – Lakeside Water District

Landscape Garden Design Awards

First Place – Schmidt Design, ASLA  
 Second Place – Mariam Marum, Marum and Associates  
 Honorable Mention – Kathryn W. Fulhorst, ASLA  
 – John Horton, ASLA

**Government Relations**

The 1987-1988 legislative session emerged as a year of Northern vs Southern water interests moving towards better solutions to the overall State water problem. During the 1987 session two sets of bills were introduced that took a comprehensive approach to the Delta problems. These measures were authored by Senator Ayala and Assemblyman Costa and would have provided for a through Delta facility, improved water quality and brought more water South. These bills failed in the final days of the legislative session. However, at the end of the 1987 session, efforts were renewed by Senators Boatwright and Ayala to begin to approach the Delta solution. The Senators' measure SB 34 provides \$170 million over the next 10 years to maintain levees in the Delta.

Specifically relating to the San Diego County Water Authority, two bills were passed during the 1987 legislative session. The first, AB 34, authored by Assemblyman Bradley specified the existence of a quorum for County Water Authorities to conduct business. The second bill authored by Senator Bergeson SB 1294, authorizes the San Diego County Water Authority to incur a second Contract of Indebtedness in lieu of issuing revenue bonds. The need for this bill came about after the Water Authority incurred debt by contract in order to build Pamo Dam. During this same period, Congress revised the Federal tax laws relating to arbitrage which in turn required the Authority to defease its debt. The remainder of the 1987 legislative year promises to be a neverending cycle of new proposals in the water arena.

**OPERATION AND MAINTENANCE****General**

Operations and maintenance of the Water Authority's aqueduct facilities and equipment is directed by the Superintendent from the Fred A. Heilbron Operations Center, 610 W. Fifth Avenue, Escondido, California. The Authority's operation and maintenance force of twenty-five people operates the aqueduct system and normally performs all maintenance and repair of the aqueducts, as well as construction and modification of metering and control buildings.

The eight people in aqueduct operations, which include two system technicians, serve as system operators and also maintain all meters, telemeters, recorders, process control, and water disinfection equipment. The maintenance force of sixteen also includes a warehouseman, two shop mechanics and three man construction crew.

The Fred A. Heilbron Operations Center occupies one city block with five major buildings. The main building houses the aqueduct computerized telemetry control system and offices for operations, maintenance, construction and field engineering. A shop building has facilities for the repair and service of all Authority vehicles and heavy equipment, and a small machine shop, meter shop and equipment maintenance office. Materials, supplies, tools and small equipment are stored in the warehouse, which also provides security parking for equipment and contains the valve repair and carpentry shops. A training center building contains two classrooms equipped for waterworks technology training. An on-site residence gives added security, nighttime assistance to the aqueduct system operators and reduction of response time by having equipment ready for the emergency response crews.

A dual radio system using two different radio relay sites on Palomar Mountain connects the Authority base stations at the Operations Center and the San Diego office, 25 mobile units, Metropolitan Water District's Robert A. Skinner Treatment Plant in Riverside County, and all the major San Diego County purveyors. If either or both relay stations failed, the relays can be bypassed and radio units can be contacted directly. A touch pad call system can call up a specific interagency radio while others remain mute.

A standby generator supplies emergency power for the Fred A. Heilbron Operation Center's control room, as well as the offices and shops.

**Operations**

The Operations Center control room is staffed every day, including weekends and holidays from 7:30 to 4:00 p.m. During off-hours, the Water Authority phone calls are transferred to the home of the systems operator on duty, who also has an Authority interagency mobile radio. A pager will notify the duty operator if a telephone contact cannot be made. In emergencies the duty operator is assisted by the superintendent and chief operator who have interagency radios at home for quick response and field coordination with other agencies.

Of the five pipelines presently serving the Water Authority, No. 1, No. 2, No. 3 and No. 5 carry untreated water. Three of the four raw water pipelines receive a continuous injection of chlorine from the Authority's Rainbow chlorine station. Chlorine is used to control algae and asiatic clams in the pipelines and also provides the first of a required dual chlorination for the First Aqueduct agencies that are delivering Colorado River Water without full sedimentation and filtration treatment. Water in the treated water line is disinfected with chloramines (chlorine and ammonia) by MWD at the Robert A. Skinner Treatment Plant.

The Water Authority serves as agent of the First Aqueduct North County water districts by measuring and reporting aqueduct water turbidity to meet daily monitoring requirements of the California Safe Drinking Water Act. The results of water quality sampling and measurement by both Authority forces and member agencies' treatment plants are compiled for a more complete water quality record.

Charts of the service connection meters are changed each week. Flow charts and meter readings are compared for indications of inaccuracies. The calibration of each active meter is checked at least three times per year. Meter accuracy is also checked at any time requested by a member agency.

Flow changes in both the treated and raw water aqueducts are controlled either locally or remotely by the Metropolitan Water District at the Robert A. Skinner Treatment Plant Operations Center. The plant's operation room is manned around the clock, and flow changes can be requested and made at any time in an emergency; but, normally they are made at two designated morning and afternoon times each day for the convenience of the treatment plant operations.

Most of the metered flows in the aqueduct system are controlled and displayed on the Authority's operation center automatic computerized control system. The computer warns the daytime operator of problems by alarm displays and a synthesized voice, and the nighttime duty operator by telephone. The duty operator may also interrogate the computer control system from home by telephone using special portable equipment.

Since the aqueduct system in San Diego County has no built-in operational storage, all flow changes must be carefully coordinated to keep the system in balance to maintain the proper flow to the service connections at or near the end of the pipeline. The computer and large aqueduct flow status board show when too little or too much water is available to meet the member agencies' needs. Each pipeline's current flow, in and out, requested flows, meter sizes, maximum capacity flows, critical pipeline flows and valve information are displayed on the status board, and computer terminals.

For operational emergencies, a van used for aqueduct operations and as a mobile electronic repair facility is equipped so that it can also be used as an emergency operations center where radio, telephone, and telemeter functions can be monitored.

Authority water is stored in several water agency reservoirs, but principally by the City of San Diego at San Vicente Reservoir. Except in minor amounts, these water storage facilities cannot return stored water to the aqueduct for use elsewhere.

The Bueno Colorado Water District, the Helix Water District, and the City of San Diego have service connections through which small flows of treated water can be put into the aqueduct when needed.

There are three pumps at the Authority's Miramar Pump Station available to pump high flows of treated water from the City of San Diego's Miramar Treatment Plant into the aqueduct. These flows are normally available only if additional untreated water can be delivered from the aqueduct to the plant because of limited storage capacity at Lake Miramar. A fourth pump, though installed, is not being used until modifications can be made to correct a vibration problem.

The Authority's Miramar Pump station can also be used to deliver aqueduct treated water by reverse flow directly into the Miramar Treatment Plant's clearwell for storage and delivery directly to consumers.

Aqueduct flows during the year averaged 717 cfs with a high of 1141 on August 20, 1986, and a low of 334 cfs on February 26, 1987. The First Aqueduct received 100% Colorado River Aqueduct water, the three pipelines of the Second Aqueduct averaged about 70% Colorado River Aqueduct water and 30% State Project water.

After the two severe earthquakes centered in the Palm Springs area on July 8th and July 13th, the chlorination station, the pump station, and the other Authority facilities were checked for damage. No problems were found and all systems were functioning normally.

The earthquake on July 8th damaged a Southern California Edison Company substation which resulted in an interruption of power to MWD's Eagle Mountain and Julian Hinds pumping plants. It was 37 hours before all nine pumps were operating. There was a 50 cfs decrease in the First Aqueduct flow, but no other interruption of flow to the San Diego Aqueducts.

The 1000 horsepower, 63 cfs C-22 pump at Miramar pumping plants was first put in continuous operation on July 10, 1986.

When the Metropolitan Water District resumed scraping the sides of the Colorado River Aqueduct canals to maintain peak capacity, turbidity in the First San Diego Aqueduct exceeded the 5.0 NTU measurement range of the Water Authority turbidimeters.

The recently completed San Diego #13 service connection was first placed in service on October 15th, and initially used to flush the new San Diego Paradise Hills pipeline. The new service connection was placed in full service on November 21, 1986.

Flow surges continued to cause problems. In January and February 1987, the Third pipeline Miramar vent cover grate was ejected by surges and substantial erosion of the hillside occurred. There will soon be residential development in this area and the Water Authority is trying to prevent or contain these overflows. Most surges are caused by unanticipated flow changes up stream, including malfunctions at Rancho California and at MWD's Robert A. Skinner Treatment Plant.

A flow test of Pipeline 3 established that 144 cfs raised water into the Navajo vent south of Mission Gorge. The flow past this point is now limited to 135 cfs as a safety precaution in the event of surges in the filtered water pipeline.

Starting in March 1987, a capacity flow of 62 cfs was supplied to the Sweetwater Authority to meet their needs with the excess being stored in their Sweetwater Lake to relieve the demand on Pipeline 3 (treated water) during the summer months.

In April and May 1987 there were numerous complaints of milky water due to entrained air in the treated water aqueduct south of the San Diego River. A press release was prepared and released on June 1st to explain the problem.

A flow test by Metropolitan Water District in early May 1987 indicated that the San Diego canal feeding Lake Skinner and the second San Diego Aqueduct pipelines now has a capacity of 1100 cfs after reconstruction work by MWD to increase the flow.

During June 1987 the water quality out of Lake Skinner deteriorated and developed taste and odor problems. Metropolitan took the Lake out of service and supplied the plant from the lake bypass pipeline. The problem was traced to heavy dead algae buildup and clams inside the outlet conduit from Lake Skinner. Cleaning out this material, followed by breakpoint chlorination and an extensive flushing operation before returning the line to service, corrected the problem.

### Maintenance

The Authority maintenance yard is located at the Fred A. Heilbron Operations Center in Escondido where all maintenance and force account construction is based. This maintenance yard is located near the center of the aqueduct system with some facilities as much as 60 miles away. For outlying major construction projects, a field office may be established in an Authority office trailer, or in a large combination construction trailer with work benches and a locked storeroom.

Maintenance activities include service, repair and maintenance of Authority buildings, pipelines, roads and equipment. The facilities and equipment maintained include: The Fred A. Heilbron Operations Center buildings, shops and yard; about 222 miles of major pipelines; 130 miles of rights-of-way; 109 miles of Authority roads; 69 buildings housing meters and automatic control equipment; a large chlorine station; a pump station containing four pumps with motors from 400 to 1,000 horsepower capable of pumping about 180 cubic feet per second; and over 900 underground valve vaults and two hydroelectric plants, each with two turbines and generators. All control equipment is serviced and repaired in Authority shops or by specially-equipped service trucks.

Maintenance equipment includes two motor graders, a bulldozer, two skidloaders, a backhoe, one 25-ton and two 5-ton cranes, two forklifts, as well as dump trucks, truck tractors and equipment trailers, compressors, generators, welders, an eight inch dewatering pump, and other portable pumps. All pickups and most other trucks have mobile radios for efficiency and quick response.

The Authority maintenance force of twelve maintenance workers and a general foreman, two mechanics and a warehouse supervisor normally provide all of the previously mentioned maintenance. They also construct new control and metering facilities, patrol the pipelines for encroachment and inspect for hazard damage to pipelines or easements.

The vehicle shop is open two hours after the normal working hours to allow for minor repairs and servicing. The shop and warehouse are open every regular working day.

The pipeline easements and patrol roads are normally checked every week by patrol vehicles. Twice each year the pipelines are checked by foot patrol.

Activities this year included the installation of the first radio operated telemeter and remote control units at the Olivenhain No. 2 station.

A computerized controller and three electric valve operators were installed at the No. 5 pipeline terminal to automatically control the water level in the pipeline rejection tower. This provides maximum pressure to the crossover pipeline for higher flows.

## SAN DIEGO COUNTY WATER AUTHORITY

The Water Authority continued its policy of participating on a one share basis with local property owners in upgrading and paving aqueduct patrol roads. This year patrol roads in the San Marcos' Twin Oaks Valley area and in the Olivenhain's Elfin Forest area were paved.

The Water Authority joined the Underground Services Alert in October. This service notifies the Water Authority of any excavations within 500 feet of Authority pipelines. Since installation of this system, the Authority has averaged about 10 calls per day. While much time is spent responding to these calls, it is important to avoid damage to Authority pipelines.

All turbine draft tubes at both the Miramar and Alvarado Hydroelectric Plants were damaged by cavitation, and had to be removed for repair. Repairs were made by the manufacturer under warranty.

The Annual Engineering and Operation Director's tour featured the Second Aqueduct alignment from the Miramar control station and hydroelectric plant south. The party travelled one of the proposed alignments for the No. 4 pipeline extension south of Lake Murray.

### Force Construction

The Bueno No. 10 service connection started during the last year was completed. Before it could be put into service, someone broke into the station and stole the electronic metering and control equipment.

Construction of the San Marcos No. 5 take off and control buildings was started and completed. Installation of the metering and control equipment was not completed.

Excavation for construction of the Otay No. 9 service connection was performed. Because of high flow demands and inability to shut the aqueduct down, further construction was deferred until fall. A security fence was installed around the site.

The San Dieguito-Santa Fe service connection piping was tied into their new hydroelectric plant.

The masonry wall at the Escondido Operations Center was extended to further enclose the yard and improve the appearance and efficiency of the storage area.

Twenty-nine galvanized anodes were set in 8 holes for cathodic protection of the Fallbrook-Oceanside pipeline.

### Shutdowns

In August a contractor's backhoe knocked a hole in the 39-inch Tri-Agency Pipeline. The repair was made the same day and the line

## OPERATION AND MAINTENANCE

returned to service. The lack of storage and the summertime demands, including agricultural usage, causes hardships if this line is not operating, even for short periods of time.

On October 6, 1986, a heavy equipment contractor dented the pipe and peeled back the bell end at a third pipeline joint at about Station 3594+28. Five days were required for draining and repair. Delivery of filtered water continued by reducing flow from MWD for delivery to the North County, and pumping 120 cubic feet per second from Miramar Treatment Plant for delivery south.

On November 5, 1986, MWD shut off the Fifth Pipeline (raw water) for 6 days. The Water Authority continued to receive raw water at a reduced level through the Third Pipeline. The Miramar Pump Station was turned off to reduce the demand on the Miramar Treatment Plant during the shutdown.

On January 12, 1987, the treated water pipeline was shut down for 3 days to install a valve for a new San Marcos No. 5 service connection. Since the introduction of chloraminated water in the treated water lines, these shutdowns have become complicated in that the water that is released must be dechloraminated by specially-built units that release a dechlorination chemical into the water. The Authority borrowed two such units from MWD for this shutdown.

San Diego Gas and Electric Company's power problems shut down the Miramar Pump Plant several times during February 1987.

Because of the lack of demand, the Fallbrook-Oceanside branch line was shut down for two days starting March 3, 1987.

The scheduled end of March shutdown of Pipeline 3 for the installation of a connection for the Otay No. 9 new service connection was postponed until fall because Otay MWD could not get by for more than two days without aqueduct water.

## DESIGN AND CONSTRUCTION

### General

The Authority provided increasingly more inspection for non-Authority projects which seriously affect operations and the unrestricted use of the easement; such as the Santa Fe/San Dieguito hydroelectric plant and many subdivisions encroaching upon Authority easements. The underlying fee owners of the properties burdened by Authority easements are choosing to exercise their rights to the use of their property to the extent that the maintenance and operation of the existing pipelines and the construction of future pipelines are not compromised. The interpretation of easement documents sometimes generate considerable difference of opinion as to what is detrimental to the Authority.

The Otay No. 9 service connection was redesigned to accommodate increased flows. Inter-ties were designed for installation on the north and south sides of Hubbard Hill between the First and Second pipelines of the First Aqueduct. These will be required when the First Aqueduct is converted to treated water. Several tests were made to determine the existing hydraulic characteristics of the Crossover pipeline to aid in designing facilities needed when the First Aqueduct is converted to treated water. Considerable preliminary work was done to determine flow requirements, pipe size, route and cost estimates for the Ramona pipeline, Pomerado extension and the 4-B extension through La Mesa. An emergency repair replacement section of 69" pipe for the southern portion of Pipeline 3 was designed, fabricated and is currently being stored at the diversion structure. A failure on the Third pipeline south of Miramar Treatment Plant would be particularly disastrous for several agencies in the south county.

### Pamo Project

The Pamo Project is designed to provide an emergency and dry year supply of water for the San Diego region. The main features of the project will be a 264-foot high roller-compacted concrete dam capable of impounding 130,000 acre-feet of water and 107,000 feet of pipeline which will join the Sutherland and Pamo Reservoirs with the Authority's First and Second Aqueducts.

The principal effort on the Pamo Project this past year has been directed toward obtaining the Corps of Engineers "404" permit required for the construction of the project. Accomplishments of the past year were:

1. Publishing the Draft Environmental Impact Statement (EIS) in October 1986.



*Artist's Rendering of Proposed Pamo Dam and 130,000 Acre-Foot Reservoir*

2. After revising the 1985 Pamo Biological Mitigation Plan to prevent jeopardy to the least Bell's vireo, a federally endangered song bird, the project received a favorable "Section 7" endangered species review from the U.S. Fish and Wildlife Service in December 1986.
3. After considerable public and agency input, published the Final EIS in February 1987.
4. On April 20, 1987 the Corps of Engineers issued a Draft Record of Decision on the Pamo Project recommending issuance of a permit for construction providing certain conditions were met. This draft decision was opposed by the U.S. Fish & Wildlife Service and the Environmental Protection Agency, thus subjecting the project to further review by the Corps of Engineers.
5. As of June 30, 1987, the State Division of Safety of Dams is nearing completion of their review of the plans and specifications for the construction of the Pamo Dam. No major difficulties in approval are anticipated.
6. Plans for the pipeline, pump station, mitigation and right-of-way are well along; however, they will not be finalized until issuance of the "404" permit.

**Alvarado and Miramar Hydroelectric Plants**

The 1986-87 generation of the two hydroelectric plants exceeded 1985-86 by 10.2%; however, because of continually declining rates paid by the San Diego Gas and Electric for generated power, the plant revenues decreased by 14.5%. In July 1985 when the hydroelectric plants began full-time production, the average rate paid by SDG&E was 6.02 cents/KWH; for the 1985-86 year that average rate was 4.92 cents/KWH; and for the 1986-87 year the average rate was 3.82 cents/KWH. Hopefully, this rate has not stabilized, but in an attempt to better utilize this source of power, the City of San Diego is studying the possibility of on-site usage at both the Alvarado and Miramar Water Treatment Plants.

Operationally, both plants were shut down for several weeks during the winter period for warranty repair work on the draft tube cones. At the high velocity area where the water exits the turbine, the draft tube cones were experiencing erosion of the base material. The turbine manufacturer modified these parts by placing stainless steel strips in the erosion zone. Also, at the Alvarado plant the downstream shutoff valves have had unusual wear due to the high levels of turbulence and

vibration associated with the turbine operation, which operates at a higher pressure level than the Miramar equipment. Repairs were made to the valves, but continued degradation may require a different type of valve for this application.

The following is a month-by-month tabulation of the energy and revenue produced by these plants.

**Alvarado Hydroelectric Plant**

<u>Month</u>	<u>Kilowatt Hours</u>	<u>Revenue</u>
July	842,703	\$ 32,428.10
August	859,699	36,522.15
September	709,052	30,579.54
October	590,970	21,930.10
November	552,202	19,649.14
December	251,485	8,762.67
January	457,179	16,889.74
February	507,408	18,967.97
March	558,020	21,686.96
April	761,970	29,550.21
May	768,951	29,298.53
June	908,072	34,402.31
1986-87 Alvarado:	7,767,711	\$300,667.42

**Miramar Hydroelectric Plant**

<u>Month</u>	<u>Kilowatt Hours</u>	<u>Revenue</u>
July	315,288	\$ 12,654.91
August	394,812	16,437.99
September	205,600	8,262.92
October	368,073	13,277.82
November	360,935	12,405.42
December	525,683	18,014.75
January	268,176	10,094.45
February	313,015	11,835.83
March	352,979	13,563.21
April	355,653	12,608.21
May	324,489	12,079.93
June	331,932	11,463.30
1986-87 Miramar:	4,116,635	\$152,698.74
1986-87 Total:	11,884,346	\$453,366.16

**Water Reclamation**

Water reclamation provides an opportunity to fully utilize our existing water resources. Realizing such, in September 1986, Chairwoman Krauel appointed a Water Reclamation Adhoc Committee to evaluate alternative means of developing a significant water reclamation program for San Diego County. Appointed to the Water Reclamation Adhoc Committee were Directors Cooper, Golding, Mason (Chairman), and Parker.

Following a lengthy investigation, the Water Reclamation Adhoc Committee returned to the Board of Directors in April with a recommendation that the Water Authority assume a lead role in water reclamation planning and development. Agreeing with this concept, the Board authorized the formation of a Water Reclamation Department. In June, the Acting General Manager was instructed to hire a Water Reclamation Director and objectives for reclaimed water production were adopted: 5,000 acre feet by 1990, 25,000 acre feet by 2000, and 50,000 acre feet by 2010.

Fiscal year 1986-1987 reclaimed water production within the Water Authority Service area has been summarized in the Table shown below:

RECLAIMED WATER PRODUCTION

Fiscal Year 1986-1987  
(Acre Feet)

Location Within CWA	Treatment Facility	M & I	Agriculture	Groundwater Recharge	Total
Olivenhain MWD	Whispering Palms WPCF			67.2	67.2
Otay MWD	Jamacha WRP	58.4			58.4
Padre Dam MWD	Santee WRP	1120.0			1120.0
Pendleton	Pendleton	223.0		5083.0	5306.0
Ramona MWD	Santa Maria WPCF			627.2	627.2
Ramona MWD	San Vicente WRP		291.2		291.2
San Diego, City of	Wild Animal Park WRP	12.3			12.3
San Marcos CWD	Meadowlark WRP	61.4			61.4
Santa Fe WD	Fairbanks Ranch WPCF			67.2	67.2
Santa Fe WD	Rancho Santa Fe WPCF			280.0	280.0
Valley Center MWD	Lower Moosa Canyon WRP			246.4	246.4
Valley Center MWD	Skyline Ranch WPCF			44.8	44.8
	Total	1475.1	291.2	6415.8	8182.1



*San Marcos County Water District's Meadowlark Water Reclamation Facility, Recipient of the California Water Pollution Control Association's Plant of the Year Award for 1985.*

**San Diego Water Reuse Study**

Through an agreement with the City and County of San Diego, the Water Authority has been preparing a Water Reclamation Master Plan for the entire San Diego area. Twenty-six wastewater treatment facilities have been identified as potential sources of reclaimed water. The most predominate uses for reclaimed water are landscape and agricultural irrigation. Several of the proposed projects combine the benefits of water reclamation and groundwater management to obtain the maximum yield from the resources available. By the year 2010, reclaimed water production is expected to exceed 58,000 acre feet per year.

## LEGAL DEPARTMENT

Principal responsibility for legal advice and representation comes from the General Counsel. Other members of the firm, Jennings, Engstrand & Henrikson, provide assistance from time to time. Mr. Wallace R. Peck generally assists in all areas and Mr. Ronald L. Endeman handles condemnation matters.

### Routine Matters

Three Directors were reappointed (Tinker, Lohnes, Klostermann) and eight new Directors (Meadows, Turner, Bonas, Carlson, Tiesen, Leming, Stevens, Olmsted) were appointed as members of the Board of Directors. Director Krauel was elected Chairman, Director Mason Vice Chairman, Director Madigan Secretary were elected on July 10, 1986 to serve in those offices for two year terms.

The annexation of lands in the "4-S Ranch Reorganization" was processed and completed during the year. It consisted of about 3,524.5 acres which was concurrently annexed to Olivenhain Municipal Water District, the San Diego County Water Authority, and the Metropolitan Water District. Cash annexation fees were paid by the landowners to the Authority (\$983,739.52) and MWD (\$2,317,322.33).

General Manager Michaels resigned effective March 31, 1987; Linden R. Burzell, former General Manager, was hired as a consultant as of March 28, 1987; Ralph R. Grahl was hired as Acting General Manager as of April 2, 1987; and Heidrick and Struggles, Inc. was engaged to assist the Authority in securing a new General Manager at the earliest practical time.

It is reasonable to expect that the Authority's fifth General Manager will be chosen during the next fiscal year. Mr. J. L. Burkholder served as General Manager and Chief Engineer between 1945-53, Mr. Richard S. Holmgren, 1953-1963, Mr. Burzell, 1963-1984, and Mr. Michaels, 1984-1987.

Ongoing discussions about the form of standard documents to be used for acquisition of easements and the granting of encroachment permits occurred. A revised form of standard easement document was approved. At the same time it was recognized that special circumstances pertinent to some situations often require case by case analysis and adaptations to the standard form. Encroachments on the rights-of-way occur mainly by reason of surface rights reserved by underlying fee owners and from requests by other public entities for joint uses of various kinds. These

often require case by case analysis and updating of existing standard conditions was being discussed. Two long time practices of the Authority were publicly questioned as to whether they complied with both the letter and spirit of the Brown Act (Government Code SS54950-54962 et seq.). Traditionally on Board meeting days a luncheon is held which is attended by the officers (Chairman, Vice Chairman and Secretary), the General Manager, General Counsel, and other Directors as invited by the Chairman, but fewer than would constitute a quorum of the Board. Authority business is discussed, but no action is taken.

Also, after the Board meeting is adjourned Directors and staff personnel are invited to dinner at a pre-selected restaurant. This event is of a social nature, no agenda exists, and no Authority business is discussed in any group fashion. Both events are hosted by the Authority.

General Counsel reiterated his view that both traditions complied with the Brown Act, but recognized a possible ambiguity about the proper definition of "quorum." Since the meeting day luncheons were considered legally proper because less than a quorum attended, it was suggested that legislative action might be appropriate to clarify any ambiguity. The evening dinners were considered appropriate as social events so long as the practice continued to eschew group discussions of Authority business.

AB 34 (Bradley) was introduced in the legislature to add Subsection f to Section 6 of the Act and define quorum as:

"(f) A quorum necessary for the transactions of business at any meeting of the board of directors exists whenever there are present at the meeting a majority of the membership of the board of directors which includes at least one-half of the number of representatives of each public agency member having more than six representatives serving on the board of directors. However, any regular or special meeting of the board of directors at which a quorum is not present may be continued from time to time until a quorum is present to transact the business of the board of directors."

### MWD Matters

One Director (Madigan) was reappointed to MWD's Board of Directors and two new Directors (Hennigar and Mason) were appointed to replace former members, Messrs. Doe and Cranston, respectively. Each was appointed to a four year term expiring in December 1990.

Although MWD and the state contractors were carrying the laboring oar and providing the principal leadership in connection with the Bay-Delta hearings being conducted by the State Water Resources Control Board consistent with the Racanelli decision ((1986) 182 Cal.App.

## SAN DIEGO COUNTY WATER AUTHORITY

3d 82), the Authority also presented data and testimony about the current and projected needs for imported water to meet demands of member agencies to satisfy consumer demands within the Authority.

General Counsel prepared a memorandum for Board members, "Re-appraisal of Impact on San Diego County Water Authority of MWD's Section 135." It was responsive, in part, to the 1986 Grand Jury report which recommended "removal of preferential rights [i.e. S135] . . . and SDCWA should consider it a standard action item on its agenda until it is accomplished." The memo recommended that ". . . legislation should now be introduced to amend Section 135. . . ." Although dialogue by Authority officers continued with interested persons in the MWD family, no legislation was introduced.

### Section 8 Financing — Pamo Dam

Although it was expected that the Corps of Engineers would issue a 404 permit for Pamo dam, it became clear that such a permit, if issued, would not allow time to complete finalization of planning, design, and award of construction contracts to comply with IRS regulations relative to the \$100 million indebtedness (ACES, 1985 series). Therefore, the Board authorized prepayment of the \$100 million indebtedness to take place during August 1987.

In order to assure the ability to reissue the 1941 revenue bonds of \$82 million as authorized by the voters in 1984 pursuant to Section 8(b) of the Act, legislation was introduced to add a Subsection (c) to Section 8. It would permit a second contract of indebtedness if the first contract was ". . . repaid in full because construction of the project . . . was not commenced due to . . . failure to obtain necessary governmental permits . . ."

### In Lieu Taxes

Sections 9(c) and (d) of the Act provide procedures to permit any member agency to pay in cash the amount of ad valorem taxes levied by the Authority upon taxable property within a member agency which elects to make such an in lieu payment. In this manner taxpayers within such a member agency would not pay ad valorem taxes to the Authority to the extent that such cash in lieu payments are made.

Due to the complex procedures adopted by the legislature to implement the Jarvis initiative (Cal. Const. XIII A), effective July 1, 1978, the Authority received no part of the 1% ad valorem tax levy made on lands within member agencies which made in lieu payments during the three year period, 1976-1978. The Authority made calculations designed to avoid a shortfall in revenues because of this circumstance

## LEGAL DEPARTMENT

and sent bills accordingly. Only the City of San Diego was affected and from 1979 through 1986 it reimbursed Authority according to such billings.

During this fiscal year a "study and analysis made by the parties . . . demonstrated that certain unintended inequities have resulted from these [billing] practices." Accordingly, an agreement was reached to settle past inequities (July 1, 1978 - June 30, 1987) whereby the Authority paid the City of San Diego on June 15, 1987 the sum of \$4.5 million. The parties agreed to cooperate to develop a plan to both avoid any future shortfall in revenue to the Authority because of the procedures adopted by the legislature in allocating the 1% ad valorem tax levy and to avoid the unintended inequity to the City of San Diego. The Authority had received by way of some allocations from the County and payment by the City of "in lieu" billings about \$13.3 million for the designated past period. The refund made was considered fair, reasonable, and legally proper.

**FINANCIAL REPORT**

For the fiscal year ending June 30, 1987, total Water Authority income was \$111,494,000. Total disbursements during the year were \$105,805,000. At the fiscal year end, the Treasurer had control of funds and investments totaling \$116,575,000.

The Director of Finance, Henry G. Lozano, also acts as the San Diego County Water Authority Treasurer and is responsible for all funds not immediately required for the conduct of business. Funds are invested under Board policy in interest bearing time deposits, and in savings accounts.

A monthly report is presented to the Board of Directors that shows monthly activity consistent with investment policy. The report outlines investments by amount, type, rate, institution, number of days invested and maturity date. As part of the monthly report to the Board of Directors, each investment during the month is listed showing the referenced information together with the list of institutions bidding for the funds and the rates quoted.

The Administrative Code requires the Treasurer to report a summary of financial transactions monthly and for each fiscal year-end. For fiscal 1986-87 the Statement of Earnings is as follows:

**STATEMENT OF EARNINGS (Dollars in Thousands)**

Income was as follows:	1986	1987
Water Sales	\$ 94,010	\$102,007
Taxes	7,373	6,667
Interest on investments	2,116	1,571
Miscellaneous	39	897
Hydroelectric sales (net)	418	352
<b>Total income</b>	<b>\$103,956</b>	<b>\$111,494</b>

Disbursements were as follows:

Water purchases	\$ 89,031	\$95,937
Operation and maintenance	2,780	2,974
Interest expense	3,032	2,394
In-lieu		4,500
<b>Total Disbursements</b>	<b>\$94,843</b>	<b>105,805</b>
<b>Net earnings before depreciation</b>	<b>\$ 9,113</b>	<b>\$ 5,689</b>

As of June 30, 1986 and 1987, the Treasurer's cash accountability was as follows:

Demand deposits	\$ 27	\$ 53
Time deposits	25,860	21,060
Bond proceeds (in escrow)	93,902	95,462
<b>Total deposits</b>	<b>\$119,789</b>	<b>\$116,575</b>

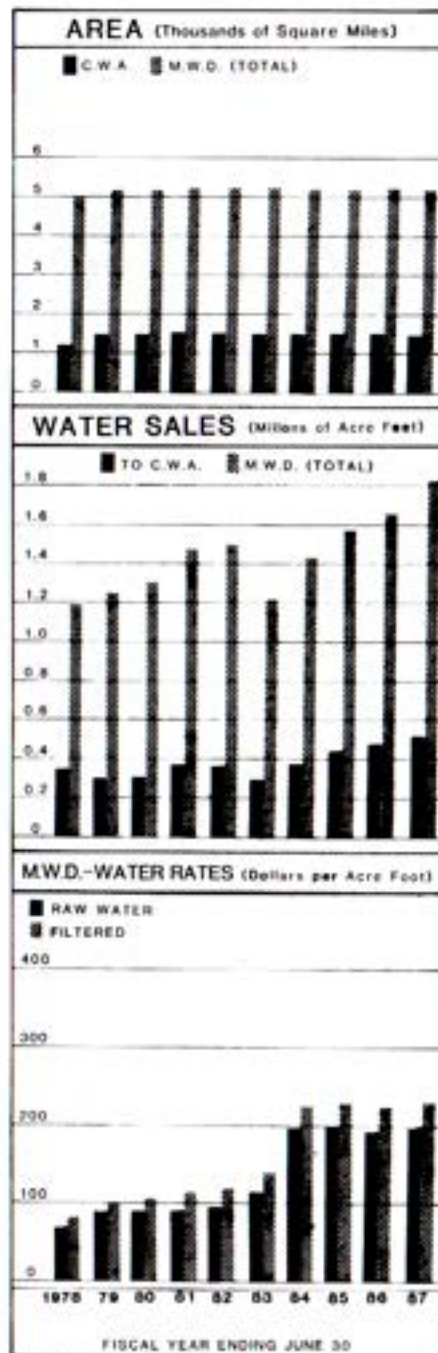


Michael D. Madigan, who has been a MWD Director for five years, is Vice-Chairman of the Land Committee and a member of the Engineering and Operations Committee.

Francesca Krauel was appointed to the Metropolitan Board on October 13, 1983 to fill a new directorship position. Ms. Krauel serves on the Legal and Claims Committee and the Finance and Insurance Committee.

As of August 1986, the Authority representatives had a total of 7,834 votes out of 49,106 or 16.0 percent of the total voting strength of MWD. The delegation of each member agency is entitled to cast one vote for each \$10 million or major fraction thereof of assessed valuation within the agency's boundaries.

The Metropolitan Water District's service area is shown in Figure E. About 13.7 million people living within those portions of Ventura, Los Angeles, Orange, San Bernardino, Riverside, and San Diego Counties are served by MWD. There are 139 incorporated cities within the District. MWD's service area contains 5,135.05 square miles which is an increase of 5.77 square miles during the fiscal year. Of this, 1,417.64 square miles, or 27.6 percent, lie within the Authority's boundaries.



Total assessed value of taxable property lying within the boundaries of Metropolitan Water District was \$505,419,663,679. Assessed value is determined by the assessors of the counties served for use in levying 1986-87 taxes. These valuations were increased \$46,637,603,863, or 10.2 percent, above the previous year's valuation of \$458,782,059,816. An amount of \$9,245,219,657 or 19.8 percent of this increase, occurred within the Authority's boundaries. Assessed valuation within the Authority is 16.0 percent of the MWD total.

The assessed valuation of MWD established for 1987-1988 is \$564,692,806,207 which includes \$89,993,730,693 for the Authority's valuation.

**Water Sales**

MWD delivered 1,825,923 acre feet of water during fiscal year 1986-87. Delivery to the Authority of 520,892 acre feet represented 28.5 percent of MWD's total deliveries.

MWD has five filtration plants in operation. The Skinner Filtration Plant with a capacity of 340 mgd serves a portion of the treated water requirements of the Authority.

The other plants operated by MWD, none of which can serve the Authority, are: F.E. Weymouth Memorial Filtration Plant in La Verne; Robert B. Diemer Filtration Plant near Yorba Linda; Joseph Jensen Filtration Plant at Granada Hills; and the Henry J. Mills Filtration Plant near Riverside. The Jensen Plant can only receive water from the West Branch of the California Aqueduct.

**Tax Rate**

MWD set its tax rate at .0148 percent of assessed valuation for the 1986-87 fiscal year. When the Authority annexed to MWD in 1946, the tax rate was 50 cents per \$100 assessed valuation. The tax rate for each year since 1930 is shown in Table 39. The total MWD tax levy during the 1986-87 fiscal year, including regular and special taxes, was approximately \$80,885,293 of which \$12,549,515, or 15.13 percent, was levied against property within the Authority. The estimated tax level for the 1987-88 fiscal year is \$70,425,111 for MWD as a whole and includes \$10,753,057 for the Authority's service area.

## COLORADO RIVER BOARD MEMBERSHIP

The Colorado River Board of California is an agency of the State dedicated to the protection of California rights to Colorado River water.

The Board members were originally selected by the Governor from a list of persons submitted by each of the six agencies that depend on Colorado River water. The Board was reorganized in April 1977 and enlarged from six to eleven members, pursuant to legislation enacted in 1976. Under the revised statutes, the Governor is to appoint both a member and an alternative member to the Board from a list of nominees designated by each of the six agencies. Additional legislation, effective in 1985, was enacted in 1983 and 1984 to improve the method of appointment and replacement of the six agencies' representatives on the Board and the selection of a Chairman. The legislation also reduced the size of the Board to ten members, eliminating one public member.

The member and the alternate representing each of the six agencies are chosen by the Governor from two lists, each containing not less than three persons, that are submitted by each of the agencies. Two State officers, the Director of the Department of Fish and Game and the Director of the Department of Water Resources, are ex officio members. There are also two public board members appointed by the Governor. The Board elects from among its members, other than the two State officers, a Chairman who is ex officio the Colorado River Commissioner.

The six agencies are: San Diego County Water Authority, The Metropolitan Water District of Southern California, City of Los Angeles Department of Water and Power, Coachella Valley County Water District, Palo Verde Irrigation District, and Imperial Irrigation District. John P. Starkey represents the Authority on the Board, and John M. Cranston serves as his alternate.

Once fully financed by the State, the Board now receives only one-third of its support from that source. The six agencies provide the balance of the required financial support for the Board.

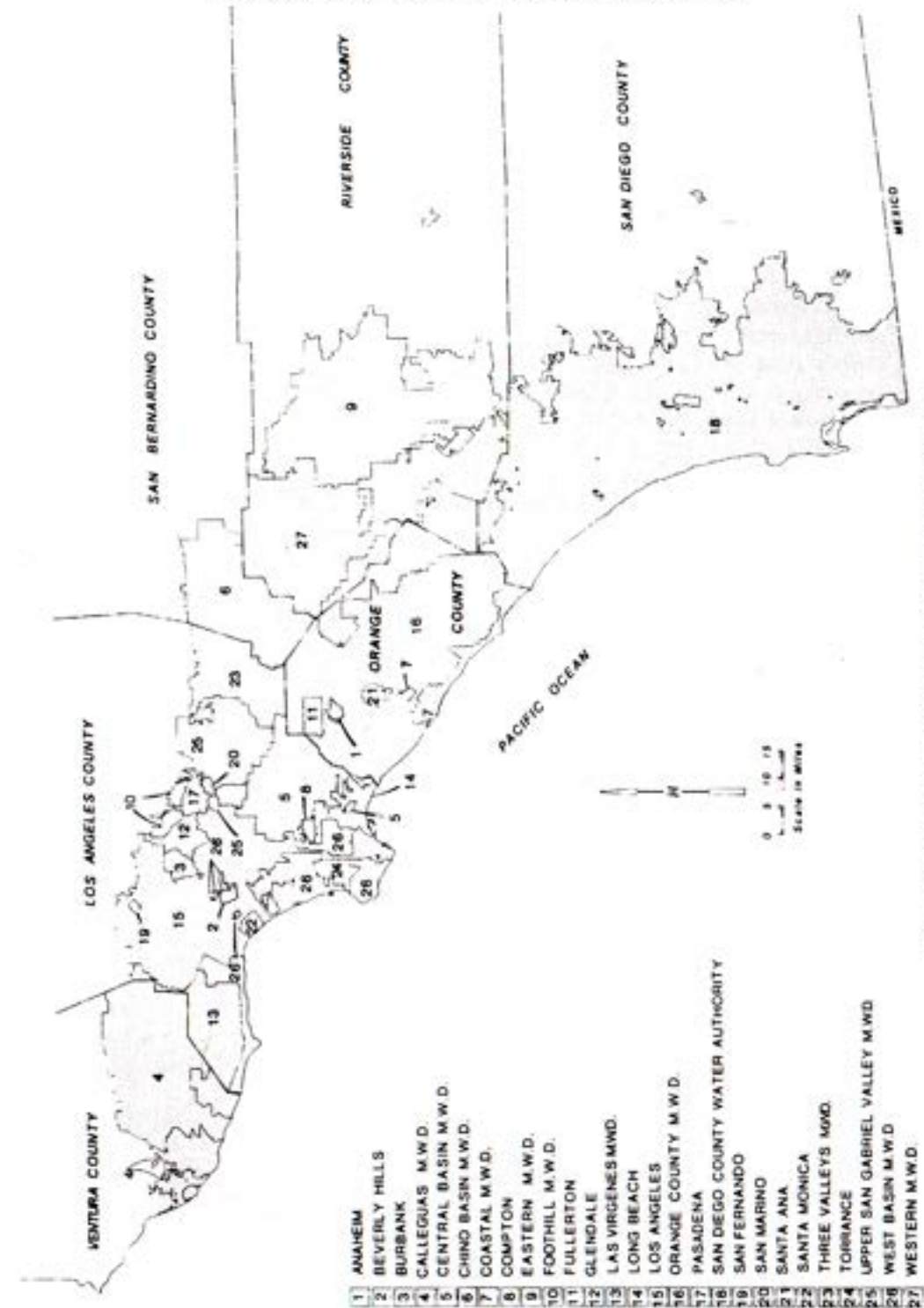


Figure E. Member Agencies of Metropolitan Water District

INDEX TO TABLES

APPENDIX A – STATISTICAL TABLES

TABLE NO.	PAGE NO.
1. Statistical Summary – Authority 1985-1987 . . . . .	80
2. Population Growth – Authority and County Through 1987 . . . . .	81
3. Area – Authority Member Agencies 1986-87 . . . . .	82
Population – Authority Member Agencies and County 1970-1987 . . . . .	83
4. Water Production, Agricultural Use and Authority Storage 1986-87 . . . . .	84
5. Assessed Valuation and Tax Collections 1986-87 . . . . .	86
6. Water Production – Authority Member Agencies 1976-87 . . . . .	88
7. Water Sales by Authority 1947-87 . . . . .	89
8. Sales of Imported Water – Fiscal Year 1986-87 . . . . .	90
9. Assessed Valuations of Tax Rates – Authority 1945-87 . . . . .	92
Tax Levies and Collection – Authority 1945-87 . . . . .	93
10. Chemical Character and Analysis of Colorado River Water Year Ending June 30, 1987 . . . . .	94
11. Chemical Character and Analysis of Blended Water At Lake Skinner Year Ending June 30, 1987 . . . . .	95
12. Assessed Valuation and Tax Rates of the Metropolitan Water District of Southern California 1929-87 . . . . .	96
13. Annexation Charges and Balances by Metropolitan Water District on Authority Areas . . . . .	97
14. Water Sales by Metropolitan Water District 1941-87 . . . . .	98
15. Water Production – Metropolitan Water District Constituent Area 1984-86 . . . . .	99

APPENDIX B – FINANCIAL REPORT

Auditor's Report . . . . .	101
Balance Sheet . . . . .	103
Statement of Earnings . . . . .	104
Changes in Financial Position . . . . .	105-106
Notes to Financial Statements . . . . .	107-112

SAN DIEGO COUNTY WATER AUTHORITY

Table 1  
STATISTICAL SUMMARY

	1985-86	1986-87	Percent Change
<b>GROWTH OF AREA</b>			
Number of Agencies	24	24	-0-
Total Area - Acres	904,006	907,288	+0.4
Population	2,105,500	2,181,000	+3.6
Assessed Valuation	71,388,143,316	80,633,362,973	+12.95
<b>OPERATIONS</b>			
Water Imported by Authority-ac. ft.	488,124	519,411	+6.4
Water Production of Agencies-ac. ft.	565,601*	591,820	+4.6
Local Water Used-ac. ft.	96,562	97,459	+0.9
Authority Water Used-ac. ft.	469,039*	494,361	+5.4
Miles of Pipeline	222	222	-0-
Miles of Patrol Roads Maintained	105	105	-0-
Number of Service Connections	75	77	+2.7
<b>FINANCIAL</b>			
<b>Revenues:</b>			
Water Revenue	94,010,000	102,007,000	+8.5
Other Revenue	2,573,000	2,907,000	+13.0
Taxes	7,373,000	5,813,000	-21.2
<b>Expenditures:</b>			
Operation and Maintenance	2,780,000	2,974,000	+7.0
Purchase of Water	89,031,000	95,937,000	+7.8
Payments on Outstanding Debt	4,794,000	4,885,000	+1.9
In-Lieu Settlement	-	3,646,000	-
<b>Total Investment in Plant:</b>			
Total Fixed Assets	135,362,000	133,479,000	-1.4
Long-Term Debt	148,094,000	143,209,000	-3.3

\*Does not include Pendleton Military Reservation

TABLES

Table 2  
POPULATION GROWTH - COUNTY AND AUTHORITY AREA  
1910 to 1987

(Includes Resident Military Personnel)

Year (as of April 1)	COUNTY		AUTHORITY		Percent of County Population in Authority
	Total Population (1)	Annual Growth	Total Population	Annual Growth	
1910 .....	61,665				
1920 .....	112,348	5,058			
1930 .....	209,659	9,741			
1940 .....	289,348	7,969			
1946 ..... (3)	501,804	26,746	(3) 440,659	2,807	88
1950 .....	556,808		(2) 451,886		81
1955 ..... (4)	769,200	42,478	(2) 702,300	50,083	91
1960 .....	1,033,010	52,762	(2) 956,400	50,820	93
1965 ..... (4)	1,194,000	32,198	(5) 1,150,000	38,720	96
1970 .....	1,310,800	23,360	(5) 1,255,000	21,000	96
1975 ..... (6)	1,560,038	49,850	(5) 1,527,520	54,500	98
1980 .....	1,808,200	49,632	(5) 1,797,655	54,027	99
1981 ..... (7)	1,900,000	91,800	(5) 1,864,290	66,635	98
1982 ..... (7)	*1,944,000	44,000	(5) 1,889,365	25,075	97
1983 ..... (7)		42,035	(5) 1,934,587	45,222	97
1984 ..... (7)	1,986,035	54,853	(5) 1,934,587	71,652	98
1985 ..... (7)	2,040,888	42,471	(5) 2,006,239	40,761	98
1986 ..... (7)	2,083,359	82,810	(5) 2,047,000	58,500	97
1987 ..... (7)	2,166,169	74,490	(5) 2,105,500	75,000	97

(1) County population from U.S. Census Bureau Reports.

(2) Authority population based on U.S. Census Bureau Reports.

(3) Based on Special Census, U.S. Census Bureau, exclusive of emergency military personnel due to World War II.

(4) Estimated by the San Diego Chamber of Commerce.

(5) Estimated by Authority member agencies.

(6) Population by Special Census.

(7) Population estimates by Integrated Planning Office, San Diego County.

\* Corrected estimate by Integrated Planning Office, San Diego County.

SAN DIEGO COUNTY WATER AUTHORITY

Table 3  
AREA - AUTHORITY MEMBER AGENCIES

	Area Within Authority			Percent of Total Authority Area 6/30/87
	As of 6/30/86 (acres)	Changes During Year (acres)	As of 6/30/87 (acres)	
Bueno Colorado M.W.D. (2)	19,836	-11	19,825	2.18
Costa Real M.W.D. (3)	20,369	-0-	20,369	2.24
Del Mar, City of	1,159	-0-	1,159	0.13
De Luz Heights M.W.D.	11,789	-0-	11,789	1.30
Escondido, City of (12)	21,192	+23	21,215	2.34
Fallbrook P.U.D.	16,174	-0-	16,174	1.78
Helix Water District (4)	31,278	-0-	31,278	3.45
National City	5,524	+49	5,573	0.61
Oceanside, City of	25,694	+4	25,698	2.83
Olivenhain M.W.D. (5)	27,266	+3,556	30,822	3.40
Otay M.W.D. (6)	62,858	-79	62,779	6.92
Padre Dam M.W.D. (8)	54,503	-0-	54,503	6.01
Pendleton Military Res.	134,625	-0-	134,625	14.84
Poway, City of	22,809	+405	23,214	2.56
Rainbow M.W.D. (10)	47,261	-0-	47,261	5.21
Ramona M.W.D.	46,929	-405	46,524	5.13
Rincon Del Diablo M.W.D. (7)	10,664	-50	10,614	1.17
San Diego, City of	210,486	-306	210,180	23.17
San Dieguito W.D.	5,639	-0-	5,639	0.62
San Marcos County W.D. (15)	28,481	+7	28,488	3.14
Santa Fe Irrigation District	10,175	-2	10,173	1.12
South Bay I.D. (9)	15,478	+91	15,569	1.72
Valley Center M.W.D. (11)	61,004	-0-	61,004	6.72
Yuima M.W.D.	12,813	-0-	12,813	1.41
Total Authority Area	904,006	+3,282	907,288	100.00
San Diego County	2,725,100	-0-	2,725,100	

- (1) Includes San Marcos C.W.D. which became a member agency of Authority on February 25, 1980.
- (2) Does not include 2,806 acres overlapping in City of Oceanside, and 37 acres overlapping in City of Escondido.
- (3) Does not include 34 acres overlapping in City of Oceanside.
- (4) Does not include 3 acres overlapping in City of San Diego.
- (5) Does not include 25 acres overlapping in City of San Diego.
- (6) Does not include 4,682 acres overlapping in City of San Diego.
- (7) Does not include 16,094 acres overlapping in City of Escondido and 39 acres overlapping in City of San Diego.
- (8) Does not include 12 acres overlapping in City of San Diego.
- (9) Does not include 297 acres overlapping in City of San Diego and 718 acres overlapping in National City.

TABLES

Table 3 (continued)  
POPULATION - AUTHORITY MEMBER AGENCIES AND COUNTY  
(Includes Resident Military Personnel)

Population 1970 (13)	U.S. Census		1987 Estimate (14)	Annual Increase 1986-87 Percent	Density of Population 1987	
	1980 (13)	Decade Increase 1970-80 Percent			Per Acre	Per Sq. Mile
39,000(1)	51,000	31	62,426	1.69	3.15	2,015
15,500	31,500	103	47,000	12.98	2.31	1,477
3,900	5,040	29	5,044	1.04	4.35	2,785
150	225	50	269	1.51	0.02	15
36,000	64,100	78	89,507	13.42	4.22	2,700
12,000	18,700	56	21,440	3.08	1.33	848
163,000	203,500	25	221,294	2.46	7.08	4,528
39,000	47,200	21	50,650	0.30	9.09	5,817
40,700	77,800	91	100,981	3.94	3.93	2,515
2,000	23,000	1,050	38,800	9.92	1.26	806
19,400	51,600	166	75,890	11.60	1.21	774
46,000	89,000	93	96,255	5.16	1.77	1,130
-	33,150	-	48,000	6.67	0.36	228
14,000	33,620*	140	39,590	3.69	1.71	1,091
4,200	7,800	86	10,540	14.86	0.22	143
6,800	16,000	135	27,500	10.00	0.59	378
18,900	13,800	-27	22,670	10.25	2.14	1,367
675,800	849,600	26	1,026,519	1.69	4.88	3,126
21,800	30,900	42	31,018	8.84	5.50	3,520
-	24,200	-	29,971	-0-	1.05	673
8,600	14,700	71	16,686	5.97	1.64	1,050
80,000	99,200	24	104,400	0.77	6.71	4,292
7,000	10,200*	46	12,700	6.65	0.21	133
1,250	1,820	46	1,850	1.65	0.14	92
1,255,000	1,797,655*	43	2,181,000	3.59	2.40	1,538
1,310,800	1,808,200	38	2,240,659	3.44	0.82	526

- (10) Does not include 701 acres overlapping in City of Oceanside.
- (11) Does not including 1,159 acres overlapping in City of Escondido.
- (12) Includes 1,159 acres overlapping in Valley Center M.W.D., 370 acres overlapping in San Marcos County W.D., 37 acres overlapping in Bueno Colorado M.W.D. and 16,094 acres overlapping in Rincon Del Diablo M.W.D.
- (13) Population in agencies other than cities was furnished by agencies.
- (14) Estimate by agencies.
- (15) Does not include 370 acres overlapping in City of Escondido.

\*Corrected figures per agencies.

Table 4  
 WATER PRODUCTION, AGRICULTURAL USE AND AUTHORITY STORAGE  
 FISCAL YEAR 1986-87  
 (Compilation of data furnished by member agencies)

Member Agencies	SOURCE OF WATER (4)				Total Water Production Ac. Ft.	Gross Area (2) Acres	Estimated Area Served by Water System Acres	AGENCIES' POOLED STORAGE VICENTE RESERVOIR				
	Local Supply		Authority Supply					Gross Area Served By Water System, Ac. Ft.	GROSS WATER WITHDRAWN DURING FISCAL YEAR			Total Quantity in Storage 6/30/87 Ac. Ft.
	Amount Ac. Ft.	Percent	Amount Ac. Ft.	Percent					By Evaporation Ac. Ft.	By Spill Ac. Ft.		
Bueno Colorado M.W.D.	12,809.3	71.4	5,119.0	28.6	17,928.3	19,825	16,311	82.3	-0-	-0-	-0-	-0-
Costa Real M.W.D.	-0-	-0-	14,643.7	100.0	14,643.7	20,869	17,540	86.1	-0-	101.2	-0-	1,577.1
Del Mar, City of	-0-	-0-	1,456.3	100.0	1,456.3	1,159	1,082	93.4	-0-	-0-	-0-	-0-
De Luz Heights M.W.D.	-0-	-0-	3,186.1	100.0	3,186.1	11,789	2,740	23.2	-0-	-0-	-0-	-0-
Escondido, City of	8,139.2	32.7	16,773.8	67.3	24,913.0	21,215	18,405	86.8	-0-	-0-	-0-	-0-
Fallbrook P.U.D.	-0-	-0-	12,345.8	100.0	12,345.8	16,174	11,063	68.4	-0-	-0-	-0-	-0-
Helix W.D.	4,951.9	11.7	37,248.7	88.3	42,200.6	31,278	30,186	96.5	-0-	101.2	-0-	1,577.1
National City, City of	3,478.5	49.6	3,530.4	50.4	7,008.9	5,573	5,065	90.9	-0-	-0-	-0-	-0-
Oceanside, City of	-0-	-0-	25,163.8	100.0	25,163.8	25,698	16,712	65.0	-0-	202.4	-0-	3,154.2
Olivenhain M.W.D.	-0-	-0-	9,739.2	100.0	9,739.2	30,822	14,750	47.9	-0-	33.7	-0-	525.7
Otay W.D.	-0-	-0-	16,336.9	100.0	16,336.9	62,779	32,775	52.2	-0-	101.2	-0-	1,577.1
Padre Dam M.W.D.	-0-	-0-	18,318.8	100.0	18,318.8	54,503	35,344	64.8	-0-	134.9	-0-	2,102.8
Pendleton Military Res (3)	9,368.0	98.8	111.1	1.2	9,479.1	134,625	N.A.	-	-	-	-	-
Poway, City of	129.2	1.2	10,692.8	98.8	10,822.0	23,214	8,474	36.5	-0-	-0-	-0-	-0-
Rainbow M.W.D.	-0-	-0-	29,822.1	100.0	29,822.1	47,261	17,551	37.1	-0-	33.7	-0-	525.7
Ramona M.W.D.	275.6	2.7	9,942.8	97.3	10,218.4	46,524	11,415	24.5	-0-	134.9	-0-	2,102.8
Rincon del Diablo M.W.D.	-0-	-0-	6,858.4	100.0	6,858.4	10,614	7,904	74.5	-0-	40.5	-0-	630.8
San Diego, City of (1)	39,559.5	16.9	194,483.8	83.1	234,043.3	210,180	111,043	52.8	-0-	-0-	-0-	-0-
San Dieguito W.D.	4,362.4	52.6	3,937.9	47.4	8,300.3	5,639	5,435	96.4	-0-	-0-	-0-	-0-
San Marcos C.W.D.	-0-	-0-	11,161.3	100.0	11,161.3	28,488	21,100	74.1	-0-	33.7	-0-	525.7
Santa Fe I.D.	5,998.6	53.2	5,267.7	46.8	11,266.3	10,173	10,173	100.0	-0-	-0-	-0-	-0-
South Bay I.D.	6,252.1	32.7	12,854.1	67.3	19,106.2	15,569	11,629	74.7	-0-	-0-	-0-	-0-
Valley Center M.W.D.	335.5	0.8	43,455.2	99.2	43,790.7	61,004	36,695	60.2	-0-	33.7	-0-	525.7
Yuima M.W.D.	1,798.9	48.5	1,911.3	51.5	3,710.2	12,813	4,000	31.2	-0-	6.8	-0-	105.1
Total and Average	97,458.7	16.5	494,361.0	83.5	591,819.7	907,288	447,392	49.3	-0-	957.9	-0-	14,929.8

- (1) Includes production by City of San Diego for areas outside City (not in Authority)  
 (2) Does not include overlapping areas as shown in Table 1.  
 (3) Water production from local sources not reported.  
 (4) Figures include losses from transmission and distribution system but not from reservoirs.  
 (5) Not included in totals.  
 N.A. - Not Applicable

Estimated Area Served by Water System Acres	Gross Area Served by Water System Percent	Water Production Per Acre Served Ac. Ft./Acre/Yr.	Estimated Population	Water Production Per Capita Ac. Ft./Cap./Yr.	WATER USED FOR AGRICULTURAL PURPOSES					Percent of Agricultural Water to Total Production	MEMBER AGENCIES' POOLED STORAGE IN SAN VICENTE RESERVOIR					
					From Local Supply		From Authority		Total Ac. Ft.		Total Quantity in Storage 6/30/86 Ac. Ft.	Placed into Storage During Fiscal Year Ac. Ft.	STORED WATER WITHDRAWN DURING FISCAL YEAR			Total Quantity in Storage 6/30/87 Ac. Ft.
					Ac. Ft.	Percent	Ac. Ft.	Percent					By Delivery Ac. Ft.	By Evaporation Ac. Ft.	By Spill Ac. Ft.	
16,311	82.3	1.10	62,426	0.29	2,113.0	72.0	820.9	28.0	2,933.9	16.4	0	-0-	-0-	-0-	-0-	-0-
17,540	86.1	0.83	47,000	0.31	-0-	-0-	2,049.5	100.0	2,049.5	14.0	1,678.3	-0-	-0-	101.2	-0-	1,577.1
1,082	93.4	1.35	5,044	0.29	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
2,740	23.2	1.16	269	11.84	-0-	-0-	3,112.9	100.0	3,112.9	97.7	-0-	0	-0-	-0-	-0-	-0-
18,405	86.8	1.35	89,507	0.28	3,151.2	40.8	4,578.0	59.2	7,729.2	31.0	-0-	0	-0-	-0-	-0-	-0-
11,063	68.4	1.12	21,440	0.58	0.0	0.0	7,263.5	100.0	7,263.5	58.8	1,678.3	-0-	-0-	101.2	-0-	1,577.1
30,186	96.5	1.40	221,294	0.19	70.2	12.6	487.9	87.4	558.1	1.3	-0-	-0-	-0-	-0-	-0-	-0-
5,065	90.9	1.38	50,650	0.14	1.8	100.0	-0-	-0-	1.8	0.0	0	-0-	-0-	-0-	-0-	-0-
16,712	65.0	1.51	100,981	0.25	-0-	-0-	3,992.0	100.0	3,992.0	15.9	3,356.6	-0-	-0-	202.4	-0-	3,154.2
14,750	47.9	0.66	38,800	0.25	-0-	-0-	1,039.1	100.0	1,039.1	10.7	559.4	-0-	-0-	33.7	-0-	525.7
32,775	52.2	0.50	75,890	0.22	-0-	-0-	945.1	100.0	945.1	5.8	1,678.3	0	-0-	101.2	-0-	1,577.1
35,344	64.8	0.52	96,255	0.19	-0-	-0-	1,464.9	100.0	1,464.9	8.0	2,237.7	-0-	-0-	134.9	-0-	2,102.8
N.A.	-	-	48,000	0.20	-	-	-	-	-	-	-	-	-	-	-	-
8,474	36.5	1.28	39,590	0.27	8.3	0.7	1,224.6	99.3	1,232.9	11.4	-0-	0	-0-	-0-	-0-	-0-
17,551	37.1	1.70	10,540	2.83	-0-	-0-	25,762.7	100.0	25,762.7	86.4	559.4	-0-	-0-	33.7	-0-	525.7
11,415	24.5	0.90	27,500	0.37	135.6	2.3	5,657.7	97.7	5,793.3	56.7	2,237.7	-0-	-0-	134.9	-0-	2,102.8
7,904	74.5	0.87	22,670	0.30	-0-	-0-	1,134.4	100.0	1,134.4	16.5	671.3	-0-	-0-	40.5	-0-	630.8
111,043	52.8	2.11	1,026,519	0.23	-0-	-0-	1,807.1	100.0	1,807.1	0.8	-0-	-0-	0	-0-	-0-	-0-
5,435	96.4	1.53	31,018	0.27	768.2	49.3	790.4	50.7	1,558.6	18.8	-0-	-0-	-0-	-0-	-0-	-0-
21,100	74.1	0.53	29,971	0.37	0	-0-	3,343.7	100.0	3,343.7	30.0	559.4	-0-	-0-	33.7	0	525.7
10,173	100.0	1.11	16,686	0.68	704.9	52.5	638.1	47.5	1,343.0	11.9	-0-	0	-0-	-0-	-0-	-0-
11,629	74.7	1.64	104,400	0.18	10.0	43.3	13.1	56.7	23.1	0.1	-0-	-0-	-0-	0	-0-	-0-
36,695	60.2	1.19	12,700	3.45	305.6	0.8	38,842.1	99.2	39,147.7	89.4	559.4	-0-	-0-	33.7	-0-	525.7
4,000	31.2	0.93	1,850	2.01	1,741.6	48.4	1,857.7	51.6	3,599.3	97.0	111.9	-0-	-0-	6.8	-0-	105.1
447,392	49.3	1.32	2,181,000	0.27	9,010.4	7.8	106,825.4	92.2	115,835.8	19.6	15,887.7	-0-	-0-	957.9	-0-	14,929.8

Table 5  
 ASSESSED VALUATION AND TAX COLLECTIONS  
 FISCAL YEAR 1986-87

Member Agencies	ASSESSED VALUATION - SECURED AND UNSECURED				Area 6/30/87  Acres	1986-87 Valuation Per Acre	Tax Assessments to Date	Adj. to Tax Assessments	Uncollected 6/30/87	Tax Collections
	*1985-86  Total	*1986-87  Total	1985-86 to 1986-87 Percent Change	*1987-88  Total						
Bueno Colorado M.W.D.	\$ 2,392,025,940	\$ 2,787,271,024	+16.5	\$ 3,253,711,801	19,825	\$140,594	\$ 3,444,007.09	\$ 325,806.27	\$ 22,334.09	\$ 3,750,479.27
Costa Real M.W.D.	2,472,996,108	2,928,817,724	+18.4	3,397,838,824	20,369	143,789	3,520,100.29	325,280.24	21,616.53	3,823,764.00
Del Mar, City of	342,406,102	370,575,006	+ 8.2	422,473,436	1,159	319,737	709,625.05	58,888.72	3,479.53	765,038.24
De Luz Heights M.W.D.	48,332,262	50,071,254	+ 3.6	52,318,440	11,789	4,247	77,176.73	4,787.46	695.22	81,268.97
Escondido, City of	1,683,336,753	1,956,578,606	+16.2	2,239,556,361	21,215	92,226	2,884,695.32	216,858.56	13,939.00	3,087,614.88
Fallbrook P.U.D.	646,182,369	707,671,331	+ 9.5	771,474,608	16,174	43,754	1,155,422.41	95,252.41	6,702.16	1,241,972.31
Helix W.D.	5,591,798,578	6,048,402,835	+ 8.2	6,510,134,509	31,278	193,376	12,101,816.30	778,309.33	50,285.75	12,829,839.88
National City, City of	746,541,158	789,058,820	+ 5.7	840,535,388	5,573	141,586	1,949,121.92	101,196.78	5,564.19	2,044,754.51
Oceanside, City of	2,372,482,193	2,659,068,957	+12.1	2,995,736,395	25,698	103,474	3,658,108.83	282,186.24	24,011.62	3,916,283.45
Olivenhain M.W.D.	1,680,643,767	2,003,261,107	+19.2	2,304,160,023	30,822	64,995	1,707,161.18	189,560.80	17,235.96	1,880,041.02
Otay W.D.	2,049,808,010	2,391,288,987	+16.7	3,005,019,934	62,779	38,091	2,716,342.51	240,131.33	21,170.42	2,935,303.42
Padre Dam M.W.D.	2,334,777,302	2,606,259,901	+11.6	2,846,520,109	54,503	47,819	3,565,050.97	258,278.84	22,260.05	3,801,069.76
Pendleton Military Res.	2,860,158,917	3,410,610,730	+19.3	3,544,561,657	134,625	25,334	2,057,540.77	(135,985.01)	93.52	1,921,462.24
Poway, City of	1,241,272,805	1,387,724,029	+11.8	1,568,466,256	23,214	59,780	1,776,240.89	133,909.37	9,625.27	1,900,524.99
Rainbow M.W.D.	729,576,499	801,355,346	+ 9.8	869,176,746	47,261	16,956	1,254,703.58	105,061.67	8,160.35	1,351,604.90
Ramona M.W.D.	701,088,562	772,833,531	+10.2	854,101,215	46,524	16,612	1,076,930.78	173,512.80	8,465.43	1,241,978.15
Rincon Del Diablo M.W.D.	1,244,456,758	1,420,181,493	+14.1	1,695,226,774	10,614	133,803	1,913,206.68	141,889.69	10,407.23	2,044,689.14
San Diego, City of	34,364,573,939	38,899,063,923	+13.2	43,216,944,091	210,180	185,075	61,769,332.46	(42,673,092.12)	53,420.57	19,042,837.77
San Dieguito W.D.	1,165,475,356	1,294,764,141	+11.1	1,455,906,129	5,639	229,609	1,922,945.01	171,974.21	11,730.15	2,083,189.07
San Marcos C.W.D.	1,299,442,913	1,453,812,585	+11.9	1,690,573,443	28,488	51,032	1,801,401.50	188,173.44	13,590.07	1,975,976.87
Santa Fe I.D.	1,615,595,568	1,803,819,133	+11.7	1,972,270,275	10,173	177,314	2,293,707.82	276,142.73	14,736.10	2,555,114.45
South Bay I.D.	2,907,316,021	3,129,097,013	+ 7.6	3,429,610,248	15,569	200,983	6,448,168.20	(37,632.51)	20,545.64	6,389,900.5
Valley Center M.W.D.	787,433,532	845,871,899	+ 7.4	936,505,241	61,004	13,866	1,264,131.15	94,591.14	11,118.28	1,347,612.01
Yuima M.W.D.	110,421,904	115,903,598	+ 5.0	120,908,790	12,813	9,046	265,776.94	15,492.75	1,182.47	280,087.22
Total Authority	\$71,388,143,316	\$80,633,362,973	+13.0	\$89,993,730,693	907,288	\$ 88,873	\$121,334,273.38	\$(38,669,417.21)	\$372,359.60	\$82,292,496.57
San Diego County (1)	\$74,138,289,435	\$85,143,527,702	+14.8	\$93,253,520,013	2,725,100	\$ 31,244				

(1) Excluding 1,475,100 acres of tax exempt lands in San Diego County  
 \*Market value as determined by County Assessor.

Table 5  
 ASSESSED VALUATION AND TAX COLLECTIONS  
 FISCAL YEAR 1986-87

7 n	Tax Assessments to Date	Adj. to Tax Assessments	Uncollected 6/30/87	Tax Collections	Interest & Penalties	Receipts in Lieu of Taxes	Net Total Collections	Amount Paid for Service Connections to 6/30/87	Total Amount Paid by Each Member Agency to 6/30/87
94	\$ 3,444,007.09	\$ 325,806.27	\$ 22,334.09	\$ 3,750,479.27	\$ 1,953.14	\$ 10,802.62	\$ 3,763,358.70	\$ 207,438.59	\$ 3,970,797.29
89	3,520,100.29	325,280.24	21,616.53	3,823,764.00	1,508.21	33,275.49	3,858,558.45	7,931.07	3,866,489.52
37	709,625.05	58,888.72	3,479.53	765,038.24	247.99	503.63	765,817.91	-	765,817.91
47	77,176.73	4,787.46	695.22	81,268.97	37.12	1,000.00	82,306.09	-	82,306.09
26	2,884,695.32	216,858.56	13,939.00	3,087,614.88	1,193.33	28.80	3,088,865.85	9,253.62	3,098,119.47
54	1,155,422.41	95,252.41	6,702.16	1,241,972.31	522.89	3,420.09	1,245,958.39	67,773.04	1,313,731.43
76	12,101,816.30	778,309.33	50,285.75	12,829,839.88	3,385.41	4,930.57	12,838,939.38	28,905.90	1,274,864.29
36	1,949,121.92	101,196.78	5,564.19	2,044,754.51	400.85	6,828.33	2,052,079.76	-	2,052,079.76
74	3,658,108.83	282,186.24	24,011.62	3,916,283.45	2,935.09	2,601.17	3,921,920.17	126,369.19	4,048,289.36
95	1,707,161.18	189,560.80	17,235.96	1,880,041.02	1,679.26	1,250.00	1,883,015.72	89,024.26	1,972,039.98
91	2,716,342.51	240,131.33	21,170.42	2,935,303.42	1,543.63	4,455.25	2,941,302.30	208,573.58	3,149,875.88
19	3,565,050.97	258,278.84	22,260.05	3,801,069.76	1,896.56	3,003.17	3,806,101.28	45,244.19	3,851,345.47
34	2,057,540.77	(135,985.01)	93.52	1,921,462.24	0-	0-	1,921,462.24	-	1,921,462.24
30	1,776,240.89	133,909.37	9,625.27	1,900,524.99	1,071.59	15.02	1,901,620.54	103,875.15	2,005,495.69
56	1,254,703.58	105,061.67	8,160.35	1,351,604.90	969.26	23,679.97	1,376,254.85	193,484.73	1,569,739.58
12	1,076,930.78	173,512.80	8,465.43	1,241,978.15	1,024.92	5,400.02	1,248,461.88	3,378.93	1,251,840.81
03	1,913,206.68	141,889.69	10,407.23	2,044,689.14	1,028.40	58,800.96	2,104,519.86	14,527.34	2,119,047.20
75	61,769,332.46	(42,673,092.12)	53,420.57	19,042,837.77	3,982.97	43,142,955.53	62,192,243.21	610,595.45	62,802,838.66
09	1,922,945.01	171,974.21	11,730.15	2,083,189.07	903.62	5,426.06	2,089,650.00	47,205.63	2,136,855.63
32	1,801,401.50	188,173.44	13,590.07	1,975,976.87	1,169.12	0-	1,977,145.99	-	1,977,145.99
14	2,293,707.82	276,142.73	14,736.10	2,555,114.45	1,914.29	2,892.80	2,561,375.76	58,787.21	2,620,162.97
83	6,448,168.20	(37,632.51)	20,545.64	6,389,900.5	1,375.91	629,977.08	7,021,486.30	-	7,021,486.30
66	1,264,131.15	94,591.14	11,118.28	1,347,612.01	1,089.85	1,011.39	1,349,739.56	162,554.79	1,512,294.35
46	265,776.94	15,492.75	1,182.47	280,087.22	132.82	1,500.00	281,720.04	28,424.47	310,144.51
73	\$121,334,273.38	\$(38,669,417.21)	\$372,359.60	\$82,292,496.57	\$31,506.16	\$43,943,784.95	\$126,273,904.23	\$2,013,346.64	\$128,287,250.87
44									

SAN DIEGO COUNTY WATER AUTHORITY

TABLES

Table 6  
WATER PRODUCTION WITHIN AUTHORITY AGENCIES - FISCAL YEARS 1977-78 TO 1986-87  
(All Figures in Acre Feet)

Member Agencies	From Local and Authority Supplies										
	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
Buena Colorado M.W.D.	13,928	13,263	14,554	15,038	17,565	15,446	14,720	18,331	16,988	17,584	17,928
Costa Real M.W.D.	10,752	10,010	11,135	12,554	13,385	12,749	11,879	12,895	12,880	13,686	14,644
Del Mar, City of	918	921	1,096	999	1,075	1,045	1,055	1,235	1,097	1,107	1,456
De Luz Heights M.W.D.	503	612	990	1,339	1,757	1,794	1,792	2,531	2,373	2,586	3,186
Escondido, City of	19,740	19,001	20,500	22,113	26,052	22,534	20,269	24,214	23,281	23,712	24,913
Fallbrook Public Utility Dist.	12,999	11,128	11,667	12,174	14,698	12,386	10,156	12,600	11,606	12,270	12,346
Heba Water District	34,465	35,882	36,256	37,676	41,613	39,284	36,519	41,081	40,579	42,056	42,201
National City & South Bay I.D.	21,339	20,021	21,628	21,319	23,222	23,209	23,252	25,593	26,092	26,854	26,115
Oceanside, City of	16,565	15,851	18,310	19,602	22,408	21,769	19,846	22,583	24,114	24,390	25,164
Olivewood M.W.D.	3,739	4,358	4,714	5,313	6,437	5,856	6,027	7,741	8,233	9,490	9,739
Otay W.D.	11,787	11,846	11,270	11,852	13,612	12,943	11,952	13,551	13,830	15,126	16,337
Padre Dam M.W.D.	11,623	11,799	12,812	13,718	15,572	14,908	14,102	16,992	17,027	17,966	18,319
Pendleton Military Res.	-	-	-	-	-	-	-	-	-	-	9,479
Poway, City of	7,177	6,553	6,948	8,240	9,027	7,873	7,547	9,215	9,320	10,061	10,822
Rainbow M.W.D.	25,824	22,529	24,709	26,943	34,111	28,630	25,354	31,374	29,297	29,887	29,812
Ranoma M.W.D.	5,653	5,531	6,269	6,583	9,065	8,873	8,679	10,871	9,609	10,307	10,219
Rincon del Diabolo M.W.D.	3,914	3,926	4,483	4,789	5,763	5,256	4,374	6,001	6,039	6,383	6,859
San Diego, City of	162,003	155,226	164,934	175,668	191,713	192,626	182,873	203,642	216,289	221,873	228,796
Inside City	7,367	6,023	6,866	4,480	6,964	6,657	3,723	6,149	4,492	5,611	5,247
Outside City (not in Authority)	7,058	6,452	7,170	7,342	8,056	7,668	7,298	7,670	7,956	7,904	8,300
San Diego Water District	5,535	5,562	6,559	6,800	8,420	8,233	7,847	9,654	10,090	10,932	11,161
Santa Fe Irrigation District	7,517	7,254	7,735	10,252	9,368	8,792	7,728	10,617	11,195	11,074	11,266
Valley Center M.W.D.	28,895	26,738	29,417	33,568	44,687	38,358	32,583	42,367	39,435	41,419	43,791
Yuma M.W.D.	3,729	3,335	2,987	2,978	3,891	3,498	2,782	3,335	3,392	3,523	3,710
Total	423,030	400,821	433,009	461,540	528,461	499,387	462,357	540,262	545,214	565,601	591,820

YEARS 1977-78 TO 1986-87

Table 7  
WATER SALES - 1947 to 1987  
(All figures rounded to nearest whole acre foot)

Member Agencies	From Local and Authority Supplies										Total
	(1) 1947-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1986-87	
Buena Colorado M.W.D.	161,540	7,402	6,594	9,652	2,753	3,463	5,827	4,473	5,119	206,823	
Costa Real M.W.D.	167,849	12,223	13,308	12,749	11,879	12,895	12,829	13,677	14,671	272,080	
Del Mar, City of	11,768	1,283	1,076	1,045	1,055	1,235	1,097	1,107	1,456	21,122	
De Luz Heights M.W.D.	2,553	1,097	1,794	1,792	2,531	2,373	2,586	2,373	2,586	19,520	
Escondido, City of	157,411	8,749	12,880	15,099	8,342	14,624	14,082	14,284	18,320	264,661	
Fallbrook Public Utility District	275,975	12,174	14,698	12,363	10,168	12,600	10,322	13,543	13,543	375,455	
Heba Water District	634,677	19,800	24,413	29,577	32,898	24,779	26,507	37,977	39,712	870,355	
National City & South Bay I.D.	362,124	3,093	143	315	132	87	4,863	20,817	16,384	407,958	
Oceanside, City of	223,790	19,326	22,362	21,726	19,821	22,583	24,114	24,190	25,164	403,076	
Olivewood M.W.D.	37,473	5,313	6,433	5,739	5,714	7,860	8,233	9,485	9,739	95,089	
Otay W.D.	162,786	11,782	13,629	12,943	11,942	13,542	13,830	15,125	16,337	271,926	
Padre Dam M.W.D.	145,521	13,721	15,572	14,908	14,102	16,992	17,027	17,966	18,319	273,928	
Pendleton Military Res.	-	293	617	715	1,356	1,694	1,542	95	111	6,823	
Poway, City of	100,132	7,052	9,269	8,351	6,843	9,005	9,313	9,821	10,724	170,508	
Rainbow M.W.D.	342,280	27,040	33,940	28,630	25,426	31,374	29,160	29,211	30,323	577,384	
Ranoma M.W.D.	46,681	6,239	8,218	8,541	8,092	10,392	8,688	9,723	9,943	116,557	
Rincon del Diabolo M.W.D.	129,494	4,789	5,763	5,256	4,374	6,001	6,039	6,383	6,858	174,957	
San Diego, City of	3,005,074	92,986	119,890	155,743	90,841	114,473	170,344	183,903	197,965	4,131,219	
San Diego Water District	79,879	5,732	5,711	4,573	4,009	4,520	3,291	3,227	3,937	114,829	
San Marcos C.W.D.	67,880	6,855	8,465	8,154	7,847	9,654	10,135	10,941	11,345	141,076	
Santa Fe Irrigation District	87,074	6,258	6,630	5,278	4,426	5,895	4,488	4,668	5,268	129,985	
Valley Center M.W.D.	280,371	32,681	44,046	38,091	32,583	42,247	38,953	41,055	43,511	593,338	
Yuma M.W.D.	30,856	1,601	2,054	2,205	1,403	1,333	1,885	1,924	1,911	45,172	
Total Sales to Agencies	6,512,938	307,489	377,378	404,317	297,806	369,779	476,201	474,955	503,678	9,684,541	
Total Sales to Orchards	53,291	2,560	658	-	-	-	-	-	-	56,509	
Total to Authority Storage	+332,181	+2,000	-	+14,560	+9,100	+452	+645	+13,158	+15,849	+887,945	
Total to Metropolitan Storage	-296,831	-2,000	-	-7,383	-	-	-	-	-116	-508,330	
Total from Metropolitan Storage	+120,979	-	-	-	-	-	-	+230	-	+121,159	
Total from Metropolitan Storage	-116,908	-	-	-	-	-	-	-219	-	-117,127	
Total Flow in Authority System	6,605,600	310,049	376,036	418,877	299,513	370,231	436,846	488,124	519,411	9,824,697	
Average Rate of Flow (c.f.s.)	427.1	522.2	558.5	411.3	509.4	601.5	656.0	695.7	695.7	695.7	
To Agencies and Others	+2.8	-	+20.1	+12.6	+0.6	+0.9	+18.2	+21.9	+21.9	+21.9	
From Authority Storage	-2.8	-	-2.8	-10.2	-	-	-	-	-	-	
To Metropolitan Storage	-	-	-	-	-	-	-	+0.3	-	-	
From Metropolitan Storage	-	-	-	-	-	-	-	-0.3	-	-	
Flow in Authority System	427.1	519.4	578.6	413.7	510.0	603.4	674.2	717.4	717.4	717.4	

(1) Operation of the First Aqueduct was formally initiated on November 24, 1947. For sales in intervening years, see previous reports.

# SAN DIEGO COUNTY WATER AUTHORITY

Table 8  
SALES OF IMPORTED WATER - FISCAL YEAR 1986-87  
(All Figures in Acre-Feet except as noted)

Member Agency	Month, 1987						Total 6 months 1986
	July	August	Sept.	Oct.	Nov.	Dec.	
Buena Colorado M.W.D.	321.5	447.0	194.8	86.2	567.8	374.1	1,991.4
Costa Real M.W.D.	1,620.4	1,745.3	1,474.0	1,130.0	1,054.5	868.3	7,892.5
Del Mar, City of	143.0	179.6	118.1	118.2	97.1	94.0	750.0
De Luz Heights M.W.D.	439.9	506.4	355.4	249.0	229.3	128.1	1,908.1
Escondido, City of	2,101.4	2,094.2	1,237.2	307.5	443.2	997.6	7,181.1
Fallbrook P.U.D.	1,766.5	2,040.9	1,775.2	884.0	902.2	592.8	7,961.6
Helix W.D.	3,739.0	4,030.5	3,414.5	3,305.0	3,203.1	2,723.7	20,415.8
National City & South Bay I.D.	505.2	662.5	399.0	751.0	1,817.2	1,263.5	5,398.4
Oceanside, City of	2,744.9	2,792.9	2,283.5	1,951.9	1,831.8	1,419.3	13,024.3
Olivenhain M.W.D.	1,188.9	1,239.0	945.9	756.4	677.7	480.0	5,287.9
Otay W.D.	1,869.5	1,959.9	1,604.3	1,178.6	1,097.1	967.2	8,676.6
Padre Dam M.W.D.	2,265.2	2,322.8	1,802.8	1,302.5	1,235.2	982.8	9,911.3
Penleton Military Res.*	10.4	9.3	8.9	4.8	9.0	5.9	48.3
Poway, City of	1,295.0	1,371.9	246.2	1,536.5	703.2	574.3	5,727.1
Rainbow M.W.D.	4,224.5	4,353.1	3,496.9	1,824.4	2,368.3	1,172.8	17,440.0
Ranoma M.W.D.	1,368.1	1,505.3	1,112.5	830.2	749.1	432.5	5,997.7
Rincon Del Diablo M.W.D.	858.7	935.8	723.1	514.3	455.9	329.3	3,817.1
San Diego, City of	19,953.2	20,383.2	17,903.7	13,433.1	15,396.1	12,835.4	99,904.7
San Diego W.D.	516.5	534.9	447.3	248.0	241.7	166.6	2,155.0
San Marcos C.W.D.	1,385.6	1,452.8	1,011.1	827.3	798.7	558.2	6,033.7
Santa Fe I.D.	793.5	832.9	637.1	320.4	299.4	165.1	3,048.4
Valley Center M.W.D.	6,167.6	6,991.1	4,801.2	3,148.4	3,051.3	1,490.4	25,650.0
Yuima M.W.D.	304.0	403.2	243.6	112.8	109.4	38.5	1,211.5
Total Sales to Agencies	55,582.5	58,794.5	46,236.3	34,820.5	37,338.3	28,660.4	261,432.5
Total Sales to Others	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Total Sales to Agencies & Others	55,582.5	58,794.5	46,236.3	34,820.5	37,338.3	28,660.4	261,432.5
Total to Authority Storage	3,323.9	2,557.4	2,520.3	1,968.6	-0-	-0-	10,370.2
Total From Authority Storage	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Total Flow in Authority System	58,906.4	61,351.9	48,756.6	36,789.1	37,338.3	28,660.4	271,802.7
Total Evaporation Losses from Storage in San Vicente and Lower Otay Reservoirs	224.7	263.1	205.3	149.7	121.2	61.0	1,025.0
Total Evaporation Losses from Storage in Sweetwater Reservoir	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Rate of Flow (c.f.s.)							
To Agencies and Others	903.9	956.2	777.0	566.3	627.5	466.1	716.3
To Authority Storage	54.1	41.6	42.4	32.0	-0-	-0-	28.4
From Authority Storage	-0-	-0-	-0-	-0-	-0-	-0-	-0-
In Authority System	958.0	997.8	819.4	598.3	627.5	466.1	744.7

\*1,552.2 AF delivered through Coastal M.W.D. facilities and are not included in Authority totals

# TABLES

Table 8  
(Continued)

Member Agency	Month, 1987						Total 6 Months 1987	Fiscal Year Total	Fiscal Year, cfs
	Jan.	Feb.	March	April	May	June			
Buena Colorado M.W.D.	587.2	27.5	32.0	238.2	223.0	2,019.7	3,127.6	5,119.0	7.1
Costa Real M.W.D.	746.9	775.1	796.0	1,301.6	1,526.7	1,632.2	6,778.5	14,671.0	20.3
Del Mar, City of	97.9	99.4	106.0	96.5	139.1	167.4	706.3	1,456.3	2.0
De Luz Heights M.W.D.	93.2	150.9	109.2	283.7	294.0	347.0	1,278.0	3,186.1	4.4
Escondido, City of	1,325.0	1,414.0	1,015.6	2,401.0	2,498.7	2,484.2	11,138.5	18,319.6	25.3
Fallbrook P.U.D.	594.2	594.1	204.1	1,244.3	1,529.2	1,427.6	5,593.5	13,555.1	18.7
Helix W.D.	2,690.4	2,643.3	3,397.1	3,735.3	3,515.2	3,335.0	19,316.3	39,732.1	54.9
National City & South Bay I.D.	1,590.8	1,464.7	1,541.4	1,932.6	2,224.4	2,232.2	10,986.1	16,384.5	22.6
Oceanside, City of	1,472.4	1,452.9	1,526.5	2,396.4	2,616.8	2,674.5	12,139.5	25,163.8	34.8
Olivenhain M.W.D.	436.7	506.8	463.1	908.7	1,017.2	1,118.8	4,451.3	9,739.2	13.4
Otay W.D.	957.2	920.3	954.3	1,399.5	1,621.0	1,808.0	7,660.3	16,336.9	22.6
Padre Dam M.W.D.	1,044.3	994.6	932.5	1,546.4	1,793.5	2,096.2	8,407.5	18,318.8	25.3
Penleton Military Res.*	10.4	7.0	5.5	10.1	16.3	13.5	62.8	111.1	0.2
Poway, City of	568.2	519.0	526.9	904.2	1,223.3	1,255.1	4,996.7	10,723.8	14.8
Rainbow M.W.D.	943.0	1,309.3	752.8	2,909.7	3,517.8	3,450.1	12,882.7	30,322.7	41.9
Ranoma M.W.D.	425.3	399.3	211.1	807.8	926.7	1,174.9	3,945.1	9,942.8	13.7
Rincon Del Diablo M.W.D.	323.6	344.5	299.9	600.8	691.0	781.5	3,041.3	6,858.4	9.5
San Diego, City of	11,613.3	11,156.8	12,848.2	19,139.3	21,441.7	21,860.7	98,060.0	197,964.7	273.4
San Diego W.D.	289.8	256.3	132.5	311.1	298.0	494.8	1,782.5	3,937.5	5.4
San Marcos C.W.D.	591.9	650.5	537.8	997.5	1,117.1	1,216.5	5,111.3	11,145.0	15.4
Santa Fe I.D.	267.0	273.3	118.4	399.3	405.6	755.7	2,219.3	5,267.7	7.3
Valley Center M.W.D.	1,742.0	2,027.3	615.4	4,034.4	4,411.0	5,031.1	17,861.2	43,511.2	60.1
Yuima M.W.D.	91.0	126.5	10.8	142.8	149.1	179.4	699.6	1,911.1	2.6
Total Sales to Agencies	28,501.7	28,113.4	27,137.1	47,741.2	53,196.4	57,556.1	242,245.9	503,678.4	695.7
Total Sales to Others	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Total Sales to Agencies & Others	28,501.7	28,113.4	27,137.1	47,741.2	53,196.4	57,556.1	242,245.9	503,678.4	695.7
Total to Authority Storage	-0-	-0-	1,137.7	1,778.9	1,275.5	1,287.0	5,479.1	15,849.3	21.9
Total From Authority Storage	-0-	-0-	-0-	98.0	-0-	18.3	116.3	116.3	0.2
Total Flow in Authority System	28,501.7	28,113.4	28,274.8	49,422.1	54,471.9	58,824.8	247,608.7	519,411.4	717.4
Total Evaporation Losses from Storage in San Vicente and Lower Otay Reservoirs	73.0	98.6	125.3	213.2	266.2	275.2	1,051.5	2,076.5	2.8
Total Evaporation Losses from Storage in Sweetwater Reservoir	-0-	-0-	2.0	16.3	54.8	75.3	148.4	148.4	0.2
Rate of Flow (c.f.s.)									
To Agencies and Others	463.5	506.2	441.3	802.3	865.2	967.3	674.7	695.7	9.5
To Authority Storage	-0-	-0-	18.5	29.9	20.7	21.6	15.3	21.9	0.3
From Authority Storage	-0-	-0-	-0-	1.6	-0-	0.3	0.3	0.2	0.0
In Authority System	463.5	506.2	459.8	830.6	885.9	988.6	689.7	717.4	9.8

SAN DIEGO COUNTY WATER AUTHORITY

Table 9  
ASSESSED VALUATIONS AND TAX RATES  
Fiscal Years 1945-46 to 1986-87

Fiscal Year	Secured Property	Public Utilities	Unsecured Property	Total	Tax Rate per \$100	
					Secured	Unsecured
1945-46	\$ 212,082,975	\$ 28,253,700	\$ 29,960,130	\$ 270,296,805	0.04	-
1946-47	208,715,150 (1)	29,433,450	30,665,910	268,814,510	0.04	0.04
1947-48	233,579,990	32,740,680	40,977,850	307,298,520 (2)	0.14	0.04
1948-49	254,227,570	37,482,020	47,177,300	338,886,890	0.14	0.14
1949-50	290,351,875	42,479,140	45,743,200	378,574,215	0.10	0.14
1950-51	306,104,930	43,595,730	44,717,740	394,418,400	0.10	0.10
1951-52	344,620,030	48,452,940	50,904,035	443,977,005	0.10	0.10
1952-53	382,948,860	53,208,220	63,996,330	500,153,410	0.12	0.10
1953-54	490,709,350	63,092,050	69,147,150	622,948,550	0.10	0.12
1954-55	546,272,880	69,243,550	79,629,790	695,146,220	0.10	0.10
1955-56	627,062,960	87,485,390	79,936,450	794,484,800	0.09	0.10
1956-57	680,824,400	101,224,260	97,950,800	879,999,460	0.09	0.09
1957-58	761,088,330	111,151,890	128,785,440	1,001,025,660	0.09	0.09
1958-59	865,283,080	128,479,290	128,124,720	1,121,887,090	0.10	0.09
1959-60	979,491,050	145,317,290	134,846,730	1,259,655,070	0.11	0.10
1960-61	1,116,723,830	165,666,720	159,954,740	1,442,345,290	0.11	0.11
1961-62	1,220,810,650	191,276,650	155,149,890	1,567,237,190	0.11	0.11
1962-63	1,272,506,330	201,245,370	154,989,440	1,628,741,140	0.11	0.11
1963-64	1,340,197,170	209,793,780	159,714,930	1,709,705,880	0.11	0.11
1964-65	1,423,375,590	213,352,470	151,686,520	1,788,414,580	0.11	0.11
1965-66	1,511,967,750	212,605,040	155,417,220	1,879,990,010	0.11	0.11
1966-67	1,567,290,460	212,223,550	147,740,730	1,927,254,740	0.11	0.11
1967-68	1,735,209,870	209,136,160	178,641,320	2,122,987,350	0.10	0.11
1968-69	1,876,936,060	208,018,700	197,139,600	2,282,094,360	0.09	0.10
1969-70	2,063,618,582	210,839,100	237,951,409	2,512,409,091	0.09	0.09
1970-71	2,348,151,943	216,378,300	276,932,717	2,841,462,960	0.09	0.09
1971-72	2,755,734,087	213,191,301	306,608,099	3,275,533,487	0.10	0.09
1972-73	3,061,010,163	225,224,650	347,857,938	3,634,092,751	0.11	0.10
1973-74	3,481,734,238	239,346,070	393,300,174	4,114,380,482	0.11	0.11
1974-75	4,075,823,685	249,562,970	450,374,627	4,775,761,282	0.11	0.11
1975-76	4,629,303,071	283,156,410	503,493,823	5,415,953,304	0.11	0.11
1976-77	5,230,851,497	311,553,680	545,425,038	6,087,830,215	0.11	0.11
1977-78	6,121,864,014	376,899,840	607,393,849	7,106,157,703	0.11	0.11
1978-79	6,272,490,327	554,099,470	707,294,537	7,533,884,334	0.06	0.11
1979-80	7,624,459,863	660,454,810	837,758,367	9,122,673,040	0.04	0.06
1980-81	9,163,752,692	731,869,180	483,834,673	10,379,456,495	0.05	0.04
1981-82 (4)	41,759,646,912	3,457,486,860	1,692,548,096	46,889,681,868	0.01	0.0125
1982-83	46,670,563,147	4,136,558,170	1,971,803,549	52,778,924,866	0.00817	0.01
1983-84	50,057,533,413	5,275,693,400	2,190,834,774	57,524,061,587	0.004605	0.00817
1984-85	55,587,979,549	5,666,443,560	2,577,402,391	63,831,825,500	0.007090	0.004605
1985-86	62,444,546,244	6,086,772,120	2,856,824,972	71,388,143,316	0.005310	0.007090
1986-87	70,584,789,216	7,095,945,340	2,952,629,417	80,633,367,973	0.00461	0.005310

(1) City of Coronado secured assessed valuations not included in this or subsequent tax levies by the Authority, having withdrawn from the Authority prior to 1946-47.

(2) City of Coronado not included in this or subsequent total valuation.

(3) Gross Tax Levy; Includes State Grant for Business Inventory, Homeowners Exemption, and allocation of the 1% assessment from the County of San Diego.

(4) Assessed valuation changed to full market value as determined by County Assessor.

TABLES

Table 9  
Continued  
TAX LEVIES AND TAX COLLECTIONS BY FISCAL YEAR  
(Includes in Lieu of Taxes)  
Fiscal Years 1945-46 to 1986-87

Tax Levy (3)	Collection of Current Year's Taxes During Fiscal Year	Percentage of Levy Collected During Fiscal Year	Adjustments to Prior Year's Levies	Collection of Prior Years' Taxes During Fiscal Year	Total Tax Collections	Accumulated Delinquent Taxes	Ratio of Accumulated Delinquent Taxes to Tax Levy
\$ 96,131	\$ 94,656	98.47%	-	-	\$ 94,656	\$ 1,474	1.53%
107,808	105,753	98.09	-	1,090	106,844	2,439	2.26
389,591	381,563	97.94	-	1,882	383,445	8,585	2.20
474,520	459,504	96.84	-	5,916	465,420	17,685	3.73
401,112	392,732	97.91	329	13,342	406,074	13,032	3.25
397,970	390,274	98.07	373	8,217	398,492	12,904	3.24
450,405	441,242	97.97	978	7,699	448,941	15,346	3.40
594,603	585,417	98.46	(1,140)	12,567	597,985	10,824	1.82
652,335	640,239	98.15	4,213	9,942	650,181	17,191	2.62
709,678	695,200	97.96	1,295	12,638	707,838	20,326	2.86
803,375	788,734	97.41	(2,099)	12,140	800,874	20,726	2.59
874,774	861,461	98.48	576	13,056	874,517	21,560	2.46
965,006	946,445	98.08	958	12,890	959,335	28,189	2.92
1,178,885	1,157,265	98.17	-	13,347	1,170,613	36,462	3.09
1,436,270	1,408,277	98.05	(5,274)	16,647	1,424,925	42,533	2.97
1,624,733	1,586,169	97.63	(8,720)	21,501	1,607,671	50,874	3.15
1,763,785	1,718,575	97.44	(2,276)	31,477	1,750,053	62,330	3.54
1,816,449	1,775,932	97.77	(3,688)	38,334	1,814,066	61,023	3.37
1,910,019	1,862,973	97.54	(268)	36,825	1,899,799	70,975	3.72
2,000,067	1,948,853	97.44	(6,588)	42,596	1,991,450	73,003	3.66
2,101,023	2,033,032	96.76	2,503	44,784	2,077,816	98,714	4.69
2,154,994	2,090,637	97.01	(7,164)	54,333	2,144,970	101,573	4.73
2,175,276	2,129,599	97.92	(301)	64,473	2,194,470	82,078	3.77
2,110,913	2,103,601	99.65	-	55,253	2,158,854	34,136	1.62
2,182,274	2,149,330	98.49	91,680	34,018	2,204,127	103,963	4.52
2,450,123	2,408,899	98.32	38,500	104,032	2,512,932	79,655	3.25
3,084,869	3,058,713	99.15	27,045	32,926	3,091,639	99,930	3.24
3,790,191	3,743,715	98.77	494	45,314	3,789,029	101,586	2.68
4,004,024	3,941,152	98.43	4,891	43,846	3,984,999	125,502	3.13
4,673,400	4,597,610	98.37	(4,573)	42,611	4,640,222	154,107	3.32
5,336,375	5,223,483	97.88	(17,845)	76,632	5,300,115	172,522	3.23
6,012,954	5,928,085	98.59	34,543	109,718	6,037,803	182,216	3.03
7,111,999	7,083,080	99.59	(6,021)	87,193	7,170,273	117,921	1.66
5,956,033	5,802,438	97.42	-	134,444	5,936,882	137,027	2.30
5,549,222	5,420,190	97.67	(105,757)	137,072	5,557,262	23,275	0.42
7,164,231	7,076,598	97.78	181,346	137,782	7,214,380	154,472	2.16
7,150,025	6,886,178	96.31	73,743	228,215	7,114,393	213,847	3.09
6,690,619	6,634,619	99.16	197,022	164,354	6,798,973	302,515	4.52
6,588,403	6,460,324	98.06	(47,042)	178,479	6,638,803	205,073	3.11
7,239,670	7,079,608	97.24	176,805	283,045	7,322,653	298,895	4.13
7,181,483	7,092,760	98.76	40,938	158,696	7,251,456	269,860	3.76
6,269,310	6,053,170	96.55	53,304	166,944	6,220,114	372,360	5.94

# SAN DIEGO COUNTY WATER AUTHORITY

Table 10  
**CHEMICAL CHARACTER OF NATURAL COLORADO RIVER WATER  
 AT WEST PORTAL OF SAN JACINTO TUNNEL**  
 Year Ending June 30, 1987  
 Samples Taken at Entrance to San Diego Aqueduct by M.W.D.  
 and Analyzed by District Laboratory

Month	Total Hardness as mg/l CaCO <sub>3</sub>	Alkalinity as mg/l CaCO <sub>3</sub> Total	Magnesium as mg/l	(PH) Hydrogen Ion Concentration	Temperature When Sampled	
					°F	°C
July	264	129	24.0	8.38	75.2	24.0
August	259	130	23.5	8.35	78.8	26.0
September	259	127	24.0	8.39	77.0	25.0
October	266	134	24.0	8.37	69.8	21.0
November	268	130	24.5	8.39	66.2	19.0
December	266	130	24.5	8.44	59.0	15.0
January	271	134	24.5	8.31	54.5	12.5
February	268	130	24.5	8.38	52.7	11.5
March	273	130	25.0	8.40	57.2	14.0
April	273	131	25.0	8.29	62.6	17.0
May	270	131	25.0	8.39	71.6	22.0
June	270	132	25.0	8.35	75.2	24.0

ANALYSIS - YEAR ENDING JUNE 30, 1987  
 (mg/l except PH, Conductivity and Temperature)

Constituent	Symbol	ANALYSIS		
		Average	Maximum	Minimum
Silica	(SiO <sub>2</sub> )	8.66	9.20	6.90
Calcium	(Ca)	67	68	64
Magnesium	(Mg)	24.5	25.0	23.5
Sodium	(Na)	72	75	71
Potassium	(K)	3.9	4.1	3.8
Carbonate	(CO <sub>3</sub> )	1	4	1
Bicarbonate	(HCO <sub>3</sub> )	158	163	153
Sulfate	(SO <sub>4</sub> )	212	220	206
Chloride	(Cl)	56	60	50
Nitrate	(NO <sub>3</sub> )	1.01	1.20	0.75
Fluoride	(F)	0.28	0.34	0.20
Boron	(B)	0.02	0.29	0.00
Total Dissolved Solids		525	535	514
Hardness as CaCO <sub>3</sub> - Total		267	273	259
Alkalinity - Total		131	134	127
Free Carbon Dioxide	(CO <sub>2</sub> )	1.2	1.4	1.0
Hydrogen Ion Concentration	(PH)	8.37	8.44	8.29
Electrical Conductivity EC x 10 <sup>6</sup> @ 25°C		835	847	821
Temperature °C		19.3	26.0	11.5

# TABLES

Table 11  
**CHEMICAL CHARACTER OF BLENDED TREATED WATER  
 AT LAKE SKINNER**  
 Year Ending June 30, 1987  
 Samples Taken by M.W.D. and Analyzed by District Laboratory

Month	Total Hardness as mg/l CaCO <sub>3</sub>	Alkalinity as mg/l CaCO <sub>3</sub> Total	Magnesium as mg/l	(PH) Hydrogen Ion Concentration	Temperature When Sampled	
					°F	°C
July	172	94	17.0	8.07	77.0	25.0
August	198	103	19.5	8.06	80.6	27.0
September	195	105	19.0	8.08	76.1	24.5
October	216	104	20.5	8.07	68.9	20.5
November	226	116	21.8	8.08	63.5	17.5
December	240	122	22.5	8.06	57.2	14.0
January	252	126	23.0	8.06	51.8	11.0
February	246	123	23.0	8.07	54.5	12.5
March	239	119	22.0	8.10	56.3	13.5
April	244	120	23.0	8.06	62.6	17.0
May	212	109	20.5	8.08	69.8	21.0
June	200	106	20.0	8.01	72.5	22.5

ANALYSIS - YEAR ENDING JUNE 30, 1987  
 (mg/l except PH, Conductivity and Temperature)

Constituent	Symbol	ANALYSIS		
		Average	Maximum	Minimum
Silica	(SiO <sub>2</sub> )	8.5	9.7	6.4
Calcium	(Ca)	54	63	41
Magnesium	(Mg)	21.0	23.0	17.0
Sodium	(Na)	66	71	57
Potassium	(K)	3.6	3.8	3.3
Carbonate	(CO <sub>3</sub> )	0	0	0
Bicarbonate	(HCO <sub>3</sub> )	137	154	115
Sulfate	(SO <sub>4</sub> )	167	198	120
Chloride	(Cl)	58	63	52
Nitrate	(NO <sub>3</sub> )	0.69	1.30	0.10
Fluoride	(F)	0.22	0.27	0.17
Boron	(B)	0.04	0.32	0.00
Total Dissolved Solids		448	504	359
Hardness as CaCO <sub>3</sub> - Total		250	252	172
Alkalinity - Total		112	126	94
Free Carbon Dioxide	(CO <sub>2</sub> )	2.0	2.2	1.6
Hydrogen Ion Concentration	(PH)	8.07	8.10	8.01
Electrical Conductivity EC x 10 <sup>6</sup> @ 25°C		736	802	628
Temperature °C		18.8	27.0	11.0

SAN DIEGO COUNTY WATER AUTHORITY

Table 12  
ASSESSED VALUATIONS AND TAX RATES OF THE  
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Fiscal Year	Area (acres)	Assessed Valuation Total (1)	Tax Rate	
			Per \$100 Secured	Per \$100 Unsecured
1929-30	-	\$ 2,439,836,920	0.04	0.00
1930-31	-	2,431,684,250	.03	.04
1931-32	-	2,382,184,445	.03	.03
1932-33	-	1,936,051,180	.04	.03
1933-34	-	1,654,403,890	.04	.04
1934-35	-	1,587,147,565	.10	.04
1935-36	-	1,783,531,020	.20	.10
1936-37	-	1,789,160,685	.37	.20
1937-38	-	1,827,765,725	.40	.37
1938-39	-	1,896,966,255	.40	.40
1939-40	-	1,910,152,190	.42	.40
1940-41	389,588	1,841,248,450	.49	.42
1941-42	399,875	1,900,599,934	.48	.49
1942-43	400,614	2,001,924,735	.48	.48
1943-44	401,190	2,005,496,430	.48	.48
1944-45	401,536	2,109,192,795	.48	.48
1945-46	402,779	2,159,731,425	.50	.48
1946-47	501,425	2,413,186,570	.48	.50
1947-48	546,573	3,443,212,822 (2)	.35	.48
1948-49	578,368	3,883,081,225	.34	.35
1949-50	585,184	4,181,812,855	.34	.34
1950-51	721,850	4,281,519,725	.31	.34
1951-52	995,130	4,674,664,040	.30	.31
1952-53	1,120,448	5,372,498,515	.28	.30
1953-54	1,368,038	6,015,691,980	.25	.28
1954-55	1,793,651	6,548,392,114	.23	.25
1955-56	1,876,256	8,514,868,335	.21	.23
1956-57	1,932,205	9,674,000,560	.19	.21
1957-58	2,046,189	11,235,906,510	.18	.19
1958-59	2,128,333	12,070,838,070	.18	.18
1959-60	2,171,290	12,714,205,470	.17	.18
1960-61	2,544,960	13,737,971,925	.16	.17
1961-62	2,647,014	14,803,202,587	.15	.16
1962-63	2,797,946	15,699,681,030	.14	.15
1963-64	2,825,306	17,261,412,395	.14	.14
1964-65	2,882,144	17,757,246,740	.14	.14
1965-66	2,890,266	19,143,157,788	.14	.14
1966-67	2,901,421	20,979,150,165	.14	.14
1967-68	3,061,885	22,732,157,500	.14	.14
1968-69	3,067,896	24,016,568,274	.16	.14
1969-70	3,072,058	25,572,510,561	.17	.16
1970-71	3,075,616	27,605,064,302	.17	.17
1971-72	3,093,303	29,023,413,462	.17	.17
1972-73	3,126,803	31,001,520,641	.15	.17
1973-74	3,127,680	32,838,476,378	.14	.15
1974-75	3,129,664	35,941,961,265	.14	.14
1975-76	3,132,012	39,585,365,754	.13	.14
1976-77	3,132,800	45,695,542,697	.12	.13
1977-78	3,267,533	51,268,796,300	.12	.12
1978-79	3,268,337	53,573,470,118	.10	.12
1979-80	3,270,880	64,319,383,253	.09	.10
1980-81	3,272,679	69,390,300,019	.079	.09
1981-82	3,273,339	314,726,854,882(3)	01988(3)	01988(3)
1982-83	3,277,011	353,335,259,307	01668	01988
1983-84	3,280,294	379,788,761,242	02378	01668
1984-85	3,280,954	419,859,047,899	01568	02378
1985-86	3,282,745	458,782,059,816	01648	01568
1986-87	3,286,400	505,419,663,679	01488	01648
1987-88	-	564,692,806,207	01128	01488

(1) Includes secured, unsecured, and public utility valuations.  
(2) First year in which Authority assessed valuation was included in District's assessed valuation.  
(3) Effective FY 1981-82, assessed valuation reported at 100% of full value, and tax rates levied in percentage of full assessed value.

TABLES

Table 13  
METROPOLITAN WATER DISTRICT ANNEXATION CHARGES  
AND BALANCES ON AUTHORITY AREAS

Member Agencies	Date of Annexation	Amount of Annexation Charge	Remaining Balance 6-30-87
<b>Annexation Charges Outstanding</b>			
Del Mar, City of	11-23-62	\$ 611,250	\$ 122,098
De Luz M.W.D.	6-28-67	2,002,000	*3,263,938
No. 1 Annexation of 1969	10-15-69	312,000	*566,205
Fallbrook P.U.D.			
No. 2 Annexation of 1958	11-24-58	50,400	3,254
Fallbrook Community Air Park	12-22-69	59,800	*91,773
Helix Water District			
Helix-Watson Ranch Annexation	2-20-59	8,730	837
Helix-Sunny Slope Hts. Annexation	9-17-59	38,250	3,806
Olivenhain M.W.D.	7-25-60	83,880	11,082
No. 1 Annexation of 1965	2-11-65	512,520	153,663
No. 4 Annexation of 1967	11-13-67	74,000	61,228
Otay W.D.	10-26-56	273,000	-0-
No. 3 Annexation of 1960	10-20-60	95,100	12,587
Padre Dam M.W.D. (not including Lakeside I.D.)			
(Formerly Rio San Diego M.W.D.)	6-7-56	373,980	-0-
No. 2 Annexation of 1959	11-6-59	109,110	10,832
No. 3 Annexation of 1960	10-17-60	289,890	38,540
No. 4 Annexation of 1970	8-3-70	164,000	115,052
Poway M.W.D.			
No. 1 Annexation of 1959	9-21-59	27,150	2,618
Rainbow M.W.D.			
No. 1 Annexation of 1959	5-12-59	24,300	2,408
No. 3 Annexation of 1967	12-6-67	1,728,000	*3,233,768
No. 5 Annexation of 1973	11-22-73	13,200	10,792
Ramona M.W.D.	8-27-57	339,000	11,264
No. 1 Annexation of 1959	5-29-59	42,330	4,220
No. 2 Annexation of 1961	9-22-61	15,480	2,578
No. 3 Annexation of 1963	9-20-63	10,560	2,452
No. 4 Annexation of 1967	11-27-67	480,600	*539,138
No. 5 Annexation of 1972	5-17-72	732,000	653,958
Rincon del Diablo M.W.D.			
No. 4 Annexation of 1972	11-2-72	19,200	*25,994
San Dieguito Water District			
No. 1 Annexation of 1959	9-15-59	71,820	7,038
No. 2 Annexation of 1972	12-8-72	107,000	*148,367
Valley Center M.W.D.	5-9-55	205,680	-0-
No. 1 Annexation of 1960	12-12-60	23,700	3,152
No. 2 Annexation of 1967	11-29-67	22,000	*27,340
No. 3 Annexation of 1967	11-30-67	502,000	*628,169
Yuima M.W.D.	12-16-63	749,490	174,870
No. 1 Annexation of 1967	11-21-67	72,200	48,087
No. 2 Annexation of 1969	11-24-69	14,400	13,019
Pendleton Mill Reservation-Nuclear Generating Plant	12-16-77	**2,405,229	**1,998,718
<b>Total</b>		<b>\$16,077,099</b>	<b>\$11,992,845</b>

Annexation charges received from other annexed areas not listed above having no remaining balance \$20,059,006

\*Annual interest charge on outstanding balance is greater than tax levy based on maximum MWD tax rate of .1875% of assessed valuation (formerly 75¢/\$100 of A.V.)

\*\*Principal only.

SAN DIEGO COUNTY WATER AUTHORITY

Table 14  
WATER SALES BY METROPOLITAN WATER DISTRICT

Fiscal Years 1941-42 to 1986-87

Year	To Member Municipalities						Total
	Natural Water		Treated Water		Total to Agencies	To Others	
	Acre Feet	Percent	Acre Feet	Percent	Acre Feet	Acre Feet	
1941-42	-0-	-0-	9,372.6	100	9,372.6	70.7	9,443.3
1942-43	-0-	-0-	14,457.8	100	14,457.8	2,626.4	17,084.2
1943-44	-0-	-0-	15,874.9	100	15,874.9	3,301.8	19,176.7
1944-45	-0-	-0-	30,591.3	100	30,591.3	1,715.7	32,307.0
1945-46	-0-	-0-	46,685.8	100	46,685.8	1,264.2	47,950.0
1946-47	-0-	-0-	59,861.8	100	59,861.8	524.0	60,385.8
1947-48	41,093.5	36	71,995.4	64	113,088.9	116.8	113,255.7
1948-49	71,642.6	49	73,237.1	51	144,879.7	128.4	145,008.1
1949-50	69,308.0	49	72,936.0	51	142,244.0	23,371.6	165,615.6
1950-51	75,000.9	54	63,493.1	46	138,494.0	26,978.6	165,472.6
1951-52	66,674.3	44	84,616.1	56	151,290.4	42,464.2	193,754.6
1952-53	30,845.3	24	99,589.6	76	130,434.9	31,682.4	162,117.3
1953-54	120,773.0	51	115,550.6	49	236,323.6	7,820.7	244,144.3
1954-55	192,544.7	59	134,923.3	41	327,468.0	58,184.5	385,652.5
1955-56	190,337.2	53	169,506.4	47	359,843.6	45,562.9	405,406.5
1956-57	286,059.1	60	191,110.7	40	477,169.8	66,074.1	543,243.9
1957-58	266,024.1	57	197,900.0	43	463,925.1	75,612.8	539,537.9
1958-59	244,354.2	46	282,248.1	54	526,602.3	74,107.1	600,709.4
1959-60	425,019.0	58	304,874.8	42	729,893.8	3,523.2	733,417.0
1960-61	594,521.1	64	335,207.2	36	929,728.3	4,099.4	933,827.7
1961-62	608,811.0	66	312,975.9	34	921,786.9	3,676.9	925,463.8
1962-63	668,881.8	66	348,092.6	34	1,016,974.4	3,677.0	1,020,651.4
1963-64	671,853.4	63	388,553.9	37	1,060,407.3	3,776.7	1,064,184.0
1964-65	645,577.3	58	471,042.0	42	1,116,619.3	5,035.3	1,121,654.6
1965-66	550,630.8	52	503,424.9	48	1,054,055.7	4,821.8	1,058,877.5
1966-67	523,141.2	50	531,659.7	50	1,054,800.9	4,513.0	1,059,313.9
1967-68	514,248.1	48	557,730.9	52	1,071,979.0	4,934.9	1,076,913.9
1968-69	455,174.3	43	599,237.7	57	1,054,412.0	2,232.4	1,056,644.4
1969-70	482,256.9	41	692,846.4	59	1,165,103.3	650.0	1,165,753.3
1970-71	520,983.9	46	612,511.6	54	1,133,495.5	150.3	1,133,645.8
1971-72	590,356.9	47	656,635.9	53	1,246,992.8	549.6	1,247,542.4
1972-73	569,290.7	48	606,120.4	52	1,175,411.1	4.3	1,175,415.4
1973-74*	655,058.0	52	593,180.0	48	1,248,238.0	955.0	1,249,193.0
1974-75*	721,970.0	54	607,013.0	46	1,328,983.0	653.0	1,329,636.0
1975-76*	735,100.0	53	653,154.0	47	1,388,254.0	994.0	1,389,248.0
1976-77*	560,124.0	40	829,773.0	60	1,389,897.0	569.0	1,390,466.0
1977-78*	508,036.0	40	757,270.0	60	1,265,306.0	22,019.0	1,287,325.0
1978-79*	434,455.0	35	777,173.0	65	1,211,628.0	24,256.0	1,235,884.0
1979-80	438,414.0	34	843,800.0	66	1,282,214.0	2,620.0	1,284,834.0
1980-81	487,833.0	33	975,177.0	67	1,463,010.0	588.0	1,463,598.0
1981-82	562,650.0	37	940,660.0	63	1,503,310.0	989.0	1,504,299.0
1982-83	314,190.0	26	912,172.0	74	1,226,362.0	207.0	1,226,569.0
1983-84	364,608.5	26	1,062,123.5	74	1,426,732.0	1,210.0	1,427,942.0
1984-85	455,061.0	29	1,119,443.0	71	1,574,806.0**	934.0	1,575,740.0
1985-86	500,995.0	30	1,145,856.0	70	1,646,851.0**	346.0	1,647,197.0
1986-87	568,812.9	31	1,252,783.6	69	1,825,921.5**	1,508.0	1,827,429.5

\*Revised

\*\*Includes deliveries of reclaimed water to Las Virgenes, Coastal MWD, Long Beach and MWD of Orange Co.

TABLES

Table 15  
WATER PRODUCTION - METROPOLITAN WATER DISTRICT CONSTITUENT AREAS  
Figures Furnished by Metropolitan Water District

M.W.D. Member Agencies	1985-1986 Fiscal Year			1986-1987 Fiscal Year			Total Water Use (5)+(6)	Difference of Totals (7)-(4)	Percent of Difference of Totals (8)/(4)	Percent of Difference of M.W.D. Supply (10)/(3)					
	(1)	(2)	(3)	(4)	(5)	(6)					(7)	(8)	(9)	(10)	(11)
	Local Water Supply	M.W.D. Water Supply	Total Water Use	Local Water Supply	M.W.D. Water Supply	Total Water Use					(5)+(6)	(7)-(4)	(8)/(4)	(6)-(3)	(10)/(3)
Anaheim	43,911	23,376	67,287	51,902	20,693	72,595	72,595	5,308	7.89	(2,683)	(11.48)				
Beverly Hills	-0-	14,578	14,578	-0-	14,791	14,791	14,791	213	1.46	213	1.46				
Barbark	1,014	22,305	23,319	614	23,108	23,722	23,722	403	1.73	803	3.60				
Calleguas M.W.D.	25,055	87,074	112,129	30,101	95,547	125,648	125,648	13,519	12.06	8,473	9.73				
Central Basin M.W.D.	147,089	114,884	261,973	116,629	147,508	264,137	264,137	2,164	0.83	32,624	28.40				
Chino Basin M.W.D.	139,210	35,322	174,532	151,943	33,958	185,901	185,901	11,369	6.51	(1,364)	(3.86)				
Coastal M.W.D.	3,721	45,502	49,223	4,671	45,046	49,717	49,717	494	1.00	(456)	(1.00)				
Compton	5,307	5,009	10,316	6,229	4,299	10,528	10,528	212	2.06	(710)	(14.17)				
Eastern M.W.D.	101,419	27,765	129,184	107,555	30,775	138,330	138,330	9,146	7.08	3,010	10.84				
Foothill M.W.D.	5,965	10,731	16,696	6,419	10,672	17,091	17,091	395	2.37	(59)	(0.55)				
Fullerton	18,618	15,405	34,023	21,095	13,830	34,925	34,925	902	2.65	(1,575)	(10.22)				
Glendale	8,533	21,498	30,031	9,379	21,996	31,375	31,375	1,344	4.48	498	2.32				
Las Virgenes	-0-	15,783	15,783	2,071	17,589	19,660	19,660	3,877	24.56	1,806	11.44				
Long Beach	30,397	47,767	78,164	30,477	48,560	79,037	79,037	873	1.12	793	1.66				
Los Angeles	594,111	81,855	675,966	580,672	125,176	705,848	705,848	29,882	4.42	43,321	52.92				
M.W.D. of Orange County	157,509	235,917	393,426	162,000	239,076	401,076	401,076	7,650	1.94	3,159	1.34				
Pasadena	15,009	33,779	48,788	16,401	23,006	39,407	39,407	1,600	1.60	(773)	(3.25)				
San Diego C.W.A.	96,562	486,579	583,141	93,978	520,892	614,870	614,870	31,729	5.44	34,313	7.05				
San Fernando	3,443	429	3,872	3,224	854	4,078	4,078	206	5.32	425	99.07				
San Marino	7,317	152	7,469	12,205	1,037	13,242	13,242	5,773	77.29	885	582.24				
Santa Ana	34,334	14,089	48,423	33,999	15,021	49,020	49,020	597	1.23	932	6.62				
Santa Monica	8,567	9,320	17,887	7,478	11,886	19,364	19,364	1,077	5.89	2,566	27.53				
Three Valleys M.W.D.	63,044	54,674	117,718	62,294	58,378	120,672	120,672	2,954	2.51	3,704	6.77				
Torrance	11,774	17,072	28,846	8,823	20,570	29,393	29,393	547	1.90	3,498	20.49				
Upper San Gabriel Valley M.W.D.	170,280	13,255	183,535	154,030	35,432	189,462	189,462	5,927	3.23	22,177	167.31				
West Basin M.W.D.	15,915	172,862	188,777	7,751	185,713	193,464	193,464	4,687	2.48	12,851	7.43				
Western M.W.D. of Riverside Co.	166,940	49,870	216,810	172,772	60,510	233,282	233,282	16,472	7.60	10,640	21.34				
Totals	1,875,444	1,646,852	3,522,296	1,854,712	1,825,923	3,680,635	3,680,635	158,339	4.50	179,071	10.87				

**SAN DIEGO COUNTY WATER AUTHORITY**  
Financial Statements and Schedule  
June 30, 1987 and 1986  
(With Accountants' Reports Thereon)

## SAN DIEGO COUNTY WATER AUTHORITY

## Balance Sheet

(Dollar amounts in thousands)

June 30, 1987 and 1986

	<u>1987</u>	<u>1986</u>
<u>Assets</u>		
<u>Current assets</u>		
Cash and certificates of deposit (note 2)	\$116,575	\$118,109
Accounts and taxes receivable	13,884	14,208
Inventory of water in storage	6,956	4,030
Other current assets	<u>805</u>	<u>294</u>
Total current assets	<u>138,220</u>	<u>136,641</u>
<u>Property, plant and equipment</u>		
Property, plant and equipment	156,076	150,052
Construction work in progress	<u>3,020</u>	<u>9,027</u>
	159,096	159,079
Less accumulated depreciation	<u>25,617</u>	<u>23,717</u>
	<u>133,479</u>	<u>135,362</u>
<u>Other assets (note 4 and 7)</u>		
	<u>2,910</u>	<u>3,064</u>
Total assets	<u>274,609</u>	<u>275,067</u>
<u>Liabilities and Equity</u>		
<u>Current liabilities</u>		
Current portion of long-term debt	97,999	4,885
Accounts payable	24,776	24,505
Other current liabilities	<u>1,586</u>	<u>1,306</u>
Total current liabilities	<u>124,361</u>	<u>30,696</u>
<u>Long-term debt (note 3 and 4)</u>	45,210	143,209
<u>Other liabilities (note 7)</u>	774	657
<u>Equity</u>		
Contributions in aid of construction	2,014	1,808
Retained earnings	<u>102,250</u>	<u>98,697</u>
	<u>104,264</u>	<u>100,505</u>
Total liabilities and equity	<u>\$274,609</u>	<u>\$275,067</u>

See accompanying notes to financial statements

The Board of Directors  
San Diego County Water Authority

I have examined the balance sheet of the San Diego County Water Authority as of June 30, 1987 and 1986 and the related statements of earnings and changes in equity, and changes in financial position for the years then ended. My examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances.

In my opinion, the June 30, 1987 and 1986 financial statements referred to above present fairly the financial position of the San Diego County Water Authority at June 30, 1987 and 1986 and the results of its operations and the changes in its financial position for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

*Lois A. Brozey*

Lois A. Brozey, CPA  
San Diego, California  
October 12, 1987

LOIS A. BROZEY - CERTIFIED PUBLIC ACCOUNTANT

## EXHIBIT B

## SAN DIEGO COUNTY WATER AUTHORITY

Statement of Earnings and  
Changes in Equity

(Dollar amounts in thousands)

Years ended June 30, 1987 and 1986

	1987	1986
<u>Operating revenue</u>		
Water sales	\$102,007	\$ 94,010
Cost of water sold	<u>95,937</u>	<u>89,031</u>
Margin from water sales	6,070	4,979
Net revenues - hydroelectric sales	<u>352</u>	<u>418</u>
Total operating revenue	<u>6,422</u>	<u>5,397</u>
<u>Operating expenses</u>		
Water treatment	113	98
Systems operations	348	339
Maintenance of structures and plant	829	789
Automotive and shop expense	71	71
Administrative and general salaries	878	810
General expense and supplies	735	673
Depreciation	<u>1,930</u>	<u>1,597</u>
Total operating expenses	<u>4,904</u>	<u>4,377</u>
Earnings from operations	1,518	1,020
<u>Nonoperating income (expense)</u>		
Property taxes	6,667	7,373
In-lieu settlement (note 5)	(4,500)	-
Annexation fees	984	-
Interest expense, net of interest capitalized of \$4,562 in 1987 and \$3,414 in 1986	(2,394)	(3,032)
Interest income, net of interest capitalized of \$5,869 in 1987 and \$4,445 in 1986	1,571	2,116
Other	<u>(87)</u>	<u>39</u>
Net earnings	\$ 3,759	\$ 7,516
Retained earnings - beginning of period	98,697	90,975
Transfers	<u>(206)</u>	<u>206</u>
Retained earnings - end of period	<u>\$102,250</u>	<u>\$ 98,697</u>

See accompanying notes to financial statements

## EXHIBIT C

## SAN DIEGO COUNTY WATER AUTHORITY

## Statement of Changes in Financial Position

(Dollar amounts in thousands)

Years ended June 30, 1987 and 1986

	1987	1986
<u>Sources of working capital</u>		
From operations:		
Net earnings	\$ 3,759	\$ 7,516
Add depreciation which does not use working capital	<u>1,930</u>	<u>1,597</u>
Working capital provided by operations	5,689	9,113
Other sources:		
Proceeds from long-term debt	-	100,000
Contributions from member agencies	206	255
Decrease other assets	<u>271</u>	<u>-</u>
	<u>6,166</u>	<u>109,368</u>
<u>Uses of working capital</u>		
Decrease long-term debt	97,999	11,794
Capital expenditures	253	1,383
Increase other assets	<u>-</u>	<u>265</u>
	<u>98,252</u>	<u>13,442</u>
Net increase (decrease) in working capital	<u>\$(92,086)</u>	<u>\$ 95,926</u>

See accompanying notes to financial statements

SAN DIEGO COUNTY WATER AUTHORITY  
Statement of Changes in Financial Position  
(Dollar amounts in thousands)  
Years ended June 30, 1987 and 1986

	1987	1986
<u>Changes in components of working capital</u>		
Increase (decrease) in current assets:		
Cash and certificates of deposit	\$ (1,534)	\$ 93,233
Accounts and taxes receivable	(324)	1,831
Inventory of water in storage	2,926	2,390
Other current assets	511	52
	<u>1,579</u>	<u>97,506</u>
Increase (decrease) in current liabilities payable from current assets:		
Current portion of long-term debt	93,114	-
Accounts payable	271	1,404
Other current liabilities	280	176
	<u>93,665</u>	<u>1,580</u>
Net increase (decrease) in working capital	<u>\$(92,086)</u>	<u>\$ 95,926</u>

See accompanying notes to financial statements

SAN DIEGO COUNTY WATER AUTHORITY  
Notes to Financial Statements  
(Dollar amounts in thousands)  
June 30, 1987 and 1986

(1) Reporting Entity and Summary of Significant Accounting Policies

(a) Reporting Entity

The San Diego County Water Authority (the Authority) was organized on June 9, 1944 under the County Water Authority Act (the Act). The Authority's primary purpose is to provide a supplemental supply of imported water to its member agencies for domestic, municipal and agricultural uses. Historically, the Authority, as a member of Metropolitan Water District of Southern California (MWD), has purchased from MWD all the water it has needed to meet the demands of member agencies. There are 24 member agencies of the Authority consisting of six cities, three water districts, two irrigation districts, ten municipal water districts, one public utility district, one federal agency and one county water district. Each member agency is represented on the Authority's Board of Directors by at least one person. In addition, each member agency is entitled to one additional representative for each full five percent of total assessed valuation contained within its boundaries.

(b) Principles of Presentation

The accompanying financial statements reflect the combined balances of the various accounts (funds) of the Authority using the accrual basis of accounting. The Authority operates as an enterprise fund although three funds are used for its internal accounting system, a capital outlay fund, a debt servicing fund and an operating fund. Certain reclassifications have been made to conform the presentation of the 1986 statements to current reporting practices.

(c) Taxing Authority

The Authority is expressly empowered under the Act to levy taxes on all taxable property within its boundaries for the purpose of carrying on its operations and paying its obligations subject to certain limitations in its Act, the Revenue and Taxation Code, and the California Constitution. The Authority levies taxes to meet its general obligation bond debt servicing and its portion of the payment obligations under its contract with the U.S. Government.

(d) Inventories of Water in Storage

Inventories of water in storage are stated at cost using the first-in, first-out method.

SAN DIEGO COUNTY WATER AUTHORITY

Notes to Financial Statements

(Dollar amounts in thousands)

June 30, 1987 and 1986

(1) Reporting Entity and Summary of Significant Accounting Policies:

(e) Property, Plant and Equipment

Property, plant and equipment are recorded at cost. Depreciation is computed on the straight line method over the estimated lives of the assets, which range from 100 years for pipelines to 5 years for automobiles and 1-4 years for other equipment.

(f) Contributions in Aid of Construction

Amounts received from member agencies for construction of service connections or other facilities are shown in the accompanying balance sheets as an equity account. Contributed service connections or other facilities are recorded as Authority assets and are depreciated in accordance with established policy for similar capital assets.

(g) Capitalized Interest

The Authority capitalizes interest expense associated with financing for self-constructed assets. This occurs during the time period for construction and is viewed as a financing cost associated with the acquisition of the assets. If the proceeds from tax-exempt borrowings produce interest income during the construction period, the result is viewed as cost recovery and this income is recorded as a reduction of financing costs for self-constructed assets.

(2) Cash and Certificates of Deposit

Cash and certificates of deposit are detailed:

	<u>1987</u>	<u>1986</u>
Cash in checking and savings, insured by the Federal Deposit Insurance Corporation	\$ 53	\$ 28
Certificates of deposit, uncollateralized	21,060	25,860
Bank of America trust fund, secured by letter of credit	<u>95,462</u>	<u>92,221</u>
	<u>\$116,575</u>	<u>\$118,109</u>

SAN DIEGO COUNTY WATER AUTHORITY

Notes to Financial Statements

(Dollar amounts in thousands)

June 30, 1987 and 1986

(2) Cash and Certificates of Deposit (continued)

Although the Authority's checking and savings accounts are protected by federal deposit insurance, this system is inadequate for larger deposits such as certificates of deposit acquired from various financial institutions. Public agencies such as the Authority must rely on pooled collateral arrangements to limit risk. State statutes determine how these pools function.

On behalf of the public agencies banking with it, each financial institution must maintain a pool of assets pledged as security for the entire group's deposits at that institution. The pooled security market value must equal or exceed 110% of the group's deposits at all times. Since the collateral is not specifically assigned to individual depositors, the Authority's certificates of deposit are considered uncollateralized.

The proceeds and accrued interest resulting from the Pamo Dam obligation are held in trust by Bank of America. These assets are restricted and earmarked primarily for the construction of the dam and other waterworks projects. These funds are secured by an irrevocable letter of credit issued by Golden State Sanwa Bank.

(3) Pamo Dam Obligation

The Authority issued \$100 million of certificates of participation in 1985. The proceeds of this borrowing were primarily intended to construct a dam and reservoir project in Pamo Valley, California. Most of the proceeds were deposited with a trustee pending the issuance of a building permit for the dam. The trustee was required to refund the certificate holders' investment to them if the permit was not issued by June 15, 1987. This permit was not obtained by the deadline date. Refer to note 8.

On June 11, 1987, the Board of Directors authorized the prepayment of all of the outstanding certificates. On July 9, 1987, the original trust deed was revised to permit a \$92 million prepayment of the outstanding certificates. This payment occurred on August 3, 1987 leaving \$8 million of the original issue outstanding. The \$92 million is included in current debt on the June 30, 1987 financial statements.

SAN DIEGO COUNTY WATER AUTHORITY

Notes to Financial Statements

(Dollar amounts in thousands)

June 30, 1987 and 1986

(4) Long-Term Debt

	Interest rate	1987	1986
General obligation bonds:			
Waterworks bonds, 1957, maturing February 1, 1988-1994	1% - 6%	\$ 12,220	\$ 13,960
Waterworks bonds, 1966, maturing October 1, 1987-2004	4.5% - 5.5%	<u>20,125</u>	<u>20,900</u>
Total general obligation bonds		<u>32,345</u>	<u>34,860</u>
U.S. Government contract maturing 1987-1995, second pipeline:			
Authority's share	2.6%	1,335	1,507
Metropolitan Water District's share	2.6%	<u>1,529</u>	<u>1,727</u>
Total U.S. Government contract		<u>2,864</u>	<u>3,234</u>
Note payable to bank, maturing June 25, 1988	7.1%	<u>2,000</u>	<u>4,000</u>
Contract note payable, maturing May 1, 1988-1990	9.25% - 10%	<u>6,000</u>	<u>6,000</u>
Pamo Dam obligation, maturing August 3, 1987 and November 1, 1988-2005	Variable	<u>100,000</u>	<u>100,000</u>
Total long-term debt		143,209	148,094
Less current installments of long-term debt		<u>97,999</u>	<u>4,885</u>
Long-term debt, excluding current installments		<u>\$ 45,210</u>	<u>\$ 143,209</u>

The Metropolitan Water District's share of U.S. Government contract, \$1,529 thousand and \$1,727 thousand at June 30, 1987 and 1986, is also recorded as due from Metropolitan Water District. Allocations of the current and long-term portions of this receivable have been made. An amount of \$197 thousand at 1987 and 1986 is included in current assets.

SAN DIEGO COUNTY WATER AUTHORITY

Notes to Financial Statements

(Dollar amounts in thousands)

June 30, 1987 and 1986

(4) Long-Term Debt (continued)

Maturities of long-term debt are summarized:

June 30,	
1988	\$ 97,999
1989	9,300
1990	8,619
1991	4,735
1992	3,439
1993-1995	6,622
1996-2000	6,330
2001-2005	<u>6,165</u>
	<u>\$ 143,209</u>

(5) In-Lieu Tax Settlement

Member agencies of the Authority may elect to pay amounts from other sources instead of the tax levy. The City of San Diego has made this in-lieu election each year since 1969.

This year, the Authority and the City reviewed the legal restrictions and computational practices for determining the amount of these payments. As a result of this review, it was determined that excess payments had been made by the City since the adoption of California Constitution Article XIII A, July 1, 1978 - June 30, 1987. The agencies agreed to a settlement which retroactively revised the computations for these prior years.

The terms of the settlement required the Authority to reimburse the City \$4.5 million. This payment is included in operations for the fiscal year ended June 30, 1987.

(6) Pension Plan

The Authority is a member of the California Public Employees' Retirement System which provides retirement benefits for all of its permanent employees. The total pension cost was \$340 thousand in 1987 and \$373 thousand in 1986 which included amortization of prior service costs.

SAN DIEGO COUNTY WATER AUTHORITY

Notes to Financial Statements

(Dollar amounts in thousands)

June 30, 1987 and 1986

(7) Deferred Compensation Plan

For the benefit of its employees, the Authority has adopted and administers a deferred compensation plan in accordance with Section 457 of the Internal Revenue Code of 1954, as amended. Generally all eligible employees may defer receipt of a portion of their salary until future years. Once deferred, the compensation is not available to employees until termination, retirement, death or unforeseeable emergency and the employees' liability for income taxes is similarly deferred until the funds are withdrawn.

All amounts of compensation deferred under the plan, all assets purchased with these amounts and all income attributable to these amounts or assets (until paid or made available to the employee or other beneficiary) are solely the property of the Authority, subject to the claims of the Authority's general creditors. Participant's rights to deferred amounts under the plan are equal to those of the general creditors of the Authority. It is the opinion of the Authority's General Counsel that the Authority has no liability for losses under the plan but does have the duty of due care that would be required of an ordinary prudent investor. The Authority believes that it is highly unlikely that it will use the assets to satisfy the claims of general creditors in the future.

Deferred amounts under the plan are invested by the Authority and are principally invested in time deposits. At June 30, 1987 and 1986 such assets totalled \$774 thousand and \$657 thousand. The assets and corresponding liabilities are included on the balance sheet in other assets and other liabilities.

(8) Commitments and Contingencies

As a condition of three outstanding contract loans, the Authority is required to maintain a minimum level of operational earnings. Exclusive of the tax revenue and debt servicing costs associated with voter-approved general obligation bonds and other voter-approved debt, net revenue, as defined by the contracts, must equal or exceed 120% of all other debt servicing costs (principal and interest).