

SAN DIEGO COUNTY
WATER AUTHORITY



FIFTH ANNUAL REPORT
1951

SAN DIEGO COUNTY WATER AUTHORITY

FIFTH ANNUAL REPORT

For Period

July 1, 1950 to June 30, 1951

J. L. BURKHOLDER
GENERAL MANAGER AND CHIEF ENGINEER

SAN DIEGO, CALIFORNIA
1951



San Diego Harbor, Principal Operating Base on the Pacific Coast for Naval and Marine forces.

LETTER OF TRANSMITTAL

San Diego, California

December 10, 1951

BOARD OF DIRECTORS

SAN DIEGO COUNTY WATER AUTHORITY

Gentlemen:

Transmitted herewith is the Fifth Annual Report of the San Diego County Water Authority for the fiscal year ending June 30, 1951.

The report covers the operation and maintenance of the Authority for the fourth year of delivery of Colorado River water to its member agencies, and the construction of additional facilities on the distribution system. Also included is a brief account of current activities of The Metropolitan Water District of Southern California, of which the Authority is a member.

Very truly yours,

J. L. BURKHOLDER,

General Manager and Chief Engineer.

ROSTER

DIRECTORS

July 1, 1950, to June 30, 1951

Chula Vista.....	Arthur L. Lynds
Escondido.....	Carl M. Reed
Fallbrook Public Utility District.....	(to 11/17/50) Franz R. Sachse Otis P. Heald
Lakeside Irrigation District.....	Allen G. Mitchell
La Mesa, Lemon Grove and Spring Valley Irrigation District.....	Mercel J. Shelton
National City.....	Delavan J. Dickson
Oceanside.....	Harold N. Beck
San Diego.....	(to 8/17/50) Gerald E. Arnold J. William Fisher Fred A. Heilbron Arthur H. Marston Fred W. Simpson Raymond M. Wansley Bruce Watt (to 4/19/51) Walter B. Whitcomb
San Dieguito Irrigation District.....	Frank S. Jacobson
Santa Fe Irrigation District.....	D. Maitland Bakewell

OFFICERS OF THE BOARD

Chairman.....	Fred A. Heilbron
Vice-Chairman.....	Arthur L. Lynds
Secretary.....	Delavan J. Dickson
Executive Secretary.....	Dorothy D. Miller

EXECUTIVE OFFICERS AND OPERATING STAFF

General Manager and Chief Engineer.....	J. L. Burkholder
General Counsel.....	W. H. Jennings
Assistant Chief Engineer.....	Richard S. Holmgren
Controller.....	Charles L. Royer
Treasurer.....	Harry L. Hall
Superintendent, Maintenance and Operation.....	A. B. Gale

BOARD OF DIRECTORS

June 30, 1951



Vice Chairman
Arthur L. Lynds
Chula Vista



Chairman
Fred A. Heilbron
San Diego



Secretary
Delavan J. Dickson
National City



D. Maitland Bakewell
Santa Fe
Irrigation District



Harold N. Beck
Oceanside



J. William Fisher
San Diego



Ot's P. Heald
Fallbrook Public
Utility District



Frank S. Jacobson
San Dieguito
Irrigation District



Arthur H. Marston
San Diego



Allen G. Mitchell
Lakeside Irrigation
District



Carl M. Reed
Escondido



Mercel J. Shelton
La Mesa, Lemon Grove and
Spring Valley Irrigation District



Fred W. Simpson
San Diego



Raymond M. Wansley
San Diego



Bruce Watt
San Diego

COMMITTEES OF THE BOARD

June 30, 1951

ENGINEERING AND OPERATIONS

Mercel J. Shelton, Chairman
J. William Fisher
Frank S. Jacobson
Arthur H. Marston
Carl M. Reed

FINANCE AND INSURANCE

Harold N. Beck, Chairman
Delavan J. Dickson
Arthur L. Lynds
Allen G. Mitchell
Raymond M. Wansley
Carl M. Reed

LEGAL AND CLAIMS

Allen G. Mitchell, Chairman
D. Maitland Bakewell
Delavan J. Dickson
Otis P. Heald
Raymond M. Wansley
Bruce Watt

ORGANIZATIONS, PERSONNEL AND PUBLIC RELATIONS

Fred W. Simpson, Chairman
D. Maitland Bakewell
Harold N. Beck
Frank S. Jacobson
Bruce Watt

WATER PROBLEMS

Arthur H. Marston, Chairman
J. William Fisher
Fred A. Heilbron
Otis P. Heald
Arthur L. Lynds
Mercel J. Shelton
Fred W. Simpson

ROLL OF DIRECTORS

Since formation of Authority

CHULA VISTA

Arthur L. Lynds.....July 15, 1944 to Present

ESCONDIDO

Carl M. Reed.....Oct. 18, 1950 to Present

FALLBROOK PUBLIC UTILITY DISTRICT

Emil J. Schmitz.....July 15, 1944 to July 11, 1949

Franz R. Sachse.....July 14, 1949 to Nov. 17, 1950

Otis P. Heald.....Dec. 8, 1950 to Present

LAKESIDE IRRIGATION DISTRICT

Allen G. Mitchell.....July 15, 1944 to Present

LA MESA, LEMON GROVE AND SPRING VALLEY IRRIGATION DISTRICT

William H. Jennings.....July 15, 1944 to February 12, 1948

Mercel J. Shelton.....February 12, 1948 to Present

NATIONAL CITY

George V. Johnson.....July 15, 1944 to July 15, 1947

Delavan J. Dickson.....August 14, 1947 to Present

OCEANSIDE

Harold N. Beck.....July 15, 1944 to Present

SAN DIEGO

Gerald E. Arnold.....July 29, 1948 to Aug. 17, 1950

J. William Fisher.....March 7, 1950 to Present

Fred A. Heilbron.....July 15, 1944 to Present

Arthur H. Marston.....July 15, 1944 to Present

Fred W. Simpson.....July 15, 1944 to Present

Raymond M. Wansley.....March 7, 1950 to Present

Walter B. Whitcomb.....July 15, 1944 to April 19, 1951

Bruce Watt.....August 14, 1950 to Present

SAN DIEGUITO IRRIGATION DISTRICT

Frank S. Jacobson.....December 22, 1948 to Present

SANTA FE IRRIGATION DISTRICT

D. Maitland Bakewell.....December 14, 1948 to Present

Directors From Agencies Which Have Withdrawn From the Authority

CORONADO

(withdrew from Authority May 10, 1946)

George F. Neal.....July 15, 1944 to May 10, 1946

RAMONA IRRIGATION DISTRICT

(withdrew from Authority August 21, 1946)

Albert C. Bisher.....July 15, 1944 to August 21, 1946

SAN DIEGO COUNTY WATER AUTHORITY

MEMBER AGENCIES AS OF JUNE 30, 1951

<i>Member Agency</i>	<i>Date of Entry</i>
City of Chula Vista	June 9, 1944
Fallbrook Public Utility District	June 9, 1944
Lakeside Irrigation District	June 9, 1944
La Mesa, Lemon Grove and Spring Valley Irrigation District	June 9, 1944
City of National City	June 9, 1944
City of Oceanside	June 9, 1944
City of San Diego	June 9, 1944
San Dieguito Irrigation District	Dec. 13, 1948
Santa Fe Irrigation District	Dec. 13, 1948
City of Escondido	Oct. 9, 1950

<i>Agencies which have withdrawn their corporate area from the Authority</i>	<i>Period of Membership</i>
City of Coronado	June 9, 1944 to May 10, 1946
Ramona Irrigation District	June 9, 1944 to Aug. 21, 1946

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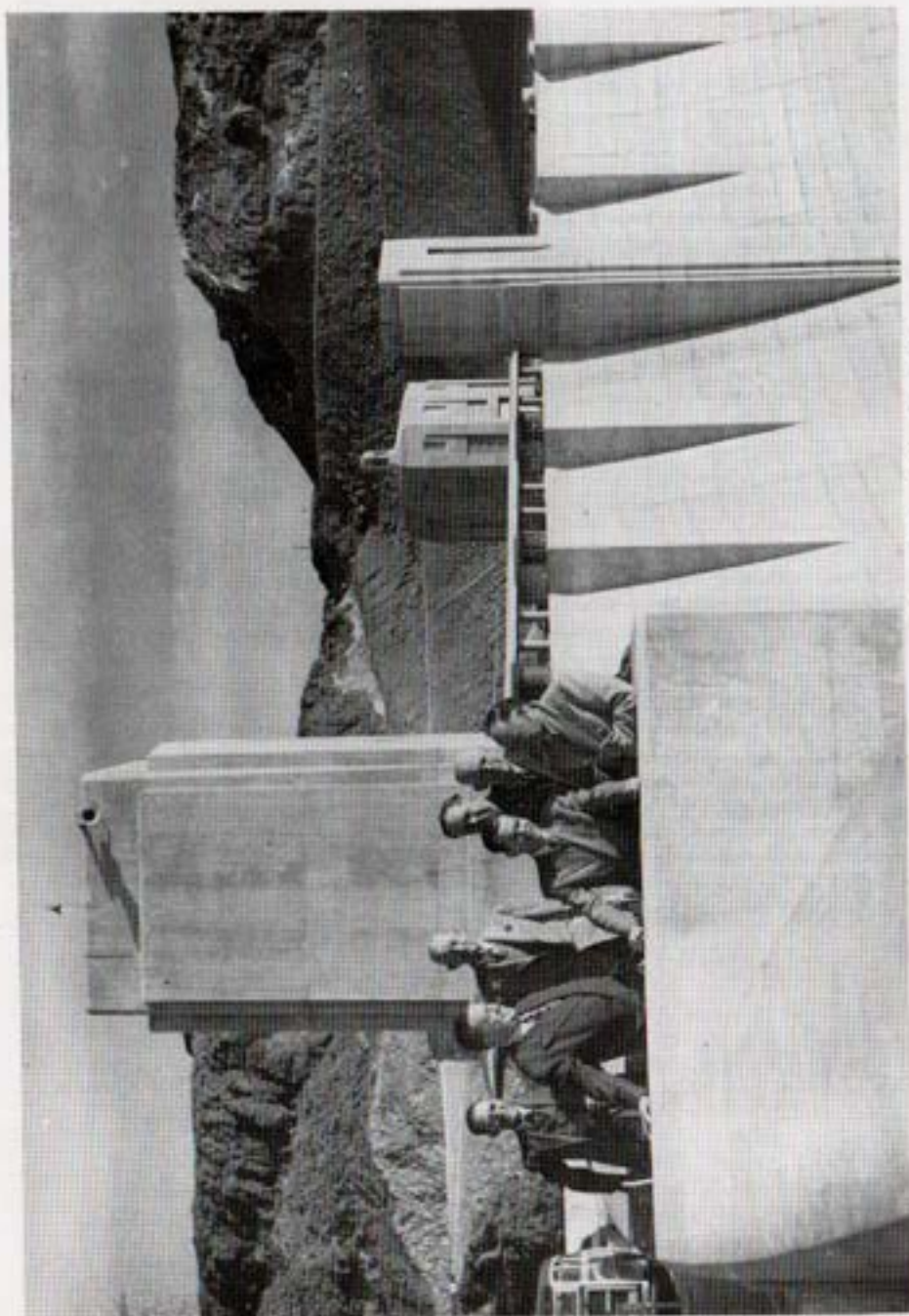
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Visitors from San Diego County at Hoover Dam, Dec. 7, 1948

FOREWORD

SAN DIEGO County accelerated its growth in the fiscal year ending June 30, 1951, under the impetus provided by increased military activity resulting from the Korean situation and the military preparedness program. Additional people were employed in industry and commerce and a shortage of skilled workers developed, which was being met by a migration of workers from other areas. This increase in activity, plus the lack of substantial runoff from local watersheds, has caused a decrease in water reserves in local reservoirs resulting in a serious shortage in the over-all supply. The shortage has occurred in spite of the continued operation of the San Diego Aqueduct at full capacity and the importation of a record amount of water during the year. By the introduction of bills in Congress which would provide for the completion of the Aqueduct by the construction of the second barrel, an additional step was taken to alleviate the water shortage in the Authority area.

Economic Growth of San Diego County

The Annual Business Survey for 1951, prepared by the San Diego Chamber of Commerce, indicates a steady increase in the prosperity of the area. For the first six months of 1951 bank debits increased 37 per cent to 1,930 billion dollars, electric power sales increased 20 per cent to 443 million kwh and the number of real estate transfers jumped 13 per cent to reach a total of 17,519, as compared with the like period in 1950.

Building construction of all types continued at a high level throughout the year. For the first six months of 1951 building permits in the City of San Diego increased 34.7 per cent over the previous year, to reach a total of approximately 31 million dollars.

Reflecting the rate at which new dwellings are being constructed throughout the County area, are the figures on the electric and gas meter installations for the first six months of 1951. During this period 7,094 electric meters and 6,777 gas meters were installed, which exceed like installations in the same period during the previous year by 60.8 per cent and 173.3 per cent, respectively.

There has been a vast increase in the number of persons gainfully employed in the County during the fiscal year 1950-51. Employment in industrial establishments in the San Diego metropolitan area was

over 40,000 persons on June 30, 1951, an increase of 66 per cent over the previous June 30th. The June 1951 Navy payrolls for military and civilian employees reached a total of more than 14 million dollars, an increase of about 38 per cent over the June 1950 payrolls.

Growth in Population

The growth in population has continued at an accelerated rate and the population of the County in April, 1951, as estimated by the San Diego Chamber of Commerce, was 620,000, an increase of 63,192 during the 12-month period. Population within the Authority area in April, 1951, as reported by agencies of the Authority, totaled 505,402, a gain of 53,382 during the year. The population of the County and of the Authority area from 1910 to 1951 is shown in Table 1. Of the total 620,000 people residing in the County in April, 1951, 82 per cent resided within the boundaries of the agencies comprising the Authority.

TABLE 1
POPULATION—COUNTY AND AUTHORITY AREAS—1910 to 1951
(Includes Resident Military Personnel)

Year (as of April 1)	COUNTY		AUTHORITY		Per cent of County population in Authority
	Total population (1)	Average annual growth	Total population (2)	Average annual growth	
1910	61,665		46,000		74
1920	112,248	5,058	87,000	4,100	78
1930	209,659	9,741	173,000	8,600	82
1940	289,348	7,969	248,274	7,600	86
1946 (3)	502,804	26,746	(3) 440,659	20,361	88
1950	556,808		451,886		81
1951	620,000	63,192	505,402	53,382	82

- (1) County population from U.S. Census Bureau Reports, excepting for 1951 which were furnished by Authority Agencies.
- (2) Authority population based on U.S. Census Bureau Reports. Population in years prior to Authority organization in 1944 are for Authority area as of 1944. Population in later years is for Authority as then constituted.
- (3) Based on Special Census, U.S. Census Bureau, exclusive of emergency Military personnel due to World War II.

TABLE 2
POPULATION—AUTHORITY CONSTITUENT AREAS AND COUNTY
(Includes Resident Military Personnel)

Constituent Areas	Gross Area 6/30/51	Population—U.S. Census			Annual Increase 1950-51 Per Cent	Density of Population 1951 Per Acre	Per Sq. Mile
		1940 (1)	1950 (2)	1951 Estimate (5)			
	Acres			Per Cent			
Chula Vista	3,363	5,138	15,927	210	19,200	5.71	3,654
Escondido	1,800	4,560	6,608	45	7,042	3.91	2,504
Fallbrook Public Utility District	8,000	2,300	5,500	139	6,000	.75	480
Lakeside Irrigation District	1,560	1,000	2,000	100	2,100	1.35	862
La Mesa, Lemon Grove & Spring Valley Irrigation District:							
In City of El Cajon	(3)	1,471	5,600	281	8,200	5.39	3,453
In City of La Mesa	(3)	3,925	10,946	178	12,000	5.47	3,499
In Crest Public Utility District	386	—	928	—	1,000	2.59	1,658
In unincorporated areas	(6)	11,704	26,688	128	30,070	1.92	1,231
Total	(6)	17,100	44,162	158	51,270	2.73	1,745
National City		10,344	21,199	105	22,900	5.38	3,440
Oceanside		6,490	12,880	177	14,000	2.16	1,381
San Diego		68,807	334,387	64	373,000	5.42	3,469
San Diego Irrigation District		4,020	6,223	159	6,562	1.63	1,045
Santa Fe Irrigation District		10,106	3,000	50	3,328	.33	211
Total Authority Area		127,211	451,886	79	505,402	3.97	2,543
San Diego County		2,725,100	556,808	92	620,000	.23	146

(1) Population in agencies other than cities was estimated from population of judicial townships.

(2) Population in agencies other than cities was furnished by agencies.

(3) Includes areas which are a part of the City but not of the Authority.

(4) Estimated.

(5) Estimated by Agencies.

(6) Does not include 23 acres of overlapping area in City of San Diego.

A breakdown of the population figures for the ten member agencies included within the Authority is shown in Table 2. The 1940 and 1950 figures for incorporated cities were taken directly from the U.S. Census reports, while those for the water districts were estimated from the U.S. Census figures for the nearest judicial area. The 1951 figures were estimates furnished by the member agencies. It will be noted that the most rapid percentage increase in population for the period occurred in the City of El Cajon and that the smallest increase occurred in the Santa Fe Irrigation District.

Assessed Valuation

A new high in assessed valuation of property within San Diego County was reached in 1950 when a total valuation of \$492,108,730 was reported by the County Assessor. Of this amount, property having an assessed valuation of \$400,098,160, or 80.1 per cent of the total, was included within the constituent area of the Authority.

The assessed valuation of each Authority agency for the fiscal years 1949-50 and 1950-51 is shown in Table 3, together with the annual percentage increases of each agency. The increase in assessed valuation for the Authority area was \$21,573,945, or 5.7 per cent. The largest percentage increase in assessed valuation, 11.8 per cent, occurred within the City of National City, and the smallest increase, 2.9 per cent, occurred within the City of San Diego.

The assessed valuation of the Authority agencies for the fiscal year 1951-52 became available in August, 1951, and is included in Table 3 for reference purposes.

Climatological Conditions

The rainfall at San Diego during the fiscal year was only 5.92 inches, as compared with the normal rainfall of 10.01 inches, and the current drought cycle went into its sixth year. The rainfall recorded at San Diego for the period from 1851 to 1951, and the dry and wet periods as indicated by accumulated departures from the mean, are shown in Figure 1.

Rainfall on the six major watersheds which are partially controlled by conservation reservoirs serving the Authority areas, was also well below normal. The rainfall recorded at Cuyamaca Reservoir, elevation 4,638, is representative of the rainfall recorded at the other stations

TABLE 3
ASSESSED VALUATIONS—AUTHORITY CONSTITUENT AREAS AND COUNTY

Agency	Area 6/30/51	Assessed Valuations Secured and Unsecured		Per Acre	Annual Increase Per cent	Assessed Valuation 1951-52
		1949-50	1950-51			
Chula Vista	3,363	Total \$ 12,735,200	Total \$ 13,454,210	\$4,001	5.6	\$ 16,645,050
Escondido	1,800	(3)	5,679,760	3,155	(3)	6,514,900
Fallbrook Public Utility District	8,000	2,532,730	2,699,690	337	6.6	3,751,190
Lakeside Irrigation District	1,560	677,990	747,210	479	10.2	826,470
La Mesa, Lemon Grove and Spring Valley Irrigation District	(2) 18,828	31,985,530	35,654,120	1,894	11.5	42,750,760
National City	4,260	9,749,585	10,897,650	2,558	11.8	12,164,200
Oceanside	6,490	9,283,590	9,880,430	1,522	6.4	11,111,160
San Diego	(4) 68,784	302,764,970	311,586,940	4,530	2.9	339,517,885
San Dieguito Irrigation District	(2) 4,020	4,975,240	5,268,820	1,311	5.9	5,872,440
Santa Fe Irrigation District	10,106	3,819,380	4,229,330	418	10.7	4,822,950
Total Authority Area	127,211	\$378,524,215	\$400,098,160	\$3,145	5.7	\$443,977,005
San Diego County	1,250,048 (1)	\$469,759,905	\$492,108,730	394	4.8	

(1) Excluding 1,475,052 acres of tax-exempt lands in San Diego County as of October 30, 1949.

(2) Includes area excluded from Agency but not from Authority.

(3) The City of Escondido was not annexed to the Authority until Oct. 9, 1950.

(4) Does not include 23 acres of overlapping area in La Mesa, Lemon Grove and Spring Valley Irrigation District.



CLIMATOLOGICAL YEAR JULY 1 - JUNE 30
Figure 1. Rainfall Record at San Diego, California.

on the watersheds. Here the recorded rainfall was 26.36 inches, as compared with the normal rainfall of 39.33 inches.

Use of Colorado River Water

The San Diego Aqueduct operated at flows well above its design capacity throughout the period July 1, 1950, to June 30, 1951, delivering water to all the Authority agencies, including the City of Escondido, which was annexed to the Authority during the current year. The quantity of water delivered as direct flow from the Aqueduct was the largest in any 12-months period to date, totaling 73,815 acre-feet. Additional deliveries of Colorado River water, totaling 5,444 acre-feet, were made from Authority-owned water previously stored in San Vicente Reservoir under an agreement with the City of San Diego. Total sales of water aggregated 79,259 acre-feet, an increase of 9,995 acre-feet over the previous year.

Including the Colorado River water, the total water production of the Authority area for the period July 1, 1950, to June 30, 1951, was 96,731 acre-feet, an increase of 6,571 acre-feet, or 7.3 per cent over the water produced in the previous fiscal year. Of the total water produced in the Authority area, 79,863 acre-feet, or 82.6 per cent, was Colorado River water. The City of San Diego was the largest user of Colorado River water, with the use of 49,121 acre-feet, 89.4 per cent of its total production. The Lakeside Irrigation District was the smallest user of Colorado River water, with the use of 27 acre-feet, 14.8 per cent of its total production.

Water Reserves in Storage

The conservation reservoirs of the member agencies have a total combined capacity of 465,389 acre-feet. On June 30, 1951, the water reserves in these reservoirs amounted to only 70,492 acre-feet, or 15 per cent of the total capacity. During the fiscal year there had been a reduction of 23,227 acre-feet from the amount of water in storage on July 1, 1950. Since practically no runoff occurred from local watershed areas during the period, this amount (23,227 acre-feet) represents for that period the water requirement of the Authority area in excess of the full capacity of the Aqueduct. A decrease in the amount of water in reserve storage has occurred in each of the past five years, and it is evident that additional water supply projects must be provided at an early date.

The Water Conservation Effort

Faced with a greater demand for deliveries of Colorado River water than the San Diego Aqueduct could supply, the Authority in April, 1951, suggested the organization of a County-wide "Save Our Water Committee" to direct an effort to stop all waste of water and reduce water use to a minimum. The organization of this Committee was rapidly completed and an active campaign was initiated in each locality. The campaign had the full support of all news agencies, including newspapers, radio and television. The immediate objective of the "Save Our Water Committee" was to keep monthly water use throughout the area, which had been running about 25 per cent above the previous year, to that used in the previous year. If this could be done, an annual saving of about 18,000 acre-feet could be effected. At the end of the fiscal year, it was estimated that monthly savings of about 1,500 acre-feet were resulting from the conservation effort.

Outlook for Additional Water Supplies

Foreseeing the eminence of a drought period, steps had been taken early in 1948 by the Board of Directors of the Authority to initiate engineering studies to determine the feasibility and need of completing the San Diego Aqueduct by the construction of a paralleling pipe line which would permit the capacity of the Aqueduct to be doubled. Such action resulted in the submission of engineering reports to the Board, first in July, 1948, by the Authority staff, and later, in November, 1950, by the U.S. Bureau of Reclamation. As a result of these studies, legislation authorizing the U.S. Navy to complete the Aqueduct was introduced in both houses of Congress early in January, 1951. At the end of the fiscal year, preparations were being made for hearings on this legislation with the expectation that it would be passed by Congress and become law in the Fall of 1951.

During the fiscal year the City of San Diego also was taking action to increase its water supply by the completion of the Sutherland Dam, located in the upper watershed of the San Dieguito River. It is expected that a bond issue covering the cost of this proposed work will be submitted to the electors of the City early in 1952.

Elsewhere throughout the Authority area, the groundwater tables were lowered dangerously and the deepening of existing wells and the drilling of new wells were being undertaken with varying success. In some of the coastal areas, there was grave danger of salt intrusion due to lowering of normal groundwater elevations.

CHRONOLOGY OF PERTINENT EVENTS

- 10-23-23 Preliminary studies of Colorado River as a source of additional water supply were begun by City of Los Angeles.
- 9-17-24 Colorado River Aqueduct Association organized at Pasadena, California.
- 6- 2-25 City of Los Angeles issued \$2,000,000 Colorado River project bonds for preliminary surveys and investigations.
- 4-15-26 City of San Diego filed application with the Division of Water Resources of the State of California for a permit to divert 155 c.f.s. from the Colorado River annually.
- 7-29-27 Metropolitan Water District Act enacted by California Legislature permitting noncontiguous cities and districts to co-operate in acquisition of domestic water supplies.
- 12- 6-28 The Metropolitan Water District of Southern California organized with eleven member cities.
- 4-24-30 Metropolitan Water District contracted with the United States for storage of water and for 36 per cent of the power generated at Hoover Dam.
- 8-18-31 Seven Party Water Agreement of 1930 signed by representatives of Palo Verde Irrigation District, Imperial Irrigation District, Coachella Valley County Water District, Metropolitan Water District of Southern California, City of Los Angeles, City of San Diego and County of San Diego fixing the priorities of the respective water rights in the Colorado River.
- 9-29-31 A construction bond issue of \$220,000,000 was approved by Metropolitan Water District electors.
- 1-25-33 Construction work on Colorado River Aqueduct was started on Coachella Tunnel at Fargo Adit.
- 2-15-33 Contract executed between Secretary of the Interior and The City of San Diego providing for 250,000 acre-feet of storage capacity in Boulder Reservoir, and for the delivery of 112,000 acre-feet of water to San Diego City and/or County each year at a point in the Colorado River immediately above Imperial Dam.

- 10- 2-34 Contract executed between Secretary of the Interior and The City of San Diego, providing for construction of capacity in All-American Canal Project for the diversion and carriage of 155 c.f.s. allotment of Colorado River water to The City and/or County of San Diego.
- 8-31-41 Initial stage of Colorado River Aqueduct construction completed and water system placed in operating status.
- 5-17-43 County Water Authority Act as introduced in the California legislature by Senator Ed Fletcher approved by the Governor of California and filed with the Secretary of State.
- 6- 9-44 The San Diego County Water Authority organized, consisting of nine public agencies.
- 11-29-44 The President of the United States transmits a communication to the Senate approving the Report of the Committee on San Diego Water Problems, and advising that he has directed immediate construction by the Federal Government of an aqueduct connecting the Colorado River Aqueduct of The Metropolitan Water District with the water system of San Diego at its San Vicente Reservoir.
- 5-18-45 First contract on San Diego Aqueduct awarded by U.S. Navy for construction of Poway, Fire Hill, and San Vicente tunnels.
- 10-17-45 Contract executed between the U.S. Navy, acting for the Government, and The City of San Diego providing for the continuation of construction of the San Diego Aqueduct and lease of Aqueduct to The City of San Diego, with privilege of later transferring to the Authority.
- 5-10-46 The withdrawal of The City of Coronado from the Authority officially completed by filing of proceedings by Secretary of Authority in the office of the Secretary of State.
- 6-28-46 Board adopted Resolution No. 17, declaring intention to call an election to authorize incurring of bonded indebtedness of \$2,000,000 to construct distribution lines.
- 8-15-46 Proposed contract merging water rights of City of San Diego with those of the Metropolitan Water District approved by the Authority, and the General Manager and

- Chief Engineer authorized to execute same on behalf of Authority.
- 8-21-46 Withdrawal of Ramona Irrigation District from the Authority officially completed by filing of proceedings with Secretary of State.
- 9-23-46 Supplemental Agreement No. 1 covering assignment of City-Navy Lease Contract NOy-13300 to San Diego County Water Authority formally executed by parties thereto.
- 11- 5-46 The Authority electors approved three propositions relative to proposed importation of Colorado River water: (1) annexation of corporate area of Authority to the Metropolitan Water District; (2) Supplemental Contract No. 1 transferring most of provisions of Aqueduct Lease-Purchase Contract from City to Authority; (3) incurring bonded indebtedness of \$2,000,000 for construction of branch lines. City of San Diego electors also approve Proposition No. 2.
- 12-17-46 The corporate area of the San Diego County Water Authority officially became annexed to The Metropolitan Water District of Southern California.
- 12-20-46 Authority sold its \$2,000,000 bond issue for branch lines to syndicate headed by Bank of America National Trust and Savings Association.
- 1-27-47 Comptroller-General reports to the Congress questioning legality of expenditures on Aqueduct.
- 5- 1-47 Committee on Expenditures in Executive Departments renders report to Congress recommending completion of Aqueduct.
- 7- 2-47 Contract for construction of La Mesa-Sweetwater Extension awarded by the Board of Directors of the Authority to American Pipe and Construction Company.
- 8-28-47 Contract for Easterly Section of Fallbrook-Oceanside Branch awarded by Board of Directors of the Authority to Edward Green.
- 11-13-47 Contract for Westerly Section of Fallbrook - Oceanside Branch awarded by Board of Directors of the Authority to American Pipe and Construction Company.

- 11-24-47 Initial flow of Colorado River water passed through San Diego Aqueduct and discharged into San Vicente Reservoir.
- 12-11-47 Water Authority took possession of San Diego Aqueduct for operation and maintenance on terms of informal interim agreement pending completion of the construction. The interim agreement was later replaced by Supplemental Agreement No. 3 to the Aqueduct Lease-Purchase Contract.
- 12-13-48 Corporate areas of the San Dieguito Irrigation District and the Santa Fe Irrigation District annexed to the Authority and The Metropolitan Water District of Southern California.
- 4-15-48 An Act of Congress (Public Law 482-80th Congress) was approved ratifying the actions of the executive branch of the Federal Government in proceeding with the construction of the San Diego Aqueduct.
- 4-25-49 Contract executed between the U.S. Bureau of Reclamation and the Authority relating to the investigation by the Bureau of the Second Barrel of the San Diego Aqueduct.
- 2-17-50 Contract executed between the City of San Diego and the Authority for the use of storage capacity by the Authority in San Vicente Reservoir.
- 8- 1-50 Fallbrook Public Utility District annexed additional area to the Authority.
- 10- 9-50 Corporate area of the City of Escondido annexed to the Authority and the Metropolitan Water District of Southern California.
- 1-19-51 Report by Bureau of Reclamation on "San Diego Project, Metropolitan Connection Enlargement" released in preliminary draft form for administrative use only.
- 4-13-51 First water delivered to City of Escondido through temporary connection.

SECTION I

OPERATION AND MAINTENANCE

THE San Diego Aqueduct was constructed by the United States Navy as an emergency project during and immediately following World War II and was useably completed late in November, 1947. During the fiscal year 1950-51 operation of the Aqueduct was continued by the Authority under Supplemental Agreement No. 3 to Contract NOy-13300, entered into between the Water Authority and the U.S. Navy. Under this contract the Authority has financial responsibilities for the entire Aqueduct, but it has turned over the northerly half to the Metropolitan Water District for operational purposes, in accordance with the Annexation Agreement under which the corporate area of the Authority became a unit of the District. Physically the Authority operates and maintains the southerly 35 miles of the Aqueduct, and the 32 miles of branch lines which together constitute the Authority distribution system serving its ten member agencies. The Aqueduct was operated at maximum capacity throughout the fiscal year.

Authority-operated System

The Authority operates the portion of the San Diego Aqueduct extending from the San Luis Rey River to the San Vicente Reservoir, consisting of 31.5 miles of pipe line, ranging in size from 48 inches to 72 inches, and 3.5 miles of 6-foot-diameter tunnels which together with numerous structures constitute the southerly portion of the Aqueduct. The Fallbrook-Oceanside branch, extending from the San Diego Aqueduct near Rainbow to the Oceanside wells, consists of 16 miles of steel and concrete pipe 14 inches and 16 inches in diameter. The La Mesa-Sweetwater branch extends from the San Diego Aqueduct at a point near its southerly terminus to the Sweetwater Reservoir and consists of 16 miles of concrete pipe ranging in size from 18 to 48 inches in diameter. The location of the Aqueduct and its branches is shown in Figure 2. Details on the pipe sizes and lengths are included in Table 4 of the Fourth Annual Report.

An important adjunct to the Authority-operated distribution system is the acquisition during the previous fiscal year of storage rights in San Vicente Reservoir owned by the City of San Diego. These rights

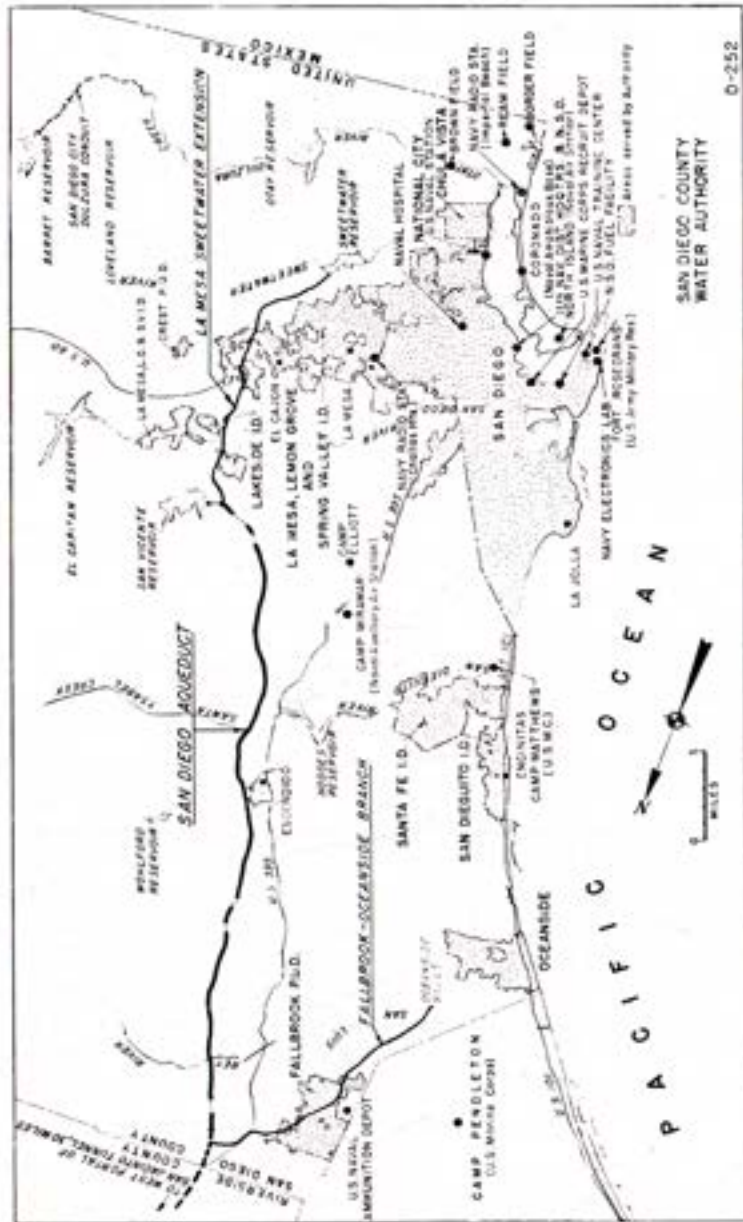


Figure 2. Areas in San Diego County served by the San Diego County Water Authority through the San Diego Aqueduct and its Branches.

provide for the use by the Authority of 20,000 acre-feet of reservoir capacity if and when available. The terms and conditions under which these rights were secured are described on page 40 of the Fourth Annual Report. The acquisition of these rights has enabled the Authority, on behalf of its member agencies, to store surplus water during periods of low demands for delivery to them during periods of peak demands.

Operating Personnel

The maintenance and direct operation of the water system continues to be centered at the Escondido headquarters of the Authority. During the year no change in personnel engaged in operation and maintenance work has occurred. The seven-man force stationed at Escondido performs all the work connected with field operations, including the regulation of water deliveries, the servicing of meters, and the maintenance of the system. The work performed during the fiscal year 1950-51 is described in detail in the following paragraphs.

Mechanical Equipment

The repair shop at Escondido headquarters, staffed by a qualified mechanic, is maintained for the purpose of servicing and repairing the sixteen units of mobile equipment required for the operation and maintenance of the system. This equipment includes the heavy equipment used primarily for maintenance and repair work and the light trucks and jeeps used for patrol and miscellaneous purposes. The shop mechanic is responsible for the upkeep and repair of other mechanical equipment, such as valves, control gates and meters located on the water distribution system.

No additions to the mobile units were purchased during the year, but the body of the 5-ton International truck was altered and equipped with a stiff-leg derrick and a power take-off for the operation of the derrick. This unit is now able to handle and transport heavy articles such as the ton containers of chlorine which must be moved to and from the chlorine injection station at Lilac Tunnel. The large trailer used to transport the bulldozer from place to place was equipped with folding ramps which facilitates moving of equipment.

Patrol of Aqueduct and Branch Lines

Regular daily patrols are maintained on the San Diego Aqueduct where the existence of 14 open structures requires careful observation

of the water elevations in order to guard against overflow due to bacterial growth which decreases pipe capacity. With total Aqueduct deliveries running about 25 per cent in excess of the design capacity of the Aqueduct, the patrolling of the line has recently attained greater importance than heretofore. This patrolling, together with less frequent trips over the two branch lines where no open structures exist, required about 50,000 miles of automobile travel during the year.

The Authority regulations require that 18 hours' notice shall be given before any change is made in the quantity of water being delivered from the system. In general this requirement has been complied with, enabling such changes to be made by the patrolmen in the course of their regular inspection trips. However, in certain emergency cases the Authority has been requested to make changes more promptly. Although this requires special trips on the part of the patrolmen, every effort is made to cooperate with the agencies in this matter.

Chlorination for Control of Bacterial Growth

The temperature of water flowing in the San Diego Aqueduct reaches a high of about 85 degrees Fahrenheit during the summer months. This high temperature is conducive to a bacterial growth on the interior of the pipe, which reduces its water-carrying capacity. In the summer of 1949 it was necessary to reduce flows to as low as 90 c.f.s. in order to prevent water from backing up in the open structures and overflowing the structure walls. To offset this growth, the Metropolitan Water District installed temporary apparatus for injecting chlorine into the Aqueduct flow, thereby killing the bacteria in their portion of the line. Later the Authority was forced to install additional temporary chlorinating equipment at the southern portal of Red Mountain Tunnel, to eliminate the bacterial growth in the southerly portion of the Aqueduct.

In view of this experience, the Metropolitan Water District, early in 1950, installed a permanent chlorinating station at the outlet of San Jacinto Reservoir and began to make regular injections of chlorine into the Aqueduct flow. Again the Authority found it necessary to install temporary chlorinating equipment at the southern portal of Red Mountain Tunnel, to supplement the District's operations. Chlorination was started on July 18, 1950, at the first indication of a rise of water in the open structures. Thereafter it was necessary to inject chlorine in the water at intervals of about two weeks until water temperatures decreased in October. A total of above 5,000 pounds

of chlorine was used for this purpose during this 3-month period, with very beneficial results. At the end of each operation the initial capacity of the Aqueduct was completely restored. It is now apparent that provision must be made for chlorination of the water in the southerly portion of the Aqueduct if maximum capacity of the line is to be maintained during the summer months.



Zigzagging Patrol Road on Aqueduct Location, South Hillside of San Luis Rey River

Access and Patrol Roads

When rights of way for access roads to the Aqueduct and the branch lines were obtained from property owners, the Authority agreed as a condition to the granting of the easements that the Authority would construct and maintain the roads as required for safe travel of ordinary vehicles. Such access roads, totaling about 37 miles, have been regularly maintained throughout the year. In general, the maintenance work performed consisted of grading, a small amount of surfacing, the cutting of drainage ditches, and the installation of small culverts. Because of the light rainfall during the winter months, the amount

Miscellaneous Maintenance Activities

During the fiscal year an inspection was made of the protective coating on exposed portions of the steel pipe and fittings located within the vaults housing the blowoff and air valves. Corrosion of the steel surfaces was found to be taking place in a number of the vaults and the parts were treated with an application of rust preventative paint.

As originally constructed, none of the 89 vault structures which give access to the Aqueduct line were provided with either drains or vents. The inner surface of the steel vault doors serves to condense moisture which later drops to the structure floors and accelerates the corrosion of valves and other steel parts. In the past this required frequent removal of the accumulated water by use of a portable pump. Part of this pumping has been eliminated by the drilling of drainage holes in the bottom of the concrete vault structures wherever possible.

The repainting of station numbers on Aqueduct and branch-line structures was begun during the previous year and has been completed in the present fiscal year. These station numbers are a tie-in with the construction drawings and records and thus serve as a ready identification symbol.

The access road to the southern portal of Lilac Tunnel is located in a deep cut made during the construction of the 72-inch pipe extending from the tunnel to the bifurcation structure. A gradual weathering of rock on the sides of this cut has occurred and it was necessary to scale and remove all loose rock from the sides of the cut in order to eliminate the hazard of rock falling on vehicles or persons using the road.

The large sluice gate in the Aqueduct diversion structure serving the La Mesa-Sweetwater Extension was found to be corroded to the extent that the gate could not be operated. In order to correct the difficulty, the gate stand and operating mechanism was removed and powerful jacks were used to break the rust and free the gate leaf so that it could be moved in the frame slides. The gate stand and operating mechanism was then replaced, and tests indicated that the gate could be readily opened and closed in a normal manner by the operating equipment. In order to prevent further difficulties with this gate, it is being serviced at more frequent intervals so as to prevent the accumulation of rust.



San Vicente Reservoir, End of San Diego Aqueduct in Foreground

Authority Storage in San Vicente Reservoir

The Authority, on February 17, 1950, entered into an agreement with the City of San Diego under which it acquired the right to store water in San Vicente Reservoir in amounts up to 20,000 acre-feet for its member agencies. Under the terms of this contract, the Authority pays the City a storage charge of \$1.00 per acre-foot per year, and assumes liability for the loss of water flowing over the spillway. In the previous year, five agencies took advantage of this agreement and ordered a total of 10,000 acre-feet to be stored for their accounts. None of this water was withdrawn during the previous fiscal year. During the 1950-51 fiscal year, 6,265.5 acre-feet of this water was withdrawn from storage and 218.6 acre-feet of water was added, leaving a total of 3,953.1 acre-feet in storage at the end of the year.

TABLE 4
AUTHORITY STORAGE IN SAN VICENTE RESERVOIR
(Fiscal Year 1950-51)

Agency	Total Quantity in Storage 7/1/50 (acre-feet)	Placed into Storage During Fiscal Year (acre-feet)	Withdrawn During Fiscal Year (acre-feet)	Total Quantity in Storage 6/30/51 (acre-feet)
Chula Vista & National City (Calif. Water & Tel. Co., Agent)	3,500.0	0	3,500.0	0
Escondido	—	118.6	0	118.6
Fallbrook Public Utility District	2,700.0	0	475.4	2,224.6
Lakeside Irrigation District	0	0	0	0
La Mesa, Lemon Grove & Spring Valley Irrigation District	2,000.0	100.0	990.1	1,109.9
Oceanside	0	0	0	0
San Diego	0	0	0	0
San Dieguito Irrigation District	1,500.0	0	1,000.0	500.0
Santa Fe Irrigation District	300.0	0	300.0	0
Authority (for evaporation)	443.9	602.8	693.4	353.3
Totals	10,443.9	821.4	6,958.9	4,306.4

Inasmuch as water cannot be delivered directly from San Vicente Reservoir to any of the agencies other than the City of San Diego, Aqueduct water, in lieu of stored water, has been delivered as requested by the agencies and stored water in like amounts has been transferred to the City of San Diego. Authority Ordinance No. 33, as amended by Ordinances Nos. 44 and 50, governing the sale of stored water,

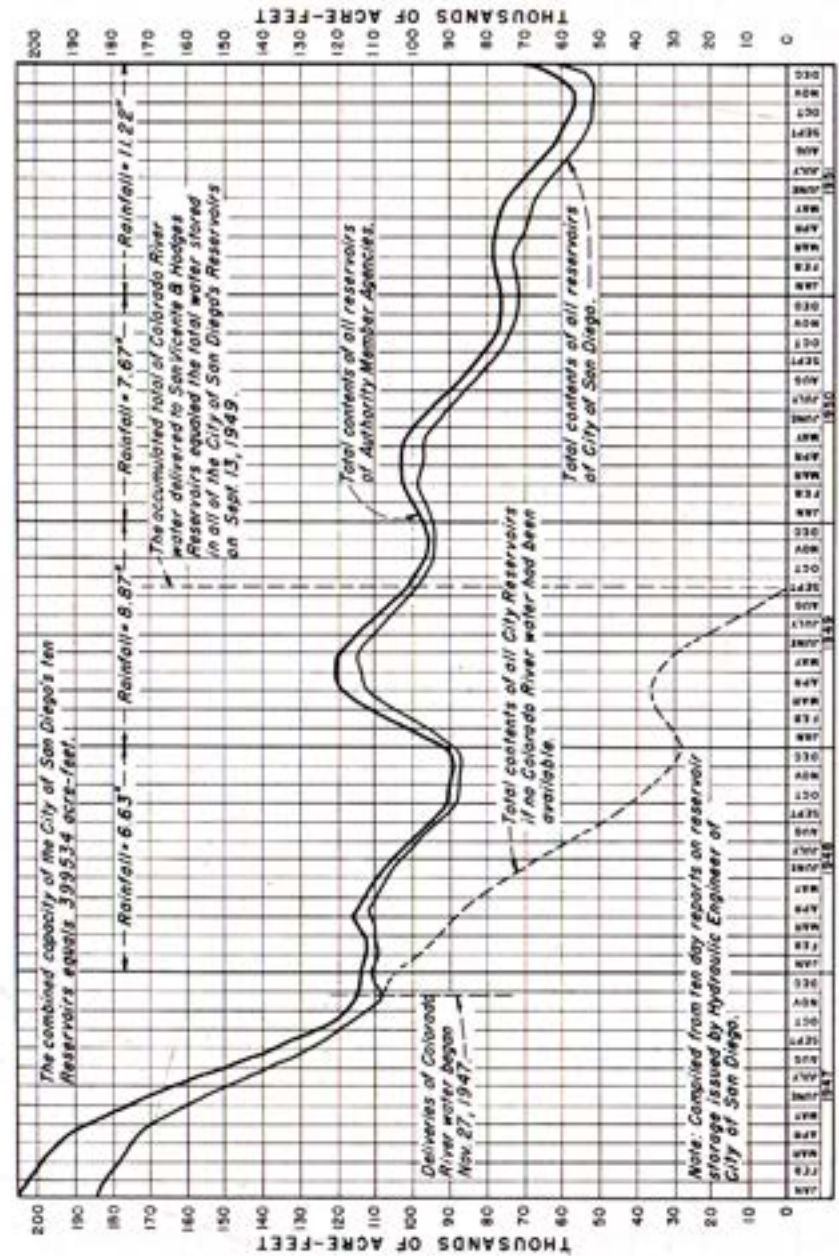


Figure 4. Amount of Water in Storage in Reservoirs of Authority Member Agencies.

provides for a \$2.50 per acre-foot per year storage charge for water placed in storage. This charge is payable to the Authority at the time the water is delivered. It includes compensation for loss of water by evaporation and for the City charge for use of its reservoir. Table 4 shows the quantity of water in storage at the beginning and end of the fiscal year 1950-51 and the amounts withdrawn from storage by the several agencies during the fiscal year.

Accurate records of the amounts of water in storage and the amounts of water released from storage are maintained by the engineering staff. Copies of these records are sent to the operating heads of the Authority agencies shortly after the end of each month.

The total amount of water in storage at the end of each month in reservoirs of Authority member agencies, including Authority storage in San Vicente Reservoir for the years 1947 to 1950 inclusive, is shown in Figure 4.

Water Deliveries and Sales

Sales of water during the fiscal year were over 7 per cent greater than the total amount of water brought into the area by the San Diego Aqueduct. This was possible because some of the water stored in 1949-50 was carried over into the next fiscal year. Notwithstanding this increase in the amount of water delivered to the agencies, the total requests for water were greater than the available supply.

The total quantity of Colorado River water delivered to member agencies during the year totaled 79,259 acre-feet, equivalent to an average delivery of 109.5 c.f.s. Of this amount, 5,444 acre-feet was delivered from water previously stored by the Authority for its member agencies in San Vicente Reservoir. The remaining water, totaling 73,815 acre-feet, was purchased from the Metropolitan Water District and brought into the area through the Aqueduct at an average flow of 102.0 c.f.s.

Monthly water sales to member agencies are shown in Table 5. The maximum quantity of 7,286 acre-feet was delivered in the month of June, and the minimum, 5,955 acre-feet, was delivered in the month of February.

Total quantities of water sold to each member agency of the Authority by fiscal years beginning with November 27, 1947, are shown in Table 6. In this period of three years and seven months, a total of

TABLE 5

Constituent Areas	May	June	Total 6 months	Yearly total	Yearly average
Chula Vista and National (California Water & Tel					c.f.s.
Escondido	803.0	388.2	5,957.2	12,964.7	17.91
Fallbrook Public Utility Dis	49.1	47.9	117.1	117.1	.16
Lakeside Irrigation District	326.4	380.4	1,574.2	3,979.2	5.50
La Mesa, Lemon Grove & ; Valley Irrigation District	0.2	1.3	2.2	27.2	.04
Oceanside	774.2	1,158.7	3,823.9	8,282.5	11.44
San Diego	48.7	58.5	287.9	558.5	.77
San Dieguito Irrigation Dis	4,924.8	5,141.6	26,882.0	51,453.9	71.07
Santa Fe Irrigation District	0	43.8	643.8	1,043.8	1.44
	32.7	65.5	98.2	832.1	1.15
Total Sales to Agencies	6,959.1	7,285.9	39,386.5	79,259.0	109.5
Total to Authority Storage	+ 22.2	+ 41.4	+ 218.6	+ 821.4	+1.1
Total from Authority Storag	-448.1	-1,017.4	-2,065.5	-6,265.5	-8.6
Total Deliveries from Aque	6,533.2	6,309.9	37,539.6	73,814.9	102.0
Rate of Flow					
c.f.s. to Agencies	113.2	122.4	109.7		109.5
c.f.s. to Authority Storag	+0.4	+0.7	+0.6		+1.1
c.f.s. from	-7.3	-17.1	-5.7		-8.6
Total deliveries from Aq	106.3	106.0	104.6		102.0

73,890.3 acre-feet was delivered from the Aqueduct, and 5,444 acre-feet was delivered from the Reservoir.

Note:

(1) Not including loss

TABLE 5
DELIVERIES AND SALES OF COLORADO RIVER WATER—FISCAL YEAR 1950-51
(All figures in acre-feet)

TABLE 5

Constituent Areas	July	August	Sept.	Oct.	Nov.	Dec.	Total 6 months	Jan.	Feb.	Mar.	Apr.	May	June	Total 6 months	Yearly total	Yearly average
Chula Vista and National City (California Water & Tel. Co.)	1,196.6	1,108.1	1,048.9	1,230.2	1,191.4	1,232.3	7,007.5	1,232.6	1,112.4	1,233.1	1,187.9	803.0	388.2	5,957.2	12,964.7	17.91
Escondido	0	0	0	0	0	0	0	0	0	0	20.1	49.1	47.9	117.1	117.1	.16
Fallbrook Public Utility District ..	405.7	461.9	474.2	514.9	270.3	278.0	2,405.0	231.3	161.7	144.3	330.1	326.4	380.4	1,574.2	3,979.2	5.50
Lakeside Irrigation District	9.4	7.2	3.6	3.0	0.8	1.0	25.0	0.1	0.2	0.2	0.2	0.2	1.3	2.2	27.2	.04
La Mesa, Lemon Grove & Spring Valley Irrigation District	914.6	930.2	838.6	878.7	398.6	497.9	4,458.6	375.2	124.5	580.9	810.4	774.2	1,158.7	3,823.9	8,282.5	11.44
Oceanside	45.7	45.1	43.3	45.1	45.0	46.4	270.6	46.5	41.9	46.7	45.6	48.7	58.5	287.9	558.5	.77
San Diego	3,357.4	3,423.9	3,398.9	4,664.6	5,037.7	4,689.4	24,571.9	4,233.7	4,314.1	4,395.1	3,872.7	4,924.8	5,141.6	26,882.0	51,453.9	71.07
San Dieguito Irrigation District ..	0	0	0	0	0	400.0	400.0	400.0	200.0	0	0	0	43.8	643.8	1,043.8	1.44
Santa Fe Irrigation District	215.2	107.6	208.3	202.8	0	0	733.9	0	0	0	0	32.7	65.5	98.2	832.1	1.15
Total Sales to Agencies	6,144.6	6,084.0	6,015.8	7,539.3	6,943.8	7,145.0	39,872.5	6,519.4	5,954.8	6,400.3	6,267.0	6,959.1	7,285.9	39,386.5	79,259.0	109.5
Total to Authority Storage	0	0	0	+ 33.0	+ 91.4	+ 478.4	+ 602.8	+155.0	0	0	0	+ 22.2	+ 41.4	+ 218.6	+ 821.4	+1.1
Total from Authority Storage (1)	0	0	-97.2	-1,433.0	-1,191.4	-1,478.4	-4,200.0	-400.0	-200.0	0	0	-448.1	-1,017.4	-2,065.5	-6,265.5	-8.6
Total Deliveries from Aqueduct ..	6,144.6	6,084.0	5,918.6	6,139.3	5,843.8	6,145.0	36,275.3	6,274.4	5,754.8	6,400.3	6,267.0	6,533.2	6,309.9	37,539.6	73,814.9	102.0
Rate of Flow																
c.f.s. to Agencies	99.9	98.9	101.1	122.6	116.7	116.2	109.3	106.0	107.2	104.1	105.3	113.2	122.4	109.7		109.5
c.f.s. to Authority Storage	0	0	0	+ 0.5	+ 1.5	+ 7.8	+ 1.6	2.5	0	0	0	+0.4	+0.7	+0.6		+1.1
c.f.s. from " (1)	0	0	-1.6	-23.3	-20.0	-24.1	-11.5	-6.5	-3.6	0	0	-7.3	-17.1	-5.7		-8.6
Total deliveries from Aqueduct	99.9	98.9	99.5	99.8	98.2	99.9	99.4	102.0	103.6	104.1	105.3	106.3	106.0	104.6		102.0

73,890.3 acre-feet was delivered into San Diego Aqueduct by The Metropolitan Water District at San Jacinto Reservoir. There was an estimated loss of 75.4 acre-feet from the Aqueduct.
Note:

(1) Not including losses by evaporation.

TABLE 6
DELIVERIES OF COLORADO RIVER WATER—1947 to 1951
(All figures in acre-feet)

Constituent Areas	(1) 1947-48	1948-49	1949-50	1950-51	Total to 6/30/51
Chula Vista and National City (California Water & Tel. Co.)	3,636.6	10,510.7	10,973.2	12,964.7	38,085.2
Escondido	—	—	—	117.1	117.1
Fallbrook Public Utility District	690.6	2,125.4	3,004.0	3,979.2	9,799.2
Lakeside Irrigation District	0	3.5	30.4	27.2	61.1
La Mesa, Lemon Grove & Spring Valley Irrigation District	4,256.3	8,080.1	4,792.6	8,282.5	25,411.5
Oceanside	0	1.5	127.8	558.5	687.8
San Diego	32,461.0	50,126.8	35,371.2	51,453.9	169,412.9
San Diego Irrigation District	—	451.3	1,655.0	1,043.8	3,150.1
Santa Fe Irrigation District	—	270.8	2,657.9	832.1	3,760.8
Total Sales to Agencies	41,044.5	71,570.1	58,612.1	79,259.0	250,485.7
Total to Authority Storage	0	0	10,652.0	+ 821.4	+11,473.4
Total from Authority Storage	0	0	0	-6,265.5	- 6,265.5
Total Deliveries	41,044.5	71,570.1	69,264.1	73,814.9	255,693.6
Rate of Flow					
c.f.s. to Agencies	98.3	98.9	81.0	109.5	96.4
c.f.s. to Authority Storage	0	0	14.7	1.1	+4.4
c.f.s. from Authority Storage	0	0	0	8.6	-2.4
Total deliveries from Aqueduct	98.3	98.9	95.7	102.0	98.4

(1) The operation of the Aqueduct was formally initiated on December 1, 1947.

255,693.6 acre-feet of water was delivered from the Aqueduct system at an average annual flow of 71,200 acre-feet, or 98.3 c.f.s.

During most of the fiscal year 1950-51 water was delivered to the several member agencies in accordance with their immediate requirements. At the end of the abnormally dry winter season, in April, 1951, it was apparent that the City of San Diego would require delivery of more Colorado River water than during previous years. On May 15, 1951, the City requested that delivery of its share of Colorado River water be made on a preferred entitlement basis. This action automatically reduced the flows available to the other agencies and resulted in the system being operated thereafter under the preferred entitlement provision of the Authority Act. After May 15th, the water demands of those agencies needing amounts of water above their entitlement were supplied from water previously stored in San Vicente Reservoir.

Water Production of Authority Agencies

The water production figures referred to herein include the total amount of water diverted from streams, conservation reservoirs, wells and other sources of local supply, which, together with diversions from the San Diego Aqueduct, were delivered into the transmission and distribution systems of the Authority agencies. The water production of the Authority agencies totaled 96,731 acre-feet for the fiscal year 1950-51, an increase of 6.3 per cent over the previous fiscal year. Of this amount, 79,863 acre-feet, or 82.6 per cent, was Colorado River water.

The water production of the agencies, together with a breakdown of the sources of supply, is shown in Table 7.

Unit water production of agencies, based on areas and population served with water, is shown in Table 8. The average production per acre was 1.03 acre-feet and the average production per capita was 0.19 acre-feet per year.

The total quantity of water produced by Authority agencies for each fiscal year 1940-41 to 1950-51 is shown in Table 9. During the decade the total annual water production has more than doubled and the separate agencies show increases ranging from a minimum of 30 per cent to a maximum of 903 per cent.

TABLE 7
WATER PRODUCTION OF AUTHORITY AGENCIES—FISCAL YEAR 1950-51

Constituent Areas	TOTAL WATER PRODUCTION				SOURCE OF WATER		
	ac. ft.	as m.g.d.	as c.f.s.	LOCAL		COLORADO RIVER	
				Amount ac. ft.	Per cent	Amount ac. ft.	Per cent
Chula Vista and National City (California Water & Tel. Co.)	11,750	10.49	16.23	1,583	13.5	10,167	86.5
Escondido (1)	1,034	0.92	1.43	917	88.7	117	11.3
Fallbrook Public Utility District	5,777	5.16	7.98	2,245	38.9	3,532	61.1
Lakeside Irrigation District	183	0.16	0.25	156	85.2	27	14.8
La Mesa, Lemon Grove and Spring Valley Irrigation District	11,412	10.19	15.76	2,426	21.3	8,986	78.7
Oceanside	3,035	2.71	4.19	2,476	81.6	559	18.4
City of San Diego:							
Inside City	54,935	49.05	75.88	5,814	10.6	49,121	89.4
Outside City (not in Authority)	2,051	1.83	2.83	2,051	100.0	—	0
San Diego Irrigation District	3,039	2.71	4.20	0	0	3,039	100.0
Santa Fe Irrigation District	3,515	3.14	4.86	0	0	3,515	100.0
Totals	96,731	86.36	133.61	17,668	18.3	79,063	81.7

NOTE: This table is a compilation of data furnished by member agencies. Figures include losses in transmission and distribution systems but not in conservation reservoirs.

(1) Deliveries to Escondido of Colorado River water began on April 13, 1951.

TABLE 8
UNIT WATER PRODUCTION—PER ACRE AND PER CAPITA—1950-1951

Area	Gross Area (1)	Total Production of water	Estimated area served by water system	Water production per acre	Estimated population	Water production per capita
California Water & Telephone Co.						
In Chula Vista	3,363	4,630	2,930	1.57	19,200	0.24
In National City	4,260	2,881	(2) 2,964	.97	22,900	0.13
Outside Cities (not in Authority)	9,924	4,239	3,044	1.39	11,600	0.37
Total (Calif. W. & T. Co.)	17,547	11,750	8,958	1.31	53,700	0.22
Escondido	1,800	1,034	1,300	.80	7,042	0.15
Fallbrook Public Utility District	8,000	5,777	5,000	1.16	6,000	0.96
Lakeside Irrigation District	1,560	183	983	.19	2,100	0.09
La Mesa, Lemon Grove and Spring Valley Irrigation District	18,828	11,412	13,233	.86	51,270	0.22
Oceanside	6,490	3,035	3,276	.93	14,000	0.22
San Diego—Inside City	68,784	54,935	46,200	1.19	373,000	0.15
Outside City (not in Authority)	(3)	2,051	(3)	—	—	—
San Diego Fe Irrigation District	4,020	3,039	4,020	1.32	6,562	0.46
Santa Fe Irrigation District	10,106	3,315	9,000	.39	3,328	1.06
Totals and Averages	137,155	96,731	91,970	1.03	517,002	0.19

(1) Does not include those areas which are a part of the agencies but not a part of the Authority.

(2) Includes 60 acres in San Diego served by Calif. Water & Telephone Co., and supplying 240 people.

(3) Not available.

(4) Does not include 23 acres of overlapping area in La Mesa, Lemon Grove and Spring Valley Irrigation District served with water by the District.

TABLE 9
WATER PRODUCTION BY AUTHORITY AGENCIES—FISCAL YEARS 1940-41 to 1950-51
(All figures in acre-feet)

Agency	From Local Sources				From Local and Authority Supplies						
	1940-41	1941-42	1942-43	1943-44	1944-45	1945-46	1946-47	1947-48	1948-49	1949-50	1950-51
Chula Vista and National City (Calif. W. and T. Co. Agent) (1)	7,502	9,588	9,048	9,963	9,288	10,799	10,519	10,265	(2) 11,293	(2) 12,709	11,750
Escondido	326	547	663	668	711	707	835	934	801	858	1,034
Fallbrook Public Utility District	576	951	1,232	1,464	1,439	2,120	2,596	3,470	3,613	5,379	5,777
Lakeside Irrigation District	47	44	60	61	65	69	90	103	110	161	183
La Mesa, Lemon Grove and Spring Valley Irrigation District	4,895	4,903	6,455	7,316	7,423	8,920	9,790	10,290	9,325	10,204	11,412
Oceanside	1,149	1,189	1,508	1,713	1,881	2,304	2,319	2,787	2,641	2,977	3,035
City of San Diego:											
Inside City	27,490	34,366	43,966	49,742	53,473	56,266	49,431	51,078	49,693	51,410	54,935
Outside City (not in Authority)	286	384	504	815	1,223	1,147	1,038	1,329	1,946	1,649	2,051
San Diego Fe Irrigation District (4)	2,014	1,917	2,280	2,321	2,611	2,966	3,369	3,034	2,303	2,899	3,039
Santa Fe Irrigation District (5)	2,700	2,503	3,073	3,300	2,760	3,539	3,512	3,491	2,878	3,372	3,315
Totals	47,185	56,532	68,789	77,363	80,874	88,837	83,699	86,801	84,603	91,018	96,731

(1) Includes some water sold to areas adjacent to the two cities.

(2) Includes evaporation losses of Colorado River water in Sweetwater Reservoir.

(3) Delivery of Colorado River Water to original Authority Agencies started in 1947-48.

(4) Delivery of Colorado River Water to San Diego Fe Irrigation District started in 1948-49.

(5) Delivery of Colorado River Water to Santa Fe Irrigation District started in 1948-49.

(6) Delivery of Colorado River Water to City of Escondido started in 1950-51.

Preferential Water Rights of Member Agencies

The preferential rights of the constituent areas to purchase water from the San Diego County Water Authority are determined from time to time by a procedure specifically set forth in the County Water Authority Act. In effect, such preferential rights bear the same relationship to the flow of the Aqueduct as the total accumulated taxes and related sums paid by each agency to the Authority (excluding payments for water) bear to the total of similar amounts paid to the Authority by all the agencies. Thus the preferred right of an agency is a right to purchase a flow of water which may vary from time to time with the total Aqueduct flow in the ratio of the agency's tax payments to the total tax payments collected by the Authority from all the agencies since its organization.

The estimated preferred rights of the Authority agencies in the present capacity of the San Diego Aqueduct are shown in Table 10. The agencies which have annexed to the Authority since its initial formation have obligated their taxpayers to pay a sum of money as an annexation fee which would approximately equal the accumulated taxes which they would have paid if they had been a member of the Authority from its organization date, plus delinquent interest; said amount becoming due over a period of years. In view of this situation, newly annexed areas would have little or no preferred entitlement unless their agreement to pay the annexation fee was in effect treated as a cash transaction. Thus the tentative preferred rights of such recent annexations as the City of Escondido and the San Dieguito and Santa Fe Irrigation Districts, as shown in Table 10, are larger than they would have been if they had been based only on the sums of money actually paid to the Authority to June 30, 1951.

TABLE 10
ESTIMATED PREFERENTIAL ENTITLEMENT TO PURCHASE COLORADO RIVER WATER
as of June 30, 1951

Constituent Areas	Total Amount paid by each member agency to 6/30/51	Amount remaining to be paid under terms of annexation	Total contributions paid and contracted for	Preferential right to purchase		Equivalent Annual Delivery Allowing 3% for reduced flows
				Percentage of aqueduct flow	Equivalent flow	
Chula Vista	\$ 63,809.54		\$ 63,809.54	3.21	c.f.s. 3.40	ac. ft. 2,389
Escondido	0	\$27,500.00	27,500.00	1.38	1.46	1,027
Fallbrook Public Utility District	15,408.87		15,408.87	.77	.82	573
Lakeside Irrigation District	3,036.68		3,036.68	.15	.16	112
La Mesa, Lemon Grove & Spring Valley Irrigation District	145,970.57		145,970.57	7.33	7.77	5,436
National City	52,951.83		52,951.83	2.66	2.82	1,980
Oceanside	45,513.36		45,513.36	2.29	2.43	1,704
San Diego	1,593,487.76		1,593,487.76	80.06	84.86	59,596
San Dieguito Irrigation District	12,779.74	10,659.79	23,439.53	1.18	1.25	879
Santa Fe Irrigation District	10,230.13	9,126.39	19,356.52	.97	1.03	722
Total Authority	\$1,943,188.48	\$47,286.18	\$1,990,474.66	100.00	106.00 (1)	74,438

(1) Based on maximum capacity of present single barrel aqueduct and the upper limit of meter range.



Interior of Lakeside Control Station, Turning Valve for First Water Delivery to La Mesa, Lemon Grove and Spring Valley Irrigation District

Water Quality

The Authority delivers Colorado River water on a wholesale basis to its member agencies for distribution by them to the ultimate consumers. No attempt is being made to treat the water or to prepare it in any manner for human consumption.

Samples of the water delivered into the San Diego Aqueduct are taken monthly from the Colorado River Aqueduct at the west portal of San Jacinto Tunnel. The analyses obtained from these samples are shown in Table 11.

TABLE 11
CHEMICAL CHARACTER OF NATURAL COLORADO RIVER
WATER

Year Ending June 30, 1951

Samples taken at entrance to San Diego Aqueduct by M.W.D. and analyzed at District Laboratory

Month	Total Hardness as P.P.M. of CaCO ₃	Non Carbonate Hardness as P.P.M. of CaCO ₃	Alkalinity as P.P.M. of CaCO ₃		Magnesium as P.P.M. of Mg.	Hydrogen Ion Concentration	Temperature when sampled F°
			Total	Phenolphthalein			
July	294	183	114	3	26.0	8.3	80
August	295	183	115	3	25.5	8.3	—
September	273	170	103	0	24.5	7.7	83
October	288	173	117	2	25.0	8.2	74
November	284	165	121	2	26.0	8.3	—
December	302	179	125	2	25.5	8.2	62
January	309	180	131	2	26.0	8.3	55
February	310	178	132	0	25.5	8.1	54
March	314	183	134	3	26.0	8.3	54
April	321	191	133	3	26.5	8.3	62
May	341	184	133	3	26.5	8.3	67
June	306	186	124	4	27.0	8.3	77
Average	301	180	124	2	26.0	8.2	67
Maximum	321	191	134	4	27.0	8.3	83
Minimum	273	165	103	0	24.5	7.7	54

NOTE: For other constituents in water see Table 20.

Weekly samples of water from the Authority's system at the Lakeside Control Station are taken and analyzed by the City of San Diego. In general, the results of these analyses correspond very closely with the determinations of the Metropolitan Water District. Frequent temperature readings of the water in the San Diego Aqueduct are made by Authority personnel.



Construction of First Barrel North of Oat Hill Tunnel

SECTION II ENGINEERING

IN general the work performed by the engineering staff during the fiscal year included supervision of the operation of the Aqueduct system, the maintenance of records of Aqueduct flows, the deliveries of water to agencies, and a great deal of detail work in connection with boundary changes. Also assistance was given to the Bureau of Reclamation engineers engaged on the preparation of a project-planning report on the completion of the San Diego Aqueduct to full capacity.

While only one new agency was annexed to the Authority, the continuation of drought conditions throughout the County resulted in the receipt of several formal applications for annexation of new areas, and a great many informal requests for information regarding possible membership in the Authority. The engineering staff prepared eight factual reports on areas seeking annexation for the information of the Board of Directors. The effect of this stimulated interest in annexation matters was to increase the work of the Authority staff in the San Diego office.

The staff was also occupied with reviewing and checking boundary descriptions covering small annexations to present agencies, for the purpose of maintaining an accurate taxing record of the lands lying within the corporate areas of the Authority and the Metropolitan Water District.

San Diego Aqueduct Completion Studies

It was originally anticipated that several years would elapse before an enlargement of the Aqueduct would be required. However, after three years of operation, during which time consumption of water within the area has continued to increase, it is now obvious that the present Aqueduct capacity is insufficient to adequately supplement the local water supplies and that the construction of the second barrel is necessary at an early date. Those portions of the Aqueduct consisting of tunnels and pipe lines located in remote sections were originally built to full capacity. Bulkheaded bifurcation structures were located at the ends of the full-capacity sections to enable the Aqueduct capacity to be doubled without necessitating a major shutdown.

A contract between the Authority and the Bureau of Reclamation providing for a report by the Bureau on the need and feasibility of completing the Aqueduct was entered into on April 25, 1949. During the fiscal year the Authority staff has cooperated with the Bureau in the preparation of basic data and in discussions relative to the scope of the report. In October, 1950, a preliminary report pertaining to possible alternative routes for the construction of the second barrel was received from the Bureau. Copies of this preliminary report were sent to the City of San Diego and the La Mesa, Lemon Grove & Spring Valley Irrigation District, the only agencies which might be affected by the adoption of a location on a non-parallel separate right of way, with a request that they review the report and indicate the location preferable to them. As a result of the replies received from the two agencies concerned with the alternative routes, and because of the increased cost of the construction on any non-parallel route, the Authority staff made a recommendation to the Board of Directors that a route generally paralleling the original Aqueduct location be adopted for the construction of the second barrel. This recommendation was approved by the Board on November 16, 1950, and the Bureau of Reclamation was notified of the action taken.

A preliminary draft of the technical portion of the Bureau's report was received by the Authority in November, 1950. Following a study of the draft, conferences were held with the Bureau's engineers relative to its arrangement and possible improvements in the subject matter. In January, 1951, a preliminary field draft of the full report, marked "for administrative use only," was received by the Authority.

In the early Fall of 1950 the Public Works Officer of the Eleventh Naval District began the preparation of a report to the Navy Department, Bureau of Yards and Docks, on "The Necessity of Constructing the Second Barrel to the San Diego Aqueduct to Supply Naval Mobilization and Other Needs." The Authority's engineering staff supplied basic information for this report and the conclusions reached therein were generally favorable to the need for the early construction of the second barrel. The report was officially rendered under date of September 1, 1950, and the Authority was furnished a copy thereof. This report, together with its endorsement by the Commandant of the Eleventh Naval District, provided the information on which the Navy Department later supported legislation in the Congress authorizing the construction of the second barrel and appropriating funds therefor.

Following the introduction of legislation in the 81st Congress author-

izing the completion of the Aqueduct by the Navy Department, the San Diego Chamber of Commerce and the Authority jointly undertook the preparation of a brochure, entitled "For the Want of a Nail," designed primarily to inform members of Congress and interested governmental agencies on the critical water situation in San Diego County and the necessity for financing the construction work on the second barrel through the Federal Government rather than by private financing. It contains statements by Rear Admiral Wilder D. Baker, Commandant, Eleventh Naval District, San Diego; Vice Admiral Thomas L. Sprague, Commander, Air Force, U.S. Pacific Fleet and Senior Officer Present Afloat, San Diego; Major General Alfred H. Noble, Commanding General, Marine Barracks, Camp Joseph H. Pendleton, Oceanside; and Major General William T. Clement, Commanding General, U.S. Marine Corps, Recruit Depot, San Diego. The brochure also contains endorsing statements by La Motte T. Cohú, President, Consolidated Vultee Aircraft Corporation; T. Claude Ryan, President, Ryan Aeronautical Company; Edmund T. Price, President, Solar Aircraft Company; Fred H. Rohr, President, Rohr Aircraft Corporation; Harley E. Knox, Mayor of San Diego; and Supervisor Frank A. Gibson, Chairman, Board of Supervisors, San Diego County; as well as charts, maps, and photographs portraying the critical water situation in San Diego County. One of the maps shows a diagrammatic sketch of the Aqueduct, the 18 military installations, and the 4 major defense plants which receive water from this source.

During the year the engineering staff completed preliminary studies relating to the adaptation of the structures on the completed Aqueduct, to best meet the needs of the Authority in serving water to its member agencies. The principal structures investigated in this connection were the diversion works for the La Mesa-Sweetwater Extension which should be expanded to include metering equipment for accurately measuring the discharge of water into San Vicente Reservoir, and the addition of a permanent chlorinating station to be located at the north portal of Lilac Tunnel.

Acquisition of Rights of Way for Access and Patrol Roads

An improvement to the system of access roads as originally planned and described in previous reports was carried through during the past fiscal year. The patrol road leading to the south portal of Red Mountain Tunnel located on the Aqueduct right of way was found to be difficult to travel in wet weather because of the steep gradient. To

remedy the situation additional rights of way were donated to the Authority by adjacent landowners and a new road was constructed with flatter grades. The total length of patrol roads located on private rights of way and maintained by the Authority is 39.2 miles, an increase of 1.7 miles over the total length previously recorded.

TABLE 12
CONSTITUENT AREAS OF THE AUTHORITY
as of June 30

Constituent Areas	Area Within Authority—Acres			Per cent of total Authority area 6/30/51
	As of 6/30/50	Changes during year	As of 6/30/51	
	acres	acres	acres	
Chula Vista	3,363	0	3,363	2.64
Escondido	0	1,800	1,800	1.41
Fallbrook Public Utility Dist.	5,000	3,000	8,000	6.29
Lakeside Irrigation Dist.(2)	1,560	0	1,560	1.23
La Mesa, Lemon Grove & Spring Valley Irrigation Dist.: (2) (3)				
In City of El Cajon(1)	(869)	+(20)	(889)	(.70)
In City of La Mesa	(1,900)	0	(1,900)	(1.49)
In Crest Public Utility Dist.	(386)	0	(386)	(.30)
In unincorporated areas	(15,769)	—(116)	(15,653)	(12.30)
Total	18,924	—96	18,828	14.81
National City	3,464	796	4,260	3.35
Oceanside	6,402	88	6,490	5.10
San Diego	65,218	3,566	68,784	54.07
San Dieguito Irrig. Dist. (2) (3)	4,020	0	4,020	3.16
Santa Fe Irrigation District	10,106	0	10,106	7.94
Total Authority Area (1)	118,057	9,154	127,211	100.00
San Diego County		2,725,100		

(1) Area revised from that in Fourth Annual Report, to conform with revised data received from agency.

(2) Does not include areas annexed to agencies without making the same a part of the Authority.

(3) Includes areas excluded from agency but still a part of the Authority.

(4) Does not include 23 acres of overlapping area in La Mesa, Lemon Grove and Spring Valley Irrigation District, served with water by District.

Changes in the Corporate Area of the Authority

The area within the corporate boundaries of the Authority was increased by annexations during the fiscal year by 9,154 acres, to reach

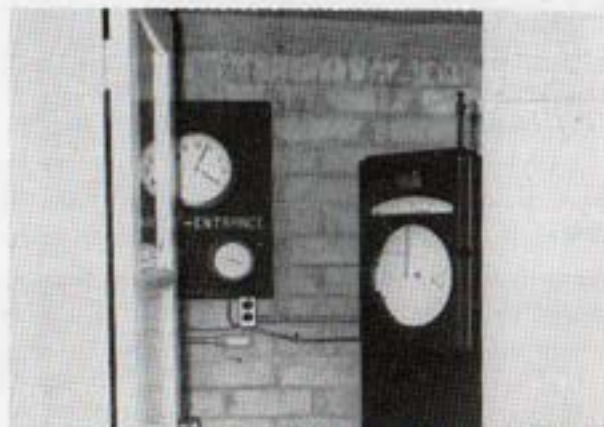
a total area of 127,211 acres as of June 30, 1951. The annexations were of three types, (1) new and independent municipalities, (2) additions to water districts, and (3) additions to member cities. Types 1 and 2 must have the formal approval of the Authority and the Metropolitan Water District before the annexation procedure can be legalized. Type 3 requires no action by either the Authority or the Metropolitan Water District and is legally effective upon appropriate action by the governing body of the municipality. This type of annexation is commonly referred to as an automatic annexation. The only new and independent municipality (type 1) annexed during the year was the City of Escondido, with an area of 1,800 acres. An additional area (type 2) totaling 3,000 acres was annexed to the Fallbrook Public Utility District. Additional areas annexing to cities (type 3) aggregated 4,450 acres, representing 3,566 acres to the City of San Diego, 796 acres to the City of National City, and 88 acres to the City of Oceanside. The annexation of Escondido added the tenth independent agency to the corporate area of the Authority.

Boundary descriptions and maps defining the areas annexed to the Authority have been filed with the Metropolitan Water District, the County Assessor and the State Board of Equalization. In the case of automatic annexations to member cities, the filings with the County Assessor and the State Board of Equalization are made by the city clerks who give official notice of their action in each case to the Authority.

The ten independent agencies, together with their separate areas as of June 30, 1951, are shown in Table 12, which also shows the changes in area which have occurred during the past fiscal year.

The La Mesa, Lemon Grove and Spring Valley Irrigation District and the San Dieguito Irrigation District have annexed areas during the year without making application to have these areas annexed to the Authority. Maps and descriptions of such areas have been filed by the agencies with the Authority and with the Metropolitan Water District, as required by their respective enabling Acts.

Table 13 shows the areas of member agencies lying within and without the boundaries of the Authority and areas which have been excluded from the boundaries of member agencies but are still a part of the Authority.



Temporary and Permanent Installations to Supply Eucalyptus Area of Lakeside Irrigation District

TABLE 13
AREAS OF MEMBER AGENCIES LYING WITHIN
AND WITHOUT THE BOUNDARIES OF THE AUTHORITY
as of June 30, 1951

Member Agency	Total area lying within agency boundaries	Area with- in agency but not a part of Authority (1)	Area with- in agency and a part of Authority	Area excluded from agency but still a part of Authority	Total area within Authority's boundaries
	Acres	Acres	Acres	Acres	Acres
Chula Vista	3,363	0	3,363	0	3,363
Escondido	1,800	0	1,800	0	1,800
Fallbrook P. U. D.	8,000	0	8,000	0	8,000
Lakeside Irrig. Dist. ...	2,008	448	1,560	0	1,560
La Mesa, Lemon Gr. & Spring Valley I. D.	22,504	3,954	18,550	607	18,828
National City	4,260	0	4,260	0	4,260
Oceanside	6,490	0	6,490	0	6,490
San Diego(2)	68,784	0	68,784	0	68,784
San Dieguito I. D.	3,993	30	3,963	57	4,020
Santa Fe Irrig. Dist. ...	10,106	0	10,106	0	10,106
Totals	131,308	4,432	126,876	664	127,211

NOTE: (1) An area when annexed to a city which is an independent agency of the Authority is automatically annexed to the Authority.

(2) Does not include 23 acres of overlapping area in La Mesa, Lemon Grove and Spring Valley Irrigation District.

Service Connections

Three new service connections were installed during the fiscal year, to deliver water to new areas not previously served by the Authority. Two of the new connections serve areas which have been annexed to the corporate area of the Authority; the other connection is of a temporary nature, installed under a special agreement with the Authority to deliver a very small quantity of water primarily for domestic purposes during the current fiscal year.

Each agency is entitled to one service connection which is installed by and at the expense of the Authority. Additional connections may be authorized by the Board upon application therefor, but the cost of the structure and equipment must be paid for by the agency to be served by the works.

Eucalyptus Service Connection. In accordance with Authority policy, the Lakeside Irrigation District deposited with the Authority \$3,500.00,

the estimated cost of a proposed service connection to supply water to Improvement District No. 1, Eucalyptus Grove area. Upon receipt of this deposit, plans were prepared for the installation of a connection to be located on the right of way acquired for the construction of the La Mesa-Sweetwater Extension at a site adjacent to a proposed pumping plant to be built by the District. The maximum capacity of this connection will be 2.0 c.f.s. The metering equipment and other necessary material were purchased and held in storage pending completion of the District's distributing system.

Escondido Service Connection. Immediately after annexation of the City of Escondido to the Authority, information was supplied to the city as to the possible locations on the Aqueduct for service connections to the city's distributing system. In order to obtain an earlier delivery of water, the city at first planned to request the installation of a temporary connection to its system at Aqueduct station South 993+05 and plans were prepared for the connection at this location. Later the city officials decided to request the installation of a permanent connection to be located at Aqueduct station South 986+90, where a blank flanged nozzle had been placed in the pipe during the construction of the Aqueduct. This required the making of a "wet tap" in order to avoid a shutdown in the Aqueduct flow. The request was granted and designs for the permanent installation were prepared and submitted to the city officials for their comments. It then developed that the city desired to install a chlorinating plant on the Aqueduct right of way in conjunction with the metering station. Final plans were then prepared containing provisions for a room to house the city chlorination station in the building housing the metering equipment. This space was leased to the city under terms of a contract entered into between the Authority and the city.

Pending delivery of the permanent metering equipment, water was supplied to the city beginning on April 13, 1951, through a temporary connection installed at the site selected for the permanent metering station. Construction work on the permanent connection was still under way at the end of the fiscal year.

Rainbow Service Connection. During the previous fiscal year a critical water shortage developed in the vicinity of Rainbow, and this area considered plans for annexing to the Fallbrook Public Utility District, to assist in minimizing the losses to the people of this community resulting from the water shortage. The Authority authorized the Fallbrook Public Utility District to sell to the Rainbow Public

Utility District an amount of water not to exceed 100 acre-feet, to be delivered from the Fallbrook-Oceanside branch at an Authority-owned service connection.

During the current fiscal year, the cost of the connection, estimated at \$736.00, was deposited by the Fallbrook Public Utility District and the connection was installed by the Authority at a cost of \$483.93. The balance was returned to the agency. The installation included a Hersey duplex meter with a maximum capacity of 0.7 c.f.s. Service through this meter commenced on August 7, 1950, and was discontinued on January 1, 1951, at which time there had been delivered to the District a total of 97 acre-feet.

Installation of Temporary Chlorination Equipment at North Portal Lilac Tunnel

The experience with the control of bacterial growth in the Aqueduct by the injection of chlorine during the summers of 1949 and 1950 demonstrated the necessity of continuing such operations in subsequent years. Accordingly, the necessary pipes, valves and fittings were pur-



Equipment used to inject Chlorine into Aqueduct at Bifurcation Structure North end of Lilac Tunnel

chased for the installation of a portable station suitable for injecting chlorine gas into the Aqueduct line, and a contract was entered into with the Dow Chemical Company providing for the delivery of necessary chlorine in 2000-pound containers. This equipment was installed at the north portal of Lilac Tunnel.

It is anticipated that this installation will satisfactorily serve the purpose until the Aqueduct is completed by the construction of the second barrel, at which time it is proposed to install a permanent chlorinating station which will include standard automatic chlorinators and will introduce chlorine solution into the flow of the Aqueduct.

Reports on Areas Seeking Annexation

The engineering staff is required to make a report to the Board of Directors on each area seeking annexation to the Authority covering factual data relative to boundaries, water supply, assessed valuation, financial status, and the estimated annexation fee. During the fiscal year, seven such reports were prepared.

In addition to the rendering of reports on areas seeking annexation, the staff was called upon to supply information to numerous individuals interested in obtaining supplemental water for their respective areas.

Application of State of California, Division of Forestry, For Water Delivery to Camp Rainbow

On September 21, 1950, the State of California, Division of Forestry, made a formal application for water delivery from the Aqueduct to serve Camp Rainbow, a forestry work camp located on Rainbow Mountain approximately 1,500 feet above the hydraulic gradient of the Aqueduct. The camp is strategically located for fire control purposes in San Diego County and cannot be moved without adversely affecting the efficiency of the fire-fighting force of 65 men.

The station, representing an investment by the State of thousands of dollars, has been established for four years and had previously obtained a water supply from wells located near the camp for the force regularly employed there and for the maintenance of the equipment. This supply has been failing for some time and explorations costing several thousand dollars recently have been made in an effort to find a new underground supply. These have failed and at the end of the year water for the station was being hauled from Temecula.

The application for a connection to the Aqueduct recites that the State of California would be agreeable to accepting delivery of water at the Aqueduct line, installing at its expense the pumping station and the $1\frac{3}{4}$ -mile pipe line required to transport water to the camp.

The estimated annual water consumption at the station is 7 acre-feet per year, an average flow of 4.3 gallons per minute. The proposed delivery could be made at Station 0+90 on the Fallbrook branch, where the Fallbrook Public Utility District delivered water to the Rainbow Valley area.

Committee of Operating Heads—Authority Agencies

An informal committee consisting of the operating heads of all the Authority agencies was organized a short time after the Authority began delivery of Colorado River water, and meetings were held at regular intervals. At these meetings, the committee tentatively allocated the flow of the Aqueduct and agreed upon a general schedule of deliveries to each of the agencies desiring to purchase water. Such a procedure was necessary because of prevailing drought conditions which emphasized the importance of utilizing the full capacity of the Aqueduct at all times. This advance scheduling of the operation of the Aqueduct contributed largely to the ability of the Authority engineering department to make the fullest possible use of Colorado River water. In fact the Aqueduct flow has been kept substantially at maximum capacity ever since the Aqueduct was placed in operation in November, 1947.

Following the start of the war in Korea on June 25, 1950, there was an expansion in the Naval and defense establishments in the area, which caused a sharp increase in the demands for water. To meet the increased requirements for Colorado River water, the flow of the Aqueduct was increased about 10 per cent above what had theretofore been considered a safe capacity. This was done by increasing freeboard at the open structures and providing more detailed patrol service.

By the end of March, 1951, however, the City of San Diego found it necessary to demand delivery of its preferred entitlement of the Aqueduct flow and the combined needs of the agencies for Colorado River water then exceeded the capacity of the Aqueduct. This condition automatically made it necessary to divide the total flow of the Aqueduct in accordance with the preferred entitlement of each agency as defined by the Authority Enabling Act. The result was that some of the agencies were forced to accept smaller flows of Aqueduct water than were avail-

able previously under the scheduling plan of operation. On April 19, 1951, this situation was brought to the attention of the Board of Directors by the General Manager and Chief Engineer, with the suggestion that the agencies should enter into a conservation program in order to obviate drastic water rationing pending the authorization and construction of the second barrel of the San Diego Aqueduct. Thereupon the Board appointed a special committee and authorized it to promote the formation of a County-wide citizens' committee to direct and carry forward a conservation program throughout the County area.

Citizens' Water Conservation Committee of San Diego County

The special Board Committee on water conservation, in cooperation with the San Diego Chamber of Commerce Water Committee, held a mass meeting of interested citizens on April 27, 1951, and presented to the group a plan for organizing and financing a County-wide conservation program to be directed by a committee termed "Citizens' Water Conservation Committee of San Diego County." This plan was adopted by the unanimous consent of those in attendance at the meeting, who approved an organization chart and elected an executive committee to carry out the program. The active officers of this committee were designated chairman, vice-chairman and secretary-coordinator. The executive committee completed the organization by the designation of special groups and organizations representing various activities within the County, who cooperated with the executive committee within the field of their activity. The general operating plan of the committee was to carry on an educational program throughout the County, first by disseminating general information which could be used by all the water-using agencies, and second, by helping the water-using agencies to carry on their own campaign in connection with the more localized phases of the program.

At the end of the fiscal year it was apparent that this program was producing excellent results and that savings in monthly water use of from 15 to 20 per cent were being made.

Information on the Quality and Use of Colorado River Water in San Diego County

A pamphlet entitled "Information on the Availability and Use of Colorado River Water in San Diego County" was published by the Authority in 1947 for the purpose of acquainting the water users within the Authority area with the quality of the Colorado River water. The

booklet continued to be in demand even after Colorado River water came into regular use, with the result that the original supply became exhausted. Because of the continuance of requests for the pamphlet, it was decided to revise and reissue the publication under the title "Information on the Quality and Use of Colorado River Water in San Diego County." Copies of this reprint have been supplied to each of the agencies and is receiving broad distribution within the County.

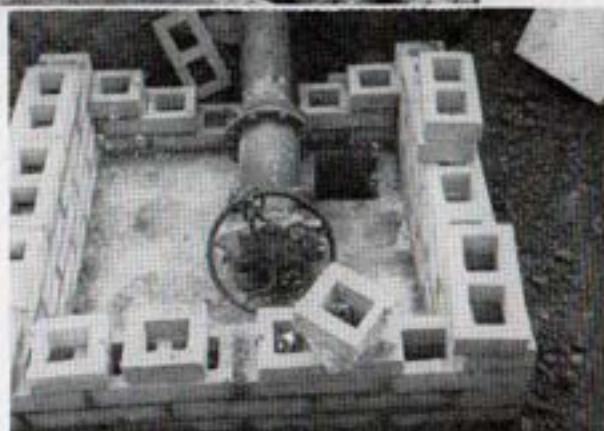
Miscellaneous Engineering Activities

The engineering staff has performed other work of a minor and routine nature which in the aggregate represents a considerable part of the work performed. Such work will be briefly described in the following paragraphs.

The routine work performed during the fiscal year consisted of checking flow charts and maintenance of records pertaining to the storage and delivery of water to the various agencies, the revision of base maps showing the boundaries of the agencies, and the preparation of data for the monthly and annual reports. The Authority is called upon each year to furnish the Metropolitan Water District with certain data relative to the use of water within the Authority area and general information relative to the Authority agencies.

At the request of the Fallbrook Public Utility District, tentative studies were made of the practicability of increasing the capacity of the Fallbrook-Oceanside branch and of increasing pressure conditions in the southerly portion of the District.

At the request of the local Regional Pollution Board, a draft of a report on the water resources of San Diego County was prepared for inclusion in the "Report on Water Pollution Control—San Diego Basin—California Drainage Basin," which is to be issued by the United States Public Health Service, Division of Water Pollution Control, a Federal Security Agency.



Construction of Escondido Metering and Control Station

SECTION III CONSTRUCTION

DURING the fiscal year no extensions were made to the Authority-operated water system. Construction work was limited to the installation of three service connections, two of which, Escondido and Eucalyptus connections, will be standard installations when completed, while one, the Rainbow connection, was of a temporary character which would be required for only a few months. All work on these service connections was performed by or under the direction of Authority crews.

Escondido Service Connection. Construction of this connection began in February, 1951, when excavation was undertaken on the Aqueduct line for the purpose of uncovering a flange nozzle which had been installed during construction of the pipe line. After repeated trials, the nozzle was finally uncovered and a valve was installed on the nozzle and a "wet tap" made through the blank flange with special equipment without shutting down the flow of the Aqueduct. A temporary connection was then made from the valve through a small meter leading to the city's distribution system. This temporary connection was placed in service April 13, 1951, and its use was continued to the end of the fiscal year, pending delivery of the materials and equipment required for a standard metering station.

Eucalyptus Service Connection. Pending the financing and construction of a water distributing system to serve the Eucalyptus area of the Lakeside Irrigation District, a small temporary meter and a hydrant were installed in August, 1950, on the La Mesa-Sweetwater Extension, to temporarily supply domestic water to nearby residents. This installation was paid for by the District. The District also deposited funds with the Authority for the construction of the permanent station and the purchasing and installation of equipment. No construction work thereon had been started at the end of the fiscal year.

Rainbow Service Connection. Arrangements for the installation of a small service connection to be installed at Station 00+90 on the Fallbrook-Oceanside branch were completed during the previous fiscal year. Installation of the small meter and control valves required for this connection was completed in August, 1950.

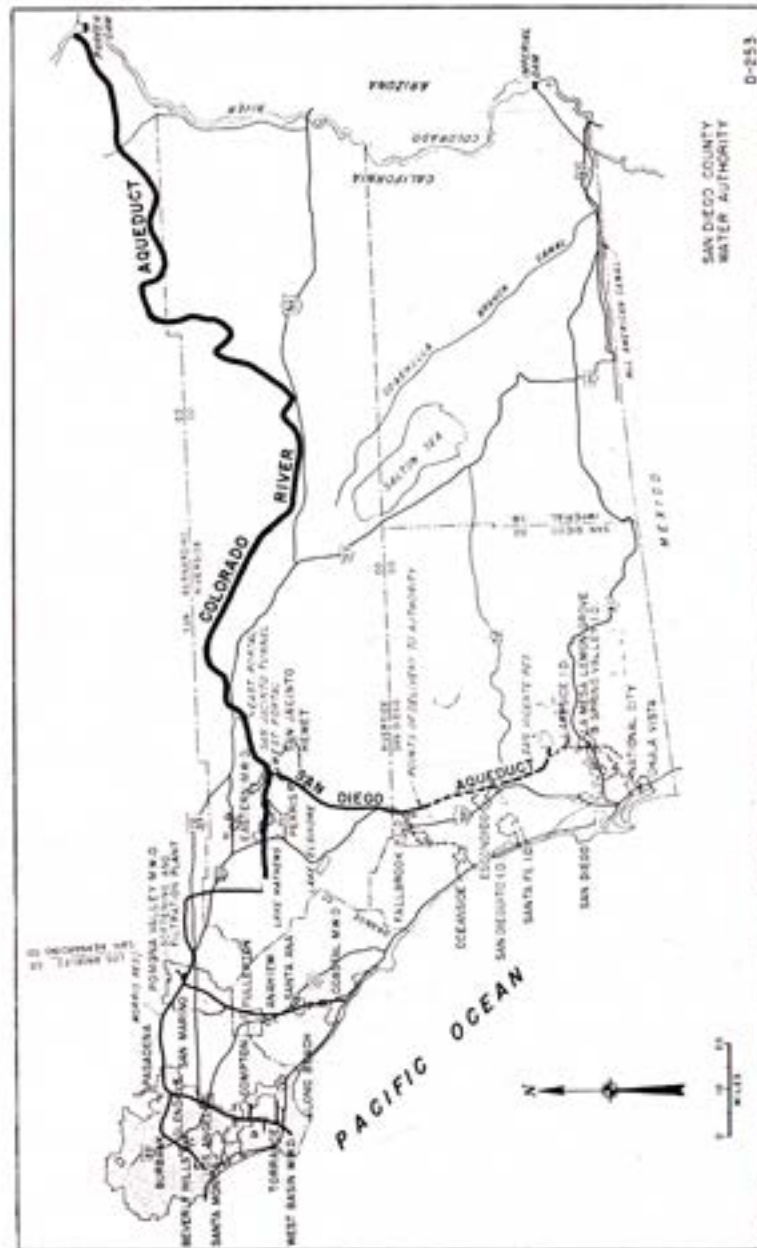


Figure 5. Colorado River Aqueduct System and Areas served by Metropolitan Water District and San Diego County Water Authority.

SECTION IV

METROPOLITAN WATER DISTRICT

DURING the year the corporate area of the Metropolitan Water District of Southern California was increased by the annexations of two municipal water districts, namely, the Pomona Valley Municipal Water District and the Eastern Municipal Water District, having a combined area of 125,606 acres. The former district, with an area of 70,566 acres, includes the incorporated cities of Claremont, La Verne and Pomona, as well as adjacent unincorporated lands. The latter district, with an area of about 55,040 acres, includes the incorporated cities of Hemet, Perris and San Jacinto, and certain unincorporated areas. At the end of the fiscal year, the District included the areas of 18 constituent municipalities, embracing a total area of 721,849 acres, or 1,127.89 square miles, which area is shown in Figure 5.

Within the District boundaries are the corporate areas of 35 cities and 15 water districts. The San Diego County Water Authority is the largest water district and is second only to Los Angeles in total assessed valuation. The detailed composition of the Metropolitan Water District is shown in Figure 6.

By the terms of the agreement under which the Authority annexed its area to the corporate area of the Metropolitan Water District, the original allocation of Colorado River water which was made to San Diego City and/or County under the Seven-Party Water Agreement of 1931 (in which the priorities of Colorado River water available for use within the State of California were fixed between the water-using agencies) was transferred to the Metropolitan Water District and merged with the District's rights. Under the Metropolitan Water District Act the Authority is now entitled to share proportionately in the total water rights of the District on the same basis as other member municipalities.

The District continues to operate the northerly one-half of the San Diego Aqueduct under the terms of the agreement with the Authority made at the time it annexed to the District. Under this agreement, the District reimburses the Authority for one-half of all payments made to the United States Government for the San Diego Aqueduct. Owner-

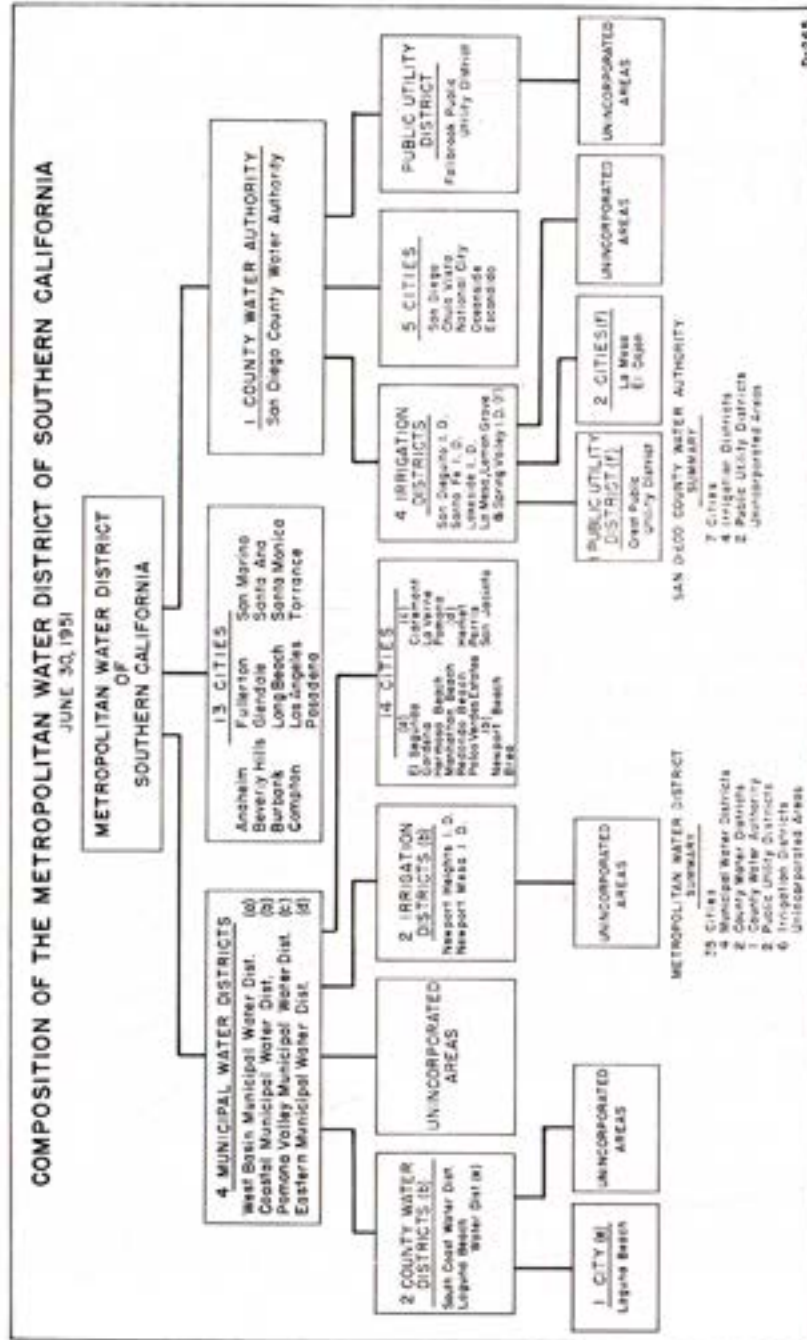


Figure 6. Composition of the Metropolitan Water District of Southern California.

ship of the Aqueduct will be transferred to the Authority when the true cost of the works is reimbursed to the United States, at which time ownership of the northerly one-half of the Aqueduct will be transferred by the Authority to the Metropolitan Water District.

The Authority has a large interest in the Metropolitan Water District and has two representatives on the District's Board of Directors. Current information and data relative to the operation of the District are briefly summarized in the following paragraphs.

TABLE 14

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

Fiscal Year	Assessed Valuations Total (1)	Tax Rate	
		Per \$100 Secured	Unsecured
1929-30	\$2,439,836,920	\$0.04	.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	1,841,248,450	.49	.42
1941-42	1,900,599,934	.48	.49
1942-43	2,001,924,735	.48	.48
1943-44	2,005,496,430	.48	.48
1944-45	2,109,192,795	.48	.48
1945-46	2,159,731,425	.50	.48
1946-47	2,413,186,570	.48	.50
1947-48	3,443,212,822 (2)	.35	.48
1948-49	3,883,081,225	.34	.35
1949-50	4,181,812,855	.34	.34
1950-51	4,281,519,725	.31	.34
1951-52	(3) 4,693,043,290	.30	.31

(1) Includes secured, unsecured, and public utility valuations.
 (2) First year in which Authority assessed valuation was included in District's assessed valuation.
 (3) Includes assessed valuation of Eastern Municipal District which annexation was completed on July 20, 1951.

TABLE 15
METROPOLITAN WATER DISTRICT SPECIAL TAX RATES
ON AUTHORITY AREAS FOR ANNEXATION CHARGES

Agency & Area	Date of Annexation	Annexation Fees		Period of Special Tax Levies		Fiscal Year 1950-51		
		Amount	Tax Levies to 6/30/50	Remaining Balance	First Year		Last Year	Tax Levy
Chula Vista								
Fallbrook Public Utility District (area as of 12-17-1946)								
Lakeside Irrigation District (area as of 12-17-1946)	12-17-46	\$13,045,000.00	\$1,327,712.26	\$11,717,287.74	1947-48	1976-77	\$423,037.86	11¢
La Mesa, Lemon Grove and Spring Valley Irrigation District (area as of 12-17-1946)								
National City								
Oceanside								
San Diego								
Escondido	10-9-50	386,000.00	0	386,000.00	1951-52	1980-81	0	0
Fallbrook Public Utility District—1950 Annexation	8-1-50	34,600.00	7,100.00	27,500.00	1951-52	1980-81	0	0
La Mesa, Lemon Grove and Spring Valley Irrigation District—Cress Public Utility District Annexation	12-13-48	10,500.00	362.97	10,137.03	1949-50	1978-79	355.92	11¢
San Diego Irrigation District	12-13-48	187,100.00	6,467.81	180,632.19	1949-50	1978-79	6,332.90	12¢
Santa Fe Irrigation District	12-13-48	167,000.00	5,729.07	161,270.93	1949-50	1978-79	5,516.77	13¢
Totals		\$15,830,200.00	\$1,547,372.11	\$12,482,827.89			\$435,263.45	

Assessed Valuation

Taxable property within the corporate area of the District increased in assessed valuation for the tenth consecutive year since 1940-41 and is now 133 per cent greater than the recorded valuation for that year. The assessed valuation is currently \$4,281,519,725, an increase of 2.4 per cent, or \$99,706,870 over the previous year. The assessed valuation of the District for each fiscal year since its incorporation in 1928 is shown in Table 14.

Tax Rates

The District's regular tax rate for the fiscal year 1950-51 on the taxable property within its corporate area was 31 cents per \$100 of assessed valuation, a drop of 3 cents from the tax rate of the previous year. The District's regular tax rate for successive fiscal years beginning with the fiscal year 1929-30, the first year a tax was levied, is also shown in Table 14.

In addition to the regular annual tax rate levied by the District against taxable property within its corporate limits, the District makes assessments against all newly annexed areas in lieu of the taxes they would have paid if they had been a member of the District from the date of its inception, plus delinquent interest charges to the date of annexation. Such assessments may be paid in cash at the time of annexation or levied as special taxes in substantially equal annual payments over a period of years. Since 1949 additional interest charges at 3 per cent have been added to the deferred payments.

All the areas within the corporate limits of the Authority are paying regular and special taxes. The annexation fees and the total amounts levied by the District against the corporate area of each member agency of the Authority to June 30, 1951, together with the tax levies and the tax rates for the fiscal year 1950-51, are shown in Table 15.

Financing

The District's long-term indebtedness decreased during the year by \$2,813,500 to a total of \$191,425,000, consisting of \$177,456,000 of outstanding Metropolitan Water District bonds, and \$13,969,000 in contractual obligations to the City of Pasadena, the Authority and the United States Government. During the year, \$3,071,000 in bonds were redeemed, making a total of \$7,228,000 in bond redemptions to June

TABLE 16

GENERAL BALANCE SHEET JUNE 30, 1951
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

ASSETS			
<i>Permanent Facilities:</i>			
Preliminary surveys, engineering and organization expense		\$ 4,631,318	
Original aqueduct construction	\$178,772,262		
Additional construction & improvements	7,199,004		
Morris Dam & appurtenant facilities	6,311,180		
San Diego Aqueduct (estimated)	7,062,500		
Parker Power Plant (estimated)	3,300,000	202,644,946	\$207,276,264
<i>Other construction costs:</i>			
By Los Angeles	\$ 1,203,778		
By Pasadena	209,738	\$ 1,413,516	
Unused power & diverted water to 7/31/41	2,790,868		
Interest on M.W.D. bonds during construction period	34,767,175	\$ 38,971,559	
Less interest received on construction funds		201,070	38,770,489
Contract obligations & commitments (in progress)			35,879
Inventories—Operation & Maintenance			295,496
<i>Cash:</i>			
On hand and on deposit	\$ 8,102,910		
Less outstanding demands	185,523		7,917,387
<i>Marketable Securities</i>			
			24,593,940
<i>Accounts Receivable:</i>			
Uncollected tax assessments			
Current year	\$ 388,385		
Prior years	425,320	\$ 811,705	
Interest accrued on government securities		42,043	
Cash with employees & others		2,425	
Uncollected water bills		339,993	
Sundry		28,267	1,224,433
<i>Accounts Receivable—Deferred</i>			
Special charges—annexation	\$ 13,502		
	22,317,330		22,330,832
TOTAL ASSETS			\$302,244,720

TABLE 16 (Continued)

GENERAL BALANCE SHEET JUNE 30, 1951
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

LIABILITIES			
<i>Long Term Indebtedness:</i>			
Outstanding M.W.D. bonds		\$177,456,000	
Contract obligations:			
City of Pasadena	\$ 4,044,000		
San Diego County Water Authority	6,625,000		
U.S. America—Parker Power House	3,300,000	13,969,000	\$191,425,000
<i>Accounts Payable:</i>			
Bond interest—coupons not presented		\$ 73,073	
Bond interest—accrued—not due		2,702,050	2,775,123
Sundry supplies & materials			97,907
Special deposits			
For services, materials, supplies	\$ 143,980		
Employees' medical fund	10,297		154,277
<i>Contract Obligations & Commitments (in progress)</i>			
			35,879
<i>Reserves for Depreciation & Replacements:</i>			
Depreciation of plant & machinery		\$ 2,664,933	
Replacement of automotive & construction equipment		59,350	
Reserve for industrial accident claims		32,626	
Reserve for fire & third party claims		58,779	2,815,688
<i>Capital Investment of Municipalities:</i>			
San Diego County Water Authority	6,414,744		
Other Municipalities	157,635,220		
Sub-Total	\$164,049,964		
Cities withdrawn & excluded	14,098	\$164,064,062	
Special charges—annexation		22,307,330	
Sub-Total		\$186,371,392	
<i>Cumulative Excess of Interest & Other Charges over Revenue:</i>			
This fiscal year	\$ 7,274,929		
Prior to this year	75,686,371	82,951,300	103,420,092
Funds collected & applied to construction	\$ 1,421,331		
Works contributed by municipalities (connections)	99,423	1,520,754	104,940,846
TOTAL LIABILITIES			\$302,244,720

30, 1951. The total interest paid on outstanding Metropolitan Water District bonds during the year was \$7,069,576.

The District's financial condition continues to improve. During the year, total cash and marketable securities increased by about \$3,411,000 to a total of \$32,311,327, in spite of the decrease in long-term indebtedness of \$2,813,500. The major part of the liquid assets are invested in United States Government Securities, of which \$16,500,000 is held in the Interest and Redemption Fund to help reduce tax levies for meeting bond service during the years of peak debt requirement. The District's general balance sheet as of June 30, 1951, is shown in Table 16.

TABLE 17
WATER SALES BY METROPOLITAN WATER DISTRICT
Fiscal Years 1941-42 to 1950-51

Year	To Member Agencies				Total to Agencies Acre feet	To Others Acre feet	Total Acre feet
	Natural Water		Softened Water				
	Acre feet	Per cent	Acre feet	Per cent			
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

Water Sales

During the fiscal year, a total of 188,131 acre-feet of water was pumped into the District's Aqueduct from the Colorado River at Lake Havasu, an increase of 6,149 acre-feet, or about 3.5 per cent over the previous year. A loss of 14,321 acre-feet, or 7.6 per cent of the water pumped, occurred in transmitting the water through the Aqueduct system from the point of diversion from Lake Havasu to the last pumping station at Hayfield. This is slightly less than the losses in the previous year. From Hayfield to the terminal reservoir, Lake

Mathews, there is very little loss of water since this section of the system consists entirely of pipes and tunnels.

The water sales to member municipalities during the fiscal year totaled 138,494 acre-feet, compared with 142,244 acre-feet during the previous year. Of this amount, 73,856 acre-feet, or about 53 per cent, was delivered to the San Diego County Water Authority.

In addition to the water sold to member municipalities, a total of 26,978 acre-feet was sold to non-member municipalities and government agencies. Of this amount, sales to the Orange County Water District accounted for 22,183 acre-feet. This water was discharged into the Santa Ana River from a blowoff in the District's upper feeder at the river crossing, and was used to recharge the underground basin.

Total quantities of natural and softened water sold annually by the District since the fiscal year 1941-42 are shown in Table 17.

Water Rates

The base rate for unsoftened water was increased from \$8.00 to \$10.00 per acre-foot on July 1, 1950. This automatically raised the rate for softened water from \$18.00 to \$20.00 per acre-foot.

Storage Facilities

The District has storage facilities at Lake Mead, Lake Havasu, and Lake Mathews. The San Diego Aqueduct takes off from the Colorado River Aqueduct above Lake Mathews and receives no benefit therefrom. A small regulating reservoir is provided on this line a short distance below its point of diversion, having a usable capacity of 1,400 acre-feet, or sufficient to permit maximum operation for about seven days. The water sold to the Authority is metered at the outlet of this reservoir.

Water Production of District Member Municipalities

The total water production of member municipalities of the District for the fiscal year 1950-51 totaled 738,023 acre-feet, including Colorado River water and water from local sources. This represents an increase of 72,451 acre-feet over the total production of the previous year, of which 49,496 acre-feet was produced by the Pomona Valley Municipal Water District, annexed to the District during the year. The water production of each member municipality, divided as to source, is shown in Table 18.

30, 1951. The total interest paid on outstanding Metropolitan Water District bonds during the year was \$7,069,576.

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Total quantities of natural and softened water sold annually by the District since the *MWD * 8 to 10* are shown in Table 17.

Water Rates

The base rate for *MWD * 8 to 10* increased from \$8.00 to \$10.00 per acre-foot. *MWD * 8 to 10* has automatically raised the rate for softened water to \$10.00 per acre-foot.

Storage Facilities

The District has *MWD * 8 to 10* the Mead, Lake Havasu, and Lake Mathews. The *MWD * 8 to 10* takes off from the Colorado River Aqueduct above *MWD * 8 to 10* and receives no benefit therefrom. A small regulating reservoir is provided on this line a short distance below its point of diversion, having a usable capacity of 1,400 acre-feet, or sufficient to permit maximum operation for about seven days. The water sold to the Authority is metered at the outlet of this reservoir.

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TABLE 18
WATER PRODUCTION—METROPOLITAN WATER DISTRICT CONSTITUENT AREAS

Constituent Area	Total Water Production			Source of Water Produced—1950-51			
	1949-50 amount ac. ft.	1950-51 amount ac. ft.	Per cent increase or decrease	M.W.D.			
				Amount ac. ft.	Per cent of total	Amount ac. ft.	Per cent of total
Anaheim	3,041	3,213	+ 5.7	2,343	72.9	870	27.1
Beverly Hills	9,481	8,844	- 6.7	555	6.3	8,289	93.7
Burbank	16,597	16,891	+ 1.8	247	1.5	16,644	98.5
Coastal Municipal Water District	7,298	7,507	+ 2.9	3,662	48.8	3,845	51.2
Compton	4,283	4,260	- .5	14	0.3	4,246	99.7
Fullerton	3,502	3,994	+ 14.1	1,921	48.1	2,073	51.9
Glendale	19,785	18,976	- 4.1	269	1.4	18,709	98.6
Long Beach	33,959	34,730	+ 2.3	12,176	35.1	22,554	64.9
Los Angeles	388,981	398,869	+ 2.5	5,617	1.4	393,252	98.6
Pasadena	24,332	24,335	0	15,098	62.0	9,237	38.0
Pomona Valley Municipal Water Dist.	—	49,496	—	3,675	7.4	45,821	92.6
San Diego County Water Authority*	90,160	96,731	+ 7.3	79,063	81.7	17,668	18.3
San Marino	3,967	4,002	+ .9	—	—	4,002	100.0
Santa Ana	6,973	7,298	+ 4.7	6,084	83.4	1,214	16.6
Santa Monica	10,651	10,983	+ 3.1	10,161	92.5	822	7.5
Torrance	3,743	5,030	+ 34.4	3,060	60.8	1,970	39.2
West Basin Municipal Water District	38,819	42,862	+ 10.4	3,445	8.0	39,417	92.0
Totals	665,572	738,023	+ 3.4	147,390	20.0	590,633	80.0

NOTE: Quantities include total water diverted into agencies' transmission and distribution systems from sources of supply.

* Water production reported by San Diego County Water Authority: Local 16,868 acre-feet, Metropolitan Water District 79,863 acre-feet—total 96,731 acre-feet. The difference between District and Authority figures for use of Colorado River water represents water in storage or loss by evaporation.

Quality of Water

Water supplied to municipalities in Los Angeles and Orange Counties is softened at the Frank E. Weymouth Memorial Treatment and Softening Plant at La Verne. Water delivered to the San Diego area is natural water diverted from the Colorado River Aqueduct before it reaches this plant.

The average monthly analyses of natural and treated water, as sampled at the Treatment Plant and analyzed at the plant laboratory, are shown in Table 19.

TABLE 19
ANALYSIS OF COLORADO RIVER WATER—
AVERAGE FOR YEAR ENDING JUNE 30, 1951
(By The Metropolitan Water District of Southern California
at La Verne Treatment Plant)

Constituent	Symbol	Colorado River Water	
		Natural	Softened
Silica	SiO ₂	8.0 p.p.m.	11.8 p.p.m.
Iron	Fe	Tr	Tr
Calcium	Ca	79	31
Magnesium	Mg	28.5	11.5
Sodium	Na	99	189
Potassium	K	4	3
Carbonate	CO ₃	4	12
Bicarbonate	HCO ₃	137	121
Sulfate	SO ₄	290	290
Chloride	Cl	79	83
Nitrate	NO ₃	0.2	0.2
Boron	B	0.1	0.1
Fluoride	F	0.4	0.4
Total dissolved solids		661	692
Hardness as CaCO ₃			
Total		315	125
Carbonate		118	119
Noncarbonate		197	6
Free carbon dioxide	CO ₂	0	0
Hydrogen ion concentration	pH	8.4	8.8
Electrical conductivity	ECX10*	1040	1105

Monthly analyses of water samples collected at the intake to the San Diego Aqueduct are also made by the District's laboratory. The average, maximum, and minimum values of the solids contained in such samples are shown in Table 20.

TABLE 20
ANALYSIS OF COLORADO RIVER AQUEDUCT WATER
TAKEN AT WEST PORTAL OF SAN JACINTO TUNNEL
For Year Ending June 30, 1951

Constituent	Symbol	Analyses		
		Average	Maximum	Minimum
Silica	SiO ₂	9.4 P.p.m.	11.1 P.p.m.	6.8 P.p.m.
Iron	Fe	0.05	0.01	0.00
Calcium	Ca	78	85	69
Magnesium	Mg	26	27	24.5
Sodium	Na	89	93	86
Potassium	K	4	4	4
Carbonate	CO ₃	2	5	0
Bicarbonate	HCO ₃	143	161	126
Sulphate	SO ₄	266	276	258
Chloride	Cl	72	76	69
Nitrate	NO ₃	0.5	1.0	0.3
Total dissolved solids		618	642	587
Hardness as CaCO ₃				
Total		302	321	273
Carbonate		121	132	103
Noncarbonate		181	191	165
Alkalinity—Phenolphthalein		2	4	0
Alkalinity—Methyl Orange		121	132	103
Free carbon dioxide		1.5	4	1
Hydrogen ion concentration	pH	8.2		7.7
Electrical conductivity	ECX10 ⁶ @ 25° C	979	1010	940

NOTE: For analyses of monthly samples, see table 11.

SECTION V LEGAL

THE legal section of the San Diego County Water Authority is directed by its General Counsel who is retained on a part-time basis. The duties of the General Counsel are to advise the Board of Directors and other officers of the Authority on legal matters; to supervise the preparation of contracts, resolutions, ordinances, tax levies, acquisition of lands and rights of way; and to perform other activities assigned by the Board of Directors. The General Counsel is responsible for the conduct of any litigation in which the Authority may be involved and the technical preparation and guidance of legislation in which the Authority is interested. The proper performance of these duties requires the attendance at all board and committee meetings and frequent conferences with members of the Authority Board and staff, as well as officials of Authority member agencies, of the Metropolitan Water District, of the Colorado River Board, and of the County of San Diego.

During the year, conferences and negotiations looking toward the completion of the San Diego Aqueduct was a major Authority undertaking. The legal problems involved therein and decisions as to methods to be followed were myriad and complex, requiring considerable study. Conferences and negotiations were held with officials of the Reclamation Bureau, the Department of Justice, the Metropolitan Water District, the United States Navy, our Congressional representatives and others. A detailed account of the steps taken and the approaches made to a solution of this problem can be only briefly summarized here.

Second Barrel Negotiations. Conferences held with Bureau of Reclamation personnel indicated that construction of the second barrel as a Bureau project would consume more time than the urgency of the situation permitted, due to the requirement of the Reclamation law that a detailed study and report be prepared and submitted to the seventeen Reclamation States for their comments before Congress would favorably consider the project. Accordingly, the General Counsel was instructed to report on the legal problems involved in financing and constructing the works under a local bond issue. Bond counsel was retained to assist in this study and the conclusion was reached that to invest bond

money in the construction of the proposed works required the elimination of the possibility of loss of the completed project through recapture by the Navy under a provision of the Lease-Purchase Agreement (Contract NOy-13300) by which the Authority is at present in possession of the half-capacity Aqueduct and rights of way therefor.

In order to eliminate this possibility, one of the following alternative procedures would be necessary:

1. Vote sufficient bonds not only to complete construction but to pay off the interest-free contract for the first barrel;
2. Build the second barrel on an entirely separate right of way, losing the advantages of the full-sized sections of the line already built and the rights of way already acquired;
3. Obtain from the United States irrevocable permission to construct the works within government-owned rights of way and to connect with existing full-size sections of the line.

Of these alternatives, the first two were discarded as being too costly and uneconomical. After exploration of the third alternative with officials of the Department of Justice and Navy Department, it was concluded that an act of Congress would be required to grant authority for such an important amendment of the Lease-Purchase Agreement.

In the meantime, identical bills prepared by the General Counsel authorizing the completion of the Aqueduct by the Navy under an amendment to the existing contract NOy-13300 had been introduced in the House of Representatives by Congressman Clinton D. McKinnon and in the Senate by Senators Wm. F. Knowland and Richard Nixon, in the belief that this proposed legislation could be successfully guided through Congress in view of the increasing amounts of water needed to supply federal establishments in the San Diego area. In the event that the proposed legislation should meet insurmountable difficulties, it was proposed to submit an amendment thereto which would permit the Navy to grant an irrevocable permit to the Authority to construct works on the government right of way as outlined in Alternate No. 3 above.

During the progress of these bills through the required legislative channels, it was necessary for the General Counsel to go to Washington, D.C., where he was successful in obtaining the approval of the Bureau of the Budget to the project as being within the President's policy, subject to the following conditions: (a) that the repayment to the

Government for the cost of works would include interest at the rate paid by the Government for long-term loans, and (b) that the water to be carried in the Aqueduct would be made available to government establishments within the Authority area at rates no higher than those charged other consumers of similar quantities. The bills were amended to provide for these requirements and it appeared at the close of the fiscal year that a successful presentation of the project to the Congressional committees might clear the way for Congressional approval before Congress adjourned.

State Legislation. In addition, bills were introduced in the legislature providing for certain changes in the organic act of the Authority, as follows: (a) automatic exclusion from the corporate area of the Authority of territory legally excluded from areas within the boundaries of member agencies, and (b) procedure to permit the treatment of territory lying within two or more member agencies of the Authority as being within that member agency for Authority purposes from which the territory was supplied with water. This legislation was passed during the session and is contained in Sections 11 and 11.1 of the County Water Authority Act. The Act, with all amendments to date, is set forth at the end of this section.

The Authority also caused to be prepared and introduced amendments to the Colorado River Board Act (Water Code Sections 12512 and 12550) which in effect substitute the Water Authority for the City of San Diego as a member of that Board. Under the provisions of the merger of the City's Colorado River rights with the Metropolitan Water District and the transfer to the Authority of the City's obligations in respect to the San Diego Aqueduct, the Authority assumed the City's financial obligations in support of the Colorado River Board. Mr. Fred W. Simpson, the City's long-time representative on the Colorado River Board, and a member of the Authority's Board of Directors, was appointed by the Authority's Board of Directors as its representative on the Colorado River Board.

Annexations. During the year, the General Counsel completed the legal formalities connected with the annexation to the Authority and the Metropolitan Water District of new areas included in the Fallbrook Public Utility District, and of the City of Escondido as a new member to the Authority. This work required the preparation of a detailed record of all proceedings taken in connection with the annexations in the form of a certificate filed with the Secretary of State. Certified copies of these certificates were then filed with the Metropolitan Water

District, San Diego County, the Fallbrook Public Utility District, and the City of Escondido. Notices of the resulting boundary changes were filed with the State Board of Equalization, the County Assessor and the County Recorders of the five counties in which a part of the Metropolitan Water District is located. Upon the legal sufficiency of these formalities depends the validity of future taxes levied by the Authority and the Metropolitan Water District and considerable time was involved in their preparation.

Numerous conferences were held and considerable legal work was done pertaining to requests for information regarding possible annexations of new territory to the corporate area of the Authority. Among the areas seeking such information are the Carlsbad area, the area served by the Escondido Mutual Water Company, the El Cajon Valley, Ramona, South Bay, San Ysidro, Vista, Lakeside, and the La Mesa, Lemon Grove and Spring Valley Irrigation Districts.

During the fiscal year, the Authority continued free of any litigation.

Other miscellaneous work performed by the General Counsel included acquisition of rights of way for access and patrol roads, the review of member agency agreements for delivery of water through the Authority's water system, preparation of contracts for construction of outlet works to supply member agencies, and the attendance of Colorado River Board meetings.

COUNTY WATER AUTHORITY ACT

An act to provide for the organization, incorporation and government of county water authorities, authorizing and empowering such authorities to acquire water and water rights, and to acquire, construct, operate and manage works and property, to incur bonded indebtedness therefor, to provide for the taxation of property therein, and the performance of certain functions relating thereto by officers of county within which any such authority may be located, to provide for addition of areas thereto, and the exclusion of areas therefrom.

[Chapter 545, Statutes of 1943, page 2090, as amended.]

The People of the State of California do enact as follows:

Section 1. This act shall be known as the County Water Authority Act.

Sec. 2. The term "public agencies," wherever appearing in this act shall be deemed to mean and include any municipal corporation of the State of California, whether organized under a freeholders' charter or under the provisions of general law, any municipal water district, any municipal utility district, any public utility district, any county water district, any irrigation district, organized under the laws of the State of California, or any other public corporation or agency of the State of California of similar character, with power to acquire and distribute water.

Sec. 3. County water authorities may be organized and incorporated hereunder by two or more public agencies in any county, which public agencies need not be contiguous, and when so incorporated, such authorities shall exercise the powers herein expressly granted, together with such implied powers as are necessary to carry out the objects and purposes of such authorities. Each such authority when so organized shall be a separate and independent political corporate entity.

Sec. 4. The procedure for organizing and incorporating a county water authority under the provisions of this act is as follows:

(1) Resolutions shall first be passed by the legislative bodies of the public agencies designated to be incorporated in the proposed authority, declaring that in their opinion public interest or necessity demands the creation and maintenance of a county water authority to be known as the "(giving the name) County Water Authority." Said resolutions shall contain a statement of the names of such public agencies as are intended to be incorporated in said authority. Certified copies of said resolutions shall be presented to the board of supervisors of the county within which said public agencies are located, requesting said board to call an election without delay for determining whether such authority shall be created.

If for any reason the legislative body of any public agency designated as intended to be incorporated fails or refuses to adopt the resolution above referred

to, then instead of said resolutions, a petition may be presented to the board of supervisors of said county on behalf of said public agency signed by qualified electors within the boundaries of any such public agency, in number to at least 10 per cent of the total vote cast at the last general State election within the territory of said public agency. Said petition shall contain substantially the same declarations and statements required to be contained in the resolutions hereinbefore mentioned. Such petition may be on separate papers but each paper shall contain the affidavit of the party who circulated it, certifying that each name signed thereto is the true signature of the person whose name it purports to be. The clerk of the board of supervisors of said county shall compare the signatures with the affidavits of registration and certify to the board of supervisors the sufficiency or insufficiency of said petition. If found and certified by said clerk as being sufficient such petition shall have all the force and effect of a resolution adopted by the legislative body of said public agency.

(2) Upon the receipt of the resolutions and petitions hereinbefore mentioned, said board of supervisors shall call an election within the territorial boundaries of the public agencies who have adopted such resolutions or on whose behalf a proper petition has been presented, for the purpose of determining whether the proposed county water authority shall be created and established.

(3) The board of supervisors of said county shall give notice of said election by publishing the same once a week for at least three weeks before the date of said election in a newspaper of general circulation, published within the proposed authority. In case no newspaper of general circulation is published within said proposed authority, said notice shall be posted for at least three weeks in not less than three public places within said proposed authority.

Said notice shall state, among other things, the name of the proposed authority and set forth the public agencies proposed to be included therein.

The ballot for said election shall contain such instructions as are required by law to be printed thereon, and in addition thereto there shall appear the following:

Shall the "(giving the name thereof) County Water Authority" be created and established:	Yes	
	No	

Said election and all matters pertaining thereto, not otherwise provided for herein, shall be held and conducted, and the results thereof ascertained, determined and declared in accordance with the general election laws of the State, as nearly as may be, and no person shall be entitled to vote at said election unless he or she be a qualified elector of one of the public agencies proposed to be incorporated in the proposed authority. Said election may be held on the same day as any other State, county or city election, and may be consolidated therewith.

The board of supervisors shall meet on Monday next succeeding the day of said election and canvass the votes cast thereat. They shall canvass the returns

of each public agency separately and shall order and declare said authority created and established consisting of the public agencies in which a majority of those who voted on the proposition voted in favor of the creation of said authority; provided, however, that the total number of electors in such approving public agencies be not less than two-thirds the number of the electors within the authority as first proposed, according to the register of voters used at said election.

The board of supervisors shall cause a certified copy of said order declaring the result of said election to be filed in the office of the Secretary of State, and with the legislative body of each of the public agencies in which said election was held. From and after the filing of said order in the office of the Secretary of State the establishment of said county water authority shall be deemed complete.

The board of supervisors calling the election shall make all provision for the holding thereof throughout the entire authority as proposed, and the cost thereof shall be a proper charge against the county. In case a special election is held exclusively on the proposition of organizing such an authority, the expenditure therefor shall be reimbursed to the county by means of a special tax on all of the taxable property within the public agencies which was proposed to be included in the authority, which tax shall be added to the next county tax bills by the proper officers of the county.

No informality in any proceeding or in the conduct of said election not substantially affecting adversely the legal rights of any citizen, shall be held to invalidate the incorporation of any county water authority, and any proceedings attacking the validity of said incorporation, shall be commenced within three months from the date of filing the aforesaid order with the Secretary of State, otherwise such incorporation and the legal existence of said county water authority shall be held to be valid and in every respect legal and incontestable.

Sec. 5. Any authority incorporated as herein provided shall have power:

- (1) To have perpetual succession.
- (2) To sue and be sued in all actions and proceedings and in all courts and tribunals of competent jurisdiction.
- (3) To adopt a corporate seal and alter it at pleasure.
- (4) To take by grant, purchase, bequest, devise or lease, and to hold, enjoy, lease, sell or otherwise dispose of, any and all real and personal property of any kind within or without the authority and within and without the State necessary or convenient to the full exercise of its powers; also to acquire, construct or operate, control and use any and all works, facilities and means necessary or convenient to the exercise of its powers, both within and without the authority, and within and without the State, and to do and perform any and all things necessary or convenient to the full exercise of the powers herein granted.
- (5) To have and exercise the power of eminent domain and in the manner provided by law for the condemnation of private property for public use, to take any property necessary to the exercise of the powers herein granted. In any proceeding relative to the exercise of such power of eminent domain, the

authority shall have the same rights, powers and privileges as a municipal corporation.

(6) To construct and maintain works and establish and maintain facilities across or along any public street or highway and in, upon or over any vacant public lands which are now, or may become the property of the State of California; provided, however, that the authority shall promptly restore any such street or highway to its former state of usefulness as nearly as may be, and shall not use the same in such manner as to completely or unnecessarily impair the usefulness thereof. The grant of the right to use such vacant State lands shall be effective upon the filing by such authority with the Division of State Lands of the Department of Finance, of an application showing the boundaries, extent and locations of the lands, rights of way, or easements desired for such purposes. If the land, rights of way or easement for which application shall be made is for the construction of any aqueduct, ditch, pipe line, conduit, tunnel or other works for the conveyance of water, or for roads, or for poles, or towers and wires for the conveyance of electrical energy or for telephonic or telegraphic communication, no compensation shall be charged the authority therefor, unless in the opinion of the Chief of such Division of State Lands the construction of such works will render the remainder of the legal subdivision through which such works are to be constructed valueless or unsalable, in which event the authority shall pay for the lands to be taken and for such portion of any legal subdivision which, in the opinion of said Chief of the Division of State Lands, are rendered valueless or unsalable. If the lands for which application is made are for purposes other than the construction of roads or for works for the conveyance of water, or electricity or telephonic or telegraphic communication, such authority shall pay to the State for such lands at a reasonable amount determined by the Division of State Lands. Upon filing such application, accompanied by map or plat showing the location or proposed location of such works and/or facilities, the fee title to so much of such State lands as shall be found by the Chief of the Division of State Lands of the Department of Finance to be necessary or convenient to enable such authority to construct or maintain its works and/or to establish or maintain its facilities, shall be conveyed to such authority by patent executed by the Governor of the State of California, attested by the Secretary of State with the Great Seal of said State affixed, and countersigned by the registrar of State lands; if an easement or right of way only over such lands be sought by such authority, such easement or right of way shall be evidenced by permit or grant executed by such Chief of the Division of State Lands. The Chief of the Division of State Lands may reserve in such patents, grants or permits, easements and rights of way across any lands therein described for the construction of streets, roads and highways. Before any such patent, grant or permit shall be executed any compensation due to the State under the provisions hereof, must be paid. In the event that the duties or titles of any of the officers herein mentioned shall be changed by lawful authority, the functions herein required to be performed shall be performed by the appropriate officer or officers of the State of California. No fee shall be exacted from such authority for any patent, permit or grant so issued or for any service rendered hereunder. In the use of streets or highways the authority shall be subject to the reasonable rules and regulations of the governmental agency in charge thereof, concerning excavations and the refilling of excavations, the relaying

of pavements and the protection of the public during periods of construction; provided, that the authority shall not be required to pay any license or permit fees, or file any bonds. The authority may be required to pay reasonable inspection fees.

(7) To borrow money and incur indebtedness and to issue bonds or other evidence of such indebtedness; provided, however, that no authority incorporated hereunder shall incur indebtedness which, in the aggregate, shall exceed fifteen (15) per cent of the taxable property of the authority as shown by the last equalized assessment roll of the county in which the authority is located.

(8) To levy and collect taxes for the purpose of carrying on the operations and paying the obligations of the authority; provided, however, that such taxes levied under this section exclusive of any tax levied to meet the bonded indebtedness of such authority and the interest thereon and exclusive of any tax levied to meet any obligation to the United States of America or to any board, department or agency thereof, shall not exceed five cents (\$0.05) on each such one hundred dollars (\$100) of assessed valuation.

(9) To enter into contracts, employ and retain personal services and employ laborers; to create, establish and maintain such offices and positions as shall be necessary and convenient for the transaction of the business of the authority, and to elect, appoint and employ such officers, attorneys, agents and employees therefor as shall be found by the board of directors to be necessary and convenient for the transaction of the business of the authority.

(10) To join with one or more other public corporations for the purpose of carrying out any of its powers, and for that purpose to contract with such other public corporation or corporations for the purpose of financing such acquisitions, constructions and operations. Such contracts may provide for contributions to be made by each party thereto and for the division and apportionment of the expenses of such acquisitions and operations, and the division and apportionment of the benefits, the services and products therefrom. Such contracts may contain such other and further covenants and agreements as may be necessary and convenient to accomplish the purposes hereof. The term "public corporation" as used in this subdivision shall be deemed to mean and include the United States or any public agency thereof or this or any other State or any political district, subdivision or public agency thereof.

(11) To acquire water and water rights within or without the State but not within the county in which the authority is organized and/or located; to develop, store and transport such water; to provide, sell and deliver water at wholesale for municipal, domestic and other beneficial uses and purposes; provided, each public agency, the area of which shall be a part of any authority incorporated hereunder, shall have a preferential right to purchase from the authority for distribution by such public agency, or any public utility therein empowered by said public agency for the purpose, for domestic, municipal and other beneficial uses within such public agency, a portion of the water served by the authority which shall, from time to time, bear the same ratio to all of the water supply of the authority as the total accumulation of amounts paid by such public agency to the authority on tax assessments and otherwise, excepting purchase of water, toward the capital cost and operating expense of the au-

thority's works shall bear to the total payments received by the authority on account of tax assessments and otherwise, excepting purchase of water, toward such capital cost and operating expense; also to provide, sell and deliver surplus water of the authority not needed or required for beneficial purposes by the public agencies, the corporate area of which is included in such authority, but giving preference to uses within the authority; provided, that the supplying of such surplus water shall, in every case, be subject to the paramount right of the authority to discontinue the same, in whole or in part, and to take and hold, or to provide, sell and deliver, such water for domestic, municipal or other beneficial uses within the authority upon one year's written notice to the purchaser or user of such surplus water, such notice to be given by the board of directors of the authority whenever it shall be determined and declared by resolution adopted by said board of directors by a two-thirds vote thereof that such water is needed or required by any public agency, the corporate area of which is included within said authority, for domestic, municipal or other beneficial uses therein; to fix the rates therefor, and to acquire, construct, operate and maintain any and all works facilities, improvements and property necessary or convenient therefor.

(12) To cooperate and contract with United States under the Federal Reclamation Act of June 17, 1902, and all acts amendatory thereof or supplementary thereto, or any other act of Congress heretofore or hereafter enacted authorizing or permitting such cooperation, for the purposes of construction of works, necessary or proper for carrying out the purposes of said authority, or for the acquisition, purchase, extension, operation or maintenance of constructed works, or for a water supply, or for the assumption as principal or guarantor of indebtedness to the United States; also to borrow or procure money from the United States, or any agency thereof for the purpose of financing any of the operations of the authority.

Sec. 5½. Any authority incorporated as herein provided shall also have power to invest any surplus money in the authority treasury, including such money in any sinking fund established for the purpose of providing for the payment of the principal or interest of any bonded or other indebtedness or for any other purpose, not required for the immediate necessities of the authority, in its own bonds, or in treasury notes, or bonds, of the United States, or of this State, and such investment may be made by direct purchase of any issue of such bonds or treasury notes, or part thereof, at the original sale of the same, or by the subsequent purchase of such bonds or treasury notes. Any bonds or treasury notes thus purchased and held may, from time to time, be sold and the proceeds reinvested in bonds or treasury notes, as above provided. Sales of any bonds or treasury notes thus purchased and held shall, from time to time, be made in season so that the proceeds may be applied to the purposes for which the money, with which the bonds or treasury notes were originally purchased, was placed in the treasury of the authority. The functions and duties authorized by this paragraph shall be performed by joint action of the Controller and Treasurer, with the approval of the attorney, under such rules and regulations as shall be prescribed by the board of directors of the authority.

Sec. 6 All powers, privileges and duties vested in or imposed upon any authority incorporated hereunder shall be exercised and performed by and

through a board of directors; provided, however, that the exercise of any and all executive, administrative and ministerial powers may be by said board of directors delegated and redelegated to any of the offices created hereby or by the board of directors acting hereunder.

The board of directors herein referred to shall consist of at least one representative from each public agency, the area of which shall lie within the authority. Such representatives shall be designated and appointed by the chief executive officers of said public agencies, respectively, with the consent and approval of the legislative bodies of the said public agencies, respectively.

Members of the board of directors shall hold office for a term of six years, and until their successors are appointed and qualified, provided, that the terms of the members of the first board shall be determined by lot so that the terms of not less than one-half of the members shall be for three years and the terms of the remainder shall be six years; provided further, that every member shall be subject to recall by the voters of the public agency from which such member is appointed, in accordance with the recall provisions of the freeholders' charter or other law applicable to such public agency; and provided further, that any member may be recalled by the unanimous vote of the governing body of the public agency from which such member is appointed.

As a member of the board of directors, each representative shall be entitled to vote on all questions, orders, resolutions and ordinances coming before the board and shall be entitled to cast one vote for each five million dollars (\$5,000,000), or major fractional part thereof, of assessed valuation of property taxable for authority purposes in the public agency represented by him as shown by the last equalized assessment roll of the county and evidenced by the certificate of the county auditor; provided, that each representative shall have at least one vote and no public agency shall have votes exceeding in number the total number of votes of all the other public agencies whose corporate areas are included in such authority. In lieu of one representative, any public agency may at its option designate and appoint several representatives not exceeding one additional representative for each fifty million dollars (\$50,000,000) of assessed valuation, but such representatives shall cast the vote to which such public agency would otherwise be entitled as a unit and as a majority of such representatives present shall determine. The affirmative votes of members representing more than fifty (50) per cent of the total number of votes of all the members shall be necessary, and, except as otherwise herein provided, shall be sufficient to carry any order, resolution or ordinance coming before the board of directors; provided, however, any meeting may be adjourned or recessed from day to day or from time to time, by vote of the director or directors present, irrespective of the number of directors present or the number of votes represented at such meeting. For the purposes of this section, the term "major fractional part" shall be deemed to mean a fractional part larger than one-half.

Members of the first board of directors so constituted shall convene at the call of the clerk of the board of supervisors in the meeting room of the board of supervisors at the county seat of said county, and immediately upon convening, such board of directors shall elect from its membership a chairman, a vice chairman, and a secretary, who shall serve for a period of two years, or until their respective successors shall be elected and qualified.

Sec. 7 (a) Whenever the board of directors of any authority incorporated under this act shall, by ordinance adopted by a vote of a majority of the aggregate number of votes of all the members of the board of directors, determine that the interests of said authority and the public interest or necessity demand the acquisition, construction or completion of any public improvement or works, necessary or convenient to carry out the objects or purposes of said authority the cost of which will be too great to be paid out of the ordinary annual income and revenue of the authority, said board of directors may order the submission of the proposition of incurring bonded indebtedness, for the purposes set forth in the said ordinance, to the qualified voters of such district, at an election held for that purpose. Any election held for the purpose of submitting any proposition or propositions of incurring such bonded indebtedness may be held separately, or may be consolidated or held concurrently with any other election authorized by law at which the qualified electors of the authority are entitled to vote. The declaration of public interest or necessity herein required and the provision for the holding of such election may be included within one and the same ordinance, which ordinance, in addition to such declaration of public interest or necessity, shall recite the objects and purposes for which the indebtedness is proposed to be incurred, the estimated cost of the public works or improvements, the amount of the principal of the indebtedness to be incurred therefor and the maximum rate of interest to be paid on such indebtedness, which rate shall not exceed six (6) per cent per annum, payable semiannually. Such ordinance shall also fix the date upon which such election shall be held and the manner of holding the same and the method of voting for or against incurring the proposed indebtedness. Such ordinance shall also fix the compensation to be paid the officers of the election and shall designate the precincts and polling places and shall appoint the officers of such election, which officers shall consist of one inspector, one judge and two clerks in each precinct. The description of precincts may be made by reference to any order or orders of the board of supervisors of the county in which the authority is situated, or by reference to any previous order or ordinance of the legislative body of any public agency, or by detailed description of such precincts. Precincts established by the board of supervisors of the county, to a number not exceeding six (6) may be consolidated for special elections held hereunder. In the event any bond election shall be called to be held concurrently with any other election or shall be consolidated therewith, the ordinance calling the election hereunder need not designate precincts or polling places or the names of officers of election, but shall contain reference to the act or order calling such other election and fixing the precincts and polling places and appointing election officers therefor.

(b) The ordinance provided for in subdivision (a) of this section shall be published once, at least ten (10) days before the date of the election therein called, in a newspaper of general circulation printed and published within the authority, and no other or further notice of such election or publication of the names of election officers or of the precincts or polling places need be given or made.

(c) The respective election boards shall conduct the election in their respective precincts in the manner prescribed by law for the holding of general elec-

tions, and shall make their returns to the secretary of the authority. At any regular or special meeting of the board of directors held not earlier than five (5) days following the date of such election, the returns thereof shall be canvassed and the results thereof declared. In the event that any election held hereunder shall be consolidated with any primary or general election and the proposition to incur indebtedness shall be printed upon a ballot containing other propositions, the returns of the election held hereunder shall be made with the returns of the primary or general election to the board of supervisors or other bodies whose duty it shall be to canvass the returns thereof, and the results of the election held hereunder shall be canvassed at the time and in the manner provided by law for the canvass of the returns of such primary or general election. It shall be the duty of such canvassing body to promptly certify and transmit to the board of directors of the authority a statement of the result of the vote upon the proposition submitted hereunder. Upon receipt of such certificates, it shall be the duty of the board of directors to tabulate and declare the results of the election held hereunder.

(d) In the event that it shall appear from said returns that a two-thirds majority of the electors voting on any proposition submitted hereunder at such election voted in favor of such proposition, the authority shall thereupon be authorized to issue and sell bonds of the authority in the amount and for the purpose or purposes and object or objects provided for in such proposition in such ordinance, and at a rate of interest not exceeding the rate recited in said ordinance.

(e) The board of directors shall prescribe the form of the bonds issued by the authority and of the interest coupons to be attached thereto. Such bonds shall mature serially at times and in amounts to be fixed by the board of directors; provided, that the payment of said bonds shall begin not later than 10 years from the date thereof and be completed in not more than 50 years from said date. The bonds shall be issued in such denominations as the board of directors may determine, except that no bonds shall be of less denomination than one hundred dollars (\$100), nor of a greater denomination than fifty thousand dollars (\$50,000), and shall be payable on the day and at the place or places fixed in such bonds and with interest at the rate specified therein, which rate shall not be in excess of six per cent (6%) per annum, and shall be payable semiannually.

The board of directors may provide for the call and redemption of any or all of said bonds on any interest payment date prior to their fixed maturity at not exceeding the par value thereof and accrued interest plus a premium of not exceeding 5 per cent upon the principal amount of said bonds in which event a statement to that effect shall be set forth in the ordinance calling the election and the call price fixed by the board of directors shall be set forth on the face of the bond. Notice of such redemption shall be published once a week for three successive weeks in a newspaper of general circulation printed and published within the authority or if there be no such newspaper printed and published within the authority then the publication shall be made in a newspaper of general circulation printed and published within the county in which the said authority is situated, the first publication of which shall be at

least 30 days prior to the date fixed for such redemption. After the date fixed for such redemption, interest on said bonds thereafter shall cease.

Such bonds shall be signed by the chairman of said board of directors, or by such other officers as said board of directors shall, by resolution adopted by a majority vote of its members, authorize and designate for that purpose, and such bonds shall also be signed by the controller, or assistant controller, and countersigned by the secretary of said board of directors. The coupons of said bonds shall be numbered consecutively, and signed by said controller, or assistant controller by his lithographed or engraved signature. All such signatures and countersignatures excepting that of the controller, or assistant controller, on said bonds, may be printed, lithographed or engraved.

(f) In case of any of such officers, whose signatures or countersignatures appear on the bonds or coupons, shall cease to be such officer before the delivery of such bonds to the purchaser, such signatures or countersignatures shall nevertheless be valid and sufficient for all purposes, the same as if they had remained in office until the delivery of such bonds.

(g) Such bonds shall not be sold at a price less than the par value thereof, together with accrued interest to the date of delivery, nor until notice calling for bids therefor shall have been published in a newspaper of general circulation published and circulated in the county wherein the principal place of business of said authority shall be located. Said notice, calling for bids, shall state the time for the receipt of such bids, which shall not be less than twenty (20) days after the first publication thereof. Such notice may offer the bonds at a fixed interest rate or with the interest rate undetermined, in which event the bids shall contain a statement of the lowest rate of interest at which the bidder will take the bonds and pay par value or more therefor, together with accrued interest. Bids for such bonds shall be opened publicly and the results thereof publicly announced. Such bonds shall be sold to the highest bidder. "Highest bidder," as used in this subsection, shall mean the one which gives the authority the lowest net cost. Temporary, or interim, bonds or certificates, of any denomination whatsoever, to be signed by the controller or assistant controller, may be issued until the definitive bonds are executed and available for delivery.

(h) Such bonds may be issued and sold by said board of directors as they shall determine, and the proceeds thereof, excepting premium and accrued interest, shall be placed in the treasury of said authority to the credit of the proper improvement fund, and shall be applied exclusively to the purposes and objects mentioned in said ordinance; provided, that the interest on said bonds accruing during the construction period and for one year thereafter shall be deemed to be a construction cost within the meaning of the purposes and objects mentioned in said ordinance, and such interest may be paid from said proceeds of the sales of such bonds. Premium and accrued interest shall be placed in the fund to be applied to the payment of interest on, and the retirement of, the bonds so sold. For the purposes of this section, the construction period shall be deemed to end when the works, the construction of which shall have been authorized from the proceeds of any such bond issue, shall have been placed in operation to such extent as to result in the sale and delivery in the authority, of water transported and provided by means of such works.

(i) The board of directors may within ninety (90) days from the date

of the election authorizing the issuance of bonds, cause to be brought in the name of the authority an action in the superior court of the county in which said authority is located, to determine the validity of any such bonds and the sufficiency of the provisions for the collection of an annual tax sufficient to pay the interest on such indebtedness as it falls due and to constitute a sinking fund for the payment of the principal thereof on or before maturity. Such action shall be in the nature of a proceeding in rem, and jurisdiction of all parties interested may be had by publication of summons for at least once a week for three (3) weeks in some newspaper of general circulation published in the county where the action is pending, such newspaper to be designated by the court having jurisdiction of the proceedings. Jurisdiction shall be complete within ten (10) days after the full publication of such summons in the manner herein provided. Anyone interested may at any time before the expiration of said ten (10) days appear and by proper proceedings contest the validity of such bonds and the sufficiency of the provision for the collection of an annual tax sufficient to pay the interest on such indebtedness as it falls due and to constitute a sinking fund for the payment of the principal thereof on or before maturity. Such action shall be speedily tried and judgment rendered declaring such bonds to be valid or invalid, and declaring the provision for the collection of an annual tax for said purposes, to be sufficient or insufficient. Either party may have the right to appeal to the Supreme Court at any time within thirty (30) days after the rendition of such judgment, which appeal must be heard and determined within three months from the time of taking such appeal. After the expiration of ninety (90) days from the date of the election authorizing the issuance of bonds, no action may be brought to contest or question the validity of said bonds and proceedings in relation thereto or the sufficiency of the provision for the collection of an annual tax sufficient to pay the interest on such indebtedness as it falls due and to constitute a sinking fund for the payment of the principal thereof on or before maturity. If there be more than one action or proceeding involving the validity of any of such bonds, or the sufficiency of the provision for the collection of an annual tax sufficient for the said purposes, they shall be consolidated and tried together. The court hearing any proceeding or action inquiring into the regularity, legality or correctness of the proceedings leading up to the issuance of bonds or the validity of such bonds or the sufficiency of such provision for the collection of an annual tax must disregard any error, irregularity or omission which does not affect the substantial rights of the parties to said action or proceeding. The rules of pleading and practice provided by the Code of Civil Procedure, which are not inconsistent with the provisions of this act, are applicable to all actions or proceedings herein provided for. The motion for a new trial of any such action or proceeding must be heard and determined within ten (10) days from the filing of the notice of intention. The costs on any proceeding or action herein provided for may be allowed and apportioned between the parties or taxed to the losing party, in the discretion of the court.

(j) The board of directors, so far as practicable, shall fix such rate or rates for water as will result in revenue which will pay the operating expenses of the authority, provide for repairs and maintenance, and provide for the payment of the interest and principal of the bonded debt. If, however, from any cause, the revenues of the authority shall be inadequate to pay the interest or

principal of any bonded debt as the same becomes due, the board of directors shall, at the time of fixing the tax levy and in the manner for such tax levy provided, levy and collect annually until said bonds are paid or until there shall be a sum in the treasury of the authority set apart for that purpose sufficient to meet all sums coming due for principal and interest on such bonds, a tax sufficient to pay the annual interest on such bonds, or such part thereof as shall not be met from revenues of the authority, and also sufficient to pay such part of the principal of such bonds as shall become due before the time when money will be available from the next general tax levy, or such portion thereof as shall not be met from revenues of the authority; provided, however, that if the maturity of the indebtedness created by the issue of bonds be made to begin more than one year after the date of the issuance of such bonds, such tax shall be levied and collected at the time and in the manner aforesaid annually sufficient when added to revenues of the authority available for that purpose to pay the interest on such indebtedness as it falls due and also to constitute, together with the revenues of the authority available for such purpose, a sinking fund for the payment of the principal of such bonds on or before maturity. The taxes herein required to be levied and collected shall be in addition to all other taxes levied for authority purposes and shall be collected at the time and in the same manner as other authority taxes are collected and shall be used for no purpose other than the payment of such bonds and accruing interest.

(k) Coupon bonds issued hereunder, at the request of the holder, may be registered as to principal and interest in the holder's name on the books of the treasurer of the district, and the coupons surrendered and the principal and interest made payable only to the registered holder of the bond. For that purpose the treasurer of the authority shall detach and cancel the coupons, and shall endorse a statement on the bonds that the coupon sheet issued therewith has been surrendered by the holder, and the coupons canceled by such treasurer, and that the principal and the semiannual interest are thereafter to be paid to the registered holder, or order, by draft, check or warrant drawn payable at a place of payment specified in the bond, after which no transfer shall be valid unless made on such treasurer's books by the registered holder, or by his attorney duly authorized, and similarly noted on the bond. After such registration, the principal and interest of such bond shall be payable only to the registered owner. Bonds registered under this paragraph may, with the consent of the authority and the holders of the bonds, be reconverted into coupon bonds at the expense of the holder thereof, and again reconverted into registered bonds from time to time, as the board of directors of the authority and the holders of the bonds may determine. In converting coupon bonds into registered bonds, coupon bonds may be exchanged for registered bonds of one hundred dollars (\$100) each, or multiples thereof, but not exceeding fifty thousand dollars (\$50,000) each, in which event new registered bonds shall be issued at the expense of the holder. Coupon bonds may be exchanged for other coupon bonds of one hundred dollars (\$100) each, or multiples thereof, but not exceeding fifty thousand dollars (\$50,000) each, in which event new coupon bonds shall be issued at the expense of the holder.

For each conversion or reconversion of a coupon or registered bond, the treasurer of the authority shall be entitled to charge and collect such fee as the board of directors of the authority may prescribe from time to time.

(1) All bonds heretofore or hereafter issued by any county water authority shall be legal investments for all trust funds, and for the funds of all insurance companies, banks, both commercial and savings and trust companies, and for the State school funds, and for all sinking funds under the control of the State Treasurer, and whenever any moneys or funds may by law now or hereafter enacted be invested in, or loaned upon the security of, bonds of cities, cities and counties, counties, or school districts in the State of California, such moneys or funds may be invested in, or loaned upon the security of, the bonds of such county water authority; and whenever bonds of cities, cities and counties, counties or school districts, by any law now or hereafter enacted, may be used as security for the faithful performance or execution of any court or private trust or of any other act, bonds of such county water authority may be so used.

Sec. 8. Any proposal to incur an indebtedness in excess of one million dollars (\$1,000,000), by contract other than by voting bonds, or expenditure of bond proceeds, for the acquisition, construction or completion of any public improvements or works or for the repayment of the costs thereof, and any proposal to purchase, lease, or otherwise acquire, rights, privileges or services by contract, the compensation for which shall be payable over a period of time exceeding five years, shall be submitted to the qualified electors of the authority for their approval and shall be voted upon at an election wherein proceedings shall be had, insofar as applicable, in the manner provided in this act for the authorization and issuance of the bonds of the authority, except that the vote of a majority of the electors voting upon the proposition shall be sufficient to authorize the incurring of such indebtedness. Notice of the election herein provided for shall contain in addition to the information required in the case of bond elections, a statement of the maximum amount of money to be paid under said contract, exclusive of penalties and interest, and for what purposes it is to be expended and the property, improvements, works, rights, privileges or services to be acquired thereby. The ballots at such election shall contain a brief statement of the general purposes of said contract and the amount of the obligation to be assumed as aforesaid, with the words "Contract—Yes" and "Contract—No." The board of directors may submit such contract or proposed contract to the superior court of the country wherein the authority is located to determine the validity thereof and the legal authority of the board to enter into such contract, whereupon the same proceedings shall be held as are herein provided in the case of the judicial determination of the validity of bonds issued pursuant to this act, and with like effect.

Sec. 9. (a) Immediately after equalization and not later than the fifteenth day of August of each year, it shall be the duty of the auditor of the county wherein such authority shall lie, to prepare and deliver to the controller of the authority a certificate showing the assessed valuation of all property within the authority, and also such assessed valuation segregated according to public agencies, the areas of which lie within the authority.

(b) On or before the twentieth day of August the board of directors of the authority shall by resolution determine the amount of money necessary to be raised by taxation during the fiscal year beginning the first day of July next preceding and shall fix the rate of taxation of the authority, designating the

number of cents upon each one hundred dollars (\$100) assessed valuation of taxable property and shall levy a tax accordingly:

(1) Sufficient, when taken with other revenues available for the purpose, to meet interest and sinking fund requirements on all outstanding bonded indebtedness of said authority; and sufficient, when taken with other revenues available for the purpose, to meet the payment of the principal and interest on any refunding bonds, or any bonds the issuance of which may have been authorized by the electors and which bonds have not been sold but which, in the judgment of the board of directors, will be sold prior to the time when money will be available from the next subsequent tax levy, and in case such bonds are not so issued and sold or such tax for any other reason is not required for said purpose, the tax so levied shall be applied to the payment of interest and/or principal on any refunding bonds, or on any bonds authorized by the electors, then outstanding or subsequently issued and/or sold; and

(2) For all other authority purposes.

(c) The board of directors shall also cause to be computed and shall declare in said resolution the amount of money to be derived from the area of the authority lying within each separate public agency by virtue of the tax levy. In such resolution the board shall also fix and determine the times and proportional amounts of installments in which any public agency may elect to make payment in lieu of taxes as hereinafter provided. The board shall immediately cause certified copies of such resolution to be transmitted to the presiding officer of the governing body of each such public agency.

(d) On or before the twenty-fifth day of August of each year the governing body of each such public agency may elect to pay out of its funds available for that purpose all or any portion of the amount of tax which would otherwise be levied upon property within such public agency. Such election shall be made by order upon motion, which order shall recite that such payment shall be made in cash concurrently with the certification of such order to the controller of the authority, or that such payment shall be made in installments and the times wherein such installments shall be payable and the amounts thereof, which amounts shall be in accordance with the requirements of the board of directors of the authority as approved by resolution. In the event that any public agency shall elect to pay in cash, or by deferred installments, money or any part thereof which would otherwise be levied upon property within the public agency, it shall immediately certify to the controller of the authority a copy of such order and a statement showing its financial condition, the funds from which such payments shall be made and the sources of revenue to be used therefor; provided, however, that in the event any public agency shall elect to pay in cash all or any portion of the amount of tax which would otherwise be levied upon property within such public agency to meet interest and sinking fund requirements on the outstanding bonded indebtedness of said authority, such amount so elected to be paid shall be deposited with the treasurer of said authority on or before the twenty-seventh day of August next following such election; and provided, also, that unless such payment is so made in the case of interest and sinking fund requirements, and unless such election, as to all other taxes, shall provide for payments in accordance with

the resolution of the board of directors as hereinbefore provided for, then such election shall be ineffective for any purpose.

(e) Before the first day of September the controller of the authority shall cause to be prepared and transmitted to the auditor of the county in which the authority shall lie, a statement showing the tax rate to be applied to assessed property in each public agency, which rate shall be the rate fixed by resolution of the board of directors modified to the extent necessary to produce from each public agency only the amount of money apportioned thereto in said resolution, less any amount paid or undertaken to be paid by such public agency, or credited thereto as herein provided, but if any fraction of a cent occur, it must be taken as a full cent on each one hundred dollars (\$100).

(f) Upon receipt by the auditor of the county in which such authority shall lie, of a certified copy of the controller's statement showing the tax rate to be applied to assessed property in each public agency, and showing the public agencies, the assessed property in which is exempt therefrom, if any, it shall be the duty of the county officers to collect taxes for the benefit of the authority at the rate specified as herein provided. The taxes so levied shall be computed and collected at the same time and in the same manner required by law for the assessment, computation and collection of taxes for county purposes, and the property subject to such tax shall be subject to the same penalties for delinquency, and the same provisions of law relating to the sale of property for non-payment of county taxes and redemption thereof shall apply to the tax herein authorized. When so collected, such taxes shall be paid over to the treasurer of the authority, subject to the deduction herein authorized.

In consideration of services rendered hereunder, any county shall annually be entitled to deduct and retain for its own use and benefit an amount not exceeding 1 per cent on the first twenty-five thousand dollars (\$25,000) collected hereunder, and one-fourth of 1 per cent of any amount in excess of twenty-five thousand dollars (\$25,000) collected hereunder. The board of supervisors of each such county may provide such extra help as in their judgment may be necessary for the proper performance of duties hereunder.

(g) Whenever any real property situated in any authority organized hereunder and upon which a tax shall have been levied, as herein provided, shall be sold for taxes and shall be redeemed, the money paid for such redemption, except advertising costs, shall be apportioned and paid in part to such authority in the proportion which the tax due to such authority shall bear to the total tax for which such property shall have been sold. All taxes levied together with penalties, interests and costs under the provisions of this act shall be a lien upon the property upon which levied, and the enforcement of the collection of such tax shall be had in the same manner and by the same means as is or shall be provided by law for the enforcement of liens for county taxes, and all of the provisions of law relating to the enforcement of such taxes are hereby made a part of this act so far as applicable.

(h) Public agencies, the areas of which are included within any county water authority incorporated hereunder, are hereby authorized to pay to any such authority, out of funds derived from the sale of water or other funds not appropriated to some other use, such amounts as may be determined upon by

the governing bodies thereof, respectively, such payments may be made in avoidance of taxes as herein provided, or otherwise, and are hereby declared to be for a public purpose and shall not be deemed gratuitous or in the nature of gifts, but shall be deemed payments for water or services in connection with the distribution of water. Any public agency making any such payment to any authority incorporated hereunder, whether in avoidance of taxes or otherwise, shall receive credit therefor and the amount of the payment so made by any public agency shall be deducted from the amount of taxes which would otherwise be levied against property lying therein as herein provided. In the event that payment so made by any public agency shall exceed the amount of taxes which would otherwise have been levied against property within such public agency, the amount of such excess without interest shall be carried over and applied in reduction of taxes levied, or which would otherwise have been levied during the ensuing year or years.

Any public agency, including a county, which shall have incurred expenses in negotiating contracts or in the investigation of or preliminary work upon any works or projects or in making payments on account of any such contracts, works or projects, taken over by the authority, may receive, and the authority so taking over any such contracts, works or projects may make to such public agency, reimbursement for all such sums so expended, or to be expended, for expenses incurred in such negotiations for, investigation of, preliminary work upon, or payments made on account of the contracts, works or projects so taken over by the authority, to the extent that the board of directors of the authority shall find that such expenditures have benefited such authority, it being the intention of this provision to permit the authority to purchase, and the public agency to sell, assign and transfer such contracts, works or projects taken over by such authority. The sum so to be paid by such authority to such public agency shall be such amount as may be mutually agreed upon.

As an alternative to the purchase and sale of any contracts, works or projects taken over by the authority, as hereinabove provided, any public agency which shall have incurred expenses in negotiating contracts or in the investigation of or preliminary work upon any such works or projects or in making payments on account of any such contracts, works or projects taken over by the authority, may certify the amount thereof, without interest, to the board of directors of said authority at any time within four (4) years from the date of the incorporation of such authority, or the incurring of such expenses, if such authority be already incorporated, and if allowed by the board of directors, such amount shall be credited to the public agency which incurred the same, and such expenditures shall be considered as a payment of money made as herein provided for which deduction shall be made from the amount of taxes which would otherwise be levied against property lying within such public agency.

Any public agency which shall incur expenses in preliminary work in preparing for the incorporation of or in the incorporation of any authority hereunder likewise may certify the amount thereof, without interest, to the board of directors of said authority at any time within four (4) years from the date of the incorporation of such authority, and if allowed by the board of directors, such amount shall be credited to the public agency incurring the same, and shall be considered as a payment of money made as herein provided, for which deduc-

tion shall be made from the amount of taxes which would otherwise be levied against property lying within such public agency.

No such payments of money made in lieu of taxes or otherwise, or such credit allowed by such board of directors, as hereinabove provided, shall apply to reduce the amount of taxes which would otherwise be levied against the property within such public agencies respectively, to meet interest and sinking fund requirements on outstanding bonded indebtedness of such authority.

Such certification and allowance shall be made on or before the first Monday in July, and the amount of money to be raised by taxation shall be computed with reference to the credit to be allowed as herein provided, but such credit may, in the discretion of the board of directors, be considered in connection with the amount of money to be raised by the next tax levy, or may be spread over subsequent years, not to exceed five.

(i) If any public agency shall fail to comply with the terms of the order relating to payments to be made to the authority in lieu of taxation, or if any public agency annexed to the authority shall fail to comply with the terms and conditions fixed by the board of directors and upon which such annexation occurred, the amount of the delinquency, plus a penalty of 8 per cent shall be added to the taxes to be collected during the ensuing fiscal year, from the property within such delinquent public agency, and thereafter for a period of two (2) years no order or ordinance shall be sufficient to exempt the property in said public agency from taxation hereunder unless it be accompanied by payment in cash of the amount which would otherwise be collected from owners of property within the public agency, together with all moneys due but unpaid under any previous order, or annexation provision.

(j) All provisions herein, or in any ordinance adopted pursuant hereto, relating to the respective times when the various acts pertaining to the levy of taxes are to be performed, are directory only, and failure to perform any such act or acts within the time so specified shall not impair the legal authority herein conferred to perform all subsequent acts relating to the levy of such taxes. In the event that any of the provisions of law respecting the time and manner of assessing property for purposes of taxation, of equalizing such assessments, of certifying such assessed valuation to the taxing authorities, of making the tax levies, of certifying such tax levies to the proper authorities for extension upon the tax rolls, and for enforcement and collection of such taxes or of performing any other act regarding the assessment, levy or collection of taxes be amended, changed, repealed or newly enacted, and as a result thereof, it should appear to the board of directors of the authority that the time schedule provided herein respecting the levy of authority taxes be no longer consistent with such modified tax procedure, then said board of directors by ordinance may prescribe a new schedule setting forth the times when the various acts herein required to be done in levying authority taxes shall be performed. Nothing contained in this paragraph shall relieve the board of directors of its duty to provide adequate funds, by annual tax levies if necessary, to meet the interest and principal requirements of the bonded debts as they fall due.

(k) For the purpose of assessing and collecting, under the provisions of Section 9(a) of Article XIII of the Constitution of the State of California, the

taxes levied by any authority incorporated hereunder, the rate for taxes levied for the preceding tax year, as such phrase is employed in said section of the Constitution, shall be the rate fixed for such preceding tax year by the board of directors of such authority pursuant to Section 9, subdivision (b) of this act. In the event that any public agency, pursuant to the provisions of Section 9, subdivision (d) of this act, shall elect to pay the whole or any portion of the amount of taxes to be derived from the area of the authority within such public agency, as such amount shall have been fixed by resolution of the board of directors, a refund shall be made by the authority to each taxpayer thereof who shall have theretofore paid any tax collected under the provisions of said section of the Constitution, in the proportion that such public agency shall have so elected to pay the amount so to be derived. The board of directors shall adopt regulations providing for the presentation and audit and payment of claims for such refunds. No claim for such refund shall be granted unless such claim shall have been filed within one year from the date when the right to such refund shall have accrued.

Sec. 10. (a) For the purposes of this section, the following definitions shall apply to the terms used therein; the term "city" shall mean and include any municipal corporation or municipality of the State of California, whether organized under a freholder's charter or under the provisions of general law of the type and class of cities and incorporated towns; the term "water district" shall mean and include any municipal water district, municipal utility district, public utility district, county water district, irrigation district or any other public corporation or agency of the State of California of similar character.

(b) Territory may be annexed to any county water authority organized hereunder by one of the following methods:

(1) By annexation to, or consolidation with, the area of any city, the area of which, as a separate unit, shall have become a part of any county water authority organized hereunder, such annexation or consolidation to occur upon compliance with the provisions of law governing such annexation to, or consolidation with, the area of such city. Upon completion of such annexation to, or consolidation with, such city in compliance with the provisions of law applicable thereto, such territory shall become, and be, a part of such county water authority, and the taxable property therein shall be subject to taxation thereafter for the purposes of said county water authority, including the payment of bonds and other obligations of such authority at the time authorized or outstanding.

(2) By annexation to, or consolidation with, any city which, as a separate unit, shall have become a part of any water district the area of which water district, as a separate unit, shall have become a part of any county water authority organized hereunder, in instances where, under the applicable provisions of law governing the change of boundaries of such water district, such annexation or consolidation automatically will result in the enlargement of the area of such water district, such annexation or consolidation to occur upon compliance with the provisions of law governing such annexation to, or consolidation with, the area of such city. Upon completion of such annexation to, or consolidation with, such city in compliance with the provisions of law applicable

thereto, such territory shall become, and be a part of such water district, and of such county water authority, and the taxable property therein shall be subject to taxation thereafter for the purposes of said water district and of said county water authority, including the payment of bonds and other obligations of such water district and of such county water authority at the time authorized or outstanding. If any such territory shall have been so annexed to, or consolidated with, any such city prior to the effective date of this subparagraph (2), under conditions which would have resulted in the enlargement of the area of such county water authority had the foregoing provisions of this subparagraph (2) then been in effect, upon compliance with the following provisions of this subparagraph (2), such territory shall be annexed to, and shall become and be a part of, such county water authority, and shall be a part of such water district for all purposes, the last-mentioned provisions being as follows:

(aa) The governing body of such city, at any time after the effective date of this subparagraph (2), may adopt an ordinance which, after reciting that such territory has been annexed to, or consolidated with, such city by proceedings theretofore taken under statutory authority, and after referring to the applicable statutes and to the date and place of filing of the certificate or certificates evidencing such annexation or consolidation, shall describe such territory and shall determine and declare that the said territory shall be, and thereby is, annexed to such county water authority, and said ordinance shall further determine and declare that the said territory shall become and be, and thereby is, a part of such county water authority, and shall be, and thereby is, a part of such water district for all purposes.

(bb) The governing body, or clerk thereof, of such city shall file a certified copy of such ordinance with the Secretary of State of the State of California. Upon the filing of said certified copy of such ordinance in the office of the Secretary of State, such territory shall become, and be, a part of such county water authority, and shall be a part of such water district for all purposes, and the taxable property therein shall be subject to taxation thereafter for the purposes of said county water authority and of said water district, including the payment of bonds and other obligations of such county water authority at the time authorized or outstanding.

(cc) Upon the filing in his office of the aforesaid certified copy of such ordinance, the Secretary of State shall, within 10 days issue his certificate, describing such territory, reciting the filing of said certified copy of such ordinance in his office and the annexation of said territory to such county water authority, and declaring that the said territory is a part of said county water authority and of such water district. The Secretary of State shall transmit the original of his said certificate to the secretary of such county water authority and a duplicate original of his said certificate to the clerk of the governing body of such water district, and shall forward a certified copy of his said certificate to the county clerk of the county in which such county water authority is situated.

(3) Upon terms and conditions fixed by the board of directors of such county water authority and in the manner provided in paragraph (c) hereof, by direct annexation, as a separate unit, of the corporate area of any water district or city.

(4) Upon terms and conditions fixed by the board of directors of such county water authority and in the manner provided in paragraph (d) hereof, by annexation to, or consolidation with, any water district, the area of which, in whole or in part, is included within such county water authority as a separate unit; provided, that unless such territory shall be so annexed to such county water authority with the consent of such board of directors, the annexation of such territory to, or the consolidation of such territory with, any such water district shall not authorize or entitle such water district or such territory to demand or receive any water from such county water authority for use in such territory; and provided further, that, except where automatic annexation results under the conditions mentioned in subparagraph (2) of this paragraph (b), nothing in this act shall prevent the annexation of territory to, or the consolidation of territory with, any such water district for its local purposes only and without annexing such territory to such county water authority, and such local annexation or consolidation may occur without requesting or obtaining the consent thereto of the board of directors of such county water authority.

(c) The governing body of any water district or city may apply to the board of directors of such county water authority for consent to annex the corporate area of such water district or city to the county water authority. The board of directors may grant or deny such application and in granting the same may fix the terms and conditions upon which the corporate area of such water district or city may be annexed to and become a part of the county water authority. Such terms and conditions may provide, among other things, for the levy by such county water authority of special taxes upon taxable property within such water district or city, in addition to the taxes elsewhere in this act authorized to be levied by such county water authority, and in case such terms and conditions shall provide for the levy of such special taxes, the board of directors in fixing such terms and conditions shall specify the aggregate amount to be so raised and the number of years prescribed for raising such aggregate sum, and that substantially equal annual levies will be made for the purpose of raising such sum over the period so prescribed. The action of the board of directors evidenced by resolution shall be promptly transmitted to the governing body of such applying water district or city, and if such action shall grant consent to such annexation, such governing body may thereupon submit to the qualified electors of such water district or city at any general or special election held therein, the proposition of such annexation subject to the terms and conditions fixed as herein provided. Notice of such election shall be given by posting or publication; when given by posting such notices shall be posted at least ten (10) days and in three public places in the water district or city; when given by publication such notice shall be published once at least ten (10) days before the date fixed for the election in a newspaper of general circulation published in the water district or city. Such notice shall contain the substance of the terms and conditions fixed by the board of directors, as herein provided. Such election shall be conducted and the returns thereof canvassed in the manner provided by law for elections in such water district or city. If such proposition shall receive the affirmative vote of a majority of electors of such water district or city voting thereon at such election, the governing body of such water district or city shall certify the result of such election on said proposition to the board of directors of said authority, together with a legal description of the boundaries of the

corporate area of such water district or city, accompanied by a map or plat indicating such boundaries. A certificate of proceedings hereunder shall be made by the secretary of the authority and filed with the Secretary of State. Upon the filing thereof in the office of the Secretary of State, the corporate area of such water district or city shall become, and be, an integral part of such county water authority, and the taxable property therein shall be subject to taxation thereafter for the purposes of said county water authority, including the payment of bonds and other obligations of such authority at the time authorized or outstanding, and the board of directors of such county water authority shall be empowered to do all things necessary to enforce and make effective the terms and conditions of annexation fixed as hereinabove authorized. Upon the filing in his office of the aforesaid certificate of proceedings the Secretary of State shall, within ten (10) days, issue his certificate, reciting the filing of said papers in his office and the annexation of the corporate area of such water district or city to such county water authority. The Secretary of State shall transmit the original of his said certificate to the secretary of such county water authority and shall forward a certified copy thereof to the county clerk of the county in which such county water authority is situated.

(1) In the event that a water district shall apply to a county water authority for consent to annex its corporate area, as a separate unit, which water district shall include as a part of its corporate area one or more cities, the corporate areas of which cities are already included within such county water authority as separate units, then that fact shall be taken into consideration by the board of directors of such county water authority in fixing the terms and conditions upon which said water district may be annexed to such county water authority, to the end that the areas within said cities which are already a part of such county water authority, shall not be required to assume any greater financial burden or obligation to such county water authority than they would have had if they had remained a part of such county water authority as separate units.

That concurrently with any election called by a water district to submit to the qualified electors of such water district, the question of whether the terms and conditions fixed by the board of directors of such county water authority for annexation shall be approved, the governing bodies of said cities may call and hold elections within their respective corporate limits to determine whether or not such cities shall withdraw from such county water authority as separate units, and said proposed withdrawal may be made and submitted conditioned upon and effective when the said water district shall have finally been annexed to such county water authority.

The effect of such concurrent elections, if a majority of the electors of the said water district voting thereat vote in favor of annexation, and a majority of the electors of said cities voting thereat vote in favor of withdrawing, shall be that the said water district thereafter shall be authorized to exercise the privileges and to discharge the duties prescribed in this act for public agencies the areas of which, as separate units, are included within the said authority, in place of and instead of said cities so withdrawing. That notwithstanding anything to the contrary in Section 11 of this act, the areas within said cities shall remain a part of such county water authority and shall not be excluded

therefrom notwithstanding the fact that said cities, as corporate entities, have withdrawn from said authority.

In the event that said water district does annex to such county water authority, then the directors representing said cities on the board of directors of such county water authority, shall continue to act until their successors have been chosen and designated by the appropriate officers of said water district and have qualified as members of the board of directors of such county water authority, after which time the said directors representing said cities, shall no longer be entitled to sit or vote on said board.

(d) The governing body of any water district, the area of which, in whole or in part, is included within such county water authority as a separate unit, may apply to the board of directors of such county water authority for consent to annex to such county water authority territory which it is sought to annex to, or consolidate with, such water district, or territory which, without making the same a part of such county water authority, already has been annexed to, or consolidated with, such water district. The board of directors may grant or deny such application and in granting the same may fix the terms and conditions upon which such territory may be annexed to, and become a part of, the county water authority. Such terms and conditions may provide, among other things, for the levy by such county water authority of special taxes upon taxable property within such territory in addition to the taxes elsewhere in this act authorized to be levied by such county water authority, and in case such terms and conditions shall provide for the levy of such special taxes, the board of directors in fixing such terms and conditions shall specify the aggregate amount to be so raised and the number of years prescribed for raising such aggregate sum, and that substantially equal annual levies will be made for the purpose of raising such sum over the period so prescribed. The action of the board of directors evidenced by resolution shall be promptly transmitted to the governing body of such applying water district, and if such action shall grant consent to such annexation, such territory may be annexed to such county water authority as provided in subdivisions (1) or (2) thereof.

(1) If such territory has not theretofore been annexed to or consolidated with such water district, upon completion of such annexation to, or consolidation with, such water district in compliance with the provisions of law applicable thereto, including this Section 10, such territory shall become and be a part of such county water authority and the taxable property therein shall be subject to taxation thereafter for the purposes of said county water authority, including the payment of bonds and other obligations of such authority at the time authorized or outstanding, and the board of directors of such county water authority shall be empowered to do all things necessary to enforce and make effective the terms and conditions of annexation fixed as hereinabove authorized; provided, that if the applicable provisions of law governing such annexation to, or consolidation with, such water district shall require any notice of any election called for the purpose of determining whether such proposed annexation or consolidation shall occur, or shall require any notice of hearing or other notice to be given to the residents or electors of, or owners of property in, such territory, such notice shall contain the substance of the terms and conditions of annexation to such county water authority fixed by the board of directors of such

authority as herein provided; and provided further, that the governing body of such water district or other officer thereof having the duty of certifying the proceedings resulting in such annexation to, or consolidation with, such water district, pursuant to the provisions of law applicable thereto, shall include in such certification a record of the proceedings by which such territory has been annexed to such county water authority in accordance with the provisions hereof, and shall file a duplicate of such certificate with the board of directors of such county water authority.

(2) If the territory sought to be annexed to such county water authority theretofore has been annexed to, or consolidated with, such water district, the governing body of such water district, upon being advised of the action of the board of directors of such county water authority, as above provided, and if such action shall grant consent to such annexation, may submit to the qualified electors of such territory at any general or special election held therein, the proposition of such annexation to such county water authority subject to the terms and conditions fixed by the board of directors of such county water authority, as herein provided. Notice of such election shall be given by posting or publication; when given by posting such notice shall be posted at least ten (10) days and in three public places in such territory; when given by publication such notice shall be published once at least ten (10) days before the date fixed for the election in a newspaper of general circulation published in such water district. Such notice shall contain the substance of the terms and conditions fixed by the board of directors, as herein provided. Such election shall be conducted and the returns thereof canvassed by the governing body of such water district in the manner provided by law for elections in such water district. If such proposition shall receive the affirmative vote of a majority of electors of such territory voting thereon at such election, the governing body of such water district shall certify the result of such election on said proposition to the board of directors of said authority. A certificate of proceedings hereunder shall be made by the secretary of the authority and filed with the Secretary of State. Upon the filing thereof in the office of the Secretary of State, such territory shall become, and be, a part of such county water authority, and the taxable property therein shall be subject to taxation thereafter for the purposes of said county water authority, including the payment of bonds and other obligations of such authority at the time authorized or outstanding, and the board of directors of such county water authority shall be empowered to do all things necessary to enforce and make effective the terms and conditions of annexation of such territory to such county water authority fixed by said board of directors as hereinabove authorized. Upon the filing in his office of the aforesaid certificate of proceedings the Secretary of State shall, within ten (10) days, issue his certificate, reciting the filing of said papers in his office and the annexation of such territory to such county water authority. The Secretary of State shall transmit the original of his said certificate to the secretary of such county water authority and shall forward a certified copy thereof to the county clerk of the county in which such county water authority is situated.

(c) The validity of any proceedings for the annexation to any authority organized hereunder, of the corporate area of a water district or city as a separate unit, or of territory annexed to, or consolidated with, a water district.

or city which, as a unit, shall have been included within such authority, shall not be contested in any action unless such action shall have been brought within three months after the completion of such annexation, or, in case such annexation is completed prior to the time that this paragraph takes effect, then within three months after this paragraph shall have become effective.

(f) Whenever territory is annexed to or consolidated with any water district, the corporate area of which, as a unit, shall have become a part of any county water authority organized hereunder, irrespective of whether such territory is annexed to and becomes a part of such county water authority, or whenever territory is annexed to any city under the conditions mentioned in subparagraph (1) or subparagraph (2) of paragraph (b) of this section, or whenever territory previously annexed to any city is annexed to such county water authority under the conditions mentioned in subparagraph (2) of paragraph (b) of this section, the governing or legislative body, or clerk thereof, of such water district or city, shall file with the board of directors of such county water authority a statement of the change of boundaries of such water district or city, setting forth the legal description of the boundaries of such water district or city, as so changed, and of the part thereof within such county water authority, which statement shall be accompanied by a map or plat indicating such boundaries.

(g) The inclusion in a county water authority of the corporate area, in whole or in part, of any municipal water district, municipal utility district, public utility district, county water district, irrigation district, or other public corporation or agency of the State of California of similar character, referred to in Section 2 of this act, shall not destroy the identity or legal existence or impair the powers of any such municipal water district, municipal utility district, public utility district, county water district, irrigation district, or other public corporation or agency of the State of California of similar character, notwithstanding the identity of purpose or substantial identity of purpose of such county water authority.

(h) In determining the number of members of the board of directors of a county water authority organized hereunder, and the number of votes to be cast by such directors, from the component public agencies, the corporate areas of which, in whole or in part, are included as units within such county water authority, there shall be considered only the assessed valuation of the property taxable for authority purposes lying in such public agencies and in such authority. Such directors shall be appointed by the chief executive officers, with the consent and approval of the governing bodies, of such component public agencies, respectively, without regard to whether any such chief executive officers or members of such governing bodies have been chosen from, or represent, areas of their respective public agencies which lie outside of such county water authority. The phrase "any water district, the corporate area of which is included within said authority" and the phrase "each city, the area of which shall be a part of any authority incorporated hereunder," and like phrases, used elsewhere in this act, shall be deemed to mean and refer to any water district or city, the corporate area of which either in whole or in part, is included within such county water authority, but the duties and obligations of such county water authority shall extend only to that part of the corporate area of such water

district or city which shall lie within such county water authority. As to any such water district, city or public agency, the corporate area of which lies partly within and partly without such county water authority, the word "therein" and the phrase "within such city" and like words and phrases, used elsewhere in this act, shall be deemed to mean and refer to that part of the corporate area of such water district, city or public agency which lies within such county water authority. The charges for water supplied by such county water authority to any component public agency, pursuant to its request, shall be and become an obligation of such public agency, irrespective of whether the entire corporate area of such public agency is included within such county water authority, and such authority in administrative and contractual matters shall deal with the chief executive officers and governing bodies and other proper officials of such component public agencies as chosen or constituted under applicable laws governing the respective public agencies.

Sec. 11. (a) Exclusion of territory from any county water authority may be effected by either of the following methods:

(1) Territory excluded from that portion of the corporate area of any public agency which lies within the exterior boundaries of a county water authority, said public agency being a unit of said authority, and which exclusion occurs in accordance with the provisions of law applicable to such exclusions, shall thereby be excluded from and shall no longer be a part of such authority; provided, that the taxable property within such excluded territory shall continue taxable by such county water authority for the purpose of paying the bonded or other indebtedness outstanding or contracted for at the time of such exclusion and until such bonded or other indebtedness shall have been satisfied; provided, further, that if the taxable property within such excluded territory or any part thereof shall be, at the time of such exclusion, subject to special taxes levied, or to be levied, by such county water authority pursuant to terms and conditions theretofore fixed under the provisions of paragraph (c) or paragraph (d) of Section 10 of this act for the annexation of such excluded territory or part thereof to such county water authority, the taxable property within such excluded territory or part thereof so subject to such special taxes shall continue taxable by such county water authority for the purpose of raising the aggregate sum or sums to be raised by the levy of special taxes upon taxable property within the respective annexing area or areas pursuant to terms and conditions for such annexation or annexations as so fixed and until such aggregate sum or sums shall have been so raised by such special tax levies.

(2) Any public agency whose corporate area as a unit shall have become or is a part of any county water authority may obtain the exclusion of such area therefrom in the following manner:

The governing body of any such public agency may submit to the electors thereof at any general or special election the proposition of excluding from such county water authority the corporate area of such public agency. Notice of such election shall be given in the manner provided in paragraph (c) of Section 10 hereof. Such election shall be conducted and the returns thereof canvassed in the manner provided by law for the conduct of elections in said public agency. In the event that the majority of electors voting thereon vote in favor of such withdrawal, the result thereof shall be certified by the governing

body of such public agency to the board of directors of the county water authority. A certificate of the proceedings hereunder shall be made by the secretary of the county water authority and filed with the Secretary of State; and upon the filing of such certificate the corporate area of such public agency shall be excluded from the said county water authority and shall no longer be a part thereof; provided, that the taxable property within such excluded area shall continue taxable by said county water authority for the purpose of paying the bonded and other indebtedness of said county water authority outstanding or contracted for at the time of such exclusion and until such bonded or other indebtedness shall have been satisfied; provided, further, that if the taxable property within such excluded area or any part thereof shall be, at the time of such exclusion, subject to special taxes levied or to be levied by said county water authority pursuant to terms and conditions theretofore fixed under the provisions of paragraph (c) or paragraph (d) of Section 10 of this act for the annexation of such excluded area or part thereof to said county water authority, the taxable property within such excluded area or part thereof so subject to such special taxes shall continue taxable by said county water authority for the purpose of raising the aggregate sum or sums to be raised by the levy of special taxes upon taxable property within the respective annexing area or areas pursuant to terms and conditions for such annexation or annexations as so fixed and until such aggregate sum or sums shall have been so raised by such special tax levies. Upon the filing in his office of the aforesaid certificate of proceedings the Secretary of State shall, within 10 days, issue his certificate, reciting the filing of said papers in his office and the exclusion of the corporate area of such public agency from such county water authority. The Secretary of State shall transmit the original of his said certificate to the secretary of such county water authority and shall forward a certified copy thereof to the county clerk of the county in which such county water authority is situated.

(b) Whenever territory is excluded from any public agency in accordance with the provisions of subparagraph (1) of paragraph (a) of this section, the governing body, or clerk, of such public agency shall file with the board of directors of such county water authority a statement of the change of boundaries of such public agency, setting forth the legal description of the boundaries of such public agency, as so changed, and of the part thereof within such county water authority, which statement shall be accompanied by a map or plat indicating such boundaries.

(c) Whenever any territory shall have been excluded from any public agency prior to the effective date of this section, under conditions which would have resulted in the exclusion of said territory from a county water authority had the provisions of subparagraph (1) of paragraph (a) of said section then been in effect, upon compliance with the following provisions of this paragraph (c), such territory shall be excluded from and shall no longer be a part of said authority, the last-mentioned provisions being as follows:

(1) The governing body of such public agency, at any time after the effective date of this subparagraph (1) may adopt an ordinance which, after reciting that such territory has been excluded from such public agency by proceedings theretofore taken under statutory authority, and after referring to the applicable statutes and to the date or dates upon which such exclusion became

effective, shall describe said territory and shall determine and declare that said territory shall be, and thereby is, excluded from such county water authority.

(2) The governing body, or clerk thereof, of such public agency shall file a certified copy of such ordinance with the Secretary of State of the State of California. Upon the filing of said certified copy of such ordinance in the Office of the Secretary of State, such territory shall be excluded from and shall no longer be a part of, said county water authority; provided, that the taxable property within such excluded territory shall continue taxable by such county water authority for the purpose of paying the bonded or other indebtedness outstanding or contracted for at the time of such exclusion, and until such bonded or other indebtedness shall have been satisfied; provided, further, that if the taxable property within such excluded territory or any part thereof shall be, at the time of such exclusion, subject to special taxes levied or to be levied by such county water authority pursuant to terms and conditions theretofore fixed under the provisions of paragraph (c) or paragraph (d) of Section 10 of this act for the annexation of such excluded territory or part thereof to such county water authority, the taxable property within such excluded territory or part thereof so subject to such special taxes shall continue taxable by such county water authority for the purpose of raising the aggregate sum or sums to be raised by the levy of special taxes upon taxable property within the respective annexing area or areas pursuant to terms and conditions for such annexation or annexations as so fixed, and until such aggregate sum or sums shall have been so raised by such special tax levies.

(3) Upon the filing in his office of the aforesaid certified copy of such ordinance, the Secretary of State shall, within 10 days, issue his certificate, describing such territory, reciting the filing of said certified copy of such ordinance in his office and the exclusion of said territory from such county water authority, and declaring that the said territory is no longer a part of said county water authority. The Secretary of State shall transmit the original of his said certificate to the secretary of such county water authority and shall forward a certified copy of his said certificate to the county clerk of the county in which such county water authority is situated.

Sec. 11.1. Any territory within a county water authority which lies within two or more public agencies, the corporate areas of which are included within such county water authority as separate units, shall, subject to the conditions hereinafter provided, for the purposes of this act and for all related purposes (other than local purposes of such public agencies) involving in any manner the respective territorial boundaries and jurisdiction of such public agencies, be considered to be a part of the respective public agency which will supply water to such overlapping territory, as determined in the manner provided herein; provided, that if the taxable property within such overlapping territory or any portion thereof shall be subject to special taxes levied or to be levied by such county water authority pursuant to terms and conditions theretofore fixed under the provisions of paragraph (c) or paragraph (d) of Section 10 of this act for the annexation of such overlapping territory or portion thereof to such county water authority, then such taxable property within such overlapping territory shall continue taxable by such county water authority for the purpose of raising the aggregate sum or sums to be raised by the levy of such special taxes pur-

suant to terms and conditions for such annexation or annexations as so fixed and until such aggregate sum or sums shall have been so raised by such special tax levies; and provided, further, that the public agency of which such overlapping territory shall be considered to be a part shall be determined in the following manner and subject to the following conditions:

(1) The governing body of each public agency in which any such overlapping territory lies, shall, on or before October 1st of any calendar year, file with the board of directors of the authority a certified copy of a resolution of such governing body which shall contain a legal description of any such overlapping territory or portion thereof which will be supplied with water by such public agency during the next ensuing fiscal year commencing July 1st next following, and such certified copy of such resolution so filed shall be accompanied by a map or plat showing the respective boundaries of each overlapping territory or portion thereof so to be supplied with water by such public agency.

(2) On or before November 1st of such calendar year, the board of directors of the authority shall consider all documents so filed with the authority as required under subparagraph (1) above, and by resolution shall determine which public agency will supply water to each such overlapping territory or portion thereof during the next ensuing fiscal year commencing July 1st next following; in the event that the board of directors of the authority, from the evidence submitted, cannot determine which public agency will supply water to any overlapping territory or portion thereof, then the board of directors shall determine that such overlapping territory or portion thereof shall be considered to be a part of, and shall designate, the public agency within which such overlapping territory or portion thereof first was included; and such resolution shall contain a legal description of each such overlapping territory or portion thereof respecting which any such determination is made.

(3) The board of directors of the authority, on or before November 20th of such calendar year, shall file with the county assessor of the county in which such overlapping territory shall lie and with the State Board of Equalization and in the event that such county water authority shall be included within a metropolitan water district as a separate unit then also with the board of directors of such metropolitan water district, a certified copy of such resolution of the board of directors of the authority so determining the matters required to be determined by it under subparagraph (2) above, accompanied by map or maps or plat or plats showing the respective boundaries of each overlapping territory or portion thereof described in such resolution.

(4) Any determination made by the board of directors of the authority and evidenced by the filing of the documents required by subparagraph (3) hereof shall be effective until changed by later determination by said board of directors and the evidencing thereof by the filing of the required documents.

(5) Any overlapping territory or portion thereof respecting which no determination shall have been made by the board of directors of the authority and evidenced by the filing of the documents required by subparagraph (3) hereof shall be considered to be a part of the public agency within which such overlapping territory or portion thereof first was included.

Sec. 12. Except as herein provided, no director or any other officer or

employee of the authority shall in any manner be interested, directly or indirectly, in any contract awarded or to be awarded by the board of directors, or made or to be made by such officer or employee pursuant to discretionary authority vested in him, or in the profits to be derived therefrom. Notwithstanding the fact that such director or other officer or employee of the authority may be a stockholder or bondholder or director or other officer or employee of a corporation contracting with the authority, contracts may be made with such corporation for its general benefit unless such director or officer or employee of the authority shall own or control, directly or indirectly, stock or bonds to an amount exceeding five per centum (5%) of the total amount of the stock or bonds, respectively, of such contracting corporation issued and outstanding. For any violation of this section such director or other officer or employee of the authority shall be deemed guilty of a misdemeanor, and such conviction shall work a forfeiture of his office, or employment, and he shall be punished by a fine not exceeding five hundred dollars (\$500), or by imprisonment in the county jail not exceeding six (6) months or by both such fine and imprisonment.

Sec. 13. All matters and things necessary for the proper administration of the affairs of said authority which are not provided for in this act shall be provided for by the board of directors of the authority by ordinance. Any action required by this act to be done by resolution may be done, with equal validity, by ordinance.

Sec. 14. The treasurer of any authority organized under the provisions of this act is hereby expressly authorized to deposit funds of such authority in banks in the manner provided by law for the deposit of moneys of a municipality or other public or municipal corporation.

Sec. 15. The fiscal year of any authority incorporated hereunder shall commence on the first day of July of each year and shall continue until the close of the thirtieth day of June of the year following. As promptly as shall be possible after the close of each fiscal year, it shall be the duty of the controller of the authority to prepare and transmit to the chief executive officer of each public agency, the area of which shall lie within the authority, a statement of revenues and expenditures in such detail as shall be prescribed by the board of directors; also a statement of the amount of water stored by the authority and the amounts used by the respective public agencies, the areas of which shall lie within the authority.

Sec. 16. If any section, subsection, sentence, clause or phrase of this act is for any reason held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this act. The Legislature hereby declares that it would have passed this act, and each section, subsection, sentence, clause and phrase thereof, irrespective of the fact that any one or more other sections, subsections, sentences, clauses or phrases be declared unconstitutional.

EVERTS and ESENOFF
 Certified Public Accountants
 Suite 727, First National Building
 San Diego, California

September 26, 1951

Board of Directors
 San Diego County Water Authority
 314-321 Land Title Building
 San Diego 1, California

Gentlemen:

We have examined the financial records of the San Diego County Water Authority for the period beginning July 1, 1950, and ending June 30, 1951. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion the accompanying balance sheet and statement of income and surplus present fairly the financial position of the San Diego County Water Authority at June 30, 1951, and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Yours very truly,

(signed) CHAS. C. PORTER

For Everts and Esenoff
 Certified Public Accountants

SECTION VI FINANCIAL

THE construction cost of the San Diego Aqueduct was financed by the Federal Government and the branch lines were financed by an Authority bond issue. Under the Authority-Navy lease-purchase contract, the cost of the Aqueduct, estimated at \$14,125,000, is to be repaid without interest at \$500,000 per year. Pending final determination of the true cost, payments are being made under the terms of a supplemental agreement at the annual rate of \$250,000. Under the terms of the Authority's annexation to the Metropolitan Water District, the District pays the Authority one-half of all payments made to the Federal Government. Currently the District payments amount to \$125,000 per year.

Funds for construction of the distribution system were raised by the sale of a \$2,000,000 bond issue authorized by the electors of the Authority on November 5, 1946. The bonds mature serially over a 19-year period beginning January 1, 1953, and are non-callable. The average interest rate for the issue is 2.19 per cent. A schedule of bonded indebtedness and annual service requirements therefor is shown in Table 29. Following the formation of the Authority in June, 1944, the financial requirements for Authority purposes were met by a tax rate of 4c per \$100 of assessed valuation until 1947-48 when the rate was raised to 14c to provide funds for payment to the United States Government on the San Diego Aqueduct Lease-Purchase Contract and interest on the Authority bond issue. The 14c rate was continued during the year 1948-49, but a decrease in the rate to 10c was possible in 1949-50 due to the increased assessed valuation in the corporate area of the Authority. This 10c rate was continued during 1950-51.

The Authority's financial operations have continued to reflect the policy of the Board of Directors described in detail in the Third Annual Report. In general, operation and maintenance costs are being met from revenues derived from the sale of water, and requirements for payments to the Federal Government and the requirements for bond service are being met by tax levies.

On June 30, 1951, inactive funds, totaling \$946,430.76, were in-

vested in U.S. Government securities, drawing an average rate of about 1.9 per cent.

The financial operations of the Authority for the fiscal year 1950-51 are summarized in Tables 21 to 29, appearing in the following pages of this section.

All accounts have been regularly audited by the firm of Everts and Esenoff, Certified Public Accountants, whose statement relative to their examination of the financial records appears on page 96.

TABLE 21
STATEMENT OF INCOME AND EXPENSE
July 1, 1950 to June 30, 1951

INCOME DIVISION		
OPERATING INCOME		
Water sales		\$945,860.58
<i>Deduct Operating Costs</i>		
<i>Cost of water sold:</i>		
Inventory of water in storage		
7/1/50	\$ 83,551.20	
Water purchased	738,561.00	
Storage charges	10,443.90	
	<u>832,556.10</u>	
Less inventory of water in storage 6/30/51	34,888.40	\$797,667.70
Direct operating expense		32,202.60
General and administrative expense		57,667.31
Annual audit		1,500.00
Protection of Colorado River Rights		2,660.72
Employee Retirement		2,088.64
Water Conservation Program		2,428.04
		<u>896,215.01</u>
<i>Net Operating Income Before Depreciation and Debt Service Expense</i>		
		49,645.57
<i>Deduct Depreciation & Debt Service Expense:</i>		
Depreciation	99,906.28	
Debt Service Expense	40,950.00	140,856.28
		<u>(91,210.71)</u>
<i>Net Operating Income (Deficit)....</i>		
INCOME CREDITS:		
Revenue from taxes	45,023.40	
Less collection expense	8.09	45,015.31
		<u>48,779.91</u>
Miscellaneous revenues		3,764.60
		<u>48,779.91</u>
Net Income (Deficit) for the Year to Surplus		(\$ 42,430.80)

TABLE 22

STATEMENT OF FINANCIAL POSITION—JUNE 30, 1951

ASSETS		
CURRENT ASSETS:		
Cash with treasurer	\$ 131,269.50	
Petty cash	100.00	
Accounts receivable	89,107.40	
Delinquent taxes receivable	\$ 1,444.41	
Less allowance for estimated losses	1,444.41	
Inventory—water in storage	34,888.40	
Investments	194,995.94	
Total Current Assets		\$ 450,359.24
BOND INTEREST AND SINKING FUND:		
Cash with treasurer	25,278.28	
Special deposits, bond interest payments	20,375.00	
Less matured bond interest coupons payable	20,375.00	
Delinquent taxes receivable	3,749.44	
Less allowance for estimated losses	3,749.44	
Investments	372,550.57	
Total Bond Interest and Sinking Fund		397,828.85
U.S. GOVERNMENT CONTRACT FUND:		
Cash with treasurer	125,006.34	
Delinquent taxes receivable	7,710.27	
Less allowance for estimated losses	7,710.27	
Investments	378,886.25	
Due from Metropolitan Water District	6,625,000.00	
Total U.S. Government Contract Fund		7,128,892.59
GENERAL RESERVE FUND:		
Cash with treasurer	150,000.00	
OTHER ASSETS:		
Cost of participation rights in Metropolitan Water District to June 30, 1951	18,453,810.59	
Annexation charges receivable—not due	47,286.18	
Total Other Assets		18,501,096.77
FIXED ASSETS:		
San Diego Aqueduct—est. Authority cost	7,062,500.00	
Hodges Outlet	8,710.79	
La Mesa-Sweetwater Extension	1,456,946.51	
Fallbrook-Oceanside Branch	833,782.70	
Escondido Headquarters	24,911.22	
Furniture and fixtures	5,736.75	
Office equipment	6,265.86	
Engineering equipment	750.00	
Automotive equipment	24,447.48	
Miscellaneous equipment	2,936.16	
	9,426,967.47	
Less allowance for depreciation	298,316.60	9,128,650.87
Construction work in progress		79,113.30
Total Fixed Assets—net book value		9,207,764.17
		<u>\$35,835,941.62</u>

TABLE 22 (Continued)

STATEMENT OF FINANCIAL POSITION—JUNE 30, 1951

LIABILITIES, RESERVES AND EQUITY ACCOUNTS		
CURRENT LIABILITIES:		
Accounts payable	\$ 63,133.00	
Purchase order encumbrances	2,269.26	
Total Current Liabilities		\$ 65,402.26
LONG TERM OBLIGATIONS:		
Bonds payable—not due	2,000,000.00	
U.S. Government Contract payable	13,250,000.00	
Annexation charges due Metropolitan Water District	12,049,639.10	
Total Long Term Obligations		27,299,639.10
ADVANCES FOR CONSTRUCTION		
		1,963.90
Total Liabilities		27,367,005.26
RESERVES:		
For petty cash	100.00	
For annexation charges receivable—not due	47,286.18	
For retirement of sinking fund bonds	\$ 347,826.08	
For amount available for reduction of taxes	50,002.77	397,828.85
For payments of U.S. Government Contract		303,892.59
Total Reserves		949,107.62
GENERAL RESERVE FUND BALANCE		
		150,000.00
EQUITY ACCOUNTS:		
<i>Investment in Fixed Assets:</i>		
Financed from bond funds		1,848,335.19
Financed from U.S. Government Contract		7,062,500.00
Financed from current revenues		585,205.18
Financed from agencies' contributions for special construction		10,040.40
		9,506,080.77
Less depreciation to June 30, 1951		298,316.60
Net Investment in Fixed Assets		9,207,764.17
Deduct:		
Amount available for retirement of bonds	347,826.08	
Amount required for retirement of bonds	1,652,173.92	2,000,000.00
Amount available—retirement—U.S. Contract	503,892.59	
Amount required—retirement—U.S. Contract	6,121,107.41	6,625,000.00
Net Equity in Fixed Assets		582,764.17
Cost of participation rights in M.W.D.	18,453,810.59	
Less amount unpaid at June 30, 1951	12,049,639.10	
Net equity in participation rights		6,404,171.49
Total Equity Accounts—Net		6,986,935.66
APPROPRIATED SURPLUS		
(Continuing Appropriations)		123,438.65
UNAPPROPRIATED SURPLUS		
		259,454.43
		<u>\$35,835,941.62</u>

TABLE 23
STATEMENT OF INCOME AND SURPLUS
July 1, 1950 to June 30, 1951

SURPLUS DIVISION		
SURPLUS July 1, 1950:		
Appropriated surplus (Continuing appropriations)	\$ 30,992.26	
Water in storage	83,551.20	
Unappropriated surplus	242,570.89	\$357,114.35
<i>Deduct:</i>		
Deficit for the year from income division		42,430.80
		<u>314,683.55</u>
<i>Additions to Surplus:</i>		
Depreciation charged to operations, entailing no expenditure of current funds....	99,906.28	
Refunds of prior year's expenditures	694.22	100,600.50
Total		<u>415,284.05</u>
<i>Deductions from Surplus:</i>		
Expenditures for construction work	28,048.72	
Expenditures for furniture, fixtures and equipment	3,250.69	
Purchase order encumbrances for fixed assets	1,091.56	32,390.97
		<u>32,390.97</u>
SURPLUS, June 30, 1951		<u>\$382,893.08</u>
<i>Consisting of:</i>		
Appropriated surplus (Continuing appropriations)	123,438.65	
Water in storage	34,888.40	
Unappropriated surplus	224,566.03	
		<u>\$382,893.08</u>

TABLE 24
STATEMENT OF REVENUE—ESTIMATED AND ACTUAL—
ALL FUNDS
Fiscal Year Ended June 30, 1951

	Estimated Revenue	Actual Revenue	Excess or Deficiency* of Actual over Estimated
GENERAL FUND			
Taxes, secured, current levy	\$ 2,500.00	\$ 2,658.26	\$ 158.26
Taxes, unsecured, current levy	—	44.69	44.69
Taxes, secured, prior years' levies	—	(Cr) 1,354.75	(Cr) 1,354.75*
Taxes, unsecured, prior years' levies	—	55.43	55.43
Penalties and interest on delinquent taxes	—	95.86	95.86
Miscellaneous tax on options	—	.50	.50
Receipts in lieu of taxes	—	2,700.00	2,700.00
Sale of water	970,500.00	945,860.58	24,639.42*
Miscellaneous tax sales	—	73.41	73.41
Earnings on investments	2,000.00	2,564.60	564.60
Rentals	1,200.00	1,200.00	—
Total—General Fund	\$ 976,200.00	\$ 953,898.58	\$22,301.42*
BOND INTEREST & SINKING FUND			
Taxes, secured, current levy	\$ 118,900.00	\$ 117,495.23	\$ 1,404.77*
Taxes, unsecured, current levy	15,000.00	13,623.44	1,376.56*
Taxes, secured, prior years' levies	—	2,032.43	2,032.43
Taxes, unsecured, prior years' levies	—	91.24	91.24
Penalties and interest on delinquent taxes	—	344.63	344.63
Miscellaneous tax on options	—	6.57	6.57
Receipts in lieu of taxes	2,000.00	5,371.44	3,371.44
Miscellaneous tax sales	—	88.00	88.00
Earnings on investments	3,000.00	3,552.69	552.69
Total—Bond Interest & Sinking Fund	\$ 138,900.00	\$ 142,405.67	\$ 3,505.67
U. S. CONTRACT FUND			
Taxes, secured, current levy	\$ 221,200.00	\$ 218,205.43	\$ 2,994.57*
Taxes, unsecured, current levy	27,600.00	31,787.99	4,187.99
Taxes, secured, prior years' levies	—	4,929.68	4,929.68
Taxes, unsecured, prior years' levies	—	249.82	249.82
Penalties and interest on delinquent taxes	—	783.60	783.60
Miscellaneous tax on options	—	13.05	13.05
Receipts in lieu of taxes	8,000.00	9,975.52	1,975.52
Miscellaneous tax sales	—	221.25	221.25
Earnings on investments	3,000.00	3,765.97	765.97
Total—U. S. Contract Fund	\$ 259,800.00	\$ 269,932.29	\$10,132.29
TOTAL ALL FUNDS	\$1,374,900.00	\$1,366,236.54	\$ 8,663.46*

TABLE 25
STATEMENT OF APPROPRIATIONS AND EXPENDITURES
July 1, 1950 to June 30, 1951

E&A No.	Purpose	Prior Year Appropriations Carried Over	Appropriations 1950-51	Expenditures 1950-51	Cancelled Appropriations	Unexpended Appropriations June 30, 1951
101	San Diego Aqueduct	\$ 1,360.26				\$ 1,360.26
110	Construction of Access Roads	3,195.61				3,195.61
112	Preliminary Investigation (2nd Barrel) Completion of San Diego Aqueduct	26,436.39	\$ 14,700.00	\$ 23,284.54		17,851.85
118	Operation and Maintenance—1950-51		103,330.00	98,713.99	\$ 4,616.01	
119	Purchase of Water from Metropolitan Water District		750,443.90	749,004.90	1,439.00	
122	Construction of Escondido Service Outlet		5,800.00	4,769.07		1,030.93
124	Authority Contributions to State Retirement System		3,200.00	1,942.64	1,257.36	
125	Water Conservation Program		5,488.00	2,428.04	3,059.96	
126	Plans and Specifications—2nd Barrel		100,000.00			100,000.00
120	Bond Interest Coupon Redemption		40,750.00	40,750.00		
121	Payments to U.S. Government on Lease-Purchase of Aqueduct		125,000.00	125,000.00		
		\$30,992.26	\$1,148,711.90	\$1,045,893.18	\$10,372.33	\$123,438.65

TABLE 26
SUMMARY STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS
July 1, 1950 to June 30, 1951

	Cash Balance July 1, 1950	Cash Receipts	Inter-Fund Transfers		Cash Disbursements	Cash Balance June 30, 1951
			In	Out		
General Fund	\$ 1,991.27	\$1,634,009.34		\$129,755.45	\$1,374,975.66	\$131,269.50
Bond Interest & Sinking Fund	67,619.11	826,654.11	\$ 43,237.42		912,232.36	25,278.28
U. S. Contract Fund	84,549.49	1,022,396.54	86,355.90		1,068,295.59	125,006.34
General Reserve Fund	150,000.00					150,000.00
F.I.C.A. Trust Fund			162.13		162.13	
Total—All Funds	\$304,159.87	\$3,483,059.99	\$129,755.45	\$129,755.45	\$3,355,665.74	\$431,554.12

TREASURY CASH ON DEPOSIT JUNE 30, 1951

First National Trust & Savings Bank	\$407,368.87
Bank of America National Trust & Savings Association	70,375.00
Total Bank Balances	\$477,743.87
Less: Outstanding Warrants	\$25,814.75
Special Deposit for payment of Bond Interest Coupons	46,189.75
Treasury Cash June 30, 1951	\$431,554.12

TABLE 27
STATEMENT OF TAX ASSESSMENTS AND COLLECTIONS
as of June 30, 1951

Member Agency	Tax Assessments to Date	Adjustments Tax Assessments	Tax Collections	Interest and Penalties	Tax on Options	Receipts in Lieu of Taxes	Misc. Tax Sales	Less Refunds	Net Total Collections	Uncollected 6-30-51
Chula Vista	\$ 61,504.96	\$ 61.49	\$ 60,913.25	\$ 175.73	\$.34	\$ 3,051.02	\$	\$ 328.80	\$ 63,809.54	\$ 653.20
Fallbrook P.U.D.	12,507.88	7.71	12,264.70	61.52	.24	3,085.88		3.47	15,408.87	250.89
Lakeside Irr. District	3,085.83	29.79	3,000.42	18.03	.05			1.20	3,036.68	115.20
La Mesa, Lemon Grove & Spring Valley I.D.	146,915.35	95.66	145,269.01	568.69	61.73			71.06	145,970.57	1,742.00
National City	50,405.69	59.04	49,869.88	170.04	5.29	3,392.95		479.09	52,951.83	614.85
Oceanside	43,729.93	71.97	43,067.75	127.19	5.11	2,371.05		57.74	45,513.36	734.15
San Diego	1,518,876.13	2,363.47	1,515,315.14	3,111.64	21.10	79,830.37		3,348.36	1,593,487.76	7,924.46
Santa Fe Irr. District	10,463.32	12.82	10,183.28	32.07	.31			.90	10,250.13	292.86
San Diego Irrigation District	15,317.27	179.49	12,920.25	34.33	1.84			15.30	12,779.74	576.51
Total Member Agencies	\$1,860,806.36	\$2,881.44	\$1,850,783.68	\$4,297.24	\$96.01	\$91,731.25	\$762.90	\$4,482.60	\$1,943,188.48	\$12,904.12
*Withdrawn Agencies	4,129.14	21.33	4,130.47	8.71	.15	186.64	—	—	4,345.97	—
	\$1,864,935.50	\$2,902.77	\$1,854,934.15	\$4,305.95	\$96.16	\$91,917.89	\$762.90	\$4,482.60	\$1,947,534.45	\$12,904.12

* Coronado 5/10/46.
Ramona Irrigation District 8/21/46.

TABLE 28
STATUS OF TAX COLLECTIONS
July 1, 1945 to June 30, 1951

Fiscal Year	Tax Assessments	Collected during Fiscal Year	Uncollected at end of Fiscal Year	Per Cent Uncollected	Subsequent Cancellations and Additions	Subsequent Collections	Uncollected on June 30, 1951
1945-46	\$ 96,131.33	\$ 94,656.51	\$ 1,474.82	1.53	\$173.66	\$ 1,560.89	87.59
1946-47	107,808.89	105,753.78	2,055.11	1.90	274.36	2,065.87	263.60
1947-48	389,591.57	381,563.14	8,028.43	2.06		7,375.43	653.00
1948-49	474,520.78	459,504.39	15,016.39	3.16		13,236.95	1,779.44
1949-50	401,112.07	392,732.15	8,379.92	2.21	255.00	6,210.61	2,424.31
1950-51	397,970.61	390,274.43	7,696.18	1.93			7,696.18

AUTHORITY ASSESSED VALUATIONS AND TAX RATES

Fiscal Year	Secured Real Personal	Public Utilities	Unsecured Personal	Total	Tax Rate per \$100 Secured	Unsecured
1945-46	\$212,082,975.00	\$28,253,700.00	\$29,960,130.00	\$270,296,805.00	\$0.04	\$0.00
1946-47	208,715,150.00 (1)	29,433,450.00	30,665,910.00	268,814,510.00	0.04	0.04
1947-48	233,579,990.00	32,740,680.00	40,977,850.00	307,298,520.00 (2)	0.14	0.04
1948-49	254,227,570.00	37,482,020.00	47,177,300.00	338,886,890.00	0.14	0.14
1949-50	290,351,875.00	42,429,140.00	45,743,200.00	378,524,215.00	0.10	0.14
1950-51	306,104,930.00	43,595,730.00	44,717,740.00	394,418,400.00	0.10	0.10

Debt limit 15 per cent of last equalized assessed valuation of Authority.
Basis of assessment approximately 50 per cent.

- (1) City of Coronado and Ramona Irrigation District secured assessed valuation not included in this or subsequent tax levies by the Authority, they having withdrawn from the Authority prior to 1946-47.
- (2) City of Coronado and Ramona Irrigation District not included in this or subsequent total valuation.

TABLE 29

SCHEDULE OF BONDED DEBT AND ANNUAL REQUIREMENTS

Fiscal Year	Interest Payable (1)	Bond Principal Payable (2)	Total Cash Required
1946-47	\$ 20,375.00	\$	\$ 20,375.00
1947-48	40,750.00		40,750.00
1948-49	40,750.00		40,750.00
1949-50	40,750.00		40,750.00
1950-51	40,750.00		40,750.00
1951-52	40,750.00		40,750.00
1952-53	40,125.00	50,000.00	90,125.00
1953-54	38,875.00	50,000.00	88,875.00
1954-55	37,625.00	50,000.00	87,625.00
1955-56	36,500.00	50,000.00	86,500.00
1956-57	35,000.00	100,000.00	135,000.00
1957-58	33,000.00	100,000.00	133,000.00
1958-59	31,000.00	100,000.00	131,000.00
1959-60	29,000.00	100,000.00	129,000.00
1960-61	27,000.00	100,000.00	127,000.00
1961-62	24,500.00	150,000.00	174,500.00
1962-63	21,500.00	150,000.00	171,500.00
1963-64	18,500.00	150,000.00	168,500.00
1964-65	15,500.00	150,000.00	165,500.00
1965-66	12,500.00	150,000.00	162,500.00
1966-67	9,500.00	150,000.00	159,500.00
1967-68	7,000.00	100,000.00	107,000.00
1968-69	5,000.00	100,000.00	105,000.00
1969-70	3,000.00	100,000.00	103,000.00
1970-71	1,000.00	100,000.00	101,000.00
	<u>\$650,250.00</u>	<u>\$2,000,000.00</u>	<u>\$2,650,250.00</u>

(1) Interest rate on bonds maturing in 1953 to 1955 inclusive is 2½%; 1956 to 1971 inclusive 2%; payable January 1 and July 1.

(2) Maturity day, January 1.