Appendix K
Urban Water Management Plan

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Urban WATER Management Plan

December 13, 2005

City of Torrance

2005

PSOMAS

City of Torrance

2005
URBAN WATER MANAGEMENT PLAN

December 13, 2005

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TABLE OF CONTENTS

Section ***Page***

Section ***Page***

TABLES

FIGURES

Figures No. ***Page***

APPENDICES

ACRONYMS and ABBREVIATIONS

AB	Assembly Bill
AF	Acre Feet
AFY	Acre Feet per Year
AMR	Automatic Meter Reading
BMP	Best Management Practices
CALSIM	California Water Allocation and Reservoir Operations Model
CCF	Hundred Cubic Feet
CFS	Cubic Feet per Second
CII	Commercial, Industrial and Institutional
CIMIS	California Irrigation Management Information System
CIP	Capital Improvement Program
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CWSC	California Water Service Company
DBP	Disinfection Byproducts
DHS	Department of Health Services
DMM	Demand Management Measure
DWCV	Desert Water Agency/Coachella Valley Water District
DWR	Department of Water Resources
EIR	Environmental Impact Report
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ETo	Evapotranspiration
gpcd	Gallons Per Capita Per Day
gpd	Gallons Per Day
gpm	Gallons Per Minute
HAA	Haloacetic Acids
HEWM	High Efficiency Washing Machines
IAWP	Interim Agricultural Water Program
IID	Imperial Irrigation District
In	Inches
IRP	Integrated Water Resources Plan
IRWM	Integrated Regional Water Management
JWPCP	Joint Water Pollution Control Plant
LACSD	Sanitation Districts of Los Angeles
LADWP	Los Angeles Department of Water and Power
LARWQCB	Los Angeles Regional Water Quality Control Board
LRP	Local Resources Program
M&I	Municipal and Industrial
MAF	Million Acre Feet
MARS	Member Agency Response System
MCL	Maximum Contaminant Level
MG	Million Gallons
mg/L	Milligrams Per Liter (parts per million)
MOU	Memorandum of Understanding
MTBE	Methyl Tertiary Butyl Ether

Metropolitan	Metropolitan Water District of Southern California
NDMA	N-nitrosodimethylamine
PCE	Perchloroethylene
pCi/L	Picocuries per liter
PDA	Protector del Agua
PSP	Proposal Solicitation Package
QSA	Quantification Settlement Agreement
RUWMP	Regional Urban Water Management Plan
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAB	South Coast Air Basin
SCADA	Supervisory Control and Data Acquisition System
SCE	Southern California Edison
SDP	Seawater Desalination Program
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
TCE	Trichloroethylene
TDS	Total Dissolved Solids
THM	Trihalomethanes
TMWD	Torrance Municipal Water Department
ug/L	Micrograms Per Liter (parts per billion)
ULF	Ultra Low Flush or Flow
ULFT	Ultra Low Flush Toilet
USBR	U.S. Bureau of Reclamation
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
WARN	Water Agencies Response Network
WBMWD	West Basin Municipal Water District
WBWRP	West Basin Water Recycling Plant
WOC	Water Operations Center
WRD	Water Replenishment District of Southern California
WSDM	Water Surplus and Drought Management

SECTION 1
INTRODUCTION

1.1 PURPOSE AND URBAN WATER MANAGEMENT PLAN SUMMARY

This Urban Water Management Plan (UWMP) was prepared to ensure water service reliability during normal, dry, or multiple dry years. The California Urban Water Management Planning Act of 1983 (Act), as amended, requires urban water suppliers to develop an UWMP every five years in the years ending in zero and five.

The legislature declared that the waters of the state are a limited and renewable resource subject to ever increasing demands; that the conservation and efficient use of urban water supplies are of statewide concern; that successful implementation of plans is best accomplished at the local level; that conservation and efficient use of water shall be actively pursued to protect both the people of the state and their water resources; that conservation and efficient use of urban water supplies shall be a guiding criterion in public decisions; and that urban water suppliers shall be required to develop water management plans to achieve conservation and efficient use.

The intent of this plan is to focus on specific issues unique to the City of Torrance (City) water service area. While some regional UWMP issues are introduced in this plan, comprehensive regional information is presented in Metropolitan Water District of Southern California's Regional UWMP, as well as West Basin Municipal Water District's Regional UWMP.

The City of Torrance 2005 UWMP has been prepared in compliance with the requirements of the Act, as amended to 2005 (Appendix A) [1], and includes the following:

- Water Service Area
- Water System Facilities
- Water Sources and Supplies
- Water Quality Information
- Water Reliability Planning
- Water Use Provisions
- Water Demand Management Measures
- Water Shortage Contingency Plan
- Water Recycling

1.2 URBAN WATER MANAGEMENT PLAN UPDATE PREPARATION

The City's 2005 UWMP revises the 2000 UWMP and incorporates changes enacted by legislation, including SB 610 (2001), AB 901 (2001), SB 672 (2001), SB 1348 (2002),

[1] California Water Code, Division 6, Part 2.6; §10610, et. seq. Established by Assembly Bill 797 (1983).

SB 1384 (2002), SB 1518 (2002), AB 105 (2004), and SB 318 (2004). The UWMP also incorporates water use efficiency efforts the City has implemented or is considering implementing pursuant to the *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU).[2]

The sections in this Plan correspond to the outline of the Act, specifically Article 2, Contents of Plans, Sections 10631, 10632, and 10633. The sequence used for the required information, however, differs slightly in order to present information in a manner reflecting the unique characteristics of the City's water utility. The Department of Water Resources (DWR) Review for Completeness form has been completed, which identifies the location of Act requirements in this Plan and is included as Appendix B. In addition, the DWR Review for DMM (Demand Management Measures) Completeness form has been complete as included in Appendix C.

The City is fully dependent on the following agencies for its long-term water supply: Metropolitan Water District of Southern California (Metropolitan) for imported water, the Water Replenishment District of Southern California (WRD) for groundwater, and West Basin Municipal Water District (WBMWD) for recycled water.

This UWMP details the specifics as they relate to the City of Torrance and its service area and will refer to Metropolitan, WRD, and WBMWD throughout. Appendix D lists the numerous references used benefiting the development of this Plan.

The UWMP is intended to serve as a general, flexible, and open-ended document that periodically can be updated to reflect changes in the regional water supply trends, and conservation and water use efficiency policies. This Plan, along with the Torrance Municipal Water Department's (TMWD) Water Master Plan and other City planning documents, will be used by City staff to guide the water use and management efforts of TMWD through the year 2010, when the UWMP is required to be updated.

Urban Water Management Plan Adoption

The 2005 UWMP was adopted by resolution of the Torrance City Council on December 13, 2005, following a public hearing. The Plan was submitted to the California DWR within 30 days of Council approval. Copies of the Notice of Public Hearing and the Resolution of Plan Adoption are included in Appendix E. Draft copies of the Plan were made available to the public prior to the public hearing and final copies were made available within 30 days following City Council approval.

[2]The *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU) was adopted in September 1991 by a large number of water suppliers, public advocacy organizations and other interested groups. It created the *California Urban Water Conservation Council* and established 16 Best Management Practices (BMPs) for urban water conservation, recently refined to 14 BMPs.

Agency Coordination and Public Participation

Development of this Plan was performed by TMWD staff of the Torrance Department of Public Works in coordination with other departments of the City including the Community Development Department, the City Manager's Office, the City Clerk's Office, and the Torrance Water Commission. Intra-department and interagency activities included the exchange of data and incorporation of the agencies' comments to the City's Draft UWMP, as appropriate.

TMWD also coordinated development of its 2005 UWMP with the following agencies: Metropolitan, WRD, WBMWD, and LACSD. Table 1.2-1 summarizes the efforts TMWD has taken to include various agencies and citizens in its planning process.

Table 1.2-1
Coordination and Public Involvement in Development of the Plan

Group	Helped Write The Plan	Contacted for Assistance or Intent to Update	Sent a Copy of the Draft	Draft Comments	Sent a Notice of Intention to Adopt	Attended Public Meeting	Sent Copy of Adopted Plan
Torrance Municipal Water Department	X	X	X	X	X	X	X
Torrance Water Commission			X	X	X	X	X
Torrance City Clerk			X		X	X	X
Community Development Department		X	X	X	X	X	X
Torrance Public Library							X
Metropolitan Water District of Southern California		X			X		X
Water Replenishment District of Southern California		X			X		X
West Basin Municipal Water District		X			X		X
Los Angeles County Sanitation Districts		X			X		X
Los Angeles County		X			X		X

To assist TMWD staff in preparation of the 2005 UWMP, TMWD staff and/or consultants to the City attended the following workshops facilitated by DWR, Metropolitan, and/or WBMWD:

Metropolitan: 2005 Regional UWMP Workshop at the WBMWD, June 28, 2005, as well as additional regional meetings with Metropolitan.

DWR: 2005 UWMP Workshop at San Diego County Water Authority, February 1, 2005; and City of Santa Ana, March 1, 2005.

1.3 TORRANCE MUNICIPAL WATER DEPARTMENT WATER SERVICE AREA

Location and Topography

TMWD's water service area is approximately 10,350 acres and comprises about 78 percent of the land within City limits. California Water Services provides water service to the remaining portion of the City. Figure 1.1 shows the City of Torrance and the TMWD water service area boundary.

Topographically, the service area consists of the El Segundo Sand Hills and the Torrance Plain. Along the southern edge of the service area are the Palos Verdes Hills, which rise about 445 feet at the southern border of Torrance. The service area overlies the West Coast Groundwater Basin, which consists of four main water bearing formations in the vicinity of Torrance, the Gage, Gardena, Lynwood, and Silverado aquifers.

Climate Characteristics

The City's climate is Mediterranean, characterized by typically warm, dry summers and wet, cool winters with an average precipitation level of about 13.3 inches per year. Average temperatures range from about 67^0 Fahrenheit in the winter months to nearly 80^0 Fahrenheit in the summer months. Evapotranspiration (ETo)[3] in the region averages 49.7 inches annually. Table 1.3-1 lists the average ETo, temperatures and rainfall for the City. The combination of mild climate and low rainfall make the area a popular tourist and residential destination, and challenges water agencies to provide adequate and reliable water service.

[3] Evapotranspiration (ETo) is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). It is an indicator of how much water crops, lawn, garden, and trees need for healthy growth and productivity. ET from a standardized grass is commonly denoted at ETo.

Figure 1.1
City of Torrance and TMWD Water Service Area Boundary

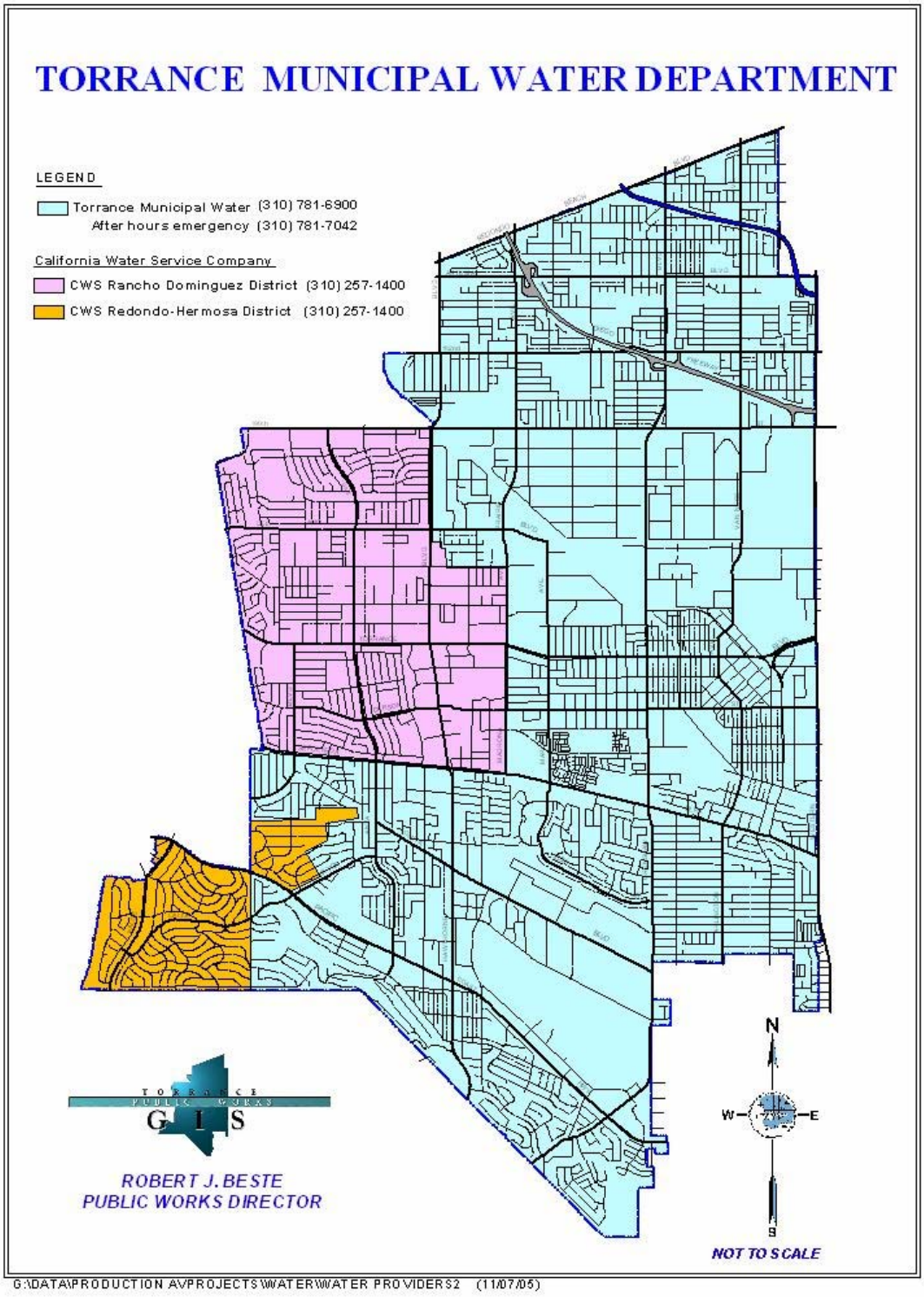

Table 1.3-1
City of Torrance
Average ETo, Temperatures, and Rainfall

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total or Average
ETo (inches)		1.86	2.24	3.41	4.80	5.58	6.30	6.51	6.20	4.80	3.72	2.40	1.86	49.7
Temperature (Fahrenheit)	Max	66.7	67.6	67.6	70.3	71.8	74.7	78.8	79.9	79.2	76.6	71.2	66.7	72.7
	Min	45.1	46.4	47.5	50.0	53.8	57.2	60.4	61.9	60.4	56.3	50.2	45.5	52.9
Rainfall (inches)		3.1	2.9	2.2	0.9	0.1	0.0	0.0	0.1	0.2	0.3	1.3	2.2	13.3

Source: [on-line] www.worldclimate.com. National Climate Data Center. Rainfall: Torrance Municipal Airport, Los Angeles County, between 1932 and 1995; Temperatures: Torrance Municipal Airport, Los Angeles County, between 1961 and 1990.

Demographics

Using information from City sources, current census data and historic trends, growth projections can be determined. Since World War II, the Los Angeles County region has experienced substantial growth, increasing by more than 160 percent by 2000. The City of Torrance grew rapidly from its incorporation in 1921, although during the past few decades, population growth in Torrance has been somewhat level. The City's current population is estimated at slightly more than 141,000 based on the latest City General Plan Update. This is expected to increase to 149,000 by 2030.[4]

TMWD serves water to about 78 percent of the City parcels. There are no data available showing the population percentage within TMWD's service area. It is assumed that the existing population within the service area is proportional to City parcelage, and population growth within the service area will occur at the same growth rate projected for the City as a whole. Table 1.3-2 provides current and future population projections comparing the General Plan Update projections and an assumed, calculated projection for TMWD's service area.

Table 1.3-2
Population – Current and Projected

	2000	2005	2010	2015	2020	2025	2030
Service Area	98,000	100,100	114,800	116,000	117,400	119,100	120,800
General Plan Update	138,870	141,134	147,245	148,704	150,562	146,890	149,000

[4] According to P&D, consultant to the City currently working on the City's General Plan Update

1.4 TORRANCE MUNICIPAL WATER DEPARMENT AND FACILITIES

The City's Public Works Department manages the health and welfare of the City's infrastructure and natural resources. To address these responsibilities more effectively, Public Works is organized into two major functional sectors, Engineering/Capital Projects and Operations. The Public Works Department consists of 210 full time staff and an annual operating budget of over $40,000,000. The Public Works Department provides high-quality service for those that live and/or work in the community. The Public Works Department is expanding its efforts to include more information on water conservation and refuse recycling to ensure that the City uses resources in a cost effective and environmentally sensible manner.

The Public Water Utility, known as the "Torrance Municipal Water Department," function consists of efforts from various Public Works sections: Water Operations, Engineering, and Administrative Services. The Operations section is responsible for providing high quality drinking water through the operation and maintenance of water production, distribution treatment, and storage facilities. The Engineering section is responsible for the Capital Improvement Program which consists of the development and replacement of water system infrastructure. The Administrative Services section, along with management, is responsible for acting as the liaison with outside agencies, most notable the State and County Health Departments, water districts and other regulatory agencies. In addition, the Administrative Services section, along with management, supports the Torrance Water Commission (which functions as an advisory board to the City Council) and the City's representative on the Metropolitan Board of Directors. Additional Administrative Services responsibilities include developing and monitoring the Operations budget; monitoring the Capital Improvement budget and water rates; and providing customer service.

Water System Pressure Zones and Facilities

TMWD maintains four water storage reservoirs ranging in capacity from 0.9 million gallons (MG) to 18.7 MG with a total capacity of 31.5 MG. Walteria Reservoir has a capacity of 10 MG, Ben Haggot Reservoir has a capacity of 18.7 MG, North Torrance Reservoir at Well #6 has a capacity of 1 MG, and Border Avenue Reservoir at Well #7 has a capacity of 0.9 MG. Currently, Border Avenue Reservoir is on standby.

TMWD has five imported water connections with a total capacity of 33,666 gallons per minute (GPM) to receive Metropolitan water. TMWD also has one active well (Well #6) and one inactive, or standby well, (Well #7) to pump groundwater from the West Coast Basin (discussed in Section 2). TMWD is also considering the construction of a well field in north Torrance to allow TMWD to enable pumping up to its full groundwater rights (discussed in Section 4.4).

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SECTION 2
WATER SOURCES AND SUPPLIES

2.1 WATER SOURCES

TMWD is a direct member agency of Metropolitan. Water sources currently available to TMWD consist of imported water purchased from Metropolitan, groundwater including desalinated water purchased from WRD, and recycled water purchased from WBMWD. Imported water supplies are delivered to TMWD by Metropolitan which diverts water from the Colorado River Aqueduct (CRA), and from the State Water Project (SWP), via California Aqueduct.

2.1.1 Metropolitan Water District of Southern California (Metropolitan)

Metropolitan was formed in the late 1920's. Collectively, charter members recognized the limited water supplies available within the region, and realized that continued prosperity and economic development of Southern California depended upon the acquisition and careful management of an adequate supplemental water supply. This foresight made the continued development of Southern California possible.

Metropolitan acquires water from Northern California via the SWP and from the Colorado River to supply water to most of Southern California. As a wholesaler, Metropolitan has no retail customers, and distributes treated and untreated water directly to its 26 member agencies. One such member agency is TMWD.

2.1.2 Water Replenishment District of Southern California (WRD)

In 1959, the State Legislature enacted the Water Replenishment Act enabling the formation of WRD by voter approval. WRD was formed for the purpose of protecting and managing the groundwater resources of the Central and West Coast groundwater basins of south Los Angeles County. WRD manages groundwater for 43 cities in south Los Angeles County covering a 420 square mile service area. The users of the groundwater basin pump approximately 250,000 acre-feet (AF) of groundwater per year.[5] The State of California relies on WRD to manage, regulate, replenish, and protect the quality of the groundwater supplies in the Central and West Coast groundwater basins.

Because of increasing populations and diminishing groundwater resources, the Central and West Coast groundwater basins were adjudicated to limit the allowable extraction amount for every water right holder within the basins. The adjudication was a result of a judgment from the Superior Court, County of Los Angeles. The final judgments for the Central and West Coast groundwater basins became effective on October 1, 1966 and August 18, 1961 respectively and appointed the DWR as the Watermaster.[6] WRD and the

[5] Water Replenishment District of Southern California website, http://www.wrd.org/Purpose.htm
[6] Watermaster Service in the West Coast Basin, Los Angeles County. 2004

Watermaster cooperate closely to record groundwater extractions from the Central and West Coast groundwater basins (the City of Torrance was granted 5,640 acre-feet per year (AFY) in the Judgment).

TMWD is currently under contract with WRD to purchase water from the Goldsworthy Desalter project. TMWD purchases approximately 2,400 AF of treated groundwater annually from the Desalter.

2.1.3 West Basin Municipal Water District (WBMWD)

In 1947, WBMWD was formed to help mitigate the over pumping of groundwater resources in southwest Los Angeles County. Although local groundwater was inexpensive, it was diminishing rapidly and it was realized that pumping would have to be curtailed. This reduction in groundwater was to be supplemented with imported water. In 1948, WBMWD became a member agency of Metropolitan. WBMWD service area includes 17 cities and several unincorporated portions of southwest Los Angeles County.

In response to the increasing demands for water, limitations on imported water supplies and the threat of drought, WBMWD developed the West Basin Water Recycling Project in the early 1990's. In 1995, WBMWD opened a state-of-the-art water recycling facility in El Segundo, which is still one of the largest recycled water plants of its kind. All recycled water is produced at the West Basin Water Recycling Treatment Plant in El Segundo, CA where it is distributed to either end-use sites or one of several satellite facilities where further treatment prepares the product water for large industrial customers such as Chevron, Exxon-Mobile, and BP Amoco. More than 200 sites currently use more than 9 billion gallons annually.

Wastewater collected and treated at the Hyperion Wastewater Treatment Plant[7] is sent to the West Basin Water Recycling Treatment Plant where it is treated to Title 22 standards. WBMWD purchases secondary effluent from Hyperion prior to ocean disposal and provides, at a minimum, tertiary treatment and disinfection to meet applicable Title 22 standards.[8] More advance treatment is provided according to customer specifications, also known as "designer water." WBMWD distributes recycled water from the West Basin Water Recycling Treatment Plant to customer sites in its service area, the City of Los Angeles, and the City of Torrance. Additional information related to recycled water is discussed in Section 8.

[7] The City of Los Angeles, Department of Public Works, Bureau of Sanitation, owns and operates the Hyperion Wastewater Treatment Plant. Hyperion discharges most of its effluent into Santa Monica Bay through a five-mile ocean outfall; nearly 50 mgd of secondary effluent is recycled on-site or transported to the West Basin Municipal Water District Recycling Facility in El Segundo.
[8] West Basin Municipal Water District, 2005 Urban Water Management Plan, Draft June 2005

2.1.4 Sanitation Districts of Los Angeles County (LACSD)

The LACSD include 25 separate sanitation districts that serve about 5.1 million people in Los Angeles County for collection and treatment of wastewater, including the City of Torrance. The service area is approximately 800 square miles and encompasses 78 cities as well as unincorporated areas of the County.[9] The LACSD construct, operate, and maintain facilities to collect, treat, recycle, and dispose of wastewater. The LACSD operates one wastewater treatment plant and nine reclamation plants to produce approximately 190 mgd of recycled water.[10]

2.2 WATER SUPPLY

TMWD currently receives approximately 68 percent of its water supply from Metropolitan and 32 percent from local supplies. Local supplies include groundwater, desalinated groundwater, and recycled water. Recycled water is currently 21 percent of TMWD's water supply while groundwater supplies (including desalinated groundwater) makes up approximately 11 percent. Of potable water supplies, imported water is approximately 85 percent and groundwater is 15 percent. Current and projected water supplies are shown in Table 2.2-1 and described in subsequent sections. Water reliability of these supplies is analyzed in Section 4.

Table 2.2-1
Current and Projected Water Supplies
(AFY)

Water Supply Sources	% of 2005 Supply	2005	2010	2015	2020	2025	2030
Imported Water	65%	19,370	25,920	20,190	21,500	20,440	19,430
Local Supply (Groundwater)	4%	1,114	1,600	5,640	5,640	5,640	5,640
Local Supply (Desalter)	8%	2,542	2,400	2,400	2,400	2,400	2,400
Recycled Water	23%	7,044	7,100	7,250	7,250	7,250	7,250
Total Water Supply	**100%**	**30,070**	**37,020**	**35,480**	**36,790**	**35,730**	**34,720**

Source: 2005 data are actual demands for 2004/05 Water Year; all other years are projected supply totals from Table 4.2-5

2.2.1 Imported Water

Most of TMWD's domestic water supply comes from imported water wholesaled by Metropolitan. Imported water is delivered from northern California via the SWP and from the Colorado River, and is treated at the Robert B. Diemer Filtration Plant and the Weymouth Filtration Plant before the water is delivered through five connections to TMWD. The characteristics of these connections are shown in Table 2.2.1-1.

[9] Sanitation Districts of Los Angeles website, http://www.lacsd.org
[10] Sanitation Districts of Los Angeles Fact Sheet, available online at http://www.lacsd.org/CSDFactSheet_Eng.pdf

Table 2.2.1-1
Imported Water Connections

Designation	Metropolitan Pipeline	Capacity (GPM)	Capacity (CFS)
T-1	Torrance Lateral	8,980	20
T-5	Palos Verdes Feeder	2,245	5
T-6	Palos Verdes Feeder	4,490	10
T-7	Palos Verdes Feeder	6,730	15
T-8	Second Lower Feeder	11,220	25
Total Capacity		33,665	75

Source: City of Torrance Water System Master Plan June 2002.

2.2.2 Groundwater

Extensive pumping from the West Coast Groundwater Basin (Basin) has led to critical overdraft and seawater intrusion within the coastal plain of the local groundwater basins. In 1961, the Los Angeles Superior Court adjudicated groundwater pumping rights. As a result, the City has water rights of 5,640 AFY from the Basin. The 5,640 AFY includes the City's original adjudication and additional purchased water rights in the Basin.

WRD tracks the amount of groundwater production (pumping) that occurs every year in the Central and West Coast groundwater basins to identify trends that may impact groundwater resources. The groundwater basins currently face overdraft every year because pumping exceeds natural groundwater replenishment. As a result, WRD developed a Groundwater Management Plan to solve future water quality and supply problems in both the Central and West Coast groundwater basins. TMWD conforms to the WRD's Groundwater Management Plan. Sources of groundwater replenishment water to WRD include recycled water, imported water, and natural runoff, which are captured in the regional spreading grounds.

West Coast Groundwater Basin (Basin)

The Basin is comprised of four separate portable-use aquifers, or water bearing layers, underlying the City of Torrance. The Basin covers approximately 160 square miles and is bounded on the north by Baldwin Hills and Ballona Escarpment, on the east by the Newport-Inglewood Uplift, to the south by San Pedro Bay and the Palos Verdes Hills, and to the west by the Santa Monica Bay. The surface of the Basin is crossed in the south by the Los Angeles River through the Dominguez Gap, and the San Gabriel River through the Alamitos Gap both of which flow into the San Pedro Bay.[11] Aquifers in the Basin are generally confined and receive the majority of their natural recharge from adjacent groundwater basins from the Pacific Ocean (Sea Water Intrusion).[12]

[11] California's Groundwater Bulletin 118
[12] Water Replenishment District of Southern California's Web Site. http://www.wrd.org

Adjudication

Groundwater in the Basin was adjudicated (Judgment) to protect the groundwater supply within the Basin. Groundwater production in the Basin is regulated by DWR, acting as Watermaster under the terms of California Water Services Company et al vs. City of Compton et al, No. 506806. Prior to adjudication, annual pumping rates reached levels as high as 94,000 AF. In the early 1960's, the Superior Court, County of Los Angeles limited the amount of pumping that could occur because the groundwater levels were declining causing the seawater to intrude into the coastal aquifers. The Basin adjudicated rights were set at 64,468.25 AFY.[13] The Judgment also allows water users to carryover any unused water rights up to 20 percent of their water right as well as extract up to 10 percent beyond their allowable pumping rights within a given year.[14] The adjudicated pumping amounts were set higher than the natural replenishment of groundwater, hence the annual overdrafts. A copy of the order adopted by the court describing the City's legal right to pump groundwater is included in Appendix F (West Coast Basin Judgment).

Groundwater production in the Basin has been fairly consistent over the past 5 years. The amount of water that member agencies are allowed to pump is set annually, but the values remain fairly constant. The City's ability to extract 5,640 AF of groundwater annually is limited due to water quality problems. In 2005, TMWD used only 1,140 AF of its groundwater supplies. TMWD is investigating ways to use all of its annual 5,640 AFY of groundwater pumping rights to offset imported water demands.

Because TMWD is not currently using their full groundwater rights, TMWD is able to lease water rights to other purveyors. In 2003/2004, TMWD leased 450 AF of its groundwater rights (with flex) to the Roman Catholic Archdiocese of Los Angeles.

Groundwater Production and Overdraft

Groundwater supply meets approximately 20 percent of the water supply demand for agencies within the WBMWD.[15] During the water year 2003/2004, total basin production for all agencies was approximately 47,967 AF. As mentioned earlier, the Central and West Coast groundwater basins are in an overdraft condition; however, the groundwater levels and amount of overdraft fluctuate over time. WRD continually monitors groundwater level trends. WRD's annual Engineering Survey and Report discusses groundwater levels within the Basin and estimates water levels to have risen approximately four feet from 2002/2003 and 2003/2004 water years. Although water levels rose in some area of the West Coast and Central groundwater basins, the overall result was a loss in groundwater storage. WRD estimates that the annual overdraft for 2003/2004 for both basins was 135,686 AF; however, 92,686 AF was purchased as replenishment water and therefore the loss in groundwater storage was 43,000 AF. The average annual overdraft for the West Coast groundwater basin is 23,800 AF.[16] The accumulated overdraft of the basins fluctuates depending on demands and availability of

[13] WRD of Southern California Engineering Survey Report, 2005
[14] WRD of Southern California Engineering Survey Report, 2005
[15] West Basin Municipal Water District, 2005 UWMP
[16] WRD of Southern California, Technical Bulletin Volume 1, Fall 2004.

replenishment water. The accumulated overdraft was determined to be 702,100 AF for both basins in 2003/2004.[17]

In an effort to eliminate long-term overdraft conditions, WRD closely monitors the groundwater basins for fluctuations in groundwater levels. WRD utilizes a groundwater model developed by the United States Geological Survey (USGS) to study and better understand the Basin's reaction to pumping and recharge. WRD works closely with the Los Angeles County Department of Public Works, Metropolitan, and LACSD on current and future replenishment supplies.

Recharge

Another method for controlling overdraft is through recharge management programs. Natural groundwater replenishment through percolation of precipitation and irrigation waters is insufficient to sustain the groundwater pumping that takes place in the Basin.[18] WRD must therefore depend on artificial recharge programs to replace the annual overdraft. The amount of water available for recharge will vary from year to year. In 2003/2004, WRD recharged 92,686 AF.[19] The various methods of recharging the Basin using imported and recycled water are described below:

- Injection – WRD recharges the Basin by injecting water in the Basin to prevent seawater intrusion. A barrier is formed by injection of treated imported water from Metropolitan in wells along the West Coast Barrier Project (between Redondo Beach and El Segundo) and the Dominguez Gap Barrier Project (east of Palos Verdes Peninsula).
- In-lieu Replenishment Water – The in-lieu program allows the natural recharge of the Basin by offsetting groundwater production with the use of imported water. The reduction in pumping naturally recharges the Basin.
- Transfer from the Central groundwater basin – Although not well quantified, groundwater from the Central groundwater basin flows into the West Coast groundwater basin through the Newport Inglewood Uplift. This, along with natural percolation due to stormwater and irrigation, make up a small part of the overall recharge to the West Coast groundwater basin.

Groundwater Wells within TMWD Service Area

TMWD has one active well (Well #6) and one inactive, or standby well, (Well #7). The total capacity of Well #6 is about 950 gallons per minute (gpm) although it was designed for 2,500 gpm. The 40-year old well degraded over time and was rehabilitated in 2003 to provide a capacity of 1,600 gpm. It again has lost capacity and is currently being restored to an expected capacity of 1,240 gpm (2,000 AFY). The one active well discharges into a small reservoir, from which a booster station pumps into the distribution system. Table 2.2.2-1 shows the details of TMWD's current wells.

[17] WRD of Southern California Engineering Survey Report, 2005
[18] WRD of Southern California, Regional Groundwater Monitoring Report Water Year 2003-2004, April 2005
[19] WRD of Southern California, Engineering Survey and Report, March 2005

Table 2.2.2-1
Current Wells in the TMWD Service Area

Well Number	Date Completed	Depth (feet)	Design Flow (gpm)
Well #6 (Active) [1]	1966	810	2,500
Well #7 (Inactive, Standby)	1996	870	2,400
Well #8[2] (Not Equipped)	1998	720	2,400

[1] Well #6 is currently being restored to capacity; approximately 2,000 AFY.
[2] Well #8 is not equipped and its capacity may change when activated.

TMWD's only active well, Well #6, is located near the southwestern corner of Artesia Boulevard and Yukon Avenue, adjacent to McMaster Park. The water is discharged into the Yukon Avenue water tank where it is aerated to remove hydrogen sulfide. Prior to entering the tank, the water is treated with sodium hypochlorite and ammonia for chloramination disinfection.

Well #7 is listed as an inactive well because it has been out of service since October 1998 due to deterioration of physical quality and high total organic carbon in the well water. Well #7 can be used in emergency situations such as meeting fire flow demands. Naturally occurring ammonia is present in the well water and TMWD is proposing wellhead treatment. Well #8 was drilled near Well #7 and the water quality concerns are the same as Well #7.

In 2004, TMWD demolished two wells (Well #4 and Well #5), which had been inactive since 1996 due to poor water quality and had been physically disconnected from the water system.

Table 2.2.2-2 summarizes the amount of groundwater pumped by TMWD for the last five years.

Table 2.2.2-2
Historical Amount of Groundwater Pumped
(AFY)

Well Number	2000	2001	2002	2003	2004	2005
Well #6 (Active)	1,969	1,793	1,831	867	1,660	1,114
Well #7 (Inactive, Standby)	67	233	0	0	0	0
Well #8 (Not Equipped)	0	0	0	0	0	0
TOTAL	**2,036**	**2,026**	**1,831**	**867**	**1,660**	**1,114**

Note: Totals are based on a water year of July 1 to June 30. For example, production shown for 2001 is for groundwater pumped from 7/1/00 to 6/30/01.

Table 2.2.3-3 shows the amount of water that is projected to be pumped from each well in the future. Although TMWD uses desalinated groundwater, the use of that water is not included in the City's total groundwater rights from the Basin. The desalinated groundwater is purchased from WRD and is included in Table 2.2-1. Table 2.2.2-3 includes only those wells that are credited towards the City's groundwater rights.

Table 2.2.2-3
Amount of Groundwater Projected to be Pumped
(AFY)

Well Number	2010	2015	2020	2025	2030
Well #6 (Active)	1,600	0	0	0	0
Well #7 (Inactive, Standby)	0	0	0	0	0
Well #8 (Not Equipped)	0	0	0	0	0
North Torrance Wells	0	5,640	5,640	5,640	5,640
TOTAL	**1,600**	**5,640**	**5,640**	**5,640**	**5,640**

Notes: 1) Future projections are from Section 4.2 of this Plan.
2) Although TMWD is proposing a Nanofiltration Treatment Plant for Wells #7 and #8 (discussed in Section 4), its construction is dependant on Proposition 50 funding. At this time, it is unclear if TMWD will receive funding and therefore groundwater projections do not include water supplies from these wells.
3) Well #6 will be replaced with new wells in north Torrance after 2010 and will be removed from service.

2.2.3 Recycled Water

In response to the increasing demands for water, limitations on imported water supplies and the threat of drought, WBMWD has developed a regional water recycling program known as the West Basin Water Recycling Project. The WBMWD purchases secondary effluent from the Hyperion Treatment Plant and provides subsequent tertiary treatment to meet applicable Title 22 standards.[20] In 1991, the WBMWD Board of Directors

[20] WBMWD Urban Water Management Plan - Draft, 2005

authorized the West Basin Recycling Program to recycle up to 100,000 AFY of wastewater from the Hyperion Treatment Plant and the recycled water deliveries began in 1995. The WBMWD distributes the recycled water to retailers in its service area including the cities of Carson, Culver City, El Segundo, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, Los Angeles, Manhattan Beach, Redondo Beach, and Torrance.

TMWD purchases recycled water from WBMWD through the Water Recycling Project. Recycled water comes from the West Basin Water Recycling Plant located in El Segundo. In the 2002-2003 and 2003-2004 financial years, TMWD used 7,455 AF and 6,581 AF of recycled water respectively. In addition, refineries in El Segundo in the WBMWD's service area and in TMWD's service area used approximately 8,000 AFY of recycled water.

2.2.4 Desalted Water

TMWD is currently under contract with WRD to purchase water from WRD's Goldsworthy Groundwater Desalter Project (Desalter). The Desalter was constructed to remove a saline plume located in the Basin that was trapped as a result of barrier operations designed to halt seawater intrusion and to treat the water to meet potable standards. The plant began operating in 2001 and currently treats approximately 2.75 MGD. The plant treats saline water using microfiltration and reverse osmosis. The product water meets all the state and federal drinking water standards and is used as drinking water for the TMWD.

The desalted water received by TMWD is used as a supplemental potable water supply source. TMWD purchases approximately 2,400 AF of groundwater annually from the Desalter. Table 2.2.4-1 summarizes the past and projected Desalter sales to TMWD. Since the groundwater would otherwise be unusable, it is not included in the adjudicated groundwater rights (i.e., it does not count against the City's annual groundwater pumping rights). The pumping and treatment of this groundwater aids in halting the migration of the saline plume. In addition, the utilization of this groundwater creates a new source of supply, expands the availability of local water supplies, reduces TMWD's reliance on imported supplies from Metropolitan, and further drought-proofs the community.

Table 2.2.4-1
Past and Projected Desalter Water Production for TMWD
(AFY)

Desalter	2003	2004	2005	2010	2015	2020	2025	2030
Goldsworthy Desalter	1,516	2,374	2,542	2,400	2,400	2,400	2,400	2,400

Source: 2003 through 2005 data are actual production; all other years are projected supply totals from Table 4.2-5

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SECTION 3
WATER QUALITY

3.1 WATER QUALITY OF EXISTING SOURCES

As required by the Safe Drinking Water Act, which was reauthorized in 1996, TMWD provides annual Water Quality Reports to its customers; also known as Consumer Confidence Reports. This mandate is governed by the Environmental Protection Agency (EPA) and the California Department of Health Services (DHS) to inform customers of their drinking water quality. In accordance with the Safe Drinking Water Act, TMWD monitors a number of regulated and unregulated compounds in its water supply and as in years past, the water delivered to TMWD's customers meets the standards required by the state and federal regulatory agencies.[21] As mentioned earlier, TMWD's sources of water currently include imported water supplies, groundwater, and recycled water.

3.1.1 Imported Water

TMWD receives imported water from Metropolitan, which receives raw water from northern California (through the SWP) and from the Colorado River. Metropolitan water is treated at a total of five treatment plants. Water treated at the Weymouth and Diemer Filtration Plants is conveyed to the southwestern part of Los Angeles County through the Middle Feeder and Lower Feeder pipelines. The Sepulveda Feeder carries northern California water treated at the Jensen Filtration Plant to the service area. Water is then delivered to TMWD service area through the Palos Verdes Feeder, Second Lower Feeder, and Torrance Lateral. The Palos Verdes Feeder and Second Lower Feeder terminate at Palos Verdes Reservoir, located southeast of Torrance, in the City of Rolling Hills Estates. The majority of the Metropolitan water to TMWD comes from the Diemer Filtration Plant, and thus a higher percentage of Colorado River water is utilized in TMWD.

Metropolitan tests and treats its water for microbial, organic, inorganic, and radioactive contaminants as well as pesticides and herbicides. Protection of Metropolitan's water system continues to be a top priority. In coordination with its 26 member agencies, Metropolitan added new security measures in 2001 and continues to upgrade and refine procedures. Changes have included an increase in the number of water quality tests conducted each year (more than 300,000) as well as contingency plans that coordinate with the Homeland Security Office's multicolored tiered risk alert system.[22] Metropolitan also has one of the most advanced laboratories in the country where water quality staff performs tests, collects data, reviews results, prepares reports, and researches other treatment technologies. Although not required, Metropolitan monitors and samples substances that are not regulated but have captured scientific and/or public interest.

[21] Annual Water Quality Report, City of Torrance, 2004
[20] Southern California's Integrated Water Resources Plan, Vol 2, Metropolitan Water District, Rpt # 1107, 1996
[22] Metropolitan's website, www.mwdh2o.com/mwdh2o/pages/yourwater/2005_report/protect_02.html

Metropolitan has tested for chemicals such as perchlorate, methyl tertiary butyl ether (MTBE), and chromium VI among others.

In Metropolitan's Integrated Resources Plan (IRP) 2003 Update, water quality was identified as a possible risk to Metropolitan's future water supply reliability. Existing supplies could be threatened in the future because of contamination, more stringent water quality regulations, or the discovery of an unknown contaminant. Water quality of imported water could directly impact water supplies available to TMWD. Metropolitan's 2005 UWMP Update includes the following examples:

- If a groundwater basin becomes contaminated and cannot be used, more water will be required from other sources.
- Imported water from the Colorado River must be blended (mixed) with lower salinity water from the SWP. Higher salinity levels in the Colorado River would increase the proportion of SWP supplies required.
- High total dissolved solids (TDS) in water supplies leads to high TDS in wastewater, which increases the cost of recycled water.
- If diminished water quality causes a need for membrane treatment, the process typically results in losses of up to 15 percent of the water processed.
- Degradation of imported water supply quality could limit the use of local groundwater basins for storage.
- Changes in drinking water quality standards such as arsenic, radon, or perchlorate could increase demand on imported water supplies.

Because of the concerns identified above, Metropolitan has identified those water quality issues that are most concerning and have identified necessary water management strategies to minimize the impact on water supplies. Water quality concerns with Metropolitan's water supplies and the approaches taken to ensure acceptable water quality are discussed in the following sections.

Salinity

Water from the CRA has the highest level of salinity of all Metropolitan's sources of supply, averaging 650 mg/L during normal water years.[23] Several actions have been taken on the state and federal level to control the salinity with the river such as the Colorado River Basin Salinity Control Act in 1974 and formation of the Colorado River Basin Salinity Control Forum. In 1975, water quality standards and a plan for controlling salinity were approved by the EPA.

In contrast, water from the SWP is significantly lower in TDS, averaging 250 mg/L. Because of the lower salinity, Metropolitan blends SWP water with Colorado River water to reduce the salinity in the water delivered to its customers. Metropolitan's board has

[23] Metropolitan Water District of Southern California, Regional Urban Water Management Plan, September 2005 Draft

adopted a salinity objective of 500 mg/L for blended imported water as defined in Metropolitan's Salinity Management Action Plan. Metropolitan estimates that the objective can be met in seven out of ten years. In the other three years, hydrologic conditions would result in increased salinity and reduced volume of SWP supplies.

In an effort to address the concerns over salinity, Metropolitan secured Proposition 13 funding for two water quality programs:

1) Water Quality Exchange Partnership – the funding is being used to develop new infrastructure to optimize water management capabilities between the agricultural users of the eastern San Joaquin Valley and urban users of southern California. Installing infrastructure will provide opportunities for Metropolitan to exchange SWP water for higher quality water. Because of tidal influences from the San Francisco Bay, bromide is a water quality issue for the SWP. Also, agricultural drainage presents a potential problem in the Delta which is manifested in the form of total organic carbon. These issues are discussed in detail below.
2) The Desalination Research and Innovation Partnership – the funding is being used to develop cost-effective advanced water treatment technologies for the desalination of Colorado River water, brackish groundwater, municipal wastewater, and agricultural drainage water.

Perchlorate in the Colorado River

Perchlorate is a contaminant of concern, which is both naturally occurring and a manmade chemical. Most of the perchlorate manufactured in the United States is used as the primary ingredient of solid rocket propellant. Perchlorate is also used in a wide variety of industrial processes and pyrotechnics. Perchlorate is a man-made anion commonly associated with the solid salts of ammonium, potassium, and sodium. Ammonium perchlorate is the mostly widely used perchlorate compound. It has also been found to occur naturally in certain highly arid environments. These salts are highly soluble in water, and because perchlorate adheres poorly to mineral surfaces and organic material, it can be very mobile in surface and subsurface aqueous systems. Also, since it is relatively inert in typical groundwater and surface water conditions, perchlorate contamination may persist for extended periods of time. In recent years, there has been increasing interest in perchlorate levels in soil, groundwater, drinking water, and irrigation water around the country and what health effects it may have.

High levels of perchlorate can temporarily affect the thyroid's ability to absorb iodide from the bloodstream. Because iodide is an essential component of thyroid hormones, perchlorate disrupts how the thyroid functions. In adults, the thyroid helps to regulate the metabolism. In children, the thyroid plays a major role in proper development, in addition to metabolism. Drinking water contaminated with perchlorate is the most likely way that perchlorate can be ingested.[24]

[24] [On-line] U.S. EPA, http://www.epa.gov/fedfac/documents/perchlorate.htm

Perchlorate has been detected at low levels in the Colorado River water supply. Perchlorate is difficult to remove from water supplies with conventional water treatment. Successful treatment technologies include nanofiltration, reverse osmosis, biological treatment, and fluidized bed bioreactor treatment. Metropolitan continues to monitor perchlorate contamination of the Colorado River as well as research various treatment options. In 2002, Metropolitan adopted a Perchlorate Action Plan which defined the following nine objectives:

1) expand monitoring and reporting programs
2) assess the impact of perchlorate on local groundwater supplies
3) continue tracking health effects studies
4) continue tracking remediation efforts in the Las Vegas Wash
5) initiate modeling of perchlorate levels in the Colorado River
6) investigate the need for additional resource management strategies
7) pursue legislative and regulatory options for cleanup activities and regulatory standards
8) include information on perchlorate into outreach activities
9) provide periodic updates to Metropolitan's board and member agencies

Disinfection by-products (formed by disinfectants) reacting with bromide and total organic carbon in State Water Project water

SWP water supplies contain levels of total organic carbon and bromide that are a concern to Metropolitan to maintain safe drinking water supplies. When water is disinfected at treatment plants, certain chemical reactions can occur with these impurities that can form disinfection byproducts (DBP). DBPs include trihalomethanes (THMs) and haloacetic Acids (HAAs). THMs and HAAs have been found to cause cancer in laboratory animals. Inherent in any through-Delta water movement is the high organic and bromide loading imposed on the water from agricultural runoff and salt water intrusion. This poses significant treatment challenges to the receiving end users, like Metropolitan, to avoid problems with DBPs and the formation of THMs. It is imperative that the quality of SWP water delivered to Metropolitan be maintained at the highest levels possible.

In order to control the total organic carbon and bromide concentrations in Metropolitan's water supply, SWP water is blended with Colorado River water. The blending of the two water sources benefits in two ways: reduction in DBPs and reduction in salinity (as discussed earlier). Because of the recent drought conditions on the Colorado River, water supplies have been reduced which impacts the blending operations at the various filtration plants. Metropolitan's board therefore authorized the use of ozone as the primary disinfectant at all five Metropolitan treatment plants in July 2003 to minimize impacts from reduced deliveries of Colorado River water. Previously, only the Henry J Mills and Jensen Filtration Plants had been approved for this treatment. These two plants were chosen for the use of ozone in order to meet new DBPs regulations. Metropolitan plans to install ozonation at the remaining three plants by 2009.

Methyl Tertiary Butyl Ether (MTBE) in local surface reservoirs

The DHS has adopted a primary maximum contaminant level (MCL) of 13 ug/L for MTBE and a secondary MCL of 5 ug/L. MTBE is an oxygenate found in gasoline. Metropolitan monitors MTBE levels at Diamond Valley Lake and Lake Skinner. The reservoirs also have boat requirements such as MTBE-free fuel to aid in the protection of imported water supplies. MTBE concentrations have been below the MCL.

Uranium

Uranium is a contaminant of concern in the water from the Colorado River. There are uranium mine tailings located approximately 600 feet from the river at Moab, Utah. Rainfall seeps through the tailings and contaminates the local groundwater which flows to the river. In 2003, an interim action system was implemented that intercepts some of the contaminated groundwater prior to reaching the river. The Department of Energy is preparing an Environmental Impact Statement that will evaluate the possibility of moving the pile, capping it in place, and other alternatives. Uranium levels at Metropolitan's intake range from 1 to 5 pCi/L (picocuries per liter) whereas the California drinking water standard is 20 pCi/L.[25]

N-nitrosodimethylamine (NDMA)

NDMA is an emerging contaminant that may have an impact on the water supply. Although Metropolitan's water supplies are non-detect for NDMA, there is a concern that chlorine and monochloramine can react with organic nitrogen precursors to form NDMA. Metropolitan manages this potential reaction by monitoring their system to ensure the water supplies meet or exceed the standards set by the State of California. The notification level for NDMA is 10 ug/L. Metropolitan currently samples quarterly for NDMA at their treatment facilities and at specific locations throughout their service area. Metropolitan focuses on areas of the system where there is a long retention time for water because these areas are where the concern for a reaction between monochloramine and organic nitrogen precursors is the greatest. Metropolitan will be expanding the number of samples taken in 2006 to better represent the system.

Hexavalent Chromium (Chromium VI)

Currently, the MCL for total chromium is 0.05 mg/L, which includes Chromium VI. California DHS is to set a MCL for Chromium VI, however, the Office of Health Hazard Assessment must first establish a public health goal. Metropolitan samples for Chromium VI and monitors levels within the Colorado River because of Chromium VI detection in groundwater near the river. The plume of Chromium VI has been detected in recently installed wells that are located less than 60 feet west of the Colorado River near Topock,

[25] Metropolitan Water District of Southern California, Regional Urban Water Management Plan, September 2005 Draft

Arizona. In February 2005, Chromium VI was detected at a concentration of 354 ug/L.[26] Metropolitan is involved in a Technical Work Group that reviews monitoring results and remediation plans for contaminated groundwater.

Water Quality Programs

Metropolitan supports and is involved in many programs that address water quality concerns related to both the SWP and Colorado River supplies. Some of the programs and activities include:

- CALFED Program – This program coordinates several SWP water feasibility studies and projects. These include:
  1. A feasibility study on water quality improvement in the California Aqueduct.
  2. The conclusion of feasibility studies and demonstration projects under the Southern California-San Joaquin Regional Water Quality Exchange Project.[27] This exchange project was discussed earlier as a mean to convey higher quality water to Metropolitan.
  3. DWR's Municipal Water Quality Investigations Program and the Sacramento River Watershed Program. Both programs address water quality problems in the Bay-Delta and Sacramento River watershed.

- Delta Improvement Package – Metropolitan in conjunction with DWR and USGS have completed modeling efforts of the Delta to determine if levee modifications at Franks Tract would reduce ocean salinity concentrations in water exported from the Delta. Currently, tidal flows trap high saline water in the track. By constructing levee breach openings and flow control structures, it is believed saline intrusion can be reduced. This would significantly reduce TDS and bromide concentrations in water from the Delta.

- Source Water Protection – In 2001, Metropolitan completed a Watershed Sanitary Survey as required by DHS to examine possible sources of drinking water contamination and identify mitigation measures that can be taken to protect the water at the source. DHS requires the survey to be completed every five years. Metropolitan also completed a Source Water Assessment (December 2002) to evaluate the vulnerability of water sources to contamination. Water from the Colorado River is considered to be most vulnerable to contamination by recreation, urban/storm water runoff, increasing urbanization in the watershed, wastewater, and past industrial practices. Water supplies from SWP are most vulnerable to urban/storm-water runoff, wildlife, agriculture, recreation, and wastewater.[28]

[26] Arizona Department of Health Services, Topock Groundwater Study Evaluation of Chromium in Groundwater Wells, September 7, 2005.
[27] Metropolitan Water District of Southern California, Regional Urban Water Management Plan, September 2005 Draft
[28] Metropolitan Water District of Southern California, Regional Urban Water Management Plan, September 2005 Draft

3.1.2 Groundwater

Both WBMWD and WRD actively monitor the Basin for water quality issues. WBMWD assists purveyors in its service area in meeting drinking water standards through its *Cooperative Basin-Wide Title 22 Groundwater Quality Program*. The program includes wellhead testing, reservoir sample collecting, water quality testing, and reporting services.[29] WRD conducts a comprehensive Groundwater Quality Program to evaluate water quality compliance in production wells, monitoring wells, and recharge/injection areas. WBMWD currently coordinates groundwater quality compliance monitoring of wells for TMWD. TMWD collects water quality samples in the distribution system.

As part of WRD's Regional Groundwater Monitoring Program, WRD collects groundwater samples twice a year from over 200 monitoring wells. The water quality data collected from these wells are used to assess ambient conditions of the Basin, monitor the effects of extraction, monitor the effectiveness of the seawater intrusion barriers, address poor water quality areas, and also provide early warning of emerging contaminants of concern. WRD supplements their sampling with information from production wells in order to broaden the coverage of the Basin.

WRD provides extensive information on groundwater quality in both its current Engineering and Survey Report (March 2005) and the Regional Groundwater Monitoring Report (April 2005). Both reports have a section devoted solely to groundwater quality management. The groundwater quality issues facing WRD and TMWD and the programs implemented to address those issues are summarized in the following sections.

Total Dissolved Solids (TDS)

One water quality concern is TDS. The DHS has established a recommended secondary standard of 500 mg/L with an upper limit of 1,000 mg/L. In the Basin, TDS levels averaged 640 mg/L in 2003-2004.[30] TMWD Well #6 had TDS concentrations ranging from 366 to 520 mg/L in 2004.

One of the major challenges for WRD is the contamination of fresh groundwater by saltwater intrusion. Therefore, WRD has implemented the Dominguez Gap and West Coast Barrier Projects. WRD monitors the effectiveness of the barriers by collecting hydrogeologic and water quality data from monitoring wells near the barriers.

Iron and Manganese

Secondary standards of 0.3 mg/L for iron and 50 ug/L for manganese were established by DHS. In the Basin, iron has been detected in monitoring wells up to 1.1 mg/L although most groundwater zones within all 15 monitoring well locations has iron levels less than MCL.

[29] West Basin Municipal Water District, 2005 UWMP, June 2005 Draft
[30] Watermaster Service in the West Coast Basin Los Angeles County, 2004

Data from the DHS indicate that one-third of production wells in the Basin have iron concentrations exceeding the secondary MCL. Manganese concentrations typically exceed the MCL in many monitoring wells. Concentrations range from nondetect to 670 ug/L.

Nitrates

Nitrates are sampled because their presence indicates that contamination may have occurred due to the degradation of organic matter. Although nitrates are present throughout the Basin, no production wells within the Basin detected nitrates above the MCL (10 mg/L).

Hardness

Hardness in the Basin ranged from 7.06 to 5,560 ug/L for both the monitoring and production wells in the Basin. In general, the lower groundwater zones have low hardness. Production wells in the Basin show moderate levels of hardness.

Sulfate

Sulfate in the Basin ranged from non-detect to 710 mg/L for all wells. Sulfate concentrations in production wells in the Basin are generally low in the eastern and southern portion of the Basin and higher in the western portion of the Basin. TMWD has not used Wells #4 and #7 partly due to the presence of sulfur in the water.

Chloride

Chloride was detected in the Basin wells at and between concentrations of 12 to 6,300 mg/L. Chloride concentrations exceeded the MCL in the Silverado aquifer zones in five of 15 Basin wells, primarily due to seawater intrusion.

Trichloroethylene (TCE)

TCE is classified as a human carcinogen and has an MCL of 5 ug/L. TCE was detected in five WRD monitoring well locations in the Basin ranging from concentrations of below the detection limit to 17 ug/L. To date, no production wells had detectable levels of TCE.

Tetrachloroethylene (PCE)

PCE's MCL is 5 ug/L and is a possible human carcinogen. PCE has been detected at one monitoring well location in the West Coast Basin. The concentration in the one well was 1.5 ug/L. PCE has not been detected above the MCL in any of the production wells in the Basin.

Special Interest Constituents

WRD has identified special interest constituents including arsenic, hexavalent chromium, MTBE, total organic carbon, apparent color, and perchlorate as emerging water quality issues. The special interest constituents are summarized below.

Arsenic

The current arsenic standard is 50 ug/L. The new federal MCL beginning in January 2006 for domestic water supplies is 10 ug/L. Three monitoring wells had arsenic concentrations between 10 and 50 ug/L and one monitoring well had an arsenic concentration of 68 ug/L. Arsenic was not detected in any Basin production wells in the water years 2001 through 2004.

Hexavalent Chromium

Hexavalent chromium, or chromium 6, is an oxidized form of chromium 3 that is a known carcinogen when inhaled. Currently, the MCL for all forms of chromium is 50 ug/L. Hexavalent chromium was not detected in any of the production wells in the Basin.

Methyl Tertiary-Butyl Ether (MTBE)

The health effects of MTBE are uncertain. The EPA currently classifies MTBE as a possible human carcinogen. The MCL for MTBE is 13 ug/L. The WRD monitoring wells have not shown detection of MTBE. MTBE has not been detected in any of the production wells in the Basin.

Total Organic Carbon

Total organic carbon is the measure of the organics in water and provides an indication of the potential formation of disinfectant byproducts.[31] There is no MCL for total organic carbon; however, seven of the 15 production wells tested greater then 5 mg/L for total organic carbon.

Apparent Color

Although apparent color in groundwater is not harmful, an MCL of 15 apparent color units has been established for aesthetic reasons. TMWD Wells #7 and #8 have been observed to produce excessive water color. The wells are no longer in service and the City is considering options to install treatment at Well #7 and possibly Well #8, if it is equipped. Due to the extremely high cost to construct these treatment facilities, this option depends on the availability of outside funding to defray a portion of the cost.

[31] WRD, Regional Groundwater Monitoring Report for Water Year 2003/2004, April 2005

Perchlorate

In March 2004, the Office of Environmental Health Hazard Assessment announced the publication of a public health goal for perchlorate at 6 ug/L. To date, however, DHS has not set a regulatory drinking water standard. Perchlorate has been detected in three monitoring wells in the Basin at levels below the Public Health Goal.

Water Quality Programs

TMWD, WBMWD, and WRD support and are involved in many programs that address water quality concerns of the Basin. Some of the programs and activities include:

- TMWD's lead and copper monitoring program – The Lead Copper Rule that came into effect in 1992 has resulted in the TMWD's Lead Copper monitoring program conducted by TMWD staff. Prior to the Lead Copper Rule, lead and copper were regulated like most other chemicals, with monitoring specified at the well or treatment plant. However, since the primary source of lead and copper in drinking water is from plumbing fixtures and old lead service lines, and not the supply source, the new rule requires water systems to test for lead and copper at representative household bathroom and kitchen faucets.
- WRD's Safe Drinking Water Program – This program promotes the treatment of contaminants at the wellhead for potable purposes. Currently, the program is focusing on volatile organic carbons and provides financial assistance for the design and installation of wellhead treatment systems.
- WRD's Groundwater Quality Program – This program monitors and evaluates the impacts of pending drinking regulations on the Basin. Contaminates of concern such as perchlorate, NDMA, hexavalent chromium, and 1.4-dioxane are closely monitored.
- WRD's application for AB303 Groundwater Management Grant Program – WRD along with the USGS, USEPA, RWQCB, Department of Toxic Substance Control (DTSC), and the City of Sante Fe Springs recently resubmitted a grant application for funding to investigate potential contamination movement within the aquifer system.
- WRD's Water Augmentation Study – This study evaluates the feasibility of capturing storm runoff in-lieu of discharge to surface waters.

3.2 WATER QUALITY EFFECT ON WATER MANAGEMENT STRATEGIES AND SUPPLY RELIABILITY

The previous section summarized the general water quality issues for TMWD's water supplies: Metropolitan and the Basin. Similar to Metropolitan and WRD, TMWD prepared an assessment of TMWD's drinking water which was completed in 2003. The

groundwater sources were found to be most vulnerable to possible contamination from landfills and dumps.[32]

TMWD continues to monitor its groundwater wells for the first indication of problems as part of their water management strategy. TMWD's groundwater management strategy includes turning wells off when water quality deteriorates as described below.

- Wells #4 and #5 – Brackish groundwater caused Wells #4 and #5 to be removed from operation when TDS exceeded the secondary MCL. TMWD also encountered high levels of iron and manganese in these wells exceeding secondary MCLs, and experienced high total trihalomethane formation potential, color and odor due to presence of organic compounds in the aquifer such as hydrogen sulfide. TMWD has destroyed these wells.

- Well #7 is an inactive well and has been out of service since October 1998 due to increased taste and odor problems and high total organic carbon levels in the well water. Naturally occurring ammonia is present in the well water. The well also contains iron, manganese, and hydrogen sulfide.

- Well #8 was drilled in 1998 and has not yet been equipped. Because it was drilled near Well #7, there is concern over the well's long-term water quality.

- Well #6 has been in service since 1965. TMWD converted its disinfection facilities at the well from chlorine gas to chloromines. TMWD chose to use choloromines in order to reduce trihalomethane formation in the distribution system, and so that the type of residual disinfectant would be compatible with chloromines in imported water from Metropolitan.

TMWD does not anticipate any significant or immediate changes in its available imported water supplies due to water quality issues in part because of the mitigation actions undertaken by Metropolitan. In the near future, EPA's Stage 2 regulation of the DBPs rule will be in effect. Stage 1 was implemented in 2002 and lowered the total THM maximum annual average concentration level in water supplies; Stage 2 will further lower the THM concentration level. TMWD's water supplies meet the requirements of Stage 1 and will be required to meet Stage 2 levels when they become finalized.

TMWD is proposing a groundwater treatment project to better manage groundwater supplies in the event Metropolitan supplies are reduced. TMWD has completed a feasibility study and two pilot studies for a proposed Nanofiltration Water Treatment Project for Wells #7 and #8. The project's purpose would be to make use of unusable groundwater, meet current and proposed water quality regulations, and reduce water supply demand on the Colorado River. Implementation of the project depends on external funding to defray a portion of the cost.

[32] City of Torrance, 2004 Water Quality Report.

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SECTION 4
WATER RELIABILITY PLANNING

4.1 RELIABILITY OF WATER SUPPLIES FOR THE CITY OF TORRANCE

Reliability is a measure of a water service system's expected success in managing water shortages. The combination of demand management and supply augmentation options help to reduce the frequency and severity of shortages.

The City of Torrance and all southern California communities and water suppliers are facing increasing challenges in their role as stewards of water resources in the region. The region faces a growing gap between its water requirements and its firm water supplies. Increased environmental regulations and the collaborative competition for water from outside the region have resulted in reduced supplies of imported water. Continued population and economic growth also contribute toward increased water demands within the region, putting an even larger burden on local supplies.

The reliability of TMWD's water supply is very dependent on the reliability of imported water supplies, given that TMWD has only one functioning production well. Imported supplies are managed and delivered by Metropolitan, while the groundwater supplies are managed by WRD. The following sections will discuss these agencies as well as the LACSD and the Regional Water Quality Control Board – Los Angeles Region, their roles in water supply reliability, and the near and long-term efforts they are involved with to ensure future reliability of water supplies to Torrance and the region as a whole. Although the City of Torrance is a direct Metropolitan member agency and not a member agency of WBMWD, TMWD does participate in some of the programs of WBMWD. With that in mind, WBMWD will also be discussed in this section.

4.1.1 Regional Agencies and Water Reliability

Metropolitan Water District of Southern California (Metropolitan)

Metropolitan's primary goal is to provide reliable water supplies to meet the water needs of its service area at the lowest possible cost. The reliability of Metropolitan's water supply has been threatened as existing imported water supplies from the Colorado River and SWP face increasing challenges. Despite these challenges, Metropolitan continues to develop and encourage projects and programs to ensure reliability now and into the future. One such project is Metropolitan's Diamond Valley Lake in Hemet, California; an 800,000 AF capacity reservoir for regional seasonal and emergency storage for SWP and Colorado River water. The reservoir began storing water in November 1999 and reached the sustained water level by early 2002.[33]

[33] Metropolitan Water District of Southern California, Regional UWMP, September 2005 Draft

Colorado River Aqueduct (CRA)

Pursuant to the 1964 U.S. Supreme Court decree, Metropolitan's dependable supply of Colorado River water was limited to 550,000 AFY assuming no surplus or unused Arizona and Nevada entitlement was available and California agricultural agencies use all of their contractual entitlement. Historically, Metropolitan has also possessed a priority for an additional 662,000 AFY depending upon availability of surplus water. In addition, Metropolitan maintains agreements for storage, exchanges and transfers within the service area of Imperial Irrigation District (IID) that provide water to Metropolitan.[34]

Water supplies from the Colorado River have been, and continue to be, a topic of negotiation and intense debate. The 1964 Court Decree required the state of California to limit its annual use to 4.4 million acre-feet (MAF) basic annual apportionment of Colorado River water plus any available surplus. To keep California at 4.4 MAF, Metropolitan reduces its level of diversions in years when no surplus is available.

In 1999, the Colorado River Board developed "California's Colorado River Water Use Plan," also known as the "California Plan" and the "4.4 Plan," which was endorsed by all seven Colorado River Basin states and the U.S. Department of the Interior. This plan developed the framework that specifies how California will transition and live within its basic apportionment of 4.4 MAF of Colorado River water.

The US Bureau of Reclamation (USBR) implemented Interim Surplus Guidelines to assist California's transition to the Plan. Seven priorities for use of the waters of the Colorado River within the State of California were established. Metropolitan would only be able to exercise its fourth priority right to 550,000 AF annually, instead of the maximum aqueduct capacity of 1.3 MAF. Priorities 1 through 3 cannot exceed 3.85 MAF annually. Together, Priorities 1 through 4 total California's 4.4 MAF apportionment.

In October 2003, the Quantification Settlement Agreement (QSA), a critical component of the California's Colorado River Water Use Plan and for purposes of Section 5(B) of the Interim Surplus Guidelines, was authorized defining Colorado River water deliveries, delivery of Priority 3(a) and 6(a) Colorado River water, and transfer and other water delivery commitments, thus facilitating the transfer of water from agricultural agencies to urban uses. The QSA is a landmark agreement, signed by the four California Colorado River water use agencies and the U.S. Secretary of the Interior, which will guide reasonable and fair use of the Colorado River by California through the year 2037.

Metropolitan's 2003 IRP Update, recognizes that the QSA supports Metropolitan's development plans for CRA deliveries, and demonstrates the reliability benefits as a result of the QSA and existing supply enhancement programs.

[34] Metropolitan Water District of Southern California. Integrated Water Resources Plan. 2003 Update. May 2004.

State Water Project (SWP)

The reliability of the SWP impacts Metropolitan's member agencies' ability to plan for future growth and supply. DWR's Bulletin 132-03, December 2004, provides certain SWP reliability information, and in 2002, the DWR Bay-Delta Office prepared a report specifically addressing the reliability of the SWP.[35] This report, *The State Water Project Delivery Reliability Report*, provides information on the reliability of the SWP to deliver water to its contractors assuming historical precipitation patterns. The following SWP reliability information is included in these reports.

On an annual basis, each of the 29 SWP contractors including Metropolitan request an amount of SWP water based on their anticipated yearly demand. In most cases, Metropolitan's requested supply is equivalent to its full Table A Amount,[36] currently at 1,911,500 AFY. After receiving the requests, DWR assesses the amount of water supply available based on precipitation, snow pack on northern California watersheds, volume of water in storage, projected carry over storage, and Sacramento-San Joaquin Bay Delta regulatory requirements. For example, the SWP annual delivery of water to contractors has ranged from 552,600 AFY in 1991 to 3.5 MAF in 2000. Due to the uncertainty in water supply, contractors are not typically guaranteed their full Table A Amount, but instead a percentage of that amount based on the available supply.

Typically, around December of each year, DWR provides the contractors with their first estimate of allocation for the following year. As hydrologic and water conditions develop throughout the year, DWR revises the allocations. On January 14, 2005, SWP supplies were projected to meet 60 percent of most SWP contractor's Table A Amounts. This allocation was increased to 70 percent on April 1, 2005 and again increased to 90 percent on May 27, 2005. The percentages, however, could easily have been reduced depending on changes in the year's hydrologic and water conditions. For the year 2006, DWR announced a 55 percent initial allocation of contractor's Table A Amounts on November 23, 2005. This percent will likely change (increase or decrease) throughout next year based on hydrologic conditions. Due to the variability in water supply for any given year, it is important to understand the reliability of the SWP to supply a specific amount of water each year to the contractors.

DWR is preparing an update to the SWP Reliability Report issued in 2003 and expects it to be complete by the end of 2005. On November 18, 2005, DWR released the draft of the 2005 SWP Delivery Reliability Report for public review and comment. The draft Reliability Report updates the reliability report finalized in 2003 with the inclusion of two updated studies. The updated studies, 4 and 5, contain the most current information for assumed demands of SWP contractors. The results of studies 4 and 5 show average deliveries of 69 percent of full Table A under current conditions and 77 percent under future conditions. The more recent studies also show a minimum delivery of 4 and 5 percent, current and future years respectively, compared to 20 percent for the 2003 report.

[35] Department of Water Resources, State Water Project Delivery Reliability Report. 2002.

[36] Two types of deliveries are assumed for the SWP contractors: Table A and Article 21. Table A Amount is the contractual amount of allocated SWP supply; it is scheduled and uninterruptible. Article 21 allows SWP contractors to receive additional water deliveries only under specific conditions. [Department of Water Resources, State Water Project Delivery Reliability Report, 2002.]

These amounts are shown in Table 4.1.1-1 on the following page compared to the earlier CALSIM modeling as discussed below.

DWR analyzed the SWP's reliability using the California Water Allocation and Reservoir Operations Model (CALSIM II) in their Reliability Report. The CALSIM II model was developed by DWR and the USBR to simulate operations of the SWP and the Central Valley Project (CVP). The CALSIM II model is used to estimate water deliveries to both SWP and CVP users under various assumptions such as hydrologic conditions, land use, regulations, and facility configurations. Documentation for CALSIM II, including assumptions, can be found on the DWR Web site at http://modeling.water.ca.gov.

One of the key assumptions of the CALSIM II model is that past weather patterns will repeat themselves in the future. The model uses a monthly time step to calculate available water supply based on historical rainfall data from 73 years of records (1922 – 1994). The model scenarios used in the preparation of the Reliability Report also assumed that regulatory requirements and facilities would not change in the future. DWR considered this assumption conservative since additional facilities such as reservoirs may be implemented in the future to specifically increase the SWP's reliability.

The CALSIM II model was used to complete three benchmark studies dated May 17, 2002 for the Reliability Report. The benchmark studies evaluated the water supply and demand at the 2001 condition and at the 2021 condition. In 2001, SWP water demand was estimated to vary from 3.0 to 4.1 MAF per year depending on the weather conditions (wet or dry years). SWP water demands in 2021 were estimated to range from 3.3 to 4.1 MAF per year. DWR prepared two benchmark studies for the 2021 condition. The first study assumed that SWP water demands would depend on weather conditions, whereas the second study assumed the contractor's water demand would be their maximum Table A Amount; 4.1 MAF per year regardless of weather. Table 4.1.1-1 shows the results, which demonstrate that SWP deliveries, on average, can meet 75 percent of the maximum Table A Amount.

Table 4.1.1-1
SWP Table A Deliveries from the Delta
Percent of Total Table A Amount of 4.133 MAF
(MAF)

Study	Average	Maximum	Minimum
2001 Study	2.962 (72%)	3.845 (93%)	0.804 (19%)
2021 Study A[1]	3.083 (75%)	4.133 (100%)	0.830 (20%)
2021 Study B[2]	3.130 (76%)	4.133 (100%)	0.830 (20%)
Revised-Demand Today[3]	2.818 (69%)	3.848 (94%)	0.159 (4%)
Revised-Demand Future[4]	3.178 (77%)	4.133 (100%)	0.187 (5%)

Source: Department of Water Resources, Excerpts from Working Draft of 2005 SWP Delivery Reliability Report – Attachment 1, May 25, 2005

[1] Assumes demands depend on weather conditions.
[2] Assumes demands at maximum Table A amount.
[3] Revises demands to current conditions.
[4] Revises demands at levels of use projected to occur by 2025.

The Monterey Agreement states that contractors will be allocated part of the total available project supply in proportion to their Table A Amount. The Monterey Agreement changed SWP water allocation rules by specifying that, during drought years, project supplies be allocated proportionately based on the maximum contractual Table A Amount. Water is allocated to urban and agricultural purposes on a proportional basis, deleting a previous initial supply reduction to agricultural contractors. The agreement further defines and permits permanent sales of SWP Table A Amounts and provides for transfer of up to 130,000 AF of annual Table A Amounts from agricultural use to municipal use. The Agreement also allows SWP contractors to store water in another agency's reservoir or groundwater basin, facilitates the implementation of water transfers and provides a mechanism for using SWP facilities to transport non-project water for SWP water contractors. The Agreement provides greater flexibility for SWP contractors to use their share of storage in SWP reservoirs.

It is important to note that Study 5, the Revised-Demand Future study shown in Table 4.1.1-1, concluded that as little as 5 percent of Table A amounts would be available to State Water Contractors during single dry years while an average of 29 percent of Table A amounts would be available during the three year multiple dry period. These low percentages are important to the overall water picture in southern California because Metropolitan receives a significant portion of its total water supply from the SWP. Such significant cuts in supply availability from DWR will therefore have major impacts upon MWD's ability to meet the demands of its member agencies during single and multiple dry years. With this in mind, MWD made major changes to its revised supply/demand projections included as part of its September 2005 Final Draft Regional Urban Water

Management Plan as compared to their earlier May 2005 projections. These changes are discussed in more detail in Section 4.2.

Report on Metropolitan's Water Supplies: Blueprint for Water Reliability

Metropolitan released a *Report on Metropolitan's Water Supplies, A Blueprint for Water Reliability* on March 25, 2003, to provide updated information on Metropolitan's projected supply and demand for incorporation into Water Verification and Water Supply Assessments for compliance with SB 221 and SB 610, respectively. These bills implement requirements to connect land use to a sufficient water supply before a development can be approved. The Metropolitan report addresses water supply reliability issues and states Metropolitan's roles and responsibilities, which include the following: (1) implementing water management programs that support the development of cost-effective local resources; (2) securing additional imported supplies as necessary through programs that increase the availability of water delivered through the CRA and the SWP; (3) providing the infrastructure needed to integrate imported and local sources; (4) establishing a comprehensive management plan dealing with periodic surplus and shortage conditions; and (5) developing a rate structure that strengthens Metropolitan's financial capabilities to implement water supply programs and make infrastructure improvements to Metropolitan's distribution system.

The report details that Metropolitan's regional water demand projections are 6 percent to 16 percent *higher*, depending on which 5-year projection period and 11 percent for Year 2025, than the aggregated projections of Metropolitan's member agencies. As stated in the Report, "this difference indicated that Metropolitan supplies would provide a level of 'margin of safety' or flexibility to accommodate delays in local resources development or adjustments in development plans."[37] Additionally, the report concludes that "current practices allow Metropolitan to bring water supplies on-line at least ten years in advance of demand with a very high degree of reliability." More particularly, Metropolitan documented sufficient currently available supplies to meet 100 percent of member agencies' supplemental water demands for 20 years (through 2023) under Average and Wet Year conditions, for 15 years under Multiple Dry Year conditions (with 8 to 26 percent reserve capacity), and for 15 years under Single Dry Year conditions (with 8-25 percent reserve capacity).

The Report also identifies the ways Metropolitan is managing changes in Southern California's water supplies, including reduced Colorado River deliveries and water quality constraints. In addition, opportunities for additional supplies are currently being implemented in the following ways:

1) Full Diamond Valley Lake: The Lake is now fully operational with an increased conveyance capacity for refill system storage.

[37] Metropolitan Water District of Southern California. Report on Metropolitan Water Supplies, A Blueprint for Water Reliability, p. 9. March 25, 2003.

2) Re-Operation of Storage and Transfer Programs: In 2003, Metropolitan developed additional storage and transfer capabilities and completed filling local resources to achieve full storage accounts in operational reservoirs and banking/transfer programs.
3) Enhanced Conservation Programs: A new campaign is designed to encourage more efficient outdoor water use and promote innovative conservation measures.
4) Development of Additional Local Resources: There are promising opportunities identified to develop seawater desalination and expand the Local Resources Program (LRP).
5) Implement the CALFED Bay-Delta Program: The CALFED Bay-Delta Program is implemented through 11 major elements including storage, conveyance, water use efficiency, water quality, and others. One element of special concern, levee system integrity, provides for the stabilization and improvement of Delta levees to protect in-Delta as well as export users such at Metropolitan. With the recent Jones Track levee failure, this program is essential to the reliability of the SWP supplies.

In addition to the *Report on Metropolitan's Water Supplies, A Blueprint for Water Reliability,* Metropolitan's September 2005 Draft Regional UWMP demand and supply analysis also projects surpluses (of regional supplies compared with regional demands) ranging from 5 percent to 35 percent in all years and all drought scenarios through 2030.[38]

As demand forecasts are refined, supply goals are also refined. Metropolitan has consistently supplied over 50 percent of water supplies to the Southern California region. To continue to meet this percent of water supply, Metropolitan continues to develop new and innovative projects and programs to ensure reliability. For example, Metropolitan supports seawater desalination projects, increases commercial conservation efforts, improves water quality by decreasing salinity in supplies from the SWP and the Colorado River, increases underground storage and retrieval facilities, adopts principles for establishing cooperative programs, and endorses legislation that would further water reliability. Some of these projects are further described in Section 4.4.

Integrated Water Resources Plan (IRP)

To address Metropolitan's reliability challenges, Metropolitan and its member agencies developed an IRP in 1996. The overall objective of the IRP process is the selection and implementation of a Preferred Resource Mix (or strategy) consisting of complementary investments in local water resources, imported supplies and demand-side management that meet the region's desired reliability goal in a cost-effective and environmentally sound manner. The 1996 IRP was reviewed as part of Metropolitan's strategic plan and rate refinement to guide the development and implementation of revised Metropolitan water management programs through the year 2005.

[38] Tables II-7, 8 and 9 of Metropolitan's September 2005 Draft Regional Urban Water Management Plan

The 2003 IRP Update was approved July 13, 2004, and includes various projects and programs that contribute to the reliability of Metropolitan's imported water supplies. The IRP Update concluded that the resource targets from the 1996 IRP, factored in with changed conditions, will continue to provide for 100 percent reliability through 2025. The IRP did not project out to 2030.

While the 2003 IRP Update includes goals for a variety of resource targets, it identified the most significant programs as conservation and local supply development among the Preferred Resource Mix. The IRP includes the LRP and the Seawater Desalination Program as a means to increase reliability of local supplies. Metropolitan initiated the LRP to promote the development of water recycling projects that reduced demand for imported water and improved regional water supply reliability in 1982. In 1991, the Groundwater Recovery Program was implemented to similarly promote the recovery of local degraded groundwater supplies. In 1995, both programs were combined into the LRP. Currently, the LRP, including both recycling and groundwater recovery, has invested over $121 million and partnered with member agencies on 53 recycled water projects and 22 groundwater recovery projects generating 251,000 AF of local supply in 2002.[39]

The 2003 IRP Update states that Metropolitan's regional production target is 500,000 AF by 2020 for its LRP. Metropolitan's current projection of regional implementation of recycling, groundwater recovery, and seawater desalination resource targets exceeds the 1996 IRP goals. Although in FY 2002, recycling and groundwater recovery programs narrowly missed their target, the region is expected to meet its 2010 and 2020 targets. Meeting the targets will require the region to produce 159,000 AF of additional local project and/or seawater desalination supply by 2010 and 249,000 AF by 2020. Overall, the region has developed about 50 percent of the 1996 IRP local resources target for 2020.

Metropolitan continues to encourage development of local water resource projects by offering financial incentives through the LRP to its member agencies. These anticipated water supply benefits are incorporated into the forecasts of demand on Metropolitan.

In addition to the LRP, Metropolitan also provides financial and technical assistance for implementing water conservation Best Management Practices, as well as a significant investment in regional and local water conservation programs. Metropolitan was also responsible for distributing $45 million in funds from Proposition 13 funding for development of conjunctive management programs in Southern California.

Metropolitan Conjunctive Use Programs

Conjunctive use can be defined as the coordinated management of surface and groundwater supplies to increase the yield of both sources and enhance water supply reliability. The application of conjunctive use in the local Central and West Coast Groundwater Basins primarily involves the storing of surplus surface water into the underground aquifers and extracting the supply during a drought or other emergency.

[39] Metropolitan Water District of Southern California. Integrated Water Resources Plan, 2003 Update. May 2004.

This type of groundwater storage can be considered as an additional source of supply in diversifying regional water resources.

To encourage the utilization of this water resource management strategy, Metropolitan has adopted an MWD-sponsored conjunctive use program. The MWD program provides for the payment of certain local water infrastructure facilities, such as wells, pumps, and related equipment, to increase groundwater capacity. In exchange, the participating agencies store surplus MWD water to be pumped to meet a shortfall in imported water supplies in dry years. The local basins have the capability to store 450,000 AF of groundwater in conjunctive use programs.

The potential benefits of conjunctive use include the following:

- Operational flexibility for groundwater production
- Increased groundwater yield
- More efficient use of surplus surface water during wet years
- Better distribution of water resources
- Increased water supply reliability
- Financial benefits to groundwater users

West Basin Municipal Water District (WBMWD)

Although the reliability of WBMWD's water supply relies heavily on Metropolitan, WBMWD has invested in recycled water to help improve its reliability. Utilizing recycled water helps WBMWD reduce its vulnerability to extended drought or emergency shortage events. The City of Torrance uses approximately 7,000 AFY of this recycled water, thereby benefiting through its customers reduced usage of potable water. WBMWD's recycled water program is discussed in Section 8.

Another means for increasing WBMWD water supply reliability is through Conjunctive Use Programs. A conjunctive use program provides operational flexibility, increased yield of the Basin, efficient use of surplus imported water during wet periods, and a financial benefit to groundwater pumpers.[40] Conjunctive Use Programs would need to be closely coordinated with WRD and are still being evaluated.

Finally, WBMWD, in collaboration with Metropolitan, conducts a variety of water conservation Best Management Practice programs within its region, which TMWD participates in. These activities add to regional water reliability and are further discussed in Section 6.

[40] West Basin Municipal Water District, 2005 UWMP, June 2005 Draft

Water Replenishment District of Southern California (WRD)

According to California Water Code, WRD is to perform any acts necessary to replenish, protect, and preserve the groundwater supplies of the Basin.[41] WRD meets this requirement by participating in numerous projects and programs directly related to the replenishment of the Basin and the increase in water supply reliability for the region. A few programs have been discussed earlier and include the Groundwater Quality Program, Safe Drinking Water Program, and the Regional Groundwater Monitoring Program. In addition, the existing projects and programs are listed below.

- Recycled Water Program – Recycled water continues to be used at spreading basins and at seawater intrusion barriers to assist in the replenishment of the Basin. WRD's recycled water program ensures the recycled water quality is safe for groundwater recharge. WRD monitors and samples water quality near the spreading grounds and tracks the travel times between the spreading basins and production wells. Projects under this program improve the reliability of groundwater supplies for the region.

- Groundwater Resources Planning Program – As the entity that manages the Basin, WRD implemented this program to evaluate proposed projects/programs to determine their impacts/benefits to the overall basin management. All new projects are brought to the WRD's Technical Advisory Committee (TAC) for review and recommendation. Past programs have been conceptual in nature and have included increasing the allowed pumping allocation, banking groundwater, and relaxing carryover provisions. A potential project storage project within the Basin is described later under the planned projects section.

- Groundwater Quality Program – This program is discussed in Section 3 as the means for WRD to evaluate water quality compliance in production wells, monitoring wells, and recharge/injection waters.

- Seawater Barrier Improvement Program – WRD purchases imported and recycled water for injection in the Alamitos, Dominguez Gap, and the West Coast Basin Barriers. The barriers are owned and operated by the Los Angeles County Department of Public Works. WRD continues to evaluate the effectiveness of the barriers and makes adjustments as needed to protect the freshwater groundwater sources.

Regional Water Quality Control Board – Los Angeles Region 4

Background

The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (Regional Boards) are responsible for the protection and, where possible, the enhancement of the quality of California's waters. The SWRCB sets statewide policy, and together with Regional Boards, implements state and federal laws

[41] WRD Engineering Survey and Report, March 2005.

and regulations. Each of the nine Regional Boards adopts a Water Quality Control Plan or Basin Plan, which recognizes and reflects regional differences in existing water quality, the beneficial uses of the region's ground and surface waters, and local water quality conditions and problems.[42]

In 1975, the Los Angeles RWQCB (LARWQCB) adopted a single Water Quality Control Plan (Basin Plan) for the Los Angeles Region, which comprised of the Santa Clara and Los Angeles River Basin Plans. The two Basin Plans were amended in 1978, 1990, and 1991 and are superseded by the single Basin Plan. For planning purposes, the single Basin Plan divides the region into major surface watersheds and groundwater basins, such as the Los Angeles River and San Gabriel River Watershed.

The LARWQCB updated the Basin Plan to address issues that evolved over time due to increasing populations and changing water demands in the region. The document covers the Santa Clara and Los Angeles River Basin, and in May 2001, the LARWQCB adopted the ranking of high priorities and the complete list of priorities for the period 2001-2004.

The Basin Plan is more than a collection of water quality goals and policies, descriptions of conditions, and discussions of solutions. It is also the basis for the LARWQCB's regulatory programs. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. Water quality problems in the region are listed in the Basin Plan, along with these causes, if known. For water bodies with quality below the recommended levels necessary for beneficial uses, plans for improving water quality are included. Legal basis and authority for the LARWQCB reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code (Porter-Cologne Water Quality Control Act) and the Clean Water Act. The LARWQCB also regulates water discharges to minimize their effects on the region's ground and surface water quality. Permits are issued by the LARWQCB under a number of these programs and authorities.

Key Regional Issues

Water quality degradation due to excess nutrients, sediment, and bacteria from nonpoint source discharges are believed to be the greatest threats to rivers and streams within the Los Angeles Region. The increase in uncontrolled pollutants from nonpoint source discharges can be associated with the rapid population growth in the region. Major surface waters of the Los Angeles Region flow from head waters in pristine mountain areas, through urbanized foothill and valley areas, high density residential and industrial coastal areas, and terminate at highly utilized recreational beaches and harbors. The urbanized, high density and highly utilized areas contribute to the surface water quality concerns of the region.

[42] Los Angeles Regional Water Quality Control Board. Region 4 Water Quality Control Plan (Los Angeles Region . January 1995.

Water Resources and Water Quality Management

The LARWQCB plans to implement more watershed-based projects in the future to address water quality and/or water supply issues. The purpose of comprehensive watershed level management is to establish a more effective approach in protecting and restoring beneficial-uses water by dividing the region into several watersheds. The Los Angeles Region has been divided into six watershed management areas for planning purposes. This will increase the coordination of planning, monitoring, assessment, permitting, and enforcement elements of the various surface and groundwater programs with activities/jurisdiction in each watershed. TMWD's service area falls into two watershed areas: San Gabriel River Watershed and Los Angeles River Watershed.

Substantial resources have also been allocated by the LARWQCB for the investigation of polluted waters and enforcement of corrective actions needed to restore water quality. The LARWQCB has established the specific remediation programs which include:

- Underground Storage Tanks
- Well Investigations
- Spills, Leaks, Investigations and Cleanups
- Above ground Petroleum Storage Tanks
- U.S. Department of Defense and Department of Energy Sites
- Resource Conservation and Recovery Act
- Toxic Pits Cleanup Act
- Bay Protection and Toxic Cleanup

Some of these activities bear directly on the implementation of the Basin Plan, while others may lead to future Basin Plan amendments to incorporate appropriate changes, such as revised regulatory strategies for various dischargers. These investigations and the implementation of appropriate physical solutions are an essential and integral part of the effort to restore and maintain water quality in the region.

4.2 DEMAND AND SUPPLIES COMPARISON

Metropolitan Supplies and Demands

As previously noted, the City of Torrance is a direct member agency of Metropolitan. In its September 2005 Draft Regional UWMP (RUWMP), Metropolitan chose the year 1977 as the single driest year since 1922 and the years 1990-1992 as the multiple driest years over that same period. These years were selected because they represent the timing of the least amount of available water resources from the SWP, a major source of Metropolitan's supply.

Over the 20-year period beginning in 2010 and ending in 2030, Metropolitan projects a 0.5 percent decrease in available supply during an average year, a 4.5 percent increase during a single dry year, and a 3.8 percent increase during the third year of the multiple dry year period. The increased available supplies during drought year scenarios are primarily due to increased contract allotments of in-basin storage as well as a number of supplies under development.

In its draft RUWMP, Metropolitan also projects an increase in member agency demands. Specifically, they project a 10.2 percent increase over the same 20-year period in the average demand, an 8.5 percent increase during the single dry year scenario, and an 8.9 percent increase during the multiple dry year scenario. However, in all cases, the projected regional increase in demands by member agencies are offset by available surpluses in the Metropolitan supply.

Table 4.2-1 summarizes Metropolitan's current imported supply availability projections for average and single dry years over the 20-year period beginning in 2010 and ending in 2030. Based on these projections, Metropolitan will be able to meet all of its projected single dry year service area demands through the year 2030.

The entries in Rows K and L in Table 4.2-1 are important and will be used later in this section for developing TMWD's projected demands over the next 25 years. It is also important to note that Row K (Projected Supply During a Single Dry Year as a % of Single Dry Year Demand) indicates Metropolitan's projected supply (including surplus water) will exceed its projected single dry year demand in all years.

Table 4.2-1
Metropolitan's Regional Imported Water Supply Reliability Projections for Average and Single Dry Years[43]
(AFY)

Row	Region Wide Projections	2010	2015	2020	2025	2030
Supply Information						
A	Projected Supply During an Average Year[1]	2,668,000	2,600,000	2,654,000	2,654,000	2,654,000
B	Projected Supply During a Single Dry Year[1]	2,842,000	3,033,000	3,002,000	2,970,000	2,970,000
C = B/A	Projected Supply During a Single Dry Year as a % of Average Supply	**106.5**	**116.7**	**113.1**	**111.9**	**111.9**
Demand Information						
D	Projected Demand During an Average Year	2,040,000	2,053,000	1,989,000	2,115,000	2,249,000
E	Projected Demand During a Single Dry Year	2,293,000	2,301,000	2,234,000	2,363,000	2,489,000
F = E/D	Projected Demand During a Single Dry Year as a % of Average Demand	**112.4**	**112.0**	**112.3**	**111.7**	**110.7**
Surplus Information						
G = A-D	Projected Surplus During an Average Year	628,000	547,000	665,000	539,000	405,000
H = B-E	Projected Surplus During a Single Dry Year	549,000	732,000	768,000	607,000	481,000
Additional Supply Information						
I = A/D	Projected Supply During an Average Year as a % of Demand During an Average Year	**130.8**	**126.6**	**133.4**	**125.5**	**118.0**
J = A/E	Projected Supply During an Average Year as a % of Demand During Single Dry Year	**116.3**	**113.0**	**118.8**	**112.3**	**106.6**
K = B/E	Projected Supply During a Single Dry Year as a % of Single Dry Year Demand (including surplus)	**123.9**	**131.8**	**134.3**	**125.6**	**119.3**
L	WBMWD Service Area Imported Water Demand During a Single Dry Year as a % of WBMWD Average Demand[2]	**101.9**	**101.9**	**103.3**	**104.5**	**104.5**

[1] Projected supplies include current supplies and supplies under development, but are limited by Metropolitan's 1.25 MAF allotment to Colorado River water; data obtained from Metropolitan's September 2005 Draft RUWMP supply/demand projections.

[2] Data obtained from WBMWD June 2005 Draft UWMP; more specific demand data for TMWD will be developed later in this section.

[43] Metropolitan Draft Regional UWMP September 2005

Table 4.2-2 summarizes Metropolitan's current imported supply availability projections over the 20-year period beginning in 2010 and ending in 2030 for average and multiple dry year scenarios. When reviewing Table 4.2-2, it is important to note that Metropolitan is projecting a surplus of supply for all multiple dry year scenarios through 2030.

The entries in Rows K and L in Table 4.2-2 are important and will be used later in this section for developing TMWD's projected multiple year demands over the next 25 years. It is also important to note that Row K indicates Metropolitan's projected supply (including surplus water) will exceed its projected multiple dry year demand during all years through 2030.

The findings in this plan were derived based upon Metropolitan's September 2005 Draft RUWMP. These figures can be interpolated to project Metropolitan's ability to meet a specified demand expressed in terms of a percentage of average demand and supply availability. When viewed on a regional basis, some member agency demands will exceed these averages, while others will fall below the stated averages. However, when viewed from the big picture perspective, it is reasonable to assume that these averages will apply to all local water purveyors.

Although a less conservative assumption might suggest surplus water supplies not used by agencies experiencing low or no growth may be freed up for use by those water purveyors experiencing more growth, this is not borne out by the overall Metropolitan supply and demand picture. In fact, Metropolitan is projecting a 20.6 percent increase in demand over its entire service area between 2005 and 2030 (4,303,900 AFY to 5,190,400 AFY)[44] compared with a 20.9 percent increase in population over the same period of (18,233,700 to 22,053,200).[45] These increases in population and demand are significantly higher than the anticipated population and water demands, which will occur in the City of Torrance over the next 25 years. This finding suggests that any available Metropolitan surpluses will be diverted to those water purveyors experiencing higher rates of growth. With that in mind, it is reasonable to assume that the findings reflected in Table 4.2-2 are valid.

[44] Table A.1-5 from Metropolitan's September 2005 Draft RUWMP
[45] Table A.1-5 from Metropolitan's September 2005 Draft RUWMP

Table 4.2-2
Metropolitan's Regional Imported Water Supply Reliability Projections for Average and Multiple Dry Years[46]
(AFY)

Row	Region Wide Projections	2010	2015	2020	2025	2030
Supply Information						
A	Projected Supply During an Average Year[1]	2,668,000	2,600,000	2,654,000	2,654,000	2,654,000
B	Projected Supply During Year 3 of a Multiple Dry Year Period[1]	2,619,000	2,776,600	2,741,000	2,719,000	2,719,000
C = B/A	Projected Supply During Year 3 of a Multiple Dry Year as a % of Average Supply	**98.2**	**106.8**	**103.3**	**102.4**	**102.4**
Demand Information						
D	Projected Demand During an Average Year	2,040,000	2,053,000	1,989,000	2,115,000	2,249,000
E	Projected Demand During Year 3 of a Multiple Dry Year Period[2]	2,376,000	2,389,000	2,317,000	2,454,000	2,587,000
F = E/D	Projected Demand During Year 3 of a Multiple Dry Year Period as a % of Average Demand	**116.5**	**116.4**	**116.5**	**116.0**	**115.0**
Surplus Information						
G = A-D	Projected Surplus During an Average Year	549,000	732,000	768,000	607,000	481,000
H = B-E	Projected Surplus During Year 3 of a Multiple Dry Year Period	243,000	377,000	424,000	265,000	132,000
Additional Supply Information						
I = A/D	Projected Supply During an Average Year as a % of Demand During an Average Year	**130.8**	**126.6**	**133.4**	**125.5**	**118.0**
J = A/E	Projected Supply During an Average Year as a % of Demand During Year 3 of a Multiple Dry Year	**112.3**	**108.8**	**114.5**	**108.1**	**102.6**
K = B/E	Projected Supply During a Multiple Dry Year as a % of Multiple Dry Year Demand (including surplus)	**110.2**	**116.2**	**118.3**	**110.7**	**105.1**
L	WBMWD Service Area Imported Water Demand During a Multiple Dry Year as a % of WBMWD Average Demand[3]	**101.9**	**101.9**	**103.3**	**104.5**	**104.5**

[1] Projected supplies include current supplies and supplies under development, but are limited by Metropolitan's 1.25 MAF allotment to Colorado River water; data obtained from Metropolitan's September 2005 Draft RUWMP supply/demand projections.
[2] Metropolitan only projects demands for year 3 of a multiple dry year period.
[3] Data obtained from WBMWD June 2005 Draft UWMP; more specific demand data for TMWD will be developed later in this section.

[46] Based on Metropolitan's September 2005 Final Draft RUWMP

To establish a reasonable foundation from which to project future TMWD demands, recent TMWD production records were reviewed to determine a basis for normal year usage. Table 4.2-3 summarizes production records for the 2000/01 through 2003/04 water years. The average total potable water usage over that period was 23,645 AFY.[47] Based on recorded rainfall, 2001 was the closest to a normal year (14.98 inches of rainfall in downtown Los Angeles compared with a long term historical average of 14.62 inches). The calendar year 2002 is representative of a single dry year based on the recorded calendar year rainfall of only 3.77 inches, which is one of the lowest recorded years on record for downtown Los Angeles. The following two years, 2003 and 2004, were also below-normal dry years and coupled with the 2002 year are representative of a multiple dry year period.

Although TMWD is not a member agency of WBMWD, it is interesting to compare that WBMWD's dry year projections with actual historical demands in the TMWD service area. In its June 2005 draft UWMP, WBMWD projected a single dry year increase in demand over its entire service area for the year 2005 of 3.2 percent, which is somewhat less than the actual 7.6 percent increase TMWD experienced in the very dry year of 2002. While WBMWD has not projected separate increases in multiple year demands for each of the three designated years (they assume only an average of 3.2 percent for each year beginning in 2005), TMWD's experience from the three dry years of 2002, 2003, and 2004 closely parallels WBMWD projection (TMWD consumption records indicate 7.6%, 2.3%, and 6.6% of normal water usage for years 1, 2, and 3, respectively, of a multiple year dry period) and is also representative of demand increases experienced in other southern California locales.[48] These factors can also be logically explained as follows: In year one, rainfall decreases and demands increase as customers use more water for irrigating lawns and other foliage; in year two, customers conserve more water as they begin to realize drought conditions are beginning to take hold; and in year three, demands begin increasing again as customers try to keep their lawns and foliage from dying.

Based on this information, the following factors will be used in developing Torrance's single and multiple year demands:

- Single Dry Year Factor 107.6 percent of normal
- Multiple Dry Year Factor for Year 1 107.6 percent of normal
- Multiple Dry Year Factor for Year 2 102.3 percent of normal
- Multiple Dry Year Factor for Year 3 106.6 percent of normal

[47] 2005 usage was approximately 5.5% less than 2004 usage because of record rainfall in 2005 (wettest year since 1883 in downtown Los Angeles) and is therefore not representative of normal usage and thus not included in the overall 2000/2004 average.

[48] The Municipal Water District of Orange County (MWDOC) has conducted extensive analyses of water demand in Orange County based on hydrologic records for the period 1922-2004 and has concluded that during a multiple dry year period, demands in years 1, 2 and 3 are 106.7%, 103.7% and 105.5% of a normal year demand. MWDOC has also determined that single dry year demands in Orange County are 105.5% of normal year demands. These percentages are very close to those experienced in Torrance, i.e., 107.6%, 103.2% and 106.6% in Years 1, 2 and 3, respectively.

It is important to note that the percentages reflected above for Multiple Dry Years 1, 2, and 3 are less than Metropolitan's projected available supplies during all multiple dry year periods through the year 2030 (refer to Row K of Table 4.2-2), which means that TMWD should not encounter any problems in meeting its demands over the next 25 years.

Table 4.2-3
TMWD Water Production for 2000 – 2005
Including Comparison with WBMWD Data and Climatologic Data
(in AFY or inches of rainfall per year)

	2000	2001	2002	2003	2004	2005	Average 2000/04
Total Potable Demand	**23,025**	**22,862**	**24,590**	**23,377**	**24,372**	**23,026**	**23,645**
Calendar Year Rainfall[49] in inches	11.93	19.06	NA	NA	NA	NA	14.62[50]
Water Year Rainfall[51] in inches	17.94	14.98	3.77	8.61	8.50	37.25	---
Water Year Rainfall at LA Civic Center[52]	11.57	17.94	4.42	16.42	9.25	37.25	---
Climatologic Classification	Average	Average	Very Dry	Average /Dry	Dry	Very Wet	---
TMWD Water Usage as a % of 2001 Assumed Average Year	**100.7**	**100.0**	**107.6**	**103.2**	**106.6**	**100.7**	**---**
WBMWD Single Dry Year Occurring in 2002 as a % of a Normal Year	**---**	**---**	**103.2**	**---**	**---**	**---**	**---**
WBMWD Multiple Dry Year Occurring in 2002-04 as a % of a Normal Year	**---**	**---**	**103.2**	**103.2**	**103.2**	**---**	**---**

City of Torrance data suggests there will be a 7.3 percent increase in population over the next 25 years.[53] Given that the City is largely built-out, it is reasonable to assume that the increase in water demand will be about half that of the population increase, i.e., the 7.2 percent projected increase in population over the next 25 years can be expected to result in a 3.7 percent increase in demand over that same period. This is a sensible approach in that there is little land left for development in Torrance, which means any increases in population will probably be reflected in higher densities per dwelling unit, with no concurrent increase in landscape irrigation or other non residential water usage.

[49] Data for years 2000-2003 obtained from National Weather Service website; data is for downtown Los Angeles; refer to http://www.wrh.noaa.gov/lox/climate/cvc.php.
[50] Average rainfall recording in downtown Los Angeles over the period 1921-2001.
[51] Data for years Water Years (October to September) 2000 – 2003 obtained from Los Angeles County Department of Public Works website; data was recorded at Downey Fire Station 107D; refer to http://ladpw.org/wrd/Precip/index.cfm.
[52] Data from http://www.laalmanac.com/weather/we13.htm for July/June period.
[53] Preliminary data obtained from P&D, a consultant to the City that has been retained to update the Torrance General Plan.

Based on a straight-line analysis, the anticipated increases in water demand over the next 25 years, reflected in five year planning increments, are presented in Row A of Table 4.2-4. As noted in Row D of the table, Metropolitan has an abundant supply of available water that can more than meet these slight increases in City demands.

Table 4.2-4
Comparison Between Metropolitan Supply Availability and TMWD Demand During an Average Year

Row	Projection	2010	2015	2020	2025	2030
A	Projected Increase in Demand During an Average Year as a % of 2005 Average Demand[1]	100.7	101.4	102.2	102.9	103.7
B	Metropolitan Projected Increase in Regional Supply Availability During an Average Year as a % of 2005 Average Year[2]	104.9	102.2	104.4	104.4	104.4
C (from Row I, Table 4.2-1)	Metropolitan Projected Regional Supply During an Average Year as a % of Demand During an Average Year[3]	130.8	126.6	133.4	125.5	118.0
D = (C-A)	Percentage Difference Between Growth in Metropolitan Supply Availability (including surplus supply) During an Average Year Compared with Growth in Torrance Demand During an Average Year	30.1	25.2	31.2	22.6	14.3

[1] Increase in demand based on historical usage records from 2000-2004.
[2] Metropolitan did not include any supply projections for 2005 in its final draft RUWMP supply/demand tables released in September 2005. The 2005 supply projection released in May 2005 (2,542,800 AFY) is therefore used as a base year for calculating the increase in supply availability in future years as compared with 2005 average year supply.
[3] Values extracted from Table 4.2-1.

The results displayed in Tables 4.2-5 through 4.2-11 indicate that TMWD can expect to meet all of its water demands over the next 25 years for all average, single and multiple dry years.

Table 4.2-5
TMWD
Projected Water Supply and Demand
Normal Water Year
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2010	2015	2020	2025	2030
Supply	**Normal Water Years**				
Projected Supply During an Average Year as a % of Demand During an Average Year[1]	130.8	126.6	133.4	125.5	118.0
Imported[2]	25,920	20,190	21,500	20,440	19,430
Recycled[3]	7,100	7,250	7,250	7,250	7,250
Local (Groundwater)[4]	1,600	5,640	5,640	5,640	5,640
Local (Desalter)[5]	2,400	2,400	2,400	2,400	2,400
Total Supply	**37,020**	**35,480**	**36,790**	**35,730**	**34,720**
% of Normal Year[6]	100.0	100.0	100.0	100.0	100.0
Demand					
Imported[2]	19,820	15,950	16,120	16,290	16,470
Recycled[3]	7,100	7,250	7,250	7,250	7,250
Local (Groundwater) [4]	1,600	5,640	5,640	5,640	5,640
Local (Desalter)[5]	2,400	2,400	2,400	2,400	2,400
Total Demand	**30,920**	**31,240**	**31,410**	**31,580**	**31,760**
% of Year 2005 Demand (30,070 AF) [7]	102.8	103.9	104.5	105.0	105.6
Supply/ Demand Difference	**6,100**	**4,240**	**5,380**	**4,150**	**2,960**
Difference as % of Supply	**16.5**	**12.0**	**14.6**	**11.6**	**8.5**
Difference as % of Demand	**19.7**	**13.6**	**17.1**	**13.1**	**9.3**

[1] From Table 4.2-1, Row I.

[2] Imported water supply = (imported water demand) x (Metropolitan Projected Supply Available During an Average Year as a % of Demand During an Average Year (from Table 4.2-1, Row I); Imported demand = Total Demand - Recycled Water Demand – Local (Groundwater) demand – Local (Desalter) demand.

[3] Projections for recycled water demand provided by TMWD staff as determined from historical records. Recycled water supply assumed to be equal to recycled water demand.

[4] Groundwater demand for 2010 is based on historical amounts pumped from Well #6. Groundwater demand for future years assumes TMWD's north Torrance well system will be operational by 2015 and allow the City to pump its full adjudicated water right of 5,640 AF and reduce imported water by 4,000 AF.

[5] Desalter supply and demand projections provided by TMWD; desalter demand assumed to equal supply in all years. The Desalters originally were designed to be expanded to 4,800 AFY and may be expanded to the capacity during the next five years pending funding.

[6] Normal Year supply is assumed to reflect the total supply available in the row labeled "Total Supply."

[7] 2005 Demand = 2005 potable water demand (23,026 AF) + 2005 recycled water demand (7,044 AF).

Table 4.2-6
TMWD
Projected Water Supply and Demand
Single Dry Water Year
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2010	2015	2020	2025	2030
Supply	**Single Dry Years**				
Metropolitan Projected Supply Available During an Average Year as a % of Demand During a Single Dry Year[1]	116.3	113.0	118.8	112.3	106.6
Metropolitan Projected Supply Available During a Single Dry Year as a % of Single Dry Year Demand (including surplus) [2]	123.9	131.8	134.3	125.6	119.3
Imported[3]	32,110	26,610	28,870	25,670	23,180
Recycled [4]	7,100	7,250	7,250	7,250	7,250
Local (Groundwater)[5]	1,600	5,640	5,640	5,640	5,640
Local (Desalter)[6]	2,400	2,400	2,400	2,400	2,400
Total Supply	**43,210**	**41,900**	**44,160**	**40,960**	**38,470**
Normal Year Supply[7]	37,020	35,480	36,790	35,730	34,720
% of Normal Year Supply	116.7	118.1	120.0	114.6	110.8
Demand					
Imported[3]	22,170	18,320	18,510	18,690	18,880
Recycled[4]	7,100	7,250	7,250	7,250	7,250
Local (Groundwater)[5]	1,600	5,640	5,640	5,640	5,640
Local (Desalter)[6]	2,400	2,400	2,400	2,400	2,400
Total Demand	**33,270**	**33,610**	**33,800**	**33,980**	**34,170**
Normal Year Demand[7]	30,920	31,240	31,410	31,580	31,760
% of Normal Year Demand	107.6	107.6	107.6	107.6	107.6
% of Year 2005 Demand (30,070 AF)[8]	110.6	111.8	112.4	113.0	113.6
Supply/ Demand Difference	**9,940**	**8,290**	**10,360**	**6,980**	**4,300**
Difference as % of Supply	**23.0**	**19.8**	**23.5**	**17.0**	**11.2**
Difference as % of Demand	**29.9**	**24.7**	**30.7**	**20.5**	**12.6**

[1] From Table 4.2-1, Row J.
[2] From Table 4.2-1, Row K (includes Metropolitan surplus supplies).
[3] Available Imported supply is estimated to equal Metropolitan's September 2005 Final Draft RUWMP projected available supplies including surplus supplies = (normal year import) x (Metropolitan projected supply as a % of the single dry year demand); Imported demand = normal year demand x 107.6% single dry year demand, calculated from demand data in 2002 (Dry Year) divided by demand in 2001 (Normal Precipitation Year).
[4] Projections for recycled water demand provided by TMWD based on historical records and assumes a slight increase in irrigation demands in future years. Recycled water supply assumed to be equal to recycled water demand. Recycled water is not projected to increase during a single dry year given that 97% of the total supply is used by a single industrial customer (Exxon-Mobil) whose demands are not weather dependent and therefore are not expected to vary during dry years.
[5] Groundwater demand for 2010 is based on historical amounts pumped from Well #6. Groundwater demand for future years assumes TMWD's north Torrance well system will be operational by 2015 and allow the City to pump its full adjudicated water right of 5,640 AF. Groundwater supply for 2010 is assumed to equal demand (since additional pumping capacity will not yet be on-line). Groundwater supply for all future years is also assumed to equal groundwater demand which is equal to TMWD's adjudicated pumping right of 5,640 AF. Demand in future years cannot be increased to account for 107.6% single dry year demand factor because it will result in pumping beyond TMWD's adjudicated right.
[6] Desalter supply and demand projections provided by TMWD; desalter demand assumed to equal supply in all years. The Desalters originally were designed to be expanded to 4,800 AFY and may be expanded to the capacity during the next five years pending funding.
[7] Normal year supplies and demands and taken from Table 4.2-5.
[8] 2005 Demand = 2005 potable water demand (23,026 AF) + 2005 recycled water demand (7,044 AF).

Table 4.2-7
TMWD
Projected Water Supply and Demand
Multiple Dry Water Years 2006-2010
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2006	2007	2008	2009	2010
Supply	**Normal Years**		**Dry Years**		
Metropolitan Projected Supply During a Multiple Dry Year as a % of Average Supply[1]			98.2	98.2	98.2
Imported[2]	27,190	26,870	26,080	25,770	25,450
Recycled[3]	7,060	7,070	7,080	7,090	7,100
Local (Groundwater)[4]	1,600	1,600	1,600	1,600	1,600
Local (Desalter)[5]	2,400	2,400	2,400	2,400	2,400
Total Supply	**38,250**	**37,940**	**37,160**	**36,860**	**36,550**
Normal Year Supply[6]	38,250	37,940	37,640	37,330	37,020
% of Normal Year Supply	100.0	100.0	98.7	98.7	98.7
Demand					
Metropolitan Projected Multiple Dry Year Demand as % of Normal Year[7]			116.5	116.5	116.5
Imported[2]	19,680	19,710	22,090	20,490	21,860
Recycled[3]	7,060	7,070	7,080	7,090	7,100
Local (Groundwater)[4]	1,600	1,600	1,600	1,600	1,600
Local (Desalter)[5]	2,400	2,400	2,400	2,400	2,400
Total Demand	**30,740**	**30,780**	**33,170**	**31,580**	**32,960**
Normal Year Demand[8]	30,740	30,780	30,830	30,870	30,920
% of Normal Year Demand	100.0	100.0	107.6	102.3	106.6
% of Year 2005 Demand (30,070 AF)[9]	102.2	102.4	110.3	105.0	109.6
Supply/ Demand Difference	**7,510**	**7,160**	**3,990**	**5,280**	**3,590**
Difference as % of Supply	**19.6**	**18.9**	**10.7**	**14.3**	**9.8**
Difference as % of Demand	**24.4**	**23.3**	**12.0**	**16.7**	**10.9**

[1] From Table 4.2-2, Row C.
[2] Imported supply = (imported supply interpolated from Table 4.2-5) x (escalation factor from Table 4.2-2, Row C); Imported demand = (normal year demand) x (107.6%, 102.3% or 106.6% Year 1, 2 and 3 multiple dry year demand factors calculated from demand in 2002, 2003, and 2004 (three consecutive dry years) divided by demand in 2001 (Normal Precipitation Year). Imported demand for normal years is 100% of normal demand interpolated from Table 4.2-5.
[3] Projections for recycled water demand determined from historical records. Recycled water supply assumed to be equal to recycled water demand. Recycled water is not projected to increase during a single dry year given that 97% of the total supply is used by a single industrial customer whose demands are not weather dependent and therefore are not expected to vary during dry years.
[4] Groundwater demand is based on historical amounts pumped from Well #6. Given that the total projected demand is well below the City's adjudicated pumping right, demand is estimated to equal supply. Total Groundwater demand = (normal year demand) x (107.6%, 103.2% or 106.6% for Multiple Dry Years 1, 2 and 3, calculated from demand data in 2002, 2003 and 2004 (3 consecutive Dry Years) divided by demand in 2001 (Normal Precipitation Year).
[5] Desalter supply and demand projections provided by TMWD; desalter demand assumed to equal supply in all years. The Desalters were originally designed to be expanded to 4,800 AFY; may be expanded to the capacity during the next five years pending funding.
[6] Interpolated from Table 4.2-5.
[7] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, Metropolitan only projected demands for Year 3, therefore Years 1 and 2 are assumed to equal Year 3 demand; these percentages are presented only to reflect the fact that the City's demand is well below the factor presented in the table, e.g., 2010 multiple dry year demand is 106.6% as opposed to 116.5%.
[8] Interpolated from Table 4.2-5.
[9] 2005 Demand = 2005 potable water demand (23,026 AF) + 2005 recycled water demand (7,044 AF).

Table 4.2-8
TMWD
Projected Water Supply and Demand
Multiple Dry Water Years 2011-2015
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2011	2012	2013	2014	2015
Supply	**Normal Years**		**Dry Years**		
Metropolitan Projected Supply During a Multiple Dry Year as a % of Average Supply[1]			106.8	106.8	106.8
Imported[2]	25,580	25,240	26,600	26,240	21,560
Recycled[3]	7,130	7,160	7,190	7,220	7,250
Local (Groundwater)[4]	1,600	1,600	1,600	1,600	5,640
Local (Desalter)[5]	2,400	2,400	2,400	2,400	2,400
Total Supply	**36,710**	**36,400**	**37,790**	**37,460**	**36,850**
Normal Year Supply[6]	36,710	36,400	36,100	35,790	35,480
% of Normal Year Supply	100.0	100.0	104.7	104.7	103.9
Demand					
Metropolitan Projected Multiple Dry Year Demand as % of Normal Year[7]			116.4	116.4	116.4
Imported[2]	19,850	19,880	22,280	20,670	18,010
Recycled[3]	7,130	7,160	7,190	7,220	7,250
Local (Groundwater)[4]	1,600	1,600	1,600	1,600	5,640
Local (Desalter)[5]	2,400	2,400	2,400	2,400	2,400
Total Demand	**30,980**	**31,040**	**33,470**	**31,890**	**33,300**
Normal Year Demand[8]	30,980	31,040	31,110	31,170	31,240
% of Normal Year Demand	100.0	100.0	107.6	102.3	106.6
% of Year 2005 Demand (30,070 AF)[9]	102.2	103.2	111.3	106.1	110.7
Supply/ Demand Difference	**5,730**	**5,360**	**4,320**	**5,570**	**3,550**
Difference as % of Supply	**15.6**	**14.7**	**11.4**	**14.9**	**9.6**
Difference as % of Demand	**18.5**	**17.3**	**12.9**	**17.5**	**10.7**

[1] From Table 4.2-2, Row C.

[2] Imported supply = (imported supply interpolated from Table 4.2-5) x (escalation factor from Table 4.2-2, Row C); Imported demand = (normal year demand) x (107.6%, 102.3% or 106.6% Year 1, 2 and 3 multiple dry year demand factors calculated from demand in 2002, 2003, and 2004 (three consecutive dry years) divided by demand in 2001 (Normal Precipitation Year). Imported demand for normal years is 100% of normal demand interpolated from Table 4.2-5.

[3] Projections for recycled water demand determined from historical records. Recycled water supply assumed to be equal to recycled water demand. Recycled water is not projected to increase during a single dry year given that 97% of the total supply is used by a single industrial customer whose demands are not weather dependent and therefore are not expected to vary during dry years.

[4] Groundwater demand is based on historical amounts pumped from Well #6. Given that the total projected demand is well below the City's adjudicated pumping right, demand is estimated to equal supply. Total Groundwater demand = (normal year demand) x (107.6%, 103.2% or 106.6% for Multiple Dry Years 1, 2 and 3, calculated from demand data in 2002, 2003 and 2004 (3 consecutive Dry Years) divided by demand in 2001 (Normal Precipitation Year).

[5] Desalter supply and demand projections provided by TMWD; desalter demand assumed to equal supply in all years. The Desalters originally were designed to be expanded to 4,800 AFY and may be expanded to the capacity during the next five years pending funding.

[6] Interpolated from Table 4.2-5.

[7] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, Metropolitan only projected demands for Year 3, therefore Years 1 and 2 are assumed to equal Year 3 demand; these percentages are presented only to reflect the fact that the City's demand is well below the factor presented in the table, e.g., 2015 multiple dry year demand is 106.6% as opposed to 116.4%.

[8] Interpolated from Table 4.2-5.

[9] 2005 Demand = 2005 potable water demand (23,026 AF) + 2005 recycled water demand (7,044 AF).

Table 4.2-9
TMWD
Projected Water Supply and Demand
Multiple Dry Water Years 2016-2020
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2016	2017	2018	2019	2020
Supply	**Normal Years**		**Dry Years**		
Metropolitan Projected Supply During a Multiple Dry Year as a % of Average Supply[1]			103.3	103.3	103.3
Imported[2]	20,450	20,710	21,670	21,940	22,210
Recycled[3]	7,250	7,250	7,250	7,250	7,250
Local (Groundwater)[4]	5,640	5,640	5,640	5,640	5,640
Local (Desalter)[5]	2,400	2,400	2,400	2,400	2,400
Total Supply	**35,740**	**36,000**	**36,960**	**37,230**	**37,500**
Normal Year Supply[6]	35,740	36,000	36,270	36,530	36,790
% of Normal Year Supply	100.0	100.0	101.9	101.9	101.9
Demand					
Metropolitan Projected Multiple Dry Year Demand as % of Normal Year[7]			116.5	116.5	116.5
Imported[2]	15,980	16,020	18,430	16,810	18,190
Recycled[3]	7,250	7,250	7,250	7,250	7,250
Local (Groundwater)[4]	5,640	5,640	5,640	5,640	5,640
Local (Desalter)[5]	2,400	2,400	2,400	2,400	2,400
Total Demand	**31,270**	**31,310**	**33,720**	**32,100**	**33,480**
Normal Year Demand[8]	31,270	31,310	31,340	31,380	31,410
% of Normal Year Demand	100.0	100.0	107.6	102.3	106.6
% of Year 2005 Demand (30,070 AF)[9]	104.0	104.1	112.1	106.8	111.3
Supply/ Demand Difference	**4,470**	**4,690**	**3,240**	**5,130**	**4,020**
Difference as % of Supply	**12.5**	**13.0**	**8.8**	**13.8**	**10.7**
Difference as % of Demand	**14.3**	**15.0**	**9.6**	**16.0**	**12.0**

[1] From Table 4.2-2, Row C.

[2] Imported supply = (imported supply interpolated from Table 4.2-5) x (escalation factor from Table 4.2-2, Row C); Imported demand = (normal year demand) x (107.6%, 102.3% or 106.6% Year 1, 2 and 3 multiple dry year demand factors calculated from demand in 2002, 2003, and 2004 (three consecutive dry years) divided by demand in 2001 (Normal Precipitation Year). Imported demand for normal years is 100% of normal demand interpolated from Table 4.2-5.

[3] Projections for recycled water demand determined from historical records. Recycled water supply assumed to be equal to recycled water demand. Recycled water is not projected to increase during a single dry year given that 97% of the total supply is used by a single industrial customer whose demands are not weather dependent and therefore are not expected to vary during dry years.

[4] Groundwater demand is based on historical amounts pumped from Well #6. Given that the total projected demand is well below the City's adjudicated pumping right, demand is estimated to equal supply. Total Groundwater demand = (normal year demand) x (107.6%, 103.2% or 106.6% for Multiple Dry Years 1, 2 and 3, calculated from demand data in 2002, 2003 and 2004 (3 consecutive Dry Years) divided by demand in 2001 (Normal Precipitation Year).

[5] Desalter supply and demand projections provided by TMWD; desalter demand assumed to equal supply in all years. The Desalters originally were designed to be expanded to 4,800 AFY and may be expanded to the capacity during the next five years pending funding.

[6] Interpolated from Table 4.2-5.

[7] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, Metropolitan only projected demands for Year 3, therefore Years 1 and 2 are assumed to equal Year 3 demand; these percentages are presented only to reflect the fact that the City's demand is well below the factor presented in the table, e.g., 2020 multiple dry year demand is 106.6% as opposed to 116.5%.

[8] Interpolated from Table 4.2-5.

[9] 2005 Demand = 2005 potable water demand (23,026 AF) + 2005 recycled water demand (7,044 AF).

Table 4.2-10
TMWD
Projected Water Supply and Demand
Multiple Dry Water Years 2021-2025
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2021	2022	2023	2024	2025
Supply	**Normal Years**		**Dry Years**		
Metropolitan Projected Supply During a Multiple Dry Year as a % of Average Supply[1]			102.4	102.4	102.4
Imported[2]	21,290	21,080	21,360	21,150	20,930
Recycled[3]	7,250	7,250	7,250	7,250	7,250
Local (Groundwater)[4]	5,640	5,640	5,640	5,640	5,640
Local (Desalter)[5]	2,400	2,400	2,400	2,400	2,400
Total Supply	**36,580**	**36,370**	**36,650**	**36,440**	**36,220**
Normal Year Supply[6]	36,580	36,370	36,150	35,940	35,730
% of Normal Year Supply	100.0	100.0	101.4	101.4	101.4
Demand					
Metropolitan Projected Multiple Dry Year Demand as % of Normal Year[7]			116.0	116.0	116.0
Imported[2]	16,150	16,190	18,620	16,980	18,380
Recycled[3]	7,250	7,250	7,250	7,250	7,250
Local (Groundwater)[4]	5,640	5,640	5,640	5,640	5,640
Local (Desalter)[5]	2,400	2,400	2,400	2,400	2,400
Total Demand	**31,440**	**31,480**	**33,910**	**32,270**	**33,670**
Normal Year Demand[8]	31,440	31,480	31,510	31,550	31,580
% of Normal Year Demand	100.0	100.0	107.6	102.3	106.6
% of Year 2005 Demand (30,070 AF)[9]	104.6	104.7	112.8	107.3	112.0
Supply/ Demand Difference	**5,140**	**4,890**	**2,740**	**4,170**	**2,550**
Difference as % of Supply	**14.1**	**13.4**	**7.5**	**11.4**	**7.0**
Difference as % of Demand	**16.3**	**15.5**	**8.1**	**12.9**	**7.6**

[1] From Table 4.2-2, Row C.

[2] Imported supply = (imported supply interpolated from Table 4.2-5) x (escalation factor from Table 4.2-2, Row C); Imported demand = (normal year demand) x (107.6%, 102.3% or 106.6% Year 1, 2 and 3 multiple dry year demand factors calculated from demand in 2002, 2003, and 2004 (three consecutive dry years) divided by demand in 2001 (Normal Precipitation Year). Imported demand for normal years is 100% of normal demand interpolated from Table 4.2-5.

[3] Projections for recycled water demand determined from historical records. Recycled water supply assumed to be equal to recycled water demand. Recycled water is not projected to increase during a single dry year given that 97% of the total supply is used by a single industrial customer whose demands are not weather dependent and therefore are not expected to vary during dry years.

[4] Groundwater demand is based on historical amounts pumped from Well #6. Given that the total projected demand is well below the City's adjudicated pumping right, demand is estimated to equal supply. Total Groundwater demand = (normal year demand) x (107.6%, 103.2% or 106.6% for Multiple Dry Years 1, 2 and 3, calculated from demand data in 2002, 2003 and 2004 (3 consecutive Dry Years) divided by demand in 2001 (Normal Precipitation Year).

[5] Desalter supply and demand projections provided by TMWD; desalter demand assumed to equal supply in all years. The Desalters originally were designed to be expanded to 4,800 AFY and may be expanded to the capacity during the next five years pending funding.

[6] Interpolated from Table 4.2-5.

[7] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, Metropolitan only projected demands for Year 3, therefore Years 1 and 2 are assumed to equal Year 3 demand; these percentages are presented only to reflect the fact that the City's demand is well below the factor presented in the table, e.g., 2025 multiple dry year demand is 106.6% as opposed to 116.0%.

[8] Interpolated from Table 4.2-5.

[9] 2005 Demand = 2005 potable water demand (23,026 AF) + 2005 recycled water demand (7,044 AF).

Table 4.2-11
TMWD
Projected Water Supply and Demand
Multiple Dry Water Years 2026-2030
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2026	2027	2028	2029	2030
Supply	**Normal Years**		**Dry Years**		
Metropolitan Projected Supply During a Multiple Dry Year as a % of Average Supply[1]			102.4	102.4	102.4
Imported[2]	20,240	20,040	20,310	20,100	19,900
Recycled[3]	7,250	7,250	7,250	7,250	7,250
Local (Groundwater)[4]	5,640	5,640	5,640	5,640	5,640
Local (Desalter)[5]	2,400	2,400	2,400	2,400	2,400
Total Supply	**35,530**	**35,330**	**35,600**	**35,390**	**35,190**
Normal Year Supply[6]	35,530	35,330	35,120	34,920	34,720
% of Normal Year Supply	100.0	100.0	101.4	101.3	101.4
Demand					
Metropolitan Projected Multiple Dry Year Demand as % of Normal Year[7]			115.0	115.0	115.0
Imported[2]	16,330	16,360	18,810	17,160	18,570
Recycled[3]	7,250	7,250	7,250	7,250	7,250
Local (Groundwater)[4]	5,640	5,640	5,640	5,640	5,640
Local (Desalter)[5]	2,400	2,400	2,400	2,400	2,400
Total Demand	**31,620**	**31,650**	**34,100**	**32,450**	**33,860**
Normal Year Demand[8]	31,620	31,650	31,690	31,720	31,760
% of Normal Year Demand	100.0	100.0	107.6	102.3	106.6
% of Year 2005 Demand (30,070 AF)[9]	105.2	105.3	113.4	107.9	112.6
Supply/ Demand Difference	**3,910**	**3,680**	**1,500**	**2,940**	**1,330**
Difference as % of Supply	**11.0**	**10.4**	**4.2**	**8.3**	**3.8**
Difference as % of Demand	**12.4**	**11.6**	**4.4**	**9.1**	**3.9**

[1] From Table 4.2-2, Row C.

[2] Imported supply = (imported supply interpolated from Table 4.2-5) x (escalation factor from Table 4.2-2, Row C); Imported demand = (normal year demand) x (107.6%, 102.3% or 106.6% Year 1, 2 and 3 multiple dry year demand factors calculated from demand in 2002, 2003, and 2004 (three consecutive dry years) divided by demand in 2001 (Normal Precipitation Year). Imported demand for normal years is 100% of normal demand interpolated from Table 4.2-5.

[3] Projections for recycled water demand determined from historical records. Recycled water supply assumed to be equal to recycled water demand. Recycled water is not projected to increase during a single dry year given that 97% of the total supply is used by a single industrial customer whose demands are not weather dependent and therefore are not expected to vary during dry years.

[4] Groundwater demand is based on historical amounts pumped from Well #6. Given that the total projected demand is well below the City's adjudicated pumping right, demand is estimated to equal supply. Total Groundwater demand = (normal year demand) x (107.6%, 103.2% or 106.6% for Multiple Dry Years 1, 2 and 3, calculated from demand data in 2002, 2003 and 2004 (3 consecutive Dry Years) divided by demand in 2001 (Normal Precipitation Year).

[5] Desalter supply and demand projections provided by TMWD; desalter demand assumed to equal supply in all years. The Desalters originally were designed to be expanded to 4,800 AFY and may be expanded to the capacity during the next five years pending funding.

[6] Interpolated from Table 4.2-5.

[7] From Table 4.2-2, Row F; In its September 2005 Draft UWMP Multiple Dry Year Projections, Metropolitan only projected demands for Year 3, therefore Years 1 and 2 are assumed to equal Year 3 demand; these percentages are presented only to reflect the fact that the City's demand is well below the factor presented in the table, e.g., 2030 multiple dry year demand is 106.6% as opposed to 115.0%.

[8] Interpolated from Table 4.2-5.

[9] 2005 Demand = 2005 potable water demand (23,026 AF) + 2005 recycled water demand (7,044 AF).

4.3 VULNERABILITY OF SUPPLY FOR SEASONAL OR CLIMATIC SHORTAGE

As mentioned in Section 1, the City of Torrance is in a semi-arid environment. The area must depend on imported water supplies since natural precipitation is limited and groundwater is not considered a viable source of supply. Climatological data in California has been recorded since the year 1858. During the 20th century, California has experienced three periods of severe drought: 1928-34, 1976-77, and 1987-91. The year 1977 is considered to be the driest year of record in the Four Rivers Basin by DWR. These rivers flow into the San Francisco Bay Delta and are the source of water for the SWP. Southern California and, in particular, Los Angeles County sustained few adverse impacts from the 1976-77 drought, but the 1987-91 drought created considerably more concern for Southern California and Los Angeles County.

As a result, the City of Torrance is vulnerable to water shortages due to its climatic environment and seasonally hot summer months. While the data shown in Tables 4.2-5 through 4.2-11 identify water availability during single and multiple dry year scenarios, response to a future drought would follow the water use efficiency mandates of the Metropolitan Water Surplus and Drought Management (WSDM) Plan, along with implementation of the appropriate stage of the City's Drought Management Plan. These programs are more specifically discussed in Section 7.

4.4 PLANNED WATER SUPPLY PROJECTS AND PROGRAMS TO MEET PROJECTED WATER USE

4.4.1 Torrance Municipal Water Department Projects

TMWD continually reviews practices that will provide its customers with adequate and reliable supplies. Trained staff continues to ensure the water quality is safe and the water supply will meet present and future needs in an environmentally and economically responsible manner. TMWD consistently coordinates its long-term water shortage planning with Metropolitan.

TMWD's water demand within its service area could remain relatively constant over the next 20 years due to minimal growth combined with water use efficiency measures and the potential use of recycled water. Water use efficiency measures described in Section 6 and possible increased use of recycled water use described in Section 8 have the potential to reduce overall demand. Any new water supply sources will be to replace or upgrade insufficient wells rather than to support population growth and new development.

The projects that have been identified to improve TMWD's water supply reliability and enhance the operations of TMWD's facilities include replacing 30 miles of water mains; water meter replacements; distribution system improvements; security improvements; and probable pump station improvements.[54] The improvement projects identified for production purposes include:

[54] City of Torrance Capital Improvement Program, Engineering Capital Budget

- Rehabilitation of Well #6 and Storage Tank – Well #6 is proposed to be rehabilitated to restore capacity to approximately 1,600 to 2,000 AFY. The project entails unclogging well perforations, other well restoration processes and installation of a new pump. The adjacent storage tank will also be rehabilitated. This project is an interim measure to restore Well #6 to active service for an additional five years until new well capacity can be constructed.
- Walteria and Ben Haggott Reservoir Rehabilitation – Both reservoirs will be rehabilitated to improve water quality and water circulation.
- Wells #7 and #8 Groundwater Treatment – TMWD submitted a pre-application for Proposition 50 funding for a Nanofiltration Water Treatment Systems at Wells #7 and #8 to mitigate the problems of excessive color and objectionable taste and odor. The project made the priority list and a full application request may be made in the future. The project is anticipated to be online four years after funding is granted. The project capacity will be 5,300 AFY. Because funding may not be available, this project is not included in the projections as a new water supply for TMWD. It is, however, a potential project for sometime in the future, possibly 2015.
- Potential wells and storage tanks – TMWD is considering the construction of a well field in north Torrance. Project specifics have not been defined and options are still being evaluated. Water quality and treatment considerations will need to be evaluated for prospective well sites as well as modeling to ensure the saline groundwaters do not migrate inward. TMWD is also investigating several potential reservoir sites to increase storage throughout the distribution system. TMWD will be able to pump up to its full groundwater rights with the construction of the north Torrance wells.
- Desalter project: TMWD has submitted a pre-application for Proposition 50 funding for the expansion of the Goldsworthy Desalter Project. The project made the priority list and a full application request may be made in the future. The expansion would include an additional 2,500 AFY of water to TMWD. The project includes additional treatment facilities, a new well, and disposal system. The project is anticipated to be online four years after funding is granted. The well will be designed as an aquifer storage and recovery facility, so that it could also be used for conjunctive use storage. Because funding may not be available, this project is not included in the projections as a new water supply for TMWD. It is, however, a potential project for sometime in the future.

TMWD relies on Metropolitan to supply the majority of its annual potable water demand. Well #6 has been reliable in the past; however, it is 40 years old and near the end of its useful life and requires rehabilitation to maintain capacity. On efforts to reduce TMWD's dependence on imported water, TMWD has converted some customers to recycled water, and is proposing projects such as the Nanofiltration Water Treatment Plant and the Goldsworthy Desalter Project along with the possible development of additional groundwater wells to maximize its groundwater rights.

Table 4.4.1-1 lists the TMWD future water supply projects and the projected water supply from these projects. These projects will enhance TMWD's water reliability into the future and provide the capability and reliability to pump groundwater up to its adjudicated rights.

Table 4.4.1-1
TMWD
Scheduled and Potential Future Water Supply Projects
(AFY)

	2010	2015	2020	2025	2030
Scheduled Projects					
Well #6 Rehabilitation (complete in 2006) and Storage Tank [1]	2,000	0	0	0	0
Walteria and Ben Haggott Reservoir Rehabilitation	Improved water quality and circulation				
Potential Projects					
Well #7 & 8 Groundwater Treatment [2]	0	5,300	5,300	5,300	5,300
North Torrance Wells [3]	0	5,640	5,640	5,640	5,640
Goldsworthy Desalter Project Expansion	0	2,500	2,500	2,500	2,500

[1] Well #6 to be replaced with new wells in north Torrance after 2010 and will be removed from service.

[2] TMWD is proposing nanofiltration treatment for Wells #7 and #8. Implementation is uncertain at this time pending confirmation of TMWD's request for outside funding.

[3] TMWD is planning three to four new wells in north Torrance with capacity of approximately 10,000 AFY.

4.4.2 Regional Agency Projects

Since TMWD purchases imported water from the SWP and the Colorado River from Metropolitan, the projects implemented by Metropolitan to secure their water supplies have a direct effect on TMWD. In addition, WRD's and WBMWD's planned projects and programs for groundwater and recycled water will also impact TMWD.

Metropolitan Water District of Southern California

Metropolitan is implementing water supply alternative strategies for the region and on behalf of their member agencies to ensure available water in the future. Some of the strategies identified in Metropolitan's 2005 UWMP include:

- Conservation
- Water recycling and groundwater recovery
- Storage and groundwater management programs within the Southern California region
- Storage programs related to the SWP and the Colorado River
- Other water supply management programs outside of the region

Metropolitan has made investments in conservation, water recycling, storage, and supply that are all part of Metropolitan's long-term water management strategy. Metropolitan's approach to a long-term water management strategy was to develop an Integrated Resource Plan that depended on many sources of supply. Metropolitan's implementation approach for achieving the goals of the Integrated Resource Plan Update is summarized in Table 4.4.2-1. A comprehensive description of Metropolitan's implementation approach is contained in their 2003 report on Metropolitan water supplies "A Blueprint for Water Reliability" as well as their 2005 Regional Urban Water Management Plan. A brief description of the various programs implemented by Metropolitan is also included following Table 4.4.2-1.

Table 4.4.2-1
Metropolitan Integrated Resource Plan Update Resources Status

Target	Programs and Status
• **Conservation**	**Current** - Conservation Credits Program - Residential; Non-residential Landscape Water Use Efficiency;, Commercial, Industrial, and Institutional Programs - Grant Programs **In Development or Identified** - Innovative Conservation Program
• **Recycling** • **Groundwater Recovery** • **Desalination**	**Current** - LRP Program **In Development or Identified** - Additional LRP Requests for Proposals - Seawater Desalination Program - Innovative Supply Program
• **In Region Dry-Year Surface Water Storage**	**Current** - Diamond Valley Reservoir, Lake Mathews, Lake Skinner - SWP Terminal Reservoirs (Monterey Agreement)

Target	Programs and Status
• **In Region Groundwater Conjunctive Use**	**Current** - North Las Posas (Eastern Ventura County) - Cyclic Storage - Replenishment Deliveries - Proposition 13 Programs (short listed) **In Development or Identified** - Raymond Basin GSP - Proposition 13 Programs (wait listed) - Expanding existing programs - New groundwater storage programs
• **State Water Project**	**Current** - SWP Deliveries - San Luis Carryover Storage (Monterey Agreement) - SWP Call Back with DWCV Table A transfer **In Development or Identified** - Sacramento Valley Water Management Agreement - CALFED Delta Improvement Program (Phase 8 Agreement)
• **Colorado River Aqueduct**	**Current** - Base Apportionment - IID/Metropolitan Conservation Program - Coachella and All American Canal Lining Programs - Palo Verde Irrigation District Land Management Program **In Development or Identified** - Lower Coachella Storage Program - Hayfield Storage Program - Chuckwalla Storage Program - Storage in Lake Mead
• **CVP/SWP Storage and Transfers** • **Spot Transfers and Options**	**Current** - Arvin Edison Program - Semitropic Program - San Bernardino Valley Municipal Water District Program - Kern Delta Program **In Development or Identified** - Mojave Storage Program - Other Central Valley Transfer Programs

Conservation Target

Metropolitan's conservation policies and practices are shaped by Metropolitan's Integrated Resource Plan and the California Urban Water Conservation Council *Memorandum of Understanding Regarding Water Conservation in California*.

Recycled Water, Groundwater Recovery and Desalination Target

Metropolitan supports the use of alternative water supplies such as recycled water and degraded groundwater when there is a regional benefit to offset imported water supplies. Currently 355,000 AF of recycled water is permitted for use within Metropolitan service

area. Metropolitan estimates that an additional 480,000 AFY of new recycled water could be developed and used by 2025 with an additional 130,000 AFY by 2050. Approximately 30 percent of the recycled water use within Metropolitan's service area is for groundwater replenishment and seawater barriers. In the future it is anticipated that up to 90 percent of all water used for seawater barriers will be recycled water.

Metropolitan recognizes the importance of member agencies developing local supplies and has implemented several programs to provide financial assistance. Metropolitan's incentive programs include:

- Competitive LRP: Supports the development of cost-effective water recycling and groundwater recovery projects that reduce demands for imported supplies.
  - » According to Metropolitan's 2005 UWMP, thirteen projects were selected in 2004 for implementation under the Competitive LRP.

- Seawater Desalination Program: Supports the development of seawater desalination within Metropolitan's service area.
  - » Metropolitan initiated the Seawater Desalination Program in 2001. According to Metropolitan's 2005 UWMP, five member agencies have submitted proposals for about 126,000 AFY of desalinated seawater: San Diego County Water Authority, Long Beach Water Department, Los Angeles Department of Water and Power (LADWP), WBMWD, and the Municipal Water District of Orange County. The Metropolitan Board has directed Metropolitan staff to develop contracts to pursue projects proposed under this program.

- Innovative Supply Program: Encourages investigations into alternative approaches to increasing the region's water supply.
  - » Under the Innovative Supply Program, Metropolitan selected 10 projects for grant funding. Proposals included harvesting storm runoff, onsite recycling, and desalination. The project findings will be presented to member agencies in 2006.

Regional Groundwater Conjunctive Use Target

Other programs within Metropolitan to maximize water supplies include storage and groundwater management programs. The Integrated Resource Plan Update identified the need for dry-year storage within surface water reservoirs and the need for groundwater storage. In 2002, Diamond Valley Lake reached its full storage capacity of 800,000 AF. Approximately 400,000 AF are dedicated for dry-year storage. Metropolitan has developed a number of local programs to increase storage in the groundwater basins. The programs include:

- North Las Posas – In 1995, Metropolitan and Calleguas Municipal Water District developed facilities for groundwater storage and extraction from the North Las Posas Basin. Metropolitan has the right to store up to 210,000 AF of water. The wellfields are expected to fully be operational in 2007 with Phases I and II already

complete. It is expected the North Las Posas program will yield 47,000 AF of groundwater from the basin each year.

- Proposition 13 Projects – In 2000, DWR selected Metropolitan to receive financial funding to help fund the Southern California Water Supply Reliability Projects Program. Although outside the City, the program coordinates eight conjunctive use projects with a total storage capacity of 195,000 AF and a dry-year yield of 65,000 AFY.
- Raymond Basin – In January 2000, Metropolitan entered into agreements with the City of Pasadena and Foothill Municipal Water District to implement a groundwater storage program that is anticipated to yield 22,000 AFY by 2010.
- Other Programs – Metropolitan intends to expand the conjunctive use programs to add another 80,000 AF to groundwater storage. Other basins in the area are being evaluated for possible conjunctive use projects.

State Water Project Target

The major actions Metropolitan is completing to improve SWP reliability include the following:

- Delta Improvements Package – The actions outlined in this package are related to water project operations in the Delta. The actions are designed to allow the SWP to operate the Banks Pumping Plant in the Delta at 8,500 CFS. Currently Banks Pumping Plant operates at 6,680 CFS. Metropolitan anticipates that increased diversions from the Delta will result in an increase of 130,000 AFY that will be available for groundwater and surface water storage.
- Phase 8 Settlement – This agreement includes various recommended water supply projects that meet demand and water quality objectives within the Sacramento Valley. The various conjunctive use projects will yield approximately 185,000 AFY in the Sacramento Valley of which approximately 55,000 AF would be available to Metropolitan through its SWP allocation.
- Monterey Amendment – The Monterey Amendment enables Metropolitan to use a portion of the San Luis Reservoir's capacity for carryover storage. This will increase SWP delivery to Metropolitan by 93,000 AF to 285,000 AF depending on supply conditions.
- SWP Terminal Storage – Metropolitan has water rights for storage at Lake Perris and Castaic Lake. The storage provides Metropolitan with options for managing SWP deliveries and store up to 73,000 AF to 219,000 AF of carryover water.
- Desert Water Agency/Coachella Valley Water District (DWCV) SWP Table A Transfer – This transfer to DWCV includes 100,000 AF of Metropolitan SWP Table A amount in exchange for other rights such as its full carryover amounts in San Luis and full use of flexible storage in Castaic and Perris Reservoirs. It is anticipated that the call-back provision of the entitlement transfer can provide between 5,000 and 26,000 AF of water depending on the water year.

- Desert Water Agency/Coachella Valley Water District (DWCV) Advance Delivery Program – Under this program Metropolitan delivers Colorado River water to the DWCV in exchange for their SWP Contract Table A allocations. Metropolitan can expect increases in SWP Table A deliveries of 6,000 AF to 18,000 AF depending on the water year.
- Comprehensive Program Evaluation – The SWP infrastructure is vulnerable to natural disasters, particularly levee failure. As a result, the CALFED Implementing Agencies will supplement the DWR risk study to ensure it considers all relevant levee risks and recommend priorities and estimate funding needs for the Levees Program.[55]

Colorado River Aqueduct Target

Metropolitan also receives imported water from the CRA. Metropolitan, IID, and Coachella Valley Water District executed the QSA in October 2003. The QSA established the baseline water use for each agency and facilitated the transfer agricultural water to urban uses. A number of programs have been identified to assist Metropolitan meet their target goal of 1.2 million AFY from the CRA. These programs include:

- Coachella and All-American Canal Lining Project – The Coachella Canal Lining Project, as proposed, is anticipated to be completed in January 2007 and is expected to conserve 26,000 AFY. The All-American Canal Lining Project, as proposed, is anticipated to be completed in 2008 and is expected to conserve 67,700 AFY. The conserved water will be made available in Lake Havasu for diversion from Metropolitan. In exchange, Metropolitan will supply a like amount to the San Luis Rey Settlement Parties and San Diego County Water Authority.
- IID/San Diego County Water Authority Transfer – IID has agreed to implement a conservation program and transfer water to San Diego County Water Authority. The transfer began in 2003 with 10,000 AF and will increase yearly until 2023 where the transfer will be 200,000 AF annually. Water will be conserved through land fallowing and irrigation efficiency measures. Metropolitan will supply the water conserved to San Diego County Water Authority in exchange for a like amount out of Lake Havasu.
- IID/Metropolitan Conservation Program – The program originally provided funding from Metropolitan to implement water efficiency improvements within IID. Metropolitan in turn would reserve the right to divert the water conserved by those investments. Execution of the QSA extended the term of the program to 2078 and guaranteed Metropolitan at least 80,000 AFY.
- Palo Verde Land Management and Crop Rotation Program – This program offers financial incentives to farmers with Palo Verde Irrigation District to not irrigate a portion of their land. A maximum of 29 percent of lands within Palo Verde Irrigation District can be fallowed in any year. The water conserved will be available to Metropolitan with a maximum of 111,000 AFY expected.

[55] Metropolitan Water District of Southern California, Regional Urban Water Management Plan, 2005.

- Hayfield Groundwater Storage Program – Metropolitan will divert Colorado River water and store it in the Hayfield Groundwater Basin in east Riverside County. Currently, there is 73,000 AF of water in storage. Metropolitan expects the program to eventually develop a storage capacity of approximately 500,000 AF.
- Chuckwalla Groundwater Storage Program – Metropolitan proposes to store water when available in the Upper Chuckwalla Groundwater Basin for future delivery to Metropolitan.
- Lower Coachella Valley Groundwater Storage Program – Metropolitan, Coachella Valley Water District, and the Desert Water Agency are investigating the feasibility of a conjunctive use program in the Lower Coachella Groundwater Basin. The basin has the potential to store 500,000 AF of groundwater for Metropolitan.
- Salton Sea Restoration Transfer – A transfer of up to 1.6 MAF would be conserved by the IID and made available to Metropolitan. The proceeds from the DWR transfer would be placed in the Salton Sea Restoration Fund.
- Lake Mead Storage – Metropolitan is exploring options for storing water in Lake Mead.

Central Valley Project/State Water Project Storage and Transfers Target

Metropolitan has focused on voluntary short and long-term transfer and storage programs with CVP and other SWP contractors. Currently, Metropolitan has enough transfer and storage programs to meet their 2010 target goal of 300,000 AF. Metropolitan has four CVP/SWP transfer and storage programs in place for a total of 317,000 AF of dry-year supply. Metropolitan is also pursuing a new storage program with Mojave Water Agency and continues to pursue Central Valley water transfers on an as needed basis. The operational programs include:

- Semitropic – 107,000 AF dry-year supply
- Arvin-Edison – 90,000 AF dry-year supply
- San Bernardino Valley Municipal Water District – 70,000 AF dry-year supply
- Kern Delta Water District – 50,000 AF dry-year supply
- Mojave Storage Program – 35,000 AF dry-year supply
- Central Valley Transfer Program – 160,000 AF dry-year supply

Water Replenishment District of Southern California (WRD)

The Water Replenishment District of Southern California (WRD) is dedicated to maintaining a reliable groundwater supply for those users of the Basin. WRD has identified reliability measures to help mitigate water shortages or increase water supply, including the following:

- Robert W. Goldsworthy Desalter Project – As mentioned in Section 2, WRD operates this desalter project in the City of Torrance and produces drinking water for TMWD. The project was originally designed for a maximum of 3,000 AFY and may double its capacity in the future.

- Caltrans Highway 105 Dewatering Project – Caltrans owns and operates 13 extraction wells along Interstate 105 for dewatering purposes. The wells produce approximately 2,000 AF of water that if treated could be put to beneficial use instead of discharging to the Los Angeles River for disposal to the ocean. The project would treat the groundwater for injection at the Dominguez Gap Barrier located in the West Coast groundwater basin. This project is in the feasibility stage.

- Conjunctive Use/Storage Project – In 2003, the Conjunctive Use Working Group was created to address issues related to storing water within the Central and West Coast Groundwater Basins. The group included WRD, Central Basin Municipal Water District, WBMWD, DWR as the Watermaster, LA County Department of Public Works, Central and West Basin Water Associations, and several large groundwater producers within both groundwater basins. The group recognized that there is potential to store water within the basins; however, there are differences in opinion on how the stored water should be managed and accessed.[56] The group continues to meet and it is anticipated resolution on some of the major issues will occur in the near future.

- Nitrogen Gas Pilot Study – WRD, LADWP, and the USBR are conducting a pilot study to test whether injection of nitrogen gas can replace water injection for barrier protection against seawater intrusion. This test involves the injection of the nitrogen gas in an existing barrier well for several days and checking water levels in nearby wells to assess effectiveness.

- Dominguez Gap Barrier Recycled Water Injection Project – The project delivers water from the LADWP's Terminal Island Treatment Plant to the Dominguez Barrier. The water at the treatment plant is processed using microfiltration, reverse osmosis, and chlorination before being injected in the barrier. The project maintains a 50/50 ratio of recycled water and potable water to satisfy regulatory requirements. The LADWP is responsible for the project water delivery, and the WRD is responsible for the groundwater monitoring compliance.

West Basin Municipal Water District (WBMWD)

The projects identified in WBMWD's fiscal year budget for 2005/2006 include the following:

- Completion of the recycled water system (pipeline extensions) through the central area of the City toward the Palos Verdes Peninsula.

[56] WRD, Engineering Survey and Report, March 2005

- Construction of the Phase IV Water Recycling Plant Expansion Design-Build Project. The Phase IV expansion project is expected to increase the amount of recycled water by 5 MGD (5,600 AFY) and will be online in 2009.
- Design and begin construction of the Hyperion Secondary Effluent Pump Station #2 (will serve the additional recycled water produced by the Phase IV Plant expansion); include construction of a second source (backup) of electrical power.
- Upgrade the Seawater Desalination Project from 40 to 80 gpm and evaluate alternative membrane pretreatment technologies.
- Continue discussions with property owners on the coast to procure site for future seawater desalination demonstration plant.
- Design/Construct miscellaneous recycled water laterals and retrofits as customers are identified.

In 2005, WBMWD also applied for funding through the Proposition 50 Water Recycling Construction Grant for the Madrona/Palos Verdes Lateral project. WBMWD also requested the SWRCB to fund 25 percent of the $27.5 million cost of the pipeline.

In the spring of 2005, the Los Angeles County South Bay Integrated Regional Water Management (IRWM) Group, operating under the lead agency authority of the WBMWD, began development of a formal IRWM Plan for a region including Ballona Creek, Dominguez and South Santa Monica Bay Watersheds. The agencies and stakeholders in the Region are preparing an IRWM Plan with the understanding that through regional integration, more cost effective and border-reaching water management solutions can be developed and implemented.[57] However, at the time of development of this Plan, the DWR and SWRCB requested consolidation of multiple regions, including the Los Angeles region. As many as five regions, including the Los Angeles County South Bay Region, are currently organizing to work toward consolidation and development of one IRWM Plan.

4.5 EXCHANGE OR TRANSFER OPPORTUNITIES

The City owns rights to extract 5,640 AF of groundwater annually; however, currently uses only 1,600 AFY of its adjudicated water rights due to water quality problems. As a result, TMWD leased some of its rights to the Roman Catholic Archdiocese of Los Angeles on May 25, 2004, in the amount of 450 AF. In addition, Metropolitan and WRD are exploring exchange and/or transfer options that would benefit the region. These exchanges were discussed earlier under proposed projects for the region.

TMWD maintains four 2-way emergency inter-connections to adjacent water purveyor systems. These connections have the ability to transfer approximately 9,900 gpm into TMWD's distribution system. There are two 8-inch connections to the City of Lomita,

[57] Proposition 50, Chapter 8 Integrated Regional Water Management Planning Grant, Los Angeles County South Bay Integrated Regional Water Management Plan

one 8-inch connection to California Water Service Company (CWSC), and one 12-inch connection to the CWSC system. Each has a two-way interconnection, allowing water transfers to and from TMWD, depending on the emergency situation. However, records show that these connections have not been used recently. There are also two 10-inch one way metered interconnections that can only flow from TMWD to CWSC.

4.6 DESALINATED WATER OPPORTUNITIES

Desalination is viewed as a way to develop a local, reliable source of water that assists agencies reduce their demand on imported water, reduce groundwater overdraft, and in some cases make unusable groundwater available for municipal uses. TMWD was a partner in a joint venture between Metropolitan and DWR in the Robert W. Goldsworthy Desalter project located in Torrance City Yard on Madrona Avenue. The desalter removes intruding diluted seawater from groundwater. The desalination project is part of a comprehensive, large scale program designed to accomplish three primary goals: 1) prevent further migration of a trapped saline plume in the Basin; 2) restore the affected aquifer to use; and 3) prevent deeper intrusion of brackish water into the Basins. In addition to the Robert W. Goldsworthy Desalter Project, TMWD also benefits from regional desalination projects and efforts.

Department of Water Resources Desalination Task Force

Assembly Bill 2717 called for DWR to establish a Desalination Task Force to evaluate the following: 1) Potential opportunities for desalination of seawater and brackish water in California, 2) Impediments to using desalination technology, and 3) The role of the State in furthering the use of desalination.[58] The task force comprised of 27 organizations and in October 2003 provided a list of recommendations related to the following key issues: general, energy, environment, planning, and permitting.

Metropolitan's Seawater Desalination Program

In August 2001, Metropolitan launched its Seawater Desalination Program (SDP). The program objectives were to provide financial and technical support for the development of cost-effective seawater desalination projects that will contribute to greater water supply reliability. In 2004, Metropolitan adopted its IRP Update that includes a target of 150,000 AFY for seawater desalination projects to meet future demands. A call for proposals, under the SDP, produced five projects by member agencies as noted earlier, including the LADWP, Long Beach Water Department, Municipal Water District of Orange County, San Diego County Water Authority, and WBMWD. Collectively, the projects could produce approximately 126,000 AFY. This additional source of water supply would provide greater water reliability for Southern California residents.

Metropolitan has also provided funding to five member agencies to research specific aspects of seawater desalination. The agencies are reviewing and assessing treatment

[58] DWR, California Water Plan Update 2005, Volume 2 – Resource Management Strategies

technologies, pretreatment alternatives, brine disposal, permitting, and regulatory approvals associated with delivery of desalinated water to the local distribution system.[59] Metropolitan continues to work with its member agencies to develop local projects, inform decision makers about the role of desalinated seawater on future supplies, and secure funding from various state and federal programs.

Department of Water Resources Proposition 50 Funding

In January 2005, DWR received 42 eligible applications requesting $71.3 million from funds available through Proposition 50. Proposition 50, the Water Quality, Supply and Safe Drinking Water Projects, Coastal Wetlands Purchase and Protection Act was passed by voters in 2002. Projects eligible for the program include construction projects, research and development, feasibility studies, pilot projects, and demonstration programs. Local agencies, water districts, academic and research institution will be able to use the funds in the development of new water supplies through brackish water and seawater desalination.

DWR recommended funding for 25 of the 42 projects with the available $25 million under the 2005 funding cycle. With this funding recommendation, 54 percent of the fund will support brackish water desalination related projects and 46 percent will support ocean desalination related projects. The projects recommended for funding include facilities in Marin, Alameda and San Bernardino counties. Pilot projects in Long Beach, Santa Cruz, San Diego, and Los Angeles are among those that will receive grants under the proposed funding plan. Research and development activities at the Lawrence Livermore National Laboratory and the University of California, Los Angeles are included in the recommendations, as are feasibility studies by agencies in the Bay Area, Monterey, and Riverside County.

The Draft 2006 Water Desalination Proposal Solicitation Package (PSP) was released on October 13, 2005. A final PSP is anticipated to be released November 25, 2005, with proposals due to DWR by January 31, 2005. The 2006 funding cycle, the second and last cycle of this funding program, includes $21.5 million for eligible projects similar to those in the first funding cycle: brackish water and seawater desalination construction projects; research and development; feasibility studies; and pilot and demonstration projects for the development of local potable water supplies.

West Basin Municipal Water District

WBMWD has been operating a desalination pilot project since May 2003 to identify optimal performance conditions and evaluate the water quality of the water produced. The project is located at the El Segundo Power Plant and processes 40 gpm. Future plans are to increase the production of the project to 80 gallons per day and to evaluate alternative pretreatment membrane technologies.

[59] Metropolitan Water District of Southern California, Regional UWMP, 2005

WBMWD recently received Proposition 50 funding for a seawater desalination demonstration project. The project is a demonstration of integrated membrane seawater desalination using single-pass reverse osmosis for the Los Angeles region. This project will span over three years and produce an estimated 560 AFY of desalinated water. The outcome of this project will be to identify and mitigate issues that factor in the design and siting of a full-scale desalination facility.[60]

United States Desalination Coalition

The United Stated Desalination Coalition was created to bring nationwide attention to desalination efforts. The original members of the coalition were WBMWD, LADWP, Municipal Water District of Orange County, Metropolitan, and San Diego County Water Authority. The coalition has since been joined by the American Water Western Region and regional water management districts in the state of Florida. The coalition continues to inform and promote desalination projects across the nation to meet future water supply demands.[61]

Water Replenishment District of Southern California

As mentioned previously, WRD owns and operates the Goldsworthy Desalter Project that is located within the City. The plant was constructed in order to treat a saline plume located in the Basin and began operations in 2001. The plant treats saline water using microfiltration and reverse osmosis. The product water meets all state and federal drinking water standards and is used as drinking water for the City. As mentioned earlier, TMWD is currently under contract with WRD to purchase groundwater from the Desalter.

[60] DWR, Summaries of Awarded Projects for Proposition 50, Chapter 6(a) Desalination grants – 2005 Funding Cycle
[61] Central Basin and West Basin Municipal Water Districts, 2002-2003 Annual Report.

SECTION 5
WATER USE PROVISIONS

5.1 PAST, CURRENT AND PROJECTED WATER USE AMONG SECTORS

Table 5.1-1 shows the water use per classification for TMWD. No increase in water demand is anticipated for TMWD's service area due to build-out of land use, and the declining trend in water consumption coupled with the increasing trend in population. The projected water use by sector reflects the water demand projections shown in Table 4.2-4 in Section 4.2.

Table 5.1-1
Past, Current and Projected Water Use by Sector
AFY

Water Use Sector	2000	2005	2010	2015	2020	2025	2030
Residential	11,424	11,806	12,450	12,540	12,630	12,715	12,810
Commercial	3,314	3,212	3,390	3,410	3,435	3,460	3,490
Industrial	3,150	3,689	3,890	3,920	3,945	3,975	4,000
Other	3,938	3,882	4,090	4,120	4,150	4,180	4,210
Subtotal Potable[1]	**21,826**	**22,589**	**23,820**	**23,990**	**24,160**	**24,330**	**24,510**
Industrial – Recycled[1]	7,010	6,765	6,765	6,765	6,765	6,765	6,765
Landscape Irrigation – Recycled	30	280	335	485	485	485	485
Subtotal Recycled	**7,040**	**7,045**	**7,100**	**7,250**	**7,250**	**7,250**	**7,250**
Subtotal Potable and Recycled	**28,866**	**29,634**	**30,920**	**31,240**	**31,410**	**31,580**	**31,760**
Unaccounted for System Losses[2]	1,235	970	1,020	1,030	1,040	1,050	1,050
Total Water Use	**30,101**	**30,604**	**31,940**	**32,270**	**32,450**	**32,630**	**32,810**

[1] Potable projections for future years based on Table 4.2-5; projections are proportioned in same percentage as 2005 breakdown.

[1] 97% of recycled water demand is estimated to supply a single industrial customer (Exxon-Mobil), based on 2003/04 and 2004/05 averages. The usage of 6,765 AF is expected to remain constant over all future years with additional recycled demand coming from irrigation usage.

[2] Estimated at 4.3% of potable water usage (based on average loss for years 2003/04 and 2004/05, the only years for which both production and consumption records are available).

Unaccounted-for water is the difference between water production and water consumption and represents "lost" water. Unaccounted-for water occurs for a number of reasons:

- Water lost from system leaking, i.e. from pipes, valves, pumps, and other water system appurtenances.
- The City Fire Department performs hydrant testing to monitor the level of fire protection available throughout the City. TMWD performs hydrant flushing to

eliminate settled sediment and ensure better water quality. Hydrant testing and flushing is not metered. However, this quantity of water is estimated and taken into consideration when calculating unaccounted-for water.

- Water used by the Fire Department to fight fires. This water is also not metered.
- Customer meter inaccuracies. Meters have an inherent accuracy for a specified flow range. However, flow above or below this range is usually registered at a lower rate. Meters become less accurate with time due to wear.

Table 5.1-2 shows the number of water service customers by sector between 2000 and 2005, and projections of customers through 2030. The number of service connections is anticipated to increase very slightly through 2030, consistent with the projected small increase in population.

Table 5.1-2
Number of Water Service Connections by Sector

Water Use Sector	2000	2005[1]	2010	2015	2020	2025	2030
Residential	22,677	22,900	23,200	23,500	23,800	24,100	24,400
Commercial	1,769	1,758	1,760	1,770	1,780	1,790	1,800
Industrial	317	282	280	280	280	280	280
Other	1,074	1,090	1,100	1,100	1,100	1,100	1,100
Industrial – Recycled [2]	1	2	4	4	4	4	4
Landscape Irrigation - Recycled	6	18	34	34	40	40	40
Total Connections	**25,844**	**26,050**	**26,378**	**26,688**	**27,004**	**27,314**	**27,624**

[1] 2005 data represent actual connections; future years have been estimated based on anticipated growth in demand as reflected in Section 4.2.

[2] 2010 includes Exxon Mobile and Toyota Motors; 2015 includes American Honda and Los Angeles County Sanitation District Methane Gas Recovery Plant.

SECTION 6
WATER DEMAND MANAGEMENT MEASURES

6.1 INTRODUCTION

Water conservation, often called demand-side management, can be defined as practices, techniques, and technologies, also known as demand management measures (DMM), which improve the efficiency of water use. Increased efficiency expands the use of the water resource, freeing up water supplies for other uses, such as population growth, new industry, and environmental conservation.

Water conservation is often equated with temporary restrictions on customer water use. Although water restrictions can be a useful emergency tool for drought management or service disruptions, as discussed in Section 7, water conservation programs emphasize lasting day-to-day improvements in water use efficiency.

The increasing efforts in water conservation are spurred by a number of factors: growing competition for limited supplies, increasing costs and difficulties in developing new supplies, optimization of existing facilities, delay reduction of capital investments in capacity expansion, and growing public support for the conservation of limited natural resources and adequate water supplies to preserve environmental integrity.

TMWD recognizes water use efficiency as an integral component of current and future water strategy for its service area. Through the California Urban Water Conservation Council's (CUWCC) Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), 14 Best Management Practices (BMPs) have been established. The City of Torrance became signatory to the MOU in 1993.

TMWD actively implements the DMMs through policies, programs, rules, regulations and ordinances, and the use of devices, equipment and facilities that provide a significant reduction in water demand. TMWD has chosen to report its conservation program activities in the context of DMMs and a discussion of each of the 14 DMMs follows in Section 6.3. DMMs are consistent with the 14 BMPs.

6.2 DETERMINATION OF DMM IMPLEMENTATION

TMWD has committed to a good faith effort in implementing the 14 cost-effective DMMs. "Implementation" means achieving and maintaining the staffing, funding, and in general, maintaining the priority levels necessary to achieve the level of activity called for in each DMM's definition.

Many of the DMMs are implemented by the City within their service area in coordination with Metropolitan in their regional conservation programs. The following section

presents TMWD's efforts in implementing the 14 DMMs, as well as projections for the next five years.

6.3 DEMAND MANAGEMENT MEASURES

TMWD has continued to work with Metropolitan toward implementing the 14 cost-effective DMMs. These 14 DMMs include technologies and methodologies that have been sufficiently documented in multiple demonstration projects that result in more efficient water use and conservation. As the regional wholesale agency, Metropolitan, as well as WBMWD, implements many of the DMMs on behalf of TMWD. The City's 2000 UWMP indicated thorough implementation of the DMMs. This element was updated on July 1, 2004 to include the most recent data and implementation schedule for the DMMs.

The following presents the most current DMM implementation efforts through 2005 and projections through 2010.

DMM 1 – Residential Water Surveys for Single and Multi-Family Residential Customers

Residential surveys have been conducted in the TMWD service area on an informal basis by customer request through a high water bill complaint or meter reading that indicated higher than normal usage. When such a request is made, TMWD staff review past billing records for the account in question and compare them with the current bill. They then visit the customer's residence and review the information with them. A copy of the historical water usage pattern (usually two years) is provided to the customer. If it appears that a significant recent increase has occurred, TMWD staff first looks for signs of a possible leak. They also question the customer about possible internal plumbing problems (leaking faucets, running toilets, etc) and make recommendations to reduce landscape irrigation where appropriate. All residential meters are equipped with a leak detector feature to indicate leakage in the system when all fixtures are closed. Meter accuracy tests are provided upon request to verify that recorded consumption is correct. In addition, indoor conservation kits and literature is provided to customers to inform them of current rebates on low water using fixtures and proper water use management.

In addition to the surveys performed in response to customer requests, TMWD will initiate a pro-active pilot residential survey program that will provide audits of a minimum of 10 households in 2006. These water use audits will provide a complete water use audit including leak detection, interior plumbing fixtures, water using appliances and exterior water use. Based on the success of the pilot program, this program will be expanded in future years. A water use audit guide will also be developed for the both single and multi-family residential customer during 2006, to enable customers to conduct their own water use audits.

TMWD also participates in Metropolitan's Protector del Agua program, including landscape instructional classes to the residential sector. A portion of the classes focuses on residential landscape audits. Future Protector del Agua classes will provide additional emphasis on how customers can identify, quantify and control their outdoor water use. Based on the California Urban Water Conservation Council's savings rates, set forth in the BMP Costs & Savings Study (December 2003), savings from untargeted intensive home surveys results in an average of 21 gpd per household (both single family and multi-family) total savings for future projections. Tables 6.3-1 and 6.3-2 below show the total historic and projected number of residential surveys and total water savings.

Table 6.3-1
DMM 1 – Historic Water Survey Programs for Residential Customers

TMWD	2001	2002	2003	2004	2005
# of Surveys (Single Family and Multifamily)	464	344	485	416	525
Water Savings (AFY)	11	9	11	10	12

Table 6.3-2
DMM 1 – Projected Water Survey Programs for Residential Customers

TMWD	2006	2007	2008	2009	2010
# of Single Family Surveys	10	15	20	25	30
# of Multifamily Surveys	2	3	4	5	6
Projected Expenditures	$5,000	$7,000	$10,000	$12,000	$15,000
Water Savings (AFY)	.28	.42	.56	.71	.85

It is anticipated that the program will continue to expand from present through 2010. Anticipated expenditures will be incorporated into the TMWD's budget for future years.

DMM 2 – Residential Plumbing Retrofits

TMWD maintains an active program for the distribution of conservation kits consisting of showerhead flow restrictors, toilet tank displacement devices, dye tablets for use in detecting toilet leaks, and brochures on conservation measures. The kits are distributed free of charge to residents in the TMWD service area. The kits are provided at the City billing office, special public events, and educational presentations. Since 1977, TMWD has distributed over 55,000 of the water conservation kits.

Since 1991, TMWD has distributed low flow showerheads to single and multi-family customers, free of charge. Approximately 25,000 low flow showerheads have been distributed to residents throughout the City through Metropolitan's program. Beginning in 2003, TMWD began a new distribution program for ultra low flow showerheads. These showerheads are also free of charge, and are available through the City Utility Billing Office, special events, and public presentations. Beginning in 2006, TMWD will make updated interior water conservation kits, including water efficient faucet aerators, available to all residents throughout TMWD's service area.

In addition, developers are required to use low-water-use plumbing fixtures and appliances and highly encouraged to install drought resistant/low-water use landscapes. The use of recycled water for irrigation and industrial uses for those developments located by existing recycled water mains is also required.

Residential Plumbing retrofits result in 5.2-5.8 gallons per day (gpd) water saved for showerheads and 8 gpd with a leak (or .64 gpd overall) for leak detection tablets. As this rate, an estimate of water savings can be calculated using historical and projected unit amounts, as shown below in Tables 6.3-3 and 6.3-4.

Table 6.3-3
DMM 2 – Historic Residential Plumbing Retrofits

TMWD	1992-2001	2002	2003	2004	2005	Cumulative
# of Single Family devices	16,000	25	700	1,000	1,000	18,725
# of Multifamily devices	9,000	25	250	350	400	10,025
Expenditures	$30,000	$200	$3,800	$5,400	$6,000	$45,400
Water Savings (AFY)	154	.3	6	8	9	180

Table 6.3-4
DMM 2 – Projected Residential Plumbing Retrofits

TMWD	2006	2007	2008	2009	2010	Cumulative
# of Single Family devices	1,200	1,300	1,400	1,400	1,400	6,700
# of Multifamily devices	400	500	600	600	600	2,700
Expenditures	$6,400	$7,200	$8,000	$8,000	$8,000	$37,600
Water Savings (AFY)	10	11	12	12	12	57

DMM 3 – Distribution System Water Audits, Leaks Detection and Repair

TMWD aggressively repairs main breaks, hydrant leaks or breaks, and meter leaks. A team of water service workers are available to permanently repair main or hydrant breaks, and promptly restore water service. Both proactive and "inform and response" approaches are utilized for water meter leaks. Meter leaks are investigated and repaired promptly.

TMWD has initiated a water main capital improvement program (CIP) to replace deteriorated water mains. Since 1993, TMWD has replaced approximately 50 miles of distribution system water mains. The CIP replaces 3 to 5 miles of water mains on an annual basis. As a result, the incidence of main breaks has declined by 60 percent; from 180 breaks in the early 1990's to approximately 70 breaks at present. The long term goal is to reduce main breaks to less than 30 within the next 10 years.

TMWD replaces large water meters at a rate of approximately 30 to 40 per year. Large meters are systematically tested, calibrated and repaired to maintain optimal accuracy. Approximately 85 percent of TMWD's water supply is delivered by gravity flow from Metropolitan transfer connections. Therefore, the system uses relief and regulating valves, which are regularly inspected and refurbished, to avoid over-pressurization of the system. In addition, TMWD maintains its 7,500 valves in the water system at least once every two to three years.

Unaccounted-for water and water auditing is regularly monitored by TMWD. TMWD's goal is to reduce unaccounted-for water below the current average of approximately 8 percent to less than 7 percent by 2009 through implementation of a systematic water audit of the entire Municipal water system starting in 2006. TMWD's systematic water audit process will identify, quantify and track all sources and uses of potable water through the distribution system. The audit process will focus on accounting for and minimizing "water losses" from various sources, including water production meters, system flushing, water main breaks, unmetered temporary water, wastewater uses, fire fighting, fire training exercises, and inaccurate end use metering. The program will be an ongoing activity incorporated into the water utility's work processes.

In addition, TMWD is beginning to convert its metering to a full scale automatic meter reading (AMR) system. Based on the success of the current pilot program, TMWD will convert all 26,000 metered services on a phased basis to full AMR systems, which will improve meter reading accuracy. This full scale program will also involve the systematic changeout of approximately one half of TMWD's existing meters, which will improve accuracy and accountability of potable water supplies.

TMWD will also implement a pilot leak detection program for its distribution system beginning in 2007. Based on the results of the pilot survey, TMWD will determine if an ongoing leak detection program is cost effective and, if so, TMWD will implement a phased program beginning in 2008.

Additionally, TMWD implemented a Supervisory Control and Data Acquisition (SCADA) system in 2002, which enables TMWD staff to monitor and control the operation of system facilities at each location to maximize operational efficiency and performance. SCADA provides for faster response time to current malfunctions.

Tables 6.3-5 and 6.3-6 provides TMWD's current and projected water audit, leak detection and repair levels through 2010.

Table 6.3-5
DMM 3 – Historic System Water Audits, Leak Detection, and Repair

TMWD	2001	2002	2003	2004	2005
% of Unaccounted Water	7%	7%	7%	7%	5%
Miles of Distribution Lines Replaced	5	5	4	4	4
Expenditures	$2.5 million	$2.5 million	$2 million	$2 million	$2 million

Table 6.3-6
DMM 3 – Projected System Water Audits, Leak Detection, and Repair

TMWD	2006	2007	2008	2009	2010
% of Unaccounted Water	7%	7%	6.5%	6%	6%
Miles of Distribution Lines Replaced	4	4	4	4	4
Expenditures	$2 million	$2 million	$2 million	$2 million	$2 million

The CUWCC has established a standard rate of water savings based on the repair of a distribution line as follows: a 1-inch crack in a distribution main at 100 psi can leak 57 gpm. Cost and savings depend on the age of infrastructure for the water system.

DMM 4 – Metering with Commodity Rates

TMWD has universal metering for water accounts in its service area. Customer usage is recorded on water meters and it has been determined that approximately 85 percent of water charges is related to the commodity rate. There are no unmetered service connections in the Municipal service area and construction meters are issued for the temporary use of Municipal water supplies.

In addition, all new construction with significant landscape irrigation demands is required to install a dedicated landscape meter. Beyond the meter retrofit program, landscape meters are installed in City parks and other facilities where current meters provide dual domestic and irrigation service. As TMWD replaces existing dual service meters, where feasible, these service connections will converted to dedicated domestic and irrigation meters.

TMWD has a general policy to change out the meters every 15 years. Metering allows TMWD to conserve a total of 20 to 30 percent of the water demand overall, and up to 40 percent savings during peak demand periods, as estimated by the CUWCC's BMP Costs and Savings Study (December 2003). Table 5.1-2 in Section 5 shows the number of water service customers by sector between 2000 and 2005, and projections of customers through 2030. The number of service connections is anticipated to increase only slightly through 2030, consistent with the projected small increase in population. All service connections are metered.

DMM 5 – Large Landscape Conservation Programs

In FY 2004/05, TMWD supplied 7,045 AFY of recycled water for industrial and landscape irrigation purposes. This amount equals nearly 24 percent of TMWD's total water demands, saving an equal amount in potable water supplies. In the future, the recycled water system for landscape irrigation will be expanded over the next approximately 15 years and will supply 500 to 600 AFY of recycled water to City parks and other greenbelt areas. The ultimate build-out goal of the recycled water system will supply nearly 50 percent of landscape water requirements in the City by 2020. Recycled water is projected to consistently satisfy approximately 20 percent of TMWD's total water demand through 2030.

Upon request, TMWD will also provide large landscape water audits. Notably, Torrance has secured a $20,000 grant from Metropolitan's City Makeover Grant program in the category of Small Parks and Gardens. The City's Community Services Department and Parks and Recreation Commission was recently awarded funding for the "Showcase of Native Gardens at Madrona Marsh Project." The project will transform a grass landscape adjacent to the Madrona Marsh Nature Center into a demonstration native plant landscape, using locally native plants that have been present in the area since the 1800s. The project will educate visitors about the historic relationships to visitors by providing environmental education, such as development and installation of interpretive panels, design and distribution of color brochures on water wise landscaping/irrigation, and

docent training for conducting tours. This project will be designed to provide resource materials to both commercial and residential customers. The adjacent Madrona Marsh Nature Center receives approximately 20,000 visitors annually, while the existing native plant garden receives over 100,000 visitors annually. Therefore, this project will educate a large number of visitors throughout the City and the surrounding region. The project will also show how irrigation water use may be reduced by 80 percent compared to water demand of current turf grass lawns. The demonstration landscape provides a variety of drought tolerant native California plants, intended to provide an impetus to encourage both commercial and residential customers to consider the advantages of installing water efficient landscapes.

The "Torrance Hometown Heritage Landscape Project" is a landscape conservation project that is in the planning stage and will be implemented as soon as funding is secured. The Project will consist of several broadly themed full-scale landscape design areas, with each area reflecting a low water use native plant material and state of the art irrigation techniques. The project will also contain an interpretive center for the public to gain information on plant materials, landscape design, irrigation systems, and site maintenance to provide business and residential customers with necessary resource materials for low-water using landscape conversion. Grant funding for this effort will be sought from Metropolitan, USBR, and DWR and other potential sources. Project implementation is contingent upon such additional sources of funding.

TMWD participates in Metropolitan's regional irrigation efficiency programs. Metropolitan provides sponsorship and performance-based funding for these programs to offset the cost to the customer. The Protector Del Agua (PDA*)* Water Efficient program is offered at a nominal cost. In addition, the PDA Professional Program has been recently redesigned and offers information for the landscape professional on water management, state of the art irrigation systems, enhanced landscape practices, and practical ideas to improve their bottom line. The Program allows landscapers to stay abreast of the policy and activities of the water agencies, and proper cultural practices within their industry.

TMWD is in the process of implementing a water efficient irrigation controller retrofit program for irrigation throughout various City parks and street medians. This program, called the Water Efficient Evapotranspiration (ETo) Controller Program, is sponsored by Metropolitan and will involve the change out of antiquated controllers in many of the largest Parks in the City with water efficient units that are remotely monitored and controlled from a central location to maximize irrigation efficiency.

In Section 5, Table 5.1-2 shows the number of landscape accounts by sector between 2000 and 2005, and projections of customers through 2030. The number of landscape accounts is projected to remain consistent, at 18 total service connections, from 2005-2030.

DMM 6 – High-Efficiency Washing Machine Rebate Programs

TMWD will be implementing a rebate program for the installation of approved high efficiency washing machines (HEWM) for City residents. The program will be implemented in early 2006. Projected participation is anticipated to be 200 rebates per year through 2010. The program will be jointly promoted with TMWD's existing conservation rebate and distribution programs.

The water savings can be estimated at an average of 85 to 109 gallons per week per machine, with 14.4 to 28.7 gpd/machine for single family residences. Based on CUWCC estimates, the mean savings of 5,085.6 gallons per year may be applied to each HECW. Table 6.3-7 below shows estimated water savings based on this rate of savings.

Table 6.3-7
DMM 6 – Projected High-Efficiency Washing Machine Rebates

TMWD	2006	2007	2008	2009	2010	Cumulative
$ per rebate	$90	$90	$90	$90	$90	n/a
# of HEWM rebates per year	200	200	200	200	200	1,000
Expenditures	$18,000	$18,000	$18,000	$18,000	$18,000	$90,000
Water Savings (AFY)	1,139	1,139	1,139	1,139	1,139	5,695

DMM 7 – Public Information Programs

TMWD disburses a variety of water conservation brochures and pamphlets at the Civic Center Complex, public libraries, the Torrance Billing Office and to the public upon request. Bill inserts providing tips for conserving water are also periodically included in the mail to educate the residents. TMWD also provides speakers to local community groups, service clubs, and schools upon request regarding water conservation and water related topics. During specific times at the Civic Center and the City's public libraries, exhibits are displayed which portray water conservation and supply management activities. Cable Television Programs are another way the City promotes water conservation by showing water related films and PSA announcements. In the event one cannot get to a television, the Torrance Library has a substantial inventory of water conservation and water related videos that can be checked out. In 2005, the City Library initiated a water resource program to acquire and disseminate publications and videos on water related topics. Newspapers and magazines such as the *Daily Breeze*, *Easy Reader*, and the City's *Recreation Reporter* also supply information about water conservation.

Furthermore, TMWD continues to promote water conservation by active relationship with the public. For one, TMWD actively participates in City and Civic events such as

City Yard Day, City Health Fair, and Chamber of Commerce Expo, Earth Day Events, Library sponsored events and other community fairs and expos. Secondly, TMWD, in coordination with Metropolitan, provides tours of the CRA, SWP, and the Diamond Valley Lake. In addition, TMWD and other City staff attend water conferences and seminars to stay informed about water conservation and supply management programs. Further, TMWD periodically provides presentations on water subjects to various civic and homeowner groups.

Metropolitan's Protector del Agua program offers classes in landscape design, maintenance and irrigation systems to professionals and residents. An extension of the program was offered in Spring 2004 and Fall 2005 to residential sectors as well as being integrated into the courses offered under the Parks and Recreation Department. The residential PDA program will be offered at least once a year, and the next session will be in the spring of 2006.

Through Metropolitan's External Affairs Group, conservation-related activities are offered to the public, including residents of TMWD's service area. The programs include the Speaker's Bureau, which provides speakers for organizations, service clubs, churches, and businesses and other community groups and associations. An estimated 15,000 to 20,000 people attend the presentations annually. The Community Relations program organizes and conducts an average of 80 Board Director-sponsored inspection trips for Metropolitan's distribution system annually for elected officials, community leaders and members of the public. Approximately 3,000 people learn about Metropolitan's conservation and water management policies and practices each year through these trips. The education curriculum and program activities engage an average of 150,000 students per year. Metropolitan's Media and Publications group conducts editorial briefings and media field trips, assembles press packet; prepares and disseminates news releases, speeches, videos, fact sheets, brochure, articles and editorials describing water management objectives and programs. The government relations sector provides elected officials, public agencies, businesses and organizations with information about Metropolitan's water management objectives and programs.

Tables 6.3-8 and 6.3-9 summarize TMWD's public information program activity as described above.

Table 6.3-8
DMM 7 – Historic Public Information Programs

Program	2001	2002	2003	2004	2005
Paid Advertising			X	X	X
Public Service Announcement	X	X	X	X	X
Bill inserts / Newsletters / Brochures	X	X	X	X	X
Bill showing water usage in comparison to previous year's usage	X	X	X	X	X
Demonstration Gardens			X	X	X
Special Events, Media Events	X	X	X	X	X
Speaker's Bureau				X	X
Program to coordinate with other government agencies, industry and public interest groups and media	X	X	X	X	X
Expenditures	$1,000	$22,000(1)	$2,000	$3,000	$4,000

[1] Includes $20,000 expenditures for Native Plant Garden at Madrona Marsh Nature Center.

Table 6.3-9
DMM 7 – Projected Public Information Programs

Program	2006	2007	2008	2009	2010
Paid Advertising	X	X	X	X	X
Public Service Announcement	X	X	X	X	X
Bill inserts / Newsletters / Brochures	X	X	X	X	X
Bill showing water usage in comparison to previous year's usage	X	X	X	X	X
Demonstration Gardens [1]	X	X	X	X	X
Special Events, Media Events	X	X	X	X	X
Speaker's Bureau	X	X	X	X	X
Program to coordinate with other government agencies, industry and public interest groups and media	X	X	X	X	X
Expenditures	$40,000[2]	$10,000	$10,000	$10,000	$10,000

[1] Includes $10,000 expenditure for development of the water efficient landscape project, Madrona Marsh Nature Center.

[2] Includes $30,000 expenditure for development of an additional water efficient landscape project.

DMM 8 – School Education Programs

Through Metropolitan, water education programs are available to the City's elementary through high schools. Programs are either supplemental or curriculum-based which include classroom presentation, audio-visual programs, hands-on activities, take-home materials for students, and workbooks. The following provides a summary of the programs offered: Admiral Splash for Grade 4 (started in 1983), All About Water for grades K-3 (started in 1991), Geography of Water for grades 4-8 (started in 1993), Water Politics for grades 9-12 (started in 1994), Water Ways for grade 5 (started in 1995), Water Quality for grades7-12 (started in 2001), Water Works for grades 7-12 (started in 2001), and Water Times for grade 6 (started in 2005).

In 2001, a multi-faceted program called Living Wise was presented to the Torrance Unified School District by TMWD and two other City departments. The program meets state education framework requirements and concentrates on water education, water resource management and conservation, along with energy and other resource conservation in other sectors. A pilot program for Living Wise was initiated in partnership with the Southern California Edison (SCE) Company in the Spring 2005. If the State Public Utilities Commission approves SCE's funding request, TMWD plans to partner with SCE to provide this program to Torrance schools on an on-going basis. Tables 6.3-10 and 6.3-11 below show the estimated number of students participating in the school education program in TMWD's service area.

Table 6.3-10
DMM 8 – Historic School Education Programs

Grade	Number of Students (2001- 2005)
4^{th} – 6^{th}	2,900
Actual Expenditures	$115,000

Table 6.3-11
DMM 8 – Projected School Education Programs

Grades	Number of Students				
	2006	2007	2008	2009	2010
4^{th} – 6^{th} [1]	1,000	1,000	1,000	1,000	1,000
Expenditures	$20,000	$20,000	$20,000	$20,000	$20,000

[1] $45 per student. Prior to 2005, $40 per student. Program cost will be split with Southern California Edison, depending on approval from the Public Utilities Commission.

DMM 9 – Commercial, Industrial and Institutional Programs

TMWD actively participates in the Commercial, Industrial and Institutional (CII) Program, which Metropolitan is sponsoring along with its member agencies. The program primarily contains financial rebates to achieve water efficiency for commercial and industrial customers. These programs include:

- Cooling Tower Conductivity Controller Rebate Program – A $500 installation rebate is offered to commercial and industrial customers who install conductivity controllers that would save 800,000 gallons of water per year.
- Commercial ULF Toilets and Urinals Rebate Program – A $60 rebate is offered for each replaced water-saving toilet or urinal that would save 30 to 50 gallons per day.
- Commercial High Efficiency Washer Rebate Program – A $100 rebate is offered to commercial and industrial customers who install a high efficiency washing machine that would save 150,000 gallons of water per washer per year.
- Pre-Rinse Sprayer Rebate Program – A $50 rebate is offered to commercial and industrial customers who install a high efficiency pre-rinse kitchen sprayer that would result in saving 75,000 gallons of water annually per sprayer.
- Dual Flush Toilet Rebate Program – An $80 rebate will be offered to commercial and industrial customers who install dual flush toilets in their business that would save 2,250 gallons of water per year per unit.
- Water Broom Rebate Program – A $100 rebate will be provided to commercial and industrial customers who purchase a water-pressurized broom and replace old hose nozzles. A pilot program funded by TMWD will be initiated with various departments of the City, the Torrance Unified School District and several business customers. These brooms result in a savings of 50,000 gallons per location per year.
- X-ray Film Processor Recirculating System Rebate Program – A $2,000 rebate will be received by hospitals and medical facilities with X-ray machines by retrofitting the X-ray machines with water saving film processor recirculating system. This retrofit would save 1 MG of water a year.
- Process Rebate Program – As much as a $154 per AF rebate is offered to eligible commercial and industrial customers who are able to demonstrate water savings by a change in an internal process.
- Smart Controllers for Irrigation Rebate Program – Rebates incentives vary by agency. The weather-based “smart” controller is available to avoid over-watering and excessive run-off by scheduling the amount of irrigation based on the type of landscape and current weather conditions.

TMWD also has an extensive recycled water program, in which TMWD currently meets approximately 24 percent of its total water demand from recycled supplies. Industrial

customers such as the Exxon-Mobile Oil Refinery and Toyota Motor Corporation actively utilize the recycled water program and over 96 percent of recycled supplies are for industrial application. Recycled water is projected to consistently supply 20 percent of TMWD's demand through 2030.

TMWD is in the process of developing an information campaign called, "Get Green" to its business sector on water recycling and conservation of resources. The first brochure was mailed to all businesses in the City in late spring of 2005. A portion of the multi-part brochure is devoted to business sector water conservation awareness, and focuses on the CII program and Metropolitan's new Industrial Process program. The Industrial Process Improvement Program offers financial assistance to local industries to encourage investment in water-saving process improvements. The Program is open to all public and private commercial and industrial users within Metropolitan's service area. Financial assistance is provided for documented water savings derived from projects implemented under the program that meet the minimum qualifying criteria.

Additional publications will be targeted at various business sectors, including restaurants, health care, industrial, office buildings, and the hotel/motel industry. These publications will be developed and distributed to these sectors over the next year and a half to two years.

The CII Rebate Program provides a total of 17.8-20.3 percent median and 17.9-29.2 percent mean in savings on an annual basis. The number of commercial and industrial accounts are shown in Table 5.1-2 of Section 5. The number of service connections per sector between 2000 and 2005, and projections of customers through 2030 are included.

DMM 10 – Wholesale Agency Assistance Programs

As TMWD's wholesale agency, Metropolitan actively provides assistance through implementation of conservation programs within TMWD's service area, as well as guidance for TMWD staff in implementation of a variety of conservation programs, as described throughout this section. Metropolitan provides water surveys, residential retrofits, system audits, landscape programs, HEWM rebate, public information and outreach, CII programs, and the assistance of multiple Conservation Coordinators.

DMM 11 – Conservation Pricing and Billing Procedures

The first goal of any rate structure is to generate sufficient revenues to maintain efficient and reliable utility operations, and the second is fairness in the allocation of utility service costs. Generally, it is possible to satisfy both of these goals in a rate structure that encourages water conservation or penalizes excessive water use. Designing water rates must include the following: 1) determination of the water utility's total annual revenue requirements for the period for which the rates are to be in effect, 2) determination of service costs by allocation of the total revenue requirements to the basic water system cost components and distribution of these costs to the various customer classes in

accordance with service requirements, and 3) design water rates to recover the cost of service from each class of customer.

The City's current Rate Structure provides customers with a uniform commodity rate. Every quantity of water used by the customer is charged at the same commodity rate except for discounts provided to low income Torrance seniors and disabled customers.

TMWD also maintains water use records and water bills on a continuous basis for approximately 26,000 customer accounts for five years. These documents supply current and previous customer consumption data, necessary information to monitor customer usage and various conservation efforts.

TMWD will be actively investigating the development and implementation of a conservation-based water rate structure. The study will assess a number of factors, including alternative rate designs, inclining block rate structures, baseline rates, cost of service, impacts on customers and realization of water management and water conservation objectives.

DMM 12 – Conservation Coordinator

TMWD has assigned a Senior Administrative Analyst as its full-time Conservation Coordinator to implement conservation programs within its service area. The Conservation Coordinator also works collaboratively with cities and water agencies within the region, including Metropolitan's Conservation Coordinator, to enhance conservation efforts.

DMM 13 – Water Waste Prohibition

The City Council of Torrance passed Ordinance No. 3320, which authorized the Water Conservation Program and Water Waste Prohibitions during times of water shortage. The ordinance is arranged into five phases, in which City Council declares a specific phase to enact during an emergency. During each phase, all water customers are to abide to conservation requirements as approved by the City Council. Details of this program are described in Section 7 of this plan.

DMM 14 – Residential Ultra-Low-Flush Toilet (ULFT) Program

The ULFT program involves the use of an ULFT toilet which uses 1.6 gallons of water per flush or less as opposed to old toilets that use at least 5 gallons per flush. In 1992, the City's Plumbing code requires that all new construction sites must have ULFT toilets to reduce water. In order to promote the installation of ULFT's, TMWD, along with Metropolitan, currently sponsors both ULFT residential and commercial/industrial rebate programs. A $50 rebate is offered to all residents of the City who replace their old toilets with 1.6 gallon or less ULFTs. This will result in annual water saving of 1,500 gallons

per ULFT. In addition, TMWD previously sponsored a ULFT distribution program in the 1990's that replaced nearly 4,000 old water consuming toilets with ULFT's.

Tables 6.3-12 and 6.3-13 provide historic and projected number of residential ULFT rebates within TMWD's service area and the associated expenditures and water savings through 2010.

Table 6.3-12
DMM 14 – Historic Single Family Residential ULFT Replacement Program

TMWD	2001	2002	2003	2004	2005	Cumulative
# of ULFT Rebates – Single Family	n/a	n/a	290	246	175	711
# of ULFT Rebates – Multi-Family	n/a	n/a	46	40	25	111
Expenditures – Single Family	n/a	n/a	$27,000	$24,000	$19,000	$70,000
Expenditures – Multi-Family	n/a	n/a	$4,000	$3,500	$2,500	$10,000
Actual Water Savings (AFY)	n./a	n/a	1.5	1.3	0.9	3.7

Table 6.3-13
DMM 14 – Projected Single Family Residential ULFT Replacement Program

TMWD	2006	2007	2008	2009	2010	Cumulative
# of ULFT Rebates – Single Family	200	225	250	270	300	1,025
# of ULFT Rebates – Multi-Family	50	75	100	125	150	500
Expenditures – Single Family	$18,000	$20,000	$23,000	$25,000	$27,000	$113,000
Expenditures – Multi-Family	$4,500	$7,000	$9,000	$11,000	$13,500	$45,000
Actual Water Savings (AFY)	1.2	1.4	1.6	1.8	2	8

Additional Water Conservation Project(s)

Metropolitan proposed four water conservation programs for funding under the DWR Water Use Efficiency Grant Program for FY 2004/05. The programs and the status of funding are listed as follows:

- Residential High Efficiency Clothes Washer Rebate Program - The Residential High Efficiency Clothes Washer Rebate Program offers rebates toward the purchase of water- and energy-saving clothes washing machines, which will reduce the demand on water imported from the Bay Delta by 12,275 AFY. This 2-year program was funded at $1.66 million.
- California Friendly Communities - The program will result in CALFED Benefits, which include avoiding Bay Delta diversions. California Friendly Communities is a grant program in which cities receive funding to transform their landscape to increase water conservation. A maintenance plan, enhanced irrigation and controllers, and landscaping techniques are exercised through this program. This program received $424,150 in funding for 1,650 valves for multi-family residences.
- High-Efficiency Toilet Rebate Program – A rebate is given to customers who purchase a new High Efficiency Toilet. The toilet uses a minimum of 20% less water than standard toilets and will supply 41 AFY of water savings. This program was funded at $1.0 million for a total of 10,000 ULFTs.
- Online/Web-Based Irrigation Efficiency Training – This program will provide two class courses for residential and professional participants, as well as educate individuals about water use, efficiency training, and educational programs. DWR funded one residential series class and two classes from the professional course for a total of $77,500.

6.4 WATER USE EFFICIENCY PROGRAM SCHEDULING AND METHODS TO EVALUATE EFFECTIVENESS

TMWD will continue to work cooperatively with Metropolitan to implement cost-effective DMMs within the City's service area. The methods to evaluate effectiveness are shown in Table 6.4-1.

Table 6.4-1
Water Use Efficiency Demand Management Measures Practices
Implementation Schedule and Methods to Evaluate Effectiveness

DMM	Implementation Schedule	Methods to Evaluate Effectiveness
1. Residential Surveys		
a. Pilot Survey	7/06 to 12/06	Degree of customer acceptance /participation. Potential savings per survey.
b. Water Use Audit Guide Development and distribution of guide	7/06 to 12/06	Degree of customer participation. Potential water savings in the TMWD service area.
c. PDA Residential Water Efficient Classes	Ongoing One session per year	Attendance/community interest.
2. Residential Plumbing Retrofits		
a. ULF Showerhead	Ongoing since 1991	Approximately 2,000 distributed annually, depending on degree of customer demand. Potential water savings in the TMWD service area.
b. Interior Conservation Kit distribution program	Pilot Program initiated in 2005 Full implementation anticipated in 2006	Distribution based on customer acceptance and demand. Potential water savings per customer.
3. *Distribution System Audits, Leak Detection and Repair*		
a. Systematic water audit of system	Initiate 2006	Reduction in unaccounted-for water loss. Reliable accounting for all major uses of water.
b. AMR Metering	Initiated in 2005 5-year phased program	Reductions in meter inaccuracies and unaccounted-for water. Success of leak detection notification feature.
4. *Metering with Commodity Rates*	Fully metered system, including temporary services	
5. *Large Landscape Conservation Program*		
a. Use recycled water for greenbelt irrigation	Initiated in 1995 Recycled water system expansion on a phased basis by 2020	Decrease in imported water demand.

DMM	Implementation Schedule	Methods to Evaluate Effectiveness
b. Madrona Marsh Nature Center Water Efficient Demonstration Landscape Project	Completion 2006	Requests for brochures/information packets and tours of landscape. Level of customer acceptance.
c. Development of Resources materials for large landscape customers	Completion 2007	Number of requests for information packets.
d. PDA water efficient Landscaping Classes for landscape professionals	One session every two years beginning in 2007	Attendance/acceptance by landscape professionals.
e. Retrofit of Water Efficient Landscape Controllers in City Parks/Medians	Initiate pilot program 2006; implement first phase in 2007	Water reduction at each location. Degree of acceptance by Parks personnel.
6. *High Efficiency Washing Machine Rebate Program*	Implement first half in 2006	Degree of participation. Quantifiable water savings.
7. *Public Information/Outreach Programs*	Ongoing	Degree of participation by residents.
a. Participate in a minimum of four community events per year.	Ongoing	n/a
b. Annual inspection tours of Colorado River facilities and bi-annual tours of state water project facilities.	Ongoing	n/a
c. Speakers Bureau to local community groups	Ongoing	n/a
d. PDA water efficient landscape classes	Ongoing – Next Session Spring 2006.	n/a
e. Newspaper articles/conservation ads	Ongoing	n/a
f. Local City cable programs on water conservation/ resources	Expand in 2006	n/a
8. *School Education Programs*		
a. Living Wise in-school education program	Pilot program initiated in Spring 2005; partner with SCE beginning Spring 2006	Degree of participation. Satisfaction survey of teachers.
b. Metropolitan sponsored in-school educational programs	Ongoing	Degree of participation. Satisfaction survey from teachers.

9. *Commercial, Industrial and Institutional Program (CII)*		
a. Standard CII	Ongoing	Extent of participation. Water savings.
b. Metropolitan Industrial Process Improvement Program	Initial brochure distributed Spring 2005	Extent of participation
10. *Wholesale Agency*	n/a	n/a
11. *Conservation Pricing*	Investigate conservation based pricing options starting 2006	Water savings. Degree of customer acceptance.
12. *Conservation Coordinator*	Ongoing - Senior Administrative Analyst	Response from community members on coordinator assistance.
13. *Waste Water Prohibitions*	In place	Reduction in water use.
14. *ULFT Program*		
a. Rebate program	Ongoing since 2003 Enhance marketing campaign 2006	Quantifiable water savings. Continued customer demand.

SECTION 7
WATER SHORTAGE CONTINGENCY PLAN

7.1 INTRODUCTION

One dry year does not constitute a drought in California, but does serve as a reminder of the need to plan for droughts. California's extensive system of water supply infrastructure, its reservoirs, groundwater basins, and inter-regional conveyance facilities, mitigates the effect of short-term dry periods. Defining when a drought begins is a function of drought impacts to water users. Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Droughts occur slowly, over a multiyear period. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline.

During water shortage emergencies, the City will implement an Emergency Water Conservation Program established by Ordinance No. 3320, which was adopted in 1991. The ordinance is arranged into five phases or stages of action that address consumption reduction during declared water shortages. The City Council declares what phase to enact during an emergency. During each phase, all customers are required to abide by conservation requirements set forth by City Council.

7.2 STAGES OF ACTION

City of Torrance Water Shortage Response

TMWD has implemented an emergency water conservation program to reduce water demands. The Water Conservation Program was adopted under Ordinance 3320. TMWD implements certain initiatives to optimize water supply during water shortages or drought conditions. In the event of a water shortage, the City Council will implement the appropriate water conservation stage by resolution.

City Stages of Action

The City has a legal responsibility to provide for the health and safety water needs of the community. TMWD will manage water supplies to minimize the social and economic impacts of water shortages. The Emergency Water Conservation Program is designed to provide a minimum of 50 percent of normal supply during a severe or extended water shortage. TMWD's two potable water sources are local groundwater (including desalted water) and Metropolitan deliveries. Rationing stages may be triggered by a shortage in one source or a combination of sources, and shortages may trigger a stage at any time.

Table 7.2-1 shows the stages of action the City will take in the case of an emergency water shortage, as declared by Ordinance No. 3320.

Table 7.2-1
Stages of Water Shortage Action

Shortage Stage	Type of Conservation	Description
1	Voluntary - Up to 20 percent supply reduction	Combined supply reductions totaling up to 4,760 AFY.
2	Mandatory – 20 to 30 percent supply reduction	Combined supply reductions totaling between 4,760 AFY and 7,140 AFY.
3	Mandatory – 30 to 40 percent supply reduction	Combined supply reductions totaling between 7, 140 AFY and 9,520 AFY.
4	Mandatory – 40 to 50 percent supply reduction	Combined supply reductions totaling 9,520 AFY or more.

Ordinance No. 3320, provided in Appendix G, provides further detail of separate phases included under Stage 1, which are detailed under Section 7.5.

Rationing Stages and Reduction Goals

In order to meet short-term water demand deficiencies, and short- or long-term drought requirements, the City will also follow Metropolitan's adopted Water Surplus and Drought Management Plan (WSDM Plan). The WSDM Plan guides the management of regional water supplies to achieve the reliability goals of Southern California's Integrated Water Resource Plan.

Metropolitan WSDM Plan

In 1999, Metropolitan in conjunction with its member agencies developed the WSDM Plan. This plan addresses both surplus and shortage contingencies.

The WSDM plan will guide management of regional water supplies to achieve the reliability goals of Southern California's IRP. The IRP sought to meet long-term supply and reliability goals for future water supply planning. The WSDM Plan guiding principle is to minimize adverse impacts of water shortage and ensure regional reliability. From this guiding principle come the following supporting principles:

- Encourage efficient water use and economical local resource programs.
- Coordinate operations with member agencies to make as much surplus water as possible available for use in dry years.
- Pursue innovative transfers and banking programs to secure more imported water for use in dry years.
- Increase public awareness about water supply issues.

The WSDM Plan guides the operations of water resources (local resources, Colorado River, SWP, and regional storage) to ensure regional reliability. It identifies the expected sequence of resource management actions Metropolitan will take during surpluses and shortages of water to minimize the probability of severe shortages that require curtailment of full-service demands. Mandatory allocations are avoided to the extent practicable, however, in the event of an extreme shortage an allocation plan will be adopted in accordance with the principles of the WSDM Plan.

The WSDM Plan distinguishes between *Surpluses, Shortages, Severe Shortages,* and *Extreme Shortages.* Within the WSDM Plan, these terms have specific meaning relating to Metropolitan's capability to deliver water to Torrance.

Surplus: Metropolitan can meet full-service and interruptible program demands, and it can deliver water to local and regional storage.

Shortage: Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfers as necessary.

Severe Shortage: Metropolitan can meet full-service demands only by using stored water, transfers, and possibly calling for extraordinary conservation. In a Severe Shortage, Metropolitan may have to curtail Interim Agricultural Water Program (IAWP) deliveries in accordance with IAWP.

Extreme Shortage: Metropolitan must allocate available supply to full-service customers.

The WSDM Plan also defines five surplus management stages and seven shortage management stages to guide resource management activities. Each year, Metropolitan will consider the level of supplies available and the existing levels of water in storage to determine the appropriate management stage for that year. Each stage is associated with specific resource management actions designed to: 1) avoid an Extreme Shortage to the maximum extent possible; and 2) minimize adverse impacts to retail customers should an "Extreme Shortage" occur. The current sequencing outline in the WSDM Plan reflects anticipated responses based on detailed modeling of Metropolitan's existing and expected resource mix. This sequencing may change as the resource mix evolves.

Shortage Actions by Shortage Stage

When Metropolitan must make net withdrawals from storage, it is considered to be in a shortage condition. However, under most of these stages, it is still able to meet all end-use demands for water. The following summaries describe water management actions to be taken under each of the seven shortage stages.

Shortage Stages

Shortage Stage 1. Metropolitan will continue storage deliveries to Diamond Valley and SWP terminal reservoirs. Draws from Diamond Valley may be necessary to fully or partially meet interruptible demands.

Shortage Stage 2. Metropolitan will continue Shortage Stage 1 actions and may draw from Semitropic and Arvin-Edison groundwater storage to meet anticipated demands.

Shortage Stage 3. Metropolitan will continue Shortage Stage 2 actions and may curtail or temporarily suspend deliveries to Long-Term Seasonal and Replenishment Groundwater Storage Programs.

Shortage Stage 4. Metropolitan will continue Shortage Stage 3 actions and may draw from contractual groundwater storage and SWP terminal reservoirs to meet full-service demands.

Severe Shortage Stages

Shortage Stage 5. Metropolitan will continue Shortage Stage 4 actions. Metropolitan Board of Directors may call for extraordinary conservation and may curtail IAWP deliveries. In the event of a call for extraordinary conservation, Metropolitan's Drought Program Officer will coordinate public information activities with member agencies and monitor the effectiveness of ongoing conservation programs. The Drought Program Officer will implement monthly reporting on conservation program activities and progress and will provide quarterly estimates of conservation water savings.

Shortage Stage 6. Metropolitan will continue Shortage Stage 5 actions and may exercise water supply option contracts and/or buy water on the market either for consumptive use or for delivery to regional storage facilities.

Extreme Shortage Stage

Shortage Stage 7. Metropolitan will discontinue deliveries to regional storage facilities, continue extraordinary conservation efforts, and develop a plan to allocate available supply fairly and efficiently to full-service customers. Metropolitan will enforce these allocations using rate surcharges. The surcharges will be set at a minimum of $175 per acre-foot for any deliveries exceeding a member agency's allotment. Any deliveries

exceeding 102 percent of the allotment will be assessed a surcharge equal to three times Metropolitan's full-service rate.

The overriding goal of the WSDM Plan is to never reach Shortage Stage 7, an Extreme Shortage. Given present resources, Metropolitan fully expects to achieve this goal over the next ten years.

Reliability Modeling

Using a technique known as "sequentially indexed Monte Carlo simulation," Metropolitan undertook an extensive analysis of system reservoirs, forecasted demands, and probable hydrologic conditions to estimate the likelihood of reaching each Shortage Stage through 2010. The results of this analysis demonstrated the benefits of coordinated management of regional supply and storage resources. Expected occurrence of a Severe Shortage is four percent or less in most years and never exceeds six percent; equating to an expected shortage occurring once every 17 to 25 years. An Extreme Shortage was avoided in every simulation run.

Metropolitan also tested the WSDM Plan by analyzing its ability to meet forecasted demands given a repeat of the two most severe California droughts in recent history. Hydrologic conditions for the years 1923–34 and 1980–91 were used in combination with demographic projections to generate two hypothetical supply and demand forecasts for the period 1999–2010. Metropolitan then simulated operation to determine the extent of regional shortage, if any. The results again indicate 100 percent reliability for full-service demands through the forecast period.

Allocation of Supply for Municipal & Industrial (M&I) Demands

The equitable allocation of supplies is addressed by the Implementation Goals for the WSDM Plan, with the first goal being to "avoid mandatory import water allocations to the extent practicable." The reliability modeling for the WSDM Plan discussed above results in 100 percent reliability for full-service demands through the year 2010. However, the second fundamental goal of the WSDM Plan is to "equitably allocate imported water on the basis of agencies' needs." Factors for consideration in establishing the equitable allocation include retail and economic impacts, recycled water production, conservation levels, growth, local supply production, and participation and investment in Metropolitan's system and programs. In the event of an extreme shortage, an allocation plan will be adopted in accordance with the principles of the WSDM Plan.

In an effort to avoid allocation, import water reliability is planned through the Southern California IRP and the WSDM Plan. The IRP presents a comprehensive water resource strategy to provide the region with a reliable and affordable water supply for the next 25 years. The WSDM Plan will guide management of regional water supplies to achieve the reliability goals of the IRP.

Additional efforts to ensure water supplies in times of drought include sufficient water storage programs. One of the most effective forms of storage in a highly dry and arid climate

is conjunctive use wherein water is stored underground during wet periods and pumped out during dry and drought periods. Conjunctive use has been identified in the IRP as a necessary component of regional planning. TMWD and Metropolitan implement and support programs to support the goals of the IRP and the WSDM Plan and to make every effort to avoid allocation of water supplies in times of shortage.

7.3 ESTIMATE OF MINIMUM SUPPLY FOR NEXT THREE YEARS

Metropolitan modeling, as discussed above, results in 100 percent reliability for full-service demands through the year 2030. The Metropolitan 2005 Regional UWMP demonstrates Metropolitan's demand/supply balance in multiple dry years, single dry year, and average year in Tables 4.2-5 through 4.2-11 in Section 4.2. TMWD anticipates the ability to meet water demand through the next three years based on the driest historic three-years as shown in Table 7.3-1.

Under the worst-case supply scenario, Metropolitan would curtail deliveries of potable water to TMWD by about 30 percent for three years consecutively, according to Stage VI of the mandatory rationing schedule found in the Metropolitan modified 1995 Incremental Interruption and Conservation Program. This level of curtailment would be quite significant for TMWD and would mean significant shortages. These shortages would then be managed through TMWD's Emergency Water Conservation Program.

Table 7.3-1 shows the minimum supplies under this scenario, assuming that a major drought emergency occurs in the current year, 2005.

Table 7.3-1
3-Year Minimum Supply Under Worst-Case Supply Projections
(AFY)

Source	2006 Base Year	2006 Dry Year	2007 Dry Year	2008 Dry Year
Imported Water	27,190	26,700	26,700	26,700
Groundwater	1,600	1,600	1,600	1,600
Desalter	2,400	2,400	2,400	2,400
Recycled Water	7,060	7,060	7,060	7,060
Total	**38,250**	**37,760**	**37,760**	**37,760**

Note: Groundwater supply capacity is limited by historical production capacity of Well #6; recycled water supply is not weather dependent since 97% of the demand is from one industrial refinery (Exxon-Mobil); imported projections extracted from Table 4.2-7.

7.4 CATASTROPHIC SUPPLY INTERRUPTION PLAN

Water Shortage Emergency Response

A water shortage emergency could be a catastrophic event such as result of drought, failures of transmission facilities, a regional power outage, earthquake, flooding, supply contamination from chemical spills, or other adverse conditions.

The City's Emergency Response Plan includes a Water Distribution Sample Action Plan to be followed in the case of a water shortage emergency. The initial effort includes a safety/damage assessment, where the extent of damage to each department will be determined. Primary consideration at the department level will be given to what is the status of its personnel and the facilities that it needs for its operations. This includes any facility critical to the department's operations whether or not it is a City facility. Each department will then identify which facilities will be available and which faculties need to be inspected by a building inspector. The Department Safety/Damage Assessment team will do a walk through or may drive to assigned areas. The information gathered will be provided to the Planning Section of the Department Operation Center and then the City Emergency Operations Center (EOC) Planning Section. The water facilities classified as Critical Facilities in the Emergency Operations Plan will be initially inspected by TMWD and other personnel as needed.

During a disaster, the City will also work cooperatively with Metropolitan through their Member Agency Response System (MARS) to facilitate the flow of information and requests for mutual-aid within Metropolitan's 5,100-square mile service area. Metropolitan's Palos Verdes reservoir and the three imported transmission mains are in close proximity to the City of Torrance, and, therefore, the possibility of Metropolitan being entirely unable to deliver water to the City is unlikely. The City's Water Master Plan contains analysis showing that the City's T-8 connection provides sufficient excess capacity to offset the shutdown of one of the three Metropolitan pipelines serving the City. By adjusting the inflow from the connections still in service, the loss of one pipeline could adequately be offset. However, should the Palos Verdes Feeder be out of service connections T-1 and T-8 can be adjusted to compensate. In the event of groundwater supply loss, all supply could be imported from Metropolitan, and it is confirmed that the necessary capacity is available to do so.

Additional emergency services in the State of California include the Master Mutual Aid Agreement, California Water Agencies Response Network (WARN) and Plan Bulldozer. The Master Mutual Aid Agreement includes all public agencies that have signed the agreement and is planned out of the California Office of Emergency Services. WARN includes all public agencies that have signed the agreement to WARN and provides mutual aid assistance. It is managed by a State Steering Committee. Plan Bulldozer provides mutual aid for construction equipment to any public agency for the initial time of disaster when danger to life and property exists.

7.5 PROHIBITIONS, PENALTIES, AND CONSUMPTION REDUCTION METHODS

Stage 1 of the Water Shortage Actions includes five Phases for consumption reduction, which are identified in Ordinance No. 3320. For complete detail, refer to a copy of the Ordinance in Appendix G. Phase I of the City's Water Conservation Program Ordinance includes implementation of voluntary actions by customers when the City experiences up to a five percent water loss. In any event, City Council can implement Phase II which is mandatory by all customers when up to five percent water loss occurs.

When a ten percent water loss occurs, City Council will declare Phase III. During this phase, watering of lawns, landscaping, and other turf areas of commercial and water dependent industries will be prohibited unless done with recycled water during the specified times of 10:00 a.m. and 4:00 p.m.

Phase IV will be implemented when the City experiences a water loss of 15 percent. Water restrictions from Phase three will be incorporated into this phase. In addition, watering of lawns, landscaping, and other turf areas of commercial and water dependent industries will be prohibited unless done with recycled water during the specified times of 10:00 a.m. and 6:00 p.m.

The final phase, Phase V, is also mandatory of customers. Phase four will be incorporated with this phase. In addition, watering of lawns, landscaping, and other turf areas of commercial and water dependent industries will be prohibited unless done with recycled water during the specified times of 8:00 a.m. and 6:00 p.m.

Penalties for Unreasonable Use and/or Wastage

As shown in Ordinance 3320, failure to comply with the specified conservation requirements will result in the following penalties:

For each billing period that any water user fails to meet the percentage of reduction, a surcharge of one dollar will be added for each billing unit the user fails to meet the water use reduction percentage.

- First Violation: The City will deliver a written notice of violation via mail.
- Second Violation: The City will deliver a written notice of violation in person.
- Third Violation: The City shall add a penalty to the next billing period water bill in the sum of $50.
- Fourth and Subsequent Violation: The City shall add a penalty to the next billing period water bill in the sum of $150. In addition, the City shall install a flow restriction reducing water flow to one gallon per minute for water services for not less than 48 hours.

7.6 ANALYSIS OF REVENUE IMPACTS OF REDUCED SALES DURING SHORTAGES

As water consumption decreases, the revenue generated through water sales also decreases. To continue operation, the City must generate sufficient revenue when faced with decreasing water sales revenue. As a result, rate increases may be imposed. Table 7.6-1 shows revenue calculations from 2004/05 as a base year, and demonstrates that based on total revenue, the sales levels and projected fiscal impact of continued reduced sales during a water shortage are demonstrated as percent of revenue.

Table 7.6-1
Financial Projections at Various Levels of Demand Reductions

	Base Year	Percent Demand Reductions			
	2004/05	10%	20%	30%	50%
Sales, AF	29,635	26,672	23,708	20,745	14,818
Revenue	**$22,148,241**	**$19.933,417**	**$17,718,593**	**$15,503,769**	**$11,074,121**
Operating Expense					
Water Cost	12,625,396	12,625,396	12,625,396	12,625,396	12,625,396
All Other Expenses	7,580,343	6,609,320	6,609,320	6,609,320	6,609,320
Total Operating Expenses	**$20,205,739**	**$19,234,716**	**$19,234,716**	**$19,234,716**	**$19,234,716**
Net Cash Provided by Operating Activities	**$1,942,502**	**$698,701**	**$-1,516,123**	**$-3,730,947**	**$-8,160,596**
Capital & Unrestricted Cash	13,376,485	13,376,485	13,376,485	13,376,485	13,376,485
Depreciation	971,023	971,023	971,023	971,023	971,023
Capital Projects	-1,720,000	-1,720,000	-1,720,000	-1,720,000	-1,720,000
Debt Service Principal	-635,000	-635,000	-635,000	-635,000	-635,000
Capital Projects Appropriation	-289,873	-289,873	-289,873	-289,873	-289,873
Cash Available for Operations, Maintenance & Capital Projects	**$13,645,137**	**$12,401,336**	**$10,186,512**	**$7,971,688**	**$3,542,040**
% of Revenue Available for Operations, Maintenance & Capital Projects	**62%**	**62%**	**57%**	**51%**	**32%**

Measures to overcome impacts of reduced water supply and consequential revenue shortfall will include the following:

1. Reduce the current fiscal year operation and maintenance expenses.
2. Reduce future projected operation and maintenance expenses.
3. Prioritize and defer selected capital construction projects.
4. Increase the fixed readiness-to-serve charge to establish a substantial firm revenue base.
5. Increase commodity charge and water adjustment rate to cover revenue requirements.

A combination of the measures outlined above may be used to offset or diminish the effects of lost revenues. Capital construction projects may be deferred, as appropriate. The base water rate could be increased to cover the general operation, maintenance, system upgrades, and capital expenditures. An increase in the base rate would be temporarily employed and then return to pre-shortage rates when conditions improve.

7.7 WATER SHORTAGE CONTINGENCY ORDINANCE AND STAGE OF ACTION RESOLUTION

In February 1991, the City Council adopted Ordinance No. 3320, which implemented a new Article 4 to Chapter 6 of Division 7 of the Torrance Municipal Code. The Ordinance addresses water conservation, establishes a water conservation program, and the stages for declaring emergency conditions. The Ordinance establishes a phased approach to water conservation and enforcement, and consists of five conservation phases in increasing order of severity. Ordinance No. 3320 is included in Appendix G.

Additionally, during an extended water shortage, the City Council will adopt by resolution the water shortage implementation stage. A Draft Resolution to implement the Water Conservation Program Stage of Action is included in Appendix H.

7.8 MECHANISMS TO DETERMINE ACTUAL REDUCTIONS IN WATER USE

The City will use multiple measures to determine the actual water consumption reductions, as follows:

- Normalized/averaged water use baseline
- More frequent review of production
- More frequent meter reading at customer location
- More frequent leak detection and repair.
- More frequent meter checking and repair
- System water audit
- Automated sensors and telemetry

- Monitor utility actions
- Penalties for customers
- Possible leak detection at customer's premises through Automated Meter Reading system

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SECTION 8
WATER RECYCLING

8.1 RECYCLED WATER IN SOUTHERN CALIFORNIA

The Southern California region, from Ventura to San Diego, discharges over 1 billion gallons of treated wastewater to the ocean each day. This is considered a reliable and drought-proof water source and could greatly reduce the region's reliance on imported water. As technological improvements continue to reduce treatment costs, and as public perception and acceptance continue to improve, numerous reuse opportunities should develop. Recycled water is a critical part of the California water picture because of the area's high likelihood of drought. As treatment technology continues to improve, demand for recycled water will also increase.

8.2 COORDINATION OF RECYCLED WATER IN CITY OF TORRANCE SERVICE AREA

Recycled water is defined as domestic wastewater purified through primary, secondary and tertiary treatment. Recycled water is acceptable for most non-potable water purposes such as irrigation and commercial/industrial processes. As part of its overall water resources planning, the City decided to investigate the feasibility and cost-effectiveness of incorporating recycled water into its water supplies. The City authorized the preparation of a Recycled Water Master Plan in 1992. An update of that plan is being prepared and will be complete in 2005. The Recycled Water Master Plan update identifies and priorities public and private sites for possible connection to the recycled water system. The update will include areas outside the TMWD service area but inside the City limits.

The West Basin 2000 Water Recycling Master Plan is currently being updated for 2005. The West Basin Water Recycling Master Plan update was prepared in conjunction with various water purveyors and cities within WBMWD's service area, LACSD, and WRD.[62] TMWD worked closely with WBMWD during its Recycled Water Master Plan update as well with DHS, Torrance Unified School District, and the City's Park and Recreation and Streetscape Maintenance Divisions.

TMWD has been able to use recycled water due to the implementation of the West Basin Water Reuse Program, an aggressive effort by the West Basin MWD to provide up to 70,000 AFY of recycled water originating at the City of Los Angeles' Hyperion Wastewater Treatment Plant to users throughout the area. The first phase of the West Basin program has been completed. TMWD began purchasing recycled water from WBMWD in 1996 and has increased use each year until a maximum of nearly 7,000 AFY was used in 1999. TMWD also recognizes the regional benefits of projects being

[62] West Basin Municipal Water District, 2005 UWMP. June 2005 Draft

implemented by the WRD and WBMWD to use recycled water to protect the Basin through groundwater recharge and seawater intrusion barrier projects.

8.3 WASTEWATER COLLECTION AND TREATMENT IN THE CITY OF TORRANCE SERVICE AREA

The City's wastewater collection system consists of approximately 340 miles of pipeline ranging from 6 inches to 27 inches in diameter. Wastewater generated within the City is conveyed to the Joint Water Pollution Control Plant (JWPCP) in Carson, via LACSD interceptor sewers. The maximum design flow of the JWPCP is 385 MGD and the maximum design peak flow is 540 MGD. Treated wastewater from the JWPCP is disposed into an outfall in the Pacific Ocean located 2 miles offshore from White Point on the Palos Verdes Peninsula. The depth of the discharge point is approximately 200 feet below sea level.[63] The JWPCP has an advanced primary treatment with 60 percent secondary treatment.

Municipal wastewater is generated in TMWD's service area from a combination of residential, commercial, and industrial sources. The quantities of wastewater generated are generally proportional to the population and the water used in the service area. It is estimated that TMWD customers generate wastewater based on 80 percent of water demand. As shown in Table 8.3-1 the wastewater generated within TMWD is estimated through 2030. Because the wastewater treated at the JWPCP is discharged to the ocean, none of the wastewater generated within TMWD is treated to recycled water standards.

Table 8.3-1
City of Torrance
Historic and Projected Wastewater Collection
(AFY)

	2000	2005	2010	2015	2020	2025	2030
Potable Water Demand	23,025	23,026	23,820	23,990	24,160	24,330	24,510
Collected Wastewater	18,420	18,420	19,050	19,180	19,330	19,460	19,610

Note: Wastewater collected is assumed to equal 80% of the potable water demand.

Recycled water supply comes from the West Basin Water Recycling Plant (WBWRP) located in El Segundo via a 36-inch pipeline. The WBWRP provides additional treatment to secondary-treated wastewater from the City of Los Angeles' Hyperion Wastewater Treatment Plant. The secondary-treated wastewater receives further treatment to meet Title 22 requirements. WBMWD produces five different qualities of recycled water including: 1) Disinfected Tertiary Water, 2) Nitrified Water, 3) Softened Reverse Osmosis Water, 4) Pure Reverse Osmosis, and 5) Ultra-Pure Reverse Osmosis Water.

[63] LACSD website: http://www.lacsd.org/waswater/wrp/jwpcp1.htm

WBMWD distributes recycled water to customer sites in its service area, the City of Torrance, and the City of Los Angeles. WBMWD recycles approximately 24 mgd, or roughly 7.7 percent of the effluent from Hyperion. The remaining secondary treated wastewater is discharged to the ocean.

8.4 CITY OF TORRANCE RECYCLED WATER PLANNING

Since 1996, TMWD has been purchasing recycled water from WBMWD at a number of connections and serving it for non-portable purposes, mainly industrial and irrigation. In 1995, WBMWD opened a state-of-the-art water recycling facility in El Segundo, one of the largest recycling plants of its kind in the nation.[64] All recycled water is produced at the El Segundo plant and distributed to either end-use sites or one of several satellite facilities where further treatment prepares the recycled water for large industrial customers such as Chevron, ExxonMobile, and BP Amco.

ExxonMobil Oil Refinery in the City is the largest recycled water user in the WBMWD recycled water service area. The refinery uses approximately 97 percent of all the recycled water used within the City. In March 2003, Toyota Motor Sales, USA, Inc. began using recycled water at its new "South Campus" facility located in the City. Other recycled water sites located in the City include McMaster, Descanso, Guenser, and Colombia Parks and Casimir, Arlington, and Magruder Schools. Table 8.4-1 shows the current recycled water users in the City and their average recycled water demand.

Table 8.4-1
TMWD Current Recycled Water Users

Current	Irrigation Demand (AFY)	Industrial Demand (AFY)	Annual Demand (AFY)
Arlington Elementary	7	-	7
Casimir Middle School	3	-	3
Columbia Park	24	-	24
Descanso Park	7	-	7
ExxonMobil	-	6,750	6,750
Guesner Park	23	-	23
MacGruder School	12	-	12
McMaster Park	12	-	12
Sunny Glen Park	13	-	13
Toyota Motors-Gramercy	12	23	35

[64] WBMWD 2005 UWMP

8.4.1 Current and Projected Recycled Water Use

A preliminary assessment of potential recycled water uses within TMWD service area was conducted in 1993 which identified the relative size and location of the recycled water market in the service area. The assessment was updated to include the entire City in 2005. The WBMWD 2000 Master Plan was used to identify new private customers in the City. The users recommended for connection to the recycled water distribution system are included in Table 8.4.1-1. Some of these users will be connected when the Madrona Lateral/Palos Verdes Extension is complete. Table 8.4.1-2 summarizes the current average annual recycled water demand for the City including the projected user demands.

Table 8.4.1-1
TMWD Projected Recycled Water Users

Projected Users	Irrigation Demand (AFY)	Industrial Demand (AFY)	Annual Demand (AFY)
America Honda	30	23	53
El Retiro Park	5	-	5
Ishibashi (Madison)	12	-	12
Sequoia Real Estate Fund A & B	68	-	68
West Torrance High	30	-	30
Torrance Park	14	-	14
Wilson Park	32	-	32
Little League Fields	18	-	18
Greenwood Park	13	-	13
Torrance Elementary/Sherry	15	-	15
Torrance High	17	-	17
Lincoln Elementary	6	-	6
Madrona Middle	7	-	7
Fern Elementary	2	-	2
Seaside Elementary	6	-	6
Hickory Elementary	4	-	4
New Horizons Golf Course	15	-	15
Dow Chemical	1	12	13
CSDLAC	0	150	150
Kobata Nurseries	12	-	12
Sunflower Nursery	5	-	5
Sequoia Real Estate Fund A (Greenwood)	15	-	15
Sequoia Real Estate Fund A (Hickory)	15	-	15
Caltrans 405/Artesia	8	-	8
Total	**350**	**185**	**535**

Table 8.4.1-2
Current and Projected Future Recycled Water Use by Type

Recycled Water Use Type	Consumption, AFY					
	2005	2010	2015	2020	2025	2030
Industrial	6,765	6,765	6,765	6,765	6,765	6,765
Landscape Irrigation	280	335	485	485	485	485
Total	**7,045**	**7,100**	**7,250**	**7,250**	**7,250**	**7,250**

Source: Table 5.1-2

8.4.2 2000 Projection Compared to 2005 Actual Use

The City's 2000 UWMP projected a recycled water demand of 7,210 AF in 2005. The industrial component of the demand was 6,310 AF and the landscape irrigation demand was 900 AF. The actual recycled water demand in 2005 was slightly lower than the projected demand. The individual projection for landscape irrigation was not met because of delays in connecting a number of the irrigation users to the recycled water distribution system and the fact that some of the landscape accounts originally projected to connect to recycled water supplies were not connected due to prohibitive costs to extend the recycled water line. The industrial demands, however, increased above the projected amount. Possibly most notable is that 2005 was the second wettest year in history and therefore limited the use of recycled water for irrigation purposes.

8.4.3 Potential Users of Recycled Water

Potential recycled water use within the City has been studied extensively over the past few years. Table 8.4.3-1 summarizes potential users of recycled water within the City and their projected demands. The potential users have not been recommended for connection at this time, however, may be in the future. The potential uses are not included in Table 8.4.1-2.

Table 8.4.3-1
Potential Recycled Water Users

User	Demand (AFY)	User	Demand (AFY)
Adam Elementary	10	Lago Seco Park	13
Alta Loma Park	11	Levy Center	9
Anza Elementary	5	Los Arboles Park	7
Arnold Elementary	3	Lynn Middle	7
Bishop Montgomery High	12	Madrona Marsh	2
Calle Mayor Middle	4	North Torrance High	20
Caltrans @ Van Ness	1	Paradise Park	12
Caltrans @ Crenshaw	6	Richardson Middle School	3
Caltrans @ Yukon	1	Riveria Elementary	5
Carr Elementary	5	Sea-Aire Golf	15
Delthorn Park	12	South Bay Junior Academy	6
De Portola Park	28	South Torrance High	26
Edison Elementary	4	St Catherin School	5
El Nido Park	17	Sur La Brea Park	15
Entradero Park	25	Towers Elementary	13
Hamilton Adult	7	Victor Elementary	22
Hickory Park	11	Victor Park	15
Hull Middle	4	Walteria Elementary	5
Jefferson Middle	7	Walteria Park	6
La Carreter Park	4	Wood Elementary	5
La Romeria Park	13	Yukon Elementary	5
Subtotal	**190**	**Subtotal**	**216**
		Total	**406**

As mentioned previously, WBMWD is pursuing a number of recycled water use projects. The West Basin 2000 Water Recycling Master Plan identified and prioritized areas where the recycled water program could expand. The WBMWD projected an increase in recycled water production to 55,500 AFY by 2030 through the WBWRP in El Segundo. Since the 1993 Master Plan, WBMWD has revised their transmission main alignments and in 2000 prepared a Recycled Water Master Plan that identified an additional 1,400 AFY of recycled water demand within the City.

Currently WBMWD, in conjunction with the U.S Army Corps of Engineers, is constructing the Harbor/South Bay Water Recycling Project. This federally funded project is scheduled for completion in 2010 and is expected to conserve more than 490 MG of portable water annually. The first two laterals of the overall project were constructed in 2003 and included the Victoria Lateral and the California State University at Irvine Dominguez Hills Main Line Extension. Ongoing activities of the Harbor/South Bay Project in 2005 include the design and construction of the Madrona Lateral/Palos Verdes Extension, and the Lateral V. The customers served by the Madrona/Palos Verdes extension will include parks and schools in the City of Torrance, along with several golf

courses, parks, schools and a cemetery in the Palos Verdes Peninsula area.[65] Recycled water is scheduled to be available off of the Madrona Lateral in 2006 and off the Palos Verdes Lateral in 2007. Due to water quality concerns of stagnant water, some of the smaller users along the Madrona Lateral/Palos Verdes Extension pipeline may have to wait until service begins for the golf course and cemetery, the two larger users.

As mentioned previously, WBMWD plans on expanding the Basin's recycling facility in El Segundo to accommodate for the additional recycled water used in the Harbor/South Bay Project. The expansion project is known as the WBWRP Phase IV Expansion. The WBWRP Phase IV Expansion will add 5 MGD of barrier water treatment capacity by the end of 2005 and 10 MGD of Title 22 treatment capacity in 2006 to supply the Harbor/Bay System expansion.

8.4.4 Encouraging Recycled Water Use

The City has prepared and adopted a reclaimed water ordinance, Ordinance No. 3392 (Appendix I) that provides a commitment from the City to encourage recycled water use. As a result, the City has adopted a recycled rate structure and incentive program provided in Appendix J. This program contains the following incentives:

- Sets recycled water rate structure at 70 percent of the portable water rate.
- Pays for retrofit costs as follows:
  - » City Departments – The Public Works Department shall construct and pay all costs of on-site irrigation system retrofits.
  - » Torrance Unified School District – The Public Works Department shall construct and pay up front costs for on-site irrigation system retrofits. Half of the on-site retrofit costs would be reimbursed to the Water Fund via an Agreement in which the Torrance Unified School District would continue to pay 100 percent of potable water rates for the recycled water until their half of the retrofit construction costs is recovered.
  - » Private Customers – Customer constructs and pays for all costs for retrofit or irrigation or industrial system.

WBMWD's marketing efforts have been successful in changing the perception of recycled water from merely a conservation tool with minimal application to a cost-effective business tool. The target customer is expanding from traditional irrigation users such as golf courses to unconventional commercial and industrial users.

WBMWD encourages the use of recycled water by increasing marketing efforts as well as providing financial incentives. Financial incentives include wholesaling recycled water at a rate lower than potable water and funding plumbing retrofits to accept recycled water. WBMWD has projected the increase in recycled water demands due to these actions.

[65] West Basin Municipal Water District, 2005 UWMP. June 2005 Draft

WBMWD provides other financial incentives as well that can assist potential customers not covered by the City's incentive program. Some potential recycled water users do not have the financial capability to pay for on-site plumbing retrofits necessary to accept recycled water. WBMWD advances funds for retrofit expenses and are subsequently reimbursed through monthly payments. The on-site facilities fees are amortized over a period of time up to ten years at WBMWD's cost of funds. Repayment is made using the differential between potable and recycled water rates such that the customer never pays more than the potable rate. Once the loan is repaid, the rate reverts to the current recycled rates.

WBMWD has projected the amount of additional recycled water to be used because of methods to encourage recycled water use within the region. The increase is for the region and included in Table 8.4.4-1.

Table 8.4.4-1
WBMWD Service Area
Methods to Encourage Recycled Water Use
(AFY)

Action	2010	2015	2020	2025	2030
Financial Incentives	6,750	4,500	2,250	2,250	4,500
Marketing Efforts	750	500	250	250	450
Total	**7,500**	**5,000**	**2,500**	**2,500**	**5,000**

Source: West Basin Municipal Water District, 2005 UWMP

8.4.5 Optimizing Recycled Water Use

The City's optimization plan is also covered by Ordinance 3392. The use of recycled water will be required if the following conditions exist:

a) Recycled water is available to the user and meets the requirements of the DHS.
b) The user of the recycled water will not cause any loss or diminution of any existing water right.
c) The irrigation system, recycled water distribution system, cross-connection control and monitoring methods can be designed to meet the standards required by the State of California.
d) Appropriate control measures can be provided in accordance with the standards of the State of California where the use of recycled water will, or might, create a mist.
e) Recycled water service is both economically and technically feasible and cost competitive for prospective recycled water customers.

Another aspect of optimizing recycled water use is continual search for funding opportunities. Regarding funding options, the primary opportunities include low interest loans obtained through the State Revolving Fund, and participation by Metropolitan

through its LRP which provide up to $250 AFY rebate for recycled water used to offset imported water.

The City partners with WBMWD for the use of recycled water. WBMWD will construct recycled water mains to any site that will provide a revenue to cost ratio of one or greater. The use of recycled water by Exxon/Mobile and the Toyota Motors south campus came about from the cooperative efforts of WBMWD, the City and those private entities. The construction of recycled water mains made it possible for TMWD to retrofit Magruder Middle School and Columbia Park with only the on-site retrofit costs paid by the City. WBMWD is now extending their main from Exxon/Mobil to the Madrona Marsh as the next phase in the Master Plan to bring recycled water to golf courses and a cemetery on the Palos Verdes Peninsula. As part of this phase, WBMWD will be constructing recycled water laterals to Lincoln Elementary School (anticipated in 2006), Madrona Middle School and Wilson Park. The only costs to the City will be for the on-site retrofits.

When the revenue to expense ratio has been less than one, the City has partnered with WBMWD to contribute funds to the construction of recycled water mains. This was the case for the Artesia Boulevard Recycled Water Main Project that connected Artesia Boulevard medians, McMaster Park, Descanso Park, Guenser Park, Casimer Middle School and Arlington Elementary School.

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SECTION 9
SUMMARY AND CONCLUSION

9.1 SUMMARY OF URBAN WATER MANAGEMENT PLAN

The California Urban Water Management Planning Act of 1983, requires urban water suppliers to develop an UWMP every five years in the years ending in zero and five.

The City of Torrance UWMP provides a level of planning to ensure the appropriate level of reliability in water service sufficient to meet the water needs of TMWD's customers during normal, single dry, or multiple dry years. The UWMP focuses on specific issues unique to the TMWD water service area. While some regional UWMP issues are introduced in this plan, comprehensive regional information is presented in Metropolitan's Regional UWMP, as well as WBMWD's Regional UWMP.

The City's 2005 UWMP has been prepared in compliance with the requirements of the Act, as amended to 2005, and includes the following discussions:

- Water Service Area
- Water System Facilities
- Water Sources and Supplies
- Water Quality Information
- Water Reliability Planning
- Water Use Provisions
- Water Demand Management Measures
- Water Shortage Contingency Plan
- Water Recycling

TMWD water supplies include imported potable water from Metropolitan, groundwater, including desalted groundwater, from the West Coast Groundwater Basin managed by WRD, and recycled water from the West Basin Water Recycling Plant. Supplies of more than 30,000 AFY currently average 68 percent imported, 11 percent groundwater, and 21 percent recycled water to meet the water demands of more than 100,000 people.

Protection of the quality of water supplies is a top priority. The quality of TMWD's water supplies meets or exceeds state and federal standards. Monitoring, testing and treatment for required contaminants, pesticides and herbicides, as well as elements that are not yet regulated but have captured scientific and/or public interest, such as perchlorate, MTBE, and chromium VI, is a continual and high priority.

Reliability is a measure of a water service's system expected success in managing water shortages. The combination of demand management and supply augmentation options help to reduce the frequency and severity of shortages. TMWD and the regional water agencies have implemented a variety of programs to ensure reliability through diversity in supply. Such programs include water storage and transfers programs; enhanced

conservation programs; development of additional local supplies, including recycled water, desalted water, groundwater cleanup and conjunctive use, and seawater barrier improvements; establishment of a preferred resource mix in the IRP; executing the Colorado River QSA, continuing SWP modeling, and implementing LARWQCB's Basin Plan to optimize the beneficial uses of ground and surface waters.

TMWD is developing its wells so that it can optimize the use of groundwater up to its water rights. This would increase groundwater, including desalted water, from 11 percent to approximately 22 percent of TMWD's water supplies.

Recycled water is also substantially used throughout the region and TMWD's service area for non-potable water uses such as irrigation and commercial and industrial processes. TMWD currently serves more than 7,000 AFY of recycled water and plans to more than double users in the future. A large portion of the recycled water is treated further to serve several large oil refineries in the region. Exxon Mobile Oil Refinery is the largest recycled water user in the WBMWD service area and is located in the City. The refinery uses 97 percent of all the recycled water in the City. As part of its resource planning, the City prepared a Recycled Water Master Plan, which is currently being updated. The Recycled Water Master Plan Update identifies additional public and private sites to potentially connect to the City's recycled water system, also included in this Plan.

TMWD recognizes water use efficiency as an integral component of current and future water strategy for its service area due to growing competition for limited supplies, and increasing costs and difficulties in developing new supplies, among other factors. TMWD actively implements the 14 DMMs through policies, programs, rules, regulations and ordinances, and the use of devices, equipment and facilities that provide a significant reduction in water demand.

Finally, TMWD has implemented an Emergency Water Conservation Program to reduce water demands during water shortage emergencies. The Water Conservation Program is formalized through Ordinance No. 3320 establishing four stages of action, and is designed to provide a minimum 50 percent of normal supply during a severe or extended water shortage. TMWD will also respond to Metropolitan's WSDM plan, which guides the management of regional water supplies in both surplus and shortage conditions.

9.2 CONCLUSION

The City's UWMP demonstrates planning efforts in coordination with Metropolitan and other regional agencies that ensure reliability of a sufficient supply of water to meet the needs of TMWD's customers during normal, dry, or multiple dry years. The Water Reliability Analysis included in Section 4 shows that TMWD will maintain a surplus of water supply above demands in normal years ranging from 13 percent and 22 percent through 2030. For a single dry year, a surplus of water supply ranging from 6 percent and 16 percent; and for multiple dry years, a surplus of water supply ranging from 8 percent to 24 percent. The results indicated that TMWD can expect to meet all of its water demands over the next 25 years for average, single and multiple dry years.

APPENDIX A

CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT OF 1983 AS AMENDED TO 2005

Established: AB 797, Klehs, 1983
Amended: AB 2661, Klehs, 1990
AB 11X, Filante, 1991
AB 1869, Speier, 1991
AB 892, Frazee, 1993
SB 1017, McCorquodale, 1994
AB 2853, Cortese, 1994
AB 1845, Cortese, 1995
SB 1011, Polanco, 1995
AB 2552, Bates, 2000
SB 553, Kelley, 2000
SB 610, Costa, 2001
AB 901, Daucher, 2001
SB 672, Machado, 2001
SB 1348, Brulte, 2002
SB 1384, Costa, 2002
SB 1518, Torlakson, 2002
AB 105, Wiggins, 2004
SB 318, Alpert, 2004

CALIFORNIA WATER CODE DIVISION 6 PART 2.6. URBAN WATER MANAGEMENT PLANNING

CHAPTER 1. GENERAL DECLARATION AND POLICY

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require

specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.
(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.
(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.
(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.
(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.
(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

CHAPTER 2. DEFINITIONS

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The

components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS
Article 1. General Provisions

10620.

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d)

(1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621.

(a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part

2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(1) An average water year.

(2) A single dry water year.

(3) Multiple dry water years.

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e)

(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.
(B) Multifamily.
(C) Commercial.
(D) Industrial.
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.
(B) Residential plumbing retrofit.
(C) System water audits, leak detection, and repair.
(D) Metering with commodity rates for all new connections and retrofit of existing connections.
(E) Large landscape conservation programs and incentives.
(F) High-efficiency washing machine rebate programs.
(G) Public information programs.
(H) School education programs.
(I) Conservation programs for commercial, industrial, and institutional accounts.
(J) Wholesale agency programs.
(K) Conservation pricing.
(L) Water conservation coordinator.
(M) Water waste prohibition.
(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being

implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

(j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the ‘‘Memorandum of Understanding Regarding Urban Water Conservation in California,’’ dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

(k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year

increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c), including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

10631.5. The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities.

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(f) Penalties or charges for excessive use, where applicable.

(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
(h) A draft water shortage contingency resolution or ordinance.
(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.
(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.
(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.
(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.
(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Article 2.5 Water Service Reliability

10635.

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

Article 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time

and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644.

(a) An urban water supplier shall file with the department and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be filed with the department and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the outstanding elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has filed its plan with the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

CHAPTER 4. MISCELLANEOUS PROVISIONS

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if

the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

10657.

(a) The department shall take into consideration whether the urban water supplier has submitted an updated urban water management plan that is consistent with Section 10631, as amended by the act that adds this section, in determining whether the urban water supplier is eligible for funds made available pursuant to any program administered by the department.

(b) This section shall remain in effect only until January 1, 2006, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2006, deletes or extends that date.

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APPENDIX B

2005 URBAN WATER MANAGEMENT PLAN
"REVIEW FOR COMPLETENESS" FORM

2005 Urban Water Management Plan "Review for Completeness" Form

For DWR Review Staff Use

Coordination with Appropriate Agencies **(Water Code § 10620 (d)(1)(2))**

Yes

[X] Participated in area, regional, watershed or basin wide plan — Sec 1, p.1-2 Reference & Page Number

Name of plan 2005 UWMP Lead Agency City of Torrance — Sec 1, p.1-2 Reference & Page Number

[X] Describe the coordination of the plan preparation and anticipated benefits. — Sec 1, p.1-3 Reference & Page Number

Table 1
Coordination with Appropriate Agencies

Check at least one box on each row	Participated in developing the plan		Was contacted for assistance	Was Sent Copy of the Draft	Commented on the Draft	Attended a Public Meeting	Was Sent a Notice of Intention to Adopt	Sent Copy of Adopted Plan
Torrance Municipal Water Dept	X		X	X	X	X	X	X
Torrance Water Commission				X	X	X	X	
Torrance City Clerk				X				X
Community Development Department			X	X	X	X	X	
Torrance Public Library								X
MWD of Southern California			X				X	
Water Replenishment District of Southern California			X				X	
West Basin Municipal Water District			X				X	
Los Angeles County Sanitation District			X				X	
Los Angeles County							X	

Describe resource maximization / import minimization plan **(Water Code §10620 (f))**

[X] Describe how water management tools / options maximize resources & minimize need to import water — Sec 2, p.2-3 Reference & Page Number

Plan Updated in Years Ending in Five and Zero **(Water Code § 10621(a))**

[X] Date updated and adopted plan received _____ (enter date) — Sec 1, p.1-2 Reference & Page Number

City and County Notification and Participation **(Water Code § 10621(b))**

[X] Notify any city or county within service area of UWMP of plan review & revision — Sec 1, p.1-2 Reference & Page Number

[X] Consult and obtain comments from cities and counties within service area — Sec 1, p.1-2 Reference & Page Number

Service Area Information — **Water Code § 10631 (a))**

X	Include current and projected population	Sec 1, p.1-6	Reference & Page Number
X	Population projections were based on data from state, regional or local agency	Sec 1, p.1-6	Reference & Page Number

Table 2
Population - Current and Projected

	2000		2005	2010	2015	2020	2025	2030 - opt
Service Area	98,000		100,100	114,800	116,000	117,400	119,100	120,800
General Plan Update (City)	138,870		141,134	147,245	148,704	150,562	146,890	149,000

X	Describe climate characteristics that affect water management	Sec 1, p.1-4	Reference & Page Number
X	Describe other demographic factors affecting water management	Sec 1, p.1-6	Reference & Page Number

Table 3
Climate

	January		February	March	April	May	June
Standard Average ETo	1.86		2.24	3.41	4.80	5.58	6.30
Average Rainfall	3.1		2.9	2.2	0.9	0.1	0.0
Average Temperature	66.7		67.6	67.6	70.3	71.8	74.7

Table 3 (continued)
Climate

	July		August	September	October	November	December	Annual
Average ETo	6.51		6.20	4.80	3.72	2.40	1.86	**49.7**
Average Rainfall	0		0.1	0.2	0.3	1.3	2.2	**13.3**
Average Temperature	78.8		79.9	79.2	76.6	71.2	66.7	**72.6**

Water Sources — **(Water Code § 10631 (b))**

X	Identify existing and planned water supply sour	Sec 2, p.2-1	Reference & Page Number
X	Provide current water supply quantities	Sec 2, p.2-3	Reference & Page Number
X	Provide planned water supply quantities	Sec 2, p.2-3	Reference & Page Number

Table 4 Current and Planned Water Supplies - AFY							
Water Supply Sources	**% of 2005 Supply**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030 - opt**
Water purchased from:							
Metropolitan Water District of Southern California - Imported	65%	19,370	25,920	20,190	21,500	20,440	19,430
Groundwater - West Boast GW Basin	4%	1,114	1,600	5,640	5,640	5,640	5,640
West Basin Municipal Water District - Desalter	8%	2,542	2,400	2,400	2,400	2,400	2,400
West Basin Municipal Water District - Recycled	23%	7,044	7,100	7,250	7,250	7,250	7,250
Total	**100%**	**30,070**	**37,020**	**35,480**	**36,790**	**35,730**	**34,720**

If Groundwater identified as existing or planned source **(Water Code §10631 (b)(1-4))**

	Has management plan		Reference & Page Number
	Attached management plan (b)(1)		Reference & Page Number
X	Description of basin(s) (b)(2)	Sec 2, p.2-4	Reference & Page Number
X	Basin is adjudicated	Sec 2, p.2-4	Reference & Page Number
X	If adjudicated, attached order or decree (b)(2)	Sec 2, p.2-4 and Appendix F	Reference & Page Number
X	Quantified amount of legal pumping right (b)(2)	Sec 2, p.2-4	Reference & Page Number

Table 5 Groundwater Pumping Rights - AF Year	
Basin Name	**Pumping Right - AFY**
West Coast Groundwater Basin	5,640
Total	5,640

X	DWR identified, or projected to be, in overdraft (b)(2)	Sec 2, p.2-5	Reference & Page Number
X	Plan to eliminate overdraft (b)(2)	Sec 2, p.2-5	Reference & Page Number
X	Analysis of location, amount & sufficiency, last five years (b)(3)	Sec 2, p.2-7	Reference & Page Number
X	Analysis of location & amount projected, 20 years (b)(4)	Sec 2, p.2-7	Reference & Page Number

Table 6 Amount of Groundwater pumped - AFY						
Well No.	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
6 (Active)	1,969	1,793	1,831	867	1,660	1,114
7 (Inactive, Standby)	67	233	0	0	0	0
8 (Not Equipped)	0	0	0	0	0	0
Total	2036	2,026	1,831	867	1,660	1,114
% of Total Water Supply	7.1%					

Table 7 Amount of Groundwater projected to be pumped - AFY					
Well No.	**2010**	**2015**	**2020**	**2025**	**2030 - opt**
6 (Active)	1,600	0	0	0	0
7 (Inactive, Standby)	0	0	0	0	0
8 (Not Equipped)	0	0	0	0	0
North Torrance Wells	0	5,640	5,640	5,640	5,640
% of Total Water Supply	4.3%	15.9%	15.3%	15.8%	16.2%

Reliability of Supply

(Water Code §10631 (c) (1-3)

[X] Describes the reliability of the water supply and vulnerability to seasonal or climatic shortage

Sec 4,4-1,26 Reference & Page Number

Table 8 Supply Reliability - AF Year					
		Multiple Dry Water Years			
Average / Normal Water Year	**Single Dry Water Year (2010)**	**Year 1 (2007)**	**Year 2 (2008)**	**Year 3 (2009)**	**Year 4 (2010)**
	43,210	37,940	37,160	36,860	36,550
Normal Year Amount	37,020	37,940	37,640	37,330	37,020
% of Normal	116.7%	100.0%	98.7%	98.7%	98.7%

Table 9 Basis of Water Year Data				
Water Year Type	Year	Source name	Source name	
Average Water Year	2001	TMWD		Sec 4, p.4-16 Reference & Page Number
Single-Dry Water Year	2002	TMWD	WBMWD	Sec 4, p.4-16 Reference & Page Number
Multiple-Dry Water Years	2002-2004	TMWD	WBMWD	Sec 4, p.4-16 Reference & Page Number

Water Sources Not Available on a Consistent Basis — **(Water Code §10631 (c))**

X	Describe the reliability of the water supply due to seasonal or climatic shortages	Sec 4, p.4-26 Reference & Page Number
X	Describe the vulnerability of the water supply to seasonal or climatic shortages	Sec 4, p.4-26 Reference & Page Number
X	No unreliable sources	Sec 4, p.4-26 Reference & Page Number

Table 10
Factors resulting in inconsistency of supply

Name of supply	Legal	Environ-mental	Water Quality	Climatic

	Describe plans to supplement or replace inconsistent sources with alternative sources or DMMs	Reference & Page Number
X	No inconsistent sources	Sec 4, p.4-1 Reference & Page Number

Transfer or Exchange Opportunities — **(Water Code §10631 (d))**

X	Describe short term and long term exchange or transfer opportunities	Sec 4, p.4-36 Reference & Page Number
X	No transfer opportunities	Sec 4, p.4-36 Reference & Page Number

Table11
Transfer and Exchange Opportunities - AF Year

Transfer Agency	Transfer or Exchange	Short term	Proposed Quantities	Long term	Proposed Quantities
Total			0		0

Water Use Provisions — **(Water Code §10631 (e)(1)(2))**

X	Quantify past water use by sector	Sec 5, p.5-1 Reference & Page Number
X	Quantify current water use by sector	Sec 5, p.5-1 Reference & Page Number
X	Project future water use by sector	Sec 5, p.5-1 Reference & Page Number

TABLE 12 - Past, Current and Projected Water Deliveries						
	2000		2005		2010	
	metered		metered		metered	
Water Use Sectors	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY
Residential	22,677	11,424	22,900	11,806	23,200	12,450
Commecial	1,769	3,314	1,758	3,212	1,760	3,390
Industrial	317	3,150	282	3,689	280	3,890
Other	1,074	3,938	1,090	3,882	1,100	4,090
Industrial - Recycled	1	7,010	2	6,765	4	6,765
Landscape Irrigation - Recycled	6	30	18	280	34	335
Total	25,844	28,866	26,050	29,634	26,378	30,920

TABLE12 (continued) - Past, Current and Projected Water Deliveries								
	2015		2020		2025		2030 - opt	
	metered		metered		metered		metered	
Water Use Sectors	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY
Residential	23,500	12,540	23,800	12,630	24,100	12,715	24,400	12,810
Commecial	1,770	3,410	1,780	3,435	1,790	3,460	1,800	3,490
Industrial	280	3,920	280	3,945	280	3,975	280	4,000
Other	1,100	4,120	1,100	4,150	1,100	4,180	1,100	4,210
Industrial - Recycled	4	6,765	4	6,765	4	6,765	4	6,765
Landscape Irrigation - Recycled	34	485	40	485	40	485	40	485
Total	26,688	31,240	27,004	31,410	27,314	31,580	27,624	31,760

☐ Identify and quantify sales to other agencies — Reference & Page Number

☒ No sales to other agencies — Sec 5, p.5-1 — Reference & Page Number

Table 13 Sales to Other Agencies - AF Year							
Water Distributed		**2000**	**2005**	**2010**	**2015**	**2020**	**2025**
name of agency		0	0	0	0	0	0
name of agency							
name of agency							
Total		0	0	0	0	0	0

☐ Identify and quantify additional water uses _____ Reference & Page Number

Table 14 Additional Water Uses and Losses - AF Year							
Water Use		**2000**	**2005**	**2010**	**2015**	**2020**	**2025**
Total		0	0	0	0	0	0

Any recycled water was included in table 12 should not be included in table 14.

Table 15 Total Water Use - AF Year							
Water Use		**2000**	**2005**	**2010**	**2015**	**2020**	**2025**
Total of Tables 12, 13, 14		28,866	29,634	30,920	31,240	31,410	31,580

2005 Urban Water Management Plan "Review of DMMs for Completeness" Form **(Water Code §10631 (f)**

(Water Code §10631 (f) & (g), the 2005 Urban Water Management Plan "Review of DMMs for Completeness" Form is found on Sheet 2

Planned Water Supply Projects and Programs, including non-implemented DMMs **(Water Code §10631 (g))**

☒ No non-implemented / not scheduled DMMs — Sec 6, p.6-1 Reference & Page Number

☐ Cost-Benefit includes economic and non-economic factors (environmental, social, health, customer impact, and technological factors) — _____ Reference & Page Number

☐ Cost-Benefit analysis includes total benefits and total costs — _____ Reference & Page Number

☐ Identifies funding available for Projects with higher per-unit-cost than DMMs — _____ Reference & Page Number

☒ Identifies Suppliers' legal authority to implement DMMs, efforts to implement the measures and efforts to identify cost share partners — Sec 6, p.6-1 Reference & Page Number

Table 16 Evaluation of unit cost of water resulting from non-implemented / non-scheduled DMMs and planned water supply project and programs	
Non-implemented & Not Scheduled DMM / Planned Water Supply Projects (Name)	**Per-AF Cost ($)**

Planned Water Supply Projects and Programs **(Water Code §10631 (h))**

[ ]	No future water supply projects or programs	
[X]	Detailed description of expected future supply projects & programs	Sec 4, p.4-26+ Reference & Page Number
[X]	Timeline for each proposed project	Sec 4, p.4-26+ Reference & Page Number
[X]	Quantification of each projects normal yield (AFY)	Sec 4, p.4-26+ Reference & Page Number
[ ]	Quantification of each projects single dry-year yield (AFY)	Reference & Page Number
[ ]	Quantification of each projects multiple dry-year yield (AFY)	Reference & Page Number

Table 17
Future Water Supply Projects

Project Name	Projected Start Date		Projected Completion Date	Normal-year AF to agency	Single-dry year yield AF	Multiple-Dry-Year 1 AF	Multiple-Dry-Year 2 AF	Multiple-Dry-Year 3 AF
Rehabilitation of Well No. 6 and Storage Tank	2006		2007	2,000				
Walteria & Ben Haggott Reservoir Rehabilitation	Not yet scheduled			Improved water quality and circulation				
Wells No. 7 & 8 Groundwater Treatment	2015		2015	5,300				
North Torrance Wells	Not yet scheduled			5,640				
Desalter Project	Not yet scheduled			2,500				

Opportunities for development of desalinated water **(Water Code §10631 (i))**

[X]	Describes opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply	Sec 4, p.4-36 Reference & Page Number
[ ]	No opportunities for development of desalinated water	Reference & Page Number

Table 18
Opportunities for desalinated water

Sources of Water		Check if yes
Ocean Water (by Metropoitan and others)		X
Brackish ocean water		
Brackish groundwater		X

District is a CUWCC signatory **(Water Code § 10631 (j))**

Urban suppliers that are California Urban Water Conservation Council members may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

The supplier's CUWCC Best Management Practices Report should be attached to the UWMP.

X	Agency is a CUWCC member	Sec 6, p.6-1	Reference & Page Number
	2003-04 annual updates are attached to plan	Sec 6, p.6-1	Reference & Page Number
	Both annual updates are considered completed by CUWCC website	Sec 6, p.6-1	Reference & Page Number

If Supplier receives or projects receiving water from a wholesale supplier **(Water Code §10631 (k))**

Yes

X	Agency receives, or projects receiving, wholesale water	Sec 4, p.4-20	Reference & Page Number
X	Agency provided written demand projections to wholesaler, 20 years	Sec 4, p.4-20	Reference & Page Number

Table 19
Agency demand projections provided to wholesale suppliers - AFY

Wholesaler	2010	2015	2020	2025	2030 - opt
Metropolitan WD of So Calif	19,820	15,950	16,120	16,290	16,470

X Wholesaler provided written water availability projections, by source, to agency, 20 years — Sec 4, p.4-20 Reference & Page Number

(if agency served by more than one wholesaler, duplicate this table and provide the source availability for each wholesaler)

Table 20
Wholesaler identified & quantified the existing and planned sources of water- AFY

Wholesaler sources	2010	2015	2020	2025	2030 - opt
Metropolitan WD of So Calif	25,920	20,190	21,500	20,440	19,430

X Reliability of wholesale supply provided in writing by wholesale agency — Sec 4, p.4-13-16 Reference & Page Number

(if agency served by more than one wholesaler, duplicate this table and provide the source availability for each wholesaler)

Table 21
Wholesale Supply Reliability - % of normal AFY

	Multiple Dry Water Years				
Wholesaler sources	Single Dry (2010)	Year 1	Year 2	Year 3	Year 4
Metropolitan WD of So Calif	106.5%	98.2%	98.2%	98.2%	

Table 22
Factors resulting in inconsistency of wholesaler's supply

Name of supply	Legal	Environment	Water Quality	Climatic

Water Shortage Contingency Plan Section		(Water Code § 10632)	
Stages of Action		**(Water Code § 10632 (a))**	
X	Provide stages of action	Sec 7, p.7-1	Reference & Page Number
X	Provide the water supply conditions for each stage	Sec 7, p.7-2	Reference & Page Number
X	Includes plan for 50 percent supply shortage	Sec 7, p.7-2	Reference & Page Number

Table 23
Water Supply Shortage Stages and Conditions
RATIONING STAGES

Stage No.	Water Supply Conditions	% Shortage
Shortage Stage 1	Combined supply reductions totaling up to 4,760 AFY	20%
Shortage Stage 2	Combined supply reductions totaling up to 4,760 AFY and 7,140 AFY	20-30%
Shortage Stage 3	Combined supply reductions totaling between 7,140 AFY and 9,520 AfY	30-40%
Shortage Stage 4	Combined supply reductions totaling 9,520 AFY or more	40-50%
MWD - Shortage Stage 1	Withdrawals from Diamond Valley Lake	
MWD - Shortage Stage 2	Continue with Stage 1 & out of region groundwater storage	
MWD - Shortage Stage 3	Continue with Stage 2, Long Term Seasonal & Replenishment Programs	
MWD - Shortage Stage 4	Continue with Stage 3, gdwtr. Storage, SWP terminal reservoirs	
MWD - Shortage Stage 5	Continue with Stage 4, monthly reports on conservation program	
MWD - Shortage Stage 6	Continue with Stage 5, water supply option contracts	
MWD - Shortage Stage 7	Metropolitan discontinues deliveries to regional storage facilities.	

Three-Year Minimum Water Supply		(Water Code §10632 (b))	
X	Identifies driest 3-year period	Sec 4, p.4-11	Reference & Page Number
X	Minimum water supply available by source for the next three years	Sec 7, p.7-6	Reference & Page Number

Table 24
Three-Year Estimated Minimum Water Supply - AF Year

source**	2006 Base Year	2006 Dry Year	2007 Dry Year	2008 Dry Year
Imported Water	27,190	26,700	26,700	26,700
Groundwater	1,600	1,600	1,600	1,600
Desalter	2,400	2,400	2,400	2,400
Recycled Water	7,060	7,060	7,060	7,060
Total	38,250	37,760	37,760	37,760

*Note: If reporting after 2005, please change the column headers (Year 1, 2, & 3) to the appropriate years

Preparation for catastrophic water supply interruption **(Water Code §10632 (c))**

[X] Provided catastrophic supply interruption plan — Sec 7, p.7-6 Reference & Page Number

Table 25
Preparation Actions for a Catastrophe

Possible Catastrophe	Check if Discussed
Regional power outage	X
Earthquake	X

Prohibitions **(Water Code § 10632 (d))**

[X] List the mandatory prohibitions against specific water use practices during water shortages — Sec 7, p.7-8 Reference & Page Number

Table 26
Mandatory Prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Voluntary actions by customers when the City experiences up to 5% water loss	Phase 1,2
Washing of sidewalks, driveways, parking areas, paved surfaces	Phase 2,3
Washing of motor vehicles, trailers, boats shall be done with hand held bucket efficient equipment	Phase 2,3
Restaurant water service unless requested	Phase 2,3
All leaks must be repaired immediately	Phase 2,3
Lawn and Landscape watering shall occur during specific times	Phase 2,3
Water shall not run off landscape areas into adjoining streets, sidewalks, or paved areas	Phase 2,3
Use of water in excess of 95% on customer's premises	Phase 2
Voluntary actions by customers when the City experiences up to 10% water loss	Phase 3
Watering of commercial nurseries, golf courses shall occur during specific times	Phase 3
Use of water in excess of 90% on customer's premises	Phase 3

Consumption Reduction Methods **(Water Code § 10632 (e))**

[X] List the consumption reduction methods the water supplier will use to reduce water use in the most restrictive stages with up to a 50% reduction.

Sec 7, p.7-2 Reference & Page Number

Table 27
Consumption Reduction Methods

Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
Voluntary-up to 4,760 AFY: Prohibition of watering of lawns, landscaping, and other turf areas of commercial and water-dependent industries unless using recycled water	Shortage Stage 1	20%
Mandatory- 4,760 AFY and 7,140 AFY; same as Stage 1, but with specified times	Shortage Stage 2	20-30%
Mandatory- 7,140 AFY and 9,520 AFY; same as Stage 2, but with extended specified times	Shortage Stage 3	30-40%
Mandatory- 9,520 AFY or more: same as Stage 3, but further extended specified times	Shortage Stage 4	40-50%

Penalties **(Water Code § 10632 (f))**

[X] List excessive use penalties or charges for excessive use

Sec 7, p.7-8 Reference & Page Number

Table 28
Penalties and Charges

Penalties or Charges	Stage When Penalty Takes Effect
Notice of violation to customer via mail	First Violation
Notice of violation to customer in person	Second Violation
Addtitional $50 to customers water bill	Third Violation
Additional $150 to customers water bill and installation of flow restricting devise	Fourth and Subsequent Violation

Revenue and Expenditure Impacts		(Water Code § 10632 (g))
X	Describe how actions and conditions impact revenues	Sec 7, p.7-8,9 Reference & Page Number
X	Describe how actions and conditions impact expenditures	Sec 7, p.7-8,9 Reference & Page Number
X	Describe measures to overcome the revenue and expenditure impacts	Sec 7, p.7-8,9 Reference & Page Number

Table 29
Proposed measures to overcome revenue impacts

Names of measures	Check if Discussed
Rate adjustment	X
Development of reserves	X

Table 30
Proposed measures to overcome expenditure impacts

Names of measures	Check if Discussed
Reduce future projected O&M expenses	X
Reduce current Fiscal Year O&M expenses	X
Prioritize and defer selected capital construction projects	X
name of measure	

Water Shortage Contingency Ordinance/Resolution		(Water Code § 10632 (h))
X	Attach a copy of the draft water shortage contingency resolution or ordinance.	Sec 7, p.7-10 Reference & Page Number

Reduction Measuring Mechanism **(Water Code § 10632 (i))**

[X] Provided mechanisms for determining actual reductions

Sec 7, p.7-10 Reference & Page Number

Table 31 Water Use Monitoring Mechanisms		
Mechanisms for determining actual reductions		**Type data expected (pop-up?)**
Normalized or average water use baseline to determine reductions		
More frequent review production		
More frequent meter reading at curstomer l		
More frequent leak detection and repair		
More frequent meter checking and repair		
System audit		
Automated sensors and telemetry		
Monitor utility actions		
Penalties for customers		

Recycling Plan Agency Coordination **Water Code § 10633**

[X] Describe the coordination of the recycling plan preparation information to the extent available

Sec 8, p.8-1 Reference & Page Number

Table 32 Participating agencies		
	participated	
Water agencies	X	
Wastewater agencies	X	
Groundwater agencies	X	
Planning Agencies		

Wastewater System Description **(Water Code § 10633 (a))**

X	Describe the wastewater collection and treatment systems in the supplier's service area	Sec 8, p.8-2	Reference & Page Number
X	Quantify the volume of wastewater collected and treated	Sec 8, p.8-2	Reference & Page Number

Table 33
Wastewater Collection and Treatment - AF Year

Type of Wastewater	2000	2005	2010	2015	2020	2025	2030 - opt
Water Demand	23,025	23,026	23,820	23,990	24,160	24,330	24,510
Collected Wastewater	18,420	18,420	19,050	10,180	19,330	19,460	19,610

Wastewater Disposal and Recycled Water Uses **(Water Code § 10633 (a - d))**

X	Describes methods of wastewater disposal	Sec 8, p.8-2	Reference & Page Number
X	Describe the current type, place and use of recycled water	Sec 8, p.8-3	Reference & Page Number
	None		Reference & Page Number
X	Describe and quantify potential uses of recycled water	Sec 8, p.8-5	Reference & Page Number

Table 34
Disposal of wastewater (non-recycled) AF Year

Method of disposal	Treatment Level	2005	2010	2015	2020	2025
Ocean outfall	Advanced Primary and Secondary	Not available				
	Total	0	0	0	0	0

Table 35
Recycled Water Uses - Actual and Potential (AFY)

Current	Irrigation Demand (AFY)	Industrial Demand (AFY)	Annual Demand (AFY)
Actual			
Arlington Elementary	7	-	7
Casimir Middle School	3	-	3
Columbia Park	24	-	24
Descanso Park	7	-	7
ExxonMobil	-	6,750	6,750
Guesner Park	23	-	23
MacGruder School	12	-	12
McMaster Park	12	-	12
Sunny Glen Park	13	-	13
Toyota Motors - Gramercy	12	23	35
Projected			
America Honda	30	23	53
El Retiro Park	5	-	5
Ishibashi (Madison)	12	-	12
Sequoia Real Estate Fund A & B	68	-	68
West Torrance High	30	-	30
Torrance Park	14	-	14
Wilson Park	32	-	32

Little League Fields	18	-	18
Greenwood Park	13	-	13
Torrance Elementary/Sherry	15	-	15
Torrance High	17	-	17
Lincoln Elementary	6	-	6
Madrona Middle	7	-	7
Fern Elementary	2	-	2
Seaside Elementary	6	-	6
Hickory Elementary	4	-	4
New Horizons Golf Course	15	-	15
Dow Chemical	1	12	13
CSDLAC	0	150	150
Kobata Nurseries	12	-	12
Sunflower Nursery	5	-	5
Sequoia Real Estate Fund A (Greenwood)	15	-	15
Sequoia Real Estate Fund A (Hickory)	15	-	15
Caltrans 405/Artesia	8	-	8
Potential			
Schools, parks, freeway landscape, golf course	406	-	406

[X] Determination of technical and economic feasibility of serving the potential uses — Sec 8, p.8-5 Reference & Page Number

Projected Uses of Recycled Water **(Water Code § 10633 (e))**

[X] Projected use of recycled water, 20 years — Sec 8, p.8-5 Reference & Page Number

Table 36
Projected Future Use of Recycled Water in Service Area - AF Year

Customer	2005	2010	2015	2020	2025	2030
Industrial	6,765	6,765	6,765	6,765	6,765	6,765
Landscape Irrigation	280	335	485	485	485	485
Total	7,045	7,100	7,250	7,250	7,250	7,250

[X] Compare UWMP 2000 projections with UWMP 2005 actual (§ 10633 (e)) — Sec 8, p.8-5 Reference & Page Number

[ ] None — Reference & Page Number

Table 37
Recycled Water Uses - 2000 Projection compared with 2005 actual - AFY

User type	2000 Projection for 2005	2005 actual use
Landscape Irrigation	900	280
Industrial	6,310	6,765
Total	7,210	7,045

Plan to Optimize Use of Recycled Water **(Water Code § 10633 (f))**

[X] Describe actions that might be taken to encourage recycled water uses — Sec 8, p.8-7 Reference & Page Number

[X] Describe projected results of these actions in terms of acre-feet of recycled water used per year — Sec 8, p.8-8 Reference & Page Number

Table 38
Methods to Encourage Recycled Water Use

Actions (Wholesalers Service Area)	AF of use projected to result from this action				
	2010	2015	2020	2025	2030 - opt
Financial incentives (WBMWD)	6,750	4,500	2,250	2,250	4,500
Marketing Efforts (WBMWD)	750	500	250	250	450
Total	7,500	5,000	2,500	2,500	4,950

[X] Provide a recycled water use optimization plan which includes actions to facilitate the use of recycled water (dual distribution systems, promote recirculating uses) — Sec 8, p.8-8 Reference & Page Number

Water quality impacts on availability of supply **(Water Code §10634)**

[X] Discusses water quality impacts (by source) upon water management strategies and supply reliability — Sec 3, p.3-10 Reference & Page Number

Sec 3, p.3-10

[X] No water quality impacts projected

Table 39
Current & projected water supply changes due to water quality - percentage

water source	2005		2010	2015	2020	2025	2030 - opt

Supply and Demand Comparison to 20 Years **(Water Code § 10635 (a))**

[X] Compare the projected normal water supply to projected normal water use over the next 20 years, in 5-year increments.

Sec 4, p.4-20 Reference & Page Number

Table 40
Projected Normal Water Supply - AF Year

(from table 4)	2010	2015	2020	2025	2030 - opt
Supply	37,020	35,480	36,790	35,730	34,720
% of year 2005	100%	100%	100%	100%	100%

Table 41
Projected Normal Water Demand - AF Year

(from table 15)	2010	2015	2020	2025	2030 - opt
Demand	30,920	31,240	31,410	31,580	31,760
% of year 2005	102.8%	103.9%	104.5%	105.0%	105.6%

Table 42
Projected Supply and Demand Comparison - AF Year

	2010		2015	2020	2025	2030 - opt
Supply totals	37,020		35,480	36,790	35,730	34,720
Demand totals	30,920		31,240	31,410	31,580	31,760
Difference	6,100		4,240	5,380	4,150	2,960
Difference as % of Supply	16.5%		12.0%	14.6%	11.6%	8.5%
Difference as % of Demand	19.7%		13.6%	17.1%	13.1%	9.3%

Supply and Demand Comparison: Single-dry Year Scenario **(Water Code § 10635 (a))**

[X] Compare the projected single-dry year water supply to projected single-dry year water use over the next 20 years, in 5-year increments. Sec 4, p.4-21 Reference & Page Number

Table 43
Projected single dry year Water Supply - AF Year

	2010	2015	2020	2025	2030 - opt
Supply	43,210	41,900	44,160	40,960	38,470
% of projected normal	116.7%	118.1%	120.0%	114.6%	110.8%

Table 44
Projected single dry year Water Demand - AF Year

	2010	2015	2020	2025	2030 - opt
Demand	33,270	33,610	33,800	33,980	34,170
% of projected normal	107.6%	107.6%	107.6%	107.6%	107.6%

Table 45
Projected single dry year Supply and Demand Comparison - AF Year

	2010	2015	2020	2025	2030 - opt
Supply totals	43,210	41,900	44,160	40,960	38,470
Demand totals	33,270	33,610	33,800	33,980	34,170
Difference	9,940	8,290	10,360	6,980	4,300
Difference as % of Supply	23.0%	19.8%	23.5%	17.0%	11.2%
Difference as % of Demand	29.9%	24.7%	30.7%	20.5%	12.6%

Supply and Demand Comparison: Multiple-dry Year Scenario **(Water Code § 10635 (a))**

[X] Project a multiple-dry year period (as identified in Table 9) occurring between 2006-2010 and compare projected supply and demand during those years Sec 4, p.4-22 Reference & Page Number

Table 46
Projected supply during multiple dry year period ending in 2010 - AF Year

	2006	2007	2008	2009	2010
Supply	38,250	37,940	37,160	36,860	35,550
% of projected normal	100.0%	100.0%	98.7%	98.7%	98.7%

Table 47 Projected demand multiple dry year period ending in 2010 - AFY					
	2006	2007	2008	2009	2010
Demand	30,740	30,780	33,170	31,580	32,960
% of projected normal	100.0%	100.0%	107.6%	102.3%	106.6%

Table 48 Projected Supply and Demand Comparison during multiple dry year period ending in 2010- AF Year					
	2006	2007	2008	2009	2010
Supply totals	38,250	37,940	37,160	36,860	36,550
Demand totals	30,740	30,780	33,170	31,580	32,960
Difference	7,510	7,160	3,990	5,280	3,590
Difference as % of Supply	19.6%	18.9%	10.7%	14.3%	9.8%
Difference as % of Demand	24.4%	23.3%	12.0%	16.7%	10.9%

[X] Project a multiple-dry year period (as identified in Table 9) occurring between 2011-2015 and compare projected supply and demand during those years

Sec 4, p.4-23 Reference & Page Number

Table 49 Projected supply during multiple dry year period ending in 2015 - AF Year					
	2011	2012	2013	2014	2015
Supply	36,710	36,400	37,790	37,460	36,850
% of projected normal	100.0%	100.0%	104.7%	104.7%	103.9%

Table 50 Projected demand multiple dry year period ending in 2015 - AFY					
	2011	2012	2013	2014	2015
Demand	30,980	31,040	33,470	31,890	33,300
% of projected normal	100.0%	100.0%	107.6%	102.3%	106.6%

Table 51 Projected Supply and Demand Comparison during multiple dry year period ending in 2015- AF Year					
	2011	2012	2013	2014	2015
Supply totals	36,710	36,400	37,790	37,460	36,850
Demand totals	30,980	31,040	33,470	31,890	33,300
Difference	5,730	5,360	4,320	5,570	3,550
Difference as % of Supply	15.6%	14.7%	11.4%	14.9%	9.6%
Difference as % of Demand	18.5%	17.3%	12.9%	17.5%	10.7%

[X] Project a multiple-dry year period (as identified in Table 9) occurring between 2016-2020 and compare projected supply and demand during those years

Sec 4, p.4-24 Reference & Page Number

Table 52
Projected supply during multiple dry year period ending in 2020 - AF Year

	2016	2017	2018	2019	2020
Supply	35,740	36,000	36,960	37,230	37,500
% of projected normal	100.0%	100.0%	101.9%	101.9%	101.9%

Table 53
Projected demand multiple dry year period ending in 2020 - AFY

	2016	2017	2018	2019	2020
Demand	31,270	31,310	33,720	32,100	33,480
% of projected normal	100.0%	100.0%	107.6%	102.3%	106.6%

Table 54
Projected Supply and Demand Comparison during multiple dry year period ending in 2020- AF Year

	2016	2017	2018	2019	2020
Supply totals	35,740	36,000	36,960	37,230	37,500
Demand totals	31,270	31,310	33,720	32,100	33,480
Difference	4,470	4,690	3,240	5,130	4,020
Difference as % of Supply	12.5%	13.0%	8.8%	13.8%	10.7%
Difference as % of Demand	14.3%	15.0%	9.6%	16.0%	12.0%

[X] Project a multiple-dry year period (as identified in Table 9) occurring between 2021-2025 and compare projected supply and demand during those years

Sec 4, p.4-25 Reference & Page Number

Table 55
Projected supply during multiple dry year period ending in 2025 - AF Year

	2021	2022	2023	2024	2025
Supply	36,580	36,370	36,650	36,440	36,220
% of projected normal	100.0%	100.0%	101.4%	101.4%	101.4%

Table 56
Projected demand multiple dry year period ending in 2025 - AFY

	2021	2022	2023	2024	2025
Demand	31,440	31,480	33,910	32,270	33,670
% of projected normal	100.0%	100.0%	107.6%	102.3%	106.6%

Table 57 Projected Supply and Demand Comparison during multiple dry year period ending in 2025- AF Year					
	2021	2022	2023	2024	2025
Supply totals	36,580	36,370	36,650	36,440	36,220
Demand totals	31,440	31,480	33,910	32,270	33,670
Difference	5,140	4,890	2,740	4,170	2,550
Difference as % of Supply	14.1%	13.4%	7.5%	11.4%	7.0%
Difference as % of Demand	16.3%	15.5%	8.1%	12.9%	7.6%

Provision of Water Service Reliability section to cities/counties within service area		**(Water Code § 10635(b))**
[X]	Provided Water Service Reliability section of UWMP to cities and counties within which it provides water supplies within 60 days of UWMP submission to DWR	Sec 1, p.1-2 Reference & Page Number

Does the Plan Include Public Participation and Plan Adoption		**(Water Code § 10642)**
[X]	Attach a copy of adoption resolution	Sec 1, p.1-2 and Appendix E Reference & Page Number
[X]	Encourage involvement of social, cultural & economic community groups	Sec 1, p.1-2 Reference & Page Number
[X]	Plan available for public inspection	Sec 1, p.1-2 Reference & Page Number
[X]	Provide proof of public hearing	Sec 1, p.1-2 and Appendix E Reference & Page Number
[X]	Provided meeting notice to local governments	Sec 1, p. 1-2 Reference & Page Number

Review of implementation of 2000 UWMP		**(Water Code § 10643)**
[X]	Reviewed implementation plan and schedule of 2000 UWMP	throughout Reference & Page Number
[X]	Implemented in accordance with the schedule set forth in plan	throughout Reference & Page Number
[ ]	2000 UWMP not required	Reference & Page Number

Provision of 2005 UWMP to local governments		**(Water Code § 10644 (a))**
[X]	Provide 2005 UWMP to DWR, and cities and counties within 30 days of adoption	Sec 1, p.1-2 Reference & Page Number

Does the plan or correspondence accompanying it show where it is available for public review		**(Water Code § 10645)**
[X]	Does UWMP or correspondence accompanying it show where it is available for public review	Back Cover Reference & Page Number

APPENDIX C

2005 URBAN WATER MANAGEMENT PLAN
"REVIEW FOR DMM COMPLETENESS" FORM

2005 Urban Water Management Plan "Review of DMMs for Completeness" Form

For DWR Review Staff Use

Water Survey Programs for Single-Family and Multi-Family Residential Customers (10631 f(1)(a))

Implementation **(Section 10631 (f))**

[X] Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) — Sec 6, p.6-2 — Reference & Page Number

Year program started: Continual or Year program scheduled to start: 2006 - pilot residential survey

[X] Describes steps necessary to implement measure — Sec 6, p.6-2 — Reference & Page Number

Table A1					
Actual	2001	2002	2003	2004	2005
# of single family surveys and	464	344	485	416	525
# of multifamily surveys					
actual expenditures - $					
actual water savings - AFY	11	9	11	10	12

Table A2					
Planned	2006	2007	2008	2009	2010
# of single family surveys	10	15	20	25	30
# of multifamily surveys	2	3	4	5	6
projected expenditures - $	$5,000	$7,000	$10,000	$12,000	$15,000
projected water savings - AFY	0.28	0.42	0.56	0.71	0.85

[X] Describe the methods, if any, used to evaluate the effectiveness of this demand management measure (10631 (f)(3)) — Sec 6, p.6-17 — Reference & Page Number

[ ] Provide estimates, if available, of existing conservation savings on water use and the effect of such savings on the supplier's ability to further reduce demand (10631(f)(4)) — Reference & Page Number

Provided an evaluation for this DMM if it is not implemented **(Section 10631 (g))**

- ☐ Evaluate legal authority (10631 (g)(4))
- ☐ Evaluate economic and non-economic factors (10631 (g)(1))
- ☐ Evaluate environmental, social, health factors (10631 (g)(1))
- ☐ Evaluate customer impact & technological factors (10631 (g)(1))

Table A3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water ($ per AF)	
Water Savings (AFY)	

- ☐ Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))
- ☐ Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

- ☐ If another Agency is implementing (10631 (g)(4))

Agency Name

Residential Plumbing Retrofit (10631 (f)(1)(b))

Implementation **(Section 10631 (f) & (h))**

- ☒ Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) — Sec 6, p.6-3 — Reference & Page Number

Year program started 1977 or Year program scheduled to start _____

- ☒ Describes steps necessary to implement measure — Sec 6, p.6-3 — Reference & Page Number

# of pre-1992 SF accounts unknown # of pre-1992 MF accounts unknown

Table B1					
Actual	1992-2001	2002	2003	2004	2005
# of single family devices	16,000	25	700	1,000	1,000
# of multi-family devices	9,000	25	250	350	400
actual expenditures - $	$30,000	$200	$3,800	$5,400	$6,000
actual water savings - AFY	154	0.3	6	8	9

Table B2					
Planned	2006	2007	2008	2009	2010
# of single family devices	1,200	1,300	1,400	1,400	1,400
# of multi-family devices	400	500	600	600	600
projected expenditures - $	$6,400	$7,200	$8,000	$8,000	$8,000
projected water savings - AFY	10	11	12	12	12

[X] Describe the methods, if any, used to evaluate the effectiveness of this demand management measure (10631 (f)(3)) — Sec 6, p.6-17 Reference & Page Number

[X] Provide estimates, if available, of existing conservation savings on water use and the effect of such savings on the supplier's ability to further reduce demand (10631(f)(4)) — Sec 6, p.6-4 Reference & Page Number

Provided an evaluation for this DMM if it is not implemented **(Section 10631 (g))**

[ ] Evaluate legal authority (10631 (g)(4))

[ ] Evaluate economic and non-economic factors (10631 (g)(1))

[ ] Evaluate environmental, social, health factors (10631 (g)(1))

[ ] Evaluate customer impact & technological factors (10631 (g)(1))

Table B3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

[ ] Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))

[ ] Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

[ ] If another Agency is implementing (10631 (g)(4))

Agency Name

System Water Audits, Leak Detection and Repair (10631 (f)(1)(c))

Implementation **(Section 10631 (f) & (h))**

[X] Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) — Sec 6, p.6-5 Reference & Page Number

Year program started 1993 or Year program scheduled to start _____

[X] Describes steps necessary to implement measure — Sec 6, p.6-5 Reference & Page Number

Year of last complete audit _____ Year of next complete audit 2007 - pilot leak detection program

Table C1					
Actual	2001	2002	2003	2004	2005
% of unaccounted water	7.0%	7.0%	7.0%	7.0%	5.0%
miles of mains surveyed	N/A	N/A	N/A	N/A	N/A
miles of lines replaced	5	5	4	4	4
actual expenditures - $	$2 .5 million	$2 .5 million	$2 million	$2 million	$2 million
actual water savings - AFY					

Table C2					
Planned	2006	2007	2008	2009	2010
% of unaccounted water	7.0%	7.0%	6.5%	6.0%	6.0%
miles of mains surveyed	N/A	N/A	N/A	N/A	N/A
miles of lines replaced	4	4	4	4	4
projected expenditures - $	$2 million	$2 million	$2 million	$2 million	$2 million
projected water savings - AFY					

[X] Describe the methods, if any, used to evaluate the effectiveness of this demand management measure (10631 (f)(3)) — Sec 6, p.6-17 Reference & Page Number

[X] Provide estimates, if available, of existing conservation savings on water use and the effect of such savings on the supplier's ability to further reduce demand (10631(f)(4)) — Sec 6, p.6-6 Reference & Page Number

Provided an evaluation for this DMM if it is not implemented **(Section 10631 (g))**

- [ ] Evaluate legal authority (10631 (g)(4))
- [ ] Evaluate economic and non-economic factors (10631 (g)(1))
- [ ] Evaluate environmental, social, health factors (10631 (g)(1))
- [ ] Evaluate customer impact & technological factors (10631 (g)(1))

Table C3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

- [ ] Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))
- [ ] Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

- [ ] If another Agency is implementing (10631 (g)(4))

Agency Name

Metering with Commodity Rates (10631 (f)(1)(d))

Implementation **(Section 10631 (f) & (h))**

[X] Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) — Sec 6, p.6-7 Reference & Page Number

Year program started: Continual or Year program scheduled to start: _____

[X] Describes steps necessary to implement measure — Sec 6, p.6-7 Reference & Page Number

Total number of accounts: 26,050 # of accounts w/o commodity rates: 0

Table D1						
Actual	2001	2002	2003	2004	2005	
# of unmetered accounts	0	0	0	0	0	***Numbers will be given***
# of retrofit meters installed						
# of accounts w/o commodity rates	0	0	0	0	0	
actual expenditures - $						
actual water savings - AFY						

Table D2						
Planned	2006	2007	2008	2009	2010	
# of unmetered accounts	0	0	0	0	0	***Numbers will be given***
# of retrofit meters installed						
# of accounts w/o commodity rates	0	0	0	0	0	
projected expenditures - $						
projected water savings - AFY						

[X] Describe the methods, if any, used to evaluate the effectiveness of this demand management measure (10631 (f)(3)) — Sec 6, p.6-17 Reference & Page Number

[X] Provide estimates, if available, of existing conservation savings on water use and the effect of such savings on the supplier's ability to further reduce demand (10631(f)(4)) — Sec 6, p.6-7 Reference & Page Number

Provided an evaluation for this DMM if it is not implemented (Section 10631 (g))

- [ ] Evaluate legal authority (10631 (g)(4))
- [ ] Evaluate economic and non-economic factors (10631 (g)(1))
- [ ] Evaluate environmental, social, health factors (10631 (g)(1))
- [ ] Evaluate customer impact & technological factors (10631 (g)(1))

Table D3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

- [ ] Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))
- [ ] Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

☐ If another Agency is implementing (10631 (g)(4))

Agency Name

Large Landscape Conservation Programs and Incentives (10631 (f)(1)(e))

Implementation **(Section 10631 (f) & (h))**

☒ Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) — Sec 6, p.6-7 Reference & Page Number

Year program started _____ or Year program scheduled to start _____

☒ Describes steps necessary to implement measure — Sec 6, p.6-7 Reference & Page Number

# of landscape accounts 18 # of landscape accounts with budgets MWD led programs

# of CII accounts 2040 # of CII accounts w/ landscape surveys MWD led programs

(CII mixed use meters)

Table E1					
Actual	2001	2002	2003	2004	2005
# of budgets developed					
# of surveys completed					
# of follow-up visits					
actual expenditures - $					
actual water savings - AFY					

Table E2					
Planned	2006	2007	2008	2009	2010
# of budgets developed					
# of surveys completed					
# of follow-up visits					
projected expenditures - $					
projected water savings - AFY					

X	Describe the methods, if any, used to evaluate the effectiveness of this demand management measure (10631 (f)(3))	Sec 6, p.6-17	Reference & Page Number
	Provide estimates, if available, of existing conservation savings on water use and the effect of such savings on the supplier's ability to further reduce demand (10631(f)(4))		Reference & Page Number

Provided an evaluation for this DMM if it is not implemented **(Section 10631 (g))**

	Evaluate legal authority (10631 (g)(4))
	Evaluate economic and non-economic factors (10631 (g)(1))
	Evaluate environmental, social, health factors (10631 (g)(1))
	Evaluate customer impact & technological factors (10631 (g)(1))

Table E3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

X	Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))	
	Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))	

If Another Agency Implementing

X	If another Agency is implementing (10631 (g)(4))	**Agency Name**: Coordinate with Metropolitan Water District of SC

High-Efficiency Washing Machine Rebate Programs (10631 (f)(1)(f))

Implementation **(Section 10631 (f) & (h))**

X	Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2))		Sec 6, p.6-9	Reference & Page Number
	Year program started		or Year program scheduled to start	2006
	Other agencies offer rebates	MWD	Cost-effectiveness calcs attached	
X	Describes steps necessary to implement measure		Sec 6, p.6-9	Reference & Page Number

Table F1					
Actual	2001	2002	2003	2004	2005
$ per rebate					
# of rebates paid					
actual expenditures - $					
actual water savings - AFY					

Table F2					
Planned	2006	2007	2008	2009	2010
$ per rebate	90	90	90	90	90
# of rebates paid	200	200	200	200	200
projected expenditures - $	$18,000	$18,000	$18,000	$18,000	$18,000
projected water savings - AFY	1,139	1,139	1,139	1,139	1,139

[X] Describe the methods, if any, used to evaluate the effectiveness of this demand management measure (10631 (f)(3)) — Sec 6, p.6-17 Reference & Page Number

[X] Provide estimates, if available, of existing conservation savings on water use and the effect of such savings on the supplier's ability to further reduce demand (10631(f)(4)) — Sec 6, p.6-9 Reference & Page Number

Provided an evaluation for this DMM if it is not implemented (Section 10631 (g))

- [ ] Evaluate legal authority (10631 (g)(4))
- [ ] Evaluate economic and non-economic factors (10631 (g)(1))
- [ ] Evaluate environmental, social, health factors (10631 (g)(1))
- [ ] Evaluate customer impact & technological factors (10631 (g)(1))

Table F3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

- [ ] Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))
- [ ] Describe funding available to implement any planned water supply project that would provide water at a higher) unit cost (10631 (g)(3) & (h)

If Another Agency Implementing

[X] If another Agency is implementing (10631 (g)(4))

Agency Name
Coordinate with Metropolitan Water District of So Cal

Public Information Programs (10631 (f)(1)(g))

Implementation **(Section 10631 (f))**

[X] Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) — Sec 6, p.6-9 Reference & Page Number

Year program started Continual or Year program scheduled to start _____

[X] Describes steps necessary to implement measure — Sec 6, p.6-10 Reference & Page Number

Table G1					
Actual	2001	2002	2003	2004	2005
a. paid advertising			X	X	X
b. Public Service Announcement	X	X	X	X	X
c. Bill Inserts / Newsletters / Brochures	X	X	X	X	X
d. Bill showing water usage in comparison to previous year's usage	X	X	X	X	X
e. Demonstration Gardens			X	X	X
f. Special Events, Media Events	X	X	X	X	X
g. Speaker's Bureau				X	X
h. Program to coordinate with other government agencies, industry and public interest groups and media	X	X	X	X	X
actual expenditures - $	$1,000	$22,000	$2,000	$3,000	$4,000

Table G2					
Planned	2006	2007	2008	2009	2010
a. paid advertising	X	X	X	X	X
b. Public Service Announcement	X	X	X	X	X
c. Bill Inserts / Newsletters / Brochures	X	X	X	X	X
d. Bill showing water usage in comparison to previous year's usage	X	X	X	X	X
e. Demonstration Gardens	X	X	X	X	X
f. Special Events, Media Events	X	X	X	X	X
g. Speaker's Bureau	X	X	X	X	X
h. Program to coordinate with other government agencies, industry and public interest groups and media	X	X	X	X	X
Projected expenditures - $	$40,000	$10,000	$10,000	$10,000	$10,000

[X] Describe the methods, if any, used to evaluate the effectiveness of this demand management measure (10631 (f)(3)) — Sec 6, p.6-17 Reference & Page Number

Provided an evaluation for this DMM if it is not implemented **(Section 10631 (g))**

- [ ] Evaluate legal authority (10631 (g)(4))
- [ ] Evaluate economic and non-economic factors (10631 (g)(1))
- [ ] Evaluate environmental, social, health factors (10631 (g)(1))
- [ ] Evaluate customer impact & technological factors (10631 (g)(1))

Table G3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

- [ ] Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))
- [ ] Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

[X] If another Agency is implementing (10631 (g)(4))

Agency Name
Coordinate with MWD of So Cal and WBMWD

School Education Programs (10631 (f)(1)(h))

Implementation **(Section 10631 (f) & (h))**

[X] Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) — Sec 6, p.6-12 Reference & Page Number

Year program started: Continual or Year program scheduled to start: _____

[X] Describes steps necessary to implement measure — Sec 6, p.6-12 Reference & Page Number

Table H1 (District includes MWD Educational Programs)		No. of class presentations				
Actual	# of classes	2001	2002	2003	2004	2005
Grades K-3rd		Living Wise Middle School Program				
Grades 4th-6th		2,000 students				900 students
Grades 7th-8th						
High School						
actual expenditures - $						$20,000

Table H2		No. of class presentations				
Actual	# of classes	2006	2007	2008	2009	2010
Grades K-3rd						
Grades 4th-6th		1,000	1,000	1,000	1,000	1,000
Grades 7th-8th						
High School						
projected expenditures - $		$20,000	$20,000	$20,000	$20,000	$20,000

[X] Describe the methods, if any, used to evaluate the effectiveness of this demand management measure (10631 (f)(3)) — Sec 6, p.6-17 — Reference & Page Number

[ ] Did your agency's material meet state education framework requirements? — _____ — Reference & Page Number

Provided an evaluation for this DMM if it is not implemented **(Section 10631 (g))**

[ ] Evaluate legal authority (10631 (g)(4))

[ ] Evaluate economic and non-economic factors (10631 (g)(1))

[ ] Evaluate environmental, social, health factors (10631 (g)(1))

[ ] Evaluate customer impact & technological factors (10631 (g)(1))

Table H3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

[X] Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))

☐ Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

☒ If another Agency is implementing (10631 (g)(4))

Agency Name
Metropolitan Water District of of Southern Califrornia

Conservation Programs for Commercial, Industrial and Institutional (10631 (f)(1)(i))

Implementation **(Section 10631 (f) & (h))**

☒ Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) Sec 6, p.6-13 Reference & Page Number

Year program started MWD Program or Year program scheduled to start _____

☒ Describes steps necessary to implement measure Sec 6, p.6-13 Reference & Page Number

# of Commercial accounts 1758 # of Industrial accounts 282 # of Institutional accounts _____

Table I1					
Actual	2001	2002	2003	2004	2005
# of surveys completed					
Were incentives provided?					
# of follow-up visits					
actual expenditures - $					
actual water savings - AFY					

Table I2					
Planned	2006	2007	2008	2009	2010
# of surveys completed					
Were incentives provided?					
# of follow-up visits					
projected expenditures - $					
projected water savings - AFY					

☒ Describe the methods, if any, used to evaluate the effectiveness of this demand management measure (10631 (f)(3)) Sec 6, p.6-17 Reference & Page Number

[X] Provide estimates, if available, of existing conservation savings on water use and the effect of such savings on the supplier's ability to further reduce demand (10631(f)(4))

Sec 6, p.6-12 Reference & Page Number

Provided an evaluation for this DMM if it is not implemented **(Section 10631 (g))**

- [ ] Evaluate legal authority (10631 (g)(4))
- [ ] Evaluate economic and non-economic factors (10631 (g)(1))
- [ ] Evaluate environmental, social, health factors (10631 (g)(1))
- [ ] Evaluate customer impact & technological factors (10631 (g)(1))

Table I3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

- [ ] Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))
- [ ] Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

[X] If another Agency is implementing (10631 (g)(4))

Agency Name
Coordinate with Metropolitan Water District of SC

Conservation Programs for Commercial, Industrial & Institutional - Toilet Replacement (10631 (f)(1)(i))

(this data is part of the Council Annual Report but is not specifically requested in the UWMP Act) change

Implementation **(Section 10631 (f) & (h))**

[X] Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2))

Sec 6, p. 6-13 Reference & Page Number

Year program started MWD Program or Year program scheduled to start _____

[X] Describes steps necessary to implement measure

Sec 6, p. 6-13 Reference & Page Number

Table I4					
Actual	2001	2002	2003	2004	2005
# of commercial replacements					
# of industrial replacements					
# of institutional replacements					
actual expenditures - $					
actual water savings - AFY					

Table I5					
Planned	2006	2007	2008	2009	2010
# of commercial replacements					
# of industrial replacements					
# of institutional replacements					
projected expenditures - $					
projected water savings - AFY					

[X] Describe the methods, if any, used to evaluate the effectiveness of this demand management measure (10631 (f)(3)) — Sec 6, p. 6-17 Reference & Page Number

[ ] Provide estimates, if available, of existing conservation savings on water use and the effect of such savings on the supplier's ability to further reduce demand (10631(f)(4)) — _____ Reference & Page Number

Provided an evaluation for this DMM if it is not implemented (Section 10631 (g))

[ ] Evaluate legal authority (10631 (g)(4))

[ ] Evaluate economic and non-economic factors (10631 (g)(1))

[ ] Evaluate environmental, social, health factors (10631 (g)(1))

[ ] Evaluate customer impact & technological factors (10631 (g)(1))

Table I6 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

[ ] Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))

[ ] Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

[X] If another Agency is implementing (10631 (g)(4))

Agency Name
Coordinate with Metropolitan Water District of SC

Wholesale Agency Programs (10631 (f)(1)(j))

[X] Not a wholesale agency

Implementation **(Section 10631 (f) & (h))**

[ ] Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) _____ Reference & Page Number

Year program started _____ or Year program scheduled to start _____

# of suppliers you serve _____

[ ] Describes steps necessary to implement measure _____ Reference & Page Number

Table J1	Number of agencies assisted				
program activities	2001	2002	2003	2004	2005
Water Surveys					
Residential Retrofit					
System Audits					
Metering-Commodity Rates					
Landscape Programs					
Washing Machines					
Public Information					
School Education					
CII WC					
CII ULF					
Water Waste					
Pricing					
WC Coordinator					
Water Waste					
UFLT Replacement					
actual expenditures - $					

Table J2	Number of agencies to be assisted				
program activities	2006	2007	2008	2009	2010
Water Surveys					
Residential Retrofit					
System Audits					
Metering-Commodity Rates					
Landscape Programs					
Washing Machines					
Public Information					
School Education					
CII WC					
CII ULF					
Water Waste					
Pricing					
WC Coordinator					
Water Waste					
UFLT Replacement					
projected expenditures - $					

☐ Describe the methods, if any, used to evaluate the effectiveness of this demand management measure (10631 (f)(3)) _____ Reference & Page Number

☐ Provide estimates, if available, of existing conservation savings on water use and the effect of such savings on the supplier's ability to further reduce demand (10631(f)(4)) _____ Reference & Page Number

Provided an evaluation for this DMM if it is not implemented (Section 10631 (g))

☐ Evaluate legal authority (10631 (g)(4))

☐ Evaluate economic and non-economic factors (10631 (g)(1))

☐ Evaluate environmental, social, health factors (10631 (g)(1))

☐ Evaluate customer impact & technological factors (10631 (g)(1))

Table J3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

☐ Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))

☐ Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

☒ If another Agency is implementing (10631 (g)(4))

Agency Name
Metropolitan Water District of Southern California

Conservation Pricing (10631 (f)(1)(k))

Implementation **(Section 10631 (f) & (h))**

☒ Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) Sec 6, p.6-14 Reference & Page Number

Year program started Ongoing or Year program scheduled to start

☐ Agency provides sewer service

☒ Describes steps necessary to implement measure Sec 6, p.6-14 Reference & Page Number

Table K1			
RETAILERS			
Residential			
Water Rate Structure	uniform	Sewer Rate Structure	pop-up list
Year rate effective		Year rate effective	
Commercial			
Water Rate Structure	uniform	Sewer Rate Structure	pop-up list
Year rate effective		Year rate effective	
Industrial			
Water Rate Structure	uniform	Sewer Rate Structure	pop-up list
Year rate effective		Year rate effective	
Institutional/Government			
Water Rate Structure	uniform	Sewer Rate Structure	pop-up list
Year rate effective		Year rate effective	
Irrigation			
Water Rate Structure	uniform		
Year rate effective			
Other			
Water Rate Structure	uniform	Sewer Rate Structure	pop-up list
Year rate effective		Year rate effective	

Table K2		
WHOLESALERS		
Water Rate Structure	pop-up list	
Year rate effective		

Provided an evaluation for this DMM if it is not implemented **(Section 10631 (g))**

- ☐ Evaluate legal authority (10631 (g)(4))
- ☐ Evaluate economic and non-economic factors (10631 (g)(1))
- ☐ Evaluate environmental, social, health factors (10631 (g)(1))
- ☐ Evaluate customer impact & technological factors (10631 (g)(1))

Table K3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

- ☐ Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))
- ☐ Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

- ☐ If another Agency is implementing (10631 (g)(4))

Agency Name

Water Conservation Coordinator (10631 (f)(1)(l))

Implementation **(Section 10631 (f) & (h))**

- ☒ Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) — Sec 6, p.6-15 Reference & Page Number

  Year program started: Ongoing or Year program scheduled to start: _____

- ☒ Describes steps necessary to implement measure — Sec 6, p.6-15 Reference & Page Number

Table L1					
Actual	2001	2002	2003	2004	2005
# of full-time positions	1	1	1	1	1
# of full/part-time staff					
actual expenditures - $					

Table L2					
Planned	2006	2007	2008	2009	2010
# of full-time positions	1	1	1	1	1
# of full/part-time staff					
projected expenditures - $					

Provided an evaluation for this DMM if it is not implemented **(Section 10631 (g))**

- ☐ Evaluate legal authority (10631 (g)(4))
- ☐ Evaluate economic and non-economic factors (10631 (g)(1))
- ☐ Evaluate environmental, social, health factors (10631 (g)(1))
- ☐ Evaluate customer impact & technological factors (10631 (g)(1))

Table L3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

- ☐ Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))
- ☐ Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

- ☒ If another Agency is implementing (10631 (g)(4))

Agency Name
Coordinate with MWD of SC, WBMWD, others

Waste Water Prohibition (10631 (f)(1)(m))

Implementation **(Section 10631 (f) & (h))**

- ☒ Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) — Sec 6, p.6-15 — Reference & Page Number

Year program started 1991 or Year program scheduled to start _____

[X] Describes steps necessary to implement measure — Sec 6, p.6-15 Reference & Page Number

Table M1					
Actual	2001	2002	2003	2004	2005
waste ordinance in effect	X	X	X	X	X
# of on-site visits					
water softener ordinance					
actual expenditures - $					

Table M2					
Planned	2006	2007	2008	2009	2010
waste ordinance in effect	X	X	X	X	X
# of on-site visits					
water softener ordinance					
projected expenditures - $					

[X] Describe the methods, if any, used to evaluate the effectiveness of this demand management measure (10631 (f) (3)) — Sec 6, p.6-17 Reference & Page Number

Provided an evaluation for this DMM if it is not implemented **(Section 10631 (g))**

- [ ] Evaluate legal authority (10631 (g)(4))
- [ ] Evaluate economic and non-economic factors (10631 (g)(1))
- [ ] Evaluate environmental, social, health factors (10631 (g)(1))
- [ ] Evaluate customer impact & technological factors (10631 (g)(1))

Table M3 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

- [ ] Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))
- [ ] Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

- [ ] If another Agency is implementing (10631 (g)(4))

Agency Name

Residential Ultra-Low-Flush Toilet Replacement Programs (10631 (f)(1)(n))

Implementation **(Section 10631 (f) & (h))**

[X] Describe demand management measure currently being implemented or scheduled for implementation (10631 (f) (1)(2)) — Sec 6, p.6-15 Reference & Page Number

Year program started 2003 or Year program scheduled to start _____

# of SF pre-1992 accounts _____

[X] Describes steps necessary to implement measure — Sec 6, p.6-15 Reference & Page Number

Table N1	Single-Family				
Actual	2001	2002	2003	2004	2005
# of ULF rebates			290	246	175
# of ULF direct installs			0	0	0
# of ULF CBO installs			0	0	0
actual expenditures - $			$27,000	$24,000	$19,000
actual water savings - AFY (includes MF)			1.50	1.30	0.90

Table N2	Single-Family				
Planned	2006	2007	2008	2009	2010
# of ULF rebates	200	225	250	270	300
# of ULF direct installs					
# of ULF CBO installs					
projected expenditures - $	$18,000	$20,000	$23,000	$25,000	$27,000
projected water savings - AFY (includes MF)	1.20	1.40	1.60	1.80	2.00

# of MF pre-1992 units _____

Table N3	Multi-Family				
Actual	2001	2002	2003	2004	2005
# of ULF rebates			46	40	25
# of ULF direct installs					
# of ULF CBO installs					
actual expenditures - $			$4,000	$3,500	$2,500
actual water savings - AFY			w/SF	w/SF	w/SF

Table N4	Multi-Family				
Planned	2006	2007	2008	2009	2010
# of ULF rebates	50	75	100	125	150
# of ULF direct installs					
# of ULF CBO installs					
projected expenditures - $	$4,500	$7,000	$9,000	$11,000	$13,500
projected water savings - AFY	w/SF	w/SF	w/SF	w/SF	w/SF

☐ Is a toilet retrofit on resale ordinance in effect for your service area?

☒ Provide estimates, if available, of existing conservation savings on water use and the effect of such savings on the supplier's ability to further reduce demand (10631 (f)(4)) Sec 6, p.6-17 Reference & Page Number

Provided an evaluation for this DMM if it is not implemented **(Section 10631 (g))**

- [ ] Evaluate legal authority (10631 (g)(4))
- [ ] Evaluate economic and non-economic factors (10631 (g)(1))
- [ ] Evaluate environmental, social, health factors (10631 (g)(1))
- [ ] Evaluate customer impact & technological factors (10631 (g)(1))

Table N5 - 10631 (g)(2)	
Cost Effectiveness Summary	
Total Costs	
Total Benefits	
Discount Rate	
Time Horizon	
Cost of Water	
Water Savings (AFY)	

- [ ] Describe efforts to work with other relevant agencies to ensure implementation of the measure and to share the cost of implementation (10631 (g)(4))
- [ ] Describe funding available to implement any planned water supply project that would provide water at a higher unit cost (10631 (g)(3) & (h))

If Another Agency Implementing

- [X] If another Agency is implementing (10631 (g)(4))

Agency Name
Coordinate with Metropolitan Water District of SC

2005 Urban Water Management Plan Review for Completeness Form **(Water Code §10620 (d)(1)(2) - 10645**

(Water Code §10620 (d)(1)(2) - 10645, the 2005 Urban Water Management Plan Review for Completeness Form is found on Sheet 1

APPENDIX D

NOTICE OF PUBLIC HEARING AND RESOLUTION FOR UWMP ADOPTION

Daily Breeze

5215 TORRANCE BLVD * TORRANCE CALIFORNIA 90503-4077
(310) 543-6635 * (310) 540-5511 Ext. 396

PROOF OF PUBLICATION
(201 5.5 C.C.P.)

STATE OF CALIFORNIA

County of Los Angeles,

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of the THE DAILY BREEZE

a newspaper of general circulation, printed and published

in the City of Torrance
County of Los Angeles, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of County of Los Angeles, State of California, under the date of

June 10, 1974
Case Number SWC7146
that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement there of on the following dates, to-wit

Nov. 27; Dec. 4,

all in the year 2005
I certify (or declare) under penalty of perjury that the foregoing is true and correct.
Dated at Torrance

California, this 4 Day of Dec. 2005

Signature

This space is for the County Clerk's Filing Stamp

RECD CITY CLERK

2005 DEC -8 PM 1:31

CITY OF TORRANCE

Proof of Publication of

DB

DB 11-153
PUBLIC NOTICE

NOTICE OF PUBLIC HEARING BEFORE THE CITY COUNCIL OF THE CITY OF TORRANCE

URBAN WATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN: That the City Council of the City of Torrance will hold a public hearing to consider the City's 2005 Urban Water Management Plan in accordance with Section 10642 of the Urban Water Management Planning Act of 1983, as amended. The purpose of the hearing will be to solicit public comment prior to the adoption of the plan.

Copies of the Urban Water Management Plan are available for public inspection at the City of Torrance, Public Works Department, 20500 Madrona Avenue, Torrance, California and the City Clerk's Office at 3031 Torrance Boulevard, Torrance, California. Additional information on the above plan and/or public hearing may be obtained by contacting Pamela Lewis at (310) 781-6900.

This matter will be heard on December 13, 2005 at 7:00 p.m., or as soon as possible thereafter, at the Council Chambers at City Hall, 3031 Torrance Boulevard, California. All persons interested in this matter are notified to appear at this time.

Pub.: November 27; December 4, 2005.

RECEIVED
DEC 12 2005
Public Works Department

RESOLUTION NO. 2005-133

A RESOLUTION BY THE TORRANCE CITY COUNCIL ADOPTING AN URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Legislature enacted Assembly Bill 2853 during the 1994 Session of the California Legislature (an act to amend California Water Code Division 6, Part 2.6 Urban Water Management Planning) Act, Water Code Section 10610 et esq.; and

WHEREAS, AB 2853 mandates that every urban water supplier providing

municipal water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to develop an Urban Water Management Plan; and

WHEREAS, AB 2853 mandates that said Plan be updated at least once every five years; and

WHEREAS, the waters of the state are limited and renewable resource subject to ever-increasing demands; and

WHEREAS, a long term, reliable supply of water is essential and urban water management plans are required to actively pursue the efficient use of available supplies; and

WHEREAS, the City's current Urban Water Management Plan must be revised and filed with the California Department of Water Resources by December 31, 2005; and

WHEREAS, the City of Torrance has completed an update to its 2000 Urban Water Management Plan (2005 Plan) pursuant to the requirements of the Urban Water Management Plan; and

WHEREAS, the purpose of the 2005 Plan is to provide a local analysis of the current and alternative water demand, supplies and conservation activities of the City; and

WHEREAS, the Urban Water Management Plan incorporates a Water Shortage Contingency Plan as an element of the subject plan to outline courses of action in the event of a drought or emergency water shortage condition; and

WHEREAS, the City of Torrance is an urban supplier of water providing service to more than 3,000 customers, and has, therefore, prepared for public review a Draft Urban Water Management Plan, in compliance with the requirements of AB 2853, and a properly noticed public hearing regarding said Plan was held by the City Council on December 13, 2005, and a Final Urban Water Management Plan prepared; and

NOW, THEREFORE, BE IT RESOLVED THAT THE CITY COUNCIL OF THE CITY OF TORRANCE HEREBY:

SECTION 1
The subject Urban Water Management Plan is hereby adopted and ordered filed with the City Clerk.

SECTION 2
The City Manager is hereby authorized and directed to file this Plan with the California Department of Water Resources.

Introduced, approved and adopted this 13day of December, 2005.

/s/ Dan Walker
Mayor Dan Walker
ATTEST:

APPROVED AS TO FORM:
JOHN FELLOWS III, City Attorney

by /s/ Ron Pohl
Ronald T. Pohl, Assistant City Attorney

/s/ Sue Herbers
Sue Herbers, CMC
City Clerk

TORRANCE CITY COUNCIL RESOLUTION NO. 2005-133

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) ss
CITY OF TORRANCE)

I, Sue Herbers, City Clerk of the City of Torrance, California, do hereby certify that the foregoing resolution was duly introduced, approved, and adopted by the City Council of the City of Torrance at a regular meeting of said Council held on the 13th day of December, 2005 by the following roll call vote:

AYES:	COUNCILMEMBERS	Guyton, Mauno, McIntyre, Nowatka, Scotto, and Mayor Walker.
NOES:	COUNCILMEMBERS	None.
ABSTAIN:	COUNCILMEMBERS	None.
ABSENT:	COUNCILMEMBERS	Witkowsky.

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF TORRANCE)
This is to certify that the foregoing is a true and correct copy of the original document.
Dated: December 20, 2005
SUE HERBERS, City Clerk

/s/ Sue Herbers
Sue Herbers, CMC
City Clerk of the City of Torrance

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APPENDIX E

REFERENCES

City of Torrance

2005 Urban Water Management Plan

REFERENCES

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Arizona Department of Health Services, *Topock Groundwater Study Evaluation of Chromium in Groundwater Wells,* September 7, 2005

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APPENDIX F

WEST COAST BASIN JUDGMENT

West Coast Basin Judgment

California Water Service Company, et al. vs. City of Compton, et al.

Table of Contents

INTRODUCTION

The above - entitled matter came on regularly for further trial before the Honorable George Francis, Judge of the Superior Court of the State of California, assigned by the Chairman of the Judicial Council to sit in this case on Friday the 21st day of July, 1961. Thereupon plaintiffs filed a dismissal of the action as to certain defendants named in the Complaint and in the Amended Complaint herein who are not mentioned or referred to in Paragraph III of this Judgment, and the further trial of the action proceeded in respect to the remaining parties.

The objections to the Report of Referee and to all supplemental Reports thereto, having been considered upon exceptions thereto filed with the Clerk of the Court in the manner of and within the time allowed by law, were overruled.

Oral and documentary evidence was introduced, and the matter was submitted to the Court for decision. Findings of Fact, Conclusions of Law and Judgment herein have heretofore been signed and filed.

Pursuant to the reserved and continuing jurisdiction of the Court under the Judgment herein, certain amendments to said Judgment and temporary Orders have heretofore been made and entered.

Continuing jurisdiction of the Court under said Judgment is currently assigned to the HONORABLE JULIUS M. TITLE.

The motion of defendant herein, DOMINGUEZ WATER CORPORATION, for further amendments to the Judgment, notice thereof and of the hearing thereon having been duly and regularly given to all parties, came on for hearing in Department 48 of the above-entitled Court on March 21, 1980, at 1:30 o'clock P.M., before said HONORABLE JULIUS M. TITLE. Defendant, DOMINGUEZ WATER CORPORATION, was represented by its attorneys, Helm, Budinger & Lemieux, and Ralph B. Helm. Various other parties were represented by counsel of record appearing on the Clerk's records. Hearing thereon was concluded on that date. The within "Amended Judgment" incorporates amendments and orders heretofore made to the extent presently operable and amendments pursuant to said last mentioned motion. To the extent this Amended Judgment is a restatement of the Judgment as heretofore amended, it is for convenience in incorporating all matters in one document, it is not a readjudication of such matters and is not intended to reopen any such matters. As used hereinafter the word "Judgment" shall include the original Judgment as amended to date.

NOW, THEREFORE, IT IS HEREBY ORDERED, ADJUDGED AND DECREED AS FOLLOWS:

I. Existence of Basin and Boundaries Thereof.

There exists in the County of Los Angeles, State of California, an underground water basin or reservoir known and hereinafter referred to as "West Coast Basin", "West Basin" or the "Basin", and the boundaries thereof are described as follows:

Commencing at a point in the Baldwin Hills about 1300 feet north and about 100 feet west of the intersection of Marvale Drive and Northridge Drive; thence through a point about 200 feet northeasterly along Northridge Drive from the intersection of Marvale and Northridge Drives to the base of the escarpment of the Potrero fault; thence along the base of the escarpment of the Potrero fault in a straight line passing through a point about 200 feet south of the intersection of Century and Crenshaw Boulevards and extending about 2650 feet beyond this point to the southerly end of the Potrero escarpment; thence from the southerly end of the Potrero escarpment in a line passing about 700 feet south of the intersection of Western Avenue and Imperial Boulevard and about 400 feet north of the intersection of El Segundo

Boulevard and Vermont Avenue and about 1700 feet south of the intersection of El Segundo Boulevard and Figueroa Street to the northerly end of the escarpment of the Avalon-Compton fault at a point on said fault about 700 feet west of the intersection of Avalon Boulevard and Rosecrans Avenue; thence along the escarpment of the Avalon-Compton fault to a point in the Dominguez Hills located about 1300 feet north and about 850 feet west of the intersection of Central Avenue and Victoria Street; thence along the crest of the Dominguez Hills in a straight line to a point on Alameda Street about 2900 feet north of Del Amo Boulevard as measured along Alameda Street; thence in a straight line extending through a point located on Del Amo Boulevard about 900 feet west of the Pacific Electric Railway to a point about 100 feet north and west of the intersection of Bixby Road and Del Mar Avenue; thence in a straight line to a point located about 750 feet west and about 730 feet south of the intersection of Wardlow Road and Long Beach Boulevard at the escarpment of the Cherry Hill fault; thence along the escarpment of the Cherry Hill fault through the intersection of Orange Avenue and Willow Street to a point about 400 feet east of the intersection of Walnut and Creston Avenues; thence to a point on Pacific Coast Highway about 300 feet west of its intersection with Obispo Avenue; thence along Pacific Coast Highway easterly to a point located about 650 feet west of the intersection of the center line of said Pacific Coast Highway with the intersection of the center line of Lakewood Boulevard; thence along the escarpment of the Reservoir Hill fault to a point about 650 feet north and about 700 feet east of the intersection of Anaheim Street and Ximeno Avenue; thence along the trace of said Reservoir Hill fault to a point on the Los Angeles - Orange County line about 1700 feet northeast of the Long Beach City limit measured along the County line; thence along said Los Angeles - Orange County line in a southwesterly direction to the shore line of the Pacific Ocean; thence in a northerly and westerly direction along the shore line of the Pacific Ocean to the intersection of said shore line with the southerly end of the drainage divide of the Palos Verdes Hills; thence along the drainage divide of the Palos Verdes Hills to the intersection of the northerly end of said drainage divide with the shore line of the Pacific Ocean; thence northerly along the shore line of the Pacific Ocean to the intersection of said shore line with the westerly projection of the crest of the Ballona escarpment; thence easterly along the crest of the Ballona escarpment to the mouth of Centinela Creek; thence easterly from the mouth of Centinela Creek across the Baldwin Hills in a line encompassing the entire watershed of Centinela Creek to the point of beginning.

All streets, railways and boundaries of Cities and Counties herinabove referred to are as the same existed at 12:00 o'clock noon on August 20, 1961.

The area included within the foregoing boundaries is approximately 101,000 acres in extent.

II. Definitions:

1. Basin, West Coast Basin and West Basin, as these terms are interchangeably used herein, mean the ground water basin underlying the area described in Paragraph I hereof.

2. A fiscal year, as that term is used herein, is a twelve month period beginning July 1 and ending June 30.

3. A water purveyor, as that term is used in Paragraph XII hereof, means a party which sells water to the public, whether a regulated public utility, mutual water company or public entity, which has a connection or connections for the taking of imported water through The Metropolitan Water District of Southern California, through West Basin Municipal Water District, or access to such imported water through such connection, and which normally supplies at least a part of its customers' water needs with such imported water.

4. A water year, as that term is used herein, is a twelve month period beginning October 1 and ending September 30, until it is changed to a "fiscal year," as provided in Paragraph XVI hereof.

III. Declaration of Rights - Water Rights Adjudicated.

Certain of the parties to this action have no right to extract water from the Basin. The name of each of said parties is listed below with a zero following his name, and the absence of such right in said parties is hereby established and declared. Certain of the parties to this action and/or their successors in interest (through September 30, 1978) are the owners of rights to extract water from the Basin, which rights are of the same legal force and effect and without priority with reference to each other, and the amount of such rights, stated in acre-feet per year, hereinafter referred to as "Adjudicated Rights" is listed below following such parties' names, and the rights of the last-mentioned parties are hereby declared and established accordingly. Provided, however, that the Adjudicated Rights so declared and established shall be subject to the condition that the water, when used, shall be put to beneficial use through reasonable methods of use and reasonable methods of diversion; and provided further that the exercise of all of said Rights shall be subject to a pro rata reduction, if such reduction is required, to preserve said Basin as a common source of water supply.

IV. Adjudicated Rights Transferable.

Any rights decreed and adjudicated herein may be transferred, assigned, licensed or leased by the owner thereof provided, however, that no such transfer shall be complete until compliance with the appropriate notice procedures established by the Watermaster herein.

Rights adjudicated herein which are temporarily transferred, licensed or leased shall be considered the production from the Basin on behalf of such transferee, licensee or lessee which next follows his production of released exchange pool water, if any.

V. Physical Solution - Carry-over, Excess Production and Drought Carry-over.

1. *Carry-over*. In order to add flexibility to the operation of this Judgment and to assist in a physical solution to meet the water requirements in the West Basin, each of the parties to this action who is adjudged in Paragraph III hereof to have an Adjudicated Right and who, during a water year, does not extract from the Basin all of such party's Adjudicated Right, is permitted to carry over from such water year the right to extract from the Basin in the next succeeding water year an amount of water equivalent to the excess of his Adjudicated Right over his extraction during said water year not to exceed, however, 10% of such party's Adjudicated Right or two acre-feet, whichever is the larger.

2. *Excess Production*. In order to meet possible emergencies, each of the parties to this action who is adjudged in paragraph III hereof to have an Adjudicated Right is permitted to extract from the Basin in any water year for beneficial use an amount in excess of each such party's Adjudicated Right not to exceed 2 acre-feet or ten per cent (10%) of such party's Adjudicated Rights, whichever is the larger, and in addition thereto, such greater amount as may be approved by the Court. If such greater amount is recommended by the Watermaster, such order of Court may be made *ex parte*. Each such party so extracting water in excess of his Adjudicated Rights shall be required to reduce his extractions below his Adjudicated Rights by an equivalent amount in the water year next following. Such requirement shall be subject to the proviso that in the event the Court determines that such reduction will impose upon such a party, or others relying for water service upon such party, an unreasonable hardship, the Court may grant an extension of time within which such party may be required to reduce his extractions by the amount of the excess theretofore extracted by such party. If such extension of time is recommended by the Watermaster, such order of Court may be granted *ex parte*.

3. *Drought Carry-over*. By reason of this Court's Orders dated June 2, 1977, and September 29, 1977, for the water years 1976-77 and 1977-78 any party herein (including any successor in

interest) can "carry-over" until utilized, any Adjudicated Right (including any authorized carry-over rights from prior years) unexercised during said water years.

VI. Physical Solution - Exchange Pool Provisions.

As a further part of said physical solution herein imposed:

1. *Mandatory Offer to Exchange Pool*. Not less than sixty (60) days prior to the beginning of each water year, each party having supplemental water available to him through then existing facilities, other than water which any such party has the right to extract hereunder, shall file with the Watermaster the offer of such party to release to the Exchange Pool the amount by which such party's Adjudicated Right exceeds one-half of the estimated total required use of water by such party during the ensuing water year, provided that the amount required to be so offered for release shall not exceed the amount such party can replace with supplemental water so available to him.

   (a) *Basis of Offer to Exchange Pool - Redetermination of Offer by Watermaster*. Such estimate of total required use and such mandatory offer shall be made in good faith and shall state the basis on which the offer is made, and shall be subject to review and redetermination by the Watermaster, who may take into consideration the prior use by such party for earlier water years and all other factors indicating the amount of such total required use and the availability of replacement water.

   (b) *Voluntary Offer to Exchange Pool*. Any party filing an offer to release water under the mandatory provisions of this Paragraph VI may also file a voluntary offer to release any part or all of any remaining amount of water which such party has the right under this Judgment to pump or otherwise extract from the Basin, and any party who is not required to file an offer to release water may file a voluntary offer to release any part or all of the amount of water which such party has the right under this Judgment to pump or otherwise extract from the basin. All such voluntary offers shall be made not less than sixty (60) days prior to the beginning of each water year.

2. *Price of Water Offered to Exchange Pool*. Each offer to release water under the foregoing subparagraph [1 (a) and 1 (b)] shall be the price per acre-foot declared and determined at the time of the filing of such offer by the releasing party; provided:

   (a) *Replacement Cost*. That such price per acre-foot shall not exceed the price which the releasing party would have to pay to obtain from others, in equal monthly amounts, through existing facilities, a quantity of supplemental water equal in amount to that offered to be released; *or*

   (b) *Maximum Price*. If any such releasing party has no existing facilities through which to obtain water from others, such price shall not exceed the sum of the price per acre-foot charged by the Metropolitan Water District of Southern California to West Basin Municipal Water District plus the additional amount per acre-foot charged by the latter to municipalities and public utilities for water received from said Metropolitan Water District.

3. *Price Dispute -Objection - Watermaster Determination Court Determination*. In the event of a dispute as to any price at which is offered for release, any party affected thereby may, within thirty (30) days thereafter, by an objection in writing, refer the matter to the Watermaster for determination. Within thirty (30) days after such objection is filed the Watermaster shall consider said objection and shall make his finding as to the price at which said water should be offered for release and notify all interested parties thereof. Any party in compliance to these Exchange Pool Provisions may file with the Court, within thirty (30) days thereafter, any objection to such finding or determination of the Watermaster and bring the same on for hearing before the Court at such time as the Court may direct, after first having served said objection upon each of the interested parties. The Court may affirm, modify, amend or overrule such finding or determination of the

Watermaster. Pending such determination if the water so offered has been allocated, the party making the offer shall be paid the price declared in his offer, subject to appropriate adjustment upon final determination. The costs of such determination shall be apportioned or assessed by the Watermaster in his discretion between or to the parties to such dispute, and the Watermaster shall have the power to require, at any time prior to making such determination, any party or parties to such dispute to deposit with the Watermaster funds sufficient to pay the cost of such determination, subject to final adjustment and review by the Court as provided in this Paragraph.

4. *Request for Water From Exchange Pool*. Not less than sixty (60) days prior to the beginning of each water year any party whose estimated required use of water during the ensuing water year exceeds the sum of the quantity of water which such party has the right under this Judgment to extract from the Basin and the quantity available to him through then existing facilities, may file with the Watermaster a request for the release of water in the amount that his said estimated use exceeds his said available supply. Such request shall be made in good faith and shall state the basis upon which the request is made, and shall be subject to review and redetermination by the Watermaster. Within thirty (30) days thereafter the Watermaster shall advise, in writing, those requesting water of the estimated price thereof. Any party desiring to amend his request by reducing the amount requested may do so after the service of such notice. Prior to the first day of each water year the Watermaster shall determine if sufficient water has been offered to satisfy all requests. If he determines that sufficient water has not been offered he shall reduce such requests pro rata in the proportion that each request bears to the total of all requests. Thereupon, not later than said first day of each water year, he shall advise all parties offering to release water of the quantities to be released by each and accepted in the Exchange Pool and the price at which such water is offered. Simultaneously, he shall advise all parties requesting water of the quantities of released water allocated from the Exchange Pool and to be taken by each requesting party and the price to be paid therefore.

5. *Allocation of Exchange Pool Water by Watermaster*. In allocating water which has been offered for release to the Exchange Pool under subparagraph 1 hereof, the Watermaster shall first allocate that water required to be offered for release and which is offered at the lowest price pursuant to subparagraph 2 hereof, and progressively thereafter at the next lowest price or prices. If the aggregate quantity of water required to be released is less than the aggregate quantity of all requests for the release of water made pursuant to subparagraph 4 hereof, he shall then allocate water voluntarily offered for release and which is offered at the lowest price and progressively thereafter at the next lowest price or prices, provided that the total allocation of water shall not exceed the aggregate of all such requests.

   Any water offered for release under subparagraph 1 hereof and not accepted in the Exchange Pool and not allocated therefrom shall be deemed not to have been offered for release and may be extracted from the Basin by the party offering the same as if such offer had not been made.

   Each party requesting the release of water for his use and to whom released water is allocated from the Exchange Pool may thereafter, subject to all of the provisions of this Judgment, extract such allocated amount of water from the Basin, in addition to the amount such party is otherwise entitled to extract hereunder during the water year for which the allocation is made.

6. *Exchange Pool Water Pumped Before Pumper's Own Right*. From and after the first day of each water year, all water extracted from the Basin by any party requesting the release of water and to whom such water is allocated shall be deemed to have been water so released until the full amount released for use by him shall have been taken, and no such party shall be deemed to have extracted from the Basin any water under his own right so to do until said amount of released water shall have been extracted. Water extracted from the Basin by parties pursuant to their request for the release of water shall be deemed to have been taken by the offerors of such water under their own rights to extract water from the Basin.

7. *Price and Payment for Water Released for Exchange Pool*. All parties allocated water under subparagraph 4 hereof shall pay a uniform price per acre-foot for such water, which price shall be the weighted average of the prices at which all the water allocated was offered for release.

   Each party shall pay to the Watermaster, in five equal monthly installments during the applicable water year, an amount equal to the quantity of water allocated to him multiplied by said uniform price. The Watermaster shall bill each such party monthly for each such installment, the first such billing to be made on or before the first day of the second month of the water year involved, and payment therefore shall be made to the Watermaster within thirty (30) days after the service of each such statement. If such payment be not made within said thirty (30) days such payment shall be delinquent and a penalty shall be assessed thereon at the rate of 1% per month until paid. Such delinquent payment, including penalty, may be enforced against any party delinquent in payment by execution or by suit commenced by the Watermaster or by any party hereto for the benefit of the Watermaster.

   Promptly upon receipt of such payment, the Watermaster shall make payment for the water released and allocated, first, to the party or parties which offered such water at the lowest price, and then through successive higher offered prices up to the total allocated.

VII. Additional Pumping Allowed Under Agreement With Central and West Basin Water Replenishment District, During Periods of Emergency.

Central and West Basin Water Replenishment District, a public corporation of the State of California, (Division 18, commencing with Section 60,000 of the Water Code), hereinafter "Replenishment District", overlies West Basin and engages in activities of replenishing the ground waters thereof.

During an actual or threatened temporary shortage of the imported water supply to West Basin, Replenishment District may, by resolution, determine to subsequently replenish the Basin for any water produced in excess of a party's adjudicated rights hereunder, within a reasonable period of time, pursuant to agreements with such parties (to a maximum of 10,000 acre feet), under the terms and conditions hereinafter set forth.

a. Notwithstanding any other provision of this Judgment, parties (including successors in interest) who are water purveyors, as herinabove defined, are authorized to enter into agreements with Replenishment District under which such water purveyors may exceed their Adjudicated Rights for a particular water year when the following conditions are met:

   1. Replenishment District is in receipt of a resolution of the Board of Directors of The Metropolitan Water District of Southern California ("MWD") stating there is an actual or immediately threatened temporary shortage of MWD's imported water supply compared to MWD's needs, or a temporary inability to deliver MWD's imported water supply throughout its area, which will be alleviated in part by overpumping from West Basin.

   2. The Bard of Directors of both Replenishment District and West Basin Municipal Water District (WBMWD), by resolutions, concur in the resolution of MWD's Board of Directors and each determine that the temporary overproduction in West Basin will not adversely affect the integrity of the Basin or the sea water barrier maintained along the Coast of West Basin.

   3. In said resolution, Replenishment District's Board of Directors shall set a public hearing, and notice the time, place and date thereof (which may be continued from time to time without further notice) and which said notice shall be given by First Class Mail to the current designees of the parties, filed and served in accordance with Paragraph IX of this

Judgment. Said notice shall be mailed at least ten (10) days before said scheduled hearing date.

4. At said public hearing, parties (including successors in interest) shall be given full opportunity to be heard, and at the conclusion thereof the Board of Directors of Replenishment District by resolution decides to proceed with agreements under this Paragraph VII.

b. All such agreements shall be subject to the following requirements, and such reasonable others as Replenishment District's Board of Directors shall require:

1. They shall be of uniform content except as to the quantity involved, and any special provisions considered necessary or desirable with respect to local hydrological conditions or good hydrologic practice.

2. They shall be offered to all water purveyors, excepting those which Replenishment District's Board of Directors determine should not over-pump because such over-pumping would occur in undesirable proximity to a sea water barrier project designed to forestall sea water intrusion, or within, or in undesirable proximity to, an area within West Basin wherein groundwater levels are at an elevation where over-pumping is, under all the circumstances, then undesirable.

3. The maximum terms for the agreements shall be four months, all of which said agreements shall commence and end on the same day (and which may be executed at any time within said four month period), unless an extension thereof is authorized by the Court, under this Judgment.

4. They shall contain provisions that the water purveyor executing the agreement pay to the Replenishment District a price, in addition to the applicable replenishment assessment, determined on the following formula: The price per acre foot of WBMWD's treated domestic and municipal water for the water year in which the agreement is to run, less the total of: (a) an amount per acre foot as an allowance on account of incremental cost of pumping, as determined by Replenishment District's Board of Directors; and (b) the rate of the replenishment assessment of Replenishment District for the same fiscal year. If the term of the agreement is for a period which will be partially in one fiscal year and partially in another, and a change in either or both the price per acre foot of WBMWD's treated domestic and municipal water and rate of the replenishment assessment of Replenishment District is scheduled, the price formula shall be determined by averaging the scheduled changes with the price and rate then in effect, based on the number of months each will be in effect during the term of the agreement. Any price for a partial acre-foot shall be computed pro rata. Payments shall be due and payable on the principle that over-extractions under the agreement are the last water pumped in the fiscal year, and shall be payable as the agreement shall provide.

5. They shall contain provisions that: (a) All of such agreements (but not less then all) shall be subject to termination by Replenishment District if, in the Judgment of Replenishment District's Board of Directors, the conditions or threatened conditions upon which they were based have abated to the extent over-extractions are no longer considered necessary; and (b) that any individual agreement or agreements may be terminated if the Replenishment District's Board of Directors finds that adverse hydrologic circumstances have developed as a result of over-extractions by any water purveyor or purveyors which

have executed said agreements, or for any other reason that Replenishment District's Board of Directors finds good and sufficient.

c. Other matters applicable to such agreements and over-pumping thereunder are as follows, and to the extent they would affect obligations of the Replenishment District they shall be anticipated in said agreements:

1. The quantity of over-pumping permitted shall be additional to that which the water purveyor could otherwise over-pump under this Judgment.

2. The total quantity of permitted overpumping under all said agreements during said four months shall not exceed ten thousand (10,000) acre feet, but the individual water purveyor shall not be responsible or affected by any violation of this requirement. That total is additional to over-extractions otherwise permitted under this Judgment.

3. Only one four month period may be utilized by Replenishment District in entering into such agreements, as to any one emergency or continuation thereof declared by MWD's Board of Directors under sub-paragraph 6 (a) hereof.

4. The *ex parte* provisions of this Judgment may be utilized in lieu of the authority contained herein (which *ex parte* provisions are not limited as to time, nature or relief, or terms of any agreements), but neither Replenishment District nor any other party shall utilize both as to any one such emergency or continuation thereof.

5. If any party claims that it is being damaged or threatened with damage by the over-extractions by any party to such an agreement, the Watermaster or any party hereto may seek appropriate action of the Court for termination of any such agreement upon notice of hearing given by the party complaining, to the party to said agreement, to the Replenishment District, and to all parties who have filed a request herein for such special notice. Any such termination shall not affect the obligation of the terminated party to make payments under the agreement for over-extractions which previously occurred thereunder.

6. Replenishment District shall maintain separate accounting and a separate fund of the proceeds from payments made pursuant to agreements entered into under this Paragraph VII. Said fund shall be utilized solely for purposes of replenishment and the replacement of waters in West Basin. Replenishment District shall, as soon as practicable, cause replenishment in West Basin by the amounts to be overproduced pursuant to this Paragraph VII, whether through spreading, injection, or in-lieu agreements.

7. Over-extractions made pursuant to the said agreements shall not be subject to the "make up" provisions of this Judgment, as amended, provided, that if any party fails to make payments as required by the agreement, Watermaster may require such "make up" under Paragraph V hereof.

8. Water Purveyor under any such agreement may, and is encouraged to, enter into appropriate arrangements with customers who have water rights in West Basin under or pursuant to this Judgment, whereby the Water Purveyor will be assisted in meeting the objectives of the agreement.

9. Nothing in this Paragraph VII limits the exercise of the reserved and continuing jurisdiction of the court as provided in Paragraph XIV hereof.

VIII. Injunction.

On and after the date hereof, each of the parties hereto, their successors and assigns, and each of their agents, employees, attorneys, and any and all persons acting by, through, or under them or any of them, are and each of them is hereby perpetually enjoined and restrained from pumping or otherwise extracting from the Basin any water in excess of said party's Adjudicated Rights, except as provided in Paragraphs V, VI, and VII hereof.

IX. Order of Pumping Credit.

Production of water from the Basin for the use or benefit of the parties hereto shall be credited to each such party in the following order:

1. Exchange Pool production (Paragraph VI).
2. Leased or licensed production (Paragraph IV).
3. Normal carry-over (Paragraph V, 1).
4. Adjudicated Right (Paragraph III).
5. Drought carry-over (Paragraph V, 3).
6. Emergency Production under Agreement with Replenishment District (Paragraph VII).

X. Loss of Decreed Rights.

It is in the best interests of the parties herein and the reasonable beneficial use of the Basin and its water supply that no party be encouraged to take and use more water than is actually required. Failure to produce all of the water to which a party is entitled hereunder shall not, in and of itself, be deemed or constitute an abandonment of such party's right in whole or in part.

No taking of water under Paragraphs III, V, VI and VII hereof, by any party to this action shall constitute a taking adverse to any other party; nor shall any party to this action have the right to plead the statute of limitations or an estoppel against any other party by reason of his said extracting of water from the Basin pursuant to a request for the release of water; nor shall such release of water to the Exchange Pool by any party constitute a forfeiture or abandonment by such party of any part of his Adjudicated Right to water; nor shall such release in anywise constitute a waiver of such right although such water, when released under the terms of this Judgment may be devoted to a public use; nor shall such release of water by any such party in anywise obligate any party so releasing to continue to release or furnish water to any other party or his successor in interest, or to the public generally, or to any party thereof, otherwise than as provided herein.

XI. Watermaster Appointment.

The Watermaster shall be the Department of Water Resources of the Resources Agency of the State of California, to serve at the pleasure of the Court, and said Watermaster shall administer and enforce the provisions of this Judgment and the instructions and subsequent orders of this Court, and shall have the powers and duties hereinafter set forth. If any such provisions, instructions or orders of the Court shall have been disobeyed or disregarded, said Watermaster is hereby empowered and directed to report to the Court such fact and the circumstances connected therewith and leading thereto.

XII. Watermaster - Powers and Duties.

In order to assist the Court in the administration and enforcement of the provisions of this Judgment and to keep the Court fully advised in the premises, the Watermaster shall have the following duties in addition to those provided for elsewhere herein:

1. *Parties to Measure and Record Static Water Level of Each Well*. The Watermaster may require each party, at such party's own expense, to measure and record not more often than once a month, the elevation of the static water level in such of his wells in the Basin as are specified by the Watermaster.

2. *Parties to Install Meters on Wells and Record Production Therefrom*. The Watermaster may require any party hereto owning any facilities for pumping or otherwise extracting water from the Basin, at such party's own expense, to install and at all times maintain in good working order, mechanical measuring devices, approved by the Watermaster, and keep records of water production, as required by the Watermaster, through the use of such devices. However, if in the opinion of the Watermaster such mechanical devices are not practicable or feasible, the Watermaster may require such party to submit estimates of his water production, together with such information and data as is used by such party in making such estimate. Upon the failure of any party to install such device or devices on or before the date the Watermaster shall fix for such installation, or to provide the Watermaster with estimates of water production and information on which such estimates are based, the Watermaster may give the Court and the party notice of such failure for proper action in the premises.

3. *Watermaster to Assemble Records and Data and Evaluate Same*. The Watermaster shall collect and assemble the records and other data required of the parties hereto, and evaluate such records and other data. Such records and other data shall be open to inspection by any party hereto or his representative during normal business hours.

4. *Watermaster's Annual Budget*. The Watermaster shall prepare a tentative budget for each water year, stating the estimated expense for administering the provisions of this Judgment. The Watermaster shall mail a copy of said tentative budget to the designee of each of the parties hereto having an Adjudicated Right, at least sixty (60) days before the beginning of each water year. If any such party has any objection to said tentative budget or any suggestions with respect thereto, he shall present the same in writing to the Watermaster within fifteen (15) days after service of said tentative budget upon him. If no objections are received, the tentative budget shall become the final budget. If objections to said tentative budget are received, the Watermaster shall, within then (10) days thereafter, consider such objections, prepare a final budget, and mail a copy thereof to each such party's designee, together with a statement of the amount assessed to each such party, computed as provided in subparagraph 5 of this Paragraph XII. Any such party whose objections to said tentative budget are denied in whole or in part by the Watermaster may, within fifteen (15) days after the service of the final budget upon him, make written objection thereto by filing his objection with the Court after first mailing a copy of such objection to each party's designee, and shall bring such objection on for hearing before the Court at such time as the Court may direct. If objection to such budget be filed with the Court as herein provided, then the said budget and any and all assessments made as herein provided may be adjusted by the Court following said hearing.

5. *Watermaster's Fees as Parties' Costs*. The fees compensation or other expenses of the Watermaster hereunder shall be borne by the parties hereto having Adjudicated Rights in the proportion that each such party's Adjudicated Right bears to the total Adjudicated Rights of all such parties, and the Court or Watermaster shall assess such costs to each such party accordingly.

   Payment thereof, whether or not subject to adjustment by the Court as provided in this Paragraph XII, shall be made by each such party, on or prior to the beginning of the water year to which said final budget and statement of assessed costs is applicable. If such payment by any party is not made on or before said date, the Watermaster shall add a penalty of 5% thereof to such party's statement. Payment required of any party hereunder may be enforced by execution issued out of the Court, or as may be provided by any order hereinafter made by the Court, or by other proceedings by the Watermaster or by any party hereto on the Watermaster's behalf.

All such payments and penalties received by the Watermaster shall be expended by him for the administration of this Judgment. Any money remaining at the end of any water year shall be available for such use in the following water year.

6. *Watermaster's Annual Report*. The Watermaster shall prepare an annual report within ninety (90) days after the end of each water year covering the work of the Watermaster during the preceding water year and a statement of his receipts and expenditures.

7. *Watermaster Report to Contain All Basin Production*. The Watermaster shall report separately, in said annual report, all water extractions in the Basin, including that by producers who have no "Adjudicated Right."

8. *Watermaster Rules and Regulations*. The Watermaster may prescribe such reasonable Rules and Regulations as will assist him in the performance of his duties hereunder.

9. *Other Watermaster Duties*. The Watermaster shall perform such other duties as directed by the Court and as may be otherwise provided by law.

XIII. Objection to Watermaster Determination - Notice Thereof and Hearing Thereon.

Any party hereto having an Adjudicated Right who has objection to any determination or finding made by the Watermaster, other than as provided in Paragraphs VI and XII hereof, may make such objection in writing to the Watermaster within thirty (30) days after the date the Watermaster gives written notice of the making of such determination or finding, and within thirty (30) days thereafter the Watermaster shall consider said objection and shall amend or affirm such finding or determination and shall give notice thereof to all parties hereto having Adjudicated Rights. Any such party may file with the Court within thirty (30) days from the date of said notice any objection to such final finding or determination of the Watermaster and bring the same on for hearing before the Court at such time as the Court may direct, after first having served said objection upon each of the parties hereto having an Adjudicated Right. The Court may affirm, modify, amend or overrule any such finding or determination of the Watermaster.

XIV. Reserved and Continuing Jurisdiction of Court.

The Court hereby reserves continuing jurisdiction and, upon application of any party hereto having an Adjudicated Right or upon its own motion, may review (1) its determination of the safe yield of the Basin, or (2) the Adjudicated Rights, in the aggregate, of all of the parties as affected by the abandonment or forfeiture of any such rights, in whole or in part, and by the abandonment or forfeiture of any such rights by any other person or entity, and, in the event material change be found, to adjudge that the Adjudicated Right of each party shall be ratably changed; provided, however, that notice of such review shall be served on all parties hereto having Adjudicated Rights at least thirty (30) days prior thereto. Except as provided herein, and except as rights decreed herein may be abandoned or forfeited in whole or in part, each and every right decreed herein shall be fixed as of the date of the entry hereof.

XV. Judgment Modifications and Further Orders of Court.

The Court further reserves jurisdiction so that at any time, and from time to time, upon its own motion or upon application of any party hereto having an Adjudicated Right, and upon at least thirty (30) days notice to all such parties, to make such modifications of or such additions to, the provisions of this Judgment, or make such further order or orders as may be necessary or desirable for the adequate enforcement, protection or preservation of the Basin and of the rights of the parties as herein determined.

XVI. Subsequent Change From Water Year to Fiscal Year.

"Water year" as used in Paragraphs V,VI,VII and XII hereof shall, beginning with the first "fiscal year" (July 1 - June 30) commencing at least four months after this "Amended Judgment" becomes final, and thereafter, mean the "fiscal year". Since this changeover will provide a transitional accounting period of nine months, October 1 - June 30, notwithstanding the findings and determinations in the annual Watermaster Report for the last preceding water year, the Adjudicated Right of each of the parties hereto permitted to be extracted from the West Basin for said transitional accounting period shall be on the basis of three-quarters of each said party's otherwise Adjudicated Right. The Watermaster herein shall convert the times of his duties hereunder, including the rendition of a nine month report for the said transitional accounting period (October 1 - June 30), to coincide with the changeover from the water year to the fiscal year hereunder.

XVII. Designees of Parties for Future Notice and Service.

Service of this "Amended Judgment" on those parties who have executed and filed with the Court "Agreement and Stipulation for Judgment" or otherwise have named a designee, filed the same herein and have therein designated a person thereafter to receive notices, requests, demands, objections, reports, and all other papers and processes in this cause, shall be made by first class mail, postage prepaid, addressed to such designees (or their successors) and at the address designated for that purpose.

Each party who has not heretofore made such a designation shall, within thirty (30) days after the Amended Judgment herein shall have been served upon that party or his designee, file with the Court, with proof of service of a copy thereof upon the Watermaster, a written designation of the person to whom and the address at which all future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon that party or delivered to that party, are to be so served or delivered.

A later substitute or successor designation filed and served in the same manner by any party shall be effective from the date of such filing as to the then future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon or delivered to that party.

Delivery to or service upon any party by the Watermaster, by any other party, or by the Court, of any item required to be served upon or delivered to a party under or pursuant to this Judgment, may be by deposit in the mail, first class, postage prepaid, addressed to the latest designee and at the address in said latest designation filed by that party.

Parties hereto who have not entered their appearance or whose default has been entered and who are adjudged herein to have an Adjudicated Right, and who have not named a designee for service herein, shall be served with all said future notices, papers and process herein, and service herein shall be accomplished, by publication of a copy of such said notice, paper or process addressed to, "Parties to the West Basin Adjudication"; said publication shall be made once each week for two successive weeks in a newspaper of general circulation, printed and published in the County of Los Angeles, State of California, and circulated within the West Basin Area; the last publication of which shall be at least two weeks and not more than five weeks immediately preceding the event for which said notice is given or immediately preceding the effective date of any order, paper or process; in the event an effective date other than the date of its execution is fixed by the Court in respect of any order, paper or process, said last publication shall be made not more than five weeks following an event, the entry of an order by the Court, or date of any paper or process with respect to which such notice is given.

XVIII. Intervention of Successors In Interest and New Parties.

Any person who is not a party herein or successor to such party and who proposes to produce water from the Basin may seek to become a party to this Judgment, through a Stipulation In Intervention entered into with the Watermaster. Watermaster may execute said Stipulation on behalf of the other parties herein, but such Stipulation shall not preclude a party from opposing such intervention at the time of the court hearing thereon. Said Stipulation for Intervention must thereupon be filed with the Court, which will consider an order confirming said intervention following thirty (30) days notice thereof to the parties, served as herein provided. Thereafter, if approved by the Court, such Intervenors shall be a party herein, bound by this Judgment and entitled to the rights and privileges accorded under the physical solution imposed herein.

XIX. Judgment Binding on Successors.

Subject to the specific provisions hereinbefore contained, this Judgment and all provisions thereof are applicable to, binding upon and inure to the benefit of not only the parties to this action, but as well to their respective heirs, executors, administrators, successors, assigns, lessees, licensees and to the agents, employees and attorneys-in-fact of any such persons.

XX. Effect of Amended Judgment on Orders Heretofore Made and Entered Herein.

This Amended Judgment shall not abrogate the rights of any additional carry-over of unused Adjudicated Rights of the parties herein, as may exist pursuant to the orders herein filed June 2, 1977, and September 29, 1977.

ORDER AMENDING JUDGMENT
(Filed with County Clerk on March 8, 1989)

GOOD CAUSE APPEARING upon the duly-noticed Motion of West Basin Municipal Water District:

IT IS HEREBY ORDERED THAT THE JUDGMENT HEREIN BE AMENDED AS FOLLOWS:

"NON-CONSUMPTIVE PRACTICES

1. Any party herein may petition the Watermaster for a non-consumptive water use permit as part of a project to recover old refined oil or other pollutants that has leaked into the underground aquifers of the Basin. If the petition is granted as set forth in this part, the petitioner may extract the groundwater covered by the petition without the production counting against the petitioner's production rights.

2. If the Watermaster determines that there is a problem of groundwater contamination which the proposed project will remedy or ameliorate, an operator may make extractions of groundwater to remedy or ameliorate that problem if the water is not applied to beneficial surface use, its extractions are made in compliance with terms and conditions established by the Watermaster, and the Watermaster has determined either of the following:

a. The groundwater to be extracted is unusable and cannot be economically blended for use with other water.
b. The proposed program involves extraction of usable water in the same quantity as will be returned to the underground without degradation of quality.

3. The Watermaster may provide those terms and conditions the Watermaster deems appropriate, including, but not limited to, restrictions on the quantity of extractions to be so exempted, limitations on time, periodic reviews, requirement of submission of test results from a Watermaster-approved laboratory, and any other relevant terms or conditions.

4. The Watermaster shall conduct a public hearing on the petition and all parties herein and their representatives shall have an opportunity to be heard concerning the same.

5. The Watermaster shall, in its discretion, grant or deny the petition and fix a reasonable annual administrative fee to be paid to the Watermaster by the permittee. Within fifteen (15) days after the rendition of its decision, the Watermaster shall give written notice thereof to the designees of all parties herein.

6. After a noticed, public hearing, the Watermaster may, on the motion of any party herein or on its own motion, interrupt or stop a project for non-compliance with the terms of its permit or rescind or modify the terms of a permit to protect the integrity of the Basin of the Judgment herein. An order to interrupt or stop a project or to rescind or modify the terms of a permit shall apply to groundwater extractions occurring more than 10 days after the date of the order. The permit holder and the designees of all parties herein shall be given two weeks written notice of any hearing to consider interrupting or stopping a permitted project or the rescission or modification of the terms of a permit. Notice will be deemed given when mailed by first-class mail or when personally delivered.

7. The Watermaster's decision to grant, deny, modify or revoke a permit or to interrupt or stop a permitted project may be appealed to this court within thirty (30) days of the notice thereof and upon thirty (30) days notice to the designees of all parties herein.

8. The Watermaster shall monitor and periodically inspect the project for compliance with the terms and conditions of the permit hereunder.

9. No party shall recover costs from any other party herein."

IT IS FURTHER ORDERED that the amendment to the judgment approved by the court on March 22, 1984 ("former amendment") is hereby repealed, provided, all permits issued by the Watermaster under the former amendment shall be deemed under the instant amendment.

APPENDIX G

ORDINANCE NO. 3320 CHAPTER VI – ARTICLE 4
WATER CONSERVATION

ARTICLE 4
WATER CONSERVATION

SECTION 76.4.1. APPLICATION.

The provisions of this Article shall apply to all persons, firms or corporations (hereinafter referred to as water users) served with water by the Water Department of the City of Torrance (hereinafter referred to as Water Department), and to all the property or facilities so served.

SECTION 76.4.2. GENERAL PROHIBITION.

No water user within the service area of the Water Department shall make, cause, use or permit the user of water in a manner contrary to any provision of this Article or in any amount in excess of that use permitted by any curtailment provision then in effect pursuant to action taken by the City Council in accordance with the provisions of this Article.

SECTION 76.4.3. DEFINITIONS.

For purposes of this Article, the following terms shall have the meaning assigned to them in this Section:

a) Base Use shall mean that amount of water set by the Water Utility Director as the maximum amount of water which a water user may consume without incurring any penalty. Such base use amount shall be determined on a case-by-case basis, taking into consideration such factors as:

1) Properties of similar size, location and use,

2) Family size and composition,

3) Type of business or industry involved,

4) Unusual needs, health or safety factors.

b) Billing Unit shall mean a quantity of water equal to one hundred (100) cubic feet.

c) Base Year shall mean for all users the calendar year 1989.

SECTION 76.4.4. PHASE I SHORTAGE, CONSERVATION REQUIREMENTS.

a) A Phase I shortage may be declared at any time the City Council determines that the City is likely to suffer any shortage of water up to five (5) percent.

b) Conservation requirements are wholly voluntary, and are set forth in a resolution of the City.

SECTION 76.4.5. PHASE II SHORTAGE, CONSERVATION REQUIREMENTS.

(Amended by O-3343)

a) A Phase II shortage may be declared at any time the City Council determines that the City is likely to suffer a water shortage of five (5) percent.

b) The following restriction on the use of water, herein known as wasteful water practices, shall be mandated during a Phase II shortage:

1) There shall be no hose washing of sidewalks, walkways, driveways, parking areas or other paved surfaces, except as 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 carwash or with reclaimed wastewater.

3) No water shall be used to clean, fill or maintain level 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 leaks from indoor and outdoor plumbing fixtures shall be promptly repaired.

6) No lawn, landscape or other turf area shall be watered 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 water user 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.

c) No water user shall make, cause, use or permit the use of water from the Water Department for any purpose in an amount in excess of ninety-five (95) percent of the amount used on the customer's premises during the corresponding billing in the base year. All water users shall be permitted to use up to sixteen (16) billing units per metered connection per month (thirty-two (32) billing units per two (2) month billing period) without penalty.

If there is no corresponding billing period the "base use," as determined by the City, will apply.

SECTION 76.4.6. PHASE III SHORTAGE, CONSERVATION REQUIREMENTS.

a) A Phase III shortage may be declared at any time the City Council determines that the City is likely to suffer a water shortage of ten (10) percent.

b) The following restrictions in the use of water shall be in effect during a Phase III shortage:

1) The restrictions listed in subsection (b) of Section 76.4.5 shall be in effect.

2) Commercial nurseries, golf courses and other water dependent industries shall be prohibited from watering lawns, landscaping and other turf areas during the hours between 10:00 A.M. and 4:00 P.M., except there shall be no restriction on watering with reclaimed water.

c) No water user shall make, cause, use or permit the use of water from the Water Department for any purpose in an amount in excess of ninety (90) percent of the amount used on the customer's premises during the corresponding billing period in the base year. All water users shall be permitted to use up to fifteen (15) billing units (one hundred (100) cubic feet) per metered connection per month (thirty (30) billing units per two (2) month billing period) without penalty.

If there is no corresponding billing period, the "base use" as determined by the City will apply.

SECTION 76.4.7. PHASE IV SHORTAGE, CONSERVATION REQUIREMENTS.

(Amended by O-3343)

a) A Phase IV shortage may be declared at any time the City Council determines that the City is likely to suffer a water shortage of fifteen (15) percent.

b) The following restrictions in the use of water shall be in effect during a Phase IV shortage:

1) The restrictions listed in subsection (b) of Section 76.4.5 shall be in effect.

2) Commercial nurseries, golf courses and other water dependent industries shall be prohibited from watering lawns, landscaping and other turf areas more than once every other day and during the hours between 10:00 A.M. and 4:00 P.M., except that there shall be no restriction on watering with reclaimed water.

c) No water user shall make, cause, use or permit the use of water from the Water Department for any purpose in an amount in excess of eighty-five (85) percent of that used on the customers premises during the corresponding billing period in the base year. All water users shall be permitted to use up to fourteen (14) billing units (one hundred (100) cubic feet) per metered connection per month (twenty-eight (28) billing units per two (2) month billing period) without penalty.

If there is no corresponding billing period, the “base use” as determined by the City will apply.

SECTION 76.4.8. PHASE V SHORTAGE, CONSERVATION REQUIREMENTS.

(Amended by O-3343)

a) A Phase V shortage may be declared at any time the City Council determines that the City is likely to suffer a water shortage of twenty (20) percent.

b) The following restrictions on the use of water shall be in effect during a Phase V shortage:

1) The restrictions listed in subsection (b) of Section 76.4.5 shall be in effect.

2) Commercial nurseries, golf courses and other water dependent industries shall be prohibited from watering lawns, landscaping and other turf areas more often than every third day and during the hours of 10:00 A.M. and 4:00 P.M.; except that there shall be no restriction on watering with 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 water user shall make, cause, use or permit the use of water from the Water Department for any purpose in an amount in excess of eighty (80) percent of the amount used on the customers premises during the corresponding billing period in the base year. All water users shall be permitted to use up to thirteen (13) billing units (one hundred (100) cubic feet) per metered connection (twenty-six (26) billing units per two (2) month billing period) without penalty.

If there is no corresponding billing period, the “base use,” as determined by the City, will apply.

SECTION 76.4.9. NONCOMPLIANCE, PENALTIES.

Failure to comply with the specified conservation requirements set forth in Sections 76.4.5, 76.4.6, 76.4.7 or 76.4.8 shall result in the application of one or more of the following actions by the City:

a) For each billing period (monthly or bimonthly) that any water user fails to meet the percentage of reduction specified in Sections 76.4.5(c), 76.4.6(c), 76.4.7(c), 76.4.7(c) or 76.4.8(c), a surcharge of One Dollar ($1.00) will be added for each billing unit, or portion thereof, by which a water user fails to meet the water use reduction percentage required by this Article; provided, however, that even if the water user fails to meet the percentage of water use reduction, but does not exceed the base number of billing units permitted, no such surcharge shall be made.

b) Any water user who violates the provisions of Sections 76.4.5(b), 76.4.6(b), 76.4.7(b) or 76.4.8(b) shall be subject to the following actions by the City:

1) First Violation: The City shall deliver a written notice of violation, by first class mail, addressed to the water user, setting forth the facts of the violation and the corrective action which must be taken to correct the violation, the possible penalty and rights of appeal.

2) Second Violation: The City shall deliver a written notice of violation by personal service upon the water user, or if the water user cannot be served, by delivery of the notice of violation to a competent member of the water user's household, or a person apparently in charge of the water user's office, place of business or usual mailing address (except for post office boxes) who is at least eighteen (18) years of age, who shall be informed of the contents of the notice of violation, and thereafter by mailing a copy of the notice of violation by first class mail to the person to be served. In the event no person can be found at the property or facility where the violation occurred, and the water user cannot be found, such notice shall be affixed, conspicuously to the building or property, and a copy shall be mailed by first class mail to the water user. This second notice shall set forth the nature of the violation, the corrective action which must be taken, possible penalties and rights of appeal.

3) Third Violation: In the event a water user allows the same violation to occur a third time, the City shall add a penalty to the next billing period water bill in the sum of Fifty Dollars ($50.00) for such violation.

4) Fourth and Subsequent Violation: In the event a water user allows the same violation to occur a fourth or subsequent time, the City shall add a penalty to the next billing period water bill in the sum of One Hundred Fifty Dollars ($150.00) for each such violation. In addition, the City shall install a flow restriction reducing water flow to one (1) gallon per minute for water services up to one and one-half (1½) inches and proportionally sized restrictors shall be placed in the water line for not less than forty-eight (48) hours.

SECTION 76.4.11. ADMINISTRATIVE RELIEF.

a) Upon a proper showing, the Water Utility Director may grant relief to a water user from the water quantity limitations, or use limitations set forth in Sections 76.4.5, 76.4.6, 76.4.7 or 76.4.8 of this Article.

b) An application for such relief shall be made in writing upon forms provided by the Water Utility Director, and in accordance with rules for such application and consideration as may be promulgated by the Water Utility Director.

c) In considering the merits of the request for relief, the following factors may be considered:

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;

10) Water use necessary for reasons related to family illness or health; and

11) The nature and extent of other water saving measures the water user has taken.

d) In the event the water user is not satisfied with the decision of the Water Utility Director, he or she may file with the Water Utility Director a request for appeal as set forth in Section 76.4.12.

SECTION 76.4.12. APPEAL.

a) Any water user, upon receipt of a third or subsequent notice of violation, as provided in Section 76.4.9, may, within fifteen (15) days of receipt of the notice, file with the Water Utility Director a request for appeal. The request shall be made in writing upon forms provided by the Water Utility Director, and accompanied by a fee as set by the City Council.

b) The appeal shall be heard by the Administrative Hearing Board, appointed pursuant to Article 2, Chapter 2, Division 1 commencing at Section 12.2.1.

c) The water user's timely written request for a hearing shall automatically stay installation of a flow-restricting device on the customer's premises until the Administrative Hearing Board renders its decision.

d) The water user'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 water user deposits with the Water Department the amount of any unpaid surcharge due. If it is determined that the surcharge was wrongly assessed, the Water Department will refund any money deposited to the customer.

e)1) The decision of the Administrative Appeal Board shall be final, except that in the event the water user is not satisfied with the decision, he or she may within fifteen (15) days of the decision, file with the Water Utility Director a request for appeal. Notwithstanding the provision of Section 12.2.3 of this Code, the appeal shall be to the Water Commission. The request for appeal shall be in writing, on forms provided by the Water Utility Director, and accompanied by a fee as set by the City Council.

2) The Water Commission shall hold a hearing at the time set therefor, and may summon witnesses and hear evidence relating to such application, but the rules of evidence shall not apply. The Commission may continue the hearing from time to time. At the conclusion therefore, the Commission shall grant or deny such application, or make such modification of the decision or action appealed from, with reference thereto, as it may deem proper. The order of the Commission shall be immediately final and conclusive and there shall be no further appeal.

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APPENDIX H

DRAFT WATER SHORTAGE STAGE RESOLUTION

~~DRAFT~~

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF TORRANCE FINDING THE EXISTENCE OF A WATER SHORTAGE, ORDERING IMPLEMENTATION OF WATER SHORTAGE STAGE _____, AND ADOPTING SCHEDULE OF PENALTIES PURSUANT TO ARTICLE 4, CHAPTER 6 OF DIVISION 7 OF THE TORRANCE MUNICIPAL CODE.

WHEREAS, the waters of the state are a limited and renewable resource subject to ever-increasing demands, and

WHEREAS, the Metropolitan Water District of Southern California has implemented a mandatory reduction program for its member agencies, including Torrance; and

WHEREAS, the City Council has adopted Ordinance No, 3320, which added Article 4 of Chapter 6 of Division 7 (Section 76.4) of the Torrance Municipal Code dealing with water conservation, establishing a water shortage contingency plan, and declaring the presence of a water shortage; and

WHEREAS, the City Council may, upon finding that a water shortage exists, order implementation of the plan and a specified shortage stage which it deems appropriate to address such water shortage and shall establish a schedule of penalties to be assessed for violation of that plan.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF TORRANCE AS FOLLOWS:

1. That, for the reasons hereinabove set forth, the City Council hereby finds and determines that a Water Shortage exists in the City of Torrance.
2. That the City Council hereby orders implementation of Stage____ of the Water Shortage Contingency Plan, as set forth in Article 4 of Chapter 6 of Division 7 of the Torrance Municipal Code (Section 76.4).
3. That the following penalties shall be assessed for violation of any of the provisions of Stage ____ of the Water Shortage Plan.

   a) For each billing period (monthly or bimonthly) that any water user fails to meet the percentage of reduction, a surcharge of One Dollar ($1.00) will be added for each billing unit, or portion thereof, by which a water user fails to meet the water use reduction percentage required by this Article; provided, however, that even if the water user fails to meet the percentage of water use reduction, but does not exceed the base number of billing units permitted, no such surcharge shall be made.

   b) Any water user who violates the provisions of Section 76.4 shall be subject to the following actions by the City:

   1) First Violation: The City shall deliver a written notice of violation, by first class mail, addressed to the water user, setting forth the facts of the violation and the corrective action which must be taken to correct the violation, the possible penalty and rights of appeal.

   2) Second Violation: The City shall deliver a written notice of violation by personal service upon the water user, or if the water user cannot be served, by delivery of the notice of violation to a competent member of the water user's household, or a person apparently in charge of the water user's office, place of business or usual mailing address (except for

post office boxes) who is at least eighteen (18) years of age, who shall be informed of the contents of the notice of violation, and thereafter by mailing a copy of the notice of violation by first class mail to the person to be served. In the event no person can be found at the property or facility where the violation occurred, and the water user cannot be found, such notice shall be affixed, conspicuously to the building or property, and a copy shall be mailed by first class mail to the water user. This second notice shall set forth the nature of the violation, the corrective action which must be taken, possible penalties and rights of appeal.

3) Third Violation: In the event a water user allows the same violation to occur a third time, the City shall add a penalty to the next billing period water bill in the sum of Fifty Dollars ($50.00) for such violation.

4) Fourth and Subsequent Violation: In the event a water user allows the same violation to occur a fourth or subsequent time, the City shall add a penalty to the next billing period water bill in the sum of One Hundred Fifty Dollars ($150.00) for each such violation. In addition, the City shall install a flow restriction reducing water flow to one (1) gallon per minute for water services up to one and one-half (1½) inches and proportionally sized restrictors shall be placed in the water line for not less than forty-eight (48) hours.

The City Council of the City of Torrance hereby finds the above information true and correct and shall cause to implement the water shortage stage immediately upon adoption. The water shortage stage will remain in effect until such time that the City Council changes, rescinds, or ends the water shortage stage by resolution.

PASSED AND ADOPTED by the City Council of the City of Torrance at a regular meeting held on the ___ day of _____, 2005.

APPENDIX I

ORDINANCE NO. 3392 CHAPTER VI - ARTICLE 5 – RECLAIMED WATER

ARTICLE 5
RECLAIMED WATER

SECTION 76.5.1. PURPOSE.

The purpose of this Article is to:

a) Establish a City policy with regard to the use of reclaimed water that is consistent with State of California law that declares "that the use of potable domestic water for various non-potable uses is a waste or an unreasonable use of water, and prohibits a person or public agency from using potable domestic water for these uses, if reclaimed water is available and specified requirements are met."

b) Preserve the reliability of the potable public water supply during times of water shortage by diversification of source of supply through the use of reclaimed water for various non-potable uses.

c) Provide an alternative water supply source that will, in the long term, lower overall water costs to water customers in the City.

d) Provide a uniform means of implementing a reclaimed water program in the City.

SECTION 76.5.2. DEFINITIONS.

For purposes of this Article, the following definitions shall apply:

a) Agricultural Purposes. Agricultural purposes include the growing of field and nursery crops, row crops, trees and vines, and the feeding of fowl and livestock.

b) "Artificial Lake" means a human-made lake, pond, lagoon or other body of water that is used wholly or partly for landscape, scenic or noncontact recreational purposes.

c) "Cost Competitive Water Pricing" shall mean that the price charged water users for reclaimed water shall be less than or equivalent to water rates for potable water furnished by the Torrance Municipal Water Department, taking into account all capital, water quality related or other costs for converting to the use of reclaimed water and the present and projected costs of supplying, delivering and treating potable domestic water for these uses.

d) "Development Project" shall have the same meaning as Section 65928 of the California Government Code.

e) "Economically Feasible" shall mean that the intended reclaimed water application be cost effective for both the reclaimed water supplier (i.e., City of Torrance Municipal Water Department) and the prospective reclaimed water user, taking into account all appropriate costs related to the provision of said reclaimed water service.

f) "Greenbelt Areas" means an area primarily devoted to nonagricultural open space. Greenbelt areas include, but are not limited to, golf courses, cemeteries, parks and landscaping.

g) "Industrial Process Water" means water used by any industrial facility with process water requirements, which include, but are not limited to, rinsing, washing, cooling, circulation, other process or construction.

h) "Off-Site Facilities" means water facilities from the source of supply to the point of connection with the on-site facilities, including the water meter.

i) “On-Site Facilities” means water facilities under the control of the owner, downstream from the water meter.

j) “Potable Water” means water that conforms to the federal, state, and local standards for human consumption.

k) Reclaimed Water. Reclaimed water means waste water that, as the result of treatment, is suitable for a direct beneficial use or controlled use that would not otherwise occur.

l) “Reclaimed Water Distribution System” means a piping system intended for the delivery of reclaimed water only, that is separate from any potable water distribution system.

m) “Technically Feasible” shall mean that the use of reclaimed water shall be achievable with the application of current available technology, and whether the uses, processes or equipment used on the site can safely and effectively be operated with reclaimed water. If required, an independent evaluation will be undertaken to determine technical feasibility.

SECTION 76.5.3. USE OF RECLAIMED WATER.

a) In order to preserve fresh water aquifers, prevent saltwater intrusion into aquifers, and reduce the use of, and dependence upon, limited potable water supplies, reclaimed water shall be used in areas designated by the City providing its use is economically justified, financially and technically feasible, cost competitive with alternative potable water supplies furnished by the Torrance Municipal Water Department and consistent with legal requirements and the preservation of public health, safety, welfare and the environment.

b) Reclaimed water delivery systems in the City will be constructed on a phased basis in a manner that is economically and technically feasible.

SECTION 76.5.4. EVALUATION OF DEVELOPMENT PERMITS.

Every subdivision, parcel map, or other development permit application, within the designated reclaimed water service area shall be reviewed to determine if the use of reclaimed water would be feasible for landscape irrigation, cooling tower use, or other application. The use of reclaimed water will be required if the following conditions exist:

a) Reclaimed water is available to the user and meets the requirements of the State Department of Health Services.

b) The use of reclaimed water will not cause any loss or diminution of any existing water right.

c) The irrigation system, reclaimed water distribution system, cross-connection control and monitoring methods can be designed to meet the standards required by the State of California.

d) Appropriate control measures can be provided in accordance with the standards of the State of California where the use of reclaimed water will, or might, create a mist.

e) Reclaimed water service is both economically and technically feasible and cost competitive for prospective reclaimed water customers.

SECTION 76.5.5. ORDER OF SERVICE.

Reclaimed water will be served first to those properties that have the necessary on-site facilities installed and are ready for use.

SECTION 76.5.6. AGREEMENT FOR SERVICE.

a) Any person, firm or corporation applying for use of reclaimed water must agree in advance on the amount of reclaimed water to be used on the property in order that the limited supply may be apportioned.

b) As an option, any person, firm or corporation entering into a voluntary agreement with the City for reclaimed water service shall be excluded from the requirements of this Article.

SECTION 76.5.7. FUTURE USERS.

In the event a development application is reviewed and found to be a suitable application for the use of reclaimed water, but reclaimed water is not yet available to the property, such development permit shall be conditioned to require an appropriate reclaimed water distribution system within the project to accommodate reclaimed water at such time as reclaimed water becomes available to the site.

SECTION 76.5.8. CONVERSION TO RECLAIMED WATER.

a) The City Engineer, in consultation with prospective reclaimed water users, shall implement a program of review of each parcel of property within the City to determine which parcels would be appropriate for using reclaimed water for industrial processing, landscape irrigation, or other appropriate uses by the then existing users.

b) In making such determination, the City Engineer, in consultation with prospective reclaimed users, shall consider, but not be limited to, the following factors:

1) Whether reclaimed water is available to the site.

2) Whether the uses, processes or equipment used on the site can safely and effectively be operated with reclaimed water.

3) Whether it is feasible to modify on-site facilities to utilize reclaimed water.

4) Whether the use of reclaimed water would be cost effective, technically feasible and cost competitive for prospective reclaimed water customers.

c) If a property is identified as being suitable for use of reclaimed water and reclaimed water is available to the site, the property owner shall be so notified.

d) Within six (6) months of such notification, the property owner or the occupant of the property must either: apply for the use of reclaimed water and commence the necessary work to convert to reclaimed water, or provide satisfactory evidence to the City that conversion of the site to use reclaimed water is not technically or economically feasible, or would result in the loss or diminution of an existing water right, or would be harmful to the public health, safety, welfare or to the environment. At the time of commencing the work, the property owner shall furnish the City a schedule showing the time frame of when the conversion work will be completed. The City

Engineer may grant an extension of time for the preparation of studies, environmental review or other good reason.

e) In the event the property owner or the occupant fails, neglects, or refuses to convert to the use of reclaimed water, such owner or occupant shall pay to the City a surcharge on the amount of potable water used on the site in an amount to be set from time-to-time by resolution of the City Council.

SECTION 76.5.9. TEMPORARY DISCONTINUANCE OF SERVICE.

a) In the event reclaimed water supplies should be temporarily reduced such that not all reclaimed water users can be served, the City shall continue to serve those users deemed to be critical users and may temporarily discontinue reclaimed water service to those users deemed to be noncritical users.

b) For purposes of this Section, the following definitions shall apply:

1) Critical users are those users who utilize large quantities of reclaimed water and for whom a reduction or discontinuance of reclaimed water supplies would result in either unusual demands on the potable water supply, reduced production, or cessation of operations.

2) Noncritical users are those users of reclaimed water who utilize smaller quantities of reclaimed water and for whom discontinuance would either result in minimum demands on the potable water supplies, or for whom a temporary discontinuance of reclaimed water would have minimal or no effect on production or overall operations.

SECTION 76.5.10. DISCONTINUANCE OF SERVICE BY USER.

a) Any reclaimed water user that discontinues the use of reclaimed water to any property may subsequently reapply for reclaimed water service, but such service will be approved only if there is an adequate supply of reclaimed water available.

b) Any user of reclaimed water that discontinues use without reasonable cause shall pay the surcharge price for potable water thereafter.

SECTION 76.5.11. DISCONTINUANCE OF SERVICE BY CITY.

The City may discontinue the supply of reclaimed water to any property in order to supply a more critical user. In such event, the user that is discontinued will be reconnected to the potable water supply without payment of the surcharge.

SECTION 76.5.12. RECLAIMED WATER METERING AND INSTALLATION.

a) Reclaimed water shall only be served from a separate meter and connection to the property located a minimum of ten (10) feet horizontally from the domestic service.

b) Each such plumbing installation shall be subject to inspection prior to the service of reclaimed water to assure that no cross-connection between the two (2) water systems exists or is possible by means of such things as anti-siphon devices, cross-connecting preventers, or separate, distinct markings of the plumbing fixtures, faucets and piping.

SECTION 76.5.13. CONDITIONS OF SERVICE.

a) In order to implement the provisions of the subject reclaimed water ordinance, the City Engineer shall develop conditions of service delineating appropriate procedures, processes and rules for implementing the use of reclaimed water in the City. The conditions of service shall include, but are not limited to, technical specifications, standards, cross-connection requirements, application procedures and other procedures as required.

b) The conditions of service shall be amended by the City Engineer as required.

SECTION 76.5.14. APPEAL PROCESS.

a) A prospective reclaimed water user may within thirty (30) days of receipt of notice requiring that the subject water user either incorporate or convert to reclaimed water for certain water uses on the subject property, in accordance with the provisions of the ordinance codified in this Article, may file a written request to the City Engineer for appeal stating the reasons why the use of reclaimed water would not be feasible.

b) If the appeal is denied by the City Engineer, the applicant may submit the appeal to a board, appointed by the City Manager, to be known as the Reclaimed Water Administrative Hearing Board.

c) The decision of the Administrative Hearing Board shall be final, except that an appeal may be filed with the City Council by any person reasonably affected by the use of reclaimed water if the person is not in agreement with the decision of the Administrative Hearing Board. The appeal to City Council shall be in accordance with Article 5, Chapter 1, Division 1 of the Torrance Municipal Code commencing at Section 11.5.1.

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APPENDIX J

CITY OF TORRANCE RECYCLED RATE STRUCTURE AND INCENTIVE PROGRAM

Council Meeting of
September 28, 1999

Honorable Mayor and Members
of the Torrance City Council
City Hall
Torrance, California

Members of the Council:

SUBJECT: Public Hearing and Recommendation for the approval of proposed Recycled Water Rate Structure and Incentive Program

RECOMMENDATION

The Engineering Director and the Water Commission recommend that the City Council conduct a public hearing to receive public input on the City Engineers recommendation to:

1. Accept the Reclaimed Water Pricing Structure Report of May 1997 prepared by MacDonald-Stephens Engineers;

2. Approve the Recycled Water Rate Structure and Incentive Program in accordance with the attached Resolution; and

3. Approve the attached agreement with Torrance Unified School District for site access and reimbursement of construction costs to the City for on-site retrofits in accordance with Incentive Program in the attached Resolution.

FUNDING

Not applicable.

BACKGROUND

The use of Recycled Water for landscape irrigation and industrial purposes is part of the City's program to diversify our water resources and reduce our dependency on imported water. The West Basin Municipal Water District (WBMWD) has constructed a Recycled Water main in Prairie Avenue from the northern City limit to 190th Street and in 190th Street from Prairie Avenue to the Mobil Oil Refinery. The Mobil Oil Refinery is the City's largest water consumer and our first customer of Recycled Water. The City has negotiated a separate contract for the sale of Recycled Water to the refinery. WBMWD is now constructing a Recycled Water main in 166th Street that will ultimately service the ARCO Oil Refinery in Carson.

The City's Recycled Water Program started in 1993 with the City of Torrance Reclaimed Water Plan prepared by Montgomery Watson. That report identified potential customers for Recycled Water, including Columbia Park and Magruder Middle School

adjacent to Prairie Avenue. Due to the high cost of water mains, it is only feasible to retrofit irrigation systems for parks and schools that are located adjacent to the streets with the WBMWD Recycled Water mains. MacDonald-Stephens Engineers was retained in August 1996 to prepare plans to retrofit Columbia Park and Magruder Middle School. Part of that contract was to prepare the Reclaimed Water Pricing Structure Report which included cost estimates for the retrofits, analysis and recommendation of a pricing structure consistent with that of neighboring agencies and Capital Recovery Charts, used as a basis for selecting an incentive program. The industry standard for a Recycled Water Rate is to set a rate at a percentage of the potable water rate that will result in the same revenue to the City. Attachment "C" includes 5 exhibits from the Report that compare possible Recycled Water Rates versus possible wholesale rates from WBMWD. The rate set at 70% of potable water rates provides the most revenue neutral rate structure.

The Engineering Department is now prepared to retrofit the Columbia Park and Magruder Middle School irrigation systems to use Recycled Water. The Department of Health and Safety approved the plans in July 1997; however, this project was put on hold due to staffing limitations. This project was reactivated in March 1999 with the hiring of a Project Manager for the Water Resources Division. Meetings have been held between the Engineering Department and the Torrance Unified School District (TUSD) and the Parks and Recreation Department. A Public Education Meeting was held on May 27, 1999 at Magruder School, and all parties are in favor of using Recycled Water.

ANALYSIS

Recycled Water is a major part of the City's program to diversify our water resources and reduce our dependency on imported water. Recycled Water will also save the Parks and Recreation Department and TUSD on the costs of irrigation water and will provide a drought-proof source of water.

It is the experience of WBMWD and other water purveyors that retrofits for schools and other public agencies need to be spearheaded by the water purveyor, or the projects will not be completed in a timely manner or at all. Incentives are also provided to public customers by the water purveyors ranging from design and construction to financing. Incentives are designed to provide Recycled Water to public customers without the customer needing to have the capital up front. School districts, in particular, have a difficult time budgeting an expensive non-essential irrigation system retrofit.

Water Commission Action

The proposed Recycled Water Rate Structure and alternative incentives for on-site irrigation retrofits were presented to the Water Commission on May 20, 1999. The Commission unanimously took a position recommending that the City Council adopt the Recycled Water Rate Structure at 70% of the Potable Water Rate and provide the following incentives:

- City Departments: The Engineering Department shall construct and pay all costs for on-site irrigation system retrofits.

- Torrance Unified School District: The Engineering Department shall construct and pay up front all the costs for on-site irrigation system retrofits. Half of the on-site retrofit costs would be reimbursed to the Water Fund via an Agreement in which TUSD would continue to pay 100% of potable water rates for the Recycled Water until their half of the retrofit construction costs are recovered

- Private Customers: Customer constructs and pays all costs for retrofit of irrigation or industrial system.

The estimate for the Magruder Middle School retrofits is $26,700. Half the costs for the retrofits will be reimbursed per the attached Agreement. Attachment "D" is a Capital Recovery Table which illustrates the Incentive Program as it applies to Magruder Middle School

Respectfully submitted,

RICHARD W. BURTT
Engineering Director

By _____
NAZIR A. QURESHI
Senior Division Engineer

CONCUR:

_____
ROD GUTIERREZ
Water Commission Chairman

_____
RICHARD W. BURTT
Engineering Director

_____
LeROY J. JACKSON
City Manager

NAQ:DC:kc/Council Item-Recycled Water Rate :pm

Attachments:
A. Resolution
B. Retrofit Financing Agreement with TUSD
C. Reclaimed Water Pricing Study
D. Capital Recovery Table: Magruder Middle School
E. Copy of "Notice of Public Meeting"

RESOLUTION NO. 99-___

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF TORRANCE TO ESTABLISH RECYCLED WATER RATE STRUCTURE AND RECYCLED WATER USE INCENTIVE PROGRAM

Whereas: The City conducted a study of costs of providing recycled water, and

Whereas: The study justifies the fees set forth in this resolution, and

Whereas: The City wishes to promote the use of recycled water to conserve the limited potable water supply available to the service area of the City, and

Whereas: The City is willing to provide incentives to encourage the use of recycled water:

The City Council of the City of Torrance does resolve as follows:

SECTION I. – EFFECTIVE DATE

The Recycled water rate structure and incentives to use Recycled Water shall become effective _____, 1999.

SECTION II. – RECYCLED WATER RATE STRUCTURE FOR METERED RECYCLED WATER

Recycled Water rates for all customers shall be:

(A) Quantity Rates (Commodity) – Metered Water

The quantity rates to be charged and collected for Recycled Water supplied in any one month through one meter shall be set forth at 70% of the *Base Water Rates for Metered Water*.

(B) Readiness-to-Serve Component

The readiness-to-serve component is a service charge based on the size of the service connection to which is to be added the monthly charge computed at the quantity rates. The minimum monthly bill shall not be less than that set by *Base Water Rates for Metered Water* set for potable water.

SECTION III. – SERVICE FEES AND DEPOSIT

Service Fees and Deposits shall be the same as those set for potable water.

SECTION IV. – RECYCLED WATER INCENTIVES

Recycled water incentives are provided to public agency customers in order to advance the use of Recycled Water and reduce the City's dependence on potable water purchased from Metropolitan Water District. Recycled Water incentives are broken down into customer classes and shall be:

(A) City Departments

The Engineering Department shall design and construct all on-site irrigation systems retrofits. The costs for design and construction of these on-site irrigation system retrofits shall be paid from the Water Fund.

(B) Torrance Unified School District

The Engineering Department shall design and construct all on-site irrigation systems retrofits for schools within the Torrance Municipal Water service area. Half of the retrofit construction costs shall be reimbursed to the Water Fund via an Agreement in which Torrance Unified School District will continue to pay 100% of potable water rates for Recycled Water until half the retrofit construction costs are recovered.

SECTION V. – ADMINISTRATION

It shall be the duty and function of the Director of Finance to administer this Resolution.

INTRODUCED, APPROVED AND ADOPTED this_____ day of _____, 1999.

_____
Mayor of the City of Torrance

ATTEST:

_____
City Clerk of the City of Torrance

APPROVED AS TO FORM:

JOHN L. FELLOWS III
City Attorney

By _____
Ronald T. Pohl
Assistant City Attorney

RETROFIT FINANCING AGREEMENT NO.
BETWEEN THE CITY OF TORRANCE
AND TORRANCE UNIFIED SCHOOL DISTRICT FOR
RECYCLED WATER SERVICE TO SCHOOL CAMPUSES WITHIN
THE CITY OF TORRANCE WATER RESOURCES DIVISION SERVICE AREA

Whereas: CITY wishes to promote that use of recycled water and to conserve the limited potable water supply available to the CITY service area, and

Whereas: Recycled water cannot be used except in compliance with laws, rules and regulations, including requirements for the installation and special devices to insure separation of recycled and potable water, and

Whereas: CITY is willing to bear the cost of installing the special devices, ("RETROFIT IMPROVEMENTS"), necessary to use recycled water at TUSD campuses within the CITY service area and recover only half the costs of the installation through the water bill for the property.

This Agreement sets forth how the CITY will finance and recover half the cost of the RETROFIT IMPROVEMENTS.

The CITY decided, via a Resolution, to subsidize the design and half the RETROFIT IMPROVEMENT installation costs for TUSD as an incentive to TUSD to use recycled water.

This agreement is made and entered into as of _____, by and between the City of Torrance ("CITY"), and Torrance Unified School District, ("TUSD"), agree as follows:

SECTION I. DESCRIPTION OF WORK

CITY shall cause the RETROFIT IMPROVEMENTS at various TUSD campuses to be constructed in accordance with the plans and specifications approved by TUSD and the Los Angeles County Department of Health Services. The RETROFIT IMPROVEMENTS shall be inspected by the parties and approved before acceptance by TUSD. The RETROFIT IMPROVEMENTS shall be owned, maintained and operated by TUSD after acceptance and TUSD shall maintain and replace RETROFIT IMPROVEMENTS as necessary to continue to receive recycled water for TUSD.

SECTION II. CONSIDERATION

(a) TUSD shall provide CITY and its contractors with right of entry to the sites during the construction period.

(b) CITY may add additional charges to the rate for recycled water ("surcharge"), in addition to the rate charged for like classes of recycled

water service sufficient to recover half the amounts paid by CITY for the RETROFIT IMPROVEMENTS. The total surcharge shall be equal to half the total cost of RETROFIT IMPROVEMNTS until paid. The surcharge shall be paid when recycled water is purchased. The amount of payment shall be the difference between water utility's potable rate and recycled water rate times the amount of water delivered The surcharge shall be billed directly to TUSD by CITY. If CITY changes its potable water rate or recycled water rate during the capital recovery period, the surcharge shall be adjusted to reflect the new water rates. The amount of payment shall be the difference between water utility's new potable water rate and new recycled water rate times the amount of water delivered. The unpaid balance may be paid at any time by TUSD without penalties.

SECTION III. **RECORDS**

(a) CITY shall maintain accurate records of the work and costs of the work and provide a complete accounting on completion along with as-built drawings.

(b) Quarterly, CITY shall provide TUSD a monthly accounting summary of TUSD's retrofit payback. The summary shall incorporate total consumption, the surcharge, principal paid, and remaining balance.

SECTION IV. **INDEMNIFICATION AND INSURANCE**

(a) Each party shall save and hold the other parties and their respective officers, agents and employees, free and harmless from costs, liability and damages, including attorney fees, arising out of any act or omission to act by the indemnifying party its officers, agents and employees under this Agreement. CITY shall require the contractor constructing the RETROFIT IMPROVEMENTS to indemnify and defend the parties as a foresaid.

(b) Before beginning construction of the RETROFIT IMPROVEMENTS, the contractor selected by CITY shall provide each party with a certificate of insurance showing the insurance coverages as set forth in Exhibit "A".

SECTION V. **INUREMENT**

The Agreement shall inure to and bind the parties and their respective successor and assigns until such time as the costs advanced by CITY have been recovered by CITY.

SECTION VI. **INTEGRATION**

The Agreement represents the entire understanding of CITY and TUSD as to those matters contained herein. No prior oral or written understanding shall be of any

force or effect with respect to those matters covered hereunder. This Agreement may not be modified or altered except in writing, signed by all parties.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed the date first above written.

APPROVED:

CITY OF TORRANCE

By_____
LeROY J. JACKSON
City Manager

APPROVED AS TO FORM:

By_____
JOHN L. FELLOWS III
City Attorney

APPROVED:

TORRANCE UNIFIED SCHOOL DISTRICT

By_____
KEVIN CONDON
Chief Business Officer

EXHIBIT "A"

INSURANCE

Before beginning construction of the retrofit improvements, the Contractor selected by CITY shall provide each party with a certificate of insurance showing that the insurance coverages have been secured for the work as set forth below:

(a) The contractor shall procure and maintain, for the duration of the contract, insurance against claims for injuries to persons or damages to property arising from or in connection with the performance of the work hereunder by the contractor, officers, agents, employees or volunteers.

(b) The contractor shall provide the following coverages:

1. Automobile Liability, including owned, non-owned and hired vehicles, with at least the following limits of liability:

   a. Primary Bodily Injury with limits of at least $500,000 per person $1,000,000 per occurrence and;
   b. Primary Property Damage with limits of at least $250,000 per occurrence, or
   c. Combined single limits of at least $1,000,000 per occurrence.

2. General Liability including coverage for premises, products and completed operations, independent contractors, personal injury and contractual obligations with combined single limits of at least $1,000,000 per occurrence.

3. Workers' Compensation with limits as required by the State of California and Employer's Liability with limits of at least $1,000,000.

(c) The insurance policies required above shall contain or be endorsed to contain the following specific provisions: CITY and its Council Members, officers, employees, agents and authorized volunteers, and TUSD, its Board Members, officers, employees, and agents are added as additional insureds.

ATTACHMENT "C"

CITY OF TORRANCE
RECLAIMED WATER PRICING STUDY

RECLAIMED WATER RATE STUDY

ITEM	CITY OF TORRANCE POTABLE RETAIL PRICE		EFFECTIVE POTABLE PRICE FROM MWD		CITY OF TORRANCE POTABLE SERVICE COSTS		POTABLE PERCENT MARK-UP	
	$/AF	$/HCF	$/AF	$/HCF	$/AF	$/HCF	%	
POTABLE WATER RATES	765	1.7562	500	1.1478	265	0.6084	0	0.00%

RECYCLED WATER RATES	CITY OF TORRANCE RECYCLED RETAIL PRICE (a)		WHOLESALE PRICE FROM WEST BASIN MWD (b)		CITY OF TORRANCE SERVICE COSTS (c)		AVAILABLE EXCESS(+) OR DEFICIT (-)	
	$/AF	$/HCF	$/AF	$/HCF	$/AF	$/HCF	$/AF	$/HCF
RECYCLED WATER RATES (0-25 AF/MO) (sold at 100% of potable rates)	765	1.7562	**320**	0.7346	265	0.6084	**180**	0.4132
RECYCLED WATER RATES (0-25 AF/MO) (sold at 95% of potable rates)	727	1.6690	**320**	0.7346	265	0.6084	**142**	0.3260
RECYCLED WATER RATES (0-25 AF/MO) (sold at 90% of potable rates)	689	1.5817	**320**	0.7346	265	0.6084	**104**	0.2388
RECYCLED WATER RATES (0-25 AF/MO) (sold at 85% of potable rates)	651	1.4945	**320**	0.7346	265	0.6084	**66**	0.1515
RECYCLED WATER RATES (0-25 AF/MO) (sold at 80% of potable rates)	612	1.4050	**320**	0.7346	265	0.6084	**27**	0.0620
RECYCLED WATER RATES (0-25 AF/MO) (sold at 75% of potable rates)	574	1.3177	**320**	0.7346	265	0.6084	**-11**	-0.0253
RECYCLED WATER RATES (0-25 AF/MO) (sold at 70% of potable rates)	536	1.2305	**320**	0.7346	265	0.6084	**-49**	-0.1125

ATTACHMENT "C"

CITY OF TORRANCE
RECLAIMED WATER PRICING STUDY

RECLAIMED WATER RATE STUDY

RECYCLED WATER RATES	CITY OF TORRANCE RECYCLED RETAIL PRICE (a)		WHOLESALE PRICE FROM WEST BASIN MWD (b)		CITY OF TORRANCE SERVICE COSTS (c)		AVAILABLE EXCESS(+) OR DEFICIT (-)	
	$/AF	$/HCF	$/AF	$/HCF	$/AF	$/HCF	$/AF	$/HCF
RECYCLED WATER RATES (25-50 AF/MO) (sold at 100% of potable rates)	765	1.7562	**300**	0.6887	265	0.6084	**200**	0.4591
RECYCLED WATER RATES (25-50 AF/MO) (sold at 95% of potable rates)	727	1.6690	**300**	0.6887	265	0.6084	**162**	0.3719
RECYCLED WATER RATES (25-50 AF/MO) (sold at 90% of potable rates)	689	1.5817	**300**	0.6887	265	0.6084	**124**	0.2847
RECYCLED WATER RATES (25-50 AF/MO) (sold at 85% of potable rates)	651	1.4945	**300**	0.6887	265	0.6084	**86**	0.1974
RECYCLED WATER RATES (25-50 AF/MO) (sold at 80% of potable rates)	612	1.4050	**300**	0.6887	265	0.6084	**47**	0.1079
RECYCLED WATER RATES (25-50 AF/MO) (sold at 75% of potable rates)	574	1.3177	**300**	0.6887	265	0.6084	**9**	0.0207
RECYCLED WATER RATES (25-50 AF/MO) (sold at 70% of potable rates)	536	1.2305	**300**	0.6887	265	0.6084	**-29**	-0.0666

ATTACHMENT "C"

CITY OF TORRANCE
RECLAIMED WATER PRICING STUDY

RECLAIMED WATER RATE STUDY

RECYCLED WATER RATES	CITY OF TORRANCE RECYCLED RETAIL PRICE (a)		WHOLESALE PRICE FROM WEST BASIN MWD (b)		CITY OF TORRANCE SERVICE COSTS (c)		AVAILABLE EXCESS(+) OR DEFICIT (-)	
	$/AF	$/HCF	$/AF	$/HCF	$/AF	$/HCF	$/AF	$/HCF
RECYCLED WATER RATES (50-100 AF/MO) (sold at 100% of potable rates)	765	1.7562	**280**	0.6428	265	0.6084	**220**	0.5051
RECYCLED WATER RATES (50-100 AF/MO) (sold at 95% of potable rates)	727	1.6690	**280**	0.6428	265	0.6084	**182**	0.4178
RECYCLED WATER RATES (50-100 AF/MO) (sold at 90% of potable rates)	689	1.5817	**280**	0.6428	265	0.6084	**144**	0.3306
RECYCLED WATER RATES (50-100 AF/MO) (sold at 85% of potable rates)	651	1.4945	**280**	0.6428	265	0.6084	**106**	0.2433
RECYCLED WATER RATES (50-100 AF/MO) (sold at 80% of potable rates)	612	1.4050	**280**	0.6428	265	0.6084	**67**	0.1538
RECYCLED WATER RATES (50-100 AF/MO) (sold at 75% of potable rates)	574	1.3177	**280**	0.6428	265	0.6084	29	0.0666
RECYCLED WATER RATES (50-100 AF/MO) (sold at 70% of potable rates)	536	1.2305	**280**	0.6428	265	0.6084	-9	-0.0207

ATTACHMENT "C"

CITY OF TORRANCE
RECLAIMED WATER PRICING STUDY

RECLAIMED WATER RATE STUDY

RECYCLED WATER RATES	CITY OF TORRANCE RECYCLED RETAIL PRICE (a)		WHOLESALE PRICE FROM WEST BASIN MWD (b)		CITY OF TORRANCE SERVICE COSTS (c)		AVAILABLE EXCESS(+) OR DEFICIT (-)	
	$/AF	$/HCF	$/AF	$/HCF	$/AF	$/HCF	$/AF	$/HCF
RECYCLED WATER RATES (100-200 AF/MO) (sold at 100% of potable rates)	765	1.7562	**260**	0.5969	265	0.6084	**240**	0.5510
RECYCLED WATER RATES (100-200 AF/MO) (sold at 95% of potable rates)	727	1.6690	**260**	0.5969	265	0.6084	**202**	0.4637
RECYCLED WATER RATES (100-200 AF/MO) (sold at 90% of potable rates)	689	1.5817	**260**	0.5969	265	0.6084	**164**	0.3765
RECYCLED WATER RATES (100-200 AF/MO) (sold at 85% of potable rates)	681	1.5634	**260**	0.5969	265	0.6084	**156**	0.3581
RECYCLED WATER RATES (100-200 AF/MO) (sold at 80% of potable rates)	612	1.4050	**260**	0.5969	265	0.6084	**87**	0.1997
RECYCLED WATER RATES (100-200 AF/MO) (sold at 75% of potable rates)	574	1.3177	**260**	0.5969	265	0.6084	**69**	0.1584
RECYCLED WATER RATES (100-200 AF/MO) (sold at 70% of potable rates)	536	1.2305	**260**	0.5969	265	0.6084	**11**	0.0253

ATTACHMENT "C"

CITY OF TORRANCE
RECLAIMED WATER PRICING STUDY

RECLAIMED WATER RATE STUDY

RECYCLED WATER RATES	CITY OF TORRANCE RECYCLED RETAIL PRICE (a)		WHOLESALE PRICE FROM WEST BASIN MWD (b)		CITY OF TORRANCE SERVICE COSTS (c)		AVAILABLE EXCESS(+) OR DEFICIT (-)	
	$/AF	$/HCF	$/AF	$/HCF	$/AF	$/HCF	$/AF	$/HCF
RECYCLED WATER RATES (200+ AF/MO) (sold at 100% of potable rates)	765	1.7562	240	0.5510	265	0.6084	260	0.5969
RECYCLED WATER RATES (200+ AF/MO) (sold at 95% of potable rates)	727	1.6690	240	0.5510	265	0.6084	222	0.5096
RECYCLED WATER RATES (200+ AF/MO) (sold at 90% of potable rates)	689	1.5817	240	0.5510	265	0.6084	184	0.4224
RECYCLED WATER RATES (200+ AF/MO) (sold at 85% of potable rates)	651	1.4945	240	0.5510	265	0.6084	146	0.3352
RECYCLED WATER RATES (200+ AF/MO) (sold at 80% of potable rates)	612	1.4050	240	0.5510	265	0.6084	107	0.2456
RECYCLED WATER RATES (200+ AF/MO) (sold at 75% of potable rates)	574	1.3177	240	0.5510	265	0.6084	69	0.1584
RECYCLED WATER RATES (200+ AF/MO) (sold at 70% of potable rates)	536	1.2305	240	0.5510	265	0.6084	31	0.0712

(a) BASED ON 100%, 95%, 90%, 85%, 80% AND 75% OF THE CITY'S RETAIL POTABLE WATER RATES
(b) WEST BASIN MWD DECLINING RATE STUCTURE, RESOLUTION 3-97--686 (APPENDIX A)
(c) BASED ON CITY'S SERVICE COSTS FOR POTABLE WATER SERVICE

City of Torrance

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