

**MWD***METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA*

8-1

Drought Contingency Plan
to Amend the Regional Urban
Water Management Plan for
The Metropolitan Water District
of Southern California

DRAFT

December 26, 1991

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
PURPOSE	1
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA	2
FORMAT OF THIS REPORT	4
II. PAST, CURRENT, AND PROJECTED WATER USE	5
PAST AND CURRENT WATER USE	5
PROJECTED WATER USE	9
III. PAST, CURRENT, AND PROJECTED WATER SUPPLIES	10
PAST AND CURRENT WATER SUPPLIES	10
Colorado River Supply	13
State Water Project Supplies	14
PROJECTED NEAR-TERM MINIMUM SUPPLIES	14
IV. MANAGEMENT OF WATER SHORTAGES	17
WATER SUPPLY MANAGEMENT PROGRAMS	17
Local Projects Program	17
Interruptible Water Service Program	17
Seasonal Storage Program	18
Groundwater Recovery Program	18
Conservation Credits	18
Conservation Best Management Practices	18
DROUGHT RESPONSE PROGRAMS	19
Incremental Interruption and Conservation Plan	19
Adjustments	21
Incentives	21
Penalties	22
Accounting and Reconciliation	22
Determination of Actual Reductions in Water Demands on Metropolitan	23
Model Emergency Water Conservation Ordinance	24
1991 Water Conservation Drought Response	24

TABLE OF CONTENTS (Continued)

	Page
Conservation Credits Program	24
Water-Wise '91	25
Industrial and Commercial Program	25
Public Outreach	25
1991 Emergency Water Supplies	25
Additional Colorado River Water	25
1991 California Drought Emergency Water Bank	26
1991 Summary	26
1992 DROUGHT RESPONSE PROGRAMS	27
 V. REVENUE IMPACTS AND MEASURES TO OVERCOME REVENUE SHORTFALLS	28
 SOURCES OF REVENUE AND REVENUE REQUIREMENTS	28
REVENUE IMPACTS OF DROUGHT MANAGEMENT	30
Water Rate Stabilization Fund	30
POTENTIAL MEASURES TO OVERCOME REVENUE IMPACTS	31
 REFERENCES	33
 APPENDIX 1--MODEL EMERGENCY WATER CONSERVATION ORDINANCE	A-1
APPENDIX 2--RESOLUTIONS OF THE BOARD OF DIRECTOR FOR IMPLEMENTATION OF IICP	A-2

LIST OF TABLES

	Page
II-1 Historical Water Use in Metropolitan's Service Area	6
II-2 Per Capita Urban Water Use	8
II-3 Projection of Water Demands on Metropolitan	9
III-1 Local and Metropolitan Deliveries in Fiscal Year 1989-90	12
III-2 Comparison of Water Demands & Supplies for Metropolitan Water District	16
IV-1 The Incremental Interruption and Conservation Plan	20
IV-2 Metropolitan Normal vs. Actual Production	23
A-1 Model Emergency Water Conservation Ordinance	
A-2 Resolutions of the Board of Director for Implementation of IICP	

LIST OF FIGURES

II-1 Municipal and Industrial Water Use	7
III-1 Sources of Water Supply	11
V-1 Revenues by Source	29

I. INTRODUCTION

PURPOSE

The effective management of water supply deficiencies is one of the most important responsibilities of Metropolitan. Possible deficiencies in Metropolitan's supplies may be caused by droughts, failures of major water transmission facilities during earthquakes, acute contamination of supplies due to chemical spills, or other adverse conditions. The need for continuing effective management programs to mitigate water supply shortages arises from Metropolitan's experiences during the drought of 1976-77 and the ongoing five-year drought which began in 1987.

This document has been prepared in response to Assembly Bill 11X (AB 11X) relating to drought contingency planning in California, which was introduced by Assembly Member Filante, and was chaptered on October 14, 1991. This Statute amends Sections 10620, 10621, 10631, and 10652 of the Water Code, and adds Section 10656. California Water Code Sections 10610 through 10656 (known as the Urban Water Management Planning Act (Act)) were added by Statute 1983, Chapter 1009 to the Water Code, and became effective on January 1, 1984. The Act was known as AB 797 while pending before the Legislature. According to Section 10631 of the California Water Code, the Metropolitan Water District of Southern California (Metropolitan) is legally required to submit a detailed drought contingency plan to the Department of Water Resources (DWR). The legislation calls for nine specific elements that must be met to be in compliance with the drought contingency components of AB 11X. These include:

- (1) Past, current, and projected water use, and to the extent possible, a breakdown of water use (residential, commercial, single-family, multifamily, etc.)
- (2) An estimate of minimum supplies available at the end of 12, 24, and 36 months; assuming a worst case scenario (assume the years 1992, 1993, and 1994)
- (3) Stages of action that a supplier would undertake to deal with up to a 50 percent shortage
- (4) Mandatory provisions to reduce water use
- (5) Consumption limits in the most restrictive stages
- (6) Penalties for excessive use
- (7) An analysis of the effects that these measures would have on revenues and the measures that an agency would take to overcome revenue shortages

- (8) A draft ordinance or resolution to carry out the drought plan
- (9) A mechanism for determining actual reductions in water use

The original Act did not specifically require Metropolitan, a water wholesaler, to prepare an urban water management plan. However, Metropolitan did prepare regional urban water management plans in 1985 and 1990. AB 11X now mandates that Metropolitan must submit an urban water management plan to the DWR in addition to the drought contingency planning.

The remainder of this chapter provides background information on the institutional setting of Metropolitan. The subsequent chapters address the specific provisions of AB 11X.

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

The Metropolitan Water District of Southern California is a public agency and quasimunicipal corporation created in 1928 by an act of the State Legislature and a vote of the electorates of thirteen Southern California cities. Metropolitan's primary purpose is to provide a supplemental supply of water for domestic and municipal uses to its member agencies in Metropolitan's service area, which covers 5,143 square miles and includes portions of the six counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura. Metropolitan now has 27 member agencies, including 14 cities, 12 municipal water districts, and one county water authority. Metropolitan is governed by a 51-member Board of Directors (Board). Each member agency has at least one representative on the Board. Representation and voting rights are based upon each agency's assessed valuation. Metropolitan imports water from two sources: the Colorado River via the Colorado River Aqueduct, and the State Water Project (SWP) via the Governor Edmund G. Brown California Aqueduct (California Aqueduct).

In 1990, the service area population for Metropolitan was just under 15 million. Metropolitan's 27 member agencies deliver to their customers a combination of groundwater, surface water, reclaimed water, and water obtained through Metropolitan, though not all agencies utilize all categories of supplies. For some member agencies, Metropolitan supplies all the water used within that agency's service area, while others obtain varying amounts of water from Metropolitan to supplement local supplies. On average, Metropolitan provides about 55 percent of the water supply needs of its service area.

Metropolitan's Board, at its November 1991 Board Meeting, adopted the following mission statement: "The mission of The Metropolitan Water District of Southern California is to provide its service area with adequate supplies of high quality water to meet present and future needs in an environmentally and economically responsible way." In carrying out this Mission Statement, Metropolitan's goal is to maximize efficient use of existing supplies and to assure adequate supplies to meet future needs. As a wholesaler of water, Metropolitan does not have direct contact with retail customers. During both normal periods as well as during drought conditions, efficient use of existing supplies by its member agencies is encouraged through pricing incentives (or disincentives) and through the development and implementation of

innovative water supply and demand management programs. These programs include the Local Projects Program, the Interruptible Water Service Program, the Seasonal Storage Program, the Groundwater Recovery Program, and the Conservation Credits Program. Metropolitan coordinates its efforts with those of its member agencies. Metropolitan has also developed an Incremental Interruption and Conservation Plan (IICP) to mitigate the effects of five years of drought in its service area. The IICP is a phased demand reduction program that utilizes financial incentives and planned conservation goals to reduce demands on Metropolitan. The IICP is discussed in detail in Chapter IV of this report.

FORMAT OF THIS REPORT

The first two chapters following this introduction describe water use in Metropolitan's service area and identify the water supplies available. Chapter II describes the past, current, and projected water use and provides, to the extent possible, a breakdown of water use by residential, commercial, single-family, multifamily, etc. Chapter III describes Metropolitan's water supplies and provides an estimate of minimum supplies available at the end of 12, 24, and 36 months, from 1992 through 1994, assuming a worst case drought scenario.

Metropolitan's management of water shortages is discussed in Chapter IV. This discussion includes the stages of actions necessary for Metropolitan to undertake when there is up to a 50 percent shortage, mandatory provisions to reduce water use, consumption limits in the most restrictive stages, penalties for excessive use, and a draft resolution to carry out the drought plan. Finally, Chapter V describes the effects that drought contingency measures have had and will have on Metropolitan's revenues and the measures recommended to overcome revenue shortages.

This report is intended to be an amendment to Metropolitan's Regional Urban Water Management Plan (as prepared in November 1990 in response to AB 797). Additional information regarding long-term water demands can be found in Municipal and Industrial Water Use in the Metropolitan Water District Service Area--Interim Report No. 4 (June 1991).

II. PAST, CURRENT, AND PROJECTED WATER USE

PAST AND CURRENT WATER USE

As shown in Table II-1, total water demands from all sources within Metropolitan's service area are estimated to have been 4.0 million acre-feet (MAF) during fiscal year (FY) 1989-90. Of this total, 3.60 MAF was used for municipal and industrial purposes (M & I) and 0.4 MAF was used for agricultural purposes. Over the past 20 years, total water demands in Metropolitan's service area have increased more than 40 percent. This increase is attributed to the increase in urban water demand. In 1970, agricultural deliveries accounted for 19 percent of total water deliveries compared to 11 percent in 1990.

Total water use in Metropolitan's service area has increased rapidly in recent years. During the 1970s, the average rate of increase was about 0.8 percent per year (from 2.79 MAF in 1970 to 3.03 MAF in 1980). From 1980 to 1990 increases averaged more than 2.8 percent per year. Increases in population growth averaged 1.6 percent per year between 1970 and 1980 and 2.2 percent per year between 1980 and 1990.

Table II-1 also shows that Metropolitan's share of water supplies to meet growing demands has increased substantially over the past ten years. In 1980, Metropolitan contributed 42.3 percent of the supply to meet the regional water needs. By 1989, the share of Metropolitan supplies required to meet total demands increased to 55.5 percent. As a result of the drought and loss of a portion of the City of Los Angeles Aqueduct supplies during 1990, 62.5 percent of the total water use in the service area was supplied from Metropolitan deliveries.

Typically, urban water use consists of residential, commercial, industrial, public, and other purposes which include fire-fighting, line cleaning, and system losses. Since Metropolitan is a wholesale water agency, it does not have the ability to maintain an accounting of water use by purpose within its service area. However, water use in the Metropolitan service area has been assessed based on sectoral water use and production records obtained from surveys of retail water agencies as well as from other demand studies. Figure II-1 shows the likely breakdown of urban water use by sector and Table II-2 shows the breakdown of per capita water use by sector.

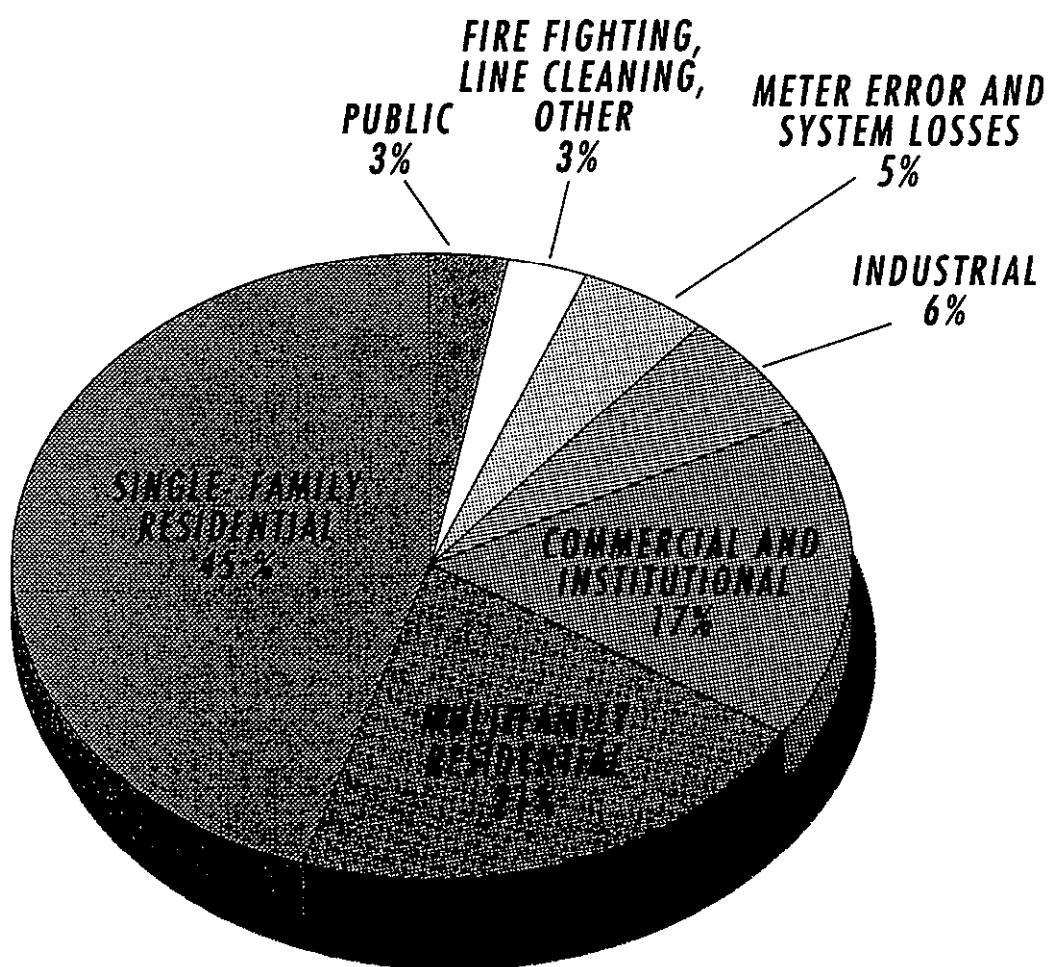
As shown in Figure II-1, the largest sector of urban water use in Metropolitan's service area is residential, accounting for more than 65 percent of total M & I use. Commercial, industrial, public irrigation, and other uses (including system losses) follow in that order.

TABLE II-1
HISTORICAL WATER USE IN METROPOLITAN'S SERVICE AREA

Fiscal Year Ending (July 1 to June 30)	Total Population Served (1,000s)	MWD Water Sales* (Acre-feet)	Total Regional Water Demands* (Acre-feet)	Percent of MWD Sales to Total Demand
1950	4,900	154,111	758,648	20.3
1951	5,109	169,118	829,123	20.4
1952	5,312	187,636	866,435	21.7
1953	5,590	156,859	945,118	16.6
1954	5,905	242,620	1,346,999	18.0
1955	6,192	380,171	1,682,904	22.6
1956	6,581	394,328	1,746,141	22.6
1957	6,873	541,891	1,850,848	29.3
1958	7,204	534,707	1,832,328	29.2
1959	7,539	590,655	1,959,440	30.1
1960	7,947	753,849	2,041,445	36.9
1961	8,239	921,402	2,172,558	42.4
1962	8,535	919,855	2,093,410	43.9
1963	8,802	1,014,804	2,258,843	44.9
1964	9,105	1,029,638	2,386,514	43.1
1965	9,365	1,103,799	2,459,191	44.9
1966	9,580	1,046,846	2,489,001	42.1
1967	9,744	1,055,533	2,457,027	43.0
1968	9,920	1,078,514	2,651,248	40.7
1969	10,104	1,045,034	2,537,549	41.2
1970	10,227	1,164,907	2,789,061	41.8
1971	10,386	1,126,278	2,816,393	40.0
1972	10,562	1,248,409	2,989,988	41.8
1973	10,734	1,175,000	2,839,457	41.4
1974	10,903	1,248,710	2,850,095	43.8
1975	11,077	1,333,768	2,853,025	46.7
1976	11,255	1,391,158	3,082,756	45.1
1977	11,432	1,390,134	2,959,477	47.0
1978	11,639	1,196,635	2,662,039	45.0
1979	11,824	1,235,508	2,848,941	43.4
1980	11,953	1,282,091	3,028,325	42.3
1981	12,198	1,462,831	3,313,765	44.1
1982	12,428	1,503,119	3,230,857	46.5
1983	12,681	1,226,361	3,015,796	40.7
1984	12,940	1,426,819	3,373,850	42.3
1985	13,216	1,575,367	3,525,827	44.7
1986	13,569	1,648,161	3,559,340	46.3
1987	13,882	1,825,921	3,674,141	49.7
1988	14,206	1,921,763	3,616,744	53.1
1989	14,502	2,108,890	3,797,812	55.5
1990	14,863	2,500,552	3,999,539	62.5

* Includes agricultural water use.

Figure II-1
MUNICIPAL AND INDUSTRIAL WATER USE



Water demand studies conducted in Metropolitan's service area indicate that a major portion of total annual M & I use is nonseasonal (or base use) which remains constant throughout the year. However, about one-fourth (26 percent) is seasonal, and varies from month to month and from year to year depending on weather conditions. Less than one-third (28 percent) of the M & I water is used for outdoor purposes, including the irrigation of urban landscapes (24 percent), cooling towers in commercial and industrial buildings (2 percent). Other minor outdoor uses include things such as maintenance of swimming pools, dust control, and car washing (2 percent).

Commonly, urban water use is expressed in units of gallons per capita day (GPCD) so that comparisons can be made over time and from one area to the next. In general, GPCD does not express the amount of water used by an individual, because it includes all sectors of urban water use. For example, an agency serving primarily residential customers will typically have a lower per capita water use than an agency serving residential and commercial/industrial users. Therefore, per capita water use in Table II-2 is expressed in the sectors of water use. With normal weather conditions, total urban per capita demand in Metropolitan's service area is estimated to be about 204 GPCD. About 13 GPCD of this is reclaimed wastewater, which is used for ground water recharge, irrigation of large public areas and golf courses, and some direct use for commercial and industrial activities.

TABLE II-2
PER CAPITA URBAN WATER USE
(With Normal Weather)*

Sector	GPCD
Residential	135
Commercial	35
Industrial	12
Public Uses	7
Other (including system losses)	<u>15</u>
Total Urban Per Capita**	204

* Annual rainfall of 15 inches and mean annual temperature of 65 degrees F.
** Includes 13 GPCD of wastewater reclamation and reuse for groundwater recharge, irrigation and commercial/industrial applications.

PROJECTED WATER USE

For its planning purposes, Metropolitan has developed methods for preparing projections of both long-term and short-term water demands. Both projection methods prepare forecasts of water use for Metropolitan's entire service area. These projections are presented in the Regional Urban Water Management Plan. The demands shown on Table II-3 summarize these projections.

TABLE II-3
PROJECTION OF WATER DEMANDS ON METROPOLITAN

	1992	1993	1994
Demands on Metropolitan (1,000 AF)*	2,472	2,518	2,564

* Demands are based on below-normal rainfall and above-normal temperatures, and include ongoing long-term water conservation.

III. PAST, CURRENT, AND PROJECTED WATER SUPPLIES

PAST AND CURRENT WATER SUPPLIES

Water supplies available to Metropolitan's service area are obtained from local and imported sources. Local groundwater, surface water, and reclaimed wastewater constitute about 35 percent of the area's current water needs. Imported supplies from the Los Angeles Aqueduct, Metropolitan's Colorado River Aqueduct, and Metropolitan's entitlement to SWP water have historically averaged 65 percent of the regional needs.

Regional demand has increased dramatically over the last twelve years. Between FY 1979-80 and FY 1989-90, Metropolitan's share of the regional water supplies increased from 44.1 percent to 62.5 percent (see Table II-1 of Chapter II). During FY 1988-89, Metropolitan provided supplemental water supplies that met about 55 percent of the regional water needs. With the continuing drought, Metropolitan provided 62.5 percent of the regional water needs during FY 1989-90. In the future, as demands for water increase with population growth and the availability of local sources remain relatively constant, it is expected that an increasing portion of the regional water demand will need to be supplied by Metropolitan.

The historic use of the local and imported supplies is shown in Figure III-1. Table III-1 shows the quantities of water obtained by member agencies from local and imported supplies during FY 1989-90. Metropolitan supplies varying amounts of imported water to supplement local supplies to member agencies and retail suppliers. Some agencies, such as City of Beverly Hills and West Basin Municipal Water District, rely almost entirely upon Metropolitan deliveries, where others such as City of San Marino and Chino Basin Municipal Water District produce the majority of their own water supply needs.

SOURCES OF WATER SUPPLY IN THE METROPOLITAN SERVICE AREA

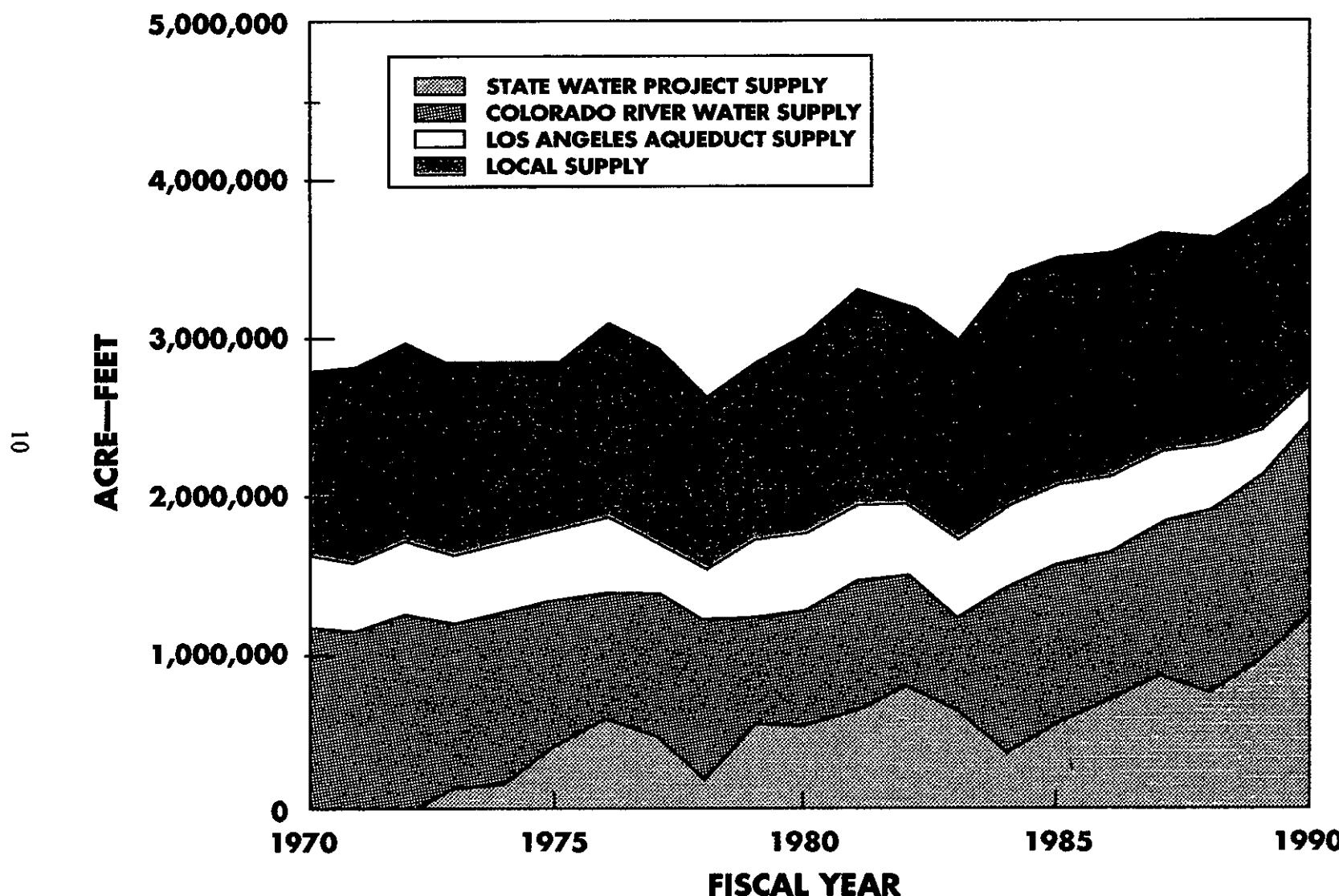


FIGURE III—1

TABLE III-1

LOCAL AND METROPOLITAN DELIVERIES IN FISCAL YEAR 1989-90

Member Agency	Local Supplies*	Metropolitan Total Deliveries**	Total Water Use
Anaheim	43,689	29,475	73,164
Beverly Hills	0	14,867	14,867
Burbank	371	23,217	23,588
Callegas MWD	29,637	111,086	140,723
Central Basin MWD	125,350	149,735	275,085
Chino Basin MWD	149,099	68,664	217,763
Coastal MWD	12,635	48,318	60,953
Compton	6,123	5,536	11,659
Eastern MWD	101,285	55,449	156,734
Foothill MWD	6,229	10,886	17,115
Fullerton	19,422	14,511	33,933
Glendale	3,305	28,848	32,153
Las Virgenes MWD	1,414	24,671	26,085
Long Beach	29,336	51,030	80,366
Los Angeles***	300,810	385,065	685,875
MWD of Orange County	163,946	299,409	463,355
Pasadena	12,066	25,339	37,405
San Diego CWA	44,173	672,844	717,017
San Fernando	2,780	1,007	3,787
San Marino	5,397	1,427	6,824
Santa Ana	31,419	20,228	51,647
Santa Monica	5,371	11,690	17,061
Three Valleys MWD	62,358	75,877	138,235
Torrance	7,482	23,804	31,286
Upper San Gabriel Valley MWD	120,691	70,397	191,088
West Basin MWD	17,182	186,023	203,205
Western MWD of Riverside Co.	198,742	89,828	288,570
TOTALS	1,500,312	2,499,231	3,999,543

* Includes groundwater, surface water, and reclaimed wastewater.

** Includes replenishment deliveries which are used by member agencies for local production.

*** Includes imported water from the Los Angeles Aqueduct of about 206,000 AF.

Colorado River Supply

Metropolitan has water delivery contracts for Colorado River water with the U.S. Department of the Interior for 1.212 million acre-feet per year (MAFY) and an additional 180,000 acre-feet per year (AFY) of surplus water. However, as a result of the 1964 U.S. Supreme Court Decree in Arizona v. California, Metropolitan's dependable supply of Colorado River water was reduced to less than 550,000 AFY. This reduction in dependable supply occurred with the commencement of Colorado River water deliveries by the Central Arizona Project which began in 1985. Since then, Metropolitan has been able to receive up to 1.2 MAFY by accepting surplus supplies.

Although Metropolitan has a priority to divert 550,000 AFY of California's 4.4 MAFY basic apportionment under its water delivery contract with the Secretary of the Interior, current water use by holders of present perfected rights (such as Indian reservations, towns, and other individuals along the Colorado River that predate Metropolitan's rights) reduces the dependable diversions by about 30,000 AFY. Conveyance losses along the Colorado River Aqueduct of 10,000 AFY further reduce the amount of Colorado River water received. Considering these reductions, and prior to the implementation of the water conservation program with Imperial Irrigation District (IID), Metropolitan has a supply of 510,000 AFY on a dependable basis.

Implementation of the water conservation program with IID, the largest agricultural user of Colorado River water, began in January 1990. In brief, the IID/Metropolitan agreement provides for Metropolitan to finance the costs of specific conservation projects in IID, both structural and nonstructural, including lining existing canals, constructing local reservoirs and spill-interceptor canals, installing non-leak gates and automation equipment, and instituting distribution system and on-farm management activities. In return, Metropolitan will be entitled to divert from the Colorado River, or store in a reservoir, a quantity of water equal to the amount of conserved water resulting from these projects, which is estimated to total 106,110 AFY upon full implementation by 1995.

Metropolitan's ability to divert additional Colorado River water in the short term will be dependent upon hydrologic conditions in the Colorado River Basin and the demand for water by other users that also hold rights to use Colorado River water in the Lower Basin, such as the California agricultural agencies and the states of Arizona and Nevada. Additional cooperative programs are under negotiation to conserve water now diverted by districts for agricultural purposes.

If more than 7.5 MAF of Colorado River water is used in Arizona, California, and Nevada, Metropolitan and other California water contractors exceeding their apportionments will be required to compensate for their overuse by the end of 1995. Compensation for overuse will be in the form of adjustments to apportionments unless other forms of compensation or other timeframes are agreed to by the Governors' representatives of the seven Colorado River Basin states and the Secretary of the Interior. The need for compensation will be eliminated in the event that system releases in excess of beneficial consumptive uses occur in the United States.

State Water Project Supplies

Metropolitan receives deliveries of SWP supplies via the California Aqueduct at Castaic Lake in Los Angeles County, Devil Canyon Afterbay in San Bernardino County, Box Springs Turnout, and Lake Perris in Riverside County. The initial facilities of the SWP (i.e., Oroville Dam, San Luis Dam, California Aqueduct, and associated pumping plants) were completed in the early 1970s. Metropolitan has contracted for the delivery of 2.01 MAFY from DWR, which is about 48 percent of the planned project yield. Currently, the SWP provides a dependable supply of about one-half of the amount that the State is contracted to deliver. The SWP was planned so that additional facilities to increase the yield would be constructed over time as contractor demands increased. DWR's current planned facility improvements, including Delta facilities and additional storage south of the Sacramento-San Joaquin Delta, would increase dependable supplies by approximately 400,000 AFY when completed.

DWR determines SWP supplies, which can vary greatly during a drought. The dependable supply (firm yield) of the SWP is defined to be the average annual supply available during a repeat of the hydrology of the seven-year critical dry period which occurred from 1928 to 1934. This value is estimated by the DWR to total 1.17 MAFY to Metropolitan. However, water supplies may be significantly lower, as illustrated in 1991, when DWR approved delivery of only 30 percent of Metropolitan's request.

SWP supplies are also augmented under agreements with Coachella Valley Water District (CVWD) and Desert Water Agency (DWA), by which Metropolitan exchanges Colorado River water for CVWD's and DWA's SWP entitlements. Through another agreement, Metropolitan delivers Colorado River water, in advance of their current SWP entitlement, to CVWD and DWA for groundwater storage. As needed, Metropolitan is able to use up to 61,200 AFY of CVWD's and DWA's SWP entitlements, while CVWD and DWA use previously stored Colorado River water.

PROJECTED NEAR-TERM MINIMUM SUPPLIES

One of the components of AB 11X requests "an estimate of the minimum water supply available at the end of 12, 24, and 36 months, assuming the worst case water supply shortages."

Metropolitan estimates a firm availability of a minimum of 600,000 acre-feet (AF) of water from the Colorado River in 1993 and 1994. However, in 1992, Metropolitan will be able to divert Colorado River water to the full capacity of the Colorado River Aqueduct, which is 1.25 MAF. This will be achieved by receiving the full basic entitlement, water available by the IID/Metropolitan water conservation program, and water unused in Arizona and Nevada.

In December 1991, DWR approved 1992 SWP deliveries at 20 percent of Metropolitan's SWP estimated entitlement request. This delivery, combined with CVWD's and DWA's approved requests, as well as the carry over of 110,000 AF of Metropolitan's 1991 entitlement

water, will provide a SWP supply of 486,000 AF to Metropolitan. This approval was developed from a scenario based on current reservoir storage and a repeat of the 1977 drought year.

DWR has not provided Metropolitan with a worst-case scenario for 1993 and 1994. In these years, as in all others, SWP deliveries are subject to a number of variables, including: availability of water in Oroville and San Luis reservoirs carried over from previous years, availability of runoff captured and regulated by these reservoirs, and the availability for export of excess unregulated runoff from the Sacramento-San Joaquin Delta (Delta). Based on information from DWR staff, Metropolitan assumed a worst-case supply scenario for either 1993 or 1994 occurs if no water from carryover storage is available and a repeat of the worst hydrologic year of record (1977) occurs. In such a case, the SWP supplies would come from excess unregulated flows from the Delta and any reservoir regulation which occurs that year. In conversations, DWR staff indicated that these sources would supply approximately 300,000 AF if the 1977 hydrologic year repeated. As Metropolitan is entitled to approximately half of this supply, 150,000 AF would probably be available to Metropolitan. It should be noted, that it is extremely unlikely that this worst-case supply scenario would occur in two consecutive years. Thus the 150,000 AF supply is the absolute worst-case which could occur in either 1993 or 1994.

The resulting water demands and supplies for Metropolitan at the end of 12, 24, and 36 months are presented in Table III-2. With the water supply scenario in Table III-2, a 30 percent shortfall in supply is projected for 1992, and a 50 percent shortfall is projected for both 1993 and 1994, which assumes a worst-case scenario. Note that the expected demands are reduced by 50 percent as the result of implementation of Metropolitan's IICP, which is described in detail in the following chapter.

TABLE III-2
COMPARISON OF WATER DEMANDS & SUPPLIES
FOR METROPOLITAN WATER DISTRICT

(1000 AF)

Source of Supplies	1992	1993	1994
Colorado River Aqueduct	1,250	608	626
State Water Project	486	150	150
System Losses	<30>	<30>	<30>
Supplemental Supplies*	0	531	536
TOTAL MINIMUM SUPPLIES	1,706	1,259	1,282
Expected Demand	2,472	2,518	2,564
Estimated Demand with IICP (50% cutback)	1,706	1,259	1,282
Stage in IICP	V	VI	VI

* Supplemental Supplies

- Colorado River Aqueduct
 - consists of possible authorization by the Secretary of the Interior to utilize Colorado River water apportioned to, but unused, by Arizona and Nevada, and can be accomplished through the declaration of surplus conditions on the Colorado River by the Secretary of the Interior
 - agreements with other California users of Colorado River water to fallow land and institute conservation programs
- State Water Project
 - the continuation of a California Drought Emergency Water Bank and implementation of other water transfer agreements could also provide supplemental supplies

IV. MANAGEMENT OF WATER SHORTAGES

WATER SUPPLY MANAGEMENT PROGRAMS

The goal of Metropolitan's water management programs is to maximize efficient use of existing supplies and to assure adequate supplies to meet short-term and long-term water demands. Metropolitan has a number of water supply management programs that are geared to achieve long-term water management objectives. However, these programs also help alleviate short-term supply constraints. The following sections describe the various water management programs conducted by Metropolitan, and how Metropolitan meets the following requirements of AB 11X:

- Stages of action that a supplier would undertake up to a 50 percent shortage
- Consumption limits in the most restrictive stages
- Mandatory provisions to reduce water use
- A draft ordinance or resolution to carry out the drought plan
- Penalties for excessive use
- A mechanism for determining actual reductions in water use

Local Projects Program

Currently, Southern California reclaims approximately 248,000 AF of wastewater annually. The Local Projects Program provides financial support to local agencies which develop local water supply projects and correspondingly reduce their demands for Metropolitan's imported supplies. These projects are primarily concerned with the development of water reclamation projects. To date, Metropolitan has participated in 26 local projects, with an ultimate yield of approximately 138,000 AFY. Currently, six additional projects with an estimated yield of about 56,000 AFY, are in various stages of review.

Interruptible Water Service Program

Under the Interruptible Water Service Program, Metropolitan enters into standard agreements with its member agencies to provide imported water at discounted rates for local storage. The stored water is to be used during a temporary deficiency in imported supplies. A participating agency is required to: (1) submit a statement that it will be able to sustain the reduction or interruption without adversely affecting service to the public, and that it has or will have water in storage and distribution facilities to do so; and (2) if the agency's statement shows reliance on water stored in an adjudicated groundwater basin, the agency must be able to

increase groundwater withdrawal to sustain the interruption. Due to the reduction in Metropolitan's water supply caused by the ongoing drought and the financial impact of reduced sales, Metropolitan's Board suspended the price differential between noninterruptible and interruptible service indefinitely, effective April 1, 1991. Since that time, all noninterruptible and interruptible sales have been at the noninterruptible rate.

Seasonal Storage Program

The Seasonal Storage Program provides an incentive for member agencies to purchase water from Metropolitan during winter months for local storage. It is aimed at achieving greater conjunctive use of imported and local supplies, encourage construction of additional local production facilities, and reducing member agencies' dependence on Metropolitan's deliveries during the peak summer months.

Groundwater Recovery Program

Under its Groundwater Recovery Program adopted in 1991, Metropolitan will improve regional water supply reliability by providing financial assistance to its member and local agencies to develop projects which can potentially ultimately recover up to 200,000 AFY of contaminated groundwater. As of December 1991, three projects with a collective capacity of 11,900 AFY were approved for participation and three projects with a combined capacity of 6,000 AFY were under review.

Conservation Credits

In 1988, Metropolitan initiated the Conservation Credits Program (CCP), which is still the centerpiece of the organization's conservation efforts. Under the CCP, Metropolitan shares the costs of the conservation programs with local agencies, where Metropolitan pays the lesser of one-half of the project cost or \$154 per acre-foot saved for qualifying projects. For many approved projects, Metropolitan also funds an extensive evaluation component. CCP projects approved through mid-1990 are projected to achieve 43,125 AF of savings over a 10-year period.

Conservation Best Management Practices

The Best Management Practices (BMPs) are a list of 16 conservation measures that are expected to achieve an additional 300,000 AF of water savings for Metropolitan per year by 2010. The BMPs were supported by water suppliers, environmental/public interest groups, and other interested parties by the signing of a memorandum of understanding (MOU) in December 1991. This MOU states a commitment to implement these measures over the next ten years by all signatories. Metropolitan has been developing a five-year plan to speed up the implementation process and support its member agencies in their efforts.

Each of these programs are described in greater detail in The Regional Urban Water Management Plan, and in Metropolitan's demand forecasting report, Interim Report No. 4.

DROUGHT RESPONSE PROGRAMS

As California entered into a fifth consecutive drought year during late 1990 and water supply shortfalls appeared eminent in 1991, Metropolitan developed and/or participated in a number of programs to significantly reduce water demands and to procure additional water supplies. Metropolitan's 1991 drought response included the development of the Incremental Interruption and Conservation Plan, the implementation of additional water conservation programs, and the procurement of emergency water supplies. Each of these drought-response programs are described below.

Incremental Interruption and Conservation Plan

In November 1990, Metropolitan adopted the Incremental Interruption and Conservation Plan (IICP) to meld provisions for service interruptions under the Interruptible Water Service Program and curtailments in service of Seasonal Storage water service, into a staged plan of reductions of Metropolitan supplied water during droughts. The IICP is designed to encourage member agencies to utilize water held in local groundwater and surface storage reservoirs and promote consumer water conservation to reduce demands on imported supplies during droughts. The program is implemented in stages, with each stage progressively reducing the water use objectives for each member agency. Metropolitan's Board determines the appropriate stage of implementation based on certain projections of supply. Stage I is a voluntary program. Later stages are mandatory with specified disincentive charges applicable when member agencies' use of Metropolitan-supplied water exceeds limits established by the IICP. These stages are described in Table IV-1.

Stage I of the IICP, calling for voluntary conservation measures, was instituted when the program was adopted in November 1990. In December 1990, there was a 25 percent chance that runoff would be so low as to require additional deficiencies in deliveries beyond a 65 percent shortage to agricultural users and 15 percent shortage to municipal and industrial users. The updated forecasts in January 1991 suggested that there was a 50 percent chance that greater deficiencies would be imposed, assuming that the SWP was able to effectively capture all of the available runoff for use in the current year.

Given the declining water supplies, Stage III was implemented by the Board on February 1, 1991. Continued depletion of available supplies forced the Board to adopt a resolution which instituted Stage V on March 1, 1991. As a result of combined drought conditions in California and the prospect that municipal and industrial users of SWP water faced substantial reductions in deliveries, Stage VI was scheduled for implementation beginning April 1, 1991. Improvements in California's water supply outlook as a result of a series of storms in March, allowed the Metropolitan to maintain its requested mandatory water conservation target at Stage V throughout calendar year 1991.

Under the IICP, Metropolitan establishes target objectives for the amount of water to be supplied to each member agency. Annual water use objectives are established based upon the amount of water purchased from Metropolitan in the base year of FY 1989-90 and the class of service (Noninterruptible, Interruptible, and Seasonal Storage Service) in which the water was purchased. In order to establish this annual target objective, water delivered in the base year is classified as either firm service or nonfirm service. Firm service includes all Noninterruptible Service and Seasonal Storage Service which was purchased from Metropolitan in the winter of FY 1989-90 and withdrawn from storage during the summer of 1990. Nonfirm service includes the remaining amounts of Seasonal Storage Service and all Interruptible Service.

Once deliveries in the base year are categorized as firm service and nonfirm service, annual water use objectives are established by reducing purchased deliveries in the base year in accordance with the following table.

TABLE IV-1
THE INCREMENTAL INTERRUPTION AND CONSERVATION PLAN

Stage	Reduction Target in Non-firm Deliveries (Percent)	<u>Reductions from Base Year</u>		Overall Reduction
		Conservation Target of Firm Deliveries (Percent)	Expected Savings (AFY)	
I	Voluntary	Goal 10	100,000	--
II	20	5	260,000	10%
III	30	10	430,000	17%
IV	40	15	600,000	24%
V	50	20	770,000	31%
VI	90	30	1,230,000	50%

The annual water use objectives are further broken into monthly target quantities based upon the member agency's usage in the corresponding month of the base year. However, not all of the water from the annual objective is scheduled into monthly targets. A portion of the water is held in what is termed a discretionary pool, which Metropolitan endeavors to deliver to agencies annually, but is available to agencies on the terms and at the water rate applicable to Seasonal Storage Service. Specifically, discretionary pool water is available at the discretion of Metropolitan's General Manager and can only be used for storage by a member agency. It is available intermittently during droughts and to help regulate overall demands.

Water which was delivered in the base year which is not included in monthly targets for member agencies, but is instead made available from the discretionary pool, includes: nonfirm

service delivered in the base year for groundwater basin replenishment by direct spreading or injecting, water delivered for replenishment of groundwater basins by making deliveries of imported water in-lieu of the pumping of groundwater, and water delivered in the base year on a nonfirm basis either for storage in a local reservoir or to maintain local water in storage in a reservoir.

After the creation of the discretionary pool is completed, the remainder of the agency's annual water-use-objective is broken into monthly target quantities based upon use in the corresponding month of the base year. The monthly target quantities effectively serve as water allocations to agencies. If, in any month, an agency's use of Metropolitan-supplied water exceeds its target quantity (after deducting any deliveries from the discretionary pool), the agency pays a disincentive charge for each acre-foot of water taken in excess of its monthly target quantity. Disincentive charges are twice the noninterruptible rate and are in addition to the applicable water rate for the purchase.

The distinction between deliveries made as part of the discretionary pool and the deliveries chargeable against an agency's monthly allocation is that water from the discretionary pool must be stored for later use. Agencies are required to certify that the quantities of water received are stored for later use during periods when discretionary pool water is available in order to process monthly accounting and potential disincentive charges.

Adjustments

Adjustments are made to the scheduled target quantities and the discretionary pool to reflect population growth, changes in local water supplies, conservation, and reclamation. A rescheduling of base-year deliveries of Metropolitan water is acceptable to meet the agency's operational needs. If rescheduling does not meet the needs of the agency, it may request a transfer of in-lieu base year deliveries from the discretionary pool to the nonfirm scheduled target quantities.

Incentives

The IICP originally included an incentive program. Stage I of the IICP was voluntary, and member agencies who reduced their use of water 5 percent of the base year deliveries and certified that they did not increase the use of local water to do so, were eligible to receive an incentive payment of \$99 (established at one-half the 1989-90 untreated noninterruptible water rate) for each acre-foot of water conserved. In Stages II through VI, agencies using less than their target quantity received the \$99/AF conservation incentive payment. In all cases, the conservation incentive payment only applied to deliveries from Metropolitan and not to total water usage. The conservation incentive payment was discontinued on September 30, 1991.

Penalties

No disincentive charges (or penalties) are used in Stage I of the IICP. Immediately upon the implementation of Stage II, a penalty rate is imposed on any agency that surpasses its target allocation.

For Stages II through VI, a penalty charge of twice the noninterruptible water rate (\$394 per acre-foot in FY 1990-91) is applied to any member agency that does not meet its scheduled target quantity. The penalty charges are imposed in addition to the applicable water rate for water purchased to the new total target quantity. The under-delivery of discretionary pool water is not allowed to be used to offset an overuse of scheduled targets. The penalty charge applies only to deliveries from Metropolitan, not total water usage. The overuse penalties do not apply to the discretionary pool.

Accounting and Reconciliation

Although disincentive charges are levied against an agency in any month that the agency's water usage exceeds its IICP target, agencies are allowed to offset overuse by extra conservation in other months through an annual reconciliation process. The reconciliation process occurs at the end of the water year (October 1 through September 30) or immediately following the Board's determination that Stage II through Stage VI are no longer in effect, whichever is earlier.

In the reconciliation process, under-usage in one month is allowed to offset over-usage in another month. An agency which utilizes more than its target in one month and has paid a disincentive charge for that over-usage is eligible for a refund of the disincentive charge to the extent that water usage in other months is less than the target allocation to that agency. Through the annual reconciliations, disincentive charges remain applicable only to the extent that an agency's usage in the entire year exceeds the sum of the agency's monthly targets for that year. Water used from the discretionary pool is excluded from the reconciliation.

In 1991, the accounting and certification processes took place after the deliveries had been made. The lag time between deliveries and certifications typically was several weeks. Because of this lag, it was not possible to immediately determine each agency's performance under the IICP. Thus, a delay in disincentive charges was possible for all agencies. The annual reconciliation accounted for any irregularities.

Determination of Actual Reductions in Water Demands on Metropolitan

The determination of actual reductions in water use are based upon the metering of monthly sales of water to Metropolitan's member agencies. Sales of water to member agencies in FY 1990-91 were compared to the amounts of water purchased from Metropolitan by the member agency during the FY 1989-90 base year. Table IV-2 shows the effectiveness of provisions to reduce water use in Metropolitan's service area from January to July 1991. During this six month period, the actual purchase of Metropolitan water decreased by more than 475,000 AF. The summer of 1991 was unusually cool and accounted for a portion of the reduced demand. Stage V called for total water savings of 31 percent, but by July, the actual reduction in Metropolitan sales achieved due to mandatory rationing was 40 percent. Between February and June 1991, actual savings in Metropolitan sales averaged 39 percent. During that period, Metropolitan paid out approximately \$18 million in incentive payments.

TABLE IV-2

METROPOLITAN NORMAL VS. ACTUAL PRODUCTION (JAN - JULY 1991)

	IICP Stage	% Reduction Goal	Normal Production/Purchase (Acre-feet)	Actual Production/Purchase (Acre-feet)	Percent Change
JAN	I	10	166,878.6	182,488.8	+9
FEB	III	17	159,724.1	126,788.7	-21
MAR	V	31	216,196.7	101,347.5	-53
APR	V	31	228,721.4	117,878.7	-48
MAY	V	31	200,003.4	138,201.6	-31
JUN	V	31	213,174.1	143,224.4	-33
JUL	V	31	<u>253,129.4</u>	<u>151,222.5</u>	-40
TOTAL			1,437,827.7	961,152.2	-33

Appendix 2 illustrates resolutions passed by the Metropolitan Board which instituted Stages of the IICP and is presented as an example of how the various stages of the IICP are implemented by Metropolitan.

Model Emergency Water Conservation Ordinance

In order to respond to potential supply shortfalls during the summer of 1990, Metropolitan adopted the "Drought Action Plan '90" in April 1990. This plan included setting water use reduction goals, distributing about 1-million water conservation packages to its member agencies, and promoting water conservation through various media. Furthermore, a Metropolitan staff task force was created to assist local water purveyors in developing and adopting water conservation ordinances. Metropolitan's "Task Force on Implementation" prepared the model Emergency Water Conservation Ordinance as presented in Table A-1 of Appendix A.

The ordinance was designed to provide a permanent mechanism that would allow local entities to deal with water shortage emergencies. It sets forth three basic implementation phases keyed to the severity of the water shortage. The implementation phases of the model ordinance prohibit certain types of water use, require percentage reductions in other water uses, and impose surcharges on excess water use. In addition to the surcharges, the ordinance provides increasingly severe sanctions for repeated violations. The penalties include a warning citation, additional surcharges, and installation of flow restrictors.

The ordinance was drafted so that it could be used or adapted by a wide range of water supply agencies and does not exhaust all possible measures that could be included in a water conservation plan. Member agencies were encouraged to review closely the ordinance for its applicability to their agency's needs before it was adopted. As a result, most of Metropolitan's approximately 300 member agencies and subagencies adopted the Emergency Water Conservation Ordinance to their local areas prior to 1991.

1991 Water Conservation Drought Response

Conservation Credits Program

Since 1988, Metropolitan had been implementing ongoing conservation projects through its Conservation Credits Program (CCP). The CCP provides incentives to member agencies to implement conservation projects that result in quantifiable water savings. Through 1991, the CCP became a vehicle for agencies to continue implementation of ultra-low-flush toilet projects, low-flow showerhead distribution projects, and to take advantage of the large-turf audit programs offered by Metropolitan. Metropolitan participated with its member agencies in the retrofit of more than 200,000 ultra-low-flush toilets in 1991, with a cost, to Metropolitan, of approximately \$10 million.

Water-Wise '91

In response to the drought, Metropolitan implemented a residential plumbing retrofit program. The goal of the Water-Wise '91 program was to launch an aggressive campaign to distribute retrofit kits throughout its service area with Metropolitan's member agencies and subagencies, with the cooperation of private sector co-sponsors. These kits included low-flow showerheads, toilet water displacement bags, leak-detection tablets and literature to reinforce the urgent need to conserve water. It is estimated that about 1-million households will be retrofitted in the Water-Wise '91 program.

Industrial and Commercial Program

In May 1991, Metropolitan established an Industrial and Commercial Water Conservation Program with technical capacity to increase water-use efficiency in the business sector. The program offers information, water audits, training seminars and technical assistance to business customers and member agencies within Metropolitan's service area. This program helps develop short-term awareness and reaction in the business community and long term water reduction support for the region.

Public Outreach

Metropolitan continues its multi-million dollar commitment to help inform and educate the general public about the water situation and conservation. This is implemented with in-school education programs, utilizing multi-media sources to advertise, public information sources, and speakers throughout the community.

1991 Emergency Water Supplies

Additional Colorado River Water

In March 1991, to help alleviate the effects of the continuing drought, the Commissioner of the United States Bureau of Reclamation informed the Governor of California that Metropolitan would be allowed to divert water from the Colorado River at the full capacity of its aqueduct for the remainder of 1991. The Commissioner's action was based on his finding that, in all probability, net diversions in Arizona, California, and Nevada would be such that Metropolitan could divert additional water without causing the three states to exceed 7.5 MAF of net diversions. If the final accounting data indicated that net diversions exceeded 7.5 MAF, Metropolitan and any other California contractors exceeding their contractual entitlements would

be required to compensate for such overuse. Based on actual net diversions through November 1991 and projected net diversions in December 1991, the three states will utilize less than 7.5 MAF.

1991 California Drought Emergency Water Bank

On April 1, 1991, negotiations were completed among interested California water agencies and DWR to establish the 1991 California Drought Emergency Water Bank (Bank). The primary objective of the Bank was to provide water to meet critical needs consistent with criteria developed by the Governor of California.

As of November 1991, DWR had purchased about 830,000 AF of water for the Bank, with 655,000 AF available for delivery (after accounting for carriage water and other losses). Metropolitan purchased 215,000 AF of Bank water, of which, 27,000 AF were contracted for by member agencies under Metropolitan's Critical Needs Water Bank (CNWB). The remaining 188,000 AF of water became part of Metropolitan's overall water supply. All of this water was delivered to Metropolitan by DWR during the five-month period from May through September 1991.

At its April 9, 1991 meeting, Metropolitan's Board established the CNWB, which is similar to the Bank. The purpose of the CNWB is to provide water to meet the critical water needs within Metropolitan's service area.

The minimum requirements for a member agency to receive allocations from the CNWB are that the member agency be fully utilizing its local water supplies; that the member agency has implemented a stringent water conservation program; that the member agency's or subagency's total water supplies are less than 75 percent of normal water demand; and that the water is to be delivered to meet critical urban needs, or is needed to sustain trees, vines and other high value crops.

1991 Summary

The IICP, coupled with an aggressive conservation program, a responsive public, the March precipitation, cooler-than-normal weather, and supplies of water from the Drought Emergency Water Bank and the Colorado River allowed Metropolitan to meet its reduced water demand. A supportive feature was that most of Metropolitan's approximately 300 member agencies and subagencies had passed water conservation ordinances resembling the Model Conservation Ordinance (Table A-1 of Appendix A).

1992 DROUGHT RESPONSE PROGRAMS

If the drought continues into 1992, as reflected in Table III-2, Metropolitan will maintain the Incremental Interruption and Conservation Plan at Stage V. With few exceptions, the IICP will be implemented using the same procedures as 1991. FY 1989-90 will remain the base year for determining target quantities of water. However, the conservation incentive payment for the amount of water not used within the target quantity has been discontinued. In addition to the applicable water rate, the penalty rate will be \$444 per acre foot for the amount of water used over the target quantity.

Metropolitan will continue to actively pursue the implementation of conservation programs. As a signatory of the Memorandum of Understanding regarding the implementation of Best Management Practices, Metropolitan will assist member agencies in meeting their obligations under the MOU. Metropolitan's Conservation Credits Program, which provides strong financial incentives to implement effective conservation programs, is expected to be the primary vehicle for the implementation of urban BMPs in Metropolitan's service area. Although the BMPs are designed as a long-term conservation effort, their immediate implementation will provide water savings in the short-term.

Metropolitan will continue to explore all possible opportunities for additional water supplies. To meet the needs of its member agencies, Metropolitan will pursue the development of a water bank similar to the 1991 California Drought Emergency Water Bank. Furthermore, all possible water exchanges and transfers will be aggressively pursued.

Metropolitan will also negotiate with the Secretary of the Interior to receive as large an allotment of Colorado River water as is possible. Should the drought extend into a sixth year, it is anticipated that a supply of Colorado River water equal to the capacity of the aqueduct can be obtained.

If 1993 and/or 1994 turn out to be worst case scenario years, it appears at this time, that it would be necessary for Metropolitan's General Manager to recommend that IICP be implemented at Stage VI, responding to a 50 percent cutback.

V. REVENUE IMPACTS AND MEASURES TO OVERCOME REVENUE SHORTFALLS

SOURCES OF REVENUE AND REVENUE REQUIREMENTS

Metropolitan receives revenue from a variety of sources. For example, during FY 1989-90, 73 percent of total revenue was derived from water sales, 12 percent from property taxes, and 15 percent from other sources including interest income, annexation charges, electric power sales, and miscellaneous sources such as rent for Metropolitan-owned land.

Since the delivery of water began in 1941, the revenue base has changed substantially (see Figure V-1). Before 1941, taxes were virtually the only source of revenues available to repay the construction costs of the Colorado River Aqueduct. However, as originally intended, the share of property taxes in total revenue has declined steadily.

Since 1979, the relationship between Metropolitan's water rates and tax levies has been governed by a proportionate-use formula. The purpose of this formula is an equitable allocation of capital costs between water users and property taxpayers. The basic concept of the proportionate-use formula is that funds collected through water rates cover all delivery costs, operations and maintenance, and a portion of capital costs representing the "used" capacity of Metropolitan's delivery system. Funds collected through tax levies cover the remaining capital costs which represent the "unused" capacity of the delivery system.

During the 1980s, a series of actions by Metropolitan's Board and the California legislature resulted in changes in the tax levies assessed by Metropolitan. Beginning July 1, 1990, Metropolitan's tax revenues were capped, such that total tax revenues, other than from special annexation taxes, cannot exceed the amount needed to pay:

- (1) the general obligation bond debt service of Metropolitan, and
- (2) that portion of Metropolitan's payment obligation allocable to debt service on the State's general obligation bonds (the Burns-Porter Act Bonds) which were outstanding in 1984 and which had been used to finance SWP facilities of benefit to Metropolitan.

Under existing legislation, taxes will cease to be levied when the general obligation bonds of Metropolitan and the SWP are fully paid. Chapter 271 of the California Statute 1984 provides that in times of financial necessity taxes may be increased beyond this limit. In 1991, the Board established a lower limit on the annual tax levy. The lower limit was set at the amount of taxes levied during FY 1990-91, which was approximately \$77 million. The lower limit is subject to the provisions of Chapter 271.

REVENUES BY SOURCE AS A PERCENT OF TOTAL REVENUE

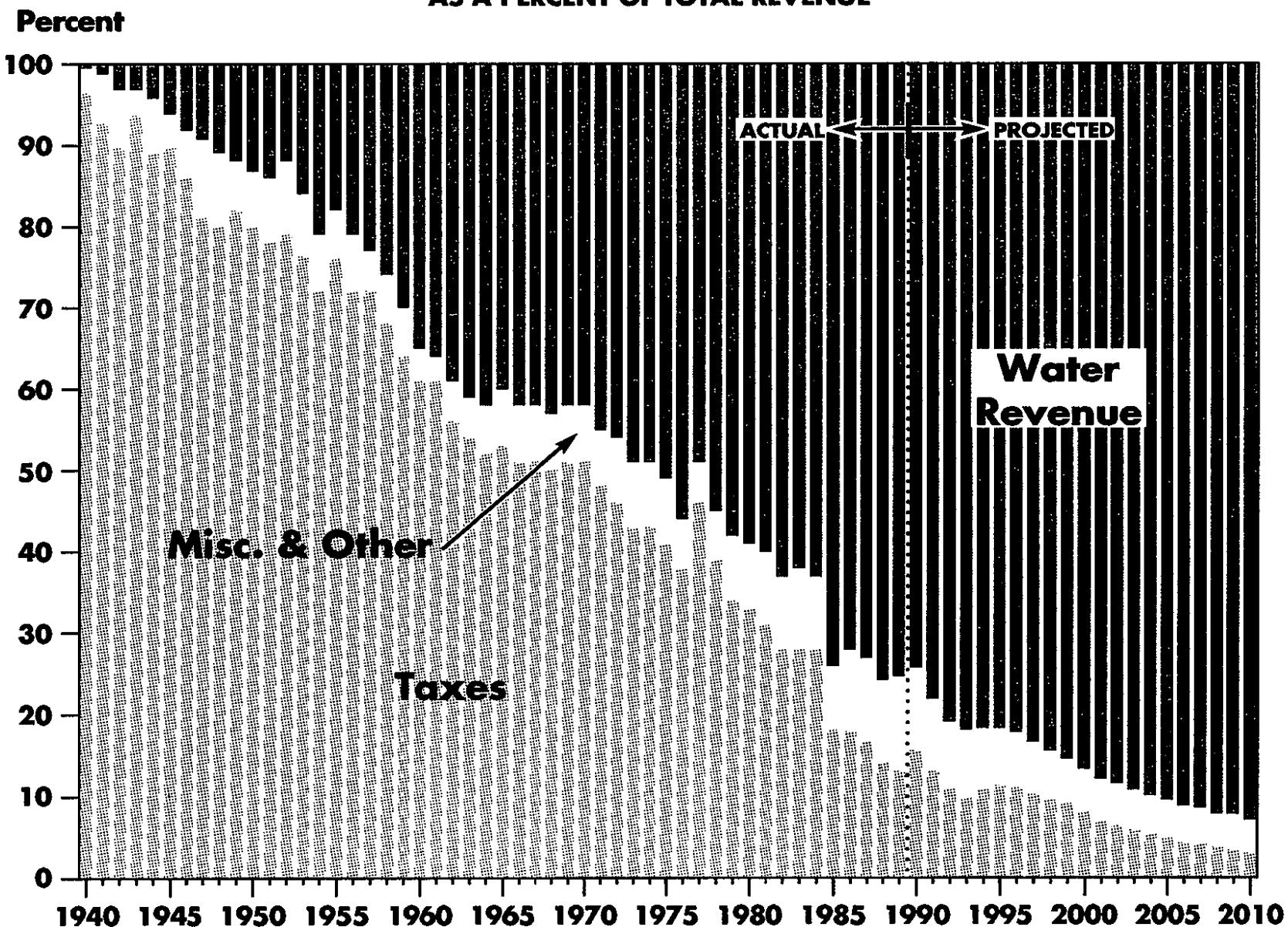


FIGURE V.1

Implementation of these recent legal provisions eventually will cause a further decline in tax revenue and a gradual increase in water rates. Revenues from water sales have increased over time and they currently represent about 70 percent of Metropolitan's total revenues (Figure V-1). The basic rate for untreated water for domestic and municipal uses increased from \$8 per AF in FY 1941-42 to \$222 per AF for FY 1991-92, while the general tax rate for Metropolitan's purposes has been gradually reduced from a peak equivalent rate of 0.1250 percent of full assessed valuation in FY 1945-46 to 0.0089 percent of full assessed valuation in FY 1991-92.

REVENUE IMPACTS OF DROUGHT MANAGEMENT

Because of continuing drought conditions, Metropolitan initiated a series of aggressive measures to reduce water demands through the IICP and other water management and conservation programs. As expected, the success of these water management programs have reduced water sales. Because the receipts of water sales make up a substantial portion of total Metropolitan operating revenues, the result has been a decline in this very important revenue base, with the possibility that future revenues may fall short of what is required.

For example, through the IICP, rationing imposed by the Board on member agencies resulted in revenue losses of about \$164 million in FY 1991-92. Of that amount, lost revenue from the non-sale of water was approximately \$125 million. The remainder of the revenue impact resulted from incentive payments to member agencies that bought less water than target allocations when the IICP was first implemented.

Metropolitan will also be providing substantial funds to support additional member agency conservation projects during FY 1992-93. The support of member agencies through the Conservation Credits Program, conservation advertising, and an irrigation management information system will have a direct impact on Metropolitan costs.

Water Rate Stabilization Fund

During the period of increasing water sales in the late 1980s, Metropolitan established a Water Rate Stabilization Fund and a Water Treatment Surcharge Stabilization Fund as a portion of the water revenues collected. The stabilization funds accumulated \$400 million by 1990 (including stabilization funds held in the Revolving Construction Fund (RCF)) without any increase in Metropolitan's water rates. The Board's stated policy is to use monies in these funds to mitigate the need to increase water rates. Reduced water supplies available to Metropolitan from the State Water Project and the resulting reduction in sales due to the 1991 drought, necessitated use of stabilization funds and an increase in water rates. By authorizing the use of rate stabilization funds, the Board was able to hold the July 1991 noninterruptible untreated rate increase to \$25 per AF. Had the stabilization funds not been available, a significantly greater rate increase would have been needed.

POTENTIAL MEASURES TO OVERCOME REVENUE IMPACTS

Metropolitan's Administrative Code Section 4304 requires that the General Manager present determinations of the total revenues and the revenues from water sales required during FY 1992-93 to the Finance and Insurance Committee no later than December 1991. A five-point program has been developed to meet the current fiscal challenge of reduced water revenues:

- (1) reduce FY 1991-92 operation and maintenance expenses
- (2) reduce FY 1992-93 projected operation and maintenance expenses
- (3) prioritize and defer selected capital construction projects until the revenue outlook improves
- (4) approve a firm revenue charge to generate approximately \$50 million per year
- (5) approve a rate increase to cover remaining revenue requirements

To implement points 1 and 2, an extensive review of variable operation and maintenance (O & M) costs has been conducted. It was determined that approximately 77 percent of projected costs are fixed obligations, leaving 23 percent that could be reviewed for reduction or deferral. A plan has been developed that involves freezing approximately 79 vacant positions, reducing costs for water development and conservation programs, reducing purchases of operating equipment, limiting use of consultants, and reducing travel expenses. Cost reductions of about \$70 million are expected in FY 1992-93.

Regarding the deferment of capital construction projects, it is important to note that downsizing or deferring elements of the capital program has only a minimal short-term effect on Metropolitan's cash flow and revenue requirements. This is because most capital expenditures are made from construction funds already on hand. The debt service on existing bonds must be paid from current revenues. Deferral of pay-as-you-go construction, however, does have a direct effect on the need to raise additional revenues. It is estimated that the reduction in pay-as-you-go capital funding will be reduced by \$48.4 million (from \$54 million to \$5.6 million) in FY 1992-93.

The proposed program includes a water standby or availability of service charge to generate \$50 million in firm revenue. The charge could be on all parcels within the service area or it could be imposed selectively on parcels meeting certain criteria. Several alternative methods of structuring such a charge are currently being studied. Committees of the Board of Directors have indicated an interest in utilizing connection fees or capacity charges. Metropolitan does not currently have the authority to impose such charges; however, AB 1875, if adopted by the California legislature, would appear to grant such authority to Metropolitan. Metropolitan staff will continue to monitor this legislation with the objective of including connection fees or capacity charges in future revenue analyses, when appropriate.

Based on current cost projections, total revenues required for FY 1992-93 are \$828.7 million. With the tax rate for FY 1992-93 set at the same rate used for FY 1991-92, tax collections during FY 1992-93 are estimated to be \$85 million. Interest income, power revenues, and miscellaneous revenues are projected to be \$73.8 million. Together with the \$50 million that will be raised from a new firm revenue source during the year, this results in a gross water revenue requirement for FY 1992-93 of \$619.9 million. After adjusting for the use of the projected balance of \$70 million remaining in the Water Rate Stabilization Fund to pay a portion of the FY 1992-93 costs, the net water revenue requirement is estimated to be \$549.9 million.

Given this estimate of required water revenue, the required water rate increase for untreated noninterruptible service could range from \$44 to \$50 per AF, effective on July 1, 1992, depending on changes in water supply availability and projected costs, and on information received at public hearings. The projected increase in the surcharge for water treatment is \$14 per AF. The cost estimates used in these projections include \$4 million for programs to augment Colorado River supplies, but do not include specific amounts to cover potential payments to the Palo Verde Irrigation District for a proposed farm land fallowing program (estimated to be an additional \$14 million) to be expended during FY 1992-93.

REFERENCES

- Chesnutt, Thomas W. and Casey N. McSpadden. 1989. Statistical Analysis of Water Demands during the Current Drought. Metropolitan Water District of Southern California. Los Angeles, CA.
- Dziegielewski, B. and Eva M. Opitz. 1987. Municipal and Industrial Water Use in the Metropolitan Water District Service Area: Interim Report No. 3. Metropolitan Water District of Southern California. Los Angeles, CA.
- Dziegielewski, B. and Eva M. Opitz. June 1991. Municipal and Industrial Water Use in the Metropolitan Water District Service Area: Interim Report No. 4. Metropolitan Water District of Southern California. Los Angeles, CA.
- Dziegielewski, B., E.M. Opitz, and D. Rodrigo. 1990a. Seasonal Component of Urban Water Use in Southern California. Metropolitan Water District of Southern California. Los Angeles, CA.
- Dziegielewski, B., D. Rodrigo, and E.M. Opitz. 1990b. Commercial and Industrial Water Use in Southern California. Metropolitan Water District of Southern California. Los Angeles, CA.
- Metropolitan Water District of Southern California. June 1, 1989. Waterworks Bonds, Election 1966, Series G. O'Melveny and Myers Bond Council. Los Angeles, CA.
- Metropolitan Water District of Southern California. July 1, 1991. Water Revenue Bonds, Issue of 1991. O'Melveny and Myers Bond Council. Los Angeles, CA.
- Metropolitan Water District of Southern California. 1990. The Regional Urban Water Management Plan for the Metropolitan Water District of Southern California. Los Angeles, CA.
- Metropolitan Water District of Southern California. August 1991. Water Conservation Pricing Approaches of the Metropolitan Water District. MWD Staff Report. Los Angeles, CA.
- Metropolitan Water District of Southern California. October 1991. Regional Implementation Plan for Conservation Best Management Practices. Los Angeles, CA.

APPENDIX 1

MODEL EMERGENCY WATER CONSERVATION ORDINANCE

TABLE A-1

MODEL EMERGENCY WATER CONSERVATION ORDINANCE

Section 1. Statement of Policy and Declaration of Purpose

- (a) Because of the water supply conditions prevailing in the [entity] and/or in the area from which the [entity] obtains a portion of its supply, the general welfare requires that the water resources available to the [entity] be put to the maximum beneficial use to the extent to which they are capable, and that the waste or unreasonable use, or unreasonable method of use of water be prevented and that the conservation of such water be practiced with a view to the reasonable and beneficial use thereof in the interest of the people of [entity] and for the public welfare.
- (b) The purpose of this ordinance is to provide a mandatory water conservation plan to minimize the effect of a shortage of water supplies on the customers of the [entity] during a water shortage emergency.

Section 2. Authorization to Implement Water Conservation Ordinance

- (a) The [governing body of the entity] is authorized to implement the provisions of this ordinance, following the public hearing required by sub-section (b), upon its determination that such implementation is necessary to protect the public welfare and safety.
- (b) Prior to implementation of this ordinance, the [governing body of the entity] shall hold a public hearing for the purpose of determining whether a shortage exists and which measures provided by this ordinance should be implemented. Notice of the time and place of the public hearing shall be published not less than ten (10) days before the hearing in a newspaper of general circulation within the [entity].
- (c) The [governing body of the entity] shall issue its determination of shortage and corrective measures by public proclamation published in a daily newspaper of general circulation within the [entity]. Any prohibitions on the use of water shall become effective immediately upon such publication. Any provisions requiring curtailment in the use of water shall become effective with the first full billing period commencing on or after the date of such publication.

Section 3. General Prohibition

No customer of the [entity] shall make, cause, use, or permit the use of water from the [entity] in a manner contrary to any provision of this ordinance or in an amount in excess of that use permitted by any curtailment provisions then in effect pursuant to action taken by the governing board in accordance with the provisions of this ordinance.

Section 4. Phase I Shortage

- (a) A Phase I Shortage shall be declared when the [governing body] determines that it is likely that it will suffer a ten percent (10%) shortage in its water supplies.
- (b) The following restrictions on the use of water shall be in effect during a Phase I Shortage:
 - (1) There shall be no hose washing of sidewalks, walkways, driveways, parking areas or other paved surfaces, except as is required for sanitary purposes;
 - (2) Washing of motor vehicles, trailers, boats and other types of mobile equipment shall be done only with a hand-held bucket or a hose equipped with a positive shutoff nozzle for quick rinses, except that washing may be done at the immediate premises of a commercial car wash or with reclaimed wastewater.
 - (3) No water shall be used to clean, fill or maintain levels in decorative fountains, ponds, lakes or other similar aesthetic structures unless such water is part of a recycling system.
 - (4) No restaurant, hotel, cafe, cafeteria or other public place where food is sold, served or offered for sale, shall serve drinking water to any customer unless expressly requested.
 - (5) All customers of the [agency] shall promptly repair all leaks from indoor and outdoor plumbing fixtures.

TABLE A-1 (Continued)

MODEL EMERGENCY WATER CONSERVATION ORDINANCE

- (6) No lawn, landscape or other turf area shall be watered more often than every other day and during the hours between 10:00 a.m. and 4:00 p.m.; except that this provision shall not apply to commercial nurseries, golf courses and other water-dependent industries.
- (7) No customer of the [agency] shall cause or allow the water to run off landscape areas into adjoining streets, sidewalks or other paved areas due to incorrectly directed or maintained sprinklers or excessive watering.

Section 5. Phase II Shortage

- (a) A Phase II Shortage shall be declared when the [governing body] determines that it is likely that it will suffer a shortage of more than 10 percent (10%) but less than twenty percent (20%) in water supplies.
- (b) The following restrictions on the use of water shall be in effect during a Phase II Shortage:
 - (1) The restrictions listed in Section 4, subsection (b) shall be in effect, except that the restrictions on watering lawn, landscape or other turf area shall be modified to prohibit watering more often than every third day between the hours of 6:00 a.m. and 6:00 p.m.
 - (2) Commercial nurseries, golf courses and other water-dependent industries shall be prohibited from watering lawn, landscape or other turf areas more often than every other day and between the hours of 10:00 a.m. and 4:00 p.m.; except that there shall be no restriction on water utilizing reclaimed wastewater.
- (c) No customer shall make, cause, use or permit the use of water from the [agency] for any purpose in an amount in excess of ____ percent (____ %) of the amount used on the customer's premises during the corresponding billing period during the prior calendar year.

Section 6. Phase III Shortage

- (a) A Phase III Shortage shall be declared whenever the governing body determines that it is likely that it will suffer a shortage of more than twenty percent (20%) in water supplies.
- (b) The following restrictions on the use of water shall be in effect during a Phase III Shortage:
 - (1) The restrictions listed in Section 4, subsection (b) shall be in effect, except that there shall be no residential outside watering of lawn, landscaping and other turf areas at any time except by bucket.
 - (2) Commercial nurseries, golf courses and other water-dependent industries shall be prohibited from watering lawn, landscaping and other turf areas more often than every third day and between the hours of 6:00 a.m. and 6:00 p.m.; except that there shall be no restriction on watering utilizing reclaimed water.
 - (3) The use of water from fire hydrants shall be limited to fire fighting and related activities and other uses of water for municipal purposes shall be limited to activities necessary to maintain the public health, safety and welfare.
- (c) No customer shall make, cause, use or permit the use of water from the [agency] for any purpose in an amount in excess of ____ percent (____ %) of the amount used on the customer's premises during the corresponding billing period of the prior calendar year.

Section 7. Relief from Compliance

- (a) A customer may file an application for relief from any provisions of this ordinance. The [chief executive officer of the governing body] shall develop such procedures as he considers necessary to resolve such applications and shall, upon the filing by a customer of an application for relief, take such steps as he or she deems reasonable to resolve the application for relief. The decision of the [chief executive officer] shall be final. The [chief executive officer] may delegate his or her duties and responsibilities under this section as appropriate.

TABLE A-1 (Continued)

MODEL EMERGENCY WATER CONSERVATION ORDINANCE

- (b) The application for relief may include a request that the customer be relieved, in whole or in part, from the water use curtailment provisions of Sections 5(c) and 6(c).
- (c) In determining whether to grant relief, and the nature of any relief, the [chief executive officer] shall take into consideration all relevant factors including, but not limited to:
 - (1) Whether any additional reduction in water consumption will result in unemployment;
 - (2) Whether additional members have been added to the household;
 - (3) Whether any additional landscaped property has been added to the property since the corresponding billing period of the prior calendar year;
 - (4) Changes in vacancy factors in multifamily housing;
 - (5) Increased number of employees in commercial, industrial, and governmental offices;
 - (6) Increased production requiring increased process water;
 - (7) Water uses during new construction;
 - (8) Adjustments to water use caused by emergency health or safety hazards;
 - (9) First filling of a permit-constructed swimming pool; and
 - (10) Water use necessary for reasons related to family illness or health.
- (d) In order to be considered, an application for relief must be filed with [the agency] within fifteen (15) days from the date the provision from which relief is sought becomes applicable to the applicant. No relief shall be granted unless the customer shows that he or she has achieved the maximum practical reduction in water consumption other than in the specific areas in which relief is being sought. No relief shall be granted to any customer who, when requested by the [chief executive officer], fails to provide any information necessary for resolution of the customer's application for relief.

Section 8. Failure to Comply

- (a) For each violation by any customer of the water use curtailment provisions of Section 5(c) and 6(c), a surcharge shall be imposed in an amount equal to ____ percent (____ %) of the portions of the water bill that exceed the respective percentages set in those two subsections.
- (b) Violation by any customer of the water use prohibitions of Section 3, or subsection (b) of Sections 4, 5 and 6, shall be penalized as follows:
 - (1) First violation. The [governing body] shall issue a written notice of the fact of a first violation to the customer.
 - (2) Second violation. For a second violation during any one water shortage emergency, the [governing body] shall impose a surcharge in an amount equal to ____ percent (____ %) of the customer's water bill.
 - (3) Third and Subsequent Violations. For a third and each subsequent violation during any one water shortage emergency, the [governing body] shall install a flow restricting device of one (1) gallon per minute capacity for services up to one and one-half (1 1/2) inch size, and comparatively sized restrictors for larger services, on the service of the customer at the premises at which the violation occurred for a period of not less than forty-eight (48) hours. The [governing body] shall charge the customer the reasonable costs incurred for installing and for removing the flow-restricting devices and for restoration of normal service. The charge shall be paid before normal service can be restored. In addition, the surcharge provided in subsection (b) (2) shall be imposed.
- (c) The [agency] shall give notice of violation to the customer committing the violation as follows:
 - (1) Notice of violation of the water use curtailment provisions of Sections 5(c) and 6(c) or of first violations of the water use prohibitions of Section 3 or of subsection (b) of Sections 4, 5 and 6 shall be given in writing by regular mail.

TABLE A-1 (Continued)

MODEL EMERGENCY WATER CONSERVATION ORDINANCE

- (2) Notice of second or subsequent violations of the water use prohibitions of Section 3 or of subsection (b) of Sections 4, 5 and 6 shall be given in writing in the following manner:
- (i) by giving the notice to the customer personally;
 - (ii) if the customer is absent from or unavailable at the premises at which the violation occurred, by leaving a copy with some person of suitable age and discretion at the premises and sending a copy through the regular mail to the address at which the customer is normally billed; or
 - (iii) if a person of suitable age or discretion cannot be found, then by affixing a copy in a conspicuous place at the premises at which the violation occurred and also sending a copy through the regular mail to the address at which the customer is normally billed.
- (d) The notice shall contain a description of the facts of the violation, a statement of the possible penalties for each violation and a statement informing the customer of his right to a hearing on the merits of the violation pursuant to Section 9.

Section 9. Hearing Regarding Violations

- (a) Any customer receiving notice of a second or subsequent violation of sections 4(b), 5(b), or 6(b) shall have a right to a hearing by the [chief executive officer] of the [agency] within fifteen (15) days of mailing or other delivery of the notice of violation.
- (b) The customer's timely written request for a hearing shall automatically stay installation of a flow-restricting device on the customer's premises until the [chief executive officer] renders his or her decision.
- (c) The customer's timely written request for a hearing shall not stay the imposition of a surcharge unless within the time period to request a hearing, the customer deposits with the [agency] money in the amount of any unpaid surcharge due. If it is determined that the surcharge was wrongly assessed, the [agency] will refund any money deposited to the customer.

- (d) The decision of the [chief executive officer] shall be final except for judicial review.
- (e) The [chief executive officer] may delegate his duties and responsibilities under this section as appropriate.

Section 10. Additional Water Shortage Measures

The [governing body] may order implementation of water conservation measures in addition to those set forth in Sections 4, 5 and 6. Such additional water conservation measures shall be implemented in the manner provided in Section 2(b).

Section 11. Public Health and Safety Not to be Affected

Nothing in this ordinance shall be construed to require the [agency] to curtail the supply of water to any customer when such water is required by that customer to maintain an adequate level of public health and safety.

Section 12. Severability

If any part of this ordinance or the application thereof to any person or circumstances is for any reason held invalid by a court of competent jurisdiction, the validity of the remainder of the ordinance or the application of such provision to other persons or circumstances shall not be affected.

APPENDIX 2

**RESOLUTIONS OF THE BOARD OF DIRECTORS
FOR IMPLEMENTATION OF
INCREMENTAL INTERRUPTIBLE CONSERVATION PLAN (IICP)**

RESOLUTION 8291

RESOLUTION OF THE BOARD OF DIRECTORS OF THE
METROPOLITAN WATER DISTRICT OF SOUTHERN
CALIFORNIA PROVIDING FOR THE IMPLEMENTATION
OF THE INCREMENTAL INTERRUPTION AND CONSERVATION PLAN

WHEREAS, four consecutive years of drought conditions throughout the State of California and the Colorado River Basin have created an unprecedented threat to the sufficiency of the imported water supply of the District; and

WHEREAS, the carryover storage in Lake Oroville and San Luis Reservoir is only 50 percent of that of the previous year and only 200,000 acre-feet greater than minimum operating storage of these reservoirs; and

WHEREAS, shortage provisions in the State water contracts call for agricultural uses to absorb deficiencies of up to 100 percent of annual entitlement over a seven-year period prior to the Department of Water Resources imposing deficiencies upon other uses; and

WHEREAS, a 50 percent deficiency was assigned to agricultural uses in 1990, and there is a strong probability that at least another 50 percent agricultural use deficiency will be assigned in 1991, thus placing all State project entitlement uses at the same level for the remaining portion of the seven-year period and thereby raising the probability that if the drought conditions continue through 1991 and beyond the District will be faced with even more severe reductions in 1992 and thereafter in supply from the State Water Project; and

WHEREAS, the Bureau of Reclamation's current annual operating plan projects the availability of only 940,000 acre-feet of Colorado River water for Metropolitan in 1991, a reduction of approximately 25 percent from supplies available in recent years; and

WHEREAS, the groundwater and surface storage reserves of Metropolitan's member agencies have been substantially depleted by the drought; and

WHEREAS, these unusual circumstances make it imperative that the District implement a plan of interruption and conservation of its limited water supply in a manner that will protect to the extent possible an adequate supply not only for 1991 but also for 1992 and thereafter if the drought conditions should continue.

NOW, THEREFORE, the Board of Directors of The Metropolitan Water District of Southern California finds and determines that, due to the exceptional circumstances identified herein, reductions in deliveries of water in interruptible service as described in Section 4603(a) of the Administrative Code if implemented would not provide appropriate protection for an adequate water supply in 1992 and it will be necessary to implement the provisions of the Incremental Interruption and Conservation Plan as defined in the General Manager's letter dated November 6, 1990, in order to effectively provide assurance of an adequate water supply for 1991, 1992 and subsequent years.

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of a resolution adopted by the Board of Directors of The Metropolitan Water District of Southern California at its meeting held on November 20, 1990.

Executive Secretary
The Metropolitan Water District
of Southern California

RESOLUTION 8292

RESOLUTION OF THE BOARD OF DIRECTORS OF
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
PROVIDING FOR THE IMPLEMENTATION OF PHASE II
OF THE INCREMENTAL INTERRUPTION AND CONSERVATION PLAN

WHEREAS, there have now been four consecutive years of drought conditions in the State of California; and

WHEREAS, the Department of Water Resources has informed Metropolitan that it will be necessary in 1991 to reduce deliveries to municipal and industrial contractors by 15 percent and to agricultural contractors by 65 percent; and

WHEREAS, the Department of Water Resources has indicated that additional reductions in scheduled deliveries may be necessary as early as March 1, 1991; and

WHEREAS, the Bureau of Reclamation's current annual operating plan projects the availability of less than 940,000 acre-feet of Colorado River water for Metropolitan in 1991, a reduction of approximately 25 percent from supplies available in recent years; and

WHEREAS, water demands on the Metropolitan system in the most recent twelve-month period exceeded 2.55 million acre-feet and the projected demand in 1991 exceeds 2.6 million acre-feet which exceeds the supplies presently available to Metropolitan; and

WHEREAS, by Resolution 8291 Metropolitan created the Incremental Interruption and Conservation Plan to address potential shortages of imported water in a continuing drought; and

WHEREAS, the Incremental Interruption and Conservation Plan is defined in the General Manager's letter dated November 20, 1990; and

WHEREAS, the Incremental Interruption and Conservation Plan provides for staged response to continuing drought conditions and Stage I is currently in effect; and

WHEREAS, the present Stage I is inadequate to address the potential shortages now facing Metropolitan.

NOW THEREFORE, be it resolved by the Board of Directors of The Metropolitan Water District of Southern California as follows:

1. The severity of the current drought conditions requires conservation of water supplies in accordance with Stage II of the Incremental Interruption and Conservation Plan as defined in the General Manager's letter dated November 20, 1990; and
2. Stage II of the Incremental Interruption Conservation Plan shall be effective on February 1, 1991; and
3. The Executive Secretary is instructed to transmit a copy of this resolution to all member agencies.

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of a resolution adopted by the Board of Directors of The Metropolitan Water District of Southern California at its meeting held on December 11, 1990.

Executive Secretary
The Metropolitan Water District
of Southern California

RESOLUTION 8298

RESOLUTION OF THE BOARD OF DIRECTORS OF
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
PROVIDING FOR THE IMPLEMENTATION OF STAGE III
OF THE INCREMENTAL INTERRUPTION AND CONSERVATION PLAN

WHEREAS, there have now been four consecutive years of drought conditions in the State of California; and

WHEREAS, the Department of Water Resources has informed Metropolitan that it will be necessary in 1991 to reduce deliveries to municipal and industrial contractors by 15 percent and to agricultural contractors by 65 percent; and

WHEREAS, the Department of Water Resources has indicated that additional reductions in scheduled deliveries may be necessary as early as March 1, 1991; and

WHEREAS, the Bureau of Reclamation's current annual operating plan projects an approximate 25 percent reduction of Colorado River water supply for Metropolitan in 1991; and

WHEREAS, water demands on the Metropolitan system in the most recent twelve-month period exceeded 2.55 million acre-feet and the projected demand in 1991 exceeds 2.6 million acre-feet which exceeds the supplies presently available to Metropolitan; and

WHEREAS, by Resolution 8291 Metropolitan created the Incremental Interruption and Conservation Plan to address potential shortages of imported water in a continuing drought; and

WHEREAS, the Incremental Interruption and Conservation Plan provides for staged response to continuing drought conditions; and

WHEREAS, by Resolution 8292 Metropolitan implemented Stage II of the Incremental Interruption and Conservation Plan effective February 1, 1991; and

WHEREAS, exceptional dryness in the normally wet month of December has substantially worsened the water supply outlook.

WHEREAS, the present Stage II will be inadequate to address the potential shortages now facing Metropolitan.

NOW THEREFORE, be it resolved by the Board of Directors of The Metropolitan Water District of Southern California as follows:

1. The severity of the current drought conditions requires conservation of water supplies in accordance with Stage III of the Incremental Interruption and Conservation Plan as defined in the General Manager's letter dated November 20, 1990; and
2. Stage III of the Incremental Interruption Conservation Plan shall be effective on February 1, 1991; and
3. The Executive Secretary is instructed to transmit a copy of this resolution to all member agencies.

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of a resolution adopted by the Board of Directors of The Metropolitan Water District of Southern California at its meeting held on January 8, 1991.



Karen E. Daff

Executive Secretary
The Metropolitan Water District
of Southern California

RESOLUTION 8303

RESOLUTION OF THE BOARD OF DIRECTORS OF
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
PROVIDING FOR THE IMPLEMENTATION OF STAGE V
OF THE INCREMENTAL INTERRUPTION AND CONSERVATION PLAN

WHEREAS, there have now been four consecutive years of drought conditions in the State of California; and

WHEREAS, the Department of Water Resources has informed Metropolitan that it will be necessary in 1991 to reduce deliveries to municipal and industrial contractors by 50 percent and to agricultural contractors by 100 percent; and

WHEREAS, the Department of Water Resources has indicated that additional reductions in scheduled deliveries may be necessary; and

WHEREAS, the Bureau of Reclamation's current annual operating plan projects an approximate 100,000 acre-feet increase in supplies over January projections, Colorado River water supply for Metropolitan in 1991 may still be reduced by approximately 20 percent; and

WHEREAS, water demands on the Metropolitan system in the most recent twelve-month period exceeded 2.60 million acre-feet which exceeds the supplies presently available to Metropolitan by approximately 1.0 million acre-feet; and

WHEREAS, by Resolution 8291 Metropolitan created the Incremental Interruption and Conservation Plan to address potential shortages of imported water in a continuing drought; and

WHEREAS, the Incremental Interruption and Conservation Plan provides for staged response to continuing drought conditions; and

WHEREAS, by Resolution 8298 Metropolitan implemented Stage III of the Incremental Interruption and Conservation Plan effective February 1, 1991; and

WHEREAS, exceptional dryness in the normally wet season continues to substantially worsen the water supply outlook; and

WHEREAS, the present Stage III will be inadequate to address the potential shortages now facing Metropolitan.

NOW THEREFORE, be it resolved by the Board of Directors of The Metropolitan Water District of Southern California as follows:

1. The current drought conditions have created an emergency situation throughout Metropolitan's service area by reason of current and foreseeable shortfalls in local as well as imported supplies.
2. The severity of the current drought conditions requires conservation of water supplies in accordance with Stage V of the Incremental Interruption and Conservation Plan as defined in the General Manager's letter dated November 20, 1990; and
3. Stage V of the Incremental Interruption Conservation Plan shall be effective on March 1, 1991, providing, however, that disincentive payments for deliveries to any member public agency prior to April 1, 1991 shall be determined based on the target quantity established for Stage III for that member agency.
4. The Executive Secretary is instructed to transmit a copy of this resolution to all member agencies.

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of a resolution adopted by the Board of Directors of The Metropolitan Water District of Southern California at its meeting held on February 12, 1991.

Executive Secretary
The Metropolitan Water District
of Southern California

RESOLUTION 8305

RESOLUTION OF THE BOARD OF DIRECTORS OF
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
PROVIDING FOR THE CREATION AND IMPLEMENTATION OF STAGE VI
OF THE INCREMENTAL INTERRUPTION AND CONSERVATION PLAN

WHEREAS, there have now been four consecutive years of drought conditions in the State of California; and

WHEREAS, the Board, on February 12, 1991, by Resolution 8303, found that the current drought conditions have created an emergency situation throughout Metropolitan's service area by reason of current and foreseeable shortfalls in local as well as imported supplies; and

WHEREAS, the Department of Water Resources has informed Metropolitan that it will be necessary in 1991 to reduce deliveries of State project water to municipal and industrial contractors by 90 percent and to agricultural contractors by 100 percent; and

WHEREAS, Such an allocation of State project water would amount to essentially a termination of State project water deliveries for the remainder of 1991; and

WHEREAS, the Bureau of Reclamation's current annual operating plan projects the availability of approximately 1,000,000 acre-feet of Colorado River water for Metropolitan in 1991, a reduction of approximately 20 percent from supplies available in recent years; and

WHEREAS, water demands on the Metropolitan system in the most recent twelve-month period exceeded 2.6 million acre-feet which exceeds the supplies presently available to Metropolitan by approximately 100 percent; and

WHEREAS, by Resolution 8291 Metropolitan created the Incremental Interruption and Conservation Plan to address potential shortages of imported water in a continuing drought; and

WHEREAS, the Incremental Interruption and Conservation Plan is defined in the General Manager's letter dated November 20, 1990; and

WHEREAS, the Incremental Interruption and Conservation Plan provides for staged response to continuing drought conditions and Stage V is currently in effect; and

WHEREAS, the present Stage V is inadequate to address the potential shortages now facing Metropolitan; and

WHEREAS, the General Manager's letter dated February 26, 1991 defines Stage VI of the Incremental Interruption Conservation Plan to address shortages of the magnitude now facing Metropolitan.

NOW THEREFORE, be it resolved by the Board of Directors of The Metropolitan Water District of Southern California as follows:

1. The severity of the current drought conditions requires conservation of water supplies in accordance with Stage VI of the Incremental Interruption and Conservation Plan as defined in the General Manager's letter dated February 26, 1991, described therein as Method 2; and
2. Stage VI of the Incremental Interruption and Conservation Plan shall be effective on April 1, 1991, and
3. The Executive Secretary is instructed to transmit a copy of this resolution to all member agencies.

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of a resolution adopted by the Board of Directors of The Metropolitan Water District of Southern California at its meeting held on March 4, 1991.

Executive Secretary
The Metropolitan Water District
of Southern California

RESOLUTION 8312

RESOLUTION OF THE BOARD OF DIRECTORS OF THE
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
URGING IMMEDIATE ADOPTION OF STATE AND LOCAL REGULATIONS
TO REDUCE WATER USE

WHEREAS, current drought conditions throughout the State have created an unprecedented shortage in the water supplies available to The Metropolitan Water District of Southern California hereafter "Metropolitan";

WHEREAS, the Department of Water Resources has informed Metropolitan that it will suspend all State Water Project deliveries to Metropolitan except for minimum quantities necessary to meet critical needs;

WHEREAS, a continuing drought into 1992 and beyond could lead to even more severe regional water shortages;

WHEREAS, local water storage reserves within Metropolitan have been seriously depleted by the last four years of drought;

WHEREAS, failure by local communities to implement effective use reductions may cause a depletion of local storage reserves threatening the viability of water service in a continuing drought;

WHEREAS, immediate forceful and compelling action is required by all levels of government to conserve available water supplies within Metropolitan's service area;

WHEREAS, the Governor has directed all communities within the State to adopt rationing plans and has directed the Department of Water Resources to monitor water use; and

WHEREAS, reductions in water use by all areas within Metropolitan's service area may facilitate sharing of water, on a temporary basis, between agencies.

NOW, THEREFORE, BE IT RESOLVED THAT:

1. Metropolitan urges all public agencies and all water supply retailers within Metropolitan's service area to adopt and enforce as rapidly as possible, a mandatory water conservation plan, including ordinances, regulations and orders, limiting their own water use and that of their customers to no more than 80 percent of normal usage.
2. Each public agency and each water supplier within Metropolitan's service area should immediately undertake an aggressive public information program to inform their constituents and consumers of the paramount need to conserve water and to eliminate unnecessary water uses.
3. All public agencies and all water supply retailers within Metropolitan's water service area that have the ability to use or supply reclaimed water should aggressively seek to use or supply such water whenever feasible.
4. Metropolitan urges its member agencies, and groundwater basin managers within its service area, to aggressively seek means to maximize opportunities for increased use of groundwater storage and transfer of imported water to partially mitigate the impact of water shortages for non-groundwater basin areas.
5. No public agency or water supply retailer shall be eligible to apply for participation in Metropolitan's Local Projects Program or Conservation Credit Program, and no entity that currently participates in those programs shall benefit from any increased Metropolitan contributions unless it adopts a mandatory water conservation program and otherwise makes a good faith effort to comply with the provisions of this resolution as determined by Metropolitan.
6. The Executive Secretary shall promptly disseminate a copy of this resolution to the governing body of each local agency and each water supply retailer within Metropolitan's service area; the responsible officer of each state or federal agency within Metropolitan's service area; the Public Utilities Commission; and the Corporations Commissioner.

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of a resolution adopted by the Board of Directors of The Metropolitan Water District of Southern California, at its meeting held March 12, 1991.


Diane E. Dorff
Executive Secretary
The Metropolitan Water District
of Southern California