

SAN DIEGO  
COUNTY WATER AUTHORITY



THIRTY-FIFTH ANNUAL REPORT  
1980-81

SAN DIEGO COUNTY WATER AUTHORITY  
Organized June 9, 1944

# THIRTY-FIFTH ANNUAL REPORT

OF AUTHORITY OPERATIONS  
FOR FISCAL YEAR ENDING JUNE 30, 1981

Linden R. Burzell  
*General Manager and Chief Engineer*

SAN DIEGO, CALIFORNIA  
1981

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**SAN DIEGO COUNTY WATER AUTHORITY**  
Member Agencies, Date of Entry and  
Representative on Board of Directors on June 30, 1981

**CITIES**

Del Mar.....	Nov. 23, 1962
William Tripp.....	
Escondido.....	Oct. 9, 1950
Robert M. Dodd.....	
National City.....	June 9, 1944
Tom Crownover.....	
Oceanside.....	June 9, 1944
David Rorick, Jr.....	
Poway.....	April 21, 1954
Harry Barber.....	
San Diego.....	June 9, 1944
Dr. Charles F. Cooper, Janet Erickson, R. E. Graham, Lawrence Hirsch, Francesca M. Krauel, Roy W. Lessard, Michael D. Madigan, Joseph Parker, John P. Starkey, Dr. Alice C. Tang.....	

**WATER DISTRICTS**

Helix.....	June 9, 1944
Nat L. Eggert, Harry Griffen, C. G. Watters, Jr.....	
San Dieguito.....	Dec. 13, 1948
Laena Dashiell.....	

**IRRIGATION DISTRICTS**

Santa Fe.....	Dec. 13, 1948
John M. Cranston.....	
South Bay.....	Nov. 3, 1952
Lloyd L. Lee.....	
<i>(Includes City of Chula Vista, an independent member agency,   from June 9, 1944 to November 3, 1952)</i>	

**MUNICIPAL WATER DISTRICTS**

Bueno Colorado.....	June 11, 1954
Hans H. Doe.....	
Costa Real.....	June 16, 1954
Fred W. Maerke.....	
De Luz Heights.....	June 28, 1967
George F. Yackey.....	
Olivenhain.....	July 25, 1960
Howard G. Golem.....	
Otay.....	Oct. 26, 1956
Charles R. Campbell.....	
Padre Dam.....	June 7, 1956
Alex L. Adams.....	
<i>(Includes Lakeside I.D., an independent member agency,   from June 9, 1944 to June 7, 1956)</i>	
Rainbow.....	April 10, 1954
Robert W. Coates.....	
Ramona.....	August 27, 1957
John T. Wilson.....	
Rincon del Diablo.....	June 14, 1954
Sherwood D. Anderson.....	
Valley Center.....	May 9, 1955
John F. Hennigar.....	
Yuima.....	Dec. 16, 1963
F. D. Fitzsimmons.....	

Robert W. Coates.....	April 10, 1954
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John T. Wilson.....	August 27, 1957
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Sherwood D. Anderson.....	June 14, 1954
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John F. Hennigar.....	May 9, 1955
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F. D. Fitzsimmons.....	Dec. 16, 1963
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John F. Hennigar.....	May 9, 1955
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F. D. Fitzsimmons.....	Dec. 16, 1963
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F. D. Fitzsimmons.....	Dec. 16, 1963
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F. D. Fitzsimmons.....	Dec. 16, 1963
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**OFFICERS OF BOARD OF DIRECTORS  
1980-81**



**Chairman**  
**R. E. GRAHAM**  
*San Diego*  
7-63 to 6-81



**Vice Chairman**  
**ROY W. LESSARD**  
*San Diego*  
5-73 to 6-81



**Secretary**  
**NAT L. EGGERT**  
*Helix*  
*Water District*  
10-77 to 6-81

**EXECUTIVE  
OFFICERS**



**LINDEN R. BURZELL**  
*General Manager and*  
*Chief Engineer*



**PAUL D. ENGSTRAND**  
*General Counsel*

**ADMINISTRATIVE STAFF**



**B. L. OGDEN**  
*Assistant Chief*  
*Engineer*



**HENRY LOZANO**  
*Director of Finance*  
*and Treasurer*



**I. E. NICHOLS**  
*Superintendent*



**JANET RAVIART**  
*Executive Secretary*

**BOARD OF DIRECTORS  
1980-81**

*For Officers, See Page 4*



**ALEX L. ADAMS**  
*Padre Dam*  
*Municipal Water District*  
7-80 to 6-81



**PAUL K. ALGERT**  
*Fallbrook Public*  
*Utility District*  
7-74 to 6-81



**S. D. ANDERSON**  
*Rincon Del Diablo*  
*Municipal Water District*  
8-78 to 6-81



**HARRY BARBER**  
*Poway Municipal*  
*Water District*  
2-81 to 6-81



**C. R. CAMPBELL**  
*Otay Municipal*  
*Water District*  
5-81 to 6-81



**PAUL L. V. CAMPO**  
*Pendleton Military*  
*Reservation*  
1-78 to 6-81



**ROBERT W. COATES**  
*Rainbow Municipal*  
*Water District*  
2-79 to 6-81



**DR. CHARLES F. COOPER**  
*San Diego*  
4-73 to 6-81



**JOHN M. CRANSTON**  
*San Diego*  
10-64 to 6-81



**TOM CROWNOVER**  
*National City*  
6-76 to 6-81



**LAENA DASHIELL**  
*San Dieguito*  
*Water District*  
1-78 to 6-81



**ROBERT M. DODD**  
*Escondido*  
1-70 to 6-81



**HANS H. DOE**  
*Buena Colorado*  
*Municipal Water District*  
6-54 to 6-81



**JANET ERICKSON**  
*San Diego*  
2-74 to 6-81



**F. D. FITZSIMMONS**  
*Yuima Municipal*  
*Water District*  
8-71 to 6-81



**HOWARD G. GOLEM**  
*Olivenhain Municipal*  
*Water District*  
1-62 to 6-81

**BOARD OF DIRECTORS  
1980-81  
(Continued)**



**HARRY GRIFFEN**  
*Helix  
Water District*  
7-56 to 6-81



**JOHN F. HENNIGAR**  
*Valley Center  
Municipal Water District*  
10-76 to 6-81



**LAWRENCE HIRSCH** **FRANCESCA M. KRAUEL**  
*San Diego San Diego*  
5-73 to 6-81 8-78 to 6-81



**LLOYD L. LEE**  
*South Bay  
Irrigation District*  
4-61 to 6-81



**MICHAEL D. MADIGAN**  
*San Diego*  
5-79 to 6-81



**FRED W. MAERKLE**  
*Costa Real Municipal  
Water District*  
11-78 to 6-81



**DALE MASON**  
*San Marcos  
County Water District*  
3-80 to 6-81



**JOSEPH PARKER**  
*San Diego*  
3-77 to 6-81



**GLENN M. REITER**  
*Otay Municipal  
Water District*  
9-71 to 5-81



**DAVID RORICK, JR.**  
*Oceanside*  
8-73 to 6-81



**JAMES C. STANTON**  
*Poway Municipal  
Water District*  
8-78 to 2-81



**JOHN P. STARKEY**  
*San Diego*  
10-75 to 6-81



**DR. ALICE C. TANG**  
*San Diego*  
10-79 to 6-81



**WILLIAM TRIPP**  
*City of Del Mar*  
6-80 to 6-81



**C. G. WATTERS, JR.**  
*Helix  
Water District*  
5-77 to 6-81

**BOARD OF DIRECTORS  
1980-81  
(Continued)**



**JOHN N. WILLIAMS**  
*South Bay  
Irrigation District*  
11-70 to 12-80



**JOHN T. WILSON**  
*Ramona Municipal  
Water District*  
10-79 to 6-81



**GEORGE F. YACKEY**  
*De Luz Heights  
Municipal Water District*  
6-68 to 6-81

**DIRECTORS REPRESENTING SDCWA ON METROPOLITAN WATER DISTRICT  
BOARD OF DIRECTORS**



**JOHN M. CRANSTON**  
12-74 to 6-81



**HANS H. DOE**  
7-59 to 6-81



**R. E. GRAHAM**  
7-79 to 6-81



**HARRY GRIFFEN**  
1-63 to 6-81



**LLOYD L. LEE**  
10-73 to 12-80



**JOHN P. STARKEY**  
1-81 to 6-81

**COMMITTEES OF THE BOARD**

June 30, 1981

**ADMINISTRATIVE CODE**

Paul L. V. Campo, Chairman  
Dale Mason, Vice Chairman  
Harry Barber  
Tom Crownover  
Laena Dashiell  
Janet Erickson  
William Tripp

**ENGINEERING AND OPERATIONS**

John F. Hennigar, Chairman  
Sherwood D. Anderson, Vice Chairman  
Robert W. Coates  
Robert M. Dodd  
Hans H. Doe  
F. D. Fitzsimmons

**ENVIRONMENTAL POLICY**

Janet Erickson, Chairman  
Joseph Parker, Vice Chairman  
Harry Griffen  
Lawrence Hirsch  
Michael D. Madigan  
Dale Mason  
Alice C. Tang

**FINANCE AND INSURANCE**

John P. Starkey, Chairman  
Robert W. Coates, Vice Chairman  
C. R. Campbell  
John M. Cranston  
Howard G. Golem  
Roy W. Lessard  
John T. Wilson

**LANDS AND RIGHTS OF WAY**

Robert M. Dodd, Chairman  
Laena Dashiell, Vice Chairman  
Paul L. V. Campo  
Fred W. Maerkle  
William Tripp  
Clarence G. Watters, Jr.

**LEGAL AND CLAIMS**

John M. Cranston, Chairman  
Paul K. Algert, Vice Chairman  
Alex L. Adams  
Tom Crownover  
Nat L. Eggert  
Francesca Krauel  
John T. Wilson

**LONG RANGE PLANNING**

Francesca Krauel, Chairman  
Lawrence Hirsch, Vice Chairman  
C. R. Campbell  
Charles F. Cooper  
Nat L. Eggert  
Lloyd L. Lee  
David Rorick, Jr.

**ORGANIZATION AND PERSONNEL**

Howard G. Golem, Chairman  
Clarence G. Watters, Vice Chairman  
Paul K. Algert  
Harry Barber  
F. D. Fitzsimmons  
Joseph Parker  
George F. Yackey

**PUBLIC INFORMATION**

Michael D. Madigan, Chairman  
Charles F. Cooper, Vice Chairman  
Alex L. Adams  
Hans L. Doe  
Roy W. Lessard  
David Rorick, Jr.  
Alice C. Tang

**WATER PROBLEMS AND POLICY**

Harry Griffen, Chairman  
Fred W. Maerkle, Vice Chairman  
Sherwood D. Anderson  
John F. Hennigar  
Lloyd L. Lee  
John P. Starkey  
George F. Yackey



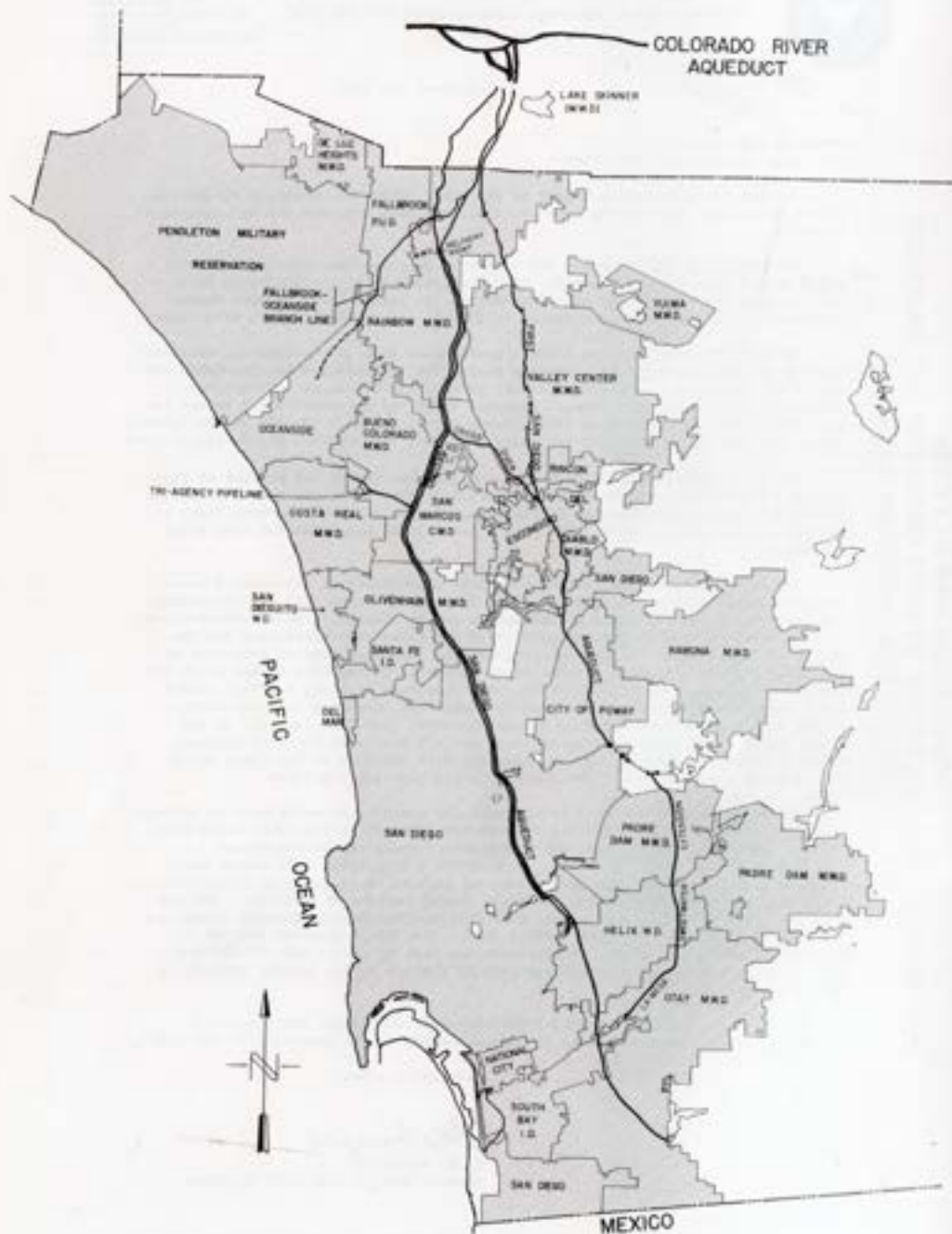


Figure A. Authority Area Within San Diego County.

**FISCAL YEAR 1980-1981**

The San Diego County Water Authority was formed on June 9, 1944 under the County Water Authority Act which was approved on May 17, 1943. Its purpose is to provide water for municipal, domestic, and other beneficial uses throughout the County of San Diego.

Since its inception, the Authority has been providing approximately 90 percent of the water used in San Diego County from The Metropolitan Water District of Southern California which owns and operates the Colorado River Aqueduct. MWD is also the distributor of water from the State Water Project.

During the 1980-1981 fiscal year, the Authority delivered a blend of Colorado River water and State Project water to its 24 member agencies that represent approximately 98 percent of the population in San Diego County. Water from both sources is blended at the Robert A. Skinner Filtration Plant which is located in southern Riverside County. The blend of water as of June 1981 was 42 percent State Project water and 58 percent Colorado River water resulting in total dissolved solids (TDS) of approximately 540.

During the fiscal year, the Board of Directors authorized the General Manager to execute a contract with Genstar for the construction of Pipeline 5. The pipeline is scheduled for operation by 1983.

With the desire for the Authority to participate in development of local water resources and increased facilities construction, the Board authorized Legal Counsel to prepare legislation to enable the Authority to acquire, store, treat, reclaim, reuse, distribute, and sell sewage, waste, and sea waters for beneficial use and to amend the County Water Authority Act Section 8 to increase the Authority's financing capabilities.

Management of available water for San Diego continues to be a concern, and as a result, the Board approved a vigorous five-year water awareness program to supplement the on-going public relations programs.

**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 Authority assessed valuation contained within its boundaries. These representatives are appointed by the chief executive officer of the respective agencies with approval by the agencies' governing bodies. During the year, only three agencies were represented by more than one representative: The City of San Diego by ten; Helix Water District by three; and South Bay Irrigation 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 1980, Ralph E. Graham was elected Chairman; Roy W. Lessard, Vice Chairman; and Nat L. Eggert, 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 ten standing committees: Engineering and

Operations, Finance and Insurance, Operations and Personnel, Water Problems and Policy, Lands and Rights of Way, Legal and Claims, Administrative Code, Public Information, Environmental Policy, and Long Range Planning.

During the July 10, 1980 meeting, Paul K. Algert was reelected as a representative of Fallbrook Public Utility District. His term expires July 15, 1986.

Also at the July 10, 1980 meeting, Alex L. Adams was seated as an Authority Director representing Padre Dam Municipal Water District, who replaced Harold S. Rakowski. Directors Eggert and Parker were presented a three-year service emblem; a six-year service emblem was presented to Director Erickson and Algert; and a ten-year service emblem was presented to Director Dodd.

At the August 14, 1980 meeting, Director David Rorick, Jr. was reelected as an Authority Director representing the City of Oceanside. His term expires on July 15, 1986. Also, Director Clarence G. Watters was presented with a three-year service emblem.

During the September 10, 1980 meeting, the Board adopted a resolution honoring former General Manager and Chief Engineer Richard S. Holmgren, deceased.

At the October 9, 1980 meeting, Director Robert M. Dodd was reelected as an Authority Director representing the City of Escondido. His term will expire on October 18, 1986. Director Lawrence Hirsch was reelected as an Authority Director representing the City of San Diego. His term expires on July 15, 1986.

During the November 13, 1980 meeting, the Board adopted a resolution honoring Author E. Hughes, President of San Diego University, for his services as Chairman of the Proposition 8 Committee. Also adopted were resolutions honoring Directors Francesca M. Krauel and Michael D. Madigan for their outstanding service on the Citizens for Proposition 8 Committee.

At the December 18, 1980 adjourned meeting, Director Robert W. Coates was appointed as a representative of the Authority to the California Water Resources Association. Also, Director John P. Starkey was appointed and Director Harry Griffen was reappointed as Authority representatives on The Metropolitan Water District of Southern California Board of Directors.

The Board adopted a resolution at the adjourned December meeting honoring Director Lloyd L. Lee for his past service as Authority representative on the MWD Board of Directors.

The Board also adopted a resolution at the December adjourned meeting honoring John N. Williams for his service as a Director of the San Diego County Water Authority, representing South Bay Irrigation District.

At its February 12, 1981 meeting, the Board adopted a resolution acknowledging the dissolution of Poway Municipal Water District and the incorporation of the City of Poway. Also, Harry Barber was seated as a Director of the Authority representing the City of Poway. His term expires on April 22, 1984.

At the February 12, 1981 meeting, the Board adopted a resolution honoring Doyle F. Boen upon his retirement as General Manager and Chief Engineer of the Eastern Municipal Water District.

The annual inspection of the Authority aqueducts was conducted by members of the Board of Directors of the San Diego County Water Authority during the month of April 1981.

During the May 7, 1981 adjourned meeting, the Board adopted a resolution honoring Glenn M. Reiter for his service as a Director of the San Diego County Water Authority.

In addition, during the May 7, 1981 adjourned meeting, Charles R. Campbell was seated as a Director of the Water Authority representing Otay Municipal Water District. His term will expire on September 10, 1983.

At the June 11, 1981 meeting, former Director Glenn M. Reiter was presented with a ten-year service emblem.

At the June 11, 1981 meeting of the Board of Directors, Commissioner Joseph F. Friedkin of the International Boundary and Water Commission reviewed several Commission matters involving San Diego County. A slide presentation on the history of the United States-Mexican border concluded the presentation.

#### Policy

A resolution was adopted at the regular meeting of the Board of Directors on July 10, 1980, approving the agreement amending the Colorado River Six-Agency Committee Agreement dated January 5, 1950.

At the July 10, 1980 Board meeting, a resolution was adopted, moved by Director Griffen, authorizing an extension of the July 9, 1980 contract for temporary emergency delivery of water to Tijuana, Mexico.

During the August 14, 1980 regular meeting, the Board adopted a resolution, establishing vote of representatives of member agencies as determined by assessed valuation for fiscal year 1980-81.

Also during the August 1980 meeting, the Board adopted a resolution setting the debt service tax levy for fiscal year 1980-81 at 5¢ per \$100 of assessed valuation on property within the Water Authority's service area.

At the September 11, 1980 meeting, the Board adopted a resolution to exercise power to eminent domain declaring public necessity to acquire 32 temporary easements for construction and access for construction of Pipeline 5.

During the September 11, 1980 meeting, the Board also adopted a resolution authorizing an agreement between the Authority and the San Diego County Water Authority Employees Association for storage of equipment at the Operations Center for use by employee association members.

At the September 25, 1980 adjourned meeting, the Board adopted a resolution providing for execution of a contract with Genstar Construction, Inc. -CONCO-BPA Enterprises for construction of Pipeline 5.

During the March 12, 1981 meeting, the Board adopted a resolution to amend the San Diego County Water Authority Administrative Code, Article 2, Section 2.2(g) to provide an orientation program for Directors and new employees.

Also at the March 12, 1981 meeting, the Board adopted a resolution amending Article 15, Section 15.2, and Article 16, Section 16.1, of the Administrative Code regarding association membership and reimbursement of travel expenses respectively.

A resolution was adopted at the regular meeting of the Board of Directors on April 9, 1981, approving a San Diego County Water Authority water conservation plan.

At the May 7, 1981 meeting, the Board adopted a resolution to establish an ad hoc committee to monitor the Public Relations Awareness Program.

Also, at the May 7, 1981 meeting, the Board adopted a resolution authorizing an agreement between the State Water Resources Control Board, San Diego County Water Authority, City of San Diego, and the County of San Diego for joint development of water reclamation projects.

Article II, Section 11.5 of the San Diego County Water Authority Administrative Code which provide for implementation of Metropolitan Water District's interruptible water pricing program was amended by resolution at the May 10, 1981, meeting.

**Administration**

The executive officers of the Water Authority are Linden R. Burzell, General Manager and Chief Engineer, and Paul D. Engstrand, General Counsel. The administrative staff consists of Assistant Chief Engineer Buckley L. Ogden; Director of Finance Henry G. Lozano; Superintendent Irwin E. Nichols; Government and Community Affairs Officer Pete Rios; and Executive Secretary Janet M. Raviart.

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.

At the end of the fiscal year, the Authority had 47 full-time employees.

**WATER AUTHORITY COMPOSITION**

**Area**

The Authority encompasses 898,726 acres (1,404.3 square miles), a net decrease of 7 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 204,945 acres; the smallest area is the City of Del Mar consisting of 1,082 acres.

Each calendar year the Authority is required by state law to file a Statement of Change of Boundary. This statement was filed with Metropolitan Water District, the San Diego County Assessor, and the State Board of Equalization on December 30, 1980.

The statement for calendar year 1980 contained several annexations and deannexations which did not change the Authority and MWD boundary, in addition to annexations and detachments that affected the area of these agencies.

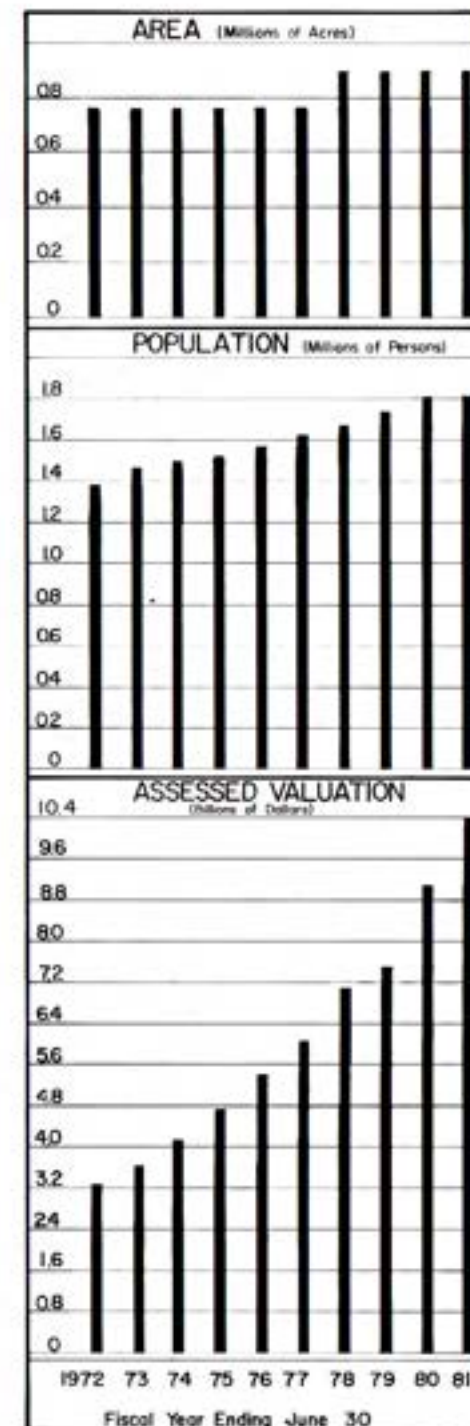
The Statement of Change of Boundary is used by the County Assessor to determine the total assessed valuation within each member agency and the Authority for tax purposes.

**Population**

The population of San Diego County on June 30, 1981 was estimated to be 1,900,000 people of which 98 percent live within the Authority service area. The average annual growth rate within the Authority service area for the period from 1946 to 1981 was 9.2 percent. The population within the Authority service area was estimated to be 1,864,290 persons on June 30, 1981, an increase of 58,255 or 3.23 percent from June 30, 1980 estimate of 1,806,035. Population statistics are contained in Table 2.

The City of San Diego, largest member agency of the Authority in area, leads the member agencies in population with 887,700 persons, approximately 48 percent of the Authority total. De Luz Heights Municipal Water District has the smallest population with 240 persons and the lowest density with 0.02 persons per acre. The highest average population density within an identifiable political entity is 8.76 per acre in the City of National City.

The average population density of the Authority increased during the fiscal year from 2.01 to 2.08 persons per acre or 1,330 persons per square mile. This increase is a result of population increases.



**Assessed Valuation**

The assessed valuation of taxable property within the Authority, both secured and unsecured, and the Authority's budget requirements provide the basis for the 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 1980-81 according to the County Auditor's certification was \$10,379,456,495, an increase of \$1,256,783,455 or 14 percent from the 1979-80 certified valuation of \$9,122,673,040.

The average assessed valuation of property within the Authority service area increased from \$10,152 per acre in 1979-80 to \$11,549 per acre in 1980-81. 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 the San Diego County are contained in Table 5.

**WATER SUPPLY AND CONSUMPTION****Source**

The Metropolitan Water District of Southern California (MWD) is the sole source of water to the Authority. The member agencies of the Water Authority use approximately 27.8 percent of MWD's supply.

**MWD Facilities**

Metropolitan Water District supplies a blend of Colorado River water and State Project water. Water from the Colorado River is diverted at Lake Havasu and 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 Lakeview Pipeline to the San Diego Canal into Lake Skinner. A portion of the water from Lake Skinner flows directly into Pipeline 3 while another portion is processed through the Skinner Filtration Plant before entering Pipeline 4. By the end of June, the blend in Lake Skinner was 58 percent Colorado River water and 42 percent State Water Project water.

Lake Skinner is the major storage facility for the San Diego Aqueducts with a maximum capacity of 44,000 acre feet of storage. The facilities are located in River-

side County south of Winchester. The maximum water elevation for storage is 1,479 feet above sea level. The Skinner Treatment Plant, located at the reservoir, has a treatment capacity of 240 million gallons per day (mgd).

**Authority Facilities**

The Authority takes delivery of water from MWD in the four pipelines of the San Diego Aqueducts near Rainbow 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 two pipelines of the Second Aqueduct (Pipelines 3 and 4), 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. The untreated water pipeline ends at the City of San Diego's Alvarado Treatment Plant near Lake Murray.

To maximize the flexibility of the system, several crossover connections have been constructed during recent years. One such facility is the pipeline from the Second Aqueduct at Twin Oaks Valley to the First Aqueduct just north of 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 Valley 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 water in Pipeline 3 is chlorinated at the Rainbow Chlorination Station.

Design capacity of the First Aqueduct, Pipelines 1 and 2 combined, is 196 cubic feet per second (cfs). Pipeline 3 has a 250 cfs design capacity, and Pipeline 4 has a 380 cfs design capacity. (One cubic foot equals 7.48 gallons. One cfs flowing 24 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 \$1.00 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, no water was placed in 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.

Lake Jennings, owned by Helix Water District, has been used for storage of a maximum of 2,000 af under terms of an agreement with the District. This water was purchased by Helix during the following fiscal year, and all losses were absorbed by the District. The agreement was terminated in June 1981 after delivery of all water stored was completed in April 1981.

Supervision and control of the San Diego Aqueduct system is conducted from the Fred A. Heilbron Operations Center, Escondido, where delivery requests from member agencies are received. Aqueduct flows and deliveries are controlled and monitored through a telemeter system designed and built by Authority personnel. Communication with operating and maintenance field staff and with MWD's East Valley Operations Section at Lake Skinner is by two-way radios.

**Deliveries and Rates**

The San Diego County Water Authority aqueducts delivered 375,419 af during the fiscal year. Untreated water accounted for 237,674 af, and the balance of 137,745 af of water was treated at the Robert A. Skinner Treatment Plant in Riverside County. This total flow of 375,419 af was 65,593 af more than the previous fiscal year which was a 21 percent increase.

The lowest flow rate averaged 217 cfs in March 1981. The highest average delivery of 745 cfs occurred during June 1981. The average for the entire year was 518.5 cfs.

Water deliveries to member agencies and others during the fiscal year are shown in Table 8. Purchases by member agencies totalled 376,760.6 af, and 658.2 af were delivered to Tijuana at the International Border.

Storage in member agencies' reservoirs at the end of the fiscal year was 371,171 af which is approximately 52 percent of total capacity compared with 540,846 af for the previous year. This decrease amounts to 169,675 af or 31 percent from the previous year.

Annual water sales to individual agencies for the eight-year period 1973-74 through 1980-81, total water sales from 1947-72, and total water sales from 1947-1981, are shown on Table 7. The sales during fiscal year 1980-81 are 121 percent of the previous fiscal year which is an increase of 65,593 af.

The operations and maintenance of the Authority is financed by a surcharge on

water delivered to its member agencies plus other miscellaneous revenues. The surcharge rate during the fiscal year was \$9.00 from July 1, 1980, to July 1, 1981.

Capital costs have been financed by sales of general obligation bonds and from tax revenues. The bond service cost is paid from tax revenues, with the balance of tax revenues used for retirement of the General Obligation Bonds.

The tax revenue from assessed valuation of property within the Authority for fiscal year 1980-81 was set at 5¢ per \$100 of assessed valuation for retirement of bonded indebtedness.

The Metropolitan Water District generally announces water rates two years in advance. Since 1975, water rates have been increased yearly because of the higher cost of energy for pumping and an increase in the proportion of the bond service cost being financed through water sales. These rates are in accordance with the City of Los Angeles-MWD agreement which was the result of a lawsuit between these two parties.

The MWD rate for untreated water for municipal and industrial use was \$90.00 per acre foot for fiscal 1980-81 to which was added the Authority's surcharge of \$9.00 per acre foot. Treatment charges by MWD at the Skinner Treatment Plant were \$25.00 per af 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. As of July 1, 1980, the Authority changed from a complicated treatment charge to a single commodity charge. The commodity charge as of July 1, 1980, was reduced from \$35.00 per af to \$33.00.

The following is a partial summary of past and future MWD and Authority rates:

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

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; and \$25.00/af for the period 7/01/79 to 7/01/82 must be added to the above rates for treated water deliveries.

As shown in the summary above, MWD now gives encouragement to better local control and management of water supplies through lower prices. 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.

**Water Production of Member Agencies**

The phrase "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 reservoirs, and operating shortages. Sources include impounding reservoirs, wells, and the Authority system.

Total water production for each of the 24 member agencies of the Authority is shown in Table 4. During 1979-80 the total water production was 461,540.4 af. The water production for the current year 1980-81 is 528,561.1 af which is an increase of 67,021 af or 14.5 percent. The highest monthly production occurred during July 1980 when 61,469.2 af of water were used. This was higher than the previous high during September 1979 when 55,831.9 af were used. The lowest monthly production occurred during March 1981 when 23,537.5 af of water were used. The Authority supplied 73.2 percent of the water production during the maximum month of July 1980 and 69.7 percent of the production for the fiscal year 1980-81.

The winter of 1980-81 produced 8.10 inches of rainfall at Lindbergh Field, 85.7 percent of normal; 18.61 inches at Lake Cuyamaca, 49.3 percent of normal; and 18.96 inches at Lake Henshaw, 73.6 percent of normal.

Local water runoff stored in local reservoirs decreased from 540,846 af on June 30, 1980, to 371,171 af on June 30, 1981, which is a decrease of 45.7 percent.

The City of San Diego maintains the most extensive system of impounding reservoirs in the Authority service area. This system produced 84,388 af of water during the fiscal year of which agencies outside of the Authority area received 6,964 af. Helix Water District produced 19,958 af from Lake Cuyamaca and its wells in the El Monte Basin. The Vista Irrigation District, part of Bueno Colorado Municipal Water District, produced 10,972 af from Lake Henshaw and the Warner Ranch wells. The City of Escondido produced 13,367 af from the Henshaw-Wolford system, and 1,837 af were produced within Yuima Municipal Water District from the Pauma Valley wells. Sweetwater Authority produced 23,079 af for use in National City and South Bay Irrigation District.

The Authority has 24 member agencies. Eleven of the 24 member agencies of the Authority are 100 percent dependent on imported water. The thirteen remaining agencies vary from 94 to 0 percent dependence on Authority water.

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 Olivenhain Municipal Water District, is approximately the same but per capita use is considerably higher.

Average daily per capita consumption of municipal and industrial water for fiscal year 1980-81 was 189 gallons which is up from 178 gallons per day during the previous year and up from 171 gallons per capita per day two years ago.

It is estimated that the Authority serves approximately 45% of the area within its boundaries.

The combined water production of Authority member agencies is shown in Figure B. Shading indicates the proportion obtained from local sources compared with that supplied by the Authority. The trend toward increased dependence on imported water and changes in the quantity of local water used each year are shown graphically.

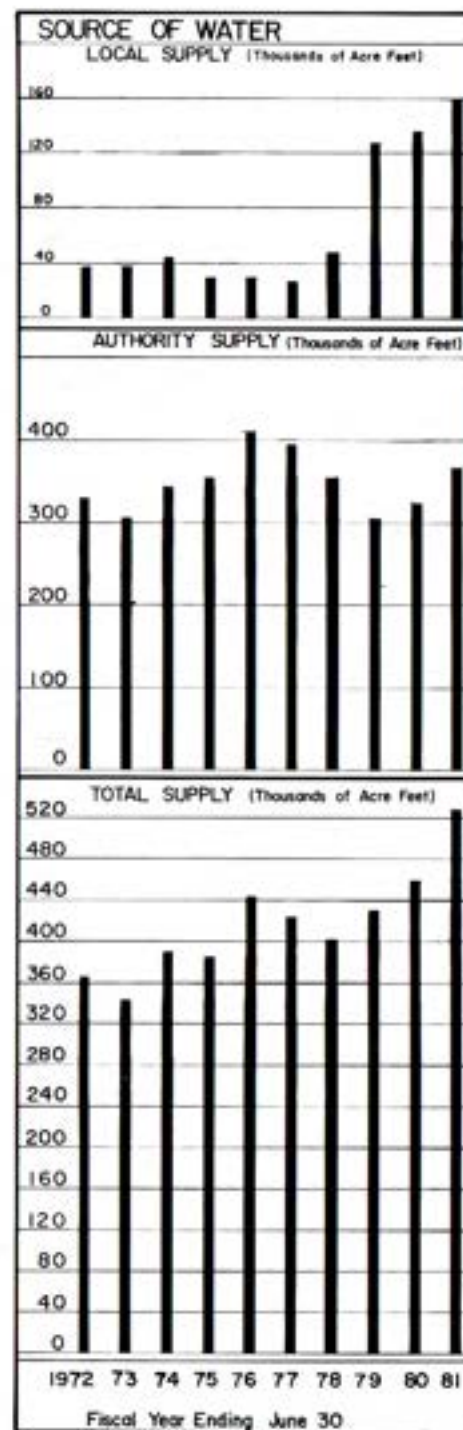
Present transmission facilities are adequate to meet water production demands until approximately 1983. Operational requirements for the delivery of treated, as well as untreated water, will require Pipeline 5 to be operational by that date.

**Water Quality**

The general quality of water entering the Authority system continues to improve. Seasonal high algae still occurs which causes variable turbidity. Turbidity at Miramar Treatment Plant ranged from 1.1 Turbidity Units (TU) to a high of 18 units reported in January and April 1981, respectively.

Algae growth in Authority pipelines is controlled through a program of continuous chlorination. The rate of chlorine applied during the year was 1.00 part 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.

During the fiscal year, all treated water delivered to the Authority was



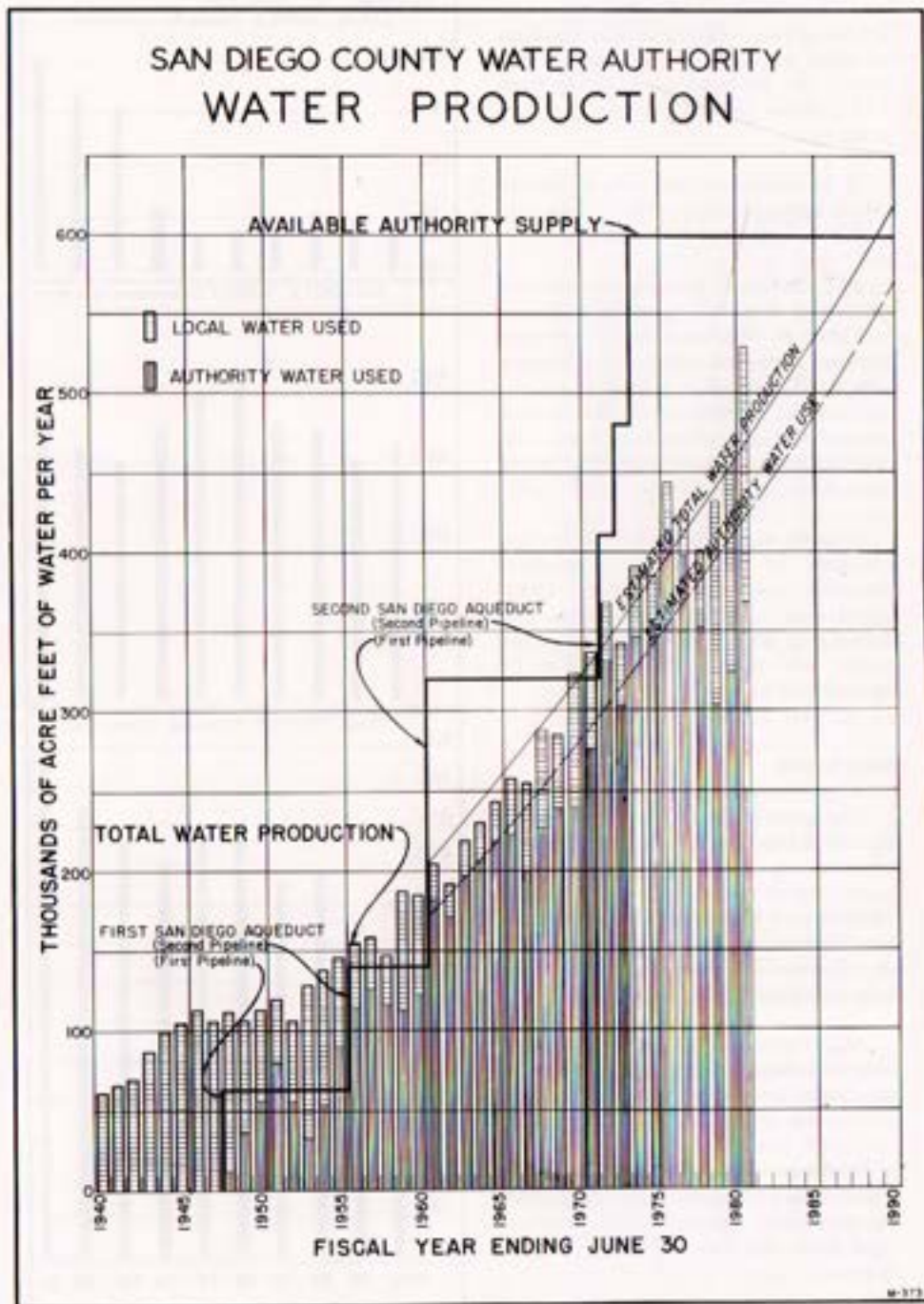


Figure B. Water Production of Authority Member Agencies.

treated at the Robert A. Skinner Treatment Plant. This treatment includes chlorination as well as filtration.

The continuous chlorination of untreated water from Lake Skinner is performed by the Authority at the Rainbow Chlorination Station.

On May 6, 1978, State Project water was introduced into the system from Perris Reservoir, and by the end of the current 1980-81 fiscal year, about 42 percent of the content of Lake Skinner was State Project water. Considerable improvement in total dissolved solids was evident.

Chemical constituents of the dissolved solids in the Colorado River water are shown in Table 11. The analyses are based on samples taken from West Portal of San Jacinto Tunnel and tested by MWD. Total hardness ranged from a high 339 milligrams per liter (mg/l) to a low of 325 mg/l. Water temperature varied from a high of 27.0°C (80.6°F) in August 1980 to a low of 13.0°C (55.4°F) reported in January 1981.

The chemical constituents of the dissolved solids of treated, blended water at Lake Skinner are shown in Table 12. Total hardness ranged from a high of 288 mg/l to a low of 220 mg/l. Water temperature ranged from a high of 25.6°C (78.1°F) recorded in August 1980 to a low of 12.7°C (54.9°F) in February 1981.

**Agricultural Water Use**

Agricultural water use by member agencies of the Authority during 1980-81 was 132,188 af which is 30,591 more than the previous year's use of 101,597 af. The percentage of agricultural water to the total water production was 25 percent. This is an increase from 22 percent in 1979-80.

The percentage of agricultural water use from the Authority is considerably higher, 90.8 percent, than the percentage of total water production of 69.7 percent because agencies with a high percentage of agricultural water, in many cases, have no local water production. Several agencies, such as Helix Water District and the City of San Diego, have very low percentages of agricultural use and high percentages of local water production. 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 in operation by May 1979. This expansion will provide sufficient treated water to satisfy the demand of all agencies requiring treated water for several years.

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 Poway and Sweetwater Authority, operating agent for South Bay Irrigation District and National City. The cost of all treated water delivered by the Authority to its member agencies is the same regardless of the treatment source.



nature against which there is no defense available within reasonable economic bounds. However, the availability of imported water is so basic to the economy of San Diego County that most diligent efforts to protect current supplies and develop future sources are justified.

Growth rates within the Authority's service area have indicated a continued population increase for the foreseeable future. The long lead time required for development of new water resources demands that constant attention be given to meeting future needs.

As has been previously noted, the Authority obtains all of the water it distributes from the Metropolitan Water District of Southern California which has two sources of supply: the Colorado River and the State Water Project.

Construction of the Peripheral Canal and other features to complete the State Water Project should assure adequate supplies until well after the turn of the century under present contracts and allocations. By that time, it is estimated that MWD's population will have increased from the present 11 million to 20 million, and the Authority's population will increase from 1.9 million to 2.66 million persons.

The MWD Board has adopted a policy to provide additional water and/or facilities as needed to meet 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 v. California*, 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 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 canal turnout for the Second San Diego Aqueduct. It then flows south into Lake Skinner.

If present projections are correct, additional water resources must be developed by the year 2010. The Authority, MWD, the State of California, various federal agencies, and many private organizations are presently conducting investigations of probable alternate water sources. The potentials of the undeveloped rivers of Northern California, the Columbia River, rivers in Canada and Alaska, waste water reclamation, weather modification, geothermal water development, seawater conversion, and other possibilities are being given careful consideration.

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

## OPERATION AND MAINTENANCE

### General

The operation and maintenance of the Water Authority's aqueduct facilities and equipment is directed by the Superintendent from the Fred A. Heilbron Operations Center, 610 West Fifth Avenue, Escondido. Normally all aqueduct maintenance, construction and modification of metering and control buildings as well as aqueduct operations are performed by the Authority's operation and maintenance force of 22 persons. Maintenance and support facilities located at the Operation Center include an equipment storage yard, a warehouse and shops for carpentry, welding, meters, telemeters, electrical and electronic devices, valves and valve operators, automotive and construction equipment.

A control panel in the Operations Center displays and controls most of the metered flows in the aqueduct system. Remote valves, several over 50 miles away, are controlled from the panel. A mobile radio relay on Palomar Mountain connects the base radio stations at the Authority's Operations Center, the Authority's San Diego office and Metropolitan Water District's Robert A. Skinner Treatment Plant in Riverside County with 25 mobile radios and provides coverage of the entire Authority area. A second frequency is available for unit to unit communication in the event of a relay station failure.

A multi-purpose room at the Operation Center is specially equipped for public tours, employee meetings and as a training facility.

### Operations

The Operations Center is staffed everyday, including weekends and holidays, from 7:30 AM to 4:00 PM. A night duty systems operator is equipped with an Authority mobile radio unit and receives Authority phone calls at his home phone. A pager will notify the duty operator if any phone calls are missed. In emergencies the duty operator is assisted by the Superintendent, Senior Systems Operator and Senior Systems Technician who also have mobile units with radios for quick response.

Most aqueduct service connection flow changes are made at the central control panel. The water flow through a remote valve may be controlled automatically or the operator may reposition a valve manually. For stations without telemetry flow changes must be made at the valve location. The telemeter panel is checked at least twice each evening and after hour flow changes are made when necessary.

Each aqueduct's current flows, requested flows, meter sizes, maximum allowable and capacity flows, critical pipeline flows and operational valve information are displayed on a large status board. The status board also shows when too little or too much water is available to meet the member agencies' needs. 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 pipelines.

Flow in the treated water aqueduct from MWD's Robert A. Skinner Treatment Plant also serves Rancho California and Santa Rosa Ranchos which are part of the Eastern Municipal and Western Municipal Water Districts in Riverside County. Sharing of the aqueduct with these independent agencies requires close cooperation

and coordination, especially during periods when the high water demand may exceed the treatment plant capacity.

For operational emergencies, a van used for aqueduct operations and as a mobile electronic repair facility may also be used as an emergency operation center. Another vehicle has a dual radio which can operate as a mobile radio relay if the radio repeater on Palomar Mountain becomes inoperative. Radio equipment has been ordered for an interagency radio network to improve communications and coordination with other water agencies. Over 20 water agencies will be a part of this network.

Charts on 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 every three months. The Water Authority and the Metropolitan Water District of Southern California has similar meter maintenance programs and when the total of all Authority service connection meters is compared with MWD's supply meters, the annual differential is usually less than 1 percent.

Three of the four pipelines serving the Water Authority carry untreated water and these pipelines receive a continuous application of chlorine from the Authority's Rainbow chlorine station. This chlorine is used for control of algae and asiatic clams in the pipelines and also to provide the first of a required dual chlorination for First Aqueduct agencies delivering Colorado River water without full treatment. Treated water is chlorinated by MWD at the Robert A. Skinner Treatment Plant. When conditions require additional chlorine it is added at the City of San Diego's Miramar Treatment Plant.

Aqueduct water quality is continuously monitored and recorded at several locations. Several member agencies also monitor aqueduct water, the results are compared with the Water Authority's recorded data. The Water Authority measures turbidity in the First Aqueduct to assist member districts to meet Safe Drinking Water Act daily monitoring requirements.

Specifications have been written for a computerized aqueduct control system. Discussions were held with twenty-four interested suppliers, sixteen of whom requested and were sent copies of the specifications. Four companies, Johnson Controls, Zimpro, Inc., BBCSI and Systems Integrated submitted detailed proposals and qualifications for this system. It is anticipated that an award will be made to the successful bidder during late 1981.

A 75 KW emergency generator was purchased from the State of California surplus equipment sales to provide standby power for the Authority's Fred A. Heilborn Operations Center.

At present three pumps are available for service at the Authority's pumping facility from the City of San Diego's Miramar Treatment Plant. The largest of the four pumps has not been tested.

After new highs of 350 and 373 CFS had been reached in treated water delivery, the Metropolitan Water District made a capacity test at the Robert A. Skinner Treatment Plant and established a maximum sustained flow through the plant of 397 CFS. MWD is continuing efforts to increase the plant flow.

Another capacity test by MWD proved that 970 CFS could be delivered to Lake Skinner through the San Diego Canal.

During the year flow was taken for the first time at Carlsbad #3, Olivenhain #2, Oceanside #4, Bueno #7, Rainbow #8, De Luz Heights #1, San Diego #10 and two large temporary meters for the City of San Diego.

The Tijuana service meters were turned off on August 20th. These meters are available to serve as an emergency standby supply with no immediate plans to take additional water through the Authority system.

Several power outages of up to four days during November and December caused failure of meters, telemeters chlorination facilities and pumps. Power failure at chlorination facilities and pumping stations forced the interruption of water delivery and rejection of deliveries from the aqueducts.

Three member agencies' treatment plants took delivery of treated water from the Aqueduct while making repairs or modifications to the treatment facilities, proving the importance of this alternate supply.

A coordinated test of tri-halomethane formation in the aqueducts and distribution systems was conducted with the Water Authority, City of Oceanside, Helix Water District, City of San Diego and Sweetwater Authority participating. First tests were made with the Authority injecting chlorine north of the Riverside County line. The injection of chlorine was then terminated for 30 days while additional tests were taken. The tests showed that most agencies currently are receiving water at near or just over the 100 parts per billion EPA limit.

In June record high temperatures, together with several fires, required operations personnel to work overtime to provide water at record high flows in excess of the design capacity of the system.

This period of record water demands was complicated by the severing of the telephone cable between Escondido and San Diego which placed North County out of contact with South County for two and one-half days. These circumstances demonstrated the need for the radio network recently ordered.

An act of vandalism further aggravated the water shortage when during the same period of time the City of Escondido was forced to take 60 CFS at their #3 connection because the Escondido canal from Lake Henshaw had to be shut down after a load of trash was intentionally dumped into the canal.

Because of the shortage of qualified system operators at critical times, other personnel from clerical and maintenance positions are being given training so that they may perform some or all of these duties.

#### Maintenance

All Authority maintenance activities are based at the Fred A. Helibron Operations Center. The facilities maintained include about 210 miles of pipeline, 130 miles of rights-of-way and about 109 miles of Authority roads; 61 buildings housing meters and control equipment, over 900 structures containing exposed piping and valves, a pump station with four pumps driven by 400, 600, 800 and 1000 Hp electric motors, as well as offices, shops and warehouse. The Operations Center and shops are located near the center of the aqueduct system, some facilities are about 60 miles travel away.

On the average, pipelines are patrolled and facilities checked semi-weekly for vandalism, erosion, leaks or any development which might pose a hazard to the pipelines or interfere with the operation and maintenance of the aqueducts. Twice each year a foot patrol provides a detailed inspection of all pipelines and rights-of-way. During pipeline shutdowns, if possible, sections of the pipes and tunnels are drained and inspected internally.

Maintenance equipment includes two road graders, a bulldozer, two skidloaders, backhoe, 5-ton hydro-crane, 25-ton crane, dewatering pumps up to 8 inches in diameter, dump trucks, truck tractor and equipment trailers, compressors, welders, and miscellaneous vehicles. Several of the vehicles are equipped with generators, welders, compressors, hoists and other accessories for specialized functions such as valve service and repair, construction and equipment maintenance. Two vans contain mobile electronic and meter service shops.

During the year a sedan, a one ton truck and two three-quarter ton trucks were purchased to replace similar vehicles. A trailer mounted compressor was also replaced.

Patrol of the pipelines has in the past been performed in conjunction with other operation or maintenance activities. With the current level of development activity adjacent to the aqueducts, intentional blocking of Authority access, changed drainage areas concentrating water flow, along with vandalism, patrol of the aqueducts has become a full-time function with backup from other employees traveling the pipelines.

The job of rebuilding the patrol roads heavily damaged by three successive years of above average rainfall was completed. New roads were built where needed for access. In some areas the Authority was able to join forces with other water agencies to build a common road to meet the needs of both agencies.

All valves were exercised and flushed; lubricated control valves were serviced at least once each month. Other valves are on a longer maintenance cycle.

Two lubricated plug valves, 14" and 30" were rebuilt using a sprayed metal technique to repair cavitation damage at a cost of less than 50 percent of the cost of replacing the valve.

Three control stations were flooded causing heavy damage to instrumentation.

Several line structures were raised in areas where silting had caused the surrounding ground level to rise and often bury the structure.

All line-structure piping on the First and Second Aqueducts and the Fallbrook-Oceanside Line were painted.

All equipment was removed from the temporary chlorination facility at Auld Valley near Lake Skinner. The building will be dismantled and moved.

The 600 Hp motor on the pump station's P-2 pump was removed and taken to General Electric facilities for testing in an attempt to determine the cause of excessive vibration and noise. The problem was a resonant frequency near the rotation speed of the motor. This condition was corrected by placing spacers between the motor and pump lengthening the shaft to lower the resonant frequency.

Work continued on the study of corrosion in the southerly ten miles of the prestressed concrete third pipeline. Authority personnel worked with Waters Corrosion Consultants in the excavation and testing under the guidance of Dr. Gordon Scott. Corrosion was found in most areas inspected. A small leak, which was discovered immediately, did develop in one of the pipe sections.

Where corrosion was found, repairs were made as appropriate for the type and severity of damage.

### Construction

The Rainbow #7 control station was completed with the installation of wiring and instrumentation.

A new 30-inch San Diego #10 service connection was constructed to serve the Rancho Bernardo and Los Penasquitos area of northern San Diego. Underground power and telephone lines to the building and installation of instrumentation are the only items to be completed.

The new Rainbow #8 service connection which was built on Metropolitan Water District's section of Pipeline 4 was wired for control by Authority forces.

A summation control was built to control a combination of Rainbow #3, #6, #7 and #8 through the Authority telemeter system. This combination control will adjust any selected service connection to compensate for flow fluctuations at the other three connections. This in effect transfers rejected water to a Rainbow reservoir in another area served by the aqueduct.

### Shutdowns

The Fallbrook-Oceanside pipeline was shut down so that the valve, air release valve and all piping could be replaced at A.V. 510+35.

The Sweetwater line was drained to allow a realignment of the pipe on Third Street in El Cajon during a 48 hour shutdown.

On December 31, a small leak in the third pipeline was discovered at about Station 4924+15 south of Proctor Valley Road. The pipeline flow was diverted at Sweetwater Lake and the pressure dropped 100 psi to allow external inspection at the leak. Inspection proved that the pipeline should be drained and the leak repaired. Corrosion damage to the prestressed wires was extensive in two locations on the one section of pipe. After cleaning the damaged areas, repair bands were fabricated and mounted in place with grout placed between the bands and the damaged pipe.

Later inspection showed that the pipe section north of the Station 4924+15 leak was also heavily corroded. Temporary repair bands were also placed on this pipe.

A leak was discovered on the treated water line in the newer Alvarado pipeline section at Station 4212+60. Pipeline 4 was taken out of service south of Costa Real #1 service connection for two days and a crack caused by settlement of the prestressed pipe was repaired. The repair also required excavation on the outside to provide concrete protection of the exposed steel.

The First Aqueduct was shut down for a little over 3 days for MWD to set a valve for the new Rainbow #10 service connection and to do other maintenance work.

A shutdown of the treated water line by MWD for three days was necessary to install a connection for Western Municipal Water District. With permission from the County Health Department, Oceanside #3 was switched to the raw water pipeline during the shutdown.

The refilling of Pipeline 4 was complicated by the fact that the flow meter and telemeter from MWD and the radio repeater were all out of service.

The Fallbrook-Oceanside Line was shut down and drained for relocation of pipe across the new Highway 1-15 realignment.

On May 11th a leak, consisting of two holes, was found on the Fallbrook-Oceanside Line at approximately Station 210+86. The pipeline was shut off and partially drained for repair.

#### Miscellaneous

The annual inspection held for the Authority's Board of Directors Engineering and Operations Committee and other Directors concentrated on the areas of possible corrosion problems.

A public auction was held to dispose of surplus equipment and material.

The 6000 Hp motor and pump acquired from the Office of Saline Water was sold separately, freeing valuable yard space which had been tied up for storage of these units.

## DESIGN AND CONSTRUCTION

The corrosion problems that became evident in Pipeline 3 and which have been the subject of detailed investigation since February 1979 continued through March of 1981. Several suspected areas of corrosion were inspected, and corrosion of prestressing wires was found in all cases. In addition, another leak was found December 31, 1980 approximately 1,000 feet south of Proctor Valley Road. This area did not indicate a corrosion problem on the logs previously made. Extensive corrosion was found on several sections of pipe, and further tests indicate the chemical characteristics of the soil are the most reliable guide in determining the location of potential problems.

Design of a liner plate system was initiated in March 1981 and with a test reach scheduled for installation in late January or early February 1982.

The La Mesa-Sweetwater Extension required modification of alignment at State Route 94. Design has been completed and construction will be scheduled for early 1982.

The last section of Interstate Highway 15 in the Rainbow Pass area requires extensive realignment of the Fallbrook-Oceanside Branch which is in Mission Road. This will be performed at Authority expense. Design was started about February and will be completed late in 1981. Construction schedule is not firm at this time.

The design of Pipeline 5 was completed early in July 1980, and bids were received on September 4, 1980. Nine contractors responded with bids for the prestressed concrete pipe alternate ranging from \$26,534,443 to \$33,921,405. Six of the nine contractors also bid the mortar-lined and coated steel pipe alternate, and these bids ranged from \$30,871,458 to \$44,366,256. However, some of these bids did not reflect the steel pipe price adjustment as it became apparent to those bidders that steel would not be competitive.

The low bidder was a joint venture of Genstar Construction, Inc. of Bellevue, Washington, and CONCO-BPA Enterprises of Mill Valley, California. The contract for Specification No. 331 was awarded to Genstar-CONCO-BPA, and they were notified to proceed with the work on October 25, 1980. The estimated date of completion is December 10, 1982.

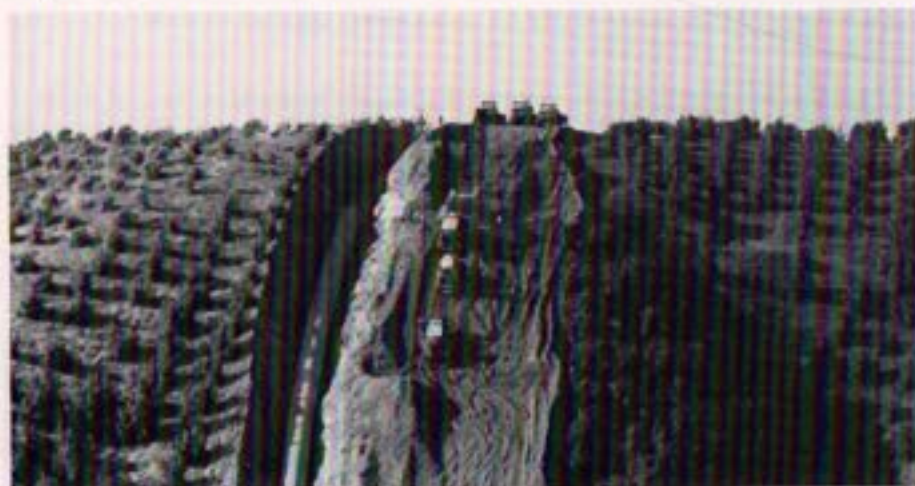


*Prestressed concrete cylinder pipe sections 96-inch inside diameter by 22 feet long weigh 45 tons and require specially-built trailers to transport from pipe plant to the job site storage.*



*Specially-constructed transporter hauls pipe from storage yard to laying site where crane places pipe section directly into the trench.*

The manufacture of pipe by Ameron began in February 1981 at Etiwanda, California. The Contractor started his field operation in early April followed by pipe-laying in early May. By June 30, 1981, 7,988 feet of pipe had been laid which is 14 percent of the total.



*Steep slopes and close proximity of groves make construction of pipeline very difficult. Crane used for laying pipe needs assistance from several tractors to negotiate slope to reposition for laying additional pipe.*

The Authority engaged Mr. Randolph Matson to conduct an avocado root-rot survey in the late spring of 1980. These tests indicated the infestation of this disease at several locations along the right of way. Further testing of avocado trees in the spring and summer of 1981 has shown the infestation to be more widely-spread than the 1980 tests indicated.



*Avocado root-rot infestations on portions of the right of way require special treatment with gaseous methyl bromide applied to holes drilled to the infested depth and covered with plastic sheeting.*

Following the recommended procedures provided by the Department of Plant Pathology of the University of California, Riverside, the Authority has begun a program of fumigation using methyl bromide. Several local grove management services have been hired to perform this work ahead of the construction operation.

During November 1980 the Authority engaged AGG-MAT of Vista, California, to repair storm damage along the crossover pipeline near Deer Springs Road. The work required the importation of cushion material for the pipe, rock for rip-rap, and the redirection of storm water at a cost of \$54,340.

In December 1980 AGG-MAT also covered about thirty feet of the exposed fourth pipeline in Mission Gorge with rock and grouted it at a cost of \$7,632.

## PUBLIC INFORMATION

Growth in San Diego County and the San Diego County Water Authority service area continues at a record pace. During Fiscal Year 1980-81 population in the County increased by 5% (92,800) and in the Water Authority service area by over 3% (58,255).

Commensurately, demand for water increased dramatically. Overall water consumption increased 15% (67,021 af) to 528,561 acre feet, agricultural consumption increased 30% (30,591 af) to 132,188 acre feet, average daily per capita consumption of municipal and industrial water increased by 6% (11 gals) to 190 gals per capita per day.

In anticipation of this continued growth development, the threat of water shortages, the rapidly increasing cost of energy and construction, and the greater increase in water consumption, emphasis on water conservation practices and education continued as a major theme throughout 1981.

### Community Relations

Support for the educational school program was strengthened as a result of a tour by superintendents and administrative personnel of the City and County schools to the State Water Project and the Colorado River Aqueduct.

In the past, the Authority offered the school program directly to educators. Now in cooperation with the superintendents of schools, the County Board of Education, and deans of colleges, the Water Authority's educational school programs, from elementary to adult education, are offered through the schools' information systems. Presentations were made to over 15,000 students at all levels of education.

In cooperation with administrators of Palomar College, the Water Authority offered a seminar on water to professionals requiring annual relicensing.

The Water Authority's school program has been the model for water agencies in the State and the State of California's Water Conservation Office in the preparation of their school programs.

Increased activity for the school program is planned for fiscal year 1982.

The Low-Water Use Garden program is expanding to serve more residents of San Diego. A mini-theatre was added to the garden which is being demonstrated at the Del Mar Exposition. Films and speakers dealing with water conservation and related subjects are offered. The mini-theatre was made possible through the support of the apprenticeship program of the Council of Carpenters, local unions, and Broadmoor Homes, Inc. that provided all the labor and materials.

Costa Real Municipal Water District will be dedicating a garden adjacent to its administration building in September 1981.

The City of San Diego is reviewing architectural plans for the construction of a garden as part of the Convention and Performing Arts Center complex. Water Authority staff and garden consultants are working with Quail Gardens, University City High School, and General Dynamics on proposals to construct low-water use gardens. Other groups and community organizations are seeking support from the Water Authority in the development and distribution of low-water use plants and materials.

Model low-water use gardens have been demonstrated at home and garden shows and water agencies' conferences.

A Water Conservation Award Program was approved by the Board of Directors of the Water Authority. The award will be presented annually on the opening day of the County Fair in Del Mar to a resident of San Diego County who, in the expert opinion of a selection committee, has contributed substantially to the water conservation effort.

Water conservation plans were prepared by Water Authority personnel for use by members of the San Diego Association of Governments and member agencies of the San Diego County Water Authority.

Cataloging of water films for the Water Authority's film library will be completed in fiscal year 1982. Films will be available on a loan basis to community groups and organizations and to other interested persons.

The speakers bureau was also very active during fiscal year 1981. Presentations were made to over 4,668 members of various community, service, professional, and business organizations. Plans to increase the activity for 1982 are being formulated.

Utilization of the water conservation displays in shopping centers, banks, and other public forums increased considerably as compared to fiscal year 1980.

A Water Awareness Program was added to the existing public relations program in fiscal year 1981. The program was designed to increase the awareness and raise the level of understanding of critical water issues which will be dominant for several years. The media (radio, television, newspapers, and periodicals), business, industry, labor, and government will be involved in the development of the awareness program.

Membership in government and community organizations has been very instrumental in seeking support for the Water Authority's public awareness programs, and in return, the Authority has met its community obligations by supporting worthy programs provided by these organizations.

Many other activities are planned by the Public Relations Department which will increase participation by the San Diego community in the water effort.

The Water Authority's public information program with the personal and financial support of business, professional, government, community, and labor organization, plus a cadre of volunteers, has made it possible to provide information and distribute thousands of brochures and pamphlets on water conservation and related subjects to a large portion of the 1,900,000 residents of San Diego County.

#### Government Relations

As a public agency providing services to other public agencies, the Board of Directors of the San Diego County Water Authority recognizes the need for a continuous program of intergovernmental relations and active communication.

During legislative sessions, legislation dealing with the water industry is monitored. Communication with local, state, and federal legislators is maintained. The Water Authority staff attends meetings and participates in seminars and conferences of mutual interest. Technical assistance and coordination is provided to other governmental agencies in the preparation of legislation affecting residents of San Diego County.

During the year, members of the Board of Directors and staff were involved with other public agencies throughout the state in promoting better understanding of the water problems which affect all Californians and corresponding solutions. Many hours were utilized in development of legislation which will enable the Water Authority to participate in the development, reclamation, and conservation of water. Testimony on water issues was presented to local and state legislative bodies. Radio, television, and editorial interviews were conducted.

In general, the goal set by the Board of Directors, to coordinate the development, interpretation, and dissemination of legislation between water users and governmental institutions was achieved.

## LEGAL DEPARTMENT

Principal responsibility for legal advice and representation comes from the General Counsel. However, members of his firm 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

New officers were elected (Graham, Chairman; Lessard, Vice Chairman; and Eggert, Secretary); three new directors (Adams, Barber, and Campbell) and four reappointed directors (Algert, Dodd, Hirsch, and Rorick) were seated; and the appointment of Griffen and Starkey to the MWD Board of Directors occurred during 1980-81.

The City of Poway was incorporated and replaced the Poway Municipal Water District as a member agency of the Authority in February 1981.

Amendments were made to the Guidelines Implementing the California Environmental Quality Act; some minor amendments were made and Section 11.5 was added to the Administrative Code to implement Metropolitan's interruptible Pricing Program and provide for an Interruptible Pool.

Litigation was commenced (*San Diego County Water Authority v. Billie J. Crawford et ux.*, S.D.S.C. N-16283) to declare existing rights under easement documents and enjoin interference with an Authority right-of-way.

#### Amendments to Act

The Authority is the only public agency in the State organized pursuant to the "County Water Authority Act" passed by the Legislature in 1943. The Authority sponsored amendments to three sections of the Act.

Senator William A. Craven authored S.B. 1163 which amended Section 8 and Section 9(e) of the Act. The amendment to Section 8 allows the Board by a three-fourths vote to incur indebtedness equal to one-tenth of one percent of the assessed valuation (which after January 1, 1981 is 100% of full value), since the assessed value will exceed \$45 billion, the increased latitude in creation of debt will permit more flexibility to the Board in planning both its long and short term financial programs. The amendment to Section 9(e) eliminated the restriction that tax levies occur "as a full cent". This will eliminate excessive over levies, since a one cent tax levy will now raise over \$4 million.

Assemblyman Larry Stirling authored AB 1885. It eliminated the restriction in Section 5 (12) of the code which tied the power to reclaim, etc., waste water to assignment pursuant to Section 208 of the Federal Water Pollution Control Act. The Authority now has ample power on its own to engage in programs related to reclaiming and conserving waste waters.

#### Pipeline 5

A considerable amount of legal evaluation was caused by some discrepancies in connection with the bids received for construction of Pipeline 5. However, all uncertainties were resolved without litigation and a contract was awarded to the Genstar Corporation for \$26.5 million at a special meeting held on September 25, 1980.

It was necessary to acquire temporary easements over thirty-two parcels and a hearing in connection with adoption of a resolution of necessity was held on September 11, 1980. Temporary easements were secured by negotiation on thirty parcels, but two are the subject of pending litigation (*San Diego County Water Authority v. Watt, et. al.* SDSC N-15718).

#### Senate Bill 200

Senate Bill 200 (Ayala) introduced on January 15, 1979 continues to be at the center of state-wide controversy about water development. Its legislative counterpart, ACA 90, was Proposition 8 at the November 1980 general election. Proposition 8 barely received a majority vote of 53.8% statewide but carried in San Diego County by a 61.9% majority.

Although SB 200 passed the legislature and was signed by the Governor on July 18, 1980, it became the subject of Referendum Petition which was filed with sufficient signatures in October 1980.

Governor Brown vacillated as to whether to call a special election, but finally announced that he would not do so. Consequently, the voters will decide at the primary election in June 1982 whether or not SB 200 will become law.

The critical nature of the importance of its passage in order for the State to fulfill its contractual commitments under the state water project cannot be over emphasized. There appears to be no dissent among San Diego community leaders in their support for SB 200. Every San Diego legislator has been supportive of the plan encompassed by SB 200.

## TREASURER'S REPORT

Henry G. Lozano, the San Diego County Water Authority Treasurer, is responsible for all funds not immediately required for the conduct of business. Funds are invested under Board policy in interest bearing bank time deposits, in direct obligations of the Federal Government, in Federal agency obligations, in savings account, and under specific guidelines in repurchase agreements.

The Administrative Code requires the Treasurer to report a summary of his financial transactions monthly and for each fiscal year-end. For fiscal 1980-81, the Statement of Earnings is as follows:

For the fiscal year ending June 30, 1981, total Water Authority income was \$48,569,431. Total disbursements during the year were \$38,725,565. At the fiscal year end, the Treasurer had control of funds and investments totaling \$29,523,711.

#### STATEMENT OF EARNINGS

Income was as follows:	1980	1981
Water sales	\$27,009,489	\$37,814,073
Taxes	5,548,715	7,248,156
Interest on investments	1,948,569	3,595,398
Tijuana water service	17,642	33,436
Miscellaneous	63,750	(121,632)
Total income	\$34,588,165	\$48,569,431
Disbursements were as follows:	1980	1981
Water purchases	\$24,282,336	\$34,392,843
Operation and maintenance	1,449,672	1,678,728
Interest expense	2,455,286	2,653,994
Total disbursements	\$28,187,294	\$38,725,565
Net earnings before depreciation	\$ 6,400,871	\$9,843,866

As of June 30, 1981, the Treasurer's cash accountability was as follows:

Demand deposits	\$ 44,977	\$ 43,711
Time deposits	18,285,000	29,480,000
Savings account and Local Agency Investment Fund	4,226,000	-
<b>Total deposits</b>	<b>\$22,555,977</b>	<b>29,523,711</b>

## METROPOLITAN WATER DISTRICT MEMBERSHIP

Because of the close relationship between the Metropolitan Water District of Southern California (MWD) and the San Diego County Water Authority, readers of this report will find a brief description of MWD's organization and operations of interest.

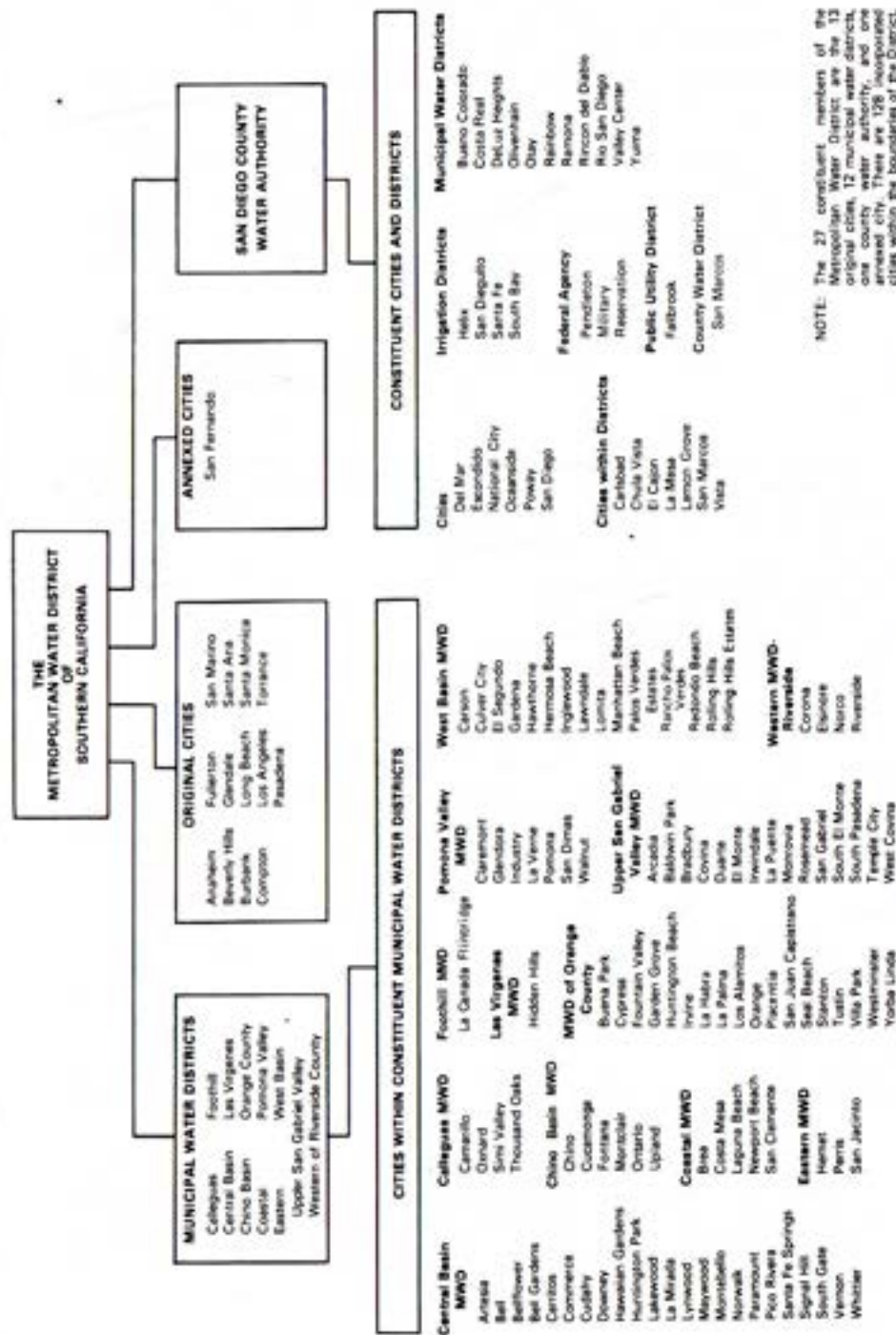
The Metropolitan Water District Act was approved by the State Legislature in 1927. Early the following year, MWD was organized. The original act provided for membership by cities. An amendment passed by the Legislature permitted annexation of water districts, also, and MWD's membership now includes 13 original cities, one city added in 1971, 12 municipal water districts, and the San Diego County Water Authority.

The Authority joined MWD on December 17, 1946, the most recent of the 27 member agencies of that District. The two agencies have been working closely together since their association began.

The MWD Act and the County Water Authority Act are very similar. Under each act, policy is established by a board of directors which represents the member agencies. Each director is appointed by the chief executive officer of the agency he represents with approval from its legislative body. Under present MWD policy, each member agency is entitled to a minimum of one director. An additional representative may be appointed for each three percent of the total MWD assessed valuation which lies within the member agency's boundaries. The district member agencies are listed in Figure D.

The Authority began and ended the fiscal year with five representatives on the Metropolitan Board of Directors. All were members of the Authority Board. Director Hans H. Doe has served on the MWD Board for 22 years and is a member of the Water Problems Committee, the Organization and Personnel Committee, and the Special Committee on Energy.

Harry Griffen has served on the MWD Board for 18 years and is Vice Chairman of that Board. He is a member of the Executive and Finance and Insurance Committees; Chairman of its Audit Subcommittee; a member of the Water Problem Committee and Ex Officio member of the Special Committee on the Peripheral Canal and the Special Budget Committee.



NOTE: The 27 constituent members of the Metropolitan Water District are the 13 original cities, 12 municipal water districts, one county water authority, and one assessed city. There are 128 incorporated cities within the boundaries of the District.

COMPOSITION OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA  
June 30, 1981  
Figure D

John M. Cranston, who has been an MWD Director for 6 years, is Chairman of the Legal and Claims Committee and a member of the Engineering and Operations Committee and the Special Nominating Committee.

Ralph E. Graham represented the Authority on the Metropolitan Board for three years from 1971 to 1974 and was reappointed on July 5, 1979. He is a member of the Engineering and Operations Committee, Land Committee, Special Committee to Review Public Information Programs, and the Special Committee on Energy.

As of January 13, 1981, John Starkey was seated as a Metropolitan Director representing the San Diego County Water Authority. He replaces Director Lloyd L. Lee. Mr. Starkey serves on the Finance and Insurance Committee, and Lands Committee.

As of June 30, 1981, the Authority representatives had a total of 986 votes out of 6,600 or 14.94 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 aqueduct and distribution system and its service area are shown in Figure E. Also shown is the Authority's system (shown in greater detail in Figure A). Approximately 11.5 million people living within portions of Ventura, Los Angeles, Orange, San Bernardino, Riverside, and San Diego Counties are served by MWD. There are 128 incorporated cities and many large unincorporated communities and areas within the District. MWD's service area contains 3,272,679 acres (5,113.56 square miles) which is an increase of 1,700 acres during the fiscal year. Of this, 898,726 acres (1,404.56 square miles) or 27.5 percent lie within the Authority's boundaries.

Total assessed value of taxable property lying within the boundaries of Metropolitan Water District was \$69,390,300,019. Assessed value is determined by the assessors of the counties served for use in levying 1980-81 taxes. These valuations were increased \$5,270,916,766 or 9.2 percent above the previous year's valuation of \$64,119,383,253. An amount of \$1,256,783,455 or 23.84 percent of this increase occurred within the Authority's boundaries. Assessed valuation within the Authority is 14.96 percent of the MWD total.

#### Water Sales

MWD delivered 1,327,774 acre feet of water during fiscal year 1980-81. Delivery to the Authority of 369,779 acre feet represented 25.3 percent of MWD's total deliveries.

MWD had four filtration plants in operation at the start of the fiscal year. The Skinner Filtration Plant serves a portion of the treated water requirements of the Authority. The capacity of the present Plant is 240 mgd.

Three other plants, none of which can serve the Authority, are operated by MWD: F. E. Weymouth Memorial Filtration Plant at La Verne, Robert B. Diemer Filtration Plant at Yorba Linda, and Joseph Jensen Filtration Plant at Granada Hills. Each of these plants has a 400 mgd rated capacity. The Jensen Plant can be supplied water only from the West Branch of the California Aqueduct.

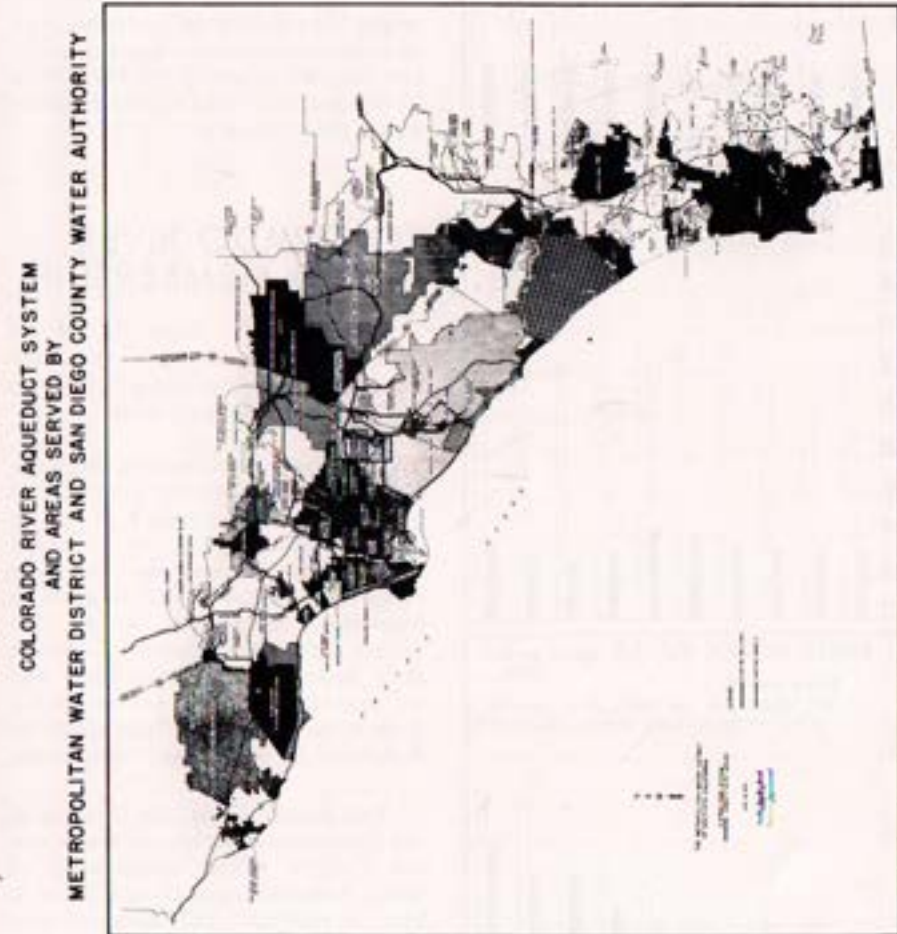
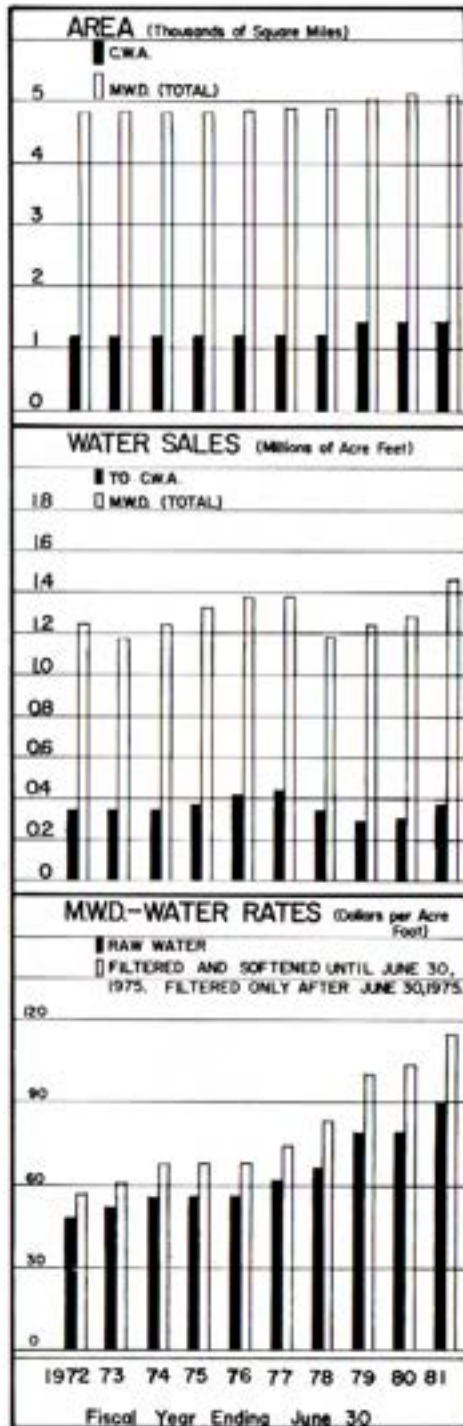


Figure E. Water Systems of Metropolitan Water District and San Diego County Water Authority.



**Tax Rate**

During fiscal year 1980-81, MWD reduced its tax rate to 7.94 per \$100 of assessed valuation. When the Authority annexed to MWD in 1946, the tax rate was 50 cents per \$100 assessed valuation. The tax rate for each year from that time is shown in Table 13. The total MWD tax levy during the report year, including regular and special taxes, was approximately \$65,927,661 of which \$8,909,509 or 13 percent was levied against property within the Authority.

**COLORADO RIVER BOARD MEMBERSHIP**

The Colorado River Board of California is an agency of the State devoted 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. However, the Board was reorganized in April 1977 pursuant to legislation enacted in 1976. The revised act provides that the Governor shall appoint both a member and an alternate member to the Board from a list of at least three nominees designated by each of the six 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. In addition, the Governor may appoint three public members.

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

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.

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SAN DIEGO COUNTY WATER AUTHORITY

Table 1  
STATISTICAL SUMMARY

	1979-80	1980-81	Percent Change
<b>GROWTH OF AREA</b>			
Number of Agencies	24	24	-0-
Total Area - Acres	898,733	898,726	-0-
Population	1,806,035	1,867,271	+3.4
Assessed Valuation	9,122,673,040	10,379,456,495	+13.8
<b>OPERATIONS</b>			
Water Imported by Authority-ac. ft.	309,826	375,419	+21.2
Water Production of Agencies-ac. ft.	461,540	528,543	+14.5
Local Water Used-ac. ft.	137,543	159,178	+15.7
Authority Water Used-ac. ft.	323,722	369,365	+14.1
Miles of Pipe Line	210	210	-0-
Miles of Patrol Roads Maintained	105	105	-0-
Number of Service Connections	71	72	+1.4
<b>FINANCIAL</b>			
<b>Revenues:</b>			
Water Revenue	27,009,489	37,814,073	+40
Other Revenue	2,012,319	3,473,766	+72.6
Taxes	5,548,715	7,248,156	+30.6
Tijuana Water Service	17,642	33,436	+89.5
<b>Expenditures:</b>			
Operation and Maintenance	1,449,672	1,678,728	+15.8
Purchase of Water	24,282,336	34,392,843	+41.6
Payments on Outstanding Debt	2,209,030	2,642,554	+19.6
<b>Total Investment in Plant:</b>			
Total Fixed Assets	240,879,243	252,881,553	+5.0
Long-Term Debt	75,602,511	72,959,957	-3.5

TABLES

Table 2  
POPULATION GROWTH-COUNTY AND AUTHORITY AREA  
1910 to 1981

Year (as of April 1)	(Includes Resident Military Personnel)		Total Population	Annual Growth	Percent of County Population in Authority
	COUNTY	AUTHORITY			
1910.....			61,665		
1920.....			112,248	5,058	
1930.....			209,659	9,741	
1940.....			289,348	7,969	
1946..... (3)			502,804	26,746	(3) 440,659
1950.....			556,808	42,478	(2) 451,886
1955..... (4)			769,200	52,762	(2) 702,300
1960.....			1,033,010	32,198	(2) 956,400
1965..... (4)			1,194,000	23,360	(5) 1,150,000
1970..... (4)			1,310,800	49,850	(5) 1,255,000
1975..... (4) (6)			1,560,038	30,662	(5) 1,527,520
1976..... (7)			1,590,700	66,100	(5) 1,559,360
1977..... (7)			1,656,800	57,200	(5) 1,624,550
1978..... (7)			1,714,000	53,450	(5) 1,665,200
1979..... (7)			1,767,450	40,750	(5) 1,758,737
1980..... (7)			1,808,200	91,800	(5) 1,806,035
1981..... (7)			1,900,000		(5) 1,864,290

- (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.

Table 3  
AREA - AUTHORITY MEMBER AGENCIES

Member Agencies	Area Within Authority			Percent of Total Authority Area 6/30/81
	As of 6/30/80 (acres)	Changes During Year (acres)	As of 6/30/81 (acres)	
Buena Colorado M.W.D. (2)	20,067	-69	19,998	2.23
In City of Vista	(9,600)	(+115)	(9,715)	(1.08)
Costa Real M.W.D. (3)	20,369	-0-	20,369	2.27
In City of Carlsbad	(20,000)	-0-	(20,000)	(2.23)
Del Mar, City of	1,082	-0-	1,082	0.12
De Luz Heights M.W.D.	11,830	-0-	11,830	1.32
Escondido, City of (12)	13,333	+681	14,014	1.56
Fallbrook Public Utility District	16,104	-0-	16,104	1.79
Helix Water District (4)	31,663	-0-	31,663	3.52
In City of El Cajon	(9,000)	(+94)	(9,094)	(1.01)
In City of La Mesa	(5,797)	(+3)	(5,800)	(0.65)
In City of Lemon Grove	(2,400)	(+35)	(2,435)	(0.27)
National City (1)	5,431	+48	5,479	0.61
Oceanside, City of	25,383	+210	25,593	2.85
Olivenhain M.W.D. (5)	27,367	-0-	27,367	3.04
Otay M.W.D. (6)	64,788	+10	64,798	7.21
Padre Dam M.W.D. (8)	54,082	-0-	54,082	6.02
Pendleton Military Res	134,625	-0-	134,625	14.98
Poway, City of	22,809	-0-	22,809	2.54
Rainbow M.W.D. (10)	46,754	-267	46,487	5.17
Ramona M.W.D.	46,939	-0-	46,939	5.22
Rincon del Diablo M.W.D. (7)	16,370	638	15,732	1.75
San Diego, City of	204,945	-0-	204,945	22.80
San Dieguito Water District	5,637	-0-	5,637	0.63
San Marcos C.W.D. (15)	28,548	+46	28,594	3.18
In City of San Marcos	(13,120)	(-0-)	(13,120)	(1.46)
Santa Fe Irrigation District	10,200	-0-	10,200	1.13
South Bay Irrigation District (9)	15,533	-28	15,505	1.73
In City of Chula Vista	(12,800)	(+1)	(12,801)	(1.42)
Valley Center M.W.D. (11)	62,061	-0-	62,061	6.90
Yuima M.W.D.	12,813	-0-	12,813	1.43
Total Authority Area	898,733	-7	898,726	100.00
San Diego County				2,725,100

- (1) Includes area annexed by an adjacent city member agency but still in district, being an overlapping area and considered here as being part of the city.
- (2) Does not include 2,806 acres overlapping in City of Oceanside, and 12 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 5 acres overlapping in City of San Diego.
- (6) Does not include 726 acres overlapping in City of San Diego.
- (7) Does not include 10,948 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 673 acres overlapping in National City.
- (10) Does not include 701 acres overlapping in City of Oceanside.

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

Population - U.S. Census			1981 Estimate	Annual Increase 1980-81	Density of Population 1981	
1970	1980	Decade Increase 1970-80 Percent			Per Acre	Per Sq Mile
39,000*	51,000	31	52,360	2.7	2.62	1,677
(24,600)	(35,800)	(46)	(47,490)	(32.7)	(4.89)	(3,128)
15,500	31,500	103	36,000	14.3	1.77	1,131
(14,850)	(35,000)	(136)	(40,510)	(15.7)	(2.03)	(1,296)
3,900	5,040	29	5,060	0.4	4.67	2,993
150	225	50	240	6.7	0.02	13
36,000	64,100	78	65,970	2.9	4.71	3,013
12,000	18,700	56	19,370	3.6	1.20	770
163,000	203,500	25	205,710	1.1	6.50	4,158
(50,900)	(72,100)	(42)	(74,760)	(3.7)	(8.22)	(5,261)
(38,800)	(45,900)	(18)	(50,340)	(9.7)	(8.68)	(5,555)
---	(20,400)	(-)	(20,780)	(1.9)	(8.53)	(5,462)
39,000	47,200	21	48,000	1.7	8.76	5,607
40,700	77,800	91	78,100	0.4	3.05	1,953
2,000	23,000	1,050	24,000	4.3	0.88	561
19,400	51,600	166	52,900	2.5	0.82	522
46,000	89,000	93	95,320	7.1	1.76	1,128
---	33,150	---	34,200	3.2	0.25	163
14,000	**33,620	140	34,170	1.6	1.50	959
4,200	7,800	86	8,200	5.1	0.18	113
6,800	16,000	135	16,500	3.1	0.35	225
18,900	13,800	-27	14,670	6.3	0.93	597
675,800	849,600	26	887,700	4.5	4.33	2,772
21,800	30,900	42	31,500	1.9	5.59	3,576
---	24,200	---	27,000	11.6	0.94	602
(3,900)	(16,500)	(323)	(28,690)	(73.9)	(2.19)	(1,400)
8,600	14,700	71	14,970	1.8	1.47	939
80,000	99,200	24	100,000	0.8	6.45	4,128
(64,500)	(82,200)	(27)	(87,830)	(6.8)	(6.86)	(4,391)
7,000	**10,200	46	10,530	3.2	0.17	109
1,250	1,820	46	1,820	0.0	0.14	90
1,255,000	**1,797,655	43	1,864,290	3.7	2.08	1,330
1,310,800	1,808,200	38	1,900,000	5.1	0.70	446.2

- (11) Does not include 61 acres overlapping in City of Escondido.
- (12) Includes 61 acres overlapping in Valley Center M.W.D., 11 acres overlapping San Marcos County W.D., 12 acres overlapping Buena Colorado M.W.D. and 10,948 acres overlapping 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 289 acres overlapping in City of Escondido.

\*Includes San Marcos CWD which became a member agency of Authority on February 25, 1980.

\*\*Corrected figures per agencies.

SAN DIEGO COUNTY WATER AUTHORITY

WATER PRODUCTION

(Continued)

Member Agencies	SOURCE OF WATER (4)				Total Water Production Ac. Ft.	Gross Area (2) Acres	Estimated Area Served by Water System Acres	Gross Area Served by Water System Percent	LAKE RESERVOIR OPERATIONS			
	Local Supply		Authority Supply						STORED WATER WITHDRAWN DURING FISCAL YEAR			Total Quantity in Storage 6/30/81 Ac. Ft.
	Amount Ac. Ft.	Percent	Amount Ac. Ft.	Percent					By Delivery Ac. Ft.	By Evaporation Ac. Ft.	By Spill Ac. Ft.	
Bueno Colorado M.W.D.	10,971.8	62.5	6,593.2	37.5	17,565.0	19,998	14,702	74	0	0	0	0
Costa Real M.W.D.	-0-	-0-	13,384.8	100.0	13,384.8	20,369	17,540	86	0	0	0	0
Del Mar, City of	-0-	-0-	1,074.7	100.0	1,074.7	1,082	1,082	100	0	0	0	0
De Luz Heights M.W.D.	129.5	7.4	1,627.4	92.6	1,756.9	11,830	2,400	20	0	0	0	0
Escondido, City of	13,366.8	51.3	12,685.7	48.7	26,052.5	14,014	10,833	77	0	0	0	0
Fallbrook P.U.D.	-0-	-0-	14,698.2	100.0	14,698.2	16,104	10,358	64	0	0	0	0
Helix W.D.	19,958.3	48.0	21,654.8	52.0	41,613.1	31,663	29,892	94	0	0	0	0
National City	6,142.5	99.4	38.5	0.6	6,181.0	5,479	4,300	78	0	0	0	0
Oceanside, City of	-0-	-0-	22,407.9	100.0	22,407.9	25,593	16,019	63	0	0	0	0
Olivenhain M.W.D.	-0-	-0-	6,436.6	100.0	6,436.6	27,367	4,422	1.6	0	0	0	0
Otay M.W.D.	-0-	-0-	13,612.5	100.0	13,612.5	64,798	31,451	49	0	0	0	0
Padre Dam M.W.D.	-0-	-0-	15,571.6	100.0	15,571.6	54,082	33,827	63	0	0	0	0
Pendleton Military Res (3)	-	-	651.7	-	-	134,625	-	-	0	0	0	0
Poway, City of	505.6	5.6	8,521.1	94.4	9,026.7	22,809	7,069	31	0	0	0	0
Rainbow M.W.D.	-0-	-0-	34,111.4	100.0	34,111.4	46,487	16,000	34	0	0	0	0
Ramona M.W.D.	806.3	8.9	8,258.5	91.1	9,064.8	46,939	10,757	23	0	0	0	0
Rincon del Diablo M.W.D.	-0-	-0-	5,762.6	100.0	5,762.6	15,732	7,101	45	0	0	0	0
San Diego, City of (1)	84,388.2	42.5	114,288.5	57.5	198,676.7	204,945	108,577	53	0	0	0	0
San Dieguito W.D.	2,301.0	28.6	5,755.2	71.4	8,056.2	5,637	5,200	92	0	0	0	0
San Marcos C.W.D.	-0-	-0-	8,420.5	100.0	8,420.5	28,594	17,189	60	0	0	0	0
Santa Fe I.D.	2,706.0	28.9	6,661.7	71.1	9,367.7	10,200	9,304	91	0	0	0	0
South Bay I.D.	16,936.7	99.4	104.3	0.6	17,041.0	15,505	10,950	71	0	0	0	0
Valley Center M.W.D.	-0-	-0-	44,687.2	100.0	44,687.2	62,061	32,255	52	0	0	0	0
Yuima M.W.D.	1,837.2	47.2	2,054.3	52.8	3,891.5	12,813	4,120	32	0	0	0	0
Total and Average	160,049.9	30.3	368,411.2	69.7	528,461.1	898,726	405,348	45	0	0	0	0

(1) Includes production by City of San Diego for areas outside City (not in Authority).

(2) Does not include overlapping area as shown in Table 1.

(3) Delivery of water by Coastal M.W.D. not included in Authority's totals.

(4) Figures include losses from transmission and distribution system but not from reservoirs.

N.A. - Not Applicable; N.R. - Not Reported

TABLES

TABLE 4  
 WATER PRODUCTION, AGRICULTURAL USE AND AUTHORITY STORAGE  
 FISCAL YEAR 1980-81  
 (Compilation of data furnished by member agencies)

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	SAN VICENTE RESERVOIR OPERATIONS					
					From Local Supply		From Authority		Total Ac. Ft.	Total Quantity in Storage 6/30/80 Ac. Ft.		Placed into Storage During Fiscal Year Ac. Ft.	STORED WATER WITHDRAWN DURING FISCAL YEAR			Total Quantity in Storage 6/30/81 Ac. Ft.	
					Ac. Ft.	Percent	Ac. Ft.	Percent					By Delivery Ac. Ft.	By Evaporation Ac. Ft.	By Spill Ac. Ft.		
					Ac. Ft.	Percent	Ac. Ft.	Percent	Ac. Ft.	Ac. Ft.		Ac. Ft.	Ac. Ft.	Ac. Ft.			
14,702	74	1.19	52,360	0.34	2,961.3	61.7	1,839.1	38.3	4,800.4	27.3	0	0	0	0	0	0	
17,540	86	0.76	36,000	0.37	0	0	4,614.8	100.0	4,614.8	34.5	0	0	0	0	0	0	
1,082	100	0.99	5,060	0.21	-	-	-	-	-	-	0	0	0	0	0	0	
2,400	20	0.73	240	7.32	126.8	7.4	1,580.5	92.6	1,707.3	97.2	0	0	0	0	0	0	
10,833	77	2.40	65,970	0.39	4,004.3	47.3	4,452.8	52.7	8,457.1	32.5	0	0	0	0	0	0	
10,358	64	1.42	19,370	0.76	0	0	9,538.4	100.0	9,538.4	64.9	0	0	0	0	0	0	
29,892	94	1.39	205,710	0.20	376.9	48.6	398.5	51.4	775.4	1.9	0	0	0	0	0	0	
4,300	78	1.44	48,000	0.13	0	0	0	0	0	-	0	0	0	0	0	0	
16,019	63	1.40	78,100	0.29	0	0	5,972.3	100.0	5,972.3	26.7	0	0	0	0	0	0	
4,422	1.6	1.46	24,000	0.27	0	0	1,667.4	100.0	1,667.4	25.9	0	0	0	0	0	0	
31,451	49	0.43	52,900	0.26	0	0	2,689.7	100.0	2,689.7	19.8	0	0	0	0	0	0	
33,827	63	0.46	95,320	0.16	0	0	599.5	100.0	599.5	3.8	0	0	0	0	0	0	
-	-	-	34,200	-	-	-	-	-	-	-	0	0	0	0	0	0	
7,069	31	1.28	34,170	0.26	34.2	2.3	1,454.7	97.7	1,488.9	16.5	0	0	0	0	0	0	
16,000	34	2.13	8,200	4.16	0	0	30,534.8	100.0	30,534.8	89.5	0	0	0	0	0	0	
10,757	23	0.84	16,500	0.55	506.7	8.5	5,423.2	91.5	5,929.9	65.4	0	0	0	0	0	0	
7,101	45	0.81	14,670	0.39	0	0	1,718.4	100.0	1,718.4	29.8	0	0	0	0	0	0	
108,577	53	1.83	887,700	0.22	-	-	-	-	-	-	0	0	0	0	0	0	
5,200	92	1.55	31,500	0.26	607.9	29.7	1,438.9	70.3	2,046.8	25.4	0	0	0	0	0	0	
17,189	60	0.49	27,000	0.31	0	0	2,731.2	100.0	2,731.2	32.4	0	0	0	0	0	0	
9,304	91	1.01	14,970	0.63	610.3	30.8	1,372.9	69.2	1,983.2	21.2	0	0	0	0	0	0	
10,950	71	1.56	100,000	0.17	321.8	99.4	1.9	0.6	323.7	1.9	0	0	0	0	0	0	
32,255	52	1.39	10,530	4.24	821.8	2.0	40,011.0	98.0	40,832.8	91.4	0	0	0	0	0	0	
4,120	32	0.94	1,820	2.14	1,780.6	47.1	1,996.1	52.9	3,776.7	97.0	0	0	0	0	0	0	
405,348	45	1.30	1,864,290	0.28	12,152.3	9.2	120,036.1	90.8	132,188.4	25.0	0	0	0	0	0	0	

## SAN DIEGO COUNTY WATER AUTHORITY

TABLE 5  
 ASSESSED VALUATION AND TAX COLLECTIONS  
 FISCAL YEAR 1980-1981

Member Agencies	ASSESSED VALUATION—SECURED AND UNSECURED				Area 6/30/81 Acres	1981-82 Valuation Per Acre	Tax Assessments To Date	Adj. to Tax Assessments	Uncollected 6/30/81	Tax Collections	Interest & Penalties	Receipts in Lieu of Taxes
	1979-80 Total	1980-81 Total	1979-80 to 1980-81 Percent Change	*1981-82 Total								
Bueno Colorado M.W.D.	\$ 263,058,107	\$ 318,319,269	+21.0	\$ 1,591,916,813	20,053	\$79,385	\$ 2,069,059	\$ 848	\$ 43,612	\$ 2,026,296	\$ 8,003	\$ 7,129
Costa Real M.W.D.	286,468,344	326,690,554	+14.0	1,498,555,071	20,369	73,570	2,115,075	(397)	40,595	2,074,082	10,055	33,275
Del Mar, City of	41,901,408	49,302,738	+17.7	222,523,789	1,082	205,660	507,668	(837)	8,377	498,454	1,992	530
De Luz Heights M.W.D.	5,770,377	6,790,976	+17.7	33,396,561	11,830	2,823	47,537	(1,907)	1,181	44,448	377	1,000
Escondido, City of	229,388,869	258,543,228	+12.7	1,139,806,627	14,014	81,333	1,919,560	1,540	33,404	1,887,696	6,146	28
Fallbrook P.U.D.	90,274,673	101,960,494	+12.9	458,568,155	16,104	28,475	767,094	202	13,283	754,013	3,139	3,420
Helix W.D.	903,474,655	985,466,231	+ 9.1	4,321,468,738	31,663	136,483	8,711,814	5,689	108,400	8,609,103	23,157	4,930
National City	134,373,197	131,536,948	- 2.1	568,425,061	5,479	103,746	1,555,334	-1,153	9,763	1,546,724	3,411	6,828
Oceanside, City of	280,972,771	343,557,888	+22.3	1,581,916,065	25,593	61,810	2,354,369	(1,616)	41,876	2,310,876	8,865	2,601
Olivenhain M.W.D.	158,755,570	198,567,754	+25.1	942,744,863	27,367	34,479	805,692	(2,354)	42,905	760,433	5,942	1,250
Otay M.W.D.	243,212,860	295,887,402	+21.7	1,327,012,120	64,798	20,482	1,571,586	(2,320)	48,699	1,520,565	6,951	4,455
Padre Dam M.W.D.	299,514,340	362,130,621	+20.9	1,621,573,742	54,082	29,987	2,238,843	(405)	51,507	2,186,930	12,636	878
Pendleton Military Res.	196,885,803	241,154,092	+22.5	1,258,625,267	134,625	9,349	492,088	43,845	114,386	421,547	-	-
Poway, City of	165,877,260	198,287,368	+19.5	900,395,185	22,809	39,475	1,056,154	(1,062)	31,677	1,023,414	9,128	15
Rainbow M.W.D.	97,091,564	117,951,051	+21.5	541,360,192	46,487	11,645	801,897	(2,143)	17,352	782,401	9,780	23,679
Ramona M.W.D.	96,789,029	114,604,942	+18.4	511,852,059	46,939	10,905	655,001	19,879	(45,211)	720,092	4,744	5,400
Rincon Del Diablo M.W.D.	155,783,332	191,063,920	+22.6	864,001,569	15,732	54,920	1,185,915	(334)	32,065	1,153,515	5,227	58,800
San Diego, City of	4,378,193,605	4,896,934,488	+11.8	22,048,874,449	204,945	107,584	45,014,181	95,268	(404,301)	15,931,990	30,791	29,734,093
San Dieguito W.D.	150,692,285	175,323,512	+16.3	782,342,137	5,637	138,787	1,243,629	152	24,923	1,218,858	3,527	5,426
San Marcos C.W.D.	167,338,010	202,491,052	+21.0	830,527,744	28,539	29,101	1,065,879	437	22,467	1,043,849	4,123	3,672
Santa Fe I.D.	179,239,043	211,723,853	+18.1	968,995,413	10,200	95,000	1,368,812	240	26,867	1,342,185	4,634	2,892
South Bay I.D.	469,905,961	497,440,856	+ 5.9	2,190,901,461	15,505	141,303	4,804,703	(29,548)	(136,359)	4,369,143	9,115	548,277
Valley Center M.W.D.	111,492,749	133,131,151	+19.4	594,720,190	62,061	9,583	774,613	8,670	23,655	759,628	6,787	1,011
Yuima M.W.D.	16,219,228	20,596,107	+27.0	88,998,577	12,813	6,946	193,747	(1,664)	3,342	188,741	532	1,500
Total Authority	9,122,673,040	\$10,379,456,495	+13.8	\$46,889,681,868	898,726	\$52,173	\$83,320,262	\$133,636	\$154,472	\$53,174,995	\$179,071	\$30,451,098
San Diego County (1)	\$9,508,000,474											

(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 1980-1981

Station	Tax Assessments To Date	Adj. to Tax Assessments	Uncollected 6/30/81	Tax Collections	Interest & Penalties	Receipts in Lieu of Taxes	Misc. Tax Sales	Net Total Collections	Amount Paid for Service Connections to 6/30/81	Total Amount Paid by Each Member Agency to 6/30/81	Amount Remaining to be Paid Under Terms of Annexation	Total Contributions Paid and Contracted for
385	\$ 2,069,059	\$ 848	\$ 43,612	\$ 2,026,296	\$ 8,003	\$ 7,129	\$ 80	\$ 2,041,510	\$ 207,438	\$ 2,248,948		\$ 2,248,948
570	2,115,075	(397)	40,595	2,074,082	10,055	33,275	10	2,117,423	7,931	2,125,354		2,125,354
660	507,668	(837)	8,377	498,454	1,992	530	1	500,978	—	500,978		500,978
823	47,537	(1,907)	1,181	44,448	377	1,000	—	45,826	—	45,826		45,826
333	1,919,560	1,540	33,404	1,887,696	6,146	28	28	1,893,900	9,253	1,903,153		1,903,153
475	767,094	202	13,283	754,013	3,139	3,420	42	760,615	67,773	828,388		828,388
483	8,711,814	5,689	108,400	8,609,103	23,157	4,930	693	8,637,885	28,905	8,666,790		8,666,790
746	1,555,334	1,153	9,763	1,546,724	3,411	6,828	85	1,557,049	—	1,557,049		1,557,049
810	2,354,369	(1,616)	41,876	2,310,876	8,865	2,601	95	2,322,439	106,369	2,428,808		2,428,808
479	805,692	(2,354)	42,905	760,433	5,942	1,250	—	767,625	66,608	834,233		834,233
482	1,571,586	(2,320)	48,699	1,520,565	6,951	4,455	45	1,532,017	99,019	1,631,036		1,631,036
987	2,238,843	(405)	51,507	2,186,930	12,636	878	131	2,200,576	45,244	2,245,820		2,245,820
349	492,088	43,845	114,386	421,547	—	—	—	421,547	—	421,547	\$65,133	486,680
475	1,056,154	(1,062)	31,677	1,023,414	9,128	15	8	1,032,567	103,875	1,136,442		1,136,442
645	801,897	(2,143)	17,352	782,401	9,780	23,679	—	815,862	152,685	968,547		968,547
905	655,001	19,879	(45,211)	720,092	4,744	5,400	58	730,295	3,378	733,673		733,673
920	1,185,915	(334)	32,065	1,153,515	5,227	58,800	1	1,217,544	14,527	1,232,071		1,232,071
584	45,014,181	95,268	(404,301)	15,931,990	30,791	29,734,093	2,424	45,699,299	181,864	45,881,163		45,881,163
787	1,243,629	152	24,923	1,218,858	3,527	5,426	127	1,227,939	47,205	1,275,144		1,275,144
101	1,065,879	437	22,467	1,043,849	4,123	3,672	41	1,051,687	—	1,051,687		1,051,687
000	1,368,812	240	26,867	1,342,185	4,634	2,892	1,093	1,350,806	58,787	1,409,593		1,409,593
303	4,804,703	(29,548)	(136,359)	4,369,143	9,115	548,277	142	4,926,679	594	4,927,273		4,927,273
583	774,613	8,670	23,655	759,628	6,787	1,011	26	767,453	128,973	896,426		896,426
946	193,747	(1,664)	3,342	188,741	532	1,500	—	190,774	28,424	219,198		219,198
173	\$83,320,262	\$133,636	\$154,472	\$53,174,995	\$179,071	\$30,451,098	\$5,141	\$83,810,305	\$1,358,852	\$85,169,147	\$65,133	\$85,234,280

Table 6  
WATER PRODUCTION WITHIN AUTHORITY AGENCIES—FISCAL YEARS 1971-72 TO 1980-81  
(All Figures in Acre Feet)

Member Agencies	From Local and Authority Supplies									
	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
Buena Colono M.W.D.	13,862	12,362	13,868	12,897	15,178	13,928	13,263	14,554	15,038	17,565
Costa Real M.W.D.	9,373	8,907	10,029	10,022	10,965	10,752	10,010	11,135	12,554	13,385
Del Mar, City of	944	850	942	893	1,162	918	921	1,096	999	1,075
De Luz Heights M.W.D.	0	9*	99	178	362	503	612	990	1,339	1,757
Escondido, City of	20,299	16,911	18,749	18,181	21,828	19,740	19,001	20,500	22,113	26,052
Fairbrook Public Utility District	13,087	10,790	12,198	11,524	13,429	12,999	11,128	11,667	12,174	14,698
Helix Water District	33,583	32,141	35,466	33,807	37,724	34,465	32,882	36,256	37,676	41,613
National City and South Bay I.D.	21,326	18,614	20,095	20,065	22,038	21,399	20,021	21,628	21,519	23,222
Oceanside, City of	13,000	12,575	14,539	14,817	17,358	16,565	15,851	18,310	19,602	22,408
Olivehain M.W.D.	2,278	2,265	2,857	2,697	4,079	3,759	4,358	4,714	5,313	6,437
Oray M.W.D.	10,666	9,643	12,043	10,970	12,927	11,787	11,846	11,270	11,852	13,612
Padre Dam M.W.D.	9,015	8,681	10,523	10,785	12,011	11,623	11,799	12,812	13,718	15,572
Pendleton Military Res	5,066	5,428	7,053	7,335	7,983	7,177	6,553	6,948	8,240	9,027
Poway, City of	21,987	18,542	21,565	20,678	25,472	25,824	22,529	24,709	26,943	34,111
Rainbow M.W.D.	2,519	2,765	3,723	4,086	5,482	5,653	5,531	6,269	6,583	9,065
Rincon del Diablo M.W.D.	3,076	3,396	3,345	3,328	4,080	3,914	3,926	4,483	4,789	5,763
San Diego, City of	141,815	138,472	153,672	153,724	167,392	162,003	155,226	164,934	175,668	191,713
Outside City (not in Authority)	6,548	6,216	6,308	6,304	7,887	7,367	6,023	6,866	4,480	6,964
San Diegoito Water District	5,238	5,088	5,677	5,811	7,167	7,058	6,452	7,170	7,342	8,056
San Marcos C.W.D.	3,514	3,477	4,528	4,580	5,274	5,535	5,562	6,559	6,800	8,420
Santa Fe Irrigation District	7,175	6,204	7,931	7,175	8,951	7,254	7,254	7,735	10,252	9,368
Valley Center M.W.D.	18,931	16,512	20,663	20,553	29,198	28,895	26,738	29,417	33,568	44,687
Yuma M.W.D.	4,643	3,471	4,629	4,251	4,263	3,729	3,335	2,987	2,978	3,891
Total	367,945	342,319	390,502	384,457	442,210	423,020	400,821	433,009	461,540	528,461

\*Use of imported water began this year. All other agencies' use began prior to 1970-71. See previous reports.

Table 7  
WATER SALES — 1947 to 1981  
(All figures rounded to nearest whole acre foot)

Member Agencies	1947-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	TOTAL
Buena Colono M.W.D.	108,843	7,209	10,196	11,237	10,258	9,140	4,637	7,402	6,594	175,536
Costa Real M.W.D.	104,867	10,060	9,999	10,989	10,761	10,011	11,162	12,223	13,308	193,380
Del Mar, City of	5,876	942	894	1,162	918	921	1,095	1,283	1,076	14,127
De Luz Heights M.W.D.	9	99	178	362	533	552	820	1,097	1,627	5,277
Escondido, City of	80,200	12,924	10,628	17,017	17,670	11,825	6,837	8,749	12,880	179,040
Fairbrook Public Utility District	203,139	12,163	11,502	13,374	12,894	11,298	11,404	12,174	14,698	402,846
Helix Water District	459,786	27,972	29,809	37,232	28,350	19,198	10,800	24,413	24,413	678,890
National City & South Bay I.D.	273,288	16,556	18,376	19,190	17,183	12,357	4,174	3,093	3,653	565,760
Oceanside, City of	126,811	14,511	14,787	17,337	16,552	15,851	17,941	22,362	26,478	265,478
Olivehain M.W.D.	14,364	2,857	2,697	4,191	3,852	4,358	5,154	5,313	6,433	49,219
Oray M.W.D.	91,943	12,043	10,970	12,927	11,787	11,846	11,270	11,282	13,629	188,197
Padre Dam M.W.D.	75,657	10,371	10,785	12,280	11,617	11,799	12,812	13,721	15,572	174,614
Pendleton Military Res	55,131	8,060	7,859	8,187	7,649	6,304	6,942	7,032	9,269	116,453
Poway, City of	201,023	21,858	20,697	25,364	26,039	22,529	24,770	27,040	33,940	403,260
Rainbow M.W.D.	16,367	3,755	4,155	5,455	5,653	5,174	6,122	6,239	8,258	61,178
Rincon del Diablo M.W.D.	106,419	3,345	3,327	4,080	3,914	3,926	4,483	4,789	5,763	140,046
San Diego, City of	2,147,557	124,699	155,139	+173,863	179,387	130,150	94,280	92,986	119,890	3,217,951
San Diegoito Water District	45,731	4,817	5,438	6,641	7,078	6,067	4,056	5,212	5,711	91,271
San Marcos C.W.D.	35,097	4,528	5,204	5,274	5,535	5,557	6,585	6,855	8,465	83,200
Santa Fe Irrigation District	45,908	6,716	6,798	8,325	7,531	7,162	4,634	6,258	6,630	99,962
Valley Center M.W.D.	123,070	20,345	23,039	29,468	29,183	26,429	28,837	32,681	44,046	357,098
Yuma M.W.D.	16,968	2,936	2,645	2,558	1,953	1,967	1,829	1,601	2,054	34,511
Total Sales to Agencies	4,238,024	328,776	368,033	419,089	425,181	344,373	289,262	307,196	376,761	7,196,894
Total Sales to Others	8,622	8,982	8,253	8,186	9,058	8,200	1,990	2,560	658	56,509
Total to Authority Storage	+200,567	+15,683	+30,109	+85,592	+26,819	-21,411	+2,000	+2,000	0	+334,181
Total from Authority Storage	-161,158	-15,561	-17,910	-37,015	-26,123	-34,531	-4,533	-2,000	-2,000	-300,831
Total to Metropolitan Storage	+120,929	0	0	0	0	0	0	0	0	+120,929
Total from Metropolitan Storage	-116,908	0	0	0	0	0	0	0	0	-116,908
Total Flow in Authority System	4,290,076	337,850	388,485	425,851	434,935	339,653	288,719	309,756	375,419	7,290,774
Average Rate of Flow (c.f.s.)	235.9	466.5	519.7	588.6	599.8	487.3	402.3	426.7	521.3	521.3
To Agencies and Others	+10.9	+21.7	+41.6	+49.0	+37.0	+29.6	+2.8	+2.8	0	0
From Authority Storage	-8.7	-21.5	-24.7	-51.0	-36.1	-47.7	-6.3	-2.8	-2.8	-2.8
To Metropolitan Storage	+6.6	0	0	0	0	0	0	0	0	0
From Metropolitan Storage	-6.3	0	0	0	0	0	0	0	0	0
Flow in Authority System	238.2	466.7	526.6	586.6	600.7	469.2	398.8	426.7	518.5	518.5

(1) The operation of the First Aqueduct was formally initiated on November 24, 1947. For sales in intervening years, see previous reports.  
\*Corrected figure

SAN DIEGO COUNTY WATER AUTHORITY

Table 8  
SALES OF IMPORTED WATER - FISCAL YEAR 1980-81  
(All Figures in Acre Feet except as noted)

Member Agency	Month, 1980						Total 6 Months 1980
	July	August	Sept.	Oct.	Nov.	Dec.	
Buena Colorado M.W.D.	694.5	690.9	771.5	656.2	615.7	110.7	3,539.5
Contra Real M.W.D.	1,350.2	1,621.6	1,448.0	1,303.4	1,105.3	937.0	7,765.5
Del Mar, City of	140.4	135.9	115.0	73.9	79.8	64.1	609.1
De Lux Heights M.W.D.	173.5	138.5	143.0	180.8	128.3	114.7	878.8
Escondido, City of	2,061.8	1,935.2	1,176.3	588.9	489.0	383.9	6,635.1
Fallbrook P.U.D.	1,859.9	1,904.8	1,584.0	1,318.9	1,322.1	902.0	8,891.7
Helix W.D.	3,735.9	3,470.7	2,390.1	1,733.9	1,479.7	1031.8	13,842.1
National City & South Bay I.D.	10.3	7.3	5.6	8.3	11.5	11.6	54.6
Oceanside, City of	2,558.8	2,630.8	2,279.8	1,992.7	1,930.7	1,395.9	12,788.7
Oliverhain, M.W.D.	757.9	824.5	624.2	578.9	531.0	479.0	3,735.5
Otay M.W.D.	1,530.7	1,676.8	1,427.6	1,317.7	1,159.4	915.1	8,027.3
Padre Dam M.W.D.	1,920.5	1,861.2	1,538.2	1,301.9	1,203.9	958.8	8,784.5
Pendleton Military Res**	35.2	56.8	52.5	33.7	41.6	37.7	257.5
Poway, City of	863.9	1,464.1	1,014.3	762.0	733.6	516.0	5,353.9
Rainbow M.W.D.	4,235.8	4,404.8	3,687.3	3,242.9	3,085.2	2,131.6	20,787.6
Ramona M.W.D.	1,064.6	1,092.3	774.8	890.9	753.8	504.9	5,081.3
Rincon Del Diablo M.W.D.	828.5	819.3	537.3	543.7	467.5	330.5	3,526.8
San Diego, City of	10,771.7	11,197.4	9,382.4	8,406.2	7,653.1	7,455.5	54,866.3
San Dieguito W.D.	657.9	646.9	421.5	382.4	476.0	494.4	3,079.1
San Marcos C.W.D.	1,038.8	985.4	845.6	783.6	642.5	510.6	4,806.5
Santa Fe I.D.	833.7	771.6	509.7	478.0	574.9	549.6	3,717.5
Valley Center M.W.D.	6,103.3	6,239.8	4,807.9	4,586.2	3,676.1	2,586.6	27,999.9
Yuima M.W.D.	342.6	367.5	263.2	254.2	150.9	78.7	1,457.1
Total Sales to Agencies	43,535.2	44,887.3	35,747.3	31,385.6	28,270.0	22,403.0	206,228.4
Total Sales to Others*	429.5	228.7	0	0	0	0	658.2
Total Sales to Agencies & Others	43,964.7	45,116.0	35,747.3	31,385.6	28,270.0	22,403.0	206,886.6
Total to Authority Storage	0	0	0	0	0	0	0
Total From Authority Storage	-200.0	-200.0	200.0	-200.0	-200.0	-200.0	-1,200.0
Total Flow to Agencies & Others	43,764.7	44,916.0	35,547.3	31,185.6	28,070.0	22,203.0	205,686.6
Total Evaporation Losses from Storage in San Vicente and Lower Otay Reservoirs	0	0	0	0	0	0	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	715.0	733.7	600.8	510.4	475.1	364.3	566.9
To Authority Storage	0	0	0	0	0	0	0
From Authority Storage	3.2	3.2	3.4	3.2	3.4	3.2	3.3
In Authority System	711.8	730.5	597.4	507.2	471.7	361.1	563.6

\*To Otay for delivery to Tijuana, Mexico.

\*\*Delivered through Coastal M.W.D. facilities and are not included in Authority's totals.

TABLES

Table 8  
(Continued)

Member Agency	Month, 1981						Total 6 Months 1981	Fiscal Year Total	Fiscal Year, Average cfs
	Jan.	Feb.	March	April	May	June			
Buena Colorado M.W.D.	670.8	240.2	84.7	218.4	589.2	1,250.9	3,054.2	6,593.7	9.1
Contra Real M.W.D.	770.0	607.1	594.3	952.5	1,265.2	1,353.0	5,542.1	13,307.6	18.4
Del Mar, City of	78.7	54.8	55.4	77.5	84.0	116.1	466.5	1,075.6	1.5
De Lux Heights M.W.D.	117.6	58.6	43.2	108.4	177.1	243.7	748.6	1,627.4	2.2
Escondido, City of	1,478.8	998.6	143.7	845.1	743.2	2,035.1	6,244.5	12,879.6	17.8
Fallbrook P.U.D.	929.5	470.7	329.4	898.8	1,354.7	1,823.4	5,806.5	14,698.2	20.3
Helix W.D.	1,159.7	679.1	897.8	1,992.5	2,833.1	3,008.4	10,570.6	24,412.7	33.7
National City & South Bay I.D.	26.8	2.9	6.1	4.8	30.9	16.7	88.2	142.8	0.2
Oceanside, City of	1,332.7	1,058.3	997.7	1,622.3	2,057.7	2,505.1	9,573.8	22,362.5	30.9
Oliverhain, M.W.D.	369.6	233.7	222.2	503.6	599.9	769.0	2,698.0	6,433.5	8.9
Otay M.W.D.	777.5	627.2	561.8	915.4	1,169.2	1,550.2	5,601.3	13,628.6	18.8
Padre Dam M.W.D.	933.2	787.0	722.2	1,004.3	1,457.0	1,883.4	6,787.1	15,571.6	21.5
Pendleton Military Res**	50.1	66.5	95.4	54.4	29.1	63.8	359.3	616.8	0.9
Poway, City of	523.1	413.4	421.8	528.0	997.6	1,031.7	3,915.6	9,269.5	12.8
Rainbow M.W.D.	2,128.6	1,057.4	581.3	2,041.1	3,149.6	4,194.8	13,152.8	33,940.4	46.9
Ramona M.W.D.	556.4	271.3	129.2	397.7	681.0	1,141.6	3,177.2	8,258.5	11.4
Rincon Del Diablo M.W.D.	311.1	184.7	153.5	348.3	511.5	726.7	2,235.8	5,762.6	8.0
San Diego, City of	7,398.3	6,385.3	6,411.8	13,938.7	17,687.8	13,201.5	65,023.4	119,889.7	165.6
San Dieguito W.D.	297.7	315.7	358.9	491.3	532.2	636.2	2,632.0	5,711.1	7.9
San Marcos C.W.D.	562.0	372.0	353.6	554.7	821.2	994.7	3,658.2	8,464.7	11.7
Santa Fe I.D.	332.0	256.8	251.9	559.9	647.5	864.2	2,912.3	6,629.8	9.2
Valley Center M.W.D.	2,803.0	918.5	398.6	2,407.0	4,124.3	5,394.9	16,046.3	44,046.2	60.8
Yuima M.W.D.	82.7	16.3	7.8	52.4	138.1	299.9	597.2	2,054.3	2.8
Total Sales to Agencies	23,639.8	16,009.6	13,726.9	30,462.7	41,652.0	45,041.2	170,532.2	376,760.6	520.4
Total Sales to Others*	0	0	0	0	0	0	0	658.2	0.9
Total Sales to Agencies & Others	23,639.8	16,009.6	13,726.9	30,462.7	41,652.0	45,041.2	170,532.2	377,418.8	
Total to Authority Storage	0	0	0	0	0	0	0	0	
Total From Authority Storage	200.0	-200.0	-200.0	-200.0	0	0	-800.0	2,000.0	
Total Flow to Agencies & Others	23,439.8	15,809.6	13,526.9	30,262.7	41,652.0	45,041.2	169,732.2	375,418.8	
Total Evaporation Losses from Storage in San Vicente and Lower Otay Reservoirs	0	0	0	0	0	0	0	0	
Total Evaporation Losses from Storage in Sweetwater Reservoir	0	0	0	0	0	0	0	0	
Rate of Flow (c.f.s.)									
To Agencies and Others	384.4	288.3	223.3	511.9	677.4	756.9	475.0	521.3	
To Authority Storage	0	0	0	0	0	0	0	0	
From Authority Storage	3.2	-3.6	-3.2	-3.4	0	0	-2.2	-2.8	
In Authority System	381.2	284.7	220.1	508.5	677.4	756.9	472.8	518.5	

SAN DIEGO COUNTY WATER AUTHORITY

Table 9  
ASSESSED VALUATIONS AND TAX RATES  
Fiscal Years 1945-46 to 1980-81

Fiscal Year	Secured Property	Public Utilities	Unsecured Property	Total	Tax Rate per \$100	
					Secured	Unsecured
1945-46	\$ 212,082,975	28,253,200	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	47,177,500	338,886,890	0.14	0.14
1949-50	290,351,875	42,429,140	45,743,200	378,524,215	0.10	0.14
1950-51	308,104,930	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	69,241,530	79,629,790	695,144,200	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	165,686,720	159,954,740	1,442,345,290	0.11	0.11
1961-62	1,230,810,650	191,276,650	155,149,890	1,577,237,190	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	213,352,430	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	178,641,120	2,122,987,150	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	9,163,757,697	731,869,180	883,834,623	10,779,456,499	0.03	0.04

- (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.

TABLES

Table 9  
Continued  
TAX LEVIES AND TAX COLLECTIONS BY FISCAL YEAR  
(Includes in Lieu of Taxes)  
Fiscal Years 1945-46 to 1980-81

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
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	13,052	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	3.13
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)	38,134 *	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	2,129,996	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	24,018	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	3.25
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	137,072	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	98.78	181,346	117,782	7,214,380	154,472	2.16

Table 10  
SAN DIEGO COUNTY WATER AUTHORITY  
ANNEXATION CHARGES, ASSESSMENTS AND BALANCES

Area	Date of Annexation	Amount of Annexation Charge	Period of Special Assessments		Special Assessments to 6/30/80	Fiscal Year 1980-81		Remaining Balance of Annexation Charges 6/30/81
			First Year	Last Year		Special Assessments	Tax Rate c/\$100	
Annexation Charges Outstanding:								
Padre Dam M.W.D.								
(Formerly Rio San Diego M.W.D.)								
No. 4 Annex of 1970	8-03-70	\$ 3,100	1971-72	1980-81	\$ 2,081	\$ 119	01c	\$ 0
Pendleton Military Reservation	12-22-77	227,578	1978-79	1982-83	115,425	47,020	02c	65,133
Rancho M.W.D.								
No. 5 Annex of 1972	5-17-72	18,300	1971-72	1982-83	16,417	1,883	01c	0
Total		\$248,978			\$134,823	\$49,022		\$65,133

Table 11

CHEMICAL CHARACTER OF NATURAL COLORADO RIVER WATER  
AT WEST PORTAL OF SAN JACINTO TUNNEL  
Year Ending June 30, 1981  
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>	Non Carbonate Hardness as mg/l CaCO <sub>3</sub>	Alkalinity as mg/l CaCO <sub>3</sub>			(PH) Hydrogen Ion Concentration	Temperature When Sampled	
			Total	Phenolphthalein	Magnesium as mg/l		*F	°C
July	335	209	126	1	30.5	8.38	78.8	26.0
August	336	212	124	1	32.0	8.34	80.6	27.0
September	325	203	122	0	30.5	8.05	79.7	26.5
October	332	209	123	1	31.0	8.40	71.6	22.0
November	337	213	124	1	31.0	8.46	59.0	15.0
December	339	210	129	0	31.5	8.36	58.1	14.5
January	338	208	130	0	30.0	8.35	55.4	13.0
February	338	212	126	1	30.0	8.42	57.2	14.0
March	338	208	130	1	30.0	8.43	59.0	15.0
April	338	206	132	1	30.5	8.39	69.8	21.0
May	335	203	132	3	30.5	8.46	71.6	22.0
June	337	204	133	3	31.0	8.38	79.7	26.5

ANALYSIS - YEAR ENDING JUNE 30, 1981

Constituent	Symbol	ANALYSIS		
		Average	Maximum	Minimum
Silica	(SiO <sub>2</sub> )	8.8	9.9	7.1
Calcium	(Ca)	83.9	86	80
Magnesium	(Mg)	30.7	32	30.0
Sodium	(Na)	105.6	109	102
Potassium	(K)	4.7	5.1	4.3
Carbonate	(CO <sub>3</sub> )	1.25	4	0
Bicarbonate	(HCO <sub>3</sub> )	153.1	159	148
Sulfate	(SO <sub>4</sub> )	300.7	307	290
Chloride	(Cl)	91.8	94	90
Nitrate	(NO <sub>3</sub> )	0.70	1.1	0.4
Fluoride	(F)	0.37	0.48	0.28
Boron	(B)	0.14	0.15	0.12
Total Dissolved Solids		705	716	694
Hardness as CaCO <sub>3</sub>				
Total		335.7	339	325
Carbonate		127.6	133	122
Noncarbonate		208.1	213	203
Alkalinity - Phenolphthalein		1.1	3	0
Alkalinity - Total		127.6	133	122
Free Carbon Dioxide	(CO <sub>2</sub> )	1.15	2.2	0.9
Filterable Residue				
Hydrogen Ion Concentration	(PH)	8.37	8.46	8.05
Electrical Conductivity EC x 10 <sup>6</sup> @ 25°C		1109	1122	1086
Temperature °C		20.2	27	13

SAN DIEGO COUNTY WATER AUTHORITY

Table 12

CHEMICAL CHARACTER OF BLENDED TREATED WATER  
AT LAKE SKINNER  
Year Ending June 30, 1981  
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>		Magnesium as mg/l	Hydrogen Ion Concentration	Temperature When Sampled	
		Total				°F	°C
July	225	103	22.5	8.18	74.8	23.8	
August	220	99	22.5	8.19	78.1	25.6	
September	222	99	22.5	8.20	75.6	24.2	
October	246	104	24.0	8.19	72.0	22.2	
November	281	113	27.0	8.20	63.7	17.6	
December	288	116	27.0	8.19	57.0	13.9	
January	274	112	26.0	8.18	57.0	13.9	
February	261	110	24.0	8.18	54.9	12.7	
March	251	108	24.0	8.20	57.2	14.0	
April	237	104	23.0	8.18	61.9	16.6	
May	232	102	23.0	8.18	67.5	19.7	
June	223	101	22.0	8.18	72.1	22.3	

ANALYSIS - YEAR ENDING JUNE 30, 1981

Constituent	Symbol	ANALYSIS		
		Average	Maximum	Minimum
Silica	(SiO <sub>2</sub> )	9.2	10	7.8
Calcium	(Ca)	59	71	51
Magnesium	(Mg)	24	27	22
Sodium	(Na)	86	97	80
Potassium	(K)	4.1	4.4	3.5
Carbonate	(CO <sub>3</sub> )	0	0	0
Bicarbonate	(HCO <sub>3</sub> )	129.3	142	121
Sulfate	(SO <sub>4</sub> )	205.8	253	179
Chloride	(Cl)	84	91	75
Nitrate	(NO <sub>3</sub> )	0.46	0.75	0.1
Fluoride	(F)	0.28	0.37	0.21
Boron	(B)	0.15	0.17	0.13
Total Dissolved Solids		540	625	489
Hardness as CaCO <sub>3</sub>				
Total		247	288	220
Alkalinity - Total		106	116	99
Free Carbon Dioxide		1.4	1.5	1.3
Hydrogen Ion Concentration	(PH)	8.19	8.20	8.18
Electrical Conductivity EC x 10 <sup>6</sup> @ 25°C		884	1015	809
Temperature °C		18.9	25.6	12.7

TABLES

Table 13

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	64,119,383,253	.09	.10
1980-81	3,272,679	69,390,300,019	.079	.09
1981-82		314,726,854,882 (3)	.0198% (3)	.0198% (3)

(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 PY 1981-82, assessed valuation reported at 100% of full value, and tax rates levied in percentage of full assessed value.

SAN DIEGO COUNTY WATER AUTHORITY

Table 14  
METROPOLITAN WATER DISTRICT ANNEXATION CHARGES  
AND BALANCES ON AUTHORITY AREAS

Member Agencies	Date of Annexation	Amount of Annexation Charge	Remaining Balance 6/30/81
<b>Annexation Charges Outstanding</b>			
Bacno Colorado M.W.D.	6-11-54	\$ 1,072,230	\$ 113,202.69
Carlsbad M.W.D.	6-16-54	548,100	69,414.15
Del Mar, City of	11-23-62	611,250	241,764.61
De Luz M.W.D.	6-28-67	2,002,000	*2,989,434.48
No. 1 Annexation of 1969	10-15-69	312,000	* 460,491.60
<b>Fallbrook P.U.D.</b>			
No. 2 Annexation of 1958	11-24-58	50,400	12,936.84
Fallbrook Community Air Park	12-22-69	59,800	82,099.96
<b>Helix Water District</b>			
El Cajon Dry Island Annexation	12-20-54	327,450	29,044.96
Helix-Watson Ranch Annexation	2-20-59	8,730	2,035.34
Helix-Sunny Slope Hts. Annexation	9-17-59	38,250	11,429.63
Olivewood M.W.D.	7-25-60	83,880	23,768.25
No. 1 Annexation of 1965	2-11-65	512,520	254,369.25
No. 4 Annexation of 1967	11-13-67	74,000	* 85,779.53
Otay M.W.D.	10-26-56	273,000	19,048.72
No. 3 Annexation of 1960	10-20-60	95,100	31,338.05
<b>Padre Dam M.W.D. (not including Lakeside L.D.)</b>			
(Formerly Rio San Diego M.W.D.)	6- 7-56	373,980	61,114.24
No. 2 Annexation of 1959	11- 6-59	109,110	32,325.60
No. 3 Annexation of 1960	10-17-60	289,890	90,459.56
No. 4 Annexation of 1970	8- 3-70	164,000	147,676.53
Poway M.W.D.	4-21-54	91,800	3,585.43
No. 1 Annexation of 1959	9-21-59	27,150	7,950.85
Rainbow M.W.D.	4-10-54	167,700	15,384.06
No. 1 Annexation of 1959	5-12-59	24,300	7,235.04
No. 3 Annexation of 1967	12- 6-67	1,728,000	* 2,706,784.36
No. 5 Annexation of 1973	11-22-73	13,200	13,151.67
Ramona M.W.D.	8-27-57	339,000	75,382.42
No. 1 Annexation of 1959	5-29-59	42,330	12,231.57
No. 2 Annexation of 1961	9-22-61	15,480	5,586.12
No. 3 Annexation of 1963	9-20-63	10,560	4,456.87
No. 4 Annexation of 1967	11-27-67	480,600	* 634,250.00
No. 5 Annexation of 1972	5-17-72	732,000	913,044.75
Rincon del Diablo M.W.D.	6-14-54	757,200	89,176.41
No. 4 Annexation of 1972	11- 2-72	19,200	* 24,783.27
<b>San Diego Water District</b>			
No. 1 Annexation of 1959	9-15-59	71,820	20,121.55
No. 2 Annexation of 1972	12- 8-72	107,000	* 131,371.62
<b>South Bay Irrigation District</b>			
(not including City of Chula Vista)	11- 3-52	449,370	18,421.64
Valley Center M.W.D.	5- 9-55	205,680	31,964.15
No. 1 Annexation of 1960	12-12-60	23,700	7,678.17
No. 2 Annexation of 1967	11-29-67	22,000	* 29,735.05
No. 3 Annexation of 1967	11-30-67	502,000	* 687,877.34
Yuima M.W.D.	12-16-63	749,490	323,617.12
No. 1 Annexation of 1967	11-21-67	72,200	74,177.49
No. 2 Annexation of 1969	11-24-69	14,400	* 16,864.65
<b>Pendleton M6. Reservation-Nuclear</b>			
Generating Plant	12-16-77	**2,405,229	**2,285,620.33
<b>Total</b>		<b>\$16,077,099</b>	<b>\$12,898,295.87</b>
Annexation charges received from other annexed areas not listed above having no remaining balance		\$14,285,776	

\*Annual interest charge on outstanding balance is greater than tax levy based on maximum MWD tax rate of 1.875% of assessed valuation (formerly 75¢/100 of A.V.).

\*\*Principal only.

TABLES

Table 15  
WATER SALES BY METROPOLITAN WATER DISTRICT

Year	Fiscal Years 1941-42 to 1980-81						
	To Member Municipalities						
	Natural Water		Treated Water		Total to Agencies	To Others	Total
Acres feet	Per cent	Acres feet	Per cent	Acres feet	Acres feet	Acres 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	463,924.1	75,612.8	539,536.9
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	682,846.4	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	655,057.2	52	593,177.8	48	1,248,235.0	954.2	1,249,189.2
1974-75	721,969.9	54	607,014.7	46	1,328,984.6	147.7	1,329,132.3
1975-76	735,103.0	53	653,516.0	47	1,388,619.0	629.0	1,389,248.0
1976-77	560,124.0	40	830,011.0	60	1,390,135.0	331.0	1,390,466.0
1977-78	439,625.0	37	757,270.0	63	1,196,895.0	1,430.0	1,198,325.0
1978-79	458,312.0	37	777,177.0	63	1,235,489.0	261.0	1,235,750.0
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

Table 16  
**WATER PRODUCTION - METROPOLITAN WATER DISTRICT CONSTITUENT AREAS**  
 Figures Furnished by Metropolitan Water District

Constituent Areas	Total Water Production			Source of Water Produced - 1980-81				Percent of Total	Amount, Ac. Ft.	Percent of Total
	1979-80	1980-81	Percent Increase or Decrease	M.W.D.		Other				
	Amount ac. ft. (c)	Amount ac. ft. (c)		Direct Deliveries(b)	In Lieu Replen.	Total(b)	Amount, Ac. Ft.			
Anaheim	58,137	63,084	+ 8.5	18,589	11,703	30,292	32,792	48	52	
Beverly Hills	13,322	14,034	+ 5.3	14,034	-	14,034	-	100	-	
Burbank	22,015	23,703	+ 7.7	18,829	4,323	23,152	551	98	2	
Calleguas M.W.D.	95,230	105,358	+10.6	79,339	-	79,339	26,019	75	25	
Central Basin M.W.D.	218,386	225,870	+ 3.4	58,840(b)	9,554	68,394	157,476	30	70	
Chino Basin M.W.D.	172,395	190,188	+10.3	13,499(b)	5,317	18,816	171,372	10	90	
Coastal M.W.D.	36,911	38,510	+ 4.3	37,134	190	37,324	1,186	97	3	
Compton	8,539	8,784	+ 2.9	2,931	442	3,373	5,411	38	62	
Eastern M.W.D.	116,264(a)	140,858(a)	+21.5	36,868	-	36,868	103,990(a)	26	74	
Footfall M.W.D.	13,908	15,785	+13.5	9,267	-	9,267	6,518	59	41	
Fullerton	31,206	32,545	+ 4.3	16,263	6,418	22,681	9,864	70	30	
Glendale	25,517	27,765	+ 8.8	20,979	4,094	25,073	2,692	90	10	
Las Virgenes M.W.D.	9,121	10,282	+12.7	10,282	-	10,282	-	100	-	
Long Beach	67,521	71,373	+ 5.7	38,146	1,926	40,072	31,301	56	44	
Los Angeles	568,395	607,160	+ 6.8	31,400(b)	4,597	35,997	571,163	6	94	
Orange County M.W.D.	345,018	370,058	+ 7.3	178,588(b)	16,470	195,058	175,000	53	47	
Pasadena	33,277	36,936	+11.0	18,492	1,280	19,772	17,164	54	46	
Pomona Valley M.W.D.	88,377	96,485	+ 9.2	44,820	3,502	48,322	48,163	50	50	
San Diego C.W.A.	442,858	529,829	+19.6	369,779	-	369,779	160,050	70	30	
San Fernando	3,281	3,474	+ 5.9	211	-	211	3,263	6	94	
San Marino	4,771	4,925	+ 3.2	4	-	4	4,921	-	100	
Santa Ana	39,398	42,580	+ 8.1	13,584(b)	1,685	15,270	27,310	36	64	
Santa Monica	16,897	16,829	- .04	12,296(b)	-	12,296	4,533	73	27	
Torrance	22,123	24,464	+10.6	18,071	2,028	20,099	4,365	82	18	
Upper San Gabriel Valley M.W.D.	185,929	239,133	+28.6	7,511(b)	-	7,511	231,622	3	97	
West Basin M.W.D.	173,866	176,547	+ 1.5	128,476(b)	3,994	132,470	44,077	75	25	
Western M.W.D.	195,230	214,758	+10.0	52,018	-	52,018	162,740	24	76	
Totals	3,007,892	3,331,317	+10.7	1,350,250	77,524	1,327,774	2,003,543	40	60	

NOTES: (a) Includes seepage into San Jacinto Tunnel.  
 (b) Does not include water delivered for replenishment use.  
 (c) Includes deliveries for in-lieu replenishment use.

San Diego County Water Authority  
**ANNUAL FINANCIAL REPORT**  
 YEAR ENDED JUNE 30, 1981



Peat, Marwick, Mitchell &amp; Co.

Certified Public Accountants

1400 Central Federal Tower  
225 Broadway  
San Diego, California 92101

The Board of Directors  
San Diego County Water Authority:

We have examined the balance sheets of San Diego County Water Authority as of June 30, 1981 and 1980, and the related statements of earnings, changes in equity and changes in financial position for the years then ended. Our examinations were made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the aforementioned financial statements present fairly the financial position of San Diego County Water Authority at June 30, 1981 and 1980 and the results of operations and changes in its financial position for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

The examinations referred to above were directed primarily toward formulating an opinion on the financial statements of San Diego County Water Authority, taken as a whole. The supplementary data included in Schedule 1 are presented for supplementary analysis purposes and are not necessary for a fair presentation of the financial position and results of operations and changes in financial position of San Diego County Water Authority. The supplementary data have been subjected to the auditing procedures applied in the examination of the basic financial statements and, in our opinion, are stated fairly in all material respects only when considered in conjunction with the financial statements taken as a whole.

*Peat, Marwick, Mitchell & Co.*

August 28, 1981

## SAN DIEGO COUNTY WATER AUTHORITY

## SAN DIEGO COUNTY WATER AUTHORITY

## Balance Sheets

June 30, 1981 and 1980

<u>Assets</u>	<u>1981</u>	<u>1980</u>
<b>Current assets:</b>		
Cash and certificates of deposit	\$ 18,930,425	12,487,085
Accounts receivable, net	5,474,477	3,543,469
Current installments of long-term receivables	65,134	50,747
Inventory of water in storage	-	158,000
Prepaid expenses	<u>17,903</u>	<u>28,365</u>
<b>Total current assets</b>	<u>24,487,939</u>	<u>16,267,666</u>
<b>Restricted assets:</b>		
Debt redemption:		
Waterworks bonds:		
Cash and certificates of deposit	1,824,767	1,062,802
Taxes and interest receivable, less allowance for delinquent taxes of \$258,516 in 1981 and \$197,181 in 1980	53,217	32,313
U.S. Government contract:		
Cash and certificates of deposit	78,368	-
Due from Metropolitan Water District	2,713,534	3,050,337
Taxes and interest receivable, less allowance for delinquent taxes of \$13,234	4,433	-
Capital improvements, Pipeline No. 5:		
Cash and certificates of deposit	8,690,152	9,083,807
Investment in annuity contract	<u>113,490</u>	<u>81,422</u>
<b>Total restricted assets</b>	<u>13,477,961</u>	<u>13,310,681</u>
Property, plant and equipment, net (note 2)	94,443,056	90,808,567
Participation rights (note 2)	158,438,497	150,070,676
Long-term receivables, excluding current installments	-	63,409
	<u>\$ 290,847,453</u>	<u>270,520,999</u>

See accompanying notes to financial statements.

## FINANCIAL REPORT

<u>Liabilities and Equity</u>	<u>1981</u>	<u>1980</u>
<b>Current liabilities, payable from current assets:</b>		
Accounts payable	\$ 8,617,707	4,835,795
Advances and deposits by agencies	158,871	207,312
Accrued expenses	<u>166,286</u>	<u>152,119</u>
<b>Total current liabilities, payable from current assets</b>	<u>8,942,864</u>	<u>5,195,226</u>
<b>Current liabilities, payable from restricted assets:</b>		
Contracts payable - Pipeline No. 5	1,805,746	-
Current installments of long-term debt (note 3)	2,404,030	2,304,030
Accrued interest payable	613,000	639,532
Bank overdraft - U.S. Government contract	-	<u>77,716</u>
<b>Total current liabilities</b>	<u>13,765,640</u>	<u>8,216,504</u>
Deferred compensation payable	<u>113,490</u>	<u>81,422</u>
<b>Long-term debt, excluding current installments (note 3):</b>		
General obligation waterworks bonds	43,955,000	45,980,000
U.S. Government contract	4,702,631	5,211,661
Annexation charges - Metropolitan Water District	12,898,296	13,106,820
Note payable to bank	<u>9,000,000</u>	<u>9,000,000</u>
<b>Total long-term debt</b>	<u>70,555,927</u>	<u>73,298,481</u>
<b>Equity:</b>		
Equity in property, plant and equipment (note 2)	34,381,395	28,312,876
Contributed capital (note 2)	145,540,201	136,963,856
Restricted balances:		
Waterworks bonds, debt redemption	1,264,984	455,583
U.S. Government contract, debt redemption	2,796,335	2,972,621
Pipeline No. 5	6,884,406	9,083,807
Appropriated, long-term projects	442,794	658,120
Unrestricted balance	<u>15,102,281</u>	<u>10,477,729</u>
<b>Total equity</b>	<u>206,412,396</u>	<u>188,924,592</u>
	<u>\$ 290,847,453</u>	<u>270,520,999</u>

FINANCIAL REPORT

SAN DIEGO COUNTY WATER AUTHORITY

Statements of Earnings

Years ended June 30, 1981 and 1980

	<u>1981</u>	<u>1980</u>
Water sales	\$ 37,814,073	27,009,489
Cost of water sold	<u>34,392,843</u>	<u>24,282,336</u>
Gross margin from water sales	<u>3,421,230</u>	<u>2,727,153</u>
Operating expenses:		
Water treatment	121,981	94,442
Systems operations	161,467	122,215
Maintenance of structures and plant	241,334	230,007
Automotive operation, maintenance and shop expense	117,637	84,811
Depreciation expense	1,160,898	1,080,134
Administrative and general salaries	299,764	266,491
General expense and supplies	<u>736,545</u>	<u>651,706</u>
Total operating expenses	<u>2,839,626</u>	<u>2,529,806</u>
Net income from operations	581,604	197,347
Nonoperating income (expense):		
Property taxes	7,248,156	5,548,715
Interest expense (note 2)	(2,653,994)	(2,455,286)
Interest income	3,595,398	1,948,569
Tijuana water delivery fees	33,436	17,642
Other	<u>(121,632)</u>	<u>63,750</u>
Net earnings	\$ <u>8,682,968</u>	<u>5,320,737</u>

See accompanying notes to financial statements.

SAN DIEGO COUNTY WATER AUTHORITY

SAN DIEGO COUNTY WATER AUTHORITY

Statements of Changes in Equity

Years ended June 30, 1981 and 1980

	Total equity	Unrestricted balance
Balance July 1, 1979	174,655,848	5,815,422
Additions (deductions):		
Net earnings	5,320,737	4,545,050
Taxes and direct payments by member agencies to Metropolitan Water District for participation rights	8,953,329	-
Capital expenditures for property, plant and equipment:		
From operations	-	(539,933)
From contributions by member agencies	71,595	-
Waterworks bonds redeemed	-	-
Payments on U.S. Government contracts	-	-
Work performed for member agency, previously capitalized	(76,917)	-
Increase in long-term debt	-	-
Transfers	-	657,190
Balance, June 30, 1980	\$ 188,924,592	10,477,729
Additions (deductions):		
Net earnings	8,682,968	4,621,721
Taxes and direct payments by member agencies to Metropolitan Water District for participation rights	8,576,345	-
Capital expenditures for property, plant and equipment:		
From restricted assets	-	-
From operations	-	(268,995)
From contributions by member agencies	228,491	56,500
Waterworks bonds redeemed	-	-
Payments on U.S. Government contracts	-	-
Transfers	-	215,326
Balance, June 30, 1981	\$ 206,412,396	15,102,281

See accompanying notes to financial statements

FINANCIAL REPORT

Appropriated long-term projects	Restricted balances			Contributed capital	Equity in property, plant and equipment
	U.S. Government contract	Waterworks bonds	Pipeline 5 contract		
755,915	3,347,049	1,004,745	-	128,010,527	35,722,190
-	4,602	1,767,412	83,807	-	(1,080,134)
-	-	-	-	8,953,329	-
-	-	-	-	-	539,933
-	-	-	-	-	71,595
-	-	(1,830,000)	-	-	1,830,000
-	(379,030)	-	-	-	379,030
-	-	-	-	-	(76,917)
-	-	-	9,000,000	-	(9,000,000)
(97,795)	-	(486,574)	-	-	(72,821)
658,120	2,972,621	455,583	9,083,807	136,963,856	28,312,876
-	332,744	2,734,401	2,155,000	-	(1,160,898)
-	-	-	-	8,576,345	-
-	-	-	(4,354,401)	-	4,354,401
-	-	-	-	-	268,995
-	-	-	-	-	171,991
-	-	(1,925,000)	-	-	1,925,000
-	(509,030)	-	-	-	509,030
(215,326)	-	-	-	-	-
442,794	2,796,335	1,264,984	6,884,406	145,540,201	34,381,395

SAN DIEGO COUNTY WATER AUTHORITY

SAN DIEGO COUNTY WATER AUTHORITY  
 Statements of Changes in Financial Position  
 Years ended June 30, 1981 and 1980

	1981	1980
Sources of working capital:		
Net earnings	\$ 8,682,968	5,320,737
Add back depreciation which does not use working capital	<u>1,160,898</u>	<u>1,080,134</u>
Working capital provided by operations	9,843,866	6,400,871
Contributions by member agencies for property, plant and equipment	228,491	71,595
Decrease in waterworks bonds, capital improvement net restricted assets, applied to new construction	-	35,339
Decrease in U.S. Government contract equity	176,286	374,428
Long-term debt, net	-	6,595,807
Decrease in Pipeline 5 contract, capital improvement, net restricted assets, applied to new construction	2,199,401	-
Decrease in long-term receivables	<u>63,409</u>	<u>50,703</u>
	<u>\$ 12,511,453</u>	<u>13,528,743</u>
Uses of working capital:		
Long-term debt, net	2,642,554	-
Capital expenditures, net of taxes and direct payments by member agencies to Metropolitan Water District for participation rights of \$8,576,345 in 1981 and \$8,953,329 in 1980	4,586,863	378,883
Proceeds from notes payable, Pipeline No. 5	-	9,083,807
Increase (decrease) in waterworks bonds equity	809,401	(549,162)
Increase in working capital	<u>4,472,635</u>	<u>4,615,215</u>
	<u>\$ 12,511,453</u>	<u>13,528,743</u>
Changes in components of working capital:		
Increase (decrease) in current assets:		
Cash and certificates of deposit	6,443,340	3,563,965
Accounts receivable, net	1,931,008	(106,558)
Current installments of long-term receivables	14,387	(31,246)
Inventory of water in storage	(158,000)	-
Prepaid expenses	<u>(10,462)</u>	<u>22,324</u>
	<u>8,220,273</u>	<u>3,448,485</u>
Increase (decrease) in current liabilities, payable from current assets:		
Accounts payable	3,781,912	(1,220,242)
Advances and deposits by agencies	(48,441)	22,393
Accrued expenses	14,167	31,119
	<u>3,747,638</u>	<u>(1,166,730)</u>
Increase in working capital	<u>\$ 4,472,635</u>	<u>4,615,215</u>

See accompanying notes to financial statements.

FINANCIAL REPORT

SAN DIEGO COUNTY WATER AUTHORITY  
 Notes to Financial Statements  
 June 30, 1981 and 1980

(1) Summary of Significant Accounting Policies

Accounting Method:

The Authority operates and reports as an enterprise utilizing the accrual method of accounting.

Taxes Receivable:

Uncollected taxes receivable are recorded at the amount billed and an allowance is established for the amount estimated uncollectible within the ensuing year.

Inventories of Water in Storage:

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

Property, Plant, Equipment and Participation Rights:

Property, plant, equipment and participation rights are recorded at cost. Depreciation of property, plant and equipment is computed on the straight-line method over the estimated lives of the respective items. Participation rights are not amortized.

Reclassification of Prior Year Statement:

For comparability, the 1980 figures have been reclassified, where appropriate, to conform to the financial statement presentation used in 1981.

(Continued)

SAN DIEGO COUNTY WATER AUTHORITY

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SAN DIEGO COUNTY WATER AUTHORITY

Notes to Financial Statements, Continued

(2) Property, Plant, Equipment and Participation Rights and Equity Therein

	<u>1981</u>	<u>1980</u>
Property, plant, equipment and participation rights:		
Property, plant and equipment	\$ 105,322,075	105,195,128
Construction work in progress	<u>6,058,598</u>	<u>1,439,153</u>
	111,380,673	106,634,281
Less accumulated depreciation	<u>16,937,617</u>	<u>15,825,714</u>
Net property, plant and equipment	94,443,056	90,808,567
Participation rights in Metropolitan Water District	<u>158,438,497</u>	<u>150,070,676</u>
Net property, plant, equipment and participation rights	252,881,553	240,879,243
Less total long-term debt including current installments	<u>72,959,957</u>	<u>75,602,511</u>
Equity in property, plant, equipment and participation rights	\$ <u>179,921,596</u>	<u>165,276,732</u>
Represented by:		
Equity in property, plant and equipment	34,381,395	28,312,876
Contributed capital	<u>145,540,201</u>	<u>136,963,856</u>
	\$ <u>179,921,596</u>	<u>165,276,732</u>
The property, plant and equipment was financed by:		
General obligation bonds	67,797,306	67,797,306
U.S. Government contract	14,873,408	14,873,408
Current revenues	21,193,110	21,066,163
Agencies contributions	<u>1,458,251</u>	<u>1,458,251</u>
	\$ <u>105,322,075</u>	<u>105,195,128</u>

(Continued)

FINANCIAL REPORT

3

SAN DIEGO COUNTY WATER AUTHORITY

Notes to Financial Statements, Continued

(3) Long-Term Debt

	Interest rate	<u>1981</u>	<u>1980</u>
General obligation bonds:			
Waterworks bonds, 1957, maturing February 1, 1982-1994	11-6%	\$ 21,670,000	23,000,000
Waterworks bonds, 1966, maturing October 1, 1981-2004	4.5%-5.5%	<u>24,310,000</u>	<u>24,905,000</u>
Total bonds		<u>45,980,000</u>	<u>47,905,000</u>
U.S. Government contract due February, 1995:			
Authority's share; second pipeline	2.6%	2,368,127	2,540,354
Metropolitan Water District's share; second pipeline	2.6%	<u>2,713,534</u>	<u>3,050,337</u>
Total U.S. Government contract		<u>5,081,661</u>	<u>5,590,691</u>
Note payable to bank, maturing June 25, 1984-1988	7.1%	9,000,000	9,000,000
Annexation charges - Metropolitan Water District		<u>12,898,296</u>	<u>13,106,820</u>
Total long-term debt		72,959,957	75,602,511
Less current installments of long-term debt		<u>2,404,030</u>	<u>2,304,030</u>
Long-term debt, excluding current installments		\$ <u>70,555,927</u>	<u>73,298,481</u>

The Metropolitan Water District's share of the U.S. Government contract, \$2,713,534 and \$3,050,337 at June 30, 1981 and 1980, respectively, is also recorded as due from Metropolitan Water District.

(Continued)

## SAN DIEGO COUNTY WATER AUTHORITY

## Notes to Financial Statements, Continued

## (3) Long-Term Debt, Continued

The Authority's liability, \$12,898,296 and \$13,106,820 at June 30, 1981 and 1980, respectively, for annexation charges due Metropolitan Water District (MWD) and interest thereon are paid by means of a special tax levied on the properties within the annexed areas. Since the collections of these taxes are remitted directly to MWD by the County of San Diego, the Authority records the net collections as a reduction of its liability to MWD and an increase in its equity in participation rights. The Authority also receives credit for participation rights payments received by MWD, both in the form of additional taxes levied and collected on properties within the Authority and direct payments made by member agencies. The Authority records such credits when received by MWD as increases in participation rights and contributed capital.

During fiscal year 1980, the Authority entered into an agreement with a bank to borrow \$9,000,000 to be used to finance construction of Pipeline No. 5. The debt is to mature as follows:

<u>Maturity date</u>	<u>Principal due</u>
June 25, 1984	\$ 1,000,000
June 25, 1985	2,000,000
June 25, 1986	2,000,000
June 25, 1987	2,000,000
June 25, 1988	2,000,000
Total principal	\$ 9,000,000

The Authority uses the services of a paying agent to handle payment of long-term debt maturities and interest expense. The agent held \$39,105 and \$67,500 at June 30, 1981 and 1980, respectively for the payment of matured unredeemed principal and interest on bonded debt. The amounts held by the paying agent have not been included in the financial statements.

## (4) Pension Plan

The Authority is a member of the California Public Employees' Retirement System which provided retirement benefits for all of its permanent employees. The total pension expense was \$144,948 in 1981 and \$152,619 in 1980, which included amortization of prior service costs to 1981. The Authority's contribution rate was 13.23% of annual payroll in 1981 and 16.38% in 1980.

## SAN DIEGO COUNTY WATER AUTHORITY

## Bonded Debt Maturities

June 30, 1981

Year ended June 30	Waterworks Bonds		Total principal	Total interest	Total payments
	1957 principal	1966 principal			
1982	\$ 1,400,000	625,000	2,025,000	1,931,967	3,956,967
1983	1,470,000	650,000	2,120,000	1,852,260	3,972,260
1984	1,540,000	680,000	2,220,000	1,767,890	3,987,890
1985	1,620,000	710,000	2,330,000	1,678,707	4,008,707
1986	1,680,000	745,000	2,425,000	1,584,486	4,009,486
1987	1,740,000	775,000	2,515,000	1,486,521	4,001,521
1988	1,815,000	815,000	2,630,000	1,384,475	4,014,475
1989	1,880,000	850,000	2,730,000	1,277,868	4,007,868
1990	1,960,000	890,000	2,850,000	1,166,815	4,016,815
1991	2,040,000	925,000	2,965,000	1,051,020	4,016,020
1992	2,100,000	970,000	3,070,000	930,117	4,000,117
1993	2,165,000	1,015,000	3,180,000	804,537	3,984,537
1994	260,000	1,060,000	1,320,000	694,630	2,014,630
1995	-	1,105,000	1,105,000	632,747	1,737,747
1996	-	1,155,000	1,155,000	577,377	1,732,377
1997	-	1,210,000	1,210,000	519,435	1,729,435
1998	-	1,265,000	1,265,000	458,797	1,723,797
1999	-	1,320,000	1,320,000	395,465	1,715,465
2000	-	1,380,000	1,380,000	329,315	1,709,315
2001	-	1,440,000	1,440,000	260,225	1,700,225
2002	-	1,505,000	1,505,000	188,072	1,693,072
2003	-	1,575,000	1,575,000	112,612	1,687,612
2004	-	1,645,000	1,645,000	37,012	1,682,012
	\$ 21,670,000	24,310,000	45,980,000	21,122,350	67,102,350