
**COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
Waterworks District No. 29, Malibu and
The Marina del Rey Water System**

**2005
URBAN WATER MANAGEMENT PLAN**



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Prepared For:

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**LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
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WATER SYSTEM
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1.0 INTRODUCTION

The 2005 Urban Water Management Plan (UWMP) for Los Angeles County Waterworks District No. 29, Malibu (District) and the Marina del Rey Water System was prepared in accordance with the California Urban Water Management Planning Act of 1984 (Appendix A presents a copy of the Act and its provisions). The Act has been amended several times since its passage, with the most recent amendment in 2004. The Act requires every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000/AF (acre-feet) of water annually to prepare and adopt, in accordance with prescribed requirements, an Urban Water Management Plan. Pursuant to section 10621.a. of the Act, each urban water supplier shall update its plan at least once every five years on or before December 31, in calendar years ending in five and zero.

1.1 Formation of Waterworks District 29 and Marina del Rey Water System

The District was formed in accordance with Division 16 Sections 55000-55991 of the State Water Code. The District is governed by the Los Angeles County Board of Supervisors with the Waterworks and Sewer Maintenance Division of the County of Los Angeles Department of Public Works (DPW) providing administration, operation, and maintenance of the District's facilities and infrastructure.

1.2 Public Participation

The 2005 UWMP was adopted by the Board of Supervisors on **November 22, 2005** and submitted to the California Department of Water Resources within 30 days of the Board's adoption. A copy of the adopted resolution is included in Appendix B. A public hearing was held during the meeting to include public review and comments on the 2005 UWMP. Notice of the preparation of the plan and the public hearing was made in the Malibu Times, Surfside News, and Topanga Messenger and a copy of the plan was distributed to interested parties and placed in the local libraries throughout the District.

1.3 Coordination with other County Departments

The District's staff has coordinated with the County of Los Angeles Department of Regional Planning to develop the population projections for this plan.

1.4 Interagency Coordination

The District is a retail agency within the service area of the West Basin Municipal Water District (West Basin MWD). Staff of the District coordinated with the West Basin MWD's staff to project the supply reliability and various water conservation programs to ensure consistency between the District's and West Basin MWD's plans. The District also worked with the Southern California Association of Governments (SCAG) to determine population growth in the service areas. Table 1.1 indicates the level of coordination with appropriate agencies that participated in the preparation of this plan.

Table 1.1 Coordination with Appropriate Agencies

	Participated in UWMP development	Contacted for Assistance	Received copy of the draft	Sent notice of intention to adopt
West Basin MWD	X	X		X
City of Malibu		X	X	X
County of Los Angeles Department of Regional Planning		X		
Resource Conservation District of the Santa Monica Mountains			X	X
Las Virgenes Municipal Water District				X
Malibu Times				X
Surfside News				X
Topanga Messenger				X
Lloyd Taber Marina del Rey County Library			X	X
Malibu Library			X	X
Southern California Association of Governments		X		

1.5 Purpose of the Urban Water Management Plan

The purpose of Urban Water Management Plans is to help water agencies plan for future water supply and demand within their service areas. The District recognizes that conservation and efficient use of water are critical, and has prepared this UWMP to ensure an appropriate level of reliability in its water service to meet the needs of its customers during normal, dry and multiple dry years.

1.6 Climate

The District’s service areas lie along the Pacific Coast. The climate is Mediterranean, characterized by warm, dry summers and wet, cool winters with average precipitation of 13 inches per year. The steady climate and low rainfall makes the area a popular vacation location for tourists. In Table 1.2 the average monthly temperature, rainfall and evapotranspiration rates (ETo) are displayed. The temperature and precipitation data was collected via the Western Regional Climate Center’s website at the Los Angeles WSO Airport weather station. The period of record for the temperature and precipitation is from the year 1914 to 2005. The ETo data was obtained from the California Irrigation

Management Information System (CIMIS) at the Santa Monica station for the Los Angeles Region.

Table 1.2 Temperature, Precipitation, and ETo

	Jan	Feb	Mar	Apr	May	Jun
Average Max. Temperature (F)	65.1	65.6	66.4	68.2	70.1	73.3
Average Min. Temperature (F)	47.9	49.1	50.6	52.8	55.9	59
Average Total Precipitation (in.)	2.9	3.15	2.08	0.91	0.21	0.06
Average ETo	1.79	2.12	3.3	4.49	4.73	5.03

	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	77.2	78.3	77.5	74.6	71.4	66.5	71.2
Average Min. Temperature (F)	62.3	63.2	61.9	58.2	52.9	48.7	55.2
Average Total Precipitation (in.)	0.01	0.06	0.22	0.43	1.22	2.21	13.47
Average ETo	5.4	5.38	3.94	3.4	2.42	2.22	3.69

[1] Data taken from the Western Regional Climate Center's website at the Los Angeles WSO Airport Station: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?calosa>.

[2] ETo data taken from the California Irrigation Management Information System (CIMIS) at the Santa Monica Station for Calendar Year 2004: <http://www.cimis.water.ca.gov/cimis/welcome.jsp>.

1.7 Other Demographic Factors

The District's water service areas include the City of Malibu and the unincorporated Topanga Canyon area. The District serves an estimated population of 24,973 people through approximately 7,760 active meters. The majority of these connections serve residential communities with some services to commercial, landscape, fire protection, and other public agencies. The District also sells water to the Marina del Rey Water System which has a population of approximately 10,000 people.

Malibu area

The Malibu water service area is a narrow strip along the coastline, with numerous canyons running northwards. As shown on the following page, it is bounded on the north by the steep and rugged Santa Monica Mountains, on the east by Topanga Canyon, on the west by Ventura County and on the south by the Pacific Ocean. The District occupies an area of about 47 square miles (30,000 acres). The District has served the Malibu area since 1973.

Due to a growing population, natural disasters, and outdated water systems in the District, several projects have been constructed to improve water service reliability. One of these projects was a one-mile section of three 10-inch diameter steel watermains along Pacific Coast Highway between Big Rock Drive and Tuna Canyon Road, a known landslide area. The District's 30-inch transmission watermain has had many leaks within this landslide area resulting in interruptions of water service to the District's customers on the west side of the District. The three new watermains will allow the District to continue providing water when the primary transmission watermain is out of service for leak repairs.

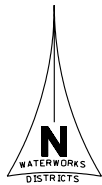
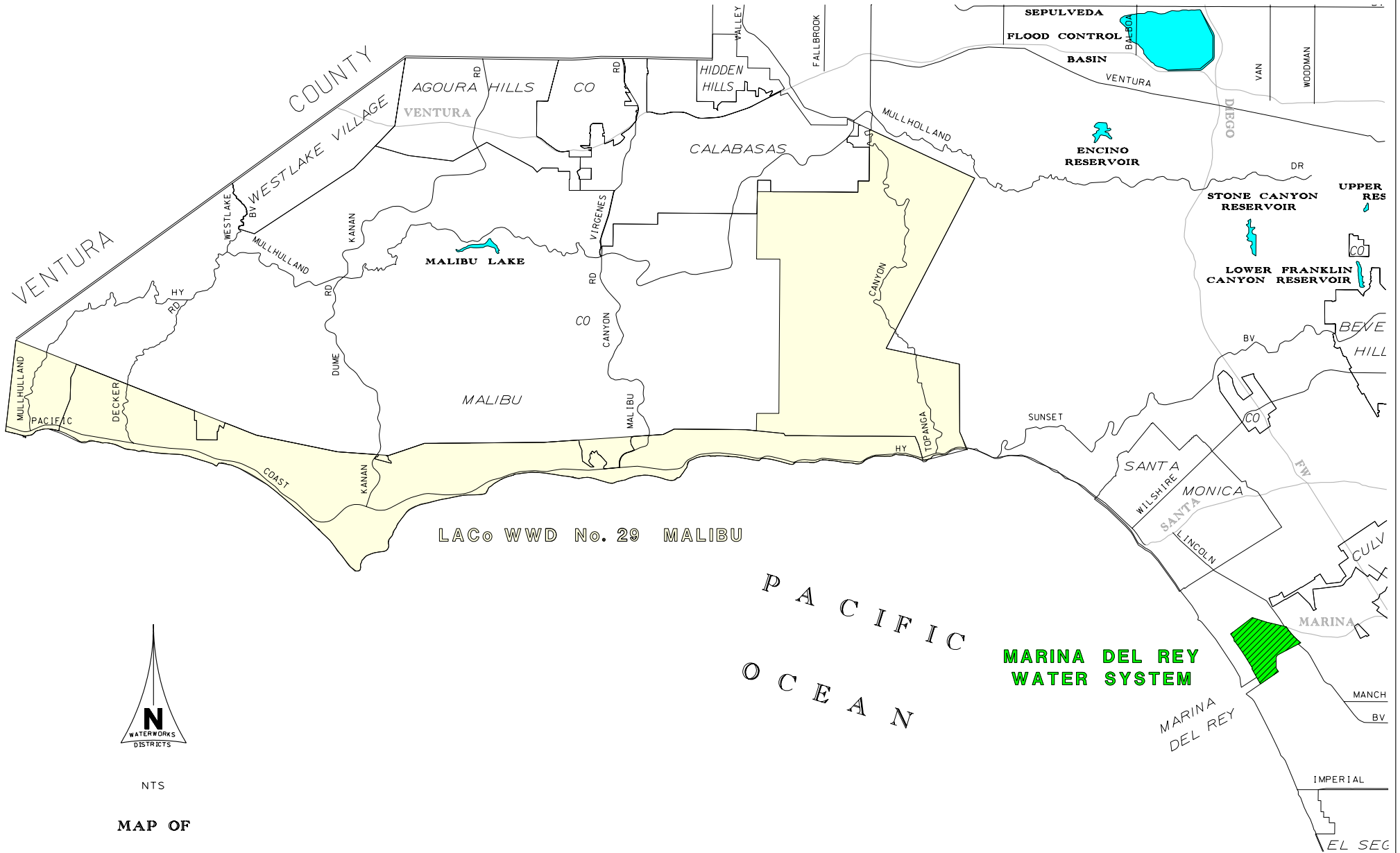
Marina del Rey area

The Marina del Rey Water System (Marina del Rey) is a smaller system served directly off the transmission main delivering water to the Malibu System. As shown in Figure 1-1, at the end of Section 1.7, Marina del Rey's service area encircles the Marina del Rey Harbor, providing service to businesses, as well as apartment and condominium complexes in the Marina del Rey area through 300 service connections.

An Adequacy Study for Marina del Rey, conducted by the County of Los Angeles Department of Beaches and Harbors, found the existing water system facilities were designed and constructed in 1961/62 to accommodate low density, two-story structure land use. Subsequently, the land use has changed to high density, high rise structures, and the existing water system has not been upgraded to meet the increased demands.

Twelve million dollars of system improvements for the Marina del Rey area have been recommended to support existing and future growth. These water system improvements were broken into five phases and scheduled for construction over a 13-year period from 1997 to 2010. They include replacement of transmission mains, metering stations, upgrades, and the construction of a 3.6 million-gallon reservoir storage tank. Phases I and IA have been completed over the last five years. Phase II is scheduled to be constructed before 2010 and Phase IV has been eliminated due to changes in the system design. The remaining phases of construction will be completed as funds in the District's Accumulative Capital Outlay Fund become available.

FIGURE 1-1



NTS

MAP OF
LOS ANGELES COUNTY
WATERWORKS DISTRICTS

1.8 Population

The Southern California Association of Governments (SCAG) has developed population projections by census tract and city within the County of Los Angeles. Based on these projections, the population within the census tracts containing the District is estimated to increase 5 to 12 percent every five years.

Table 1.3 below displays the population growth projections over the various regions in the District from the year 2000. Projections have been shown through 2030. This table provides two projection estimates; one is based on SCAG projections and the other is based on the observed growth in the number of new connections per year.

Table 1.3 Population Projections

Southern California Association of Governments (SCAG) Based Projections							
	2000	2005	2010	2015	2020	2025	2030
City of Malibu	12,656	13,471	13,721	14,546	15,370	16,196	17,000
Northern Topanga	3,276	3,548	4,714	5,294	5,925	6,453	6,896
Southern Topanga	3,207	3,623	4,283	4,770	5,293	5,772	6,185
Marina Del Rey	8,334	10,143	11,587	12,402	13,205	14,065	14,891
Dist. 29 (Exclude Marina del Rey)	19,139	20,642	22,718	24,610	26,588	28,421	30,081
Total District 29 Population	27,473	30,785	34,305	37,012	39,793	42,486	44,972
Percent (%) Growth over 5 Year Period	12%	11%	8%	8%	7%	6%	5%
Population Estimates Based on the anticipated number of New Connections Multiplied by Average Person Per Household (APPH)							
	2000	2005	2010	2015	2020	2025	2030
Number of Connections	7,331	7,614	7,842	8,078	8,320	8,570	8,827
Projected Population	24,430	29,918	31,977	33,430	34,886	36,421	37,941
Percent (%) Growth over 5 Year Period	22%	7%	5%	4%	4%	4%	4%

1.9 Past Drought, Water Demand, and Conservation Information

The District experienced a drought from 1989 to 1992 and the County of Los Angeles took several efforts to reduce water usage and promote water conservation. The County of Los Angeles Board of Supervisors adopted the Phased Water Conservation Plan (PWCP) that identified nine phases to reduce water usage. The Plan established conservation targets for each phase to enable the District to meet the anticipated shortages in water supply. (See **Appendix C** for the section of the District's Rules and Regulations that established the PWCP).

In addition, the Metropolitan Water District of Southern California (MWD) requested a voluntary conservation effort by its member agencies in 1990 to reduce its water consumption by 10 percent. During the four-month duration of the request (June through September of 1990), the District reduced its monthly water consumption by 12 percent. The District's wholesaler, West Basin MWD, reported that during the four-month conservation effort the District saved more than 273 acre-feet (AF) of water.

Additionally, on April 11, 1996, the District became signatory to the California Urban Water Conservation Council's (CUWCC) Memorandum of Understanding regarding urban water conservation in California (MOU).

2.0 WATER SUPPLY

The District purchases the majority of its water supply from the West Basin MWD. The District also purchases imported water from the City of Los Angeles Department of Water and Power and Las Virgenes Municipal Water District through emergency interconnections. Table 2-1 displays the current and projected water supply available to the District from West Basin MWD. Because the District relies on treated imported water supplies, the reliability of the District’s supply is completely dependent on the availability of water from West Basin MWD.

Table 2.1 Current and Projected Water Supply

Projected Wholesale Water Supply							
Purchases from wholesaler (Acre-feet per year)							
Water Supply Sources	2000	2005	2010	2015	2020	2025	2030
West Basin MWD	9,450	11,587	11,867	12,803	13,765	14,697	15,557
City of Los Angeles DWP	Emergency Interconnections Only						
Las Virgenes MWD	Emergency Interconnections Only						
Recycled Water	140	140	140	140	140	140	140
Total	9,590	10,440	12,607	13,590	14,601	15,579	16,481

2.1 Imported Water

West Basin MWD receives its imported water supply from the Metropolitan Water District of Southern California (MWD). The District has an interconnection with West Basin MWD in the City of Culver City. A 35-mile transmission watermain along Pacific Coast Highway conveys water from the interconnection with West Basin MWD to the western boundary of the District. The water is pumped from the transmission watermain into various gravity storage tanks in Malibu and Topanga. The District also has four emergency interconnections; two with the City of Los Angeles Department of Water and Power (LADWP) and two with the Las Virgenes Municipal Water District.

The District’s major system facilities include approximately 200 miles of watermain (approximately 5% or 53,600 linear feet are above ground), 32 pump stations and 52 tanks with a storage of approximately 20 million gallons of storage capacity.

Currently, the District has storage capacity for approximately three days. The District’s original water system facilities were acquired from various small mutual water companies. The transmission watermain was built in during the 1960s. Therefore, the condition of the water system coupled with the unique topography of region results in the costs for maintenance and operation costs being higher than other water districts.

In 1998, the District conducted a review of its system deficiencies that identified \$108.5 million of improvements. However, repetitive failures in the existing system have diverted funds for immediate repairs without significant progress on capital improvements.

The Marina del Rey water system is served by the District and accounts for 17 percent of the water supplied to the District from West Basin MWD. This is served directly off the transmission watermain delivering water to the District. There are no pump stations or storage tanks within the Marina del Rey water system. Additionally, the Marina del Rey water system also has two emergency interconnections with LADWP.

2.2 Recycled Water

Production and use of recycled water is limited in the District because the community is predominately on individual septic systems. A portion of the wastewater generated in the area is collected and treated by small private and publicly owned package wastewater treatment plants serving individual developments. DPW operates and maintains the collection and treatment systems of three publicly owned treatment plants (Malibu Mesa Water Reclamation Plant, Malibu Water Pollution Control Plant and Trancas Water Pollution Control Plant). The total treatment capacity of these plants is approximately 312,500 gallons per day (gpd). Of these plants, only the Malibu Mesa Plant generates recycled water for irrigation use.

The Malibu Mesa Plant treats wastewater for an estimated population of 3,360 persons at Pepperdine University and the Malibu Country Estates. The plant treats wastewater to Title 22 standards for landscape irrigation. The treated wastewater is used by Pepperdine University for landscape irrigation of approximately 113 acres. DPW does not expect the use of recycled water to increase in the future because significant growth is not projected for the plant's service area.

The District is also within the service area of the West Basin MWD's Recycled Water Program. Under this program, the West Basin MWD serves recycled water in 13 Southern California cities. At this time, the District does not receive recycled water from the West Basin MWD because of conveyance and transmission facilities do not exist to serve the District. Although the program does not service the District with recycled water, it does provide an indirect benefit. The Recycled Program reduces demand for potable water and, therefore, increases the availability of imported water for all the West Basin MWD's customers including the District.

2.3 Groundwater

The geology below the District's service area lacks groundwater basins capable of producing an adequate supply of groundwater. Therefore no supply from ground water sources will be used for future water supply within the District.

3.0 WATER USE

3.1 Past, Current and Projected Water Use

Table 3.1 shows the past, current and projected water use for each water use sector in the District and Marina del Rey Water System. Based on SCAG projections, water use within the District will increase 45% over the next 25 years. This can be explained by overall build up within the District.

Table 3.1 Past, Current, and Projected Water Use by District Customers and Customers of the Marina del Rey Water System (Acre-Feet)

Water Use Sectors	2000	2001	2004	FY '04-'05	2010	2015	2020	2025	2030
Single Family Residential	-	6,381	7,293	6,827	7,596	8,195	8,811	9,407	9,957
Multi-Family Residential	-	681	667	667	742	800	860	919	972
Commercial	-	443	443	445	495	495	495	495	495
Private Fire Protection	-	20	25	27	30	32	34	37	39
Landscape / Irrigation ¹	-	294	338	306	341	368	395	422	447
Other ²	-	592	954	963	1,071	1,156	1,243	1,327	1,405
Water Sold	8,228	8,411	9,719	9,235	10,274	11,085	11,918	12,724	13,469
Water Purchased ³	9,450	9,733	10,715	9,941	11,302	12,194	13,110	13,997	14,816

⁽¹⁾ Landscape/Irrigation includes potable and recycled water

⁽²⁾ Includes: Private Fire Protection, Temporary Construction, Combined Domestic & Private, Gov't/Public Agencies, and Other Sectors

⁽³⁾ Water Purchased accounts for 10% loss of wholesale water use due to the condition of the District's Distribution System

The District began tracking water use by customer type in 2001. Previously, water use data was only available for the District as a whole. Projected water use through 2030 was estimated using the recorded water use per person based on the District's historic billing records and the population projections made by SCAG. Current water use in the District was estimated at 97,600 gallons/year/person (0.2995 acre-feet/year/person) using data from 2000-2005.

Table 3.2 below displays the actual and projected number of connections by customer type for years 2000 to 2030. Based on these numbers, connections are estimated to increase by approximately 46 percent by the year 2030.

Table 3.2 Number of Connections by Customer Type
(By District Customers and Customers of Marina del Rey Water System)

Connection Type	2000	2005	2010	2015	2020	2025	2030
Single Family Residential	6,795	7,079	7,815	8,491	9,152	9,792	10,382
Multi-Family Residential	39	39	43	46	50	53	56
Commercial	22	22	24	26	28	30	32
Private Fire Protection	82	82	90	98	105	112	119
Landscape / Irrigation	31	31	34	37	40	42	45
Other ⁽¹⁾	67	67	74	80	86	92	97
Marina del Rey Customers	295	295	300	300	300	300	300
Total No. of Meters	7,331	7,615	8,381	9,079	9,761	10,421	11,031

⁽¹⁾ Other Connections includes: Private Fire Protection, Temporary Construction, Public/Gov't Agencies, Combined Domestic & Private, and Other
Source: County Waterworks Division

3.2 Residential Sector

Single Family and Multi-Family Residential Customers account for the majority of water use within the District. For the District, the average number of persons per household is 2.8 based on SCAG estimates from 2000. For the Marina del Rey Water System the average persons per dwelling unit is 1.73 according to SCAG estimates.

Residential customer connections have increased 4 percent since 2000. Over the next 25 years, development in the residential sector will consist of infill growth and conversion of commercial facilities into multi-family residential units.

3.3 Commercial/Institutional Sector

The District's service area includes a commercial sector ranging from markets and restaurants to shopping centers. The commercial sector is predominately within the Marina Del Rey water system service area and along the coastline in the City of Malibu, due to the high tourist activity along the Pacific Coast Highway. The commercial connections are expected to have minimal growth over the next twenty years due to the built out commercial sector of the District.

The service area has a stable institutional sector within the District, which includes government buildings within the City of Malibu, schools, public facilities, and public hospitals. Growth in this sector is also expected to be minimal for the next 25 years.

3.4 Landscape/Irrigation Sector

Landscape irrigation includes golf courses, residential lawns, parks, and schools. All landscape irrigation uses potable water except for landscape within Pepperdine University. All irrigation water use in Pepperdine is recycled water from the Malibu Mesa Reclamation Plant.

3.5 Other

The remainder of the water use in the District is for private fire protection, construction, and public/government facilities.

4.0 WATER RELIABILITY

4.1 Reliability

Reliability is a measure of a water system's expected success in managing water shortages. Reliability planning requires information about the following: (1) expected frequency and severity of shortages; (2) how additional water management is likely to effect the frequency and severity of shortages; and (3) how available contingency measures can reduce the impact of shortages when they occur.

4.2 Frequency and Magnitude of Supply Deficiencies

The District experienced a drought between 1987 and 1991. During this period, supply in Southern California decreased and MWD called for water use reductions throughout its service area. To meet these reductions, the County of Los Angeles adopted three ordinances in 1991.

The first was Ordinance No. 91-0046U, which called for a water waste prohibition for the unincorporated areas of the County. The water saving measures included limiting car washes, preventing excessive landscape watering, and prohibiting washing paved surfaces. Any failures to comply with these provision resulted in a fine.

The second and most significant measure adopted was Ordinance No. 91-0075M, which created the Phased Water Conservation Plan. Through nine phases, the Board of Supervisor can declare mandatory percentages of water use reductions in order to stretch water supplies. In 1991, the Board of Supervisors declared a "Phase Three" shortage with a goal to reduce water consumption in the District by 20 percent. Any customers that exceeded this target quantity were assessed a conservation surcharge on their bill.

On June 27, 1991, the County adopted Ordinance No. 91-0097U, which amended the plumbing code by requiring the installation of ultra low flow toilet and urinals in all new buildings.

All these measures, including efforts by the community to conserve water, resulted in a 21 percent reduction in the District and a 15 percent reduction in Marina del Rey, between May 1991 and April 1992.

4.3 Plans to Assure a Reliable Water Supply

The District purchases all of its water supply from the West Basin MWD. Therefore, a reliable water supply is completely dependent on the availability of water from the District's wholesaler, West Basin MWD.

West Basin MWD Reliability Plan

According to the West Basin MWD's 2005 Urban Water Management Plan, West Basin MWD and MWD have taken important steps to reduce the vulnerability of supplies to extended droughts or other potential threats to reliability. These efforts have included using more recycled water for non-potable uses, expanding the use of local groundwater resources through conjunctive use programs, and searching for potential water transfers and exchanges from imported water sources other than those already available to MWD.

The expanded use of recycled water in West Basin MWD's service area will continue to reduce the demand on imported water. According to the 2005 West Basin MWD UWMP, imported water use in West Basin MWD's service area should decrease through 2030.

Metropolitan Water District's WSDM Plan

With the experience of the droughts of 1977-78 and 1989-92, MWD undertook a number of planning initiatives to ensure supply reliability. These efforts included the Integrated Resources Plan (IRP), the Water Surplus and Drought Management Plan (WSDM Plan) and other local resource investments. Together, these initiatives have provided the policy framework for MWD and its member agencies to manage their water resources to meet the needs of a growing population even under recurrences of the worst historical hydrologic conditions locally and in the key watersheds that supply water to southern California.

In April of 1999, MWD's Board of Directors adopted the WSDM Plan to guide the management of regional water supplies to achieve the reliability goals of the Southern California's Integrated Resources Plan (IRP). Through the effective management of its water supply, MWD fully expects to be 100 percent reliable throughout the next 20 years.

The guiding principle of the WSDM Plan is to minimize the adverse impacts of water shortage to retail customers. From this guiding principle come the following supporting principles:

- Encourage efficient water use and economical local water resource programs.
- Coordinate operations with member agencies to make as much surplus water as possible available for use in dry years.

- Pursue innovative transfer and banking programs to secure more imported water for use in dry years.
- Increase public awareness about water supply issues.

The WSDM Plan further defines five surplus management stages and seven shortage management stages to guide resource management activities. Each year, MWD will consider the level of supplies available and existing levels of water in storage to determine the management actions designed to 1) avoid an Extreme Shortage to the maximum extent possible, and 2) minimize adverse impact to retail customers should an Extreme Shortage occur. The current sequencing outlined in the WSDM Plan reflects anticipated responses based on detailed modeling of MWD's existing and expected resource mix. This sequencing may change as the resource mix evolves.

The WSDM Plan also guides the operations of water resources (local resources, Colorado River, State Water Project, and regional storage) to ensure regional reliability. It identifies the expected sequence of resource management actions MWD will take during surpluses and shortages to minimize the probability of severe shortages that require curtailment of full-service demands.

The West Basin MWD supports the WSDM plan, however, at this time the Plan does not include a detailed allocation plan. MWD is currently developing a plan to describe how imported water will be allocated in the event that demands exceed imported supply. Once completed, the West Basin MWD will pass the allocation to its retailers. The Los Angeles County Waterworks District No. 29 also has a water shortage contingency plan that is explained in Section 7 of this report.

4.4 Water Transfers or Exchanges

The District does not currently participate in any out of region water transfers. The District relies on the West Basin MWD as its water supplier.

4.5 Increasing District Demands

The District's water demand is projected to increase at a steady rate. The wholesale supply of potable water available to the District from West Basin MWD is also projected to increase. Due to the increasing use of recycled water by the West Basin MWD's customers, the West Basin MWD will be able to meet the District's future imported water demands.

5.0 SUPPLY AND DEMAND COMPARISON PROVISIONS

5.1 Supply and Demand Comparison during Normal Years

The District receives 100 percent of its water supply from the West Basin MWD. Therefore, the available supply from the West Basin MWD must be equal to the projected water demands for the District in order for the District's supply to be 100% reliable for its customers.

Table 5-1 shows a sufficient supply to meet the demand of the District through 2030. The West Basin MWD's Urban Water Management Plan projects a 100% reliable supply of water for all retail agencies served by West Basin MWD for the next 25 years. This assumption is assured through Metropolitan Water District's WSDM Plan.

Table 5.1 Projected Supply and Demand Comparison

Projected Supply and Demand Comparison during Normal Years						
(In Acre-Feet/Year)						
	2005	2010	2015	2020	2025	2030
Total supply from West Basin MWD	11,587	11,867	12,803	13,765	14,697	15,557
Total demand for the District*	9,941	11,302	12,194	13,110	13,997	14,816
Difference	359	565	610	655	700	741

*these values do not include recycled water

5.2 Supply and Demand Comparison during Single and Multiple-Dry Year(s)

Table 5.2 through 5.8 present the projected water demands for single and multiple-dry water year(s) compared to the available supply. The projected single and multiple-dry year demands were determined from historical data analyzed by the West Basin MWD and Metropolitan Water District and confirmed by the Districts records. The data shows that due to a lack of precipitation during a drought, there is an increase of 4 to 8 percent in water demands.

Table 5.2 Normal Water Year Demands

Projected Normal Water Year	2005	2010	2015	2020	2025	2030
Supply total	11,587	11,867	12,803	13,765	14,697	15,557
Demand total	9,941	11,302	12,194	13,110	13,997	14,816
Difference	1,646	565	610	655	700	741
Difference as % of Supply	14.2%	4.8%	4.8%	4.8%	4.8%	4.8%
Difference as % of Demand	16.6%	5.0%	5.0%	5.0%	5.0%	5.0%

Table 5.3 Single Dry Water Year Demands

Projected Single Dry Water Year						
	2005	2010	2015	2020	2025	2030
Supply total	11,587	11,867	12,803	13,765	14,697	15,557
Demand total	10,962	11,867	12,803	13,765	14,697	15,557
% of Normal Year Demand	105%	105%	105%	105%	105%	105%
Difference	625	0	0	0	0	0
Difference as % of Supply	5.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	5.7%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 5.4 Multiple Dry Water Year Demands occurring after 2005

Projected Multiple-Dry Water Years			
	2006	2007	2008
Supply total	11,587	11,587	11,587
Demand total	10,438	10,339	10,736
% of Normal Year Demand	105%	104%	108%
Difference	1,149	1,248	851
Difference as % of Supply	9.9%	10.8%	7.3%
Difference as % of Demand	11.0%	12.1%	7.9%

Table 5.5 Multiple Dry Water Year Demands occurring after 2010

Projected Multiple-Dry Water Years			
	2011	2012	2013
Supply total	11,867	11,867	11,867
Demand total	11,867	11,754	12,206
% of Normal Year Demand	105%	104%	108%
Difference	0	113	-339
Difference as % of Supply	0.0%	1.0%	-2.9%
Difference as % of Demand	0.0%	1.0%	-2.8%

Table 5.6 Multiple Dry Water Year Demands occurring after 2015

Projected Multiple-Dry Water Years			
	2016	2017	2018
Supply total	12,803	12,803	12,803
Demand total	12,803	12,681	13,169
% of Normal Year Demand	105%	104%	108%
Difference	0	122	-366
Difference as % of Supply	0.0%	1.0%	-2.9%
Difference as % of Demand	0.0%	1.0%	-2.8%

Table 5.7 Multiple Dry Water Year Demands occurring after 2020

Projected Multiple-Dry Water Years			
	2021	2022	2023
Supply total	13,765	13,765	13,765
Demand total	13,765	13,634	14,159
% of Normal Year Demand	105%	104%	108%
Difference	0	131	-394
Difference as % of Supply	0.0%	1.0%	-2.9%
Difference as % of Demand	0.0%	1.0%	-2.8%

Table 5.8 Multiple Dry Water Year Demands occurring after 2025

Projected Multiple-Dry Water Years			
	2026	2027	2028
Supply total	14,697	14,697	14,697
Demand total	14,697	14,557	15,117
% of Normal Year Demand	105%	104%	108%
Difference	0	140	-420
Difference as % of Supply	0.0%	1.0%	-2.9%
Difference as % of Demand	0.0%	1.0%	-2.8%

In the event of a reduction in the available water supply from the West Basin MWD, the County of Los Angeles Board of Supervisors has adopted a water shortage contingency plan known as the Phased Water Conservation Plan (PWCP). The purpose of the PWCP is to reduce the overall water demands throughout the District and the Marina del Rey Water System. Section 7 of this report gives further details of the PWCP.

5.3 Water Quality of West Basin MWD's Imported Water Supplies

The West Basin MWD's imported water supply comes from the SWP and Colorado River via MWD pipelines and aqueducts. MWD tests its water for microbial, organic, inorganic, and radioactive contaminants as well as pesticides and herbicides. In coordination with its 26 member agencies, MWD added new security measures in 2001 and continues to upgrade and refine procedures to ensure good water quality. 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 Office of Homeland Security's multi-colored tiered risk alert system.

MWD also has one of the most advanced laboratories in the country where water quality staff collects data, performs tests, reviews results, prepares reports, and researches other treatment technologies. Although not required, MWD monitors and samples constituents in its water supplies that are not currently regulated but have captured scientific and/or public interest. MWD has a strong record of identifying those water quality issues that are of most concern and has identified necessary water management strategies to minimize the impact of these issues on water supplies. Part of MWD's strategy is to support 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 that 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.
3. DWR's Municipal Water Quality Investigations Program and the Sacramento River Watershed Program. Both of these programs address water quality problems in the Bay-Delta and Sacramento River watershed.

- **Delta Improvement Package** – MWD, in conjunction with DWR and the U.S. Geologic Survey, has completed modeling efforts of the San Francisco Bay 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 this tract. By constructing levee breach openings and flow control structures, it is believed saline intrusion can be reduced. This would significantly reduce total dissolved solids and bromide concentrations in water that is diverted from the Delta into the California Aqueduct.

6.0 WATER DEMAND MANAGEMENT MEASURES

On April 11, 1996, the District became signatory to the Memorandum of Understanding regarding Urban Water Conservation in California (MOU) and a member of the California Urban Water Conservation Council (CUWCC). Pursuant to Section 10631.h. of the Urban Water Management Plan Act (UWMPA), urban water suppliers that are members of the CUWCC may submit the annual reports identifying water demand management measure. These reports identify best management practices (BMPs) that are currently being implemented, or scheduled for implementation, which satisfy the requirements of Section 10631.f. of the UWMPA.

Please refer to **Appendix D** for the District's 2004 Best Management Practices Annual Report.

7.0 WATER SHORTAGE CONTINGENCY PLAN

7.1 Water Shortage Response

As a result of a significant drought that occurred in Los Angeles County between 1987 and 1991 and the associated water supply shortage, the County of Los Angeles Board of Supervisors (BOS) approved the Phased Water Conservation Plan (PWCP) on March 23, 1991. For a copy of the approved PWCP, see [Appendix C](#). Depending upon the severity of the situation, the BOS may use the PWCP to impose phases of voluntary and mandatory reductions of water use of up to 50%. The objective of the PWCP is to effectively manage the impacts of a water shortage on the District's and Marina del Rey's customers.

The PWCP is comprised of nine "Phases" that are designed to meet specific conservation targets through higher water rates for usage above the target. The PWCP has only been implemented once. Table 7-1 shows the various reduction stages of the PWCP.

Table 7-1 Rationing Stages

Phased Water Conservation Plan									
RATIONING STAGES									
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8	Phase 9
Anticipated shortage in water supply	10%	15%	20%	25%	30%	35%	40%	45%	50%
Conservation Target as a Percent of Baseline Use	90%	85%	80%	75%	70%	65%	60%	55%	50%
Type of Rationing Program	Voluntary	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

Source: Los Angeles County Ordinance No. 91-0075M

In the event that a conservation phase is declared by the BOS, the Plan also calls for the water conservation measures shown in Table 7-2, as water shortages increase.

Table 7.2 Phased Water Conservation Plan

Phased Water Conservation Plan Water Conservation Measures in Phases				
Phase	Cutback %	Landscape Watering Restrictions	Construction Meter Restrictions	Other Restrictions
I	10	None	None	None
II	15	None	None	None
III	20	None	No New Construction Meters	Issuance Of "Will Serve" Letter Discontinued*
IV	25	Every Other Day	No New Construction Meters	Issuance Of "Will Serve" Letter Discontinued*
V	30	Every Other Day	No New Construction Meters	Issuance Of "Will Serve" Letter Discontinued*
VI	35	Every Third Day	No New Construction Meters	Issuance Of "Will Serve" Letter Discontinued*
VII	40	Trees and Shrubs only by Bucket	Remove All Construction Meters	Issuance Of "Will Serve" Letter and Installation of all New Permanent Meters Discontinued*
VIII	45	Trees and Shrubs only by Bucket	Remove All Construction Meters	Issuance Of "Will Serve" Letter and Installation of all New Permanent Meters Discontinued*
IX	50	Trees and Shrubs only by Bucket	Remove All Construction Meters	Issuance Of "Will Serve" Letter and Installation of all New Permanent Meters Discontinued*

"Will Serve" letters will be issued that will allow recordation of final maps; however, permanent metered service to the newly created lots will not be authorized until the current drought is over (mandatory rationing discontinued).

7.2 Catastrophic Water Supply Interruption

In the event of a catastrophe, the District will take the following measures to prevent water shortages: (1) utilizing the emergency interconnections with Las Virgenes Municipal Water District and Los Angeles Department of Water and Power, (2) implementing Phased Water Conservation Plan, and (3) enforcing the No Waste Ordinance.

The District has also prepared an Emergency Response Plan (ERP) that includes response procedures for any foreseeable emergency. A copy of the table of contents for the ERP is included in [Appendix E](#).

7.3 Water Shortage Contingency Ordinances

On March 21 and May 23, 1991, the Board of Supervisors adopted Ordinance Nos. 91-0075M and 91-0046U to establish the Phased Water Conservation Plan and Water Wasting Prohibition. Copies of these ordinances and the applicable sections of the Los Angeles County Code (Title 11 Health and Safety) are included in [Appendix F](#).

7.4 Three Year Minimum Water Supply

The Urban Water Management Act states that an UWMP must consider the upcoming three years as dry years, based on the driest three year historic sequence. Table 7-3 shows the current average/normal, single-dry, and multiple-dry water year supply for the District. The water supply for the District is made up of 11,587 AF/yr of imported water through a purchase agreement with West Basin MWD and 140 AF/yr of recycled water.

Table 7-3 Minimum Water Supply and Demand

Minimum Water Supply (In Acre-Feet/Year)				
		Multiple Dry Water Years		
Average / Normal Water Year	Single Dry Water Year	Year	Year	Year
		2006	2007	2008
11,727	11,727	11,727	11,727	11,727

7.5 Water Shortage Stages Triggering Mechanisms

Prior to implementation of a phase of the PWCP, the County of Los Angeles Board of Supervisors (BOS) must determine the projected water shortage in the County. However, a public hearing must be held prior to the implementation of a phase for the purposes of determining whether a shortage exists in the District and which phase should be implemented. The determination can be influenced by the District's water supplier, the West Basin MWD or by the regional supplier, MWD.

7.6 Mandatory Prohibitions on Water Wasting

On March 21, 1991, the BOS adopted No Waste Ordinance No. 91-0046U that specified a number of water saving measures that applied only to unincorporated areas

of the County. As shown in **Appendix F**, this Ordinance includes the following prohibitions:

- Washing down paved surfaces is prohibited unless required for health or safety
- Landscape watering is prohibited between 10:00 a.m. and 5:00 p.m.
- Excessive landscape watering that results in runoff into adjoining streets, parking lots or alleys is prohibited
- Plumbing leaks must be repaired as soon as practical
- Washing of vehicles is prohibited excepted at a commercial carwash or with a hand-held bucket or hose equipped with an automatic shutoff nozzle
- Serving drinking water at public eating places is prohibited unless requested by customers
- Water used in decorative fountains must flow through a recycling system

This Ordinance was enacted on March 1991 and scheduled to sunset in January 1993.

7.7 Excessive Use Penalties

Any customer that violates the regulations and restrictions on water use set forth in the “No Waste” Ordinance or Phased Water Conservation Plan shall be penalized. According to the Phased Water Conservation Plan, a customer that uses water in excess of the target quantity will be assessed a conservation surcharge on to his next water bill. In the event a customer violates the provisions in the No Waste Ordinance a progressive fine will be issued for infractions. In addition, the District may disconnect a customer’s water service if their water use continues to be excessive during drought periods.

7.8 Revenue and Expenditure Impacts and Measures to Overcome Impacts

The implementation of the PWCP could result in a significant short-term reduction in the District’s revenue. Revenue losses due to less usage could range from approximately 10-50 percent.

The District’s sources of funding are structured into four categories: Service Charge, Facility Surcharge, Water Quantity Charge, and Standby Charge. The Service Charge is a fixed connection charge based on the size of the meter. The Facility Surcharge and Water Quantity Charge are based on the actual quantity of water used. The Standby Charge is assessed on all properties and is included on the property owner’s tax bill. A reduction in water sales will affect only the revenues from the Water Quantity Charge and Facility Surcharge.

If water sales do affect the operation and maintenance revenues, the District has the following measures to reduce such an impact:

- Extra revenues contributed by the conservation surcharge. During the 1991 drought, the revenues collected from the conservation surcharge generated funds which were used to offset a portion of the operation and maintenance costs.
- Delayed capital improvement projects. If necessary, the BOS can authorize the transfer of funds for capital improvement projects from the District's Accumulative Capital Outlay (ACO) Fund to the District's General Fund.
- Increased water rates. The BOS could increase water rates to meet operational needs.

7.9 Reduction Measuring Mechanism in Water Use

Data on the District's water supply and demand is collected and analyzed on a bi-monthly basis. Water meters are read bi-monthly and readings are compiled into yearly summaries. Excessive water use is reported on the customer's bi-monthly bills and is compared to target conservation goals.

8.0 WATER RECYCLING

8.1 Wastewater Collection and Treatment

The production and use of recycled water is limited in the District because residences are mostly on individual septic systems. However, a portion of the wastewater generated in the area is collected and treated by small private and publicly owned package wastewater treatment plants serving individual developments. The Los Angeles County Department of Public Works (LACDPW) Waterworks and Sewer Maintenance Division operates and maintains the collection and treatment systems of three publicly-owned treatment plants (Malibu Mesa Water Reclamation Plant, Malibu Water Pollution Control Plant and Trancas Water Pollution Control Plant) serving the area. The total treatment capacity of these facilities is approximately 312,500 gallons per day (gpd).

The Malibu Mesa Water Reclamation Plant provides primary, secondary and tertiary treatment, with disinfection by an ultraviolet system. Tertiary treatment is provided by coagulation, rapid mix, flocculation and sand filtration. The Malibu Water Pollution Control Plant provides primary and secondary treatment with sand filters and disinfection. The Trancas Water Pollution Control Plant provides primary and secondary treatment with sand filters. Table 8-1 shows the treatment plants' average and maximum flow rates for 2004 and wastewater collection and treatment averages and capacities for all three facilities.

Table 8.1 Wastewater Treatment

Wastewater Treatment					
(in gallons per day)					
Treatment Plant Name	Location (City)	Average Daily Volume (2004)	Maximum Daily Volume (2004)	Year of Planned Build-out	Plant Capacity Volume
Malibu Mesa Water Reclamation Plant	Malibu	152,000	200,000	Build-out Complete	200,000
Malibu Water Pollution Control Plant	Malibu	24,000	36,000	Build-out Complete	51,000
Trancas Water Pollution Control Plant	Malibu	73,000	121,000	Build-out Complete	180,000
Total			357,000		431,000

Source: County WWD

8.2 Wastewater Disposal Methods

The effluent produced is disposed using a seepage pit system or a leach field disposal system or recycled and used for irrigation. Table 8-2 displays the current and estimated wastewater disposal and recycled water use within District 29 and Marina Del Rey.

Table 8.2 Wastewater Disposal & Recycled Water Use

Estimated Wastewater Disposal & Recycled Water Use (in million of gallons)						
Destination	Treatment Level	2000	2005	2010	2015	2020
Rivers/Stream	Tertiary	0	2	2	2	2
Landscape	Tertiary	56	54	54	54	54
Leachfield	Tertiary	35	36	36	36	36
Total		91	92	92	92	92

Source: County WWD

8.3 Recycled Water Currently Being Used

The Malibu Mesa Plant serves an estimated population of 3,360 persons at Pepperdine University in the unincorporated County area, and the Malibu Country Estates, a residential subdivision in the City of Malibu. The wastewater is recycled to Title 22 standards for landscape irrigation. Pepperdine University then uses the recycled water to irrigate approximately 126 acres of landscape at the campus and approximately 1.6 acres of landscape at the plant site. Recycled water generation and use has varied over the past 5 years due to the variation in the volume of wastewater produced, the demand for irrigation based on soil moisture content, and climatic factors. In 2004, nearly 100% of the 45.5 million gallons of wastewater treated at the Malibu Mesa Plant was used for landscape irrigation purposes.

Recycled water use is limited by the volume of wastewater produced and the treatment plant capacity. The LACDPW does not expect the use of recycled water to increase in the future because significant growth is not projected in the plant's service area, resulting in no plan for plant expansion.

Regional Recycled Programs

In 1991, the West Basin MWD Board of Directors authorized the West Basin Recycled Water Program to recycle up to 100,000 AF/year of wastewater from the City of Los Angeles Hyperion Treatment Plant. Deliveries of recycled water from the project began in March 1995, and today West Basin MWD distributes recycled water to over 150 customers. West Basin MWD's goal is to conduct a phased expansion of the West

Basin Recycled Water Program so that by 2030, recycled water sales will reach 60,000 AF/year, which is close to four times the amount produced currently (21,500 AF in 2005). To date, the program has saved over 48 billion gallons of imported water that would have otherwise been delivered for non-potable end uses.

Because of its remote location, the District does not currently participate in the West Basin Recycled Water Program. The District does, however, indirectly benefit from the program. The more West Basin MWD's other customers use recycled water for irrigation and process water, the more potable water will be available for the District.

8.4 Potential Uses of Recycled Water

Potential uses of recycled water in the District are landscape irrigation at parks, schools, and commercial centers. Currently, the only recycled water use is at Pepperdine University. The recycled water facilities in the District have limited potential to expand due to the capacity of the existing treatment plants.

8.5 Plan For Optimizing the Use of Recycled Water

In an effort to optimize the use of recycled water within the greater region, MWD prepared the Southern California Comprehensive Water Reclamation and Reuse Study (SCCWRRS). Under SCCWRRS, MWD has encouraged the collection and use of recycled water in Southern California. In conjunction with West Basin MWD, Metropolitan Water District, and the California Department of Water Resources, the SCCWRRS proposes a plan designed to take advantage of potential surpluses in recycled water that could serve needs in areas throughout the region.

The SCCWRRS consists of a three-part, six-year comprehensive effort to identify regional reclamation systems. Metropolitan Water District's goal is to promote efficient use of all water resources by increasing the use of recycled water and identifying opportunities for and constraints to maximizing water reuse in Southern California.

9.0 REFERENCES

Los Angeles County Department of Public Works. 2000 *Urban Water Management Plan, District No. 29 and Marina Del Rey Water System*

Metropolitan Water District of Southern California. 2005 *Draft Regional Urban Water Management Plan, August 2005*

West Basin Municipal Water District. 2005 *Draft Urban Water Management Plan*

APPENDIX A

California Urban Water Management Planning Act

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 recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.
- (c) 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.

- (d) 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.
- (e) 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.
- (f) 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.
- (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.

Articl 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.

APPENDIX B

Adopted Resolution

ENCLOSURE A

A RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF LOS ANGELES, CALIFORNIA, APPROVING THE 2005 URBAN WATER MANAGEMENT PLAN FOR THE LOS ANGELES COUNTY WATERWORKS DISTRICT NO. 29, MALIBU, AND THE MARINA DEL REY WATER SYSTEM

WHEREAS, the Urban Water Management Planning Act (Division 6 of the California Water Code) requires each water supplier with more than 3,000 customers (service connections), or annually supplying more than 3,000 acre-feet of water, to prepare and adopt an Urban Water Management Plan; and

WHEREAS, Los Angeles County Waterworks District No. 29, Malibu, and the Marina del Rey Water System (District) is considered one system; and

WHEREAS, the District has approximately 7,300 service connections, and is therefore required to prepare and adopt an Urban Water Management Plan; and

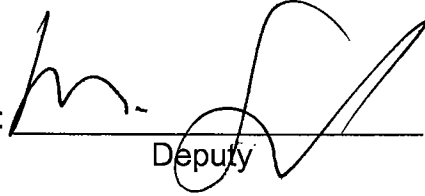
WHEREAS, the District's 2005 Urban Water Management Plan (Attachment E) meets the requirements of the Urban Water Management Planning Act.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Supervisors of the County of Los Angeles, as the Board of Directors of Los Angeles County Waterworks District No. 29, Malibu, and the Marina del Rey Water System, hereby adopts the District's 2005 Urban Water Management Plan.

The foregoing Resolution was on the 22nd day of November, 2005, adopted by the Board of Supervisors of the County of Los Angeles as the governing body of the Los Angeles County Waterworks District 29, Malibu and Marina del Rey Water System.

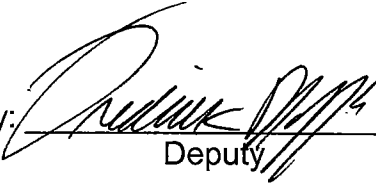


VIOLET VARONA-LUKENS,
Executive-Officer of the
Board of Supervisors of
the County of Los Angeles

By: 
Deputy

APPROVED AS TO FORM:

RAYMOND G. FORTNER, JR.
County Counsel

By: 
Deputy



MINUTES OF THE BOARD OF SUPERVISORS
COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

Violet Varona-Lukens, Executive Officer
Clerk of the Board of Supervisors
383 Kenneth Hahn Hall of Administration
Los Angeles, California 90012

Director of Public Works

At its meeting held November 22, 2005, the Board acting as the Governing Body of the Los Angeles County Waterworks District No. 29, Malibu and the Marina del Rey Water System and the Los Angeles County Waterworks District No. 40, Antelope Valley, took the following action:

5

At the time and place regularly set, notice having been duly given, the following item was called up:

Hearing on adoption of the 2005 Urban Water Management Plans for County Waterworks District No. 29, Malibu, the Marina del Rey Water System, and County Waterworks District No. 40, Antelope Valley, as required by the Urban Water Management Planning Act, which includes a water-shortage contingency plan, and explanation of existing water conservation practices, the projection of future water demands, and identification of sufficient water supplies to meet projected water demands (3, 4 and 5), as further described in the attached letter dated October 20, 2005 from the Director of Public Works.

Opportunity was given for interested persons to address the Board. No interested persons addressed the Board. No correspondence was presented.

On motion of Supervisor Knabe, seconded by Supervisor Antonovich, unanimously carried, the Board acting as the Governing Body of the Los Angeles County Waterworks District No. 29, Malibu and the Marina del Rey Water System and the Los Angeles County Waterworks District No. 40, Antelope Valley, closed the hearing and took the following actions:

1. Adopted the attached resolution approving the 2005 Urban Water Management Plan for the Los Angeles County Waterworks District No. 29, Malibu and Marina Del Rey Water System; and

(Continued on Page 2)

5 (Continued)

2. Adopted the attached resolution approving the 2005 Integrated Urban Water Management Plan for the Antelope Valley for the Los Angeles County Waterworks District No. 40, Antelope Valley.

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Attachments

Copies distributed:

Each Supervisor
Auditor-Controller
Chief Administrative Officer
County Counsel

APPENDIX C

Phased Water Conservation Plan

(Part 5 of the LA County Rules and Regulations)



RULES AND REGULATIONS
OF THE
LOS ANGELES COUNTY
WATERWORKS DISTRICTS
AND THE
MARINA DEL REY WATER SYSTEM

Last revision adopted on
February 2005

Prepared by

Department of Public Works
Waterworks and Sewer Maintenance Division
900 South Fremont Avenue
Alhambra, CA 91803
(626) 300-3302

PART 5 - PHASED WATER CONSERVATION PLAN
SECTION A - STATEMENT OF POLICY AND DECLARATION OF PURPOSE

RULE

5-A-1 STATEMENT OF POLICY AND DECLARATION OF PURPOSE: Because of the water supply conditions prevailing in any or all of the County Waterworks Districts and/or in the area from which any or all of the Districts obtain all or a portion of their supply, the general welfare requires that the water resources available to any or all of the Districts be put to the maximum beneficial use to the extent to which they are capable, and that the unreasonable use, or unreasonable method of use of water be discouraged and that the conservation of such water be practiced with a view to the reasonable and beneficial use thereof in the interest of the people of any or all of the Districts and for the public welfare. The purpose of this Phased Water Conservation Plan is to minimize the effect of a shortage of water supplies on the customers of any or all of the Districts during a water shortage emergency.

SECTION B - AUTHORIZATION TO IMPLEMENT WATER CONSERVATION

5-B-1 AUTHORIZATION TO IMPLEMENT WATER CONSERVATION:

5-B-1a The Board of Directors of the Waterworks Districts may implement the applicable provisions of this conservation plan, following the public hearing required by Rule 5-B-1b, upon its determination that such implementation is necessary to protect the public welfare and safety.

5-B-1b The Board of Directors of the Waterworks Districts shall hold a public hearing for the purpose of determining whether a shortage exists in any or all of the Districts and which measures provided by this ordinance should be implemented. Notice of the time and place of the public hearing shall be published not less than ten (10) days before the hearing in a newspaper of general circulation within the affected District or Districts.

5-B-1c The Board of Directors shall issue its determination of shortage and corrective measures by resolution published in a daily newspaper of general circulation within the affected District or Districts. Conservation surcharges assessed per Rule 5-0-1 shall become effective no sooner than the first full billing period commencing on or after the date of such publication.

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION C - GENERAL PROHIBITION

RULE

5-C-1 GENERAL PROHIBITION:

5-C-1a No customer of the District or Districts shall make, cause, use, or permit the use of water from the District or Districts in a manner contrary to any provision of this ordinance.

5-C-1b In the area of District No. 34 Desert View Highlands known as Ritter Ranch, as defined in Agreement No. 66407 as amended between the District and Ritter Park Associates, the water use limitations contained in Agreement No. 66407 as amended shall be implemented in addition to those required by this Part of these rules.

SECTION D - PHASE I SHORTAGE

5-D-1 PHASE I SHORTAGE:

5-D-1a A Phase I Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a ten percent (10%) shortage in its water supplies.

5-D-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of ninety percent (90%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-D-1c For meter sizes of one (1) inch or less, a base quantity shall be computed and will be the larger of the following amounts:

1. The average of the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the Board of Directors, or
2. The amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION D - PHASE I SHORTAGE (Continued)

RULE

5-D-1 PHASE I SHORTAGE: (Continued)

A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of ninety percent (90%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per rule 5-0-1.

SECTION E - PHASE II SHORTAGE

5-E-1 PHASE II SHORTAGE:

5-E-1a A Phase II Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between ten percent (10%) and fifteen percent (15%) in its water supplies.

5-E-1b A customer with a meter size of one and one-half (1 1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of eighty-five percent (85%) of the base quantity. All water used in

5-E-1c excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-E-1d For meter sizes of one (1) inch or less, a base quantity shall be computed and will be the larger of the following amounts:

1. The average of the water usage for all similar sized meters during the corresponding billing period to be defined by the Board of Directors, or
2. The amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of eighty-five percent (85%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1.

5-D-1c Rev. 7/91
5-E-1c Rev. 7/91

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION F - PHASE III SHORTAGE

RULE

5-F-1 PHASE III SHORTAGE:

5-F-1a A Phase III Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between fifteen percent (15%) and twenty percent (20%) in its water supplies.

5-F-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of eighty percent (80%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-F-1c For meter sizes of one (1) inch or less, a base quantity shall be computed and will be the larger of the following amounts:

1. The average of the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the Board of Directors, or
2. The amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of eighty percent (80%) of the base quantity. All water used in excess of the target quantity shall be subject to a surcharge per Rule 5-0-1.

5-F-1d New meters to provide construction water service shall not be issued.

5-F-1e Water service ("Will Serve") letters will be issued, but such letters will be issued with the condition that permanent metered service to any newly created lot will be prohibited until the Board of Directors determines that the provisions of the Phased Water Conservation Plan are no longer in effect or that the severity of the water supply condition may be reduced to a Phase I or Phase II shortage.

5-F-1c Rev. 7/91

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION G - PHASE IV SHORTAGE

RULE

5-G-1 PHASE IV SHORTAGE:

5-G-1a A Phase IV Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between twenty percent (20%) and twenty-five percent (25%) in its water supplies.

5-G-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of seventy-five percent (75%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-G-1c For meter sizes of one (1) inch or less, a base quantity shall be computed and will be the larger of the following amounts:

1. The average of the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the Board of Directors, or
2. The amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of seventy-five (75%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1.

5-G-1d The watering of lawn, landscape or other turf area with water supplied by the District shall be limited to not more than every other day and shall be prohibited between the hours of 10:00 a.m. and 5:00 p.m.

5-G-1e New meters to provide construction water service shall not be issued.

5-G-1f Water Service ("Will Serve") letters will be issued but such letters will be issued with the condition that permanent metered service to any newly created lot will be prohibited until the Board of Directors determines that the provisions of the Phased Water Conservation Plan are no longer in effect or that the severity of the water supply condition may be reduced to a Phase I or Phase II shortage.

5-G-1c Rev. 7/91

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION H - PHASE V SHORTAGE

RULE

5-H-1 PHASE V SHORTAGE:

5-H-1a A Phase V Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between twenty-five (25%) and thirty percent (30%) in its water supplies.

5-H-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of seventy percent (70%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Supervisors.

5-H-1c For meter sizes of one (1) inch or less, a base quantity shall be computed and will be the larger of the following amounts:

1. The average of the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the Board of Directors, or
2. The amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

A customer with a meter size of (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of seventy percent (70%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1.

5-H-d The watering of lawn, landscape or other turf area with water supplied by the district shall be limited to not more than every other day and shall be prohibited between the hours of 10:00 a.m. and 5:00 p.m.

5-H-1e New meters to provide construction water service shall not be issued.

5-H-1f Water service ("Will Serve") letters will be issued but such letters will be issued with the condition that permanent metered service to any newly created lot will be prohibited until the Board of Directors determines that the provisions of the Phased Water Conservation Plan are no longer in effect or that the severity of the water supply condition may be reduced to a Phase I or Phase II shortage.

5-H-1c Rev. 7/91

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION I - PHASE VI SHORTAGE

RULE

5-I-1 PHASE VI SHORTAGE:

5-I-1a A Phase VI Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between thirty (30%) and thirty-five percent (35%) in its water supplies.

5-I-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of sixty-five percent (65%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-I-1c For meter sizes of one (1) inch or less, a base quantity shall be computed and will be the larger of the following amounts:

1. The average of the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the Board of Directors, or
2. The amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of sixty-five percent (65%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1.

5-I-1d The watering of lawn, landscape or other turf area with water supplied by the District shall be limited to not more than every third day and shall be prohibited between the hours of 10:00 a.m. and 5:00 p.m.

5-I-1e New meters to provide construction water service shall not be issued.

5-I-1f Water service ("Will Serve") letters will be issued but such letters will be issued with the condition that permanent metered service to any newly created lot will be prohibited until the Board of Directors determines that the provisions of the Phased Water Conservation Plan are no longer in effect or that the severity of the water supply condition may be reduced to a Phase I or Phase II shortage.

5-I-1c Rev. 7/91

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION J - PHASE VII SHORTAGE

RULE

5-J-1 PHASE VII SHORTAGE:

5-J-1a A Phase VII Shortage shall be declared whenever the Board of Directors determined that it is likely that the District will suffer a shortage of between thirty-five (35%) and forty percent (40%) in its water supplies.

5-J-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of sixty percent (60%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.

5-J-1c For meter sizes of one (1) inch or less, a base quantity shall be computed by averaging the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the Board of Directors. A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of sixty percent (60%) of the base quantity. All water used in excess of the target quantity shall be subject to a surcharge per Rule 6-0-1.

5-J-1d The watering of lawn, landscape or other turf area with water supplied by the District shall be prohibited, except that trees and shrubs may be watered at any time by bucket.

5-J-1e All meters to provide construction water shall be removed.

5-J-1f Water service ("Will Serve") letters will be issued, but such letters will be issued with the condition that permanent metered service to any newly created lot will be prohibited until the Board of Directors determines that the provisions of the Phased Water Conservation Plan are no longer in effect or that the severity of the water supply condition may be reduced to a Phase I or Phase II shortage.

5-J-1g No new permanent meters shall be installed.

SECTION K - PHASE VIII SHORTAGE

5-K-1 PHASE VIII SHORTAGE:

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION K - PHASE VIII SHORTAGE (Continued)

RULE

- 5-K-1a A Phase VIII Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between forty (40%) and forty-five percent (45%) in its water supplies.
- 5-K-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of fifty-five percent (55%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.
- 5-K-1c For meter sizes of one (1) inch or less, a base quantity shall be computed by averaging the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the Board of Directors. A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to fifty-five percent (55%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1.
- 5-K-1d The watering of lawn, landscape or other turf area with water supplied by the District shall be prohibited except that trees and shrubs may be watered at any time by bucket.
- 5-K-1e All meters to provide construction water shall be removed.
- 5-K-1f Water service ("Will Serve") letters will be issued but such letters will be issued with the condition that permanent metered service to any newly created lot will be prohibited until the Board of Directors determines that the provisions of the Phased Water Conservation Plan are no longer in effect or that the severity of the water supply condition may be reduced to a Phase I or Phase II shortage.
- 5-K-1g No new permanent meters shall be installed.

SECTION L - PHASE IX SHORTAGE

5-L-1 PHASE IX SHORTAGE:

- 5-L-1a A Phase IX Shortage shall be declared whenever the Board of Directors determines that it is likely that the District will suffer a shortage of between forty-five (45%) and fifty percent (50%) in its water supplies.

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION L - PHASE IX SHORTAGE (Continued)

RULE

- 5-L-1b A customer with a meter size of one and one-half (1-1/2) inches or larger shall be billed at his or her normal established water rate for all water used up to a target quantity of fifty percent (50%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1. The base quantity shall be determined by the amount of water used on the customer's premises during the corresponding billing period of a base period to be defined by the Board of Directors.
- 5-L-1c For meter sizes of one (1) inch or less, a base quantity shall be computed by averaging the water usage for all similar sized meters during the corresponding billing period of a base period to be defined by the Board of Directors. A customer with a meter size of one (1) inch or less shall be billed at his or her normal established water rate for all water used up to a target quantity of fifty percent (50%) of the base quantity. All water used in excess of the target quantity shall be subject to a conservation surcharge per Rule 5-0-1.
- 5-L-1d The watering of lawn, landscape or other turf area including trees and shrubs, with water supplied by the District shall be prohibited.
- 5-L-1e All meters to provide construction water shall be removed.
- 5-L-1f Water service ("Will Serve") letters will be issued, but such letters will be issued with the condition that permanent metered service to any newly created lot will be prohibited until the Board of Directors determines that the provisions of the Phased Water Conservation Plan are no longer in effect or that the severity of the water supply condition may be reduced to a Phase I or Phase II shortage.
- 5-L-1g No new permanent meters shall be installed.

SECTION M - RELIEF FROM COMPLIANCE

- 5-M-1 RELIEF FROM COMPLIANCE:
- 5-M-1a A customer may file an application for relief from any provisions of this ordinance. The Director of Public Works shall develop such procedures as he or she considers necessary to resolve such applications and shall, upon the filing by a customer of an application for relief, take such steps as he or she deems reasonable to resolve the application for relief. The decision of the Director of Public Works shall be final. The Director of Public Works may delegate his or her duties and responsibilities under this Rule as appropriate.

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION M - RELIEF FROM COMPLIANCE (Continued)

RULE

5-M-1b The application for relief may include a request that the customer be relieved, in whole or in part, from the conservation surcharge provisions of Rules 5-D-1b, 5-D-1c, 5-E-1b, 5-F-1c, 5-G-1b and 5-G-1c, 5-H-1b, 5-H-1c, 5-I-1b, 5-I-1c, 5-J-1b, 5-J-1c, 5-K-1b, 5-K-1c, 5-L-1b and 5-L-1c.

5-M-1c In determining whether to grant relief, and the nature of any relief, the Director of Public Works shall take into consideration all relevant factors including, but not limited to:

1. Whether any additional reduction in water consumption will result in unemployment;
2. Whether additional members have been added to the household;
3. Whether any additional landscaped property has been added to the property since the corresponding billing period of the base year;
4. Changes in vacancy factors in multi-family housing;
5. Increased number of employees in commercial, industrial, and governmental offices;
6. Increased production requiring increased process water;
7. Water uses during new construction;
8. Adjustments to water use caused by emergency health or safety hazards;
9. First filling of a permit-constructed swimming pool; and
10. Water use necessary for reasons related to family illness or health.
11. Whether the basic period for billing should be adjusted due to the unique circumstances of the type of facility, such as a boat, which results in irregular, intermittent periods of consumption.

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION M - RELIEF FROM COMPLIANCE (Continued)

RULE

5-M-1d In order to be considered, an application for relief must be filed with the District within twenty (20) days from the date the provision from which relief is sought becomes applicable to the applicant. No relief shall be granted unless the customer shows that he or she has achieved the maximum practical reduction in water consumption other than in the specific areas in which relief is being sought. No relief shall be granted to any customer who, when requested by the Director of Public Works or designee, fails to provide any information necessary for resolution of the customer's application for relief. The decision shall be issued within twenty (20) days and provided to the customer.

SECTION N - NOTIFICATION OF CUSTOMERS

5-N-1 NOTIFICATION OF CUSTOMERS:

5-N-1a Each customer will be notified on his or her bill as to what the target quantity and the base quantity will be for the applicable billing period.

SECTION O - CONSERVATION SURCHARGES

5-O-1 CONSERVATION SURCHARGES:

5-O-1a Water use in excess of target quantities specified in Rules 5-D-1b, 5-D-1c, 5-E-1b, 5-E-1c, 5-F-1b, 5-F-1c, 5-G-1b, 5-F-1c, 5-H-1b, 5-H-1c, 5-I-1b, 5-I-1c, 5-J-1b, 5-J-1c, 5-K-1b, 5-K-1c, 5-L-1b and 5-L-1c shall be subject to the following conservation surcharges:

1. A conservation surcharge of \$3.00 per 100 cubic-feet shall be assessed for water usage in excess of the target quantity but less than the base quantity set in these Rules for the applicable billing cycle. This conservation surcharge shall be in addition to the normal established water rate.
2. A conservation surcharge of \$6.00 per 100 cubic-feet shall be assessed for water usage in excess of the base quantity set in these Rules for the applicable billing cycle. This conservation surcharge shall be in addition to the normal established water rate.

5-O-1b Violation by any customer of the water use prohibitions of Rules 5-G-1d, 5-H-1d, 5-I-1d, 5-K-1d and 5-K-1d shall be penalized as follows:

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION O - CONSERVATION SURCHARGES (Continued)

RULE
5-O-1b (Continued)

1. First violation. The Director of Public Works or designee shall issue a written notice of the fact of a first violation to the customer.
2. Second violation. For a second violation during any one water shortage emergency, the Director of Public Works or designee shall issue a written notice of the fact of a second violation to the customer.
3. Third and subsequent violations. For a third and each subsequent violation during any one water shortage emergency, the Director of Public Works or designee may install a flow-restricting device or the service of the customer at the premises at which the violation occurred for installing and for removing the flow-restricting devices and for restoration of normal service. The charge shall be paid before normal service can be restored.

5-O-1c All monies collected by a District pursuant to this ordinance shall be deposited in that District's General Fund as reimbursement for the District's costs and expenses of administering this conservation plan.

5-O-1d The District shall give notice to customer of water conservation surcharges or of water usage violations as follows:

1. Notice of water conservation surcharges or of first and second violations of the water use prohibitions of Rules 5-G-1d, 5-H-1d, 5-I-1d, 5-J-1d, 5-K-1d and 5-L-1d shall be given to the customer in person or by regular mail.
 - B. If the customer is absent from or unavailable at the premises at which the violation occurred, by leaving a copy with some person of suitable age and discretion at the premises and sending a copy through the regular mail to the address at which the customer is normally billed; or
 - C. If a person of suitable age or discretion cannot be found, then by affixing a copy in a conspicuous place at the premises at which the violation occurred and also sending a copy through the regular mail to the address at which the customer is normally billed.

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION O - CONSERVATION SURCHARGES (Continued)

RULE

5-O-1e The notice of a violation of the water use prohibitions of Rules 5-G-1d, 5-H-1d, 5-I-1d, 5-J-1d, 5-K-1d and 5-L-1d shall contain a description of the facts of the violation, a statement of the possible penalties for each violation and a statement informing the customer of his right to a hearing on the merits of the violation pursuant to Rule 5-P-1.

5-O-1f Nothing in these regulations shall prohibit any customer from either installing sub-meters or from pro-rating and collecting from the ultimate users any conservation surcharges assessed when the customer's master meter measures consumption of water for multiple tenancy facilities. However, unless the sub-meters are subsequently billed directly by the District, the customer responsible for the master meter shall continue to be responsible directly to the District for all payments including conservation surcharges.

SECTION P - HEARING REGARDING VIOLATIONS

5-P-1 HEARING REGARDING VIOLATIONS:

5-P-1a Any customer receiving notice of a third or subsequent violations of the water use prohibitions of Rules 5-G-1d, 5-H-1d, 5-I-1d, 5-J-1d, 5-K-1d or 5-L-1d shall have a right to a hearing by the Director of Public Works or his designee within fifteen (15) days of a mailing or other delivery of the notice of violation.

5-P-1b The customer's written request for a hearing must be received within ten (10) days of the issuance of the notice of violation. This request shall stay installation of a flow-restricting device on the customer's premises and the assessment of any surcharge until the Director of Public Works or designee renders his or her decision. The decision shall be issued within ten (10) days of the hearing, a copy of which shall be provided to the customer.

5-P-1c The decision of the Director of Public Works shall be final except for judicial review.

SECTION Q - ADDITIONAL WATER SHORTAGE MEASURES

5-Q-1 ADDITIONAL WATER SHORTAGE MEASURES:

The Board of Directors may order implementation of water conservation measures in addition to those set forth in Rules 5-D-1, 5-E-1, 5-F-1, 5-F-1, 5-H-1, 5-I-1, 5-J-1, 5-K-1 and 5-L-1. Such additional water conservation measures shall be implemented in the manner provided in Rule 5-B-1.

PART 5 - PHASED WATER CONSERVATION PLAN (Continued)
SECTION R - PUBLIC HEALTH AND SAFETY NOT TO BE AFFECTED

RULE

5-R-1

PUBLIC HEALTH AND SAFETY NOT TO BE AFFECTED:

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

SECTION S - SEVERABILITY

5-S-1

SEVERABILITY:

If any part of this ordinance or the application thereof to any person or circumstances is for any reason held invalid or unconstitutional by a decision of any court of competent jurisdiction, the validity of the remainder of the ordinance or the application of such provision to other persons or circumstances shall not be affected. The Board of Directors of the District or Districts declares that it would have adopted this ordinance and all provisions hereof irrespective of the fact that any one or more of the provisions be declared invalid or unconstitutional.

APPENDIX D

Demand Management Measures (DMMs)

(also known as)

Water Conservation Best Management Practices (BMPs)

Reported as of 10/2

Water Supply & Reuse

Reporting Unit:

**Los Angeles County Waterworks District 29 - Malibu &
Marina del Rey**

Year:

2004

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
--------------------	------------------------	-------------

Total AF:

Reported as of 10/2

Accounts & Water Use

Reporting Unit Name: **Los Angeles County Waterworks District 29 - Malibu & Marina del Rey**
 Submitted to: **CUWCC**
 Year: **2004**
 Date: **03/07/2005**

A. Service Area Population Information:

1. Total service area population 24900

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	7063	7293	0	0
2. Multi-Family	85	667	0	0
3. Commercial	118	441	0	0
4. Industrial	0	0	0	0
5. Institutional	29	126	0	0
6. Dedicated Irrigation	110	198	0	0
7. Recycled Water	0	0	0	0
8. Other	177	853	0	0
9. Unaccounted	NA	1137	NA	0
Total	7582	10715	0	0

Metered**Unmetered**

Reported as of 10/2

Reported as of 10/2

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:

Los Angeles County Waterworks **BMP Form Status:** **Year:**
District 29 - Malibu & Marina del Rey **100% Complete** **2004**

A. Implementation

- | | |
|--|------------|
| 1. Based on your signed MOU date, 04/11/1996, your Agency STRATEGY DUE DATE is: | 04/11/1998 |
| 2. Has your agency developed and implemented a targeting/marketing strategy for SINGLE-FAMILY residential water use surveys? | no |
| a. If YES, when was it implemented? | |
| 3. Has your agency developed and implemented a targeting/marketing strategy for MULTI-FAMILY residential water use surveys? | no |
| a. If YES, when was it implemented? | |

B. Water Survey Data

Survey Counts:	Single Family Accounts	Multi-Family Units
1. Number of surveys offered:	0	0
2. Number of surveys completed:	0	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	no	no
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	no	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as necessary; replace leaking toilet flapper, as necessary	no	no
Outdoor Survey:		
6. Check irrigation system and timers	no	no
7. Review or develop customer irrigation schedule	no	no
8. Measure landscaped area (Recommended but not required for surveys)	no	no
9. Measure total irrigable area (Recommended but not required for surveys)	no	no
10. Which measurement method is typically used (Recommended but not required for surveys)		None
11. Were customers provided with information packets that included evaluation results and water savings recommendations?	no	no
12. Have the number of surveys offered and completed, survey results, and survey costs been	no	no

tracked?

- a. If yes, in what form are surveys tracked? None
- b. Describe how your agency tracks this information.

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

- 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 10/2

BMP 02: Residential Plumbing Retrofit

Reporting Unit:

**Los Angeles County Waterworks
District 29 - Malibu & Marina del Rey**

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? no
 - a. If YES, list local jurisdictions in your service area and code or ordinance in each:

2. Has your agency satisfied the 75% saturation requirement for single-family housing units? no
3. Estimated percent of single-family households with low-flow showerheads: %
4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? no
5. Estimated percent of multi-family households with low-flow showerheads: %
6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? no
 - a. If YES, when did your agency begin implementing this strategy?
 - b. Describe your targeting/ marketing strategy.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	0	0
3. Number of toilet-displacement devices distributed:	0	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	0	0
6. Does your agency track the distribution and cost of low-flow devices? no		
a. If YES, in what format are low-flow devices tracked?		
b. If yes, describe your tracking and distribution system :		

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? yes

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

The County passed Ordinance No. 91-0097U to require all new buildings to use Ultra Low Flow Toilets (ULFT) and urinals. In addition, West Basin MWD service area and MWD has developed a ULF toilet and showerhead replacement rebate program.

E. Comments

Reported as of 10/2

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:

**Los Angeles County Waterworks
District 29 - Malibu & Marina del Rey**BMP Form Status:
100% CompleteYear:
2004**A. Implementation**

1. Has your agency completed a pre-screening system audit for this reporting year? yes
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:
- | | |
|--|-------|
| a. Determine metered sales (AF) | 9578 |
| b. Determine other system verifiable uses (AF) | 0 |
| c. Determine total supply into the system (AF) | 10715 |
| d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required. | 0.89 |
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production? yes
4. Did your agency complete a full-scale audit during this report year? yes
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit? yes
6. Does your agency operate a system leak detection program? yes
- a. If yes, describe the leak detection program:

Los Angeles County Waterworks Districts has hires an as needed consultant to conduct leak detection throughout the year for various districts. Leaks are reported by field personnel and meter-read employees. Also, as street improvement projects are submitted for review, old deteriorated water mains are replaced. Our field personnel also report high leak incidents, which are replaced when reported. The Districts maintain leak records.

B. Survey Data

- | | |
|--|-----|
| 1. Total number of miles of distribution system line. | 207 |
| 2. Number of miles of distribution system line surveyed. | 35 |

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	21000	21000
2. Actual Expenditures	25462	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? yes
- a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

The water audit program in place within the County compares the supply purchased versus the water used in order to determine the water loss.

E. Comments

Reported as of 10/2

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:

Los Angeles County Waterworks **BMP Form Status:** **Year:**
District 29 - Malibu & Marina del Rey **100% Complete** **2004**

A. Implementation

1. Does your agency require meters for all new connections and bill by volume-of-use? yes
2. Does your agency have a program for retrofitting existing unmetered connections and bill by volume-of-use? no
 - a. If YES, when was the plan to retrofit and bill by volume-of-use existing unmetered connections completed?
 - b. Describe the program:
3. Number of previously unmetered accounts fitted with meters during report year. 0

B. Feasibility Study

1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? no
 - a. If YES, when was the feasibility study conducted? (mm/dd/yy)
 - b. Describe the feasibility study:
2. Number of CII accounts with mixed-use meters. 0
3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period. 0

C. Meter Retrofit Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? yes
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

All existing connections are metered and billed by volume.

E. Comments

Reported as of 10/2

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:

**Los Angeles County
Waterworks District 29 -
Malibu & Marina del Rey**

BMP Form Status:
100% Complete

Year:
2004

A. Water Use Budgets

- | | |
|--|-----|
| 1. Number of Dedicated Irrigation Meter Accounts: | 110 |
| 2. Number of Dedicated Irrigation Meter Accounts with Water Budgets: | 0 |
| 3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF): | 0 |
| 5. Does your agency provide water use notices to accounts with budgets each billing cycle? | no |

B. Landscape Surveys

- | | |
|--|----|
| 1. Has your agency developed a marketing / targeting strategy for landscape surveys? | no |
| a. If YES, when did your agency begin implementing this strategy? | |
| b. Description of marketing / targeting strategy: | |
| 2. Number of Surveys Offered. | 0 |
| 3. Number of Surveys Completed. | 0 |
| 4. Indicate which of the following Landscape Elements are part of your survey: | |
| a. Irrigation System Check | no |
| b. Distribution Uniformity Analysis | no |
| c. Review / Develop Irrigation Schedules | no |
| d. Measure Landscape Area | no |
| e. Measure Total Irrigable Area | no |
| f. Provide Customer Report / Information | no |
| 5. Do you track survey offers and results? | no |
| 6. Does your agency provide follow-up surveys for previously completed surveys? | no |
| a. If YES, describe below: | |

C. Other BMP 5 Actions

- | | |
|---|----|
| 1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets? | no |
| 2. Number of CII mixed-use accounts with landscape budgets. | 0 |
| 3. Do you offer landscape irrigation training? | no |

4. Does your agency offer financial incentives to improve landscape water use efficiency? no

Type of Financial Incentive:	Budget (Dollars/ Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates	0	0	0
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services? No

a. If YES, describe below:

6. Do you have irrigated landscaping at your facilities? no

a. If yes, is it water-efficient? no

b. If yes, does it have dedicated irrigation metering? no

7. Do you provide customer notices at the start of the irrigation season? no

8. Do you provide customer notices at the end of the irrigation season? no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

Reported as of 10/2

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form	Year:
Los Angeles County Waterworks	Status:	2004
District 29 - Malibu & Marina del Rey	100% Complete	

A. Implementation

- | | |
|---|-----|
| 1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers? | Yes |
| a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is. | |

Go to West Basin's website www.westbasin.org Click on Conservation Link

- | | |
|--|----|
| 2. Does your agency offer rebates for high-efficiency washers? | no |
| 3. What is the level of the rebate? | 0 |
| 4. Number of rebates awarded. | 0 |

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

- | | |
|--|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | no |
| a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as." | |

D. Comments

Reported as of 10/2

BMP 07: Public Information Programs

Reporting Unit: **Los Angeles County Waterworks**
 District 29 - Malibu & Marina del Rey

BMP Form Status: **100% Complete**

Year: **2004**

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes
- a. If YES, describe the program and how it's organized.

Three full-time staff dedicated to water conservation practices-newsletter, bill inserts, Web site, radio PSA's, outreach materials at public counter and at public events, planning BMP program for next year

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	no	
b. Public Service Announcement	yes	104
c. Bill Inserts / Newsletters / Brochures	yes	2
d. Bill showing water usage in comparison to previous year's usage	Yes	
e. Demonstration Gardens	no	
f. Special Events, Media Events	yes	3
g. Speaker's Bureau	no	
h. Program to coordinate with other government agencies, industry and public interest groups and media	no	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	580	580
2. Actual Expenditures	580	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No
- a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 10/2

BMP 08: School Education Programs

Reporting Unit:

**Los Angeles County
Waterworks District 29 -
Malibu & Marina del Rey**BMP Form Status:
100% CompleteYear:
2004**A. Implementation**

1. Has your agency implemented a school information program to promote water conservation? No

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	no	0	0	0
Grades 4th-6th	No	0	0	0
Grades 7th-8th	No	0	0	0
High School	No	0	0	0

3. Did your Agency's materials meet state education framework requirements? No

4. When did your Agency begin implementing this program?

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 10/2

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:

**Los Angeles County
Waterworks District 29 -
Malibu & Marina del Rey**

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

- 1. Has your agency identified and ranked COMMERCIAL customers according to use? no
- 2. Has your agency identified and ranked INDUSTRIAL customers according to use? no
- 3. Has your agency identified and ranked INSTITUTIONAL customers according to use? no

Option A: CII Water Use Survey and Customer Incentives Program

- 4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option? no

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	0	0	0
b. Number of New Surveys Completed	0	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0
CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	no	no	no
f. Evaluation of all water-using apparatus and processes	no	no	no
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	no	no	no
Agency CII Customer Incentives	Budget (\$/Year)	No. Awarded to Customers	Total \$ Amount Awarded
h. Rebates	0	0	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

-
- | | |
|---|----|
| 5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option? | no |
| 6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings? | no |
| 7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991. | 0 |
| 8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991. | 0 |

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

- | | |
|---|----|
| 1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? | No |
| <p>a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."</p> | |

D. Comments

Program has not been implemented.

Reported as of 10/2

BMP 09a: CII ULFT Water Savings

Reporting Unit:

**Los Angeles County
Waterworks District 29 -
Malibu & Marina del Rey**

BMP Form Status:
100% Complete

Year:
2004

1. Did your agency implement a CII ULFT replacement program in the reporting year? Yes
If No, please explain why on Line B. 10.

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply. CII Sector or subsector
CII ULFT Study subsector targeting

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

We found CII sectors and sub sectors most effective because we were able to version our marketing efforts appropriately.

2. How does your agency advertise this program? Check all that apply. Direct letter
Bill insert
Newsletter
Web page
Newspapers
Trade publications
Other print media
Trade shows and events
Telemarketing

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

For the purposes of this program, Trade Allies have proven to be the most effective overall marketing tool, as well as the most effective per dollar expended. Trade Allies include plumbers, distributors, retail home improvement stores and product manufacturers.

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP.) Yes
2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency? Yes
3. What is the total number of customer accounts participating in the program during the last year ? 2

4.	CII Subsector	Number of Toilets Replaced			
		Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount
a.	Offices	0	0	0	0
b.	Retail / Wholesale	0	0	0	0

c. Hotels	0	0	0	0
d. Health	0	0	0	0
e. Industrial	0	0	0	0
f. Schools: K to 12	27	0	0	0
g. Eating	0	0	0	0
h. Govern- ment	0	0	0	0
i. Churches	0	0	0	0
j. Other	0	0	0	0

5. Program design. Rebate or voucher
6. Does your agency use outside services to implement this program? Yes
- a. If yes, check all that apply. Consultant
7. Participant tracking and follow-up. Telephone
Site Visit
8. Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program.
- | | |
|-------------------------------------|---|
| a. Disruption to business | 1 |
| b. Inadequate payback | 3 |
| c. Inadequate ULFT performance | 2 |
| d. Lack of funding | 5 |
| e. American's with Disabilities Act | 0 |
| f. Permitting | 0 |
| g. Other. Please describe in B. 9. | |
9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other issues affecting program implementation or effectiveness.
- Customers are generally more willing to participate in the program if the cost of the retrofit is in balance with the amount of the rebate, and the projected water savings is significant. Resistance occurs if the out-of-pocket expense for the retrofit is too costly and the rebate amount is too low.
10. Please provide a general assessment of the program for this reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor	0	0
b. Materials	0	0
c. Marketing & Advertising	0	0

d. Administration & Overhead	0	0
e. Outside Services	0	0
f. Total	0	0

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution		2800
b. State agency contribution		0
c. Federal agency contribution		0
d. Other contribution		0
e. Total		2800

D. Comments

Reported as of 10/2

BMP 11: Conservation Pricing

Reporting Unit:

Los Angeles County Waterworks**District 29 - Malibu & Marina del Rey**

BMP Form

Status:

100% Complete

Year:

2004**A. Implementation****Rate Structure Data Volumetric Rates for Water Service by Customer Class****1. Residential**

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$11627632
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$3603674

2. Commercial

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$517767
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$29088

3. Industrial

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$0

4. Institutional / Government

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$931205
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$61899

5. Irrigation

a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$236505
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$23342

6. Other

a. Water Rate Structure	Uniform
-------------------------	---------

b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	\$198225
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	\$265805

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? yes

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

The District charges its customers a monthly service charge and a uniform volumetric charge.

D. Comments

Reported as of 10/2

BMP 12: Conservation Coordinator

Reporting Unit:

**Los Angeles County Waterworks
District 29 - Malibu & Marina del Rey**

BMP Form

Status:
100% Complete

Year:

2004**A. Implementation**

1. Does your Agency have a conservation coordinator? yes
2. Is this a full-time position? yes
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?
4. Partner agency's name:
5. If your agency supplies the conservation coordinator:
 - a. What percent is this conservation coordinator's position? 20%
 - b. Coordinator's Name David Rydman
 - c. Coordinator's Title Associate Civil Engineer
 - d. Coordinator's Experience and Number of Years 4 years
 - e. Date Coordinator's position was created (mm/dd/yyyy) 05/01/1998
6. Number of conservation staff, including Conservation Coordinator. 3

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	29000	29000
2. Actual Expenditures	29000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no
 - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 10/2

BMP 13: Water Waste Prohibition

Reporting Unit:

Los Angeles County Waterworks
District 29 - Malibu & Marina del
Rey

BMP Form Status: **Year:**
100% Complete **2004**

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? no

a. If YES, describe the ordinance:

2. Is a copy of the most current ordinance(s) on file with CUWCC? no

a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

a. Gutter flooding no

b. Single-pass cooling systems for new connections no

c. Non-recirculating systems in all new conveyor or car wash systems no

d. Non-recirculating systems in all new commercial laundry systems no

e. Non-recirculating systems in all new decorative fountains no

f. Other, please name
 No Water Wasting Ordinance yes

2. Describe measures that prohibit water uses listed above:

On March 21, 1991, the County Board of Supervisors adopted Ordinance No. 91-0046U that called for "No Water Wasting" in only unincorporated areas of the County. They include the following measures: * Washing down paved surfaces is prohibited unless required for health or safety * Landscape watering is prohibited between 10:00 a.m. and 5:00 p.m. * Excessive landscape watering that results in runoff into adjoining streets, parking lots or alleys is prohibited * Plumbing leaks must be repaired as soon as practical * Washing of vehicles is prohibited excepted at a commercial carwash or with a hand-held bucket or hose equipped with an automatic shutoff nozzle * Serving drinking water at public eating places is prohibited unless requested by customers * Water used in decorative fountains must flow through a recycling system Failure to comply with these measures could have resulted in fines up to \$500. However, this Ordinance was active from March 1991 to January 1993. Currently, there is no water wasting ordinance in effect in the District. Two cities within our service have a similar ordinance implemented the same year.

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

a. Allow the sale of more efficient, demand-initiated no

regenerating DIR models.

b. Develop minimum appliance efficiency standards that:

i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. no

ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. no

c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. no

4. Does your agency include water softener checks in home water audit programs? no

5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement of less efficient timer models? no

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? yes

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

See B2

E. Comments

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:

Los Angeles County Waterworks **BMP Form Status:** **Year:**
District 29 - Malibu & Marina del Rey **100% Complete** **2004**

A. Implementation

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes
Number of Toilets Replaced by Agency Program During Report Year		
Replacement Method	SF Accounts	MF Units
2. Rebate	0	0
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	0	0
<hr/>		
Total	0	0

6. Describe your agency's ULFT program for single-family residences.

District 29's wholesaler, West Basin MWD has increased the effort to change existing property owners toilets with ULF models through incentive programs. Some of the programs in past have included rebates of \$50 for each toilet replaced with a ULF model. From 1991 to 1995 West Basin MWD rebate program replaced 493 single-family and 3,568 multi-family toilets. Over the next 20 years West Basin MWD is planning in replacing approximately 30,000 toilets in their service area.

7. Describe your agency's ULFT program for multi-family residences.

See Question 6

8. Is a toilet retrofit on resale ordinance in effect for your service area? no

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

City of Malibu

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	1200
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? yes

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective"

as."

In 1991, the County Board of Supervisors adopted Ordinance No. 91-0097U, which required the installation of ultra low flush toilets and urinals in all new buildings within the service area of District 29 and Marina Del Rey.

D. Comments

We plan to implement a residential ULFT program next year. The cost of each rebate has not yet been determined. Next Year's expenditure estimate assumed \$30 per rebate at 200/year plus processing costs.

APPENDIX E

Emergency Response Procedures

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LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

LOS ANGELES COUNTY WATERWORKS DISTRICTS

EMERGENCY RESPONSE PROCEDURES

Approved by
Manuel del Real
Assistant Deputy Director

August 2005

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APPENDIX E

**Water Conservation Requirements for the Unincorporated Los Angeles County
Area**

County Ordinance No. 91 - 0046U

Los Angeles, CA County Code

Title 11 HEALTH AND SAFETY

Part 4. Water Conservation Requirements for the Unincorporated Los Angeles County Area

11.38.620 Hose watering prohibition.

No person shall hose water or wash down any sidewalks, walkways, driveways, parking areas or other paved surfaces, except as is required for the benefit of public health and safety. Willful violation hereof shall be an infraction punishable by a fine of \$100.00 for the first infraction and \$500.00 each for subsequent infractions. (Ord. 91-0046U § 1 (part), 1991.)

11.38.630 Watering of lawns and landscaping.

- A. No person shall water or cause to be watered any lawn or landscaping between the hours of ten a.m. and five p.m.
- B. No person shall water or cause to be watered any lawn or landscaping more than once a day.
- C. No person shall water or cause to be watered any lawn or landscaping to such an extent that runoff into adjoining streets, parking lots or alleys occurs due to incorrectly directed or maintained sprinklers or excessive watering.
- D. It shall be the duty of all persons to inspect all hoses, faucets and sprinkling systems for leaks and to cause all leaks to be repaired as soon as is reasonably practicable.
- E. Willful violation hereof shall be an infraction punishable by a fine of \$100.00 for the first infraction and \$500.00 each for subsequent infractions. (Ord. 91-0046U § 1 (part), 1991.)

11.38.640 Indoor plumbing and fixtures.

- A. It shall be the duty of all persons to inspect all accessible indoor plumbing and faucets for leaks and to cause all leaks to be repaired as soon as is reasonably practicable.
- B. Willful violation hereof shall be an infraction punishable by a fine of \$500.00 (Ord. 91-0046U § 1 (part), 1991.)

11.38.650 Washing vehicles.

No motor vehicle, boat, trailer or other type of mobile equipment may be washed, except at a commercial carwash or with reclaimed water, unless such vehicle is washed by using a hand-held bucket or a water-hose equipped with an automatic shutoff nozzle. No person shall leave a water hose running while washing a vehicle or at any other time. Willful violation hereof shall be an infraction punishable by a fine of \$100.00 for the first infraction and \$500.00 each for subsequent infractions. (Ord. 91-0046U § 1 (part), 1991.)

11.38.660 Public eating places.

No restaurant, hotel, cafeteria, cafe or other public place where food is sold or served shall serve drinking water to any customer unless specifically requested to do so by such customer. Willful violation hereof shall be an infraction punishable by a fine of \$100.00 for the first infraction and \$500.00 each for subsequent infractions. (Ord. 91-0046U § 1 (part), 1991.)

11.38.670 Decorative fountains.

No person shall use water to clean, fill or maintain levels in decorative fountains, ponds, lakes, or other similar aesthetic structures unless such water flows through a recycling system. Willful violation hereof shall be an infraction punishable by a fine of \$100.00 for the first infraction and \$500.00 each for subsequent infractions. (Ord. 91-0046U § 1 (part), 1991.)

Water Wasting

EXHIBIT "E"

ORDINANCE NO. 91-0046U

An urgency ordinance amending Title 11, Chapter 11.38 of the Los Angeles County Code relating to Water and Sewers to add Part 4, Water Conservation.

The Board of Supervisors of the County of Los Angeles ordains as follows:

Section 1. Title 11, Chapter 11.38 of the County Code is amended by adding Part 4, to read:

Part 4. Water Conservation Requirements For The Unincorporated Los Angeles County Area.

Section 11.38.620 Hose Watering Prohibition.

No person shall hose water or wash down any sidewalks, walkways, driveways, parking areas or other paved surfaces, except as is required for the benefit of public health and safety. Willful violation hereof shall be an infraction punishable by a fine of \$100.00 for the first infraction and \$500.00 each for subsequent infractions.

Section 11.38.630 Watering of Lawns and Landscaping.

- 1). No person shall water or cause to be watered any lawn or landscaping between the hours of 10:00 a.m. and 5:00 p.m.
- b). No person shall water or cause to be watered any lawn or landscaping more than once a day.
- c). No person shall water or cause to be watered any lawn or landscaping to such an extent that runoff into adjoining streets, parking lots or alleys occurs due to incorrectly directed or maintained sprinklers or excessive watering.
- d). It shall be the duty of all persons to inspect all hoses, faucets and sprinkling systems for leaks and to cause all leaks to be repaired as soon as is reasonably practicable.
- e). Willful violation hereof shall be an infraction punishable by a fine of \$100.00 for the first infraction and \$500.00 each for subsequent infractions.

Section 11.38.640 Indoor Plumbing and Fixtures.

a). It shall be the duty of all persons to inspect all accessible indoor plumbing and faucets for leaks and to cause all leaks to be repaired as soon as is reasonably practicable.

b). Willful violation hereof shall be an infraction punishable by a fine of \$500.00.

Section 11.38.650 Washing Vehicles.

No motor vehicle, boat, trailer or other type of mobile equipment may be washed, except at a commercial car wash or with reclaimed water, unless such vehicle is washed by using a hand-held bucket or a water-hose equipped with an automatic shutoff nozzle. No person shall leave a water hose running while washing a vehicle or at any other time. Willful violation hereof shall be an infraction punishable by a fine of \$100.00 for the first infraction and \$500.00 each for subsequent infractions.

Section 11.38.660 Public Eating Places.

No restaurant, hotel, cafeteria, cafe or other public place where food is sold or served shall serve drinking water to any customer unless specifically requested to

do so by such customer. Willful violation hereof shall be an infraction punishable by a fine of \$100.00 for the first infraction and \$500.00 each for subsequent infractions.

Section 11.38.670 Decorative Fountains.

No person shall use water to clean, fill or maintain levels in decorative fountains, ponds, lakes, or other similar aesthetic structures unless such water flows through a recycling system. Willful violation hereof shall be an infraction punishable by a fine of \$100.00 for the first infraction and \$500.00 each for subsequent infractions.

Section 2. This ordinance shall terminate on January 1, 1993, unless renewed or terminated earlier by ordinance.

Section 3. Due to the severity of the drought in the State of California, there is an immediate need to prohibit the wasting of water in the Los Angeles County unincorporated area to better utilize the available water supplies. This ordinance is urgently needed for the preservation of the public health, safety and general welfare and shall take effect immediately.

Section 4. This ordinance shall be published in

Metropolitan News Enterprise

a newspaper printed and published in the County of Los Angeles.

Michael D. Antonovich
Chairman

ATTEST:

Larry J. Monteilh
Executive Officer
Board of Supervisors
of the County of Los Angeles



I hereby certify that at its meeting of March 21, 1991,
the foregoing ordinance was adopted by the Board of Supervisors
of said County of Los Angeles by the following vote, to wit:

Ayes:

Noes:

Supervisors Gloria Molina
Edmund D. Edelman
Deane Dana
Michael D. Antonovich

Supervisors None



Larry J. Monteilh
Executive Officer
Board of Supervisors
of the County of Los Angeles

Effective Date: March 21, 1991

~~XXXXXXXXXXXX~~

I hereby certify that pursuant to
Section 25103 of the Government Code,
delivery of this document has been made.

LARRY J. MONTEILH
Executive Officer
Clerk of the Board of Supervisors

By [Signature]
DEPUTY

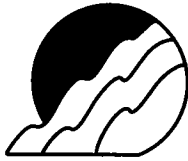
APPROVED AS TO FORM:

DE WITT W. CLINTON
County Counsel

By [Signature]
GERALD F. CRUMP
Chief Assistant County Counsel

APPENDIX G

Purchase Agreement with West Basin Municipal Water District



West Basin Municipal Water District

17140 S. Avalon Blvd • Suite 210 • Carson, CA 90746-1296

telephone 310-217-2411 • fax 310-217-2414

CONTRACT
DOCUMENT TRANSMITTAL

DATE: January 18, 2005

TO: Los Angeles County, Waterworks District #29
Waterworks & Sewer Maintenance Division
Attn David Rydman
P.O. Box 1480
Alhambra, CA 91802-1460

SUBJECT: Imported Water Purchase Agreement – Amendment No. 2

Enclosed is a fully executed original of the above-mentioned Agreement.

(X) For your files

() Per our discussion

By 
Art Aguilar, Co-General Manager

By 
Richard Nagel, Co-General Manager

Enc.

**SECOND AMENDMENT
TO
PURCHASE AGREEMENT FOR IMPORTED WATER TO BE PROVIDED BY
WEST BASIN MUNICIPAL WATER DISTRICT**

PURCHASER: Los Angeles County Waterworks District #29

BASE ALLOCATION: 11,587 acre-feet

TIER 1 ANNUAL MAXIMUM (90% of Base Allocation): 10,428 acre-feet

PURCHASE COMMITMENT : 34,380 acre-feet

TERM: 5 years from January 1, 2003

EFFECTIVE DATE: January 1, 2004

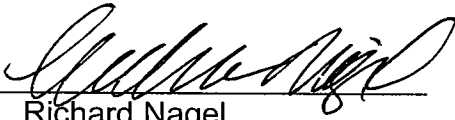
THIS AMENDMENT TO THE PURCHASE AGREEMENT FOR IMPORTED WATER TO BE PROVIDED BY WEST BASIN MUNICIPAL WATER DISTRICT, dated as of January 1, 2004, is entered into on JANUARY 21, 2004 between West Basin Municipal Water District and Los Angeles County Waterworks District #29.


It is mutually agreed that the following changes and additions are hereby made to the Agreement:

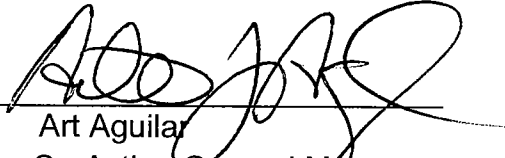
- A. Base Allocation is increased from 11,270 acre-feet to 11,587 acre-feet, as shown above under "BASE ALLOCATION"
- B. Tier 1 Annual Maximum is increased from 10,143 acre-feet to 10,428 acre-feet, as shown above under TIER 1 ANNUAL MAXIMUM (90% of Base Allocation)"
- C. Purchase Commitment is increased from 33,809 acre-feet to 34,380 acre-feet, as shown above under "PURCHASE COMMITMENT"
- D. Term is five (5) years from January 1, 2003, as shown above under "TERM" to clarify that the term of the original agreement has not changed.
- E. Effective date of the increases in Base Allocation, Tier 1 Annual Maximum and Purchase Commitment is January 1, 2004, as shown above under "EFFECTIVE DATE".

WEST BASIN MUNICIPAL
WATER DISTRICT

Los Angeles County Waterworks District
#29

By: 
Richard Nagel
Co-Acting General Manager

By: 
Title: Prin. CIVIL Eng.

By: 
Art Aguilar
Co-Acting General Manager

Date: 1/21/05

Date: 1/5/05

Exhibit 1
Imported Water Purchase Agreement
DEFINITIONS

“Base Allocation” means the Purchaser’s share of the District’s base amount with Metropolitan (defined as the “Initial Base Demand” in the District’s purchase order with Metropolitan). The Purchaser’s Base Allocation is used to calculate both the Tier 1 Annual Maximum (90% of Base Allocation) and the Purchase Commitment (60% of Base Allocation times five). Initially, the Base Allocation is determined as the five-year average of Purchaser’s non-surplus imported water purchases from District, from fiscal years ending 1997 through 2001, plus a prorated adjustment to account for the District’s Initial Base Demand. As described in the Adjustments and Renewals section above, Base Allocation may be increased or decreased if the District can accommodate a Purchaser’s request.

“Imported Water” means imported water supplied by Metropolitan and sold by the District to Purchaser. Imported Water does not include Long-Term Seasonal Storage Service and other surplus categories of supplies.

“Purchaser” means a customer of the District that has entered into a Purchase Agreement with the District.

“Purchase Commitment” means the amount of Imported Water that Purchaser agrees to purchase from District. Purchase Commitment must be at least 60% of the Base Allocation times five. Deliveries of surplus imported water supplies, including but not limited to Long-Term Seasonal Storage Service, will not count towards the Purchase Commitment.

“Term” means the term of this Purchase Agreement as specified above.

“Tier 1 Annual Maximum” means an amount equal to 90% of the Base Allocation.

“Tier 1 Rate” means the price charged by the District for deliveries of Imported Water to Purchaser in an amount up to the Tier 1 Annual Maximum. The initial Tier 1 Rate is \$457 per acre-foot.

“Tier 2 Rate” means the price charged by the District for deliveries of Imported Water to Purchaser in an amount greater than the Tier 1 Annual Maximum. The initial Tier 2 Rate is \$538 per acre-foot.

“Tier 1 Supply Rate” means Metropolitan’s per acre-foot Tier 1 Supply Rate, as determined from time to time by Metropolitan’s Board of Directors. The initial Tier 1 Supply Rate is \$73 per acre-foot.

“Tier 2 Supply Rate” means Metropolitan’s per acre-foot Tier 2 Supply Rate, as determined from time to time by Metropolitan’s Board of Directors. The initial Tier 2 Supply Rate is \$154 per acre-foot.

Exhibit 2
Imported Water Purchase Agreement
BASE REALLOCATION PROCESS

Background

In order to receive a greater amount of Tier 1 water for its customers, the District will commit to purchasing supply from Metropolitan. It is the District's goal that the sum of Purchase Commitments of the District's customer agencies must always equal the District's commitment to Metropolitan.

The Base Allocations and the Reallocation process are intended to maintain a full allocation of the District's Tier 1-priced water to all Purchasers (customer agencies that have entered into Purchase Agreements with the District) in an objective manner.

The Base Allocation determines the Purchase Commitment (60% of Base Allocation times five) and Tier 1 Annual Maximum (90% of Base Allocation) for the Purchaser.

Reallocation Process Outline

- District considers Purchasers' requests for adjustment annually and must receive requests by August 1.
- After August 1, District will compare any request(s) for increase in Base Allocation to any request(s) for decrease. The District will accommodate requests to the extent that the total of base allocation increases does not exceed the total of base allocated decreases (see General Notes 1,2 above). If more than one Purchaser requests an increase or decrease, adjustments will be made on pro-rata basis according to each Purchaser's relative share of the total request (see Reallocation Example below).
- District will respond in writing to a Purchaser's request by October 31. The Purchaser could receive less as an adjustment than what was requested.

Reallocation Example

	Initial Base (AF)	Request (AF)	Rel. Share	Adjustment (AF)	New Base (AF)
Purchaser A	3,000	-500	58.8%	-382	2,618
Purchaser B	1,700	-350	41.2%	-268	1,432
Total of Requests for Decrease = -850			100%	-650	
Purchaser C	500	+100	15.4%	+100	600
Purchaser D	650	+250	38.5%	+250	900
Purchaser E	420	+300	46.1%	+300	720
Total of Requests for Increase = +650			100%	+650	
Total Base	6,270				6,270

APPENDIX H

West Basin Municipal Water District's 2005 Urban Water Management Plan (Final Draft) (appendices have been omitted)

FINAL DRAFT

**West Basin Municipal Water
District**

2005 Urban Water Management Plan

Prepared by:

West Basin Municipal Water District
17140 S. Avalon Blvd., Suite 210
Carson, CA 90746

November 2005

Glossary of Abbreviations and Terms

Agencies

AWWARF	American Water Works Association Research Foundation
CalWater	California Water Service Company
CDHS	California Department of Health Services
Central Basin City	Central Basin Municipal Water District City of Los Angeles
CPUC	California Public Utilities Commission
CSDLAC	County Sanitation Districts of Los Angeles County
CUWCC	California Urban Water Conservation Council
CWAC	California Water Awareness Campaign
District	Central Basin Municipal Water District
DWR	California Department of Water Resources
Edison	Southern California Edison
EPA	United States Environmental Protection Agency
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LADWP	Los Angeles Department of Water and Power
MWD	Metropolitan Water District of Southern California
RWQCB	Regional Water Quality Control Board
SCAG	Southern California Association of Governments
USBR	United States Bureau of Reclamation
West Basin	West Basin Municipal Water District
WRD	Water Replenishment District of Southern California

Facilities and Locations

Barrier	Alamitos Barrier
Bay-Delta	San Francisco- San Joaquin Bay Delta
CGB	Central Groundwater Basin
CRA	Colorado River Aqueduct
CSUDH	California State University at Dominguez Hills
CVP	Central Valley Project
Hyperion	Hyperion Wastewater Treatment Plant
Ibbetson Century Project	E. Thornton Ibbetson Century Recycled Water Project
Pilot Project	West Basin's Desalination Pilot Project
SWP	State Water Project
SWRP	Southeast Water Reliability Project
Torres Project	Esteban E. Torres Rio Hondo Recycled Water Project
WCGB	West Coast Groundwater Basin
WRP	Water Recycling Plant

Measurements

AFY	Acre-Feet Per Year
CFS	Cubic Feet Per Second
GPCD	Gallons Per Capita Per Day
GPM	Gallons Per Minute
MAF	Million Acre-Feet
MGD	Million Gallons per Day
TAF	Thousand Acre-Feet
WF	Water Factor

Miscellaneous

BMPs	Best Management Practices
CBIC	Weather-Based Irrigation Program
CII	Commercial, Industrial & Institutional
Harbor/South Bay	Harbor/South Bay Water Recycling Project
HECW	High-Efficiency Clothes Washer Program
HET	High-Efficiency Toilets
IRP	Integrated Resources Plan
Marketing Plan	Recycled Water Marketing Plan
Master Plan	Recycled Water Master Plan
MOU	Memorandum of Understanding
MWD-MAIN	Metropolitan Water District's Municipal and Industrial Needs
NPDES	National Pollutant Discharge Elimination System
PAC	Project Advisory Committee
PIC	Public Information Committee
Plan	Conservation Master Plan
Program	Water Audit and Leak Detection Program
QSA	Quantification Settlement Agreement
RTS	Readiness-to-Serve Charge
Title 22	California Code of Regulations Title 22 standards
ULFT	Ultra-Low Flush Toilet
UWMP	Urban Water Management Plan
VOCs	Volatile Organic Compounds
WBIC	Weather-Based Irrigation Controller
WQPP	Water Quality Protection Project
WSDM	Water Surplus and Drought Management Plan

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APPENDICES

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Executive Summary

This section is a summary of the components of this Plan

ES.1 A Brief History

The legislative requirement to prepare an Urban Water Management Plan (UWMP) every five years provides West Basin Municipal Water District (West Basin) with an opportunity to affirm and support its primary purpose – to ensure the long-term water supply reliability of its region. Although the District’s overall mission has not changed in over five decades, techniques for meeting its objective are continuously evolving.

The history of West Basin is representative of how water resource management has evolved in southern California over the past half a century. Ensuring that residents and businesses in southern California have an adequate and reliable supply of water, requires the cooperation of local water purveyors as well as regional wholesalers.

When native groundwater supplies in the growing southeastern part of Los Angeles County became critically over-drafted in the 1940s, groundwater producers formed a regional agency, West Basin Municipal Water District in 1947. Prior to joining MWD, the District explored alternative sources of water including recycled water and even ocean desalination. Due to the extraordinary cost in developing these sources, West Basin joined the Metropolitan Water District of Southern California (MWD). MWD had been created in 1928 by 11 cities (13 in 1933 and now 26 member agencies), for the purpose of constructing a 240 mile aqueduct from the Colorado River. The era of “imported water” and mega-projects that began at the turn of the last century, with construction of the Los Angeles Aqueduct from the Owens Valley by the City of Los Angeles, and continued with the extension of the California Aqueduct into southern California in the 1970s, was well underway. West Basin joined this era to provide a new source of water for groundwater replenishment and to meet the needs of many cities and agencies with little or no access to groundwater.

Imported water was the fuel that drove the economic engine of southern California for decades. Through the 1960s, 70s, and 80s, imported water provided by West Basin offered the reliability enjoyed by retail water agencies across most of coastal Los Angeles County. During this time, population within West Basin’s service area grew by 238 percent from about 320,000 in 1950 to over 760,000 people by 1990.

ES.2 A Different Approach to Water Management

The paradigm of ensuring reliability while continuing to provide unlimited supplies of imported water began to change with the drought of 1989-1992. Even before the near-reality of mandatory water rationing in the spring of 1992, plans had begun to enhance conservation practices and to consider the development of locally-produced sources of



water that, over the long-term, would significantly reduce southern California's reliance on supply systems subject to hydrology and environmental pressures.

West Basin was at the forefront of this change in approach to water management. By 1990, funding mechanisms were in place and designs were being drawn-up for a world-class recycled water production and distribution system that would directly offset potable imported water for non-potable uses such as irrigation and industrial applications. West Basin would also become renowned for its highly successful conservation and education programs that, combined with recycled water, have helped conserve over 63 billion gallons of potable water over the past decade.

By 1996, local water supply programs were accounted for within MWD's Southern California Integrated Resources Plan (IRP) which established a rolling 20-year roadmap for diversified supply investments in recycled water, brackish groundwater treatment, surface and groundwater storage, water transfers and exchanges, conservation practices, and accessibility to imported water. A recent update of the IRP also includes ocean water desalination as an additional resource for ensuring the long-term reliability of regional water supplies.

West Basin's aggressive pursuit of the resource development targets within the IRP is bringing supply diversity to a region originally dependent on groundwater.

ES.3 Water Demand

Total water use, or demand, within West Basin's service area includes retail demand and groundwater replenishment (i.e. Barriers). Retail demand is defined as all municipal (residential, firefighting, parks, etc.) and industrial uses, and represents the population's total direct water consumption. Replenishment includes deliveries to the West Coast and Dominguez Gap Barriers to protect the West Coast groundwater basin. Table ES-1 summarizes the current and projected retail and replenishment demands.

Table ES-1
West Basin's Current and Projected Water Demands
(In Acre-Feet)

District Water Demands	2005¹	2010	2015	2020	2025	2030
Retail Municipal & Industrial Use						
Groundwater ²	41,535	52,000	52,000	52,000	52,000	52,000
Imported Water	129,316	123,000	97,319	98,665	100,140	101,747
Recycled Water ³	13,065	21,848	32,500	36,250	40,000	43,750
Desalinated Water	0	0	20,000	20,000	20,000	20,000
Total Retail Demand	183,916	196,848	201,819	206,915	212,140	217,497
Replenishment						
Imported Water	15,000	10,000	10,000	10,000	10,000	10,000
Recycled Water	7,500	17,500	17,500	17,500	17,500	17,500
Total Replenishment Demand	22,500	27,500	27,500	27,500	27,500	27,500



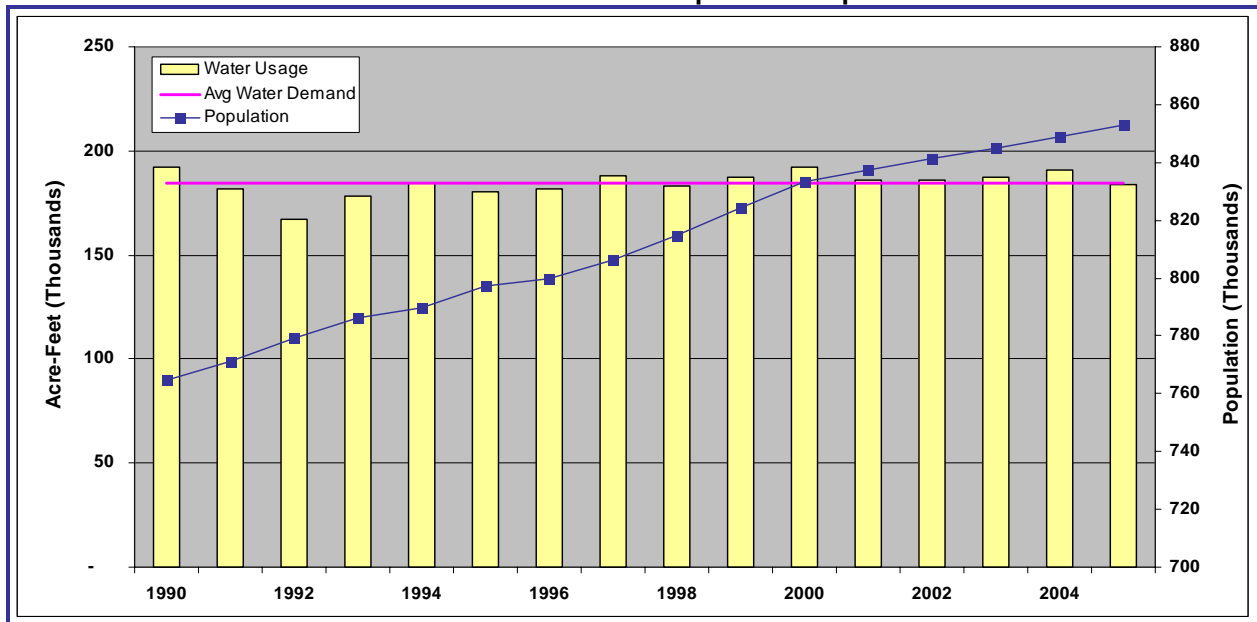
Total Demand	206,416	224,348	229,319	234,415	239,640	244,997
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[1] The 2005 demands are based on the FY 2004-05, which was recorded as one of the "wettest" years on record.
 [2] Groundwater demands include the amount of groundwater pumped from the West Coast and Central (avg. 2,000 AFY) groundwater basins to satisfy groundwater demands within West Basin's service area.
 [3] Includes M&I recycled water sales from West Basin's service area; it does not include recycled water sales to Los Angeles Department of Water and Power and the City of Torrance or Replenishment sales (Barrier).

ES.4 Impacts of Conservation and Education: Reduced Demand

Although not a traditional "wet" water supply like imported water or recycled water, water use efficiency, including conservation and education, is considered part of West Basin's water supply portfolio because it results in less retail need, or demand, for wet supplies than would otherwise be the case. Perhaps the most telling picture of the impact of conservation and education on retail demand is conveyed by Figure ES-1.

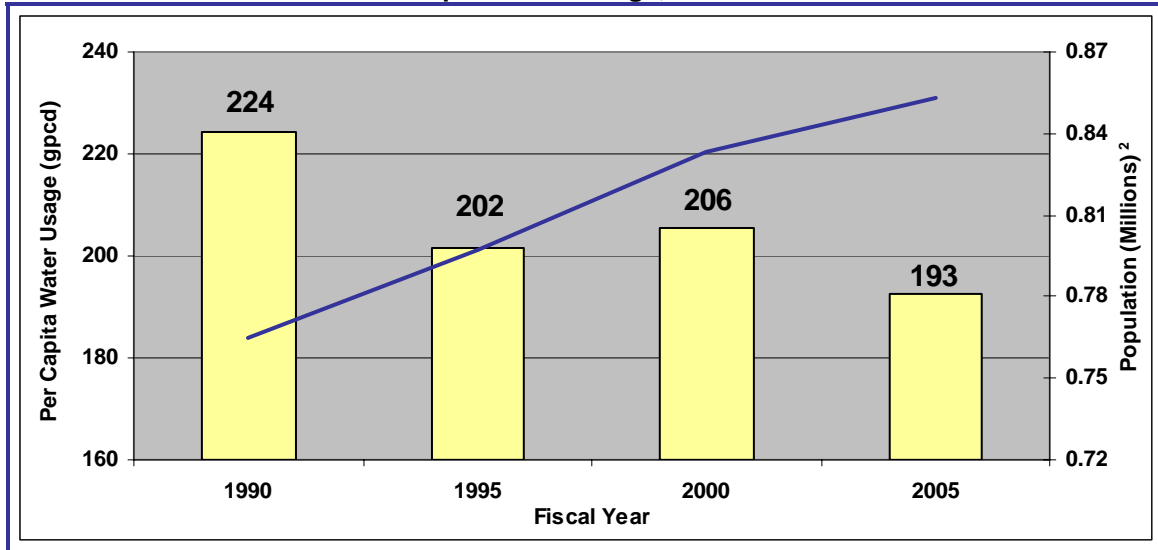
Figure ES-1
Historical Retail Demand Compared to Population



Retail water use within West Basin's service area is largely the same today as it was 15 years ago despite the addition of over 100,000 people. The average retail demand for the past 15 years is approximately 184,000 AFY. Clearly, residents are now using less water on an individual, or "per capita," basis, as shown in Figure ES-2, than in the past 15 years.



Figure ES-2
Per Capita Water Usage, 1990 - 2005



It is apparent that the trend of lower per capita water usage over time, with assistance from MWD and its member agencies, has been successful in continuing a water conservation ethic begun 15 years ago during the last major drought.

ES.5 Water Supply

West Basin currently relies on approximately 150,000 AFY of imported water from the State Water Project (SWP) and the Colorado River delivered through MWD to meet the District’s retail and replenishment demands. While groundwater supplies remain a significant source of water (20%) for customer agencies in the West Basin service area, imported water supplements this resource (65%) and assists to mitigate the over-pumping of the groundwater basin. Recycled water is added to the supply mix, serving up to 7% of the area’s demands, while conservation rounds out the equation at 7%.

Table ES-2 shows current (2005) and projected (2030) supplies within West Basin’s service area, with imported and local supplies being provided by West Basin.

Table ES-2
Current and Projected Water Supply
(In Acre-Feet)

District Water Demands	2005 ¹	2030
Groundwater ²	41,535	52,000
Imported Water ³	129,315	101,747
Recycled Water ⁴	13,065	43,750
Ocean Desalination	-	20,000
Total	183,916	217,497
Conservation ⁵	14,500	42,800
Total	198,416	260,297



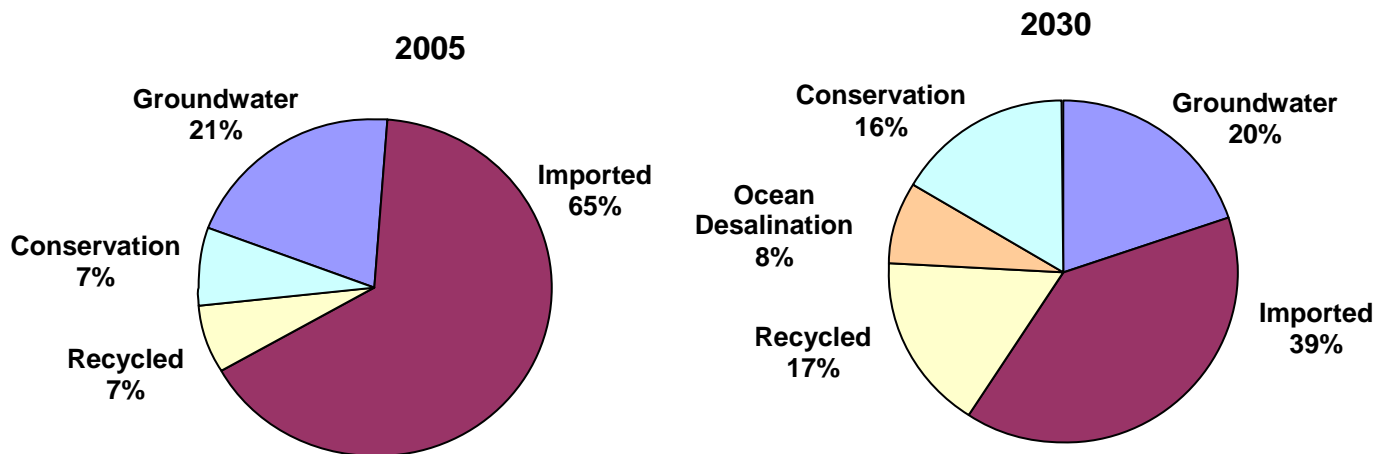
- [1] The 2005 demands are based on the 2004-05 year, which is also considered one of the "wettest" years on record.
- [2] Groundwater production within West Basin's service area only, including imported groundwater production from California American Water Company (average of 2,000 AFY).
- [3] Imported retail use only; does not include replenishment deliveries i.e. Barrier.
- [4] Recycled M&I use only; does not include replenishment deliveries i.e. Barrier.
- [5] Conservation consists of Active and Passive savings according to the District's projected estimates.

ES.6 Planning for Increased Diversification

Given the critical importance of water to the region's growth, economic health and quality of life, the desirable quantity and mix of supply must be planned well in advance of the actual need. Implementing water projects and changing behavior and attitudes regarding water usage are lengthy and complex endeavors. While the UWMP Act requires a 20-year planning horizon for water reliability, West Basin has used a 25-year planning horizon to ensure a minimum 20-year planning period each year until the next 5-year update of the District's UWMP.

Although implementation of supply targets is challenging, West Basin's plan is relatively simple: continue to reduce the risk of future shortage by distributing the responsibility for supply among several, well-balanced options. West Basin's projected supply portfolio for 2030, as compared to the current mix, is shown in the following figure.

**Figure ES-3
Comparison of Water Supply Portfolio, 2005 vs. 2030**



West Basin's diversification plan includes expansion of the District's recycled water system, increased conservation efforts, and groundwater storage opportunities. The District's dependence on imported water will continue to decrease with the expansion of these alternative resources. Over the next 25 years, conservation is expected to have a significant dampening effect on retail water demand, lowering projected water use by roughly 42,800 AF in 2030.

West Basin's ambitious 2030 target for conservation will be directed by a Conservation Master Plan (scheduled for completion in 2006) that will identify the programs, strategies, and actions that will guide policy development and commitment of resources in the future.



West Basin's increase in recycled water supply to 17% by 2030 will nearly triple recycled water use. Treatment expansions as well as distribution system extensions will provide more recycled water to meet growing demands.

Across southern California, alternative water supplies are being explored, studied, and in some cases, implemented, to enhance the area's water supply reliability. In addition to recycled water, alternative water supply projects include seawater barrier water projects, conjunctive use groundwater storage, water transfers and exchanges, and ocean and groundwater desalination. West Basin supports the ongoing efforts of all these programs.

ES.7 Water Supply Reliability

During consecutive dry years, southern California has historically seen demands increase by as much as 20% while supplies have decreased. Prior to recent significant improvements in water reliability, most cities and agencies were forced to mandate conservation efforts and restrict water use in some cases to maintain an adequate supply. Enormous strides made by MWD, West Basin, and the entire water supply community in southern California to increase locally-developed supplies and conservation, as well as imported water storage and transfers over the past decade, have increased the overall supply reliability during extended dry periods.

MWD's 2005 Regional UWMP demonstrates reliability of supply in all hydrologic conditions through the year 2030. In fact, their plan shows a surplus of supply in nearly all conditions. MWD planning initiatives to ensure water supply reliability include the IRP, the Water Surplus and Drought Management Plan (WSDM Plan) and their local resource investments. These initiatives provide a framework for MWD and its member agencies to manage their water resources to meet growing demands.

Through its investments into supply diversification, support of the region's IRP and the collaborative efforts with MWD, West Basin's projections show that supplies will adequately meet service area demands in normal, single dry, and multiple dry-year scenarios.

ES.8 Water Quality

Water quality regulations are an important factor in West Basin's water management activities. Imported water quality is the responsibility of MWD to comply with State and Federal drinking water regulations. Purveyors that West Basin sells imported water to are responsible for ensuring compliance in their individual distribution systems and at the customer tap. MWD maintains a rigorous water quality monitoring program, and is also proactive in protecting its water quality interests in the SWP and the Colorado River. Imported water meets or exceeds all drinking water standards set by the California Department of Health Services.

Water quality of the West Coast Groundwater Basin is continually monitored by both West Basin and WRD. Challenges to water quality include potential contamination from



seawater intrusion and the migration of shallow contamination into deeper aquifers. WRD and West Basin have several active programs to monitor, evaluate, and mitigate water quality issues.

West Basin actively assists its retail agencies in meeting drinking water standards through its *Cooperative Basin-Wide Title 22 Groundwater Quality Monitoring Program*. West Basin offers this program to water agencies for wellhead and reservoir sample collection, water quality testing and reporting services.

Although recycled water meets Title 22 standards through tertiary treatment, West Basin's Water Recycling Plant produces five different types of water quality for various end users. The five types of recycled water include: 1) Disinfected Tertiary Water, 2) Nitrified Water, 3) Softened Reverse Osmosis Water, 4) Pure Reverse Osmosis, and 5) Ultra-Pure Reverse Osmosis Water. Approximately 2,000 tests are performed monthly at the West Basin Water Recycling Plant to ensure water quality meets or exceeds all State and Federal requirements.

ES.9 Water Conservation

Since the drought of the 1990s, West Basin has been a leader implementing aggressive water conservation programs to help limit water demand in its service area. District programs have included a strong emphasis on education and the distribution of rebate incentives and plumbing retrofit hardware. The active and passive conservation programs have resulted in significant reductions in water use. By current estimates, demand management conservation saves over 4.5 billion gallons of imported water every year. This represents the average water use of almost 30,000 families of four in southern California.

West Basin water conservation programs follow the recommended 14 Best Management Practices (BMPs) according to the California Urban Water Conservation Council. For fiscal year 2005/06, West Basin will complete a Conservation Master Plan that will guide the District to meet or exceed the goals of the BMPs and MWD's Conservation Strategy Plan. The plan will assess the conservation potential and incorporate local stakeholder input into a group of actions and strategies for achieving long-term targets for conservation.

ES.10 Water Rates and Charges

In 2002, MWD adopted a new rate structure to support its strategic planning vision as a regional provider of services, incentivize the development of local supplies like recycled water and conservation, and encourage long-term planning for imported water demand. To achieve these objectives, MWD called for voluntary purchase orders from its member agencies, unbundled its water rates, established a tiered supply rate system, and added a capacity charge. In all, these new rate structure components have provided a better opportunity for MWD and its member agencies to manage their water supplies.



MWD's 2002 rate structure changes were passed through to West Basin's customer agencies in a manner that preserved the water management benefits while minimizing financial impacts. With the purchase order and tiered supply rate elements, West Basin has successfully implemented a conservation-based structure that encourages agencies to stay within their annual water budget, and uses revenue from agencies that exceed their water budget to fund service-area wide conservation studies and programs. West Basin also assesses a capacity charge at the retail level designed to recover the cost of MWD's capacity charge, and a Readiness-to-Serve charge. In addition to the pass-through elements of MWD's rate structure, West Basin's rates include a volumetric administrative surcharge and a fixed water service charge.

Since 1995, West Basin has encouraged the maximum use of recycled water through the economic incentive of its rates and charges. West Basin commodity rates cover the operation, maintenance, labor and power costs associated with the delivery of recycled water. These rates are set up in a declining tiered structure and are wholesaled at a significant reduction to imported water so they may further encourage the use of recycled water.

ES.11 Recycled Water

Recycled water is one of the cornerstones of West Basin's efforts to augment local supplies and reduce dependence on imported water. Since the initial planning and construction of West Basin's recycled water system in the early 1990s, West Basin has become a leader in producing and marketing recycled water. This new supply of water assists in meeting the demand for non-potable applications such as landscape irrigation, commercial and industrial processes, and seawater intrusion barriers. With approximately 210 site connections, West Basin has delivered approximately 210,000 AF of recycled water over the past ten years. Over the past five years, West Basin has delivered an average 25,000 AFY to its irrigation, industrial, and groundwater replenishment customers.

Although not within its service area, West Basin sells recycled water to the City of Torrance and Los Angeles Department and Power. West Basin purchases secondary treated water from the City of Los Angeles' Hyperion Wastewater Treatment Plant. The treated wastewater is further treated at West Basin's Water Recycling Plant, located in El Segundo, California.

West Basin anticipates recycled water use sales to increase in the future as more customers switch from potable water to recycled water due to the reliability of the supply and the economic incentives associated with the conversion. West Basin is also performing a number of expansion projects such as the Harbor/South Bay Water Recycling Project, the West Basin Water Recycling Plant Phase IV Expansion, and the Madrona/Palos Verdes Lateral Extension. These three projects will increase recycled water use significantly in the coming years. Table ES-3 summarizes the current and projected demands for recycled water.



**Table ES-3
Projected Recycled Water Deliveries by West Basin MWD
(In Acre-Feet)**

	2005 ¹	2010	2015	2020	2025	2030
Industrial & Irrigation	13,065	21,848	32,500	36,250	40,000	43,750
West Coast Barrier (Replenishment)	3,800	17,500	17,500	17,500	17,500	17,500
West Basin MWD's Service Area Total	16,865	39,348	50,000	53,750	57,500	61,250
City Torrance	6,921	6,650	6,650	6,650	6,650	6,650
City of Los Angeles	283	1,400	1,400	1,400	1,400	1,400
Outside West Basin MWD's Service Area Total	7,205	8,050	8,050	8,050	8,050	8,050
Total	24,070	47,398	58,050	61,800	65,550	69,300

[1] Based on West Basin MWD's actual sales for FY 2004-05

1.12 Ocean Desalination

Another important element of West Basin's supply diversification strategy is the cost-effective development of ocean desalination. Within MWD's Integrated Resources Plan, West Basin has committed to producing 20,000 acre-feet per year of potable water from the ocean beginning in 2011. West Basin is following an incremental approach to that production target, including research, pilot testing, a demonstration facility, and ultimately a full-scale plant.

Since 2001, West Basin has been a leader in creating funding partnerships for research related to the application of technologies it currently uses successfully in the desalination of wastewater to produce high-purity recycled water, namely micro-filtration and reverse osmosis. West Basin has successfully operated a pilot scale test facility in El Segundo using microfiltration and reverse osmosis to produce 40 gallons per minute of drinking water. These processes have demonstrated tremendous water quality and operational performance since the commissioning of the pilot project.

Recently, West Basin was awarded \$1,750,000 in state grants to assist in the research and construction of the next step in its desalination program: a 500,000 gallons per day demonstration project.



Introduction

This section provides an overview of the District

1.1 Purpose and UWMP Summary

An Urban Water Management Plan (UWMP or Plan) prepared by a water purveyor is to ensure the appropriate level of reliability of water service sufficient to meet the needs of its various categories of customers during normal, single dry or multiple dry years. The California 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 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.

West Basin Municipal Water District's (District) 2005 UWMP has been prepared in compliance with the requirements of the Act, as amended to 2005¹ (Appendix A), and includes the following:

- Water Wholesale Service Area
- Water Demands
- Water Sources and Supplies
- Water Reliability Planning
- Water Quality Information
- Water Demand Management Measures
- Water Shortage Contingency Plan
- Water Recycling
- Ocean Water Desalination

1.2 Urban Water Management Plan Update Preparation

The District's 2005 UWMP revises the 2000 UWMP prepared by the District and incorporates changes enacted by legislation, including SB 610 (2001), AB 901 (2001), SB 672 (2001), SB 1348 (2002), SB 1384 (2002), SB 1518 (2002), AB 105 (2004), and

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



SB 318 (2004). The UWMP also incorporates water use efficiency efforts the District has implemented or is considering implementing pursuant to the *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU).² The District was one of the first agencies to become signatory to the MOU in September 1991.

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 District. The Department of Water Resources Review for Completeness form has been completed, which identifies the location of Act requirements in this Plan and is included as Appendix B.

1.2.1 Plan Adoption

The 2005 UWMP was adopted by a resolution of the District’s Board of Directors in December 2005, following a public hearing. The Plan was submitted to the California Department of Water Resources within 30 days of Board approval. Copies of the Notice of Public Hearing and the Resolution of Plan Adoption are included in Appendix C. Copies of the Plan were made available to the public within 30 days following Board approval.

1.2.2. Agency Coordination

A Notice of Preparation for the 2005 UWMP Update was prepared and sent to Metropolitan Water District of Southern California (MWD), the County of Los Angeles, and all of the District’s various cities and customer agencies, as shown in Table 1-1. The Notice of Preparation is included in Appendix D.

**Table 1-1
Coordination with Appropriate Agencies**

	Participated in UWMP Development	Commented on the Draft	Attended Public Meetings	Contacted for Assistance	Received Copy of Draft	Sent notice of intention to adopt
Retail Water Agencies	Metropolitan Water District of Southern California	✓	✓	✓	✓	✓
Customer Agencies	California American Water Company				✓	✓
	California Water Service Company	✓		✓	✓	✓

²The *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. The District became signatory to the MOU in September 1991.



	City of El Segundo		✓		✓	✓
	City of Inglewood				✓	✓
	City of Lomita	✓	✓	✓	✓	✓
	City of Manhattan Beach		✓		✓	✓
	Southern California Water Company		✓	✓	✓	✓
	LA County Waterworks District 29	✓	✓	✓	✓	✓
	Water Replenishment District	✓	✓	✓	✓	✓

Development of this Plan was performed by District staff in coordination with its water purveyors and the MWD. District staff has met with many of its customer agencies to discuss the UWMP, answer questions related to the UWMP and/or projects occurring throughout the service area, and provide assistance when requested. Staff provided many of its agencies with conservation data that they were able to use in their conservation section of the UWMP.

The District is a water wholesaler and is fully dependent on MWD for its imported water supplies to its service area. This UWMP details the specifics as they relate to the District and its service area and will refer to MWD throughout the document. The District held two UWMP workshops, one in January 2005 for the public, in coordination with MWD and the California Urban Water Conservation Council, and the other in June 2005 for the District’s water purveyors. Further, MWD held multiple UWMP information meetings for stakeholders and the public throughout its service area during the months of June and July 2005. On August 24, 2005, MWD held an additional Public Information Meeting at the Southern California Water Dialogue monthly forum. The Southern California Water Dialogue participants meet voluntarily to explore water-related issues of vital interest to the Southern California region.

The UWMP is intended to serve as a general, flexible, and open-ended document that periodically can be updated to reflect changes in the region’s water supply trends, and conservation and water use efficiency policies. This Plan, along with the District’s other planning documents, will be used by District staff to guide the service area’s water use and management efforts through the year 2010, when the UWMP is required to be updated.

1.3 The District’s Service Area

1.3.1 Background

The District was established by a vote of the people in 1947 to help mitigate the overpumping in the West Coast Groundwater Basin (Basin). West Basin’s founders realized they would have to curtail the use of pumping by providing the region with



imported water. As a water supplier, MWD provides the Southern California region with a reliable supply of imported water. West Basin remains one of the largest member agencies in MWD’s family of wholesalers.

Today, West Basin wholesales potable water to 17 cities, mutual water companies, investor-owned utilities, water districts and private companies in the region. In addition, the District supplies recycled water to the region for municipal, commercial and industrial use. West Basin supplies imported and recycled water to its customer agencies to help reduce their reliance on groundwater supplies.

West Basin is governed by a five member elected board of directors from within the service area of the District. Each director serves a four-year term once elected. The Board of Directors guides the mission and policy of the District. Also, West Basin’s Board of Directors appoints two representatives to serve on the 37-member MWD Board of Directors. West Basin’s representation on the MWD Board is critical to shaping a regional voice on water issues.

1.3.2 District’s Service Area

West Basin’s service area covers approximately 185- square miles and includes 17 cities and several unincorporated areas in Los Angeles County. Approximately 852,800 people are served within West Basin’s service area. The cities and their associated divisions include:

Division 1:

Carson, Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills and Rolling Hills Estates

Division 2:

Inglewood and the Los Angeles County unincorporated areas of Athens, Howard, Ross-Sexton and South Ladera Heights

Division 3:

Hermosa Beach, Lomita, Manhattan Beach, Redondo Beach and unincorporated areas of Torrance

Division 4:

Culver City, El Segundo, Malibu, West Hollywood and unincorporated areas of Lennox, North Ladera heights, Topanga, View Park and Windsor Hills

Division 5:

Gardena, Hawthorne and Lawndale

1.3.3 Relationship to Metropolitan Water District

West Basin became a member agency of the MWD in 1947. West Basin joined MWD to purchase, on a wholesale level, potable water imported from the Colorado River and the State Water Project, and then sell it to the local municipalities, investor-owned, and mutual water companies and districts. The imported water is provided to supplement

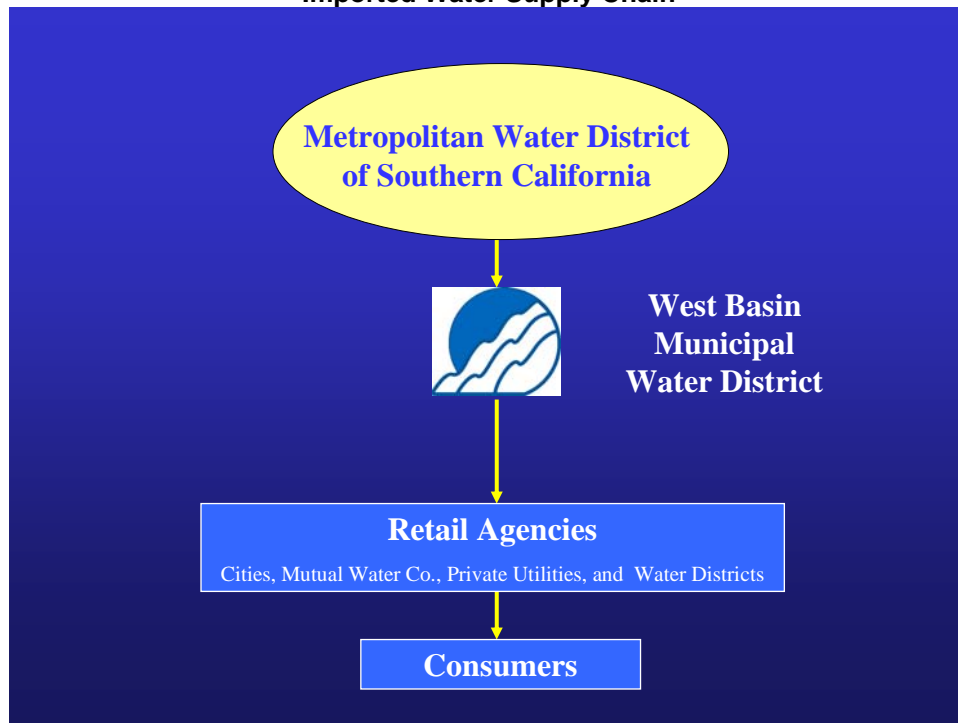


existing groundwater supplies in all areas of West Basin (there are some utilities within the District service that do not receive MWD water directly but receive their drinking water through groundwater wells).

The District plays an important role in managing the imported supplies for the region. Through various programs and projects the District ensures that its residents have a safe and reliable supply of water.

Figure 1-1 shows the supply chain which illustrates the relationship the District plays to its customer agencies. The District is the voice and representative of its customers to MWD. As such, the District takes great pride in knowing that its retailers are receiving a safe and reliable supply of drinking water.

**Figure 1-1
Imported Water Supply Chain**





Water Demand

This section describes current and future water demand trends within West Basin's service area



2.1 Overview

Today, the total retail water demand for the 852,800 people living within West Basin's service area is approximately 183,900 acre-feet (AF) with replenishment demands adding an additional 15,200 AF. One acre-foot equals 326,000 gallons, and serves the annual water needs of two families. In 1980, West Basin's population was 707,500 people and the service area's retail water demand was 162,653 AF with replenishment demands adding an additional 43,131 AF. In those 25 years, West Basin's retail water demand has grown 13.1%, while population has grown 21%. Some of the contributing factors to this growth in demand have been population, new development, land use, economic growth, and persons-per-household ratios.

In the last five years West Basin's water demand has increased by only 0.4%, while population has increased by more than 2%. This gradual increase in water usage is attributed to West Basin's efforts in education and promotion of water conservation, as well as incentives for people to retrofit their homes and businesses with more efficient water use devices.

Despite the flattening demand trend due to conservation, water use will continue to increase. Projections show that West Basin's water usage is expected to increase roughly 0.4% per year over the next 25 years, as illustrated later in Table 2-5.

This section will explore in greater detail West Basin's population trends, its historical and current water demands, and offer some insight into expected future water demands for the next 25 years.

2.2 Climate Characteristics

West Basin's service area lies in the heart of southern California's coastal plain. The climate is Mediterranean, characterized by typically warm, dry summers and wet, cool winters with an average precipitation level of approximately 14.9 inches per year¹. The combination of mild climate and low rainfall makes the area a popular residential destination, which create challenges for water agencies to provide for increased water demands with a tight water supply.

¹ According to the National Weather Service



Areas with low precipitation, such as southern California, are typically vulnerable to droughts. Historically, West Basin has been plagued with some severe dry years (Droughts of 1977-78 and 1989-92) and recently the Los Angeles region had the driest five years on record (1999-2004). In fact, anything less than the average yearly rainfall causes concern for water agencies.

Table 2-1 illustrates the climate characteristics for the Los Angeles region, taken at both the Long Beach Station and the Los Angeles WSO Airport Station, for the period between 1944 and 2004 (60 years) including, standard monthly average ETo² (Long Beach Station), average rainfall (Los Angeles WSO Airport Station), and average temperature (Los Angeles WSO Airport Station). In comparison to other cities with an abundant supply of precipitation each year, the low rainfall in this region invariably challenges West Basin to provide sufficient, reliable, quality water to meet the area's increasing water needs. The average precipitation for the last 60 years is approximately 12.13 inches, indicating the need for water conservation in an area with a water demand that will continue to grow as urban infiltration continues to rise.

Table 2-1
Climate Characteristics- Los Angeles Region
Period 8/1/1944 to 12/31/2004

	Jan	Feb	Mar	Apr	May	June
Standard Monthly Average Eto¹	1.65	2.15	3.59	4.77	5.12	5.71
Average Rainfall (inches)²	2.67	2.69	1.94	0.78	0.17	0.06
Average Temperature (Fahrenheit)²	65.0	65.4	65.3	67.5	69.2	72.0

	July	Aug	Sept	Oct	Nov	Dec	Annual
Standard Monthly Average Eto	5.93	5.91	4.39	3.22	2.18	1.68	46.3
Average Rainfall (inches)	0.02	0.08	0.16	0.35	1.48	1.75	12.13
Average Temperature (Fahrenheit)	75.2	76.4	76.2	73.6	70.2	66.1	70.2

[1] Data taken from the California Irrigation Management Information System (CIMIS) at the Long Beach Station for the Los Angeles Region for Calendar Year 2004: <http://www.cimis.water.ca.gov/cimis/welcome.jsp>.

[2] Data taken from the Western Regional Climate Center's website at the Los Angeles WSO Airport Station: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?calosa>.

2.3 Demographics

West Basin's service area encompasses 185 squares miles in southwest Los Angeles County, including 17 cities, water agencies, and several unincorporated areas. With the population in West Basin's service area expected to increase by 83,300 people by the year 2020, the demand on the limited existing water supplies will also increase.

Based on the Metropolitan Water District of Southern California's (MWD) demographic projections, population is expected to increase an average of roughly 3.1% every five years for the next 25 years, or 0.6% annually. Table 2-2 displays the demographic projections for the next 25 years.

² Evapotranspiration is the water lost to the atmosphere by two processes-evaporation and transpiration. Evaporation is the loss from open bodies of water, such as lakes and reservoirs, wetlands, bare soil, and snow cover; transpiration is the loss from living-plant surfaces.



**Table 2-2
Demographic Projections for West Basin's Service Area**

Year	2005	2010	2015	2020	2025	2030
Population	852,800	876,400	906,500	936,100	964,600	991,900
Single-family	168,300	173,900	175,800	181,600	186,900	189,700
Multi-family	123,200	128,900	138,300	143,900	149,900	158,500
Total Household	291,500	302,800	314,100	325,400	336,800	348,100
Persons per Household	2.89	2.86	2.86	2.85	2.84	2.82
Employment	455,800	514,500	530,000	544,000	556,500	586,200

Source: Information based on MWD Demographic Data, 2005.

Note: All units are rounded to the nearest hundred; totals may not sum exact due to rounding.

Table 2-2 displays West Basin's total households, which are expected to increase 20% by 2030; especially in the Multi-family category where households will increase by 35,300 people. As it relates to water demand, the availability of more households increases the demand on water supplies. As for employment, West Basin is expected to see a 29% increase by 2030. As urban employment grows, so does the demand on water supplies.

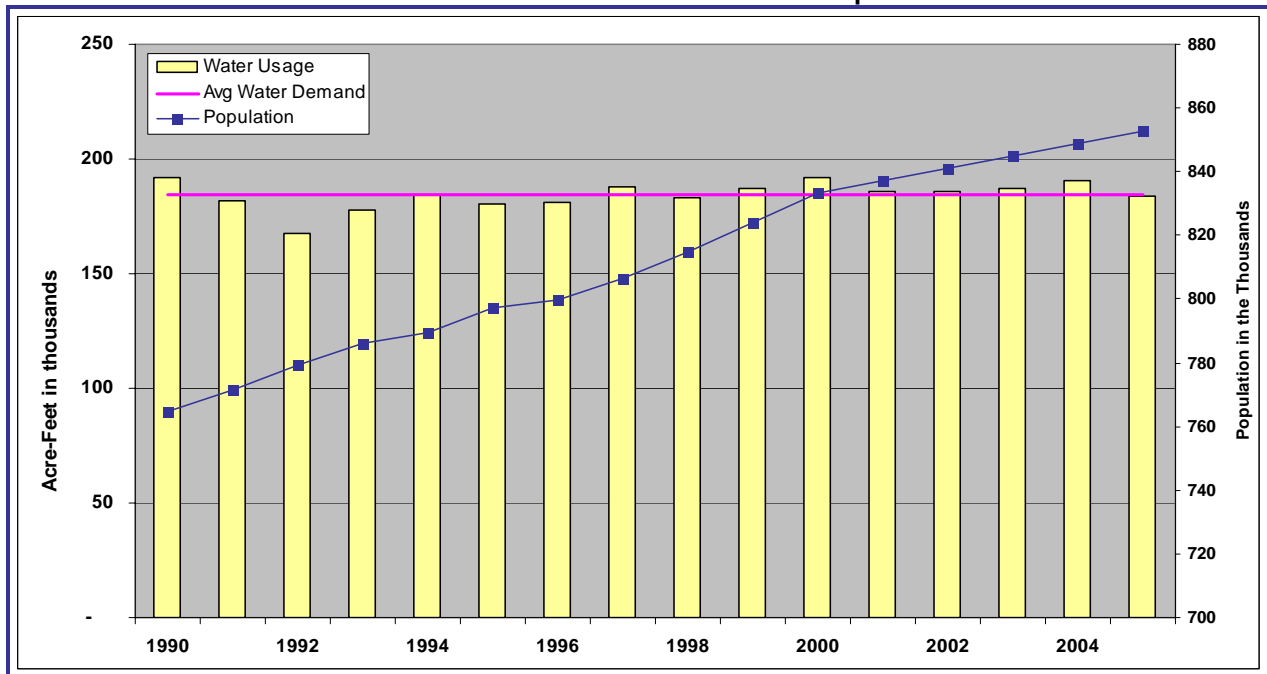
2.4 Historical and Current Water Demands

The key factors that affect water demands are growth in population, increases in land use development, industrial growth and hydrology. However, since the end of the 1989-1992 drought, retail water demands in West Basin's service area have remained fairly consistent. As illustrated in Figure 2-1, the West Basin region has not seen significant increases in water demands over the past 15 years despite population growth at an average rate of 3,875 persons per year and continued in-fill development in the service area. West Basin's FY 2004-05 retail water demand was 183,916 AF.

Total water use, or demand, within West Basin's service area includes retail demand and groundwater replenishment. Retail demand is defined as all municipal (residential, firefighting, parks, etc.) and industrial uses, and represents the population's total direct water consumption. Replenishment uses, including deliveries to the saline barriers (West Coast and Dominguez Gap Barriers), are not directly delivered to the public but enable continued groundwater production and helps to satisfy retail demand.



Figure 2-1
West Basin's
Historical Total Retail Water Demand vs. Population



Source: Information based on MWD Demographic Data, 2005.

Note: The totals do not include Replenishment Sales i.e. Barrier RW & Imported

Figure 2-1 displays West Basin's total retail water demand from FY 1990 to 2005. As previously discussed, retail demands have remained very consistent since 1994 following several years of increasing demands after the drought. The average retail water demand for the past 15 years is 184,295 AF.

The District averaged 187,554 AF for the past five years, which is only 1.8% above the 15 year average.

West Basin's service area is using an average amount of water as it has since 1990. This indicates that water conservation and education has significantly affected the manner in which West Basin's residents are using water today. This can be verified by reviewing West Basin's water usage per person in the "Historical Per Capita Water Usage" Section, which follows.

2.4.1 Historical Per Capita Water Usage

According to the Pacific Institute, the State's total water usage is equivalent to 183 gallons per capita per day (gpcd) for the nearly 34 million people living in California.³ Through conservation measures such as Ultra-low-flush toilets (ULFT), high efficiency clothes washer machines, low-flow showerheads, and new technologies in water

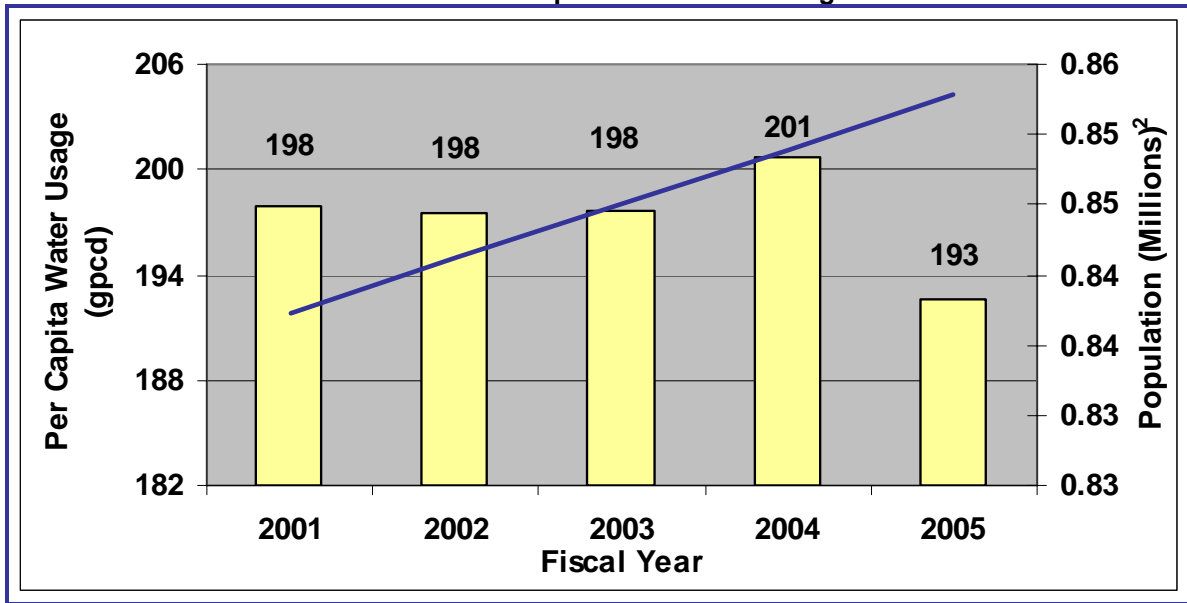
³ Pacific Institute, *Waste Not, Want Not: The Potential for Urban Water Conservation in California*, 2003. pg. 4



irrigation and education programs, West Basin has gradually reduced per capita water usage.

In 1990, the per capita water usage was estimated at 224 gallons per day (gpd). For the last five years the usage has decreased to an average of 199 gpd. Figure 2-2 illustrates the retail water usage per capita for the last five fiscal years comparative to population in West Basin’s service area.

Figure 2-2
Historical Per Capita Retail Water Usage¹



[1] M&I Water Usage from West Basin MWD Water Use Data.
[2] Population is based on MWD Population Estimates, MWD-MAIN Model.

As displayed above, population has been steadily increasing from Fiscal Year 2001 to 2005 while per capita water usage remained stable at around 199 gpcd, verifying the positive impact of the District’s current water resource conservation efforts.

2.4.2 Replenishment Demands

Replenishment water is defined as water that is used to refill or protect the groundwater basin. The Water Replenishment District of Southern California (WRD) is the entity responsible for maintaining and replenishing the West Coast and Central Groundwater Basins. WRD is a special district created by the State and governed by a 5-member elected body to replenish and protect these groundwater basins with imported water, storm water, and recycled water. Within the West Coast Groundwater Basin (WCGB), WRD’s responsibility is to protect the basin by injecting treated water at the West Coast and Dominguez Gap Barriers along the western South Bay Region.

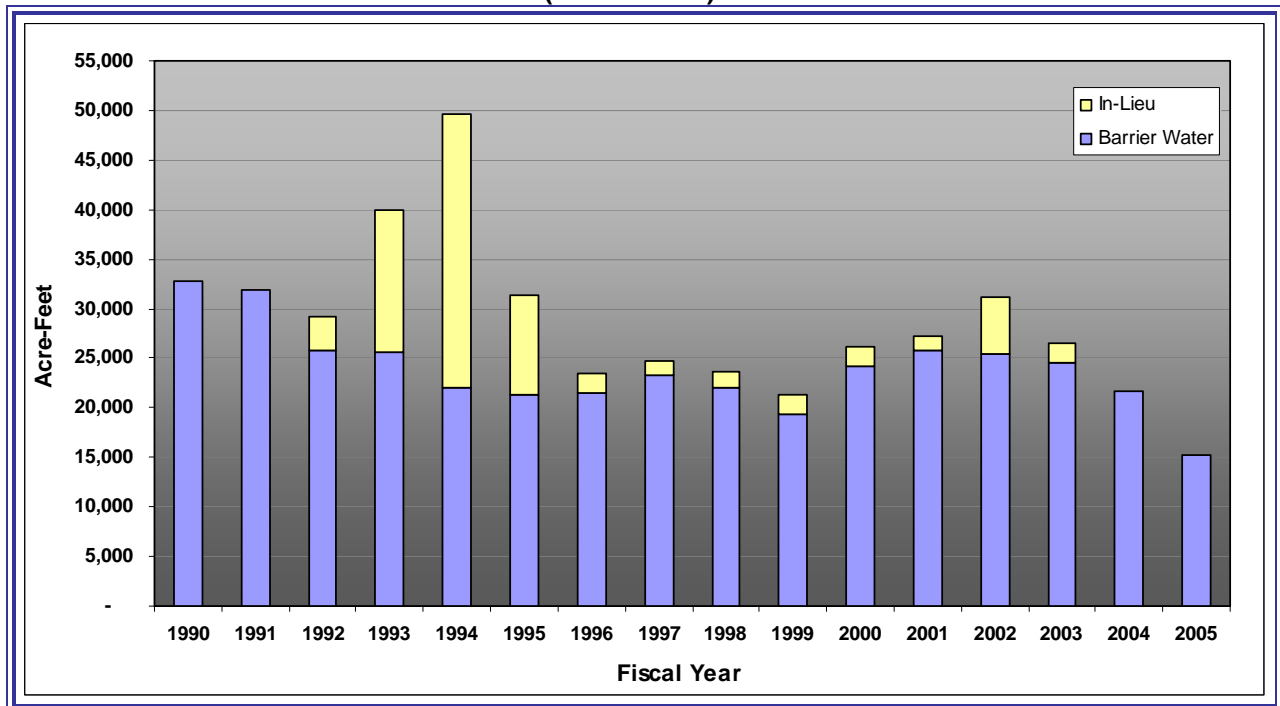
Barrier Demands



As groundwater is extracted annually beyond the natural level of replenishment, seawater begins to intrude into the basin along the coast. The current method in preventing seawater from contaminating the groundwater basin is to create a hydrologic barrier. The Los Angeles County Department of Public Works (LACDPW) maintains two barriers where imported and recycled water is injected on a consistent basis to protect the groundwater basins.

As the wholesaler, West Basin sells treated imported and recycled water to WRD to inject into the saltwater barriers. WRD’s purchases average a total of 17,000 AFY of imported water and 5,000 AFY of recycled water from West Basin. Water demands at the barriers usually do not shift dramatically due to the limited groundwater production each customer is allowed annually. Figure 2-3 displays the total barrier demands within West Basin’s service area.

Figure 2-3
Replenishment Demands¹ in West Basin MWD’s Service Area
(In Acre-Feet)



Source: WBMWD Wateruse Database, 2005

[1] Replenishment demands include both In-lieu and barrier deliveries. Barrier deliveries include both imported and recycled water.

2.4.3 Retail Water Demand by Customer Agency

Overall, retail water demands within West Basin’s service area have not seen significant increases for the past 15 years. However, individual retail customer agencies have experienced some changes in their retail demand since 1990. Table 2-3 illustrates the changes, either increases or decreases, in each retail customer agencies’ average water usage over two different five year periods since 1990.



**Table 2-3
Total Water Demand per West Basin Customer Agency
Average (1990-1995) vs. Average (2000-2005)
(In Acre-Feet)**

Customer Agency	1990-1995 Average Total Water Use	2000-2005 Average Total Water Use	%Increase/ (Decrease)
California American Water Co.	3,261	3,834	17.6%
Cal Water Service Co.- Dominguez	33,288	35,134	5.5%
Cal Water Service Co.- Hermosa/Redondo	13,704	15,816	15.4%
Cal Water Service Co.- Palos Verde	18,479	21,684	17.3%
Cal Water Service Co.- Hawthorne	4,948	5,020	1.5%
City of El Segundo	17,802	17,296	(2.8%)
City of Inglewood	12,424	12,533	0.9%
City of Lomita	2,491	2,764	11.0%
City of Manhattan Beach	6,279	7,088	12.9%
L.A. County Waterworks District 29	8,036	9,822	22.2%
Southern California Water Co.	36,605	40,002	9.3%
Water Replenishment District	25,310	25,021	(1.1%)
Total	182,627	196,014	

Source: WBMWD Wateruse Database, 2005

Although some agencies have seen some dramatic shifts in water demand usage over the past 15 years, the average increase for a West Basin customer agency was 9.1%. Some of the significant changes among customer agencies may be attributed to population growth, increases in industrial customers, and/or further land use development.

2.5 Projected Water Demands

One of the objectives of this Plan is to provide some insight into West Basin's expected water demands for the next 25 years. The predictability of water usage is an important element in planning future water supplies. The methodology used to determine demand forecasting is a combination of historical water use analysis, population growth and commercial and residential development. West Basin, with the assistance of MWD's forecasting model known as MWD-MAIN (Municipal and Industrial Needs) Water Use Forecasting System, is able to develop some well formulated water demand projections.

The MWD-MAIN forecasting model determines expected urban water usage for the next 25 years. This model incorporates Census data, industrial growth, employment, and regional development from regional planning agencies, such as SCAG (Southern California Association of Governments), to project water demands. It also features demands in sectors such as single family, multi-family, industrial, commercial and institutional usage for the region. MWD also takes into account current and future water



management efforts, such as water conservation Best Management Practices (BMPs) and education programs.

Table 2-4 illustrates the current and projected retail water demands to the year 2030 for West Basin under normal demand conditions.

**Table 2-4
West Basin's Current and Projected M&I Water Demands
(In Acre-Feet)**

District Water Demands	2005 ¹	2010	2015	2020	2025	2030
Retail Municipal & Industrial Use						
Groundwater ²	41,535	52,000	52,000	52,000	52,000	52,000
Imported Water	129,316	123,000	97,319	98,665	100,140	101,747
Recycled Water ³	13,065	21,848	32,500	36,250	40,000	43,750
Desalinated Water	0	0	20,000	20,000	20,000	20,000
Total	183,916	196,848	201,819	206,915	212,140	217,497

[1] The 2005 demands are based on FY 2004-05, which was recorded as one of the "wettest" years on record.

[2] Groundwater demands include the amount of groundwater pumped from the West Coast and Central (avg. 2,000 AFY) groundwater basins to satisfy groundwater demands within West Basin's service area.

[3] Includes M&I recycled water sales from West Basin's service area; it does not include recycled water sales to Los Angeles Department of Water and Power and the City of Torrance or Replenishment sales (Barrier).

As displayed above, the retail demand in West Basin is expected to grow approximately 0.5% each year. Groundwater will remain consistent, due to the limited amount of extractable pumping rights within the basin; but imported water is expected to decrease with the expansion of recycled water and the development of ocean water desalination meeting the growing demand over the next 25 years.

2.5.1 Projected Per Capita Water Usage

As discussed previously, water demand is determined by the water usage per person. The future per capita usage shows how water demand is growing at a modest pace.

**Table 2-5
Projected Per Capita Retail Water Usage in West Basin's Service Area**

Year	Estimated Population ¹ (Thousands)	Retail Water Usage ² (AF)	Per Capita (GPCD)
2005	852,800	183,916	193
2010	876,400	196,848	201
2015	906,500	201,819	199
2020	936,100	206,915	197
2025	964,600	212,140	196
2030	991,900	217,497	196

[1] Information is based on MWD Demographic Data, 2004.

[2] Retail Water usage includes recycled water, but does not include replenishment sales, i.e. barrier water.



Table 2-5 shows a gradual decrease in per capita usage at a time when water has become a scarce commodity in a region where population is projected to increase. Although the total retail water usage continues to increase, the amount of water used per person will decline over the next 25 years. Essentially, more people are using less water.

2.5.2 Projected Replenishment Demand

Future replenishment demands are difficult to project because of the variation in operational changes and replenishment needs. WRD expects reduced deliveries of imported water at both of the Barriers, Dominguez Gap and West Coast, with increased deliveries of recycled water.

The estimated replenishment demands over the next 25 years under normal conditions are presented in Table 2-6. Although replenishment demands may fluctuate year to year, the overall demand should stay relatively the same because groundwater production is limited according to the allowable pumping rights each groundwater producer is allocated. Furthermore, groundwater production is at or around its maximum amount, therefore, replenishment demands should not significantly increase.

**Table 2-6
Projected Replenishment Demands
(In Acre-Feet)**

District Water Demands	2005	2010	2015	2020	2025	2030
Replenishment						
Imported Water ¹	15,000	10,000	10,000	10,000	10,000	10,000
Recycled Water ²	7,500	17,500	17,500	17,500	17,500	17,500
Total	22,500	27,500	27,500	27,500	27,500	27,500

[1] Imported water demands are based on the Water Replenishment District's projected estimate needs, although they may adjust annually depending upon groundwater production. Imported water demands are for both the West Coast and Dominguez Gap Barriers.

[2] Recycled water deliveries are only at the West Coast Barrier; with a 5,000 AF expansion in 2006. Additional recycled water deliveries in 2010 are contingent upon a regulatory permit to expand recycled water to 100% at the West Coast Barrier.



Water Supply

This section discusses the current and future water supply within West Basin’s service area

3.1 Overview

It is West Basin’s mission to ensure a safe, adequate and reliable supply of water for the region it serves. However, with a limited supply and growing demand for water, the task of meeting this mission is becoming increasingly challenging.

Seventy years ago the average customer agency in West Basin relied completely on groundwater. Today, however, it relies on a more diverse mix of water resources: 21% groundwater, 65% imported, 7% recycled water (only Municipal & Industrial [M&I]), and to date conservation efforts have made up 7%. It is projected that by 2030, the resource mix on average will be 20% groundwater, 39% imported, 17% recycled water, 8% ocean water desalination, with conservation meeting the remaining 16%. Diversification of water supplies has become one of the District’s answers to ensuring a reliable supply of water for its service area.

This section provides an overview of the current and future water supplies needed to meet the expected demands of West Basin, including a review of the District’s current and projected water supply mix, a description of each water source that West Basin’s customer agencies currently rely on, and expected future supplies that West Basin is planning and/or developing to meet the demands by year 2030.

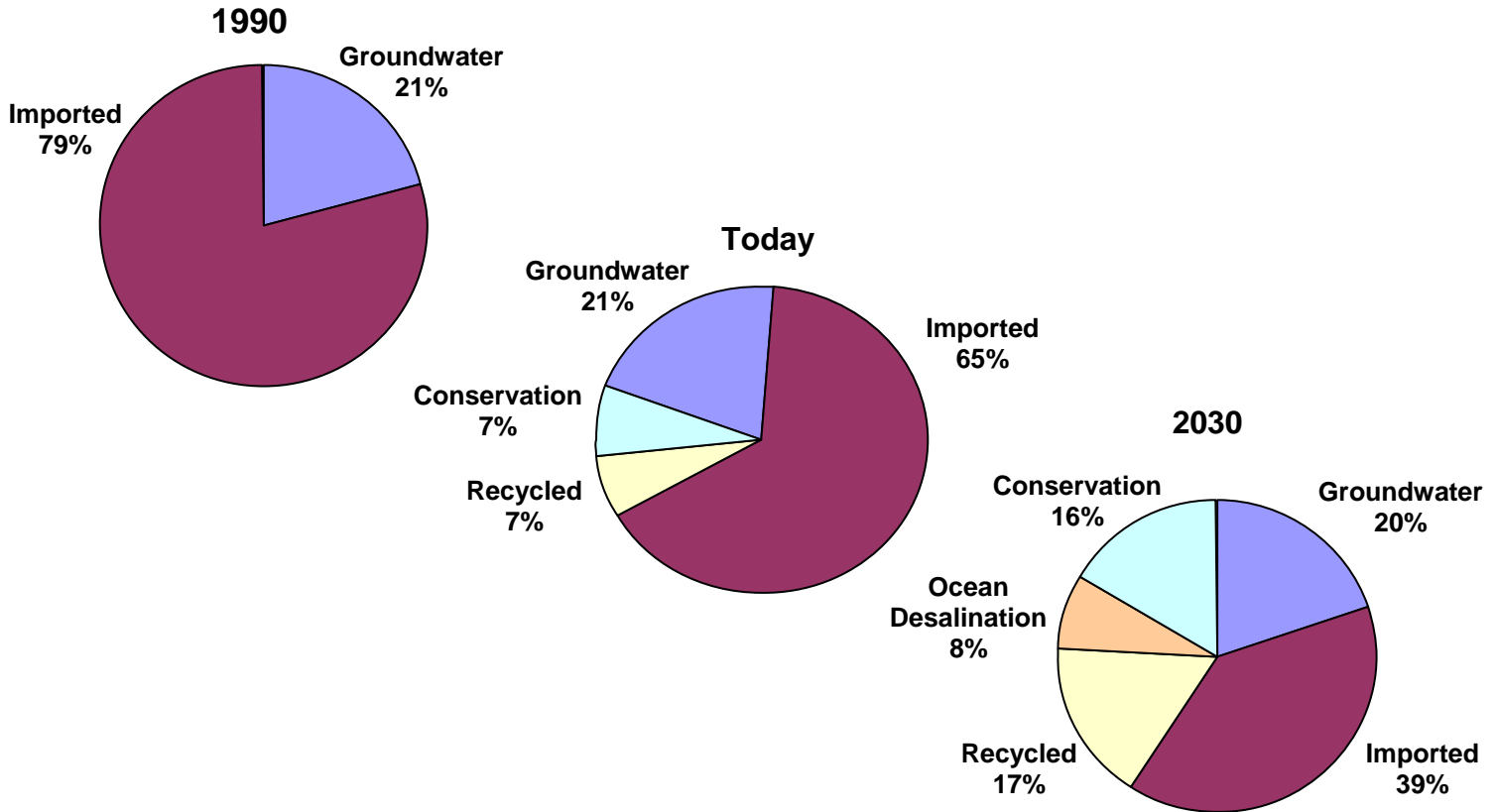
3.2 West Basin’s Water Supply Portfolio

Since its formation in 1947, West Basin has fulfilled its responsibility of providing its customer agencies with supplemental supplies to ensure reliability. Today, diversification is the key to an ample future supply of water throughout its service area. As illustrated in Figure 3-1, West Basin’s supply portfolio has changed through the years.

Similar to creating a balanced investment portfolio to reduce risk, the District plans to further diversify the water resource mix over the next 25 years, with the expansion of the District’s recycled water system, increased conservation efforts, and groundwater storage opportunities. The District’s dependence on traditional sources of water (groundwater and imported) will continue to decrease with the expansion of these alternative resources. Figure 3-1 and Table 3-1 show the historical, current and projected water supply portfolio that the District is anticipating meeting by the year 2030.



**Figure 3-1
West Basin's Service Area
Projected Water Supplies**



**Table 3-1
West Basin MWD
Historical & Projected Retail Water Supplies
(In Acre-feet)**

Type of Water	FY 1990	Today ¹	2030
Groundwater ²	40,148	41,535	52,000
Imported Water ³	151,829	129,315	101,747
Recycled Water ⁴	-	13,065	43,750
Ocean Desalination	-	-	20,000
Total	191,977	183,916	217,497
Conservation ⁵	-	14,500	42,800
Total	191,977	198,416	260,297

[1] Based upon actual FY 2004-05 sales.

[2] Groundwater production within West Basin service area only, including imported groundwater production from California American Water Company (FY 1990 1,658 AF, FY 04-05 2,228 AFY, and average of 2,000 AFY for 2030).

[3] Imported retail use only; does not include replenishment deliveries; i.e. Barrier.

[4] Recycled M&I use only; does not include replenishment deliveries; i.e., Barrier.

[5] Conservation consists of Active and Passive savings according to the District's projected estimates.



3.3 West Basin's Water Source

3.3.1 Imported Water Supply

West Basin relies on approximately 150,000 acre-feet per year (AFY) of imported water from the Colorado River and State Water Project to meet the District's retail and replenishment demands. MWD receives this supply from these two major water systems that supplies a majority of the southern California region.¹

Colorado River

MWD was established to develop a supply from the Colorado River. Its first mission was to construct and operate the Colorado River Aqueduct (CRA), which can deliver roughly 1.2 million acre-feet (MAF) per year. Under its contract with the



Federal government, MWD has a basic entitlement of 500 thousand acre-feet per year of Colorado River water. MWD also holds a priority for an additional 0.662 MAF per year. MWD can obtain water under this priority when the U.S. Secretary of the Interior determines that either one or both of the following exists:

- surplus water; and/or
- water is apportioned to, but unused by, Arizona and/or Nevada.

MWD and the State of California have acknowledged that they could obtain less water from the Colorado River in the future than they have in the past, but the lack of clearly quantified water rights hindered efforts to promote water management projects. The U.S. Secretary of Interior asserted that California's users of Colorado River water had to limit their use to a total of 4.4 MAF per year, plus any available surplus water. The resulting plan, known as "California's Colorado River Water Use Plan" or the "California Plan," characterizes how California would develop a combination of programs to allow the State to limit its annual use of Colorado River water to 4.4 MAF per year plus any available surplus water. The Quantification Settlement Agreement (QSA) among the California agencies is the critical component of the California Plan. It establishes the baseline water use for each of the agencies and facilitates the transfer of water from agricultural agencies to urban uses.

¹ The Los Angeles Aqueduct, a third aqueduct to southern California, the Los Angeles Aqueduct, supplies imported water from the eastern Sierra Nevada region to the City of Los Angeles.



In the context of the QSA, MWD has identified a number of storage and transfer programs that could be used to achieve long-term development targets for a full CRA, and it has entered into or is exploring agreements with a number of agencies.

State Water Project

California's State Water Project (SWP), MWD's second main source of imported water, is the nation's largest state-built water and power development and conveyance system. It includes facilities—pumping and power plants; reservoirs, lakes, and storage tanks; and canals, tunnels, and pipelines—that capture, store, and convey water from the Lake Oroville watershed in Northern California to 29 water agencies in Central and southern California. Planned, designed, constructed and now operated and maintained by the California Department of Water Resources, this unique facility provides water supplies for 23 million Californians and for 755,000 acres of irrigated farmland.

The original State Water Contract called for an ultimate delivery capacity of 4.2 MAF, with MWD holding a contract for 2.011 MAF. More than two-thirds of California's drinking water, including all of the water supplied by SWP, passes through the San Francisco-San Joaquin Bay-Delta (Bay-Delta). For decades, the Bay-Delta system has experienced water quality and supply reliability challenges and conflicts due to variable hydrology and environmental standards that limit pumping operations.

In 1999, MWD's Board of Directors set new goals for the SWP with the adoption of its CALFED Policy Principles. These goals committed MWD to water quality objectives, the development of 0.65 MAF minimum dry-year supply from the SWP by 2020, and average annual deliveries of 1.5 MAF (excluding transfers and storage programs along the SWP). To achieve these goals while minimizing impacts to the Bay-Delta ecosystem, MWD would maximize deliveries to storage programs during wetter years, implement a number of source water qualities and supply reliability improvements in the Delta, and remove operational conflicts with the Central Valley Project (CVP), and better coordinate planning and operations between the SWP and CVP.

Types of Imported Supplies

MWD offers different types of imported water to its member agencies depending on the ultimate use. Among them, West Basin has delivered Non-Interruptible Water (treated full-service) and Seasonal Treated Replenishment Water (In-Lieu Replenishment).

Non-Interruptible Water is the treated firm supply that is available all year. West Basin delivers an average of 150,000 AF of non-interruptible water annually. It is



used as the main supplemental supply of cities and water agencies, including the main supply for the Saline Barriers.

Seasonal Treated Replenishment Water, also known as the “In-Lieu” water is delivered to customer agencies that are eligible to offset groundwater production with imported water. This program incentivizes customer agencies to take imported surplus water “when available,” which indirectly replenishes the groundwater basin. This surplus water is purchased at a discount rate in exchange for leaving groundwater in the basin for no less than a year so that it can be used subsequently during dry years.

3.3.2 Groundwater Supply

Groundwater has for many years represented a fifth of the District’s supplies within West Basin’s service area. Today, the average customer agency in West Basin relies on groundwater production for 20% of its retail demand. This is a result of the geographical location where most of West Basin’s customer agencies are located. There are a few agencies within the District’s service area that rely exclusively on imported water to meet all their current water needs.

The West Coast Groundwater Basin (WCGB) is an adjudicated basin. The extensive overpumping of the WCGB over the years led to critically low groundwater levels, resulting in seawater intrusion along the coast. This overpumping of the WCGB resulted in a legal judgment, or adjudication that limits the allowable extraction that could occur in any given year and assigned water rights to basin pumpers. The adjudicated water rights were greater than the basin yield; therefore, the WCGB was operating with an annual overdraft. To address this overdraft, imported and recycled water sources and a means to purchase these sources was required. The groundwater producers (pumpers), which are members of the West Basin Water Association, led the creation of the Water Replenishment District of Southern California (WRD), which manages the replenishment of the groundwater basin.

In 1959, the State Legislature enacted the Water Replenishment Act, enabling the water association for the basin to secure voter approval for the formation of the “Central and West Basin Water Replenishment District” (now referred to as the Water Replenishment District of Southern California or “WRD”) to be the permanent agency responsible for replenishing the basin. The State Legislature has vested in WRD the statutory responsibility to manage, regulate, replenish, and protect the quality of the groundwater supplies within its boundaries for the beneficial use of the approximately 3.5 million residents and water users who rely upon those groundwater resources to satisfy all or a portion of their water needs.

Although the water rights have been bought, sold, exchanged, or transferred over the years, the total amount of allowable extraction rights within the entire groundwater basin has remained virtually the same. The adjudicated pumping rights available within West



Basin's service area total 54,730 AF. However, not all of these water rights holders are water retail agencies. Many of these holders are school districts, businesses, cemeteries, and private entities that make up approximately 42% (23,215 AF) of the total water rights. Shown below in Table 3-2, are all of the water retailers' adjudicated groundwater rights in West Basin's service area for Fiscal Year 2003-04.

Table 3-2
Groundwater Pumping Rights 2003-2004
(AFY)

West Basin MWD Retail Agencies	Adjudicated Pumping Rights in West Basin
Cal Water Service Co. (Hermosa/Redondo)	4,070
Cal Water Service Co. (Dominguez)	10,417
City of El Segundo	953
City of Hawthorne	1,882
City of Inglewood	4,450
City of Lomita	1,352
City of Manhattan Beach	1,131
Southern California Water Co.	7,260
Total	31,515

Source: West Basin Watermaster Report, 2004

Although mostly all of the groundwater supply is extracted from the WCGB, there is a small amount of groundwater that is imported from the Central Groundwater Basin. The Central Groundwater Basin underlies the southeastern part of the Los Angeles Coastal Plain. It is bounded on the north by the hills separating it from the San Gabriel Valley, on the east by Orange County, and on the southwest by the West Coast Basin.

The total amount of water extracted and imported within West Basin's service area is approximately 2,000 AFY. Table 3-3 below displays the water retailer and the amount produced from this adjoining basin for the past five fiscal years:

Table 3-3
Amount of Groundwater Pumped from Central Basin
(In-Acre-feet)

Water Retailer	2000	2001	2002	2003	2004
California American Water Co.	1,707	1,935	1,979	2,509	2,228
Total	1,707	1,935	1,979	2,509	2,228

Source: Central Basin Watermaster Report, 2004

As illustrated in Table 3-4, the total amount of groundwater produced over the past five years in the WCGB and Central Groundwater Basin has remained fairly consistent. The amount of groundwater produced ranges from 73% to 86% of the total groundwater supply available from both Basins (56,797 AF).



**Table 3-4
Total Amount of Groundwater Pumped
(In-Acre-Feet)**

Basin Name	2000	2001	2002	2003	2004
West Coast Basin ¹	50,295	46,867	45,367	46,555	42,421
Central Basin ²	1,669	1,707	1,935	1,979	2,509
Total	51,964	48,574	47,302	48,534	44,930
% of Total Water Supply³	91%	86%	83%	85%	79%

Source: West Basin MWD Wateruse Database, 2005

[1] Includes West Basin MWD service area including Desalter sales

[2] Includes California American Water Co. groundwater imported from Central Basin

[3] Percentage of the available groundwater supply of both basins totaling 56,797 AFY

The total amount of groundwater projected to be extracted over the next 25 years will be fairly consistent due to the adjudication of both basins. The economic costs to pumped groundwater versus the purchase of imported water will pressure water retailers to maximize their groundwater rights. Therefore, the total amount of groundwater produced is projected to range in the 92% percentile of available supply, as illustrated in Table 3-5.

**Table 3-5
Total Amount of Groundwater Projected to be Pumped
(In Acre-Feet)**

Basin Name	2010	2015	2020	2025	2030
West Coast Basin ¹	50,000	50,000	50,000	50,000	50,000
Central Basin ²	2,000	2,000	2,000	2,000	2,000
Total	52,000	52,000	52,000	52,000	52,000
% of Total Water Supply³	92%	92%	92%	92%	92%

[1] Includes West Basin MWD service area including Desalter sales

[2] Includes California American Water Co. groundwater imported from Central Basin

[3] Percentage of the available groundwater supply of both basins totaling 56,797 AFY

Groundwater Recharge

To replenish the WCGB and prevent further seawater intrusion, the Los Angeles County Flood Control District (LACFCD) created the injection barriers along the West Coast and at the Dominguez Gap, located north of the Los Angeles Harbor.

For the past 42 years, WRD has accomplished its statutory replenishment objectives primarily by allowing recycled and imported water to be injected into “seawater intrusion barriers” owned and operated by the County of Los Angeles Department of Public Works (LACDPW) in the WCGB.

WRD assesses a groundwater production fee, known as their “Replenishment Assessment”, to pumpers of the WCGB. This assessment provides funds which WRD uses to purchase and produce water for both spreading and injection to replace groundwater pumped, and create hydrological barriers to seawater intrusion.



WRD also encourages In-Lieu replenishment of the basins. Under the “In-Lieu program”, pumpers of the WCGB are encouraged through a financial incentive to purchase surplus imported water from the West Coast Basin “in-lieu” of pumping groundwater.

Table 3-6 summarizes the historical amounts of imported water purchased to replenish the basin.

**Table 3-6
Historical Replenishment Deliveries
(In Acre-Feet)**

Fiscal Year	In-Lieu Water	Barrier Water¹	Total
1990	0	32,850	32,850
1991	0	31,876	31,876
1992	3,434	25,736	29,170
1993	14,265	25,705	39,970
1994	27,656	21,958	49,614
1995	10,094	21,274	31,368
1996	1,962	21,585	23,547
1997	1,453	23,208	24,661
1998	1,593	22,088	23,680
1999	1,942	19,353	21,294
2000	2,045	24,176	26,221
2001	1,455	25,811	27,265
2002	5,726	25,414	31,140
2003	1,864	24,631	26,495
2004	0	21,672	21,672

[1] Barrier Water includes imported and recycled water deliveries to both the West Coast and Dominguez Gap Barriers.

3.3.3 Recycled Water Supply

Recycled water is one of the cornerstones of West Basin’s efforts to augment local supplies and reduce dependence on imported water. Since the planning and construction of West Basin’s recycled water system in the early 1990’s, West Basin has become a leader in producing and marketing recycled water. This new supply of water assists in meeting the demand for non-potable applications such as landscape irrigation, commercial and industrial processes, and seawater barriers. Recycled water is a resource that is reliable and environmentally beneficial to the region. It is only limited by the infrastructure needed to deliver this source of water. With approximately 206 site connections, West Basin has delivered an average of 14,000 AF of recycled water within the District’s service area.





West Basin projects on delivering 21,850 AF of recycled water by year 2010. Refer to a more detailed description of West Basin's water recycling program in Section 8 of this Plan.

3.4 Alternative Water Supply Projects

3.4.1 Seawater Barrier Water Conservation Project

To prevent seawater intrusion into the WCGB, two injection barriers were created along the West Coast and at the Dominguez Gap. These barriers are a series of wells that act like a freshwater dam between the ocean and the groundwater aquifer. To ensure groundwater protection, the barriers require a reliable source of high quality water for continuous injection.

For over a decade, West Basin has supplied a combination of 50 percent imported water and approximately 50 percent highly purified recycled water into the West Coast Barrier. To further enhance water reliability and water quality, West Basin is currently expanding the use of recycled water in the barrier to 75 percent for the following reasons:

- West Basin is committed to conserving imported water. A 25 percent increase in the amount of recycled water used for injection at the barrier represents an additional 5,000 AFY of imported water that can be used for potable purposes. Furthermore, recycled water is more reliable than imported water, which is subject to drought and changes in weather patterns.
- Since it has been treated to have impurities removed, recycled water is a higher quality water source than Colorado River water. This purified water has one-half the salt concentration of existing groundwater and one-fifth the salt of Colorado River water. This will help improve water quality in the aquifer, which is consistent with West Basin's commitment to ongoing water quality enhancement.
- Using highly purified recycled water is less expensive than imported water and helps to control water rates in West Basin's service area.

3.4.2 Ocean Water Desalination

Desalting ocean water as a source of potable water in the West Basin region is a foreseeable goal. May 2003 marked the first anniversary of West Basin's Desalination Pilot Project and research program in which 40,000 gallons per day undergo microfiltration and reverse osmosis treatment and a battery of water quality tests. It is anticipated that West Basin will be able to provide up to 20,000 AF of ocean desalinated water in 2012. A more detailed description of West Basin's desalination efforts are described in Section 9 of this Plan.



3.4.3 Conjunctive Use Groundwater Storage

Conjunctive Use can be defined as the coordinated management of surface and groundwater supplies to increase the yield of both supplies and enhance water supply reliability in an economic and environmentally responsible manner. West Basin sees the development of Conjunctive Use Storage Programs as part of the District's core responsibility to ensure a reliable supply of water for its service area. If done in a publicly responsible manner, groundwater storage can be viewed as an additional source in diversifying our water resource supply portfolio.

The potential benefits of a Conjunctive Use program include:

- Operational flexibility for groundwater production;
- Increased yield of the basin;
- More efficient use of surplus surface water during wet years;
- Financial benefits to groundwater users;
- Better distribution of water resources; and
- Increased measures of reliability.

At this time there are programs available for water retailers to create groundwater storage both within and outside of the WCGB groundwater judgment. Included is the availability for a District-sponsored storage program with MWD in which retail agencies with imported water connections can partake. The size of such a program would depend on retailers' total demand and the amount of groundwater they could realistically shift to imported water.

3.4.4 Water Transfers & Exchanges

Water transfers and exchanges are management tools to address increased water needs in areas of limited supply. Although transfer and exchange of water does not generate a new supply of water, these management tools distribute water from where it is abundant to where it is limited.

MWD, in recent years, has played an active role statewide in securing water transfers and exchanges as part of their IRP goals. Although West Basin is a member of MWD, there has not been a compelling reason or opportunity to pursue transfers directly.



Water Reliability

This section discusses West Basin's plan of maintaining a reliable source of water



4.1 Overview

Among the future challenges of continued urbanization in southern California are the questions of water reliability. In other words, can southern California meet the necessary water demands of the region during times of drought? During consecutive dry years, southern California has historically seen demands increase by as much as 20% while supplies have decreased. Prior to recent significant improvements in water reliability, most cities and agencies were forced to mandate conservation efforts and restrict water use in some cases in order to maintain an adequate supply¹.

This section will discuss how the regional supplier, MWD, in partnership with its member agencies like West Basin, plans on ensuring future reliability through water management measures, long-term planning and investment in local resources; West Basin's projections for meeting its service area's future demands during single and multiple dry-year conditions; and finally, a review of the District's Water Shortage Contingency Plan in the event that MWD limits deliveries.

4.2 MWD Water Supply Reliability

With the experience of the droughts of 1977-78 and 1989-92, MWD has undertaken a number of planning initiatives to ensure water supply reliability. Included among them are the Integrated Resources Plan (IRP), the Water Surplus and Drought Management Plan (WSDM Plan) and their local resource investments. Together these initiatives have provided the policy framework for MWD and its member agencies to manage their water resources to meet a growing population even under recurrences of the worst historical hydrologic conditions locally, and in the key watersheds that supply southern California. Below is a brief description of each water management initiative MWD has undertaken to ensure 100 percent reliability over the next 20 years.

4.2.1 MWD Integrated Resource Plan

To meet the challenges of the supply shortages on the State Water Project (SWP) and the Colorado River Aqueduct under increases in population and growing State and Federal regulatory requirements, MWD's Board of Directors called for the development

¹ By contrast, the loss of a large portion of our Colorado River supply in 2004 during an extended dry period in southern California did not cause hardship or require any drastic return on the part of the general population. This was a tribute to planning and investments made into water reliability over the past decade.

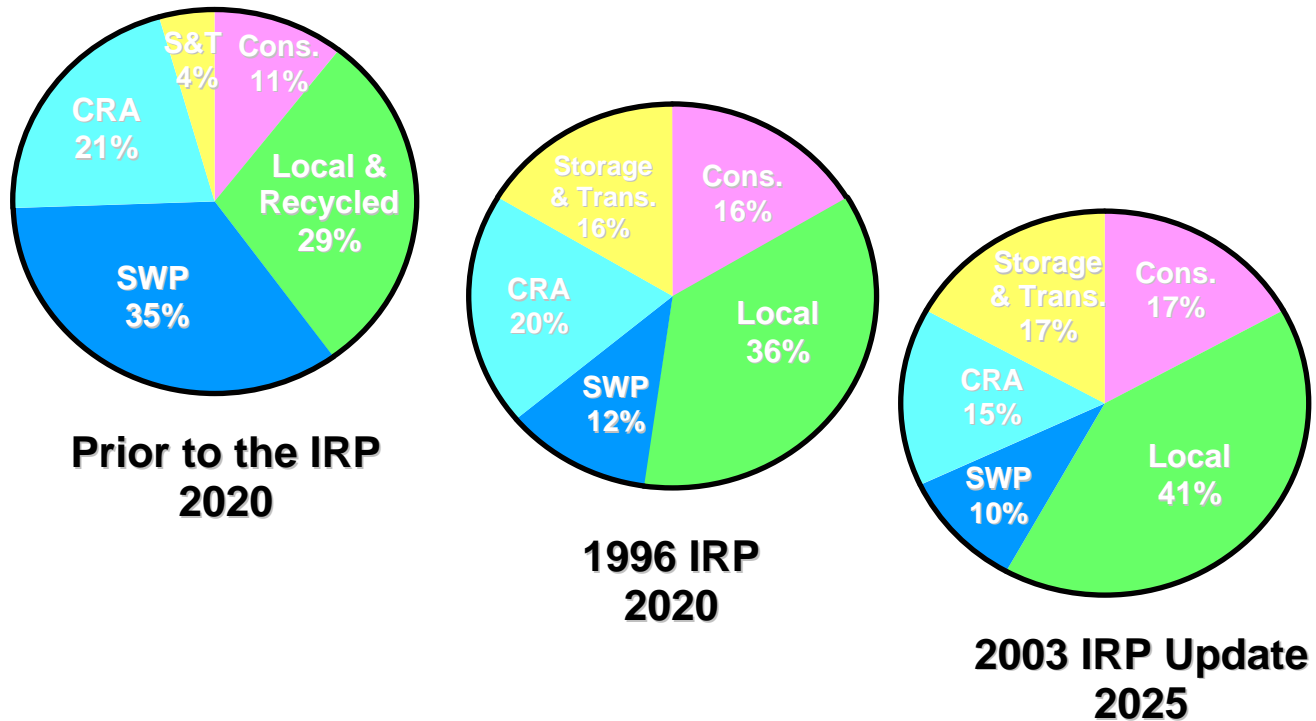


of an IRP in 1996. The IRP’s objective was to determine the appropriate combination of water resources to provide 100 percent reliability for full service demands over the next 20 years. With the support of its member agencies, MWD developed a preferred supply mix that includes conservation, local supplies (recycled, brackish, desalination), SWP supplies, CRA supplies, groundwater banking, and water transfers that could meet projected water demands under severe shortage conditions. The IRP identifies supply targets for each supply option and has become the blueprint for guiding investment and policy decisions for decades to come.

By design, the IRP is subject to revision when conditions and opportunities change over time. In 2003, MWD completed its first update to the IRP, which included revised projected demands and an updated resource supply mix. MWD had three clear objectives for the IRP update: (1) to review the goals and achievements of the 1996 IRP, (2) to identify changed conditions for water resource development and (3) to update the resource targets through 2025.

Among the most significant findings from the updated IRP was the increased participation of local agencies in developing local supplies, such as recycled water and brackish groundwater desalination, as well as promoting savings from conservation. The result of which revealed a greater source of local supply reliability than anticipated among MWD member agencies. However, it also identifies the limitations expected on the Colorado River and the need for local infrastructure improvements to provide the flexibility to manage and overcome supply risks.

Overall, the 2003 IRP Update revealed a decrease in the region’s reliance on Colorado River and SWP supplies compared to the 1996 IRP, while continuing to provide 100 percent reliability through the year 2025.





4.2.2 MWD Water Surplus and Drought Management Plan

In order for MWD to be 100 percent reliable in meeting all non-discounted non-interruptible demands in the region, MWD adopted the WSDM Plan in 1999. The WSDM Plan provides the policy guidance to manage the region's water supplies to achieve the reliability goals of the IRP. This is achieved by integrating the operating activities of surplus and shortage supplies through a series of stages and principles.

Those principles include water management actions needed to secure more imported water during times of drought by promoting efficient water usage, increasing public awareness, and seeking additional water transfers and banking programs. Should supplies become limited to the point where imported supplies are truncated, the WSDM Plan would allocate water through a calculation on the basis of need, as opposed to any historical purchases through MWD. MWD and its member agencies have not yet decided on a formula for the allocation calculation.

4.2.3 MWD Local Resource Investments

A key element within MWD's IRP objectives to ensure region reliability is to further enhance local resources. Besides the traditional supplies of imported water and groundwater, MWD has looked to invest in numerous local resource projects including: recycled water, conservation, groundwater and surface water storage, and even ocean water desalination to meet future demands.

Since 1982, MWD has provided financial assistance to over 75 projects in the areas of recycled water and groundwater recovery totaling approximately \$124 million and \$41 million, respectively.

MWD has already invested over \$290 million in water conservation, which has produced significant water savings over the last 15 years.

One of MWD's most significant investments is Diamond Valley Lake. Built in the saddle of two mountains, Diamond Valley Lake, southern California's newest and largest reservoir, is a vital link in the regional system that has brought water to southern California for the past 60 years. The lake nearly doubled the region's surface water storage capacity and provides additional water supplies for drought, peak summer and emergency needs. This



nearly created reservoir, located in southwestern Riverside County, holds enough water to meet the region's emergency and drought needs for six months and is an important component in MWD's plan to provide a reliable supply of water to the 18 million people in southern California. Water began pouring into the reservoir in November 1999 and the lake was filled by early 2002. Diamond Valley Lake holds 800,000 AF, or 260 billion



gallons of water. By comparison, Lake Havasu on the Colorado River holds just 648,000 AF or 201 billion gallons. The lake has nearly doubled the area’s surface water storage capacity and provides additional water supplies for drought, peak summer and emergency needs.

4.3 West Basin’s Water Supply Reliability

Along with MWD’s reliability initiatives, West Basin has also taken important steps over the past decade to reduce the District’s vulnerability to extended drought or other potential threats. The District’s investments in recycled water to replace imported water for non-potable uses and the implementation of conservation devices and education have resulted in more self-reliance.

Based on the District’s current water supply portfolio, as illustrated in Table 4-1, West Basin provides an adequate supply for the single dry-water year and multiple dry-water year scenarios. The Normal Water Year used in this plan is based on the average rainfall year of 2000-01. According to the National Weather Service, the recorded rainfall in FY 2000-01 was 17.94 inches - one of the closest years to the historical average of over 100 years (16.42 inches). The Single Dry Year is based on the lowest rainfall year of 2001-02. The recorded rainfall in FY 2001-02 was at 4.42 inches - the lowest recorded year in over 100 years. The three Multiple Dry-Water Years used below were based upon the most recent dry period - FY 2001-02, 2002-03, and 2003-04.

**Table 4-1
Supply Reliability
(In Acre-Feet)**

Supplies	Normal Water Year	Single Dry-Water Year	Multiple Dry-Water Years		
	FY 2000-01	FY 2001-02	FY 2001-02	FY 2002-03	FY 2003-04
Groundwater ¹	56,797	56,797	56,797	56,797	56,797
Imported Water	126,000	129,936	129,936	130,940	135,334
Recycled Water ²	14,000	14,000	14,000	14,000	14,000
Total Supply	196,797	200,733	200,733	201,737	206,131

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries such as Barrier.
[1] Based upon the total water rights for each customer agency within West Basin’s service area, according to the 2004 DWR West Coast Basin Watermaster Report. Also includes groundwater rights (2,000 AFY) from Central Groundwater Basin, which are imported into West Basin.
[2] Includes M&I Recycled Water sales from West Basin’s service area; does not include recycled water sales to LADWP and Torrance or replenishment sales (Barrier).

Groundwater is shown constant in all scenarios due to the Basin’s adjudication, which limits the total amount that each customer within West Basin’s service area is able to extract. Recycled water, which includes only M&I sales, is also constant in all scenarios because the availability of recycled water is not subject to hydrologic variation. This leaves imported water as the only supply currently that can fluctuate under different hydrological scenarios.



The supply reliability scenarios described in this section focus exclusively on municipal and industrial usage within the District’s service area, it does not include replenishment water.

Looking forward, West Basin will continue to evaluate opportunities to increase its water supply portfolio within its service area. These opportunities include the expanded use of recycled water, brackish water recovery, ocean water desalination, additional conservation programs, as well as the exploration of investments in groundwater storage through Conjunctive Use programs.

4.3.1 Normal-Year Reliability Comparison

As discussed in the Water Demand Section, West Basin’s normal demands are projected to increase modestly over the next 25 years. Increases in recycled water use and ocean water desalination over the 25 year planning period equate to a corresponding reduction in the need for imported water.

Table 4-2
Projected Normal Water Year Supply and Demand
(In Acre-Feet)

Supplies	2005	2010	2015	2020	2025	2030
Groundwater ¹	56,797	56,797	56,797	56,797	56,797	56,797
Imported Water	126,000	123,000	97,319	98,665	100,140	101,747
Recycled Water ²	14,000	21,848	32,500	36,250	40,000	43,750
Ocean Desalination	0	0	20,000	20,000	20,000	20,000
Total Supply	196,797	201,645	206,616	211,712	216,937	222,294
Total Demand³	183,916	196,848	201,819	206,915	212,140	217,497
Surplus/(Shortage)	12,881	4,797	4,797	4,797	4,797	4,797

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries such as Barrier

[1] Based upon the total water rights for each customer agency within West Basin’s service area, according to the 2004 DWR West Coast Basin Watermaster Report. Also includes groundwater rights (2,000 AFY) from Central Groundwater Basin, which are imported into West Basin.

[2] Includes M&I Recycled Water sales from West Basin’s service area; does not include recycled water sales to LADWP and Torrance or replenishment sales (Barrier).

[3] Total Demand includes Projected Groundwater within West Basin’s service area, as well as Imported and Recycled M&I Demands.

4.3.2 Single Dry-Year Reliability Comparison

West Basin’s projected single dry-year water supply is expected to call for additional imported supplies from MWD. According to historical demands, the total water demands in a single dry-year are projected to be 3.5% greater than normal year projections. Table 4-3 compares the dry-year supply and demand projections for the West Basin MWD service area.



**Table 4-3
Projected Single Dry-Year Water Supply and Demand
(In Acre-Feet)**

Supplies	2005	2010	2015	2020	2025	2030
Groundwater ¹	56,797	56,797	56,797	56,797	56,797	56,797
Imported Water	129,936	125,460	99,586	101,110	102,768	104,562
Recycled Water ²	14,000	21,848	32,500	36,250	40,000	43,750
Ocean Desalination	0	0	20,000	20,000	20,000	20,000
Total Supply	200,733	204,105	208,883	214,157	219,565	225,109
Total Demand³	190,353	203,738	208,883	214,157	219,565	225,109
Surplus/(Shortage)	10,380	367	0	0	0	0

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries such as Barrier

[1] Based upon the total water rights for each customer agency within West Basin's service area, according to the 2004 DWR West Coast Basin Watermaster Report. Also includes groundwater rights (2,000 AFY) from Central Groundwater Basin, which are imported into West Basin.

[2] Includes M&I Recycled Water sales from West Basin's service area; does not include recycled water sales to LADWP and Torrance or Replenishment sales (Barrier).

[3] Total Demand includes Projected Groundwater within West Basin's service area, as well as Imported and Recycled M&I Demands.

4.3.3 Multiple Dry-Year Reliability Comparison

Under the multiple dry-year water scenarios, West Basin is projected to meet demands by continuing to implement conservation, water recycling, and introducing ocean water desalination as a new source of potable water to replace imported water. Tables 4-4 through 4-8 illustrate the projected water supplies and demands within multiple dry-year reliability comparisons for the next 25 years.

**Table 4-4
Projected Water Supply and Demand during Multiple Dry-Year 2008-2010
(In Acre-Feet)**

Supplies	2008	2009	2010
Groundwater ¹	56,797	56,797	56,797
Imported Water	129,936	130,940	135,334
Recycled Water ²	21,000	21,420	21,848
Ocean Desalination	0	0	0
Total Supply	207,733	209,157	213,979
Total Demand³	198,792	200,785	206,188
Surplus/(Shortage)	8,941	8,372	7,791

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries such as Barrier

[1] Based upon the total water rights for each customer agency within West Basin's service area, according to the 2004 DWR West Coast Basin Watermaster Report. Also includes groundwater rights (2,000 AFY) from Central Groundwater basin, which are imported in West Basin.

[2] Includes M&I Recycled Water sales from West Basin's service area; does not include recycled water sales to LADWP and Torrance or Replenishment sales (Barrier).

[3] Total Demand includes Projected Groundwater within West Basin's service area, as well as Imported and Recycled M&I Demands.



Table 4-5
Projected Water Supply and Demand during Multiple Dry-Year 2013-2015
(In Acre-Feet)

Supplies	2013	2014	2015
Groundwater ¹	56,797	56,797	56,797
Imported Water	129,936	130,940	135,334
Recycled Water ²	27,500	31,000	32,500
Ocean Desalination	20,000	20,000	20,000
Total Supply	234,233	238,737	244,631
Total Demand³	203,812	205,855	211,395
Surplus/(Shortage)	30,421	32,882	33,236

Table 4-6
Projected Water Supply and Demand during Multiple Dry-Year 2018-2020
(In Acre-Feet)

Supplies	2018	2019	2020
Groundwater ¹	56,797	56,797	56,797
Imported Water	129,936	130,940	135,334
Recycled Water ²	34,750	35,500	36,250
Ocean Desalination	20,000	20,000	20,000
Total Supply	241,483	243,237	248,381
Total Demand³	208,959	211,053	216,733
Surplus/(Shortage)	32,524	32,184	31,648

Table 4-7
Projected Water Supply and Demand during Multiple Dry-Year 2023-2025
(In Acre-Feet)

Supplies	2023	2024	2025
Groundwater ¹	56,797	56,797	56,797
Imported Water	129,936	130,940	135,334
Recycled Water ²	38,500	39,250	40,000
Ocean Desalination	20,000	20,000	20,000
Total Supply	245,233	246,987	252,131
Total Demand³	214,235	216,383	222,205
Surplus/(Shortage)	30,998	30,604	29,926



**Table 4-8
Projected Water Supply and Demand during Multiple Dry-Year 2028-2030
(In Acre-Feet)**

Supplies	2028	2029	2030
Groundwater ¹	56,797	56,797	56,797
Imported Water	129,936	130,940	135,334
Recycled Water ²	42,250	43,000	43,750
Ocean Desalination	20,000	20,000	20,000
Total Supply	248,983	250,737	255,881
Total Demand³	219,645	221,847	227,816
Surplus/(Shortage)	29,338	28,890	28,065

4.4 Water Shortage Contingency Plan

The State requires that each urban water supplier provide a water shortage contingency analysis within its UWMP. Below is a brief description of the District's plan for water shortage according to the state's water code requirements.

4.4.1 Minimum Supply

Currently, the District's water supplies are groundwater, imported water, and recycled water. As it relates to the estimated minimum supply available during a severe drought, the District's groundwater supply, as stated in Section 3, is not affected by hydrology because the Basin is adjudicated. The available supply for each groundwater producer (Allowable Production Allocation), set by the Judgment, remains the same regardless of the service area's rainfall. The same relates to recycled water, where the supply is not affected by hydrology but rather through the number of service connections and production capacity. The benefit of recycled water is that it is drought-proof and the supply of recycled water remains available regardless of the rainfall. Imported water, on the other hand, is the only supply affected by hydrology. As the wholesaler of imported water to the region, the District's minimum imported water supply is based upon the recent historical demand of imported water during a dry-year sequence of fiscal years 2001-02 to 2003-04; rainfall for these three years range among the lowest on record. The estimated minimum supplies over the next three years for the District is shown in Table 4-9.



**Table 4-9
Three-year Estimated Minimum Water Supply
(In Acre-Feet)**

Supplies	2006	2007	2008
Groundwater ¹	56,797	56,797	56,797
Imported Water	129,936	130,940	135,334
Recycled Water ²	14,500	18,000	21,000
Ocean Desalination	0	0	0
Total Supply	201,233	205,737	213,131
Total Demand³	196,819	198,792	204,142
Surplus/(Shortage)	4,414	6,945	8,989

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries such as Barrier

[1] Based upon the total water rights for each customer agency within West Basin's service area, according to the 2004 DWR West Coast Basin Watermaster Report. Also includes groundwater rights (2,000 AFY) from Central Groundwater basin, which are imported into West Basin.

[2] Includes M&I Recycled Water sales from West Basin's service area; does not include recycled water sales to LADWP and Torrance or Replenishment sales (Barrier).

[3] Total Demand includes Projected Groundwater within West Basin's service area, as well as Imported and Recycled M&I Demands.

4.4.2 Stages of Action to Reduce Imported Deliveries

As the area's wholesaler of MWD imported water, the District's stages for reduction are subject to MWD's WSDM Plan, which guide the management of water supplies for the region during shortage conditions.

According to MWD's WSDM Plan, an array of water resource management measures would take place prior to any supply reductions. Through a series of seven shortage stages, MWD will seek the steps to encourage more efficient water usage with its member agencies. Not until the last stage, under an extreme shortage condition, will MWD discontinue imported water deliveries according to an allocation formula. Currently, however, MWD has not determined the shortage allocation methodology to complete the WSDM Plan. Conversely, MWD's 2005 Regional UWMP demonstrates 100 percent reliability in multiple dry-years through 2030. Nevertheless, given the resources described in MWD's IRP, MWD fully expects to be reliable, under the most extreme supply shortage scenarios, over the next ten years.

However, if imported water supplies were discontinued according to MWD's WSDM Plan, the District would consider reducing supplies through a series of action stages, which would include an allocation methodology similar to MWD. Once MWD determined such an allocation, the District would work with each of its customer agencies to set a specific allocation level to cumulatively meet the District's allocation from MWD. Below is a four step stage rationing plan the District would implement to reduce imported deliveries up to 50%.



West Basin Municipal Water District Stages of Action

Minimum Shortage – The District would request for a voluntary effort among its customers to reduce imported water deliveries. In addition, the District would pursue an aggressive Public Awareness Campaign to encourage residents and industries to reduce their usage of water.

Moderate Shortage – In addition to the stage above, the District would work with its customer agencies to promote and adopt water waste prohibitions and ordinances to discourage unnecessary water usage.

Severe Shortage – In addition to the two stages above, the District would seek to adopt a rate structure that penalizes increased water usage among its customer agencies.

Extreme Shortage – In addition to all the stages above, the District would call for the discontinuance of imported water based upon an allocation methodology similar to MWD for each of its customer agencies.

Since these action stages are contingent upon MWD's WSDM Plan's allocation methodology and such a formula has yet to be determined, the District's shortage stages will remain in draft form. Until MWD completes the WSDM formula, the District's implementation of any rationing stage will be subject to a variety of conditions, among them the severity of the drought, the District allocation level, and the current water supply mix available to each customer agency before the Board would apply any action stage listed above.

Once the Board determines what action is necessary, the Board will adopt, by resolution, the appropriate stage of action, which will take effect immediately and the District's customer agencies will be notified. A draft resolution is included in Appendix E.

4.4.3 Prohibitions, Penalties and Consumption Reduction Methods

Through the years the District has developed strong relationships with its customer agencies to promote community awareness of water conservation. Should water reductions become necessary, the District will work with each city, water agency or investor owned water company within its service area to encourage the adoption of water waste prohibition measures that establish mandatory water use restrictions. Moreover, the District will provide the necessary assistance and information to apply the best suited water reducing practice(s) for each customer agency.

Additionally, the District will encourage behavioral change through the adoption of an appropriate water rate structure. As part of MWD's WSDM Plan, the District will pass through additional charges; where MWD will enforce water reductions by setting a minimum amount per AF for any deliveries exceeding a member agency's allotment up



to 102 percent, once an allocation plan is determined. Any deliveries exceeding 102 percent will be assessed a surcharge equal to three times MWD's full-service rate. The District will impose MWD's penalties for excess use to its customer agencies that exceed their allocation.

4.4.4 Impacts to Revenue

The District will seek to recover the shortfall of revenue caused by water reductions from its Rate Stabilization Fund as well as from any surplus revenues collected from excess penalties. Moreover, the District will closely monitor its revenue and expenditure impacts on a monthly basis, and respond with any rate adjustments needed at each action stage.

Through the District's imported water invoices per connection, the District will measure each customer agencies' actual performance on a monthly basis.

4.4.5 Catastrophic Supply Interruption

In the event imported water supplies are interrupted from a catastrophic event, the District, through coordination with MWD, can respond at both a regional and a local level.

In the event that an emergency such as an earthquake, system failure, or regional power outage, etc. affected the entire southern California region, MWD would take the lead and activate its Emergency Operation Center (EOC). The EOC coordinates MWD's and the District's responses to the emergency and concentrate efforts to ensure the system can begin distributing potable water in a timely manner.

If circumstances render the southern California's aqueducts to be out of service, MWD's Diamond Valley Lake can provide emergency storage supplies for its entire service area's firm demand for up to six months. With few exceptions, MWD can deliver this emergency supply throughout its service area via gravity, thereby eliminating dependence on power sources that could also be disrupted. Furthermore, should additional supplies be needed, MWD also has surface reservoirs and groundwater conjunctive use storage accounts that can be drawn upon to meet additional demands. The WSDM plan guides MWD's management of available supplies and resources during an emergency to minimize the impacts of a catastrophic event.

Locally, the District has the Member Agency Response System (MARS) to immediately contact its customer agencies and MWD during an emergency about potential interruption of services and the coordination of critical resources to respond to the emergency, also known as mutual aid. The MARS is a radio communication system developed by MWD and its member agencies to provide an alternative means of communication in extreme circumstances. The District is currently in the process of enhancing its communication system in order to provide a more rapid response.





Water Quality

This section discusses the Water Quality within West Basin's service area



5.1 Overview

Compliance with water quality regulations within West Basin's service area is a critical water management activity. MWD is responsible for complying with State and Federal drinking water regulations on its imported water sold to West Basin. West Basin's retail customer agencies are responsible for ensuring compliance in their individual distribution systems and at the customer tap.

For groundwater quality, West Basin assists retail agencies in its service area in meeting drinking water standards through its *Cooperative Basin-Wide Title 22 Groundwater Quality Monitoring Program*. Title 22 refers to the California Code of Regulations section pertaining to both domestic drinking water and recycled water standards. West Basin offers this program to water agencies for wellhead and reservoir sample collection, water quality testing and reporting services. Sampling is conducted for compliance with the Federal Safe Drinking Water Act and Title 22 regulations. Three agencies in West Basin's service area participate in the monitoring program. Results are compiled in a published annual report called the Consumer Water Quality Report.

The West Basin Water Recycling Plant (WRP), located in El Segundo, processes and distributes water through three distinct treatment trains: Title 22, Barrier, and Boilerfeed. Tertiary recycled water meeting Title 22 standards is used for a wide variety of industrial and irrigation purposes where high-quality, non-potable water is needed. The WRP also produces recycled water to meet the strict standards required for injection into the West Coast Basin Barrier Project to protect the underground aquifer from seawater intrusion. The Boilerfeed treatment process produces high-quality water treated through microfiltration and reverse osmosis for use in oil refinery boiler systems.

5.2 Quality of Existing Water Supplies

Providing a safe drinking water supply to consumers is a task of paramount importance to MWD and West Basin. All prudent actions are taken to ensure that water delivered throughout the service area meets or surpasses drinking water standards set by the State's primary water quality regulatory agency, the California Department of Health Services (CDHS). MWD is also proactive in its water quality efforts, protecting its water quality interests in the SWP and Colorado River through active participation in the regulatory arena and in treatment processes that provide the highest water quality from both sources.



A number of issues are considered when evaluating alternative water supply options. Of primary consideration is a project's ability to provide a safe, reliable, and cost-effective drinking water supply.

5.2.1 Imported Water

West Basin's imported water comes from the SWP and Colorado River via MWD pipelines and aqueducts. MWD tests its water for microbial, organic, inorganic, and radioactive contaminants as well as pesticides and herbicides. Protection of MWD's water system is a top priority. In coordination with its 26 member agencies, MWD 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.¹ MWD 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, MWD monitors and samples elements that are not regulated but have captured scientific and/or public interest.

MWD has a strong record of identifying those water quality issues that are most concerning and have identified necessary water management strategies to minimize the impact on water supplies. Part of its strategy is to support and be involved in 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.² This exchange project was discussed earlier as a means to convey higher quality water to MWD.
 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** – MWD, in conjunction with DWR and the U.S. Geologic Survey, 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 total dissolved solids and bromide concentrations in water from the Delta.

¹ MWD's website, www.mwdh2o.com/mwdh2o/pages/yourwater/2005_report/protect_02.html

² The MWD Water District of Southern California, Regional Urban Water Management Plan, 2005



- **Source Water Protection** – In 2001, MWD completed a Watershed Sanitary Survey as required by CDHS to examine possible sources of drinking water contamination and identify mitigation measures that can be taken to protect the water at the source. CDHS requires the survey to be completed every five years. MWD 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.³

5.2.2 Groundwater

As part of West Basin's customer service, the Water Quality Department works closely with regulatory agencies to assist retail agencies in meeting State and Federal drinking water regulations through the *Cooperative Basin-Wide Title 22 Groundwater Quality Monitoring Program*. This voluntary program offers water quality testing to purveyors in the service area, funded through an annual assessment. The District's Water Quality staff coordinates a wellhead and reservoir water quality testing at approximately 7 groundwater wells in the service area to ensure high quality of the local supply of drinking water. Under the program, a contract laboratory provides sampling, analytical and reporting services. Laboratory results are reported to the District, retail agencies, and the CDHS. The program helps retail agencies save time and expense while providing a valuable service for public health.

Other services provided under the program are an annual report summarizing water quality throughout the basin, and production of the annual Customer Water Quality report at the purveyor's request. The Customer Water Quality Report is required by State and Federal law. District water quality staff has prepared Annual Consumer Water Quality Reports for several West Basin purveyors for over ten years.

Water Replenishment District Programs

As the regional groundwater management agency for the Central and West Coast Groundwater Basins, the WRD has several active programs to monitor, evaluate and mitigate water quality issues.

Under its Groundwater Quality Program, WRD continually evaluates current and proposed water quality compliance in agency production wells, monitoring wells, and recharge/injection waters of the groundwater basins. If non-compliance is identified, WRD staff develops a recommended course of action and associated cost estimates to address the problem and to achieve compliance. WRD also monitors and evaluates the impacts of pending drinking water regulations and proposed legislation.

³ The MWD Water District of Southern California, Regional Urban Water Management Plan, 2005



WRD's Regional Groundwater Monitoring Program consists of a network of about 200 WRD and USGS-installed monitoring wells at 45 locations throughout the District. Monitoring well data is supplemented with information from production wells to capture the most accurate information available. WRD staff, comprised of certified hydrogeologists and registered engineers, provides the in-house capability to collect, analyze and report groundwater data. This information is stored in the District's GIS database and provides the basis to better understand the characteristics of the Central and West Coast Groundwater Basins.

WRD's Safe Drinking Water Program (SDWP) is intended to promote the cleanup of groundwater resources at specific well locations. Through the installation of wellhead treatment facilities at existing production wells, the District hopes to remove contaminants from the underground supply and deliver the extracted water for potable purposes. Projects implemented through the program are accomplished through direct input and coordination with well owners. The current program focuses on the removal of volatile organic compounds (VOCs) and offers financial assistance for the design and equipment of the selected treatment facility.

More information regarding these and other groundwater management programs can be found in the WRD's current Engineering and Survey Report and Regional Groundwater Monitoring Report.

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 West Basin customers are summarized in the following sections.

5.2.3 Groundwater Recovery- Saltwater Plume

Although construction of seawater barriers was effective in halting the intrusion of seawater into the WCGB, exiting plumes of brackish water are still trapped behind the barriers. In the early 1990's, West Basin completed the C. Marvin Brewer Desalting facility in the City of Torrance area as a demonstration project for removing and treating brackish water from 2 existing drinking water wells. Enhancements in the Desalter's water supply and water quality in 2005 included the replacement of 2 wells with a new, more productive well. This well will have a design capacity of approx. 1,000 to 1,500 gallons per minute (gpm). This corresponds to approximately 1,600 to 2,400 AFY of saltwater treatment capability.

Since 2002, WRD has been operating the Robert W. Goldsworthy Desalter, located adjacent to West Basin's Brewer Desalter. Product water from the Goldsworthy Desalter is delivered for potable use to the City of Torrance's water distribution system.



5.2.4 Recycled Water

West Basin's WRP, in continuous operation since 1995, has conserved over 48 billion gallons of imported water by serving reliable supplies of recycled water for a wide variety of non-potable uses. The WRP produces five different types of water quality, from irrigation water to ultra-pure water for groundwater injection and industrial boilerfeed. Tertiary treated recycled water meeting California Title 22 regulations is produced for non-potable irrigation use through a conventional treatment process of flocculation, coagulation, filtration and disinfection. Some Title 22 recycled water is further treated in a process called nitrification for use in refinery cooling towers.

Barrier water is high quality recycled water that undergoes lime or microfiltration pretreatment, reverse osmosis and disinfection. The resulting product is higher quality water than the Colorado River or SWP water from Northern California, with one-half the salt concentration of existing groundwater and one-fifth the salt concentration of Colorado River water. This purified water is blended with imported potable water from MWD before being injected into a series of wells that act as a barrier to protect inland fresh water supplies from sea water intrusion. Upgraded treatment facilities are being constructed that will improve the barrier water product quality, including state-of-the-art microfiltration, and disinfection with ultraviolet (UV) and hydrogen peroxide.

The last two water quality types are treated with microfiltration and reverse osmosis to an ultra-pure quality for use in refinery boiler feed. More information on West Basin's water recycling efforts is included in Section 8 of this Plan.

5.2.5 West Coast Barrier Monitoring Well

The Barrier Monitoring Well will be completed in June 2005. This well will monitor the quality of the groundwater down-gradient of the barrier. West Basin is committed to monitoring and maintaining the high quality of the seawater barrier and surrounding groundwater from migrating contamination sources. The monitoring well will be essential in providing critical water quality data for the surrounding groundwater. The well is located within a three to six-month groundwater travel time from the barrier injection wells. This will serve as a first line of monitoring the blended water quality.

5.2.6 Ocean Water Desalination

West Basin's Desalination Pilot Project (Pilot Project) marked the first use of microfiltration as a pretreatment to reverse osmosis for ocean water desalination. The goal was two-fold: 1) identify optimal performance conditions and 2) evaluate the water quality. The research findings would then be shared with the rest of the industry on the suitability of microfiltration/ reverse osmosis technology for producing potable water from ocean water.



Since it first began operation, West Basin has identified the optimal operating parameters for desalination and will continue with the research, focusing primarily on water quality. Along with 500 analytical tests performed monthly, additional water quality studies will be completed under the auspices of the American Water Works Association Research Foundation (AWWARF). The Pilot Project's analytical test results indicate that the quality of the desalinated ocean water meets current State and Federal drinking water standards set by the CDHS and the EPA. West Basin's plan for the future is a full-scale desalination plant capable of providing 20,000 AFY of potable water, enough to supply 40,000 families (of four) for a year. More information on West Basin's ocean water desalination efforts is included in Section 9 of this Plan.

5.3 Effects on Water Management Strategies

Retail water agencies in densely populated southern California are acutely aware of the economic impact of water quality on a public water system. Management strategies must be developed to maintain a safe, reliable supply at reasonable cost without jeopardizing water quality and public health. Water quality, pressure, and supply are maintained through operational practices that can include wellhead treatment for contaminated groundwater sources, or blending down contaminated groundwater with purchased imported surface water from MWD or high quality groundwater from adjacent purveyors.

5.4 Effects on Supply Reliability

Poor water quality makes a water source unreliable, affects overall supply and increases the cost of serving water to the public. More importantly, it results in a loss of customer's confidence, which can be very difficult to overcome, even after water quality is restored. A water source that fails drinking water regulations must be taken out of service. The source can be restored through treatment or other management strategies.

Groundwater can become impaired through leaching of contaminants into an aquifer, or by excessive concentrations of naturally-occurring constituents that impact quality, such as arsenic. Surface water sources become contaminated from human activities in the watershed or through deliberate contamination.



Water Conservation



This section discusses the Water Conservation efforts within West Basin’s service area

6.1 Overview

Since the drought of the 1990’s, West Basin has been a leader implementing aggressive water conservation programs to help limit water demand in its service area. District programs have included a strong emphasis on education and the distribution of rebate incentives and plumbing retrofit hardware. The results of these programs, in conjunction with passive conservation measures such as modifications to the plumbing and building codes, have resulted in significant reductions in retail water use within West Basin’s service area. By current estimates, demand management conservation saves over 4.5 billion gallons of imported water every year. This represents the average water use of almost 30,000 families (of four) in southern California.

West Basin’s conservation programs are made up of a wide array of cost-effective programs that contribute to conserving water, improving water quality, reducing imported water needs and increasing the region’s water supply reliability.

West Basin prides itself in the partnerships it has created with Federal, State, and local entities to offer these programs. By developing integrated programs with its partners, West Basin has been able to leverage funding and resources to provide effective programs throughout its region.

This section will present the past and current water conservation efforts West Basin has undertaken since 1990. In addition, this section provides a detailed analysis of West Basin’s water conservation programs, implemented in accordance with the California Urban Water Conservation Council’s (CUWCC) recommended Best Management Practices (BMPs), followed by a brief description of West Basin’s upcoming conservation efforts and its Conservation Master Plan to promote additional water savings for the service area by the year 2030.

Water Conservation is made of two main elements: *Active* and *Passive*. Below is a brief description of these two.

Active Conservation: Water savings produced from incentive based programs: Rebates, Giveaways, Retrofits, etc.

Passive Conservation: Water savings produced from building and plumbing codes, consumer behavioral changes, and price responses.

6.2 West Basin’s Past and Current Water Conservation Efforts

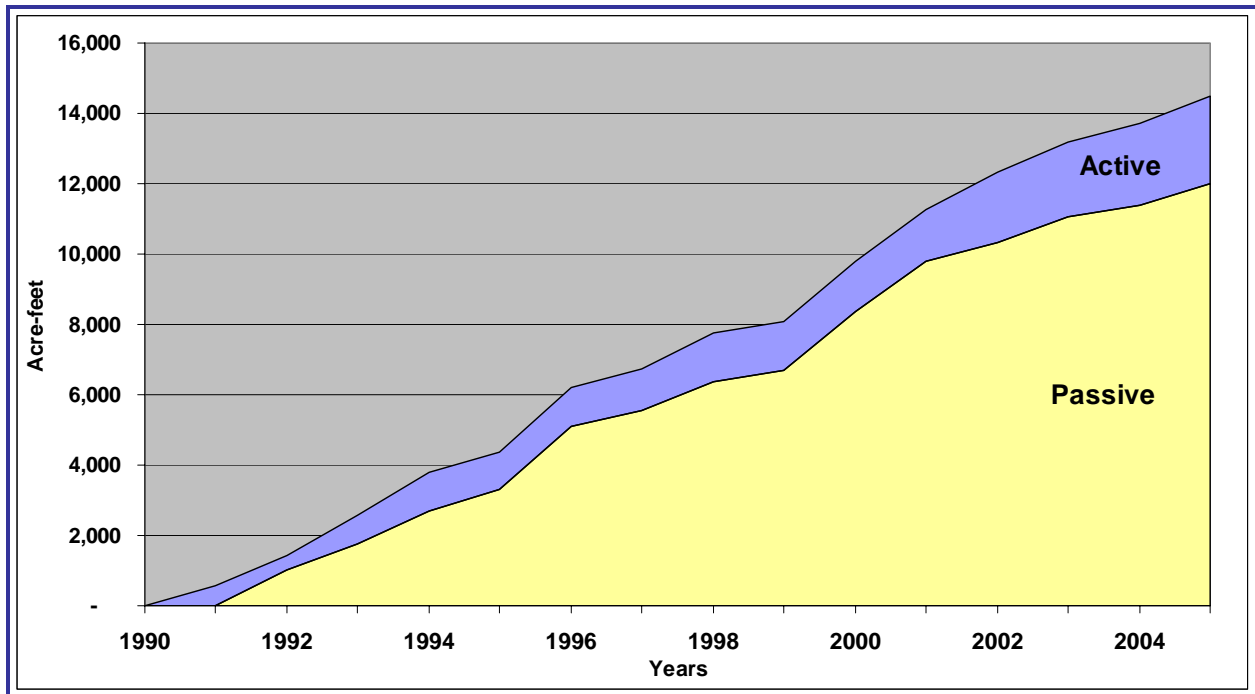
Today, West Basin’s conservation programs are made up of a wide array of cost-effective programs, which include:



- Zero Water Consumption Urinal Program
- Ultra Low Flush Toilets
- High Efficiency Clothes Washer Rebate Program
- Commercial, Industrial, and Institutional Rebates
- Commercial Clothes Washers
- Water brooms
- Cooling Towers Conductivity controllers
- Pre-rinse spray nozzles
- X-ray machine Recirculating devices
- Landscape Conservation Programs
- Weather Based Irrigation Controller
- Landscape Classes
- School Education Programs
- Public Outreach

It is estimated that West Basin has distributed and installed over 274,000 devices from 1990 to 2003. As a result, it is estimated that West Basin currently saves, from active and passive conservation combined, over 14,500 AF (4.7 billion gallons), or 7 percent annually, of West Basin’s total water demand. The total cumulative savings since 1990 is over 116,000 AF.

Figure 6-1
West Basin Conservation Water Savings
From 1990 to 2005

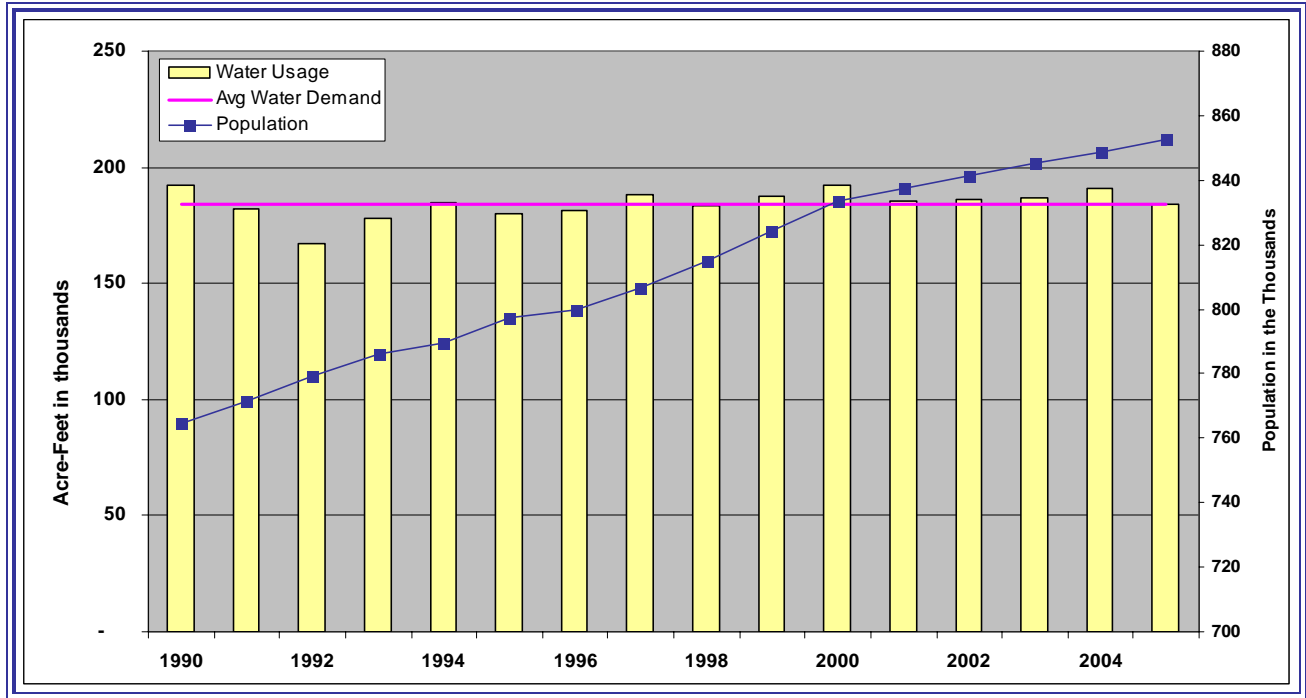


Source: Estimated total water savings from conservation from MWD-MAIN Model 2004.

Conservation savings can further be verified by comparing West Basin’s water usage versus population. As shown in Figure 6-2, water usage has remained relatively consistent while population has escalated an average of 1% annually.



Figure 6-2
Total Retail Water Demand vs. Population Growth
From 1990 to 2005



Source: Information based on MWD Demographic Data, 2005.

Note: The total retail demand does not include replenishment sale i.e. Barrier Sales - RW & Imported

6.2.1 Metropolitan Water District’s Conservation Goal

MWD, in adopting its 2004 IRP Update, is committed to an aggressive water conservation goal. MWD’s IRP Update set water supply targets for southern California through 2025, which includes a conservation target of 1.1 MAF over the next 20 years. MWD’s strategy and approach for meeting the conservation targets is outlined in a “Conservation Strategy Plan.” The Strategy Plan emphasizes three main areas of incentive based conservation: Residential, Landscape, and Commercial, Industrial & Institutional (CII), and provides Board policy guidelines and action plans for the implementation of conservation under MWD’s Conservation Credit Program.

6.3 California Urban Water Conservation Council

In 1991, the CUWCC was created to increase water use efficiency by integrating urban water conservation BMPs into the planning and management of California water agencies. It is a partnership of agencies and organizations concerned with water supply and conservation of natural resources in California.

To encourage water use efficiency, the CUWCC asked water agencies and organizations to sign a Memorandum of Understanding (MOU) regarding urban water conservation in California, which committed participating urban water suppliers to use their “good faith efforts” to implement the CUWCC’s 14 BMPs.



West Basin was one of the first urban water suppliers to become signatory to the CUWCC’s MOU. In addition, West Basin has submitted a *Best Management Practices Wholesaler Water Agency Report* to the CUWCC every other year that details West Basin’s progress in implementing the 14 BMPs as currently specified in the MOU. In Appendix F, the District has attached its 2003-04 CUWCC Report.

The BMPs are becoming increasingly important as benchmarks of agency conservation efforts throughout the State. This UWMP, for example, requires agencies that are not members of the CUWCC to describe current and future implementation efforts for all 14 BMPs (referred to as Demand Management Measures, or DMMs). Eligibility for grant funding from State agencies, such as DWR, is now contingent upon satisfactory completion of the urban water management plans, and the conservation reporting within them.

6.3.1 Best Management Practices (BMPs)

The BMP’s are a list of recommended conservation measures that have been proven to provide reliable savings to a given urban area. There are currently 14 BMPs that a signatory member is committed to implement. Table 6-1 lists the 14 existing BMPs.

**Table 6-1
List of Best Management Practices for
California Urban Water Conservation Council**

1. Residential Water Surveys <i>Indoor and outdoor audits of residential water use and distribution of water-saving devices</i>
2. Residential Plumbing Retrofits <i>Distribution or installation of water-saving devices in pre-1992 residences</i>
3. System Water Audits <i>Unaccounted for water calculated annually, and distribution system audits as required</i>
4. Metering with Commodity Rates <i>Metering of consumption and billing by volume</i>
5. Large-Landscape Conservation <i>ET-based water budget for large landscape irrigators</i>
6. High Efficiency Clothes Washers <i>Rebates for efficient washing machines</i>
7. Public Information <i>Public information to promote water conservation</i>
8. School Education <i>Provision of education materials and services to schools</i>



<p>9. Commercial, Industrial, and Institutional Conservation (CII) <i>Programs to increase water use efficiency in CII sectors</i></p>
<p>10. Wholesale Agency Assistance <i>Support by wholesalers for conservation programs of retail water suppliers</i></p>
<p>11. Conservation Pricing <i>Uniform or increasing block rate structure, volume related water charges, and service cost recovery</i></p>
<p>12. Conservation Coordinator <i>Designation of staff coordination of agency conservation programs</i></p>
<p>13. Water Waste Prohibition <i>Enforced prohibition of wasteful use of water</i></p>
<p>14. Residential Ultra-Low Flush Toilet Replacement <i>Programs promoting replacement of high-water-using toilets with ultra-low flush toilets</i></p>

As a signatory to the MOU, West Basin currently implements the wholesaler BMPs, which are BMPs #3, 7, 8, 10, 11, and 12. Although only certain BMPs apply to a wholesaler, West Basin also provides additional support to its cities and water retailers (customers) through BMP #10. As a water wholesaler representing 17 cities throughout the South Bay, West Basin also supports its customers with BMPs #5, 6, 9, and 14. In order to enhance the programs, West Basin offers partnership opportunities to its customers who can add additional funding and resources in order to increase the size of the programs or rebates, which increases participation and water savings.

6.4 West Basin’s Conservation Programs

West Basin’s mission is to ensure a safe, reliable supply of water to its service area. Since the drought of the early 1990s, West Basin has strived to expand its role in water use efficiency. Not only is water conservation and education a method for public outreach, but an essential part of West Basin’s water resources portfolio to drought-proof the region.

Although West Basin is required to meet only the wholesaler BMPs, West Basin is committed to assisting its customer agencies with their conservation efforts. Described below are West Basin’s efforts in each of the 14 BMPs.

6.4.1 BMP #1 - Water Survey Programs for Single-Family Residential and Multi-Family Customers

Residential surveys look to all the water using devices inside the home such as toilets, faucets, and showerheads. A trained surveyor checks for leaks and tests the flow indoors and outdoors. Once the survey is completed, recommendations are provided



for retrofitting certain water use devices, and educational materials are also supplied to the resident.

Because West Basin is a water wholesaler and does not have direct access to single or multi-family customer account data, West Basin can only provide support to the water retailers. MWD currently provides funding for residential survey devices, and if requested, West Basin will act as the liaison to MWD and provide retailers with funding available through MWD. It is anticipated that West Basin will review the market strategy for promoting residential water use surveys within the Conservation Master Plan.

Residential surveys provide cities and water retailers with a great opportunity to provide their customers with a program that offers customer outreach opportunities.

6.4.2 BMP #2 - Residential Plumbing Retrofit

This BMP recommends the distribution and retrofit of low-flow showerheads, ultra-low flush toilets, and faucet aerators, as well as the adoption of enforceable ordinances.

Since 1990, it is estimated that West Basin has distributed the following number of faucet aerators and low-flow showerheads.

**Table 6-2
Residential Plumbing Retrofit Devices**

Devices	1990-2000		2000-2005		Total	
	# units	AF	# units	AF	# units	AF
Faucet Aerators	954	3	0	0	954	3
Low-flow Showerheads	215,563	1,014	7,500	35	223,063	1,049

6.4.3 BMP #3 - System Water Audits, Leak Detection, and Repair

In 1996, West Basin and its sister agency, Central Basin Municipal Water District, partnered with the United States Bureau of Reclamation (USBR) and hired a consultant to develop and provide a Water Audit and Leak Detection Program (Program). The Program was offered to 40 water purveyors. Of the 40, 10 participated in the audit, and of the 10, only three agencies found their unaccounted for water to be above 10%.

According to BMP #3, water retailers shall complete an annual pre-screening system audit of its potable water system to determine the need for a full-scale system audit. This BMP is geared more towards a water retailer, but West Basin has provided support in the past. As part of its Conservation Master Plan, West Basin will seek input from its water retailers regarding support for this program.

6.4.4 BMP #4 - Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections



Since West Basin is a water wholesaler, this BMP does not directly apply. However, every water agency within West Basin's service area bills their retail customers according to meter consumption. This BMP requires that agencies identify intra- and inter-agency disincentives and barriers to retrofitting mixed use commercial accounts with dedicated landscape meters and conduct a feasibility study to assess the merits of a program that provides incentives to switch mixed use accounts to dedicated landscape meters.

By encouraging the installation of dedicated landscape meters, agencies will be able to recommend the appropriate irrigation schedules through future landscape programs.

6.4.5 BMP #5 - Large Landscape Conservation Programs and Incentives

Despite the urbanization of southern California, the region is dotted with large turf areas that require year-round irrigation to keep them green. Large turf areas include city and county parks, golf courses, schools, cemeteries, and street medians. West Basin is reducing demand for imported water for irrigation purposes by providing recycled water in its service area. Virtually anywhere potable water is used to irrigate, recycled water can, and should, replace it. However, in areas where recycled water is not available, West Basin provides other programs to conserve water. Below is a list of the programs West Basin is currently implementing.

Irrigation Controller Programs

In 2004, MWD was awarded a Proposition 13 grant for a new Weather-Based Irrigation Controller (WBIC) Program. MWD and its member agencies developed a Project Advisory Committee (PAC) to work on developing the program, which includes marketing, reporting, databasing, and implementing. MWD allocated a limited amount of funding to each member agency for this program. West Basin has been working with the PAC to develop the program. West Basin recognizes the water savings potential and is beginning to test weather-based irrigation controllers in sites that use potable imported water. The plan is to use the new controllers in areas where recycled water is unavailable. The funding incentives provided vary based on the number of stations and acreage at each site. The funding is used to help pay for the hardware and to help motivate cities, parks, and schools to participate in the program.

Protector Del Agua Irrigation Program

West Basin also partners with MWD on the "Protector Del Agua" or "Protector of Water" landscape classes. In partnership with cities, classes are offered to residents as a way to teach them about various topics that help conserve water and reduce urban runoff. Residents learn about gardening with native plants and using weather-based irrigation controllers to conserve water and reduce runoff.



Over 50% of the potable water in southern California is used for maintaining landscaping; therefore, offering these classes is an ideal way to reduce outdoor water use and waste. By educating the public on properly maintaining the irrigation system, trouble-shooting problems, such as over-watering, that are simple yet difficult to address, can be solved without spending additional funding.

Ocean Friendly Gardens

Also in 2005, West Basin formed a partnership with the Surfrider Foundation to develop “Ocean Friendly Garden” workshops and demonstration gardens. West Basin took the lead in applying for a State grant to help finance the classes. The classes focus on planting “ocean friendly plants” and installing weather-based irrigation controllers as a way to reduce urban runoff that finds its way to the local waterways and the ocean. The installation of water efficient plants and efficient sprinkler controllers can conserve between 20%-50% water and reduce runoff by up to 70%.

6.4.6 BMP #6 - High-Efficiency Washing Machine Rebate Programs

Beginning in 1999, West Basin participated with MWD in a pilot program with Southern California Edison (Edison) to offer rebates to residents who replaced their existing clothes washer with a high efficiency model. The rebate from Edison varied according to the model purchased (which was tied into the total energy savings), but the amount offered by West Basin and MWD at the time was capped at \$35 per washer. That pilot program ended in September 1999.

In 2003, West Basin again partnered with MWD on a new program. MWD received funding from CALFED and provided a higher rebate incentive. West Basin developed the program and offered residents a \$100 rebate.

The CALFED portion of the funding expired, but the program was so successful that, at the request of the MWD member agencies, MWD continued to provide funding at the current level. The High-Efficiency Clothes Washer (HECW) Program has exceeded all expectations and continues to be one of West Basin’s more successful programs. When the HECW’s first hit the market, they were quite expensive; but market demand has helped to drive the price down. The new HECW’s cost twice as much as regular inefficient models, but by providing a \$100 rebate (along with other utility/store incentives), consumers are purchasing the new HECW’s. In addition to saving 50% water, the HECW’s also have other benefits: they save 60% electricity and use less detergent. Consumer acceptance has been very positive.

In 2004, the MWD Board of Directors, along with the support of West Basin, approved additional funding to continue the program through 2005. At the same time, MWD applied for Proposition 50 funding in an effort to maintain the program at the higher incentive level through 2006. MWD was successful in its Prop. 50 application and was awarded roughly \$1.6 Million from the California Department of Water Resources for the



High-Efficiency Clothes Washer Rebate Program. This funding will allow MWD and West Basin to continue offering its \$100 rebate to residents in an effort to encourage the purchase of high-efficient clothes washers with a Water Factor (WF) of 6.0 or less.

The Water Factor of a clothes washer can range from 13.5 to 3.6, with the lower number being more efficient. A complete list of qualifying washers can be obtained at MWD’s web site, www.bewaterwise.com, or by calling the District’s program vendor at, 1-800-442-0467.

In 2003, the Governor of California signed Assembly Bill 1561 that would require clothes washer manufacturers to only manufacture and provide residential washers with a WF of 8.5 in 2007 and 6.0 by 2010. The legislation was adopted by the California Energy Commission and was submitted to the Federal Government for approval. The Federal Government must approve this legislation before the new standards can be applied. This process is anticipated to take 1 – 2 years.

As long as funding is available, MWD and West Basin will continue offering its \$100 rebate to residential customers for clothes washers with a WF of 6.0 or less. Table 6-3 illustrates the number of rebates West Basin has distributed over the past two years.

**Table 6-3
High-Efficiency Washing Machine**

	2003	2004	Total
\$ per Rebate	\$100	\$100	\$100
# of Rebates	104	602	706
Water Savings (AF)	1.6	9.4	11

In an effort to continue the successful washer rebate program, MWD along with its member agencies, applied for and received Proposition 50 funding from DWR in the amount of \$1,660,000. This funding will allow West Basin to continue its program through 2006.

6.4.7 BMP #7 - Public Information Programs

“Public information” is a very broad term with various meanings. Since West Basin operates a strong outreach program, public information about West Basin and its mission, programs and events are constantly disseminated to many interested parties. The method by which the public receives this information is important.

- The first significant method is the Public Information Committee (PIC), formed several years ago. The Committee is made up of Public Information and Public Affairs Officers from cities and water agencies within West Basin’s service area. The purpose is to share information on a variety of topics that would be of interest to customers.



- West Basin, in cooperation with MWD, also provides inspection tours of the Colorado River Aqueduct and the State Water Project to legislators, local elected officials, retail agency staff, and the general public on various dates throughout the year. The purpose of the three-day trips is to give local decision-makers a better understanding and appreciation of the water supply throughout the State.
- West Basin, through its Speaker's Bureau, provides speakers to local community groups, service clubs, and schools when requested. In addition, West Basin operates a very successful and aggressive school education program that promotes the importance of conservation and recycled water.
- In October 1999, West Basin began its first annual "Water Harvest Festival" located at the West Basin Water Recycling Plant in El Segundo. West Basin invites children and their parents to participate in a variety of games and to obtain information on water recycling and conservation.
- West Basin is also active in the California Water Awareness Campaign (CWAC), which is an association formed several years ago to coordinate efforts throughout the State during "May is Water Awareness Month." With this effort, water agencies throughout the State, large and small, can tap into a large pool of knowledge and materials to promote a water awareness message not only in May, but throughout the year.
- West Basin maintains a strong link with the local news media through press releases on important subjects and periodic meetings with newspaper editorial boards.

6.4.8 BMP #8 - School Education Programs

Water and environmental education continue to be critical components of West Basin's outreach strategy. Therefore, West Basin offers a variety of elementary through high school programs free of charge to all schools within its service area. The following is a list of West Basin's current and future education programs. Descriptions of each program can be found in Section 6.5.

- Planet Protector Water Explorations
- Think Earth It's Magic
- Conservation Connection
- Think Earth Curriculum Kits
- Water Awareness Month Poster Contest
- Water Wanderings: A Journey Through Water
- SEWER SCIENCE

6.4.9 BMP #9 - Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts



West Basin, in partnership with MWD, participates in MWD’s region-wide CII rebate program. West Basin helps promote these rebates to the businesses, schools and facilities throughout its service area. Rebates are offered for commercial clothes washers, waterbrooms, cooling tower conductivity controllers, pre-rinse spray nozzles, x-ray machine recirculating devices and commercial toilets and urinals.

In 2002, the CUWCC pursued and received a \$2.3 million grant from the California Public Utilities Commission (CPUC) to purchase and install restaurant pre-rinse spray nozzle valves. The new nozzles use 1.6 gpm compared to 2 to 6 gpm valves. These valves conserve water, heating costs, and reduce waste-water discharge. West Basin supported CUWCC’s efforts in marketing the program. The nozzles and installations were provided free of charge to the food services sector.

In 2005, West Basin entered into a 10-year agreement with MWD to help support the on-going regional marketing efforts of the CII rebate program. As a way to increase the success of this program, West Basin offers its cities and water purveyors with partnering opportunities to increase the rebate amounts. Over the years, agencies have partnered to provide higher rebate incentives in an effort to increase program participation of their customers.

6.4.10 BMP #10 - Wholesale Agency Programs

The programs provided by West Basin are done in partnership with and benefit the following retail water agencies that are located within the 17 cities serviced by West Basin: 1) California American Water Company 2) California Water Service Company 3) City of El Segundo 4) City of Inglewood 5) City of Lomita 6) Los Angeles County Water Works #29 7) City of Manhattan Beach, and 8) Southern California Water Company.

Among the 14 BMPs West Basin provides assistance for are:

- **BMP #3 - System Audits**
- **BMP #5 - Landscape Programs**
- **BMP #6 - Washing Machines**
- **BMP #7 - Public Information**
- **BMP #8 - School Education**
- **BMP #9 - CII Rebates**
- **BMP #10 - Wholesaler Incentives**
- **BMP #12 - Water Conservation Coordinator**
- **BMP #14 - ULFT Replacement**

Since 2000, West Basin has acquired more than \$1 million from State and local grant funding sources for program development and implementation. Furthermore, West Basin markets, designs and implements a majority of the BMPs within its service area. West Basin has also invested over \$1 million to provide conservation programs that help increase water supply reliability for the region.

West Basin plans on expanding its conservation programs and the support it provides to cities and water retailers in their conservation program efforts.



6.4.11 BMP #11 - Conservation Pricing

In 2003, West Basin passed-through MWD's two-tiered rate structure to its customer agencies to promote water conservation and regional water supply reliability. This rate structure called for customer agencies, in coordination with West Basin, to develop a reasonable budget for their Tier 1 annual maximum limit for imported water. Through voluntary purchase agreements, these customers will pay a higher price (Tier 2) for purchases that exceed their Tier 1 allotment.

To help assist agencies from exceeding their Tier 1 allocation limits, West Basin works with agencies to enhance conservation, education and expand recycled water use.

6.4.12 BMP #12 - Water Conservation Coordinator

As the regional wholesaler, West Basin has a full time water conservation coordinator who not only promotes West Basin's conservation programs and devices but also works with cities and water agencies to enhance their conservation efforts. This close collaboration between West Basin's conservation coordinator and the customer agencies' staff provides for a successful execution of the BMPs. In addition, West Basin's conservation coordinator represents the service area at regional and statewide workshops and organizations.

West Basin's conservation coordinator also seeks Federal, State, and local funding to develop new programs that cities and water purveyors can partner on and provide additional benefits to the end-users.

6.4.13 BMP #13 - Water Waste Prohibition

West Basin encourages its customer agencies to adopt water waste prohibition ordinances. West Basin can also assist local cities and agencies in the development of ordinances that will reduce water wasting in the area.

6.4.14 BMP #14 - Residential Ultra-Low-Flush Toilet (ULFT) Replacement Programs

One of West Basin's more successful programs has been its free ULFT distribution program. Since 1991, West Basin has provided over 80,000 ULFTs to the public "free of charge" in an effort to conserve water. These devices have proven water savings and have contributed to the overall water reduction over the years.

In 2004, West Basin partnered with MWD on a joint-project to identify the existing opportunity within West Basin's service area for this device. Data shows that there are still many inefficient toilets that need to be replaced. Within West Basin, there is a 30% - 40% saturation level in many of its cities. The saturation levels and program performance will continue to be evaluated. For the time being, West Basin plans on continuing to provide ULFTs and rebates as long as funding is available, programs



continue to be cost-effective, and a significant saturation level has not been met. Due to the large areas of high density and numerous multi-family facilities, there are still many older toilets that need replacing. West Basin will continue to partner with cities and water purveyors in order to implement these programs. In addition, West Basin will continue to offer its \$50 rebate for the purchase and installation of ULFTs.

West Basin also provides a \$70 rebate for the purchase and installation of dual-flush toilets. These new toilets have the capability of flushing at either 0.8 gallons for liquids and 1.6 gallons for solids; they average 1 gallon per flush. Also, new 1 gallon per flush High-Efficiency Toilets (HET) are beginning to enter the market place. Advances in technology continue to create new conservation devices that are more water efficient than today's products.

Tables 6-4 and 6-5 illustrate the ULFT Rebate Program and the ULFT Replacement Program for the last five years.

Table 6-4
ULFT Rebate Program

	2000	2001	2002	2003	2004	Total
\$ per Rebate	\$50	\$50	\$50	\$50	\$50	n/a
# of Rebates	564	564	377	736	581	2,822
Water Savings (AF)	16	16	10	21	16	79

Table 6-5
ULFT Replacement Program (Free ULFT Distribution to the Public)

	2000	2001	2002	2003	2004	Total
# of Devices	4,234	2,946	2,214	2,234	1,544	13,172
Water Savings (AF)	123	85	64	65	44	381

6.4.15 Additional Conservation Programs

West Basin is very active in working with MWD to develop new conservation programs that are included in the CUWCC BMPs. In 2005, MWD implemented several new programs that West Basin supports, including:

Synthetic Turf Program

MWD, in partnership with the USBR, developed and provided funding to test the effectiveness of using synthetic turf. West Basin helped promote the program by issuing press releases and forwarding information to cities, water purveyors, non-profit organizations and others.

City Makeover Program



West Basin continues to support MWD's City Makeover Program. Through a competitive application process, MWD provides funding for development of new water efficient landscapes that promote California native plants and water efficient techniques. More information about this program can be found on MWD's web site; www.mwdh2o.com.

Community Partnering Program

MWD, in cooperation with the Member Agencies, accepts applications from non-profit organizations and public agencies that promote discussions and educational activities for regional water quality, conservation and reliability issues. This program provides support for the following types of programs:

- after-school water education
- community water festivals
- watershed education outreach
- environmental museum exhibits
- library water resources education book drives
- public policy water conferences
- other projects that directly support water conservation or water quality education

6.5 Current and Future Education Programs

6.5.1 CURRENT PROGRAMS

Planet Protector Water Explorations

Now in its tenth year of operation, *Planet Protector Water Explorations* is a collaborative water education field trip program between West Basin and the Roundhouse Marine Research Station and Aquarium in Manhattan Beach. The Roundhouse is operated by Oceanographic Teaching Stations, a non-profit organization, and is affiliated with the Los Angeles County Office of Education.

The objectives of *Planet Protector Water Explorations* are:

1. To increase the awareness of water as a valuable and limited resource.
2. To encourage water conservation efforts.
3. To introduce the concept of water recycling.
4. To introduce the concept of ocean water desalination.
5. To increase the awareness of urban runoff pollution.
6. To teach about local marine life.
7. To promote the concept of stewardship of the environment and its resources.



By the end of the 2004-2005 school year, over 25,000 students will have experienced *Planet Protector Water Explorations*, since the program began in September 1995. Table 6-6 displays the number of students that have been educated through the *Planet Protector Water Exploration* program from fiscal year 2000-01 to fiscal year 2004-05. Beginning in fiscal year 2004-05, additional programs have become available to students, therefore increasing the number of students that become educated.

**Table 6-6
School Education Program
(Number of Students)**

Grade Level	FY 2000-01	FY 2001-02	FY 2002-03	FY 2003-04	FY 2004-05 ¹	Total
Grades K-3rd	240	250	480	690	1,014 ²	2,674
Grades 4th-6th	350	575	450	690	1,632	3,697
Grades 7th-8th	70	36	150	120	876	1,252
High School	0	70	30	30	174	304
Total	660	931	1,110	1,530	3,696	7,927

[1] Program includes *Planet Protector Water Exploration* in addition to *Think Earth It's Magic*, *Conservation Connection*, and *Think Earth* curriculum kits for Fiscal Year 2004-05 only.

[2] Only third graders participate in this program.

Think Earth It's Magic

Through West Basin's membership as part of the Think Earth Environmental Education Foundation, *Think Earth It's Magic* is a collaborative program between West Basin, Los Angeles County Sanitation Districts, and MWD. *Think Earth It's Magic* combines Think Earth's award winning environmental education curriculum, which is designed to promote conservation behaviors and stewardship of the environment, with an environmental magic show that cleverly ties together what students learn in the classroom. By the end of the 2004-2005 school year over 500 elementary school students will have participated in *Think Earth It's Magic*.

Conservation Connection

We turn on the tap and water flows out. We turn on a lamp and light fills the room. We depend on water and energy. We need water and energy to live in this world. But where do we get the water and energy that we use? And will we always have enough to meet our needs?

Conservation Connection answers those questions, showing the connections between California, our water and energy supply, and us. But providing information is only part of *Conservation Connection*. The goal of the curriculum is to get students actively involved – in their homes and at school – in conserving water and energy. Within the program, students have the opportunity to: survey



their family's water and energy use, and survey water and energy use at their school.

After gathering data, analyzing their findings, and reviewing recommendations, students make, implement, and monitor plans to decrease water and energy use. By participating in this action-based curriculum, students will learn to look critically at important environmental issues and take responsibility for finding solutions. By the end of the 2004-2005 school year over 500 middle school students will have participated in *Conservation Connection*.

Think Earth Curriculum Kits

Through West Basin's membership as part of the Think Earth Environmental Education Foundation, all teachers that participate in *Planet Protector Water Explorations* receive a grade appropriate *Think Earth* curriculum unit. *Think Earth* units are usually distributed each March, so that teachers have them prior to Earth Day in April. Each *Think Earth* unit contains a video, two color posters, a teacher's guide, and student booklets. The entire *Think Earth* curriculum is correlated to the California State Content Standards for the following content areas: Language Arts, Science, Social Science, and Mathematics. Over the past ten years over 25,000 students within West Basin's service area have participated in *Think Earth*.

Water Awareness Month Poster Contest

All teachers who have or will participate in *Planet Protector Water Explorations* are notified each February, which provide enough time to allow students to participate in the 2005 "Water Is Life" Poster Contest, which is sponsored by West Basin and MWD each May. In addition, all teachers at each of West Basin's primary and secondary schools will also be notified in February. As in previous years, one grand-prize winner is selected and receives a fully-loaded laptop computer during an award ceremony in June. Each grand-prize winner will also have his or her artwork featured in MWD's "Water Is Life" annual calendar. Over the past ten years, more than 25,000 students within West Basin's service area have participated in this program.

6.5.2 FUTURE PROGRAMS

Water Wanderings: A Journey Through Water

Water Wanderings is a collaborative classroom visitation program between West Basin and the S.E.A. Lab in Redondo Beach. This collaborative hands-on classroom program will take fourth graders on a 2 ½-hour journey through California's water. The program will be correlated to many of the fourth grade State standards for social science and science. Included in the program will also be a "touring tide pool," a van outfitted with touch tanks that will enable students



to touch live marine creatures and plants. The Program schedule calls for classes to begin in October and last through June for this upcoming fiscal year.

SEWER SCIENCE

Staff is currently exploring the possibility of partnering with the Los Angeles County Sanitation Districts on this exciting high school science program. *Sewer Science* is a hands-on laboratory program that teaches students about wastewater treatment. During a week-long lab, students create wastewater; treat it through the use of tanks employing physical, biological, and chemical methods; and apply analytical procedures to test its quality. *Sewer Science* is correlated to the California State Content Standards for the following high school sciences: chemistry, physics, and microbiology. The Program schedule calls for classes to begin in September 2005 and last through June 2006.

6.6 Funding Partnerships

In addition to partnering with MWD on programs, West Basin continually seeks State funding. In 2004 and 2005, the Department of Water Resources and the State Water Resources Control Board provided funding for programs through various chapters of Proposition 50. As a leader in water conservation, West Basin, in partnership with its cities and water retailers, developed several conservation programs and applied to the State's competitive funding process. As funding is awarded, West Basin works with its cities and water purveyors to provide programs to the local communities.

6.6.1 Proposition 50 Programs

In 2005, West Basin, with support from cities, water retailers, and environmental groups, applied for and received Proposition 50 – Chapter 7 – Water Use Efficiency Grant Funding for a complete Restroom Retrofit Program in the amount of \$294,834. This program will provide older commercial, industrial, and institutional facilities that have inefficient devices with a complete restroom retrofit that includes: water-efficient toilets, Waterfree urinals, and infrared sink sensor faucets. The program will also provide funding for installation. This new conservation program will be rolled-out in 2006.

In an effort to conserve water outdoors, West Basin also applied for Proposition 50 – Chapter 8 Funding, under the State's Integrated Regional Water Management Grant Program. West Basin partnered with various cities, water purveyors and stakeholders to develop an integrated approach at developing regional programs. Funding is being sought for the purchase and installation of weather-based irrigation controllers and for the development of "Ocean Friendly Garden" workshops. If successful, West Basin will provide education and devices that will conserve water, reduce urban runoff, reduce imported water, and increase local water supply reliability.

6.7 West Basin's Conservation Master Plan



Water Conservation, along with water recycling, will be used to meet a substantial portion of West Basin's gradually increasing water demands. The goal is to minimize West Basin's need for new imported water sources, and enhance this drought-proof resource that has no environmental impacts and is not subject to weather conditions.

Measures such as tiered water pricing, financial incentives for the installation of ultra-low flush toilets, water efficient washer machines and large landscape irrigation efficiency programs are just some of the ways West Basin provides leadership and results in the conservation arena. Conservation is a key component of West Basin's water resource planning activities and will be implemented to the fullest extent practicable over the long-term.

6.7.1 Water Conservation Master Plan

West Basin is in the process of developing its own specific Conservation Master Plan (Plan) to meet and exceed the goals of the BMPs and MWD's Conservation Strategy Plan. The goal of the Plan is to assess the conservation potential within West Basin's service area and incorporate local stakeholder input into a group of actions and strategies for achieving long-term targets for conservation. The Plan will be launched and completed by the end of the 2005-06 fiscal year.



Water Rates & Charges

This section discusses West Basin's Water Rates & Charges



7.1 Overview

The residential water bill in southern California is most likely the least expensive of a typical household's major utility bills. In fact, tap water can be purchased for much less than a penny per gallon; remarkable, considering investments made by water utilities into regulatory compliance, water use efficiency, infrastructure, and other reliability programs. This paradox applies to West Basin's service area as well, although residential water bills vary from one retail agency to another, agency depending primarily on the mix of source water purchased and/or produced.

Retail agencies that serve exclusively groundwater, for example, tend to have water rates that are lower than those that serve all imported water or a mix of groundwater and imported water. Imported water purchased from West Basin and provided by MWD, carries not only the cost of acquiring importing, purifying (treating) and distributing the commodity throughout the region, but also a long-term action plan for ensuring adequate supplies to meet growing demands through conservation, education, and new locally produced supplies.

7.2 MWD Rate Structure

In 2002, the MWD Board adopted a new rate structure to support its strategic planning vision as a regional provider of services, encourage the development of local supplies like recycled water and conservation, and ensure a reliable supply of imported water. To achieve these objectives, MWD called for voluntary purchase orders from its member agencies, unbundled its water rates, established a tiered supply rate system, and added a capacity charge. In all, these new rate structure components provide a better opportunity for MWD and its member agencies to manage their water supplies and proactively plan for future demands.

7.2.1 Purchase Orders

One of the important changes in the new rate structure was the call for voluntary purchase orders among MWD's member agencies. The Purchase Order is an agreement between MWD and a member agency, whereby the member agency agrees to purchase a minimum amount (60% of their highest year's delivery of non-interruptible water times ten) of non-interruptible water over a ten-year period - "Purchase Commitment." The economic incentive for a Purchase Commitment is that it entitles the member agency to purchase annually a set amount of non-interruptible water (Tier 1



Annual Maximum) at the lower Tier 1 rate, which is 90% of it's highest year's delivery of non-interruptible water.

In the case of West Basin, the highest delivery of non-interruptible water was 174,304 AF in 1990. As shown below in Table 7-1, West Basin's Tier 1 Annual Maximum is 156,874 AF with a Purchase Commitment of 1,045,824 AF by the end of 2013.

Table 7-1
West Basin
Purchase Order Terms

Initial Base Allocation	Tier 1 Annual Maximum (90% of Base)	Purchase Commitment (60% of Base x 10)
174,304 AF	156,874 AF	1,045,824 AF

Since signing a Purchase Order with MWD, West Basin has remained below its Tier 1 Annual Maximum and has been on track to meet its Purchase Commitment by the year 2013.

7.2.2 Unbundled Rates and Tier 1 & 2

To clearly justify the different components of the costs of water on a per acre foot basis, MWD unbundled its full service water rate. Among the components MWD established are:

Supply Rate Tier 1 – Reflects the average supply cost of water from the Colorado River and State Water Project.

Supply Rate Tier 2 – Reflects the MWD costs associated with developing new supplies, which is assessed when an agency exceeds its Tier 1 limit of firm deliveries.

System Access Rate – Recovers a portion of the costs associated with the conveyance and distribution system, including capital and operating and maintenance costs.

Water Stewardship Rate – Recovers MWD's cost of providing incentives to member agencies for conservation, water recycling, groundwater recovery, and other water management programs approved by the MWD Board.

System Power Rate – Recovers MWD's electricity-related costs, such as the pumping of water through the conveyance and distribution system.

Treatment Surcharge – Recovers the treatment cost and is assessed only for treated water deliveries, whether firm or non-firm.



The unbundled MWD water rates for calendar year (CY) 2006 are displayed in Table 7-2.

**Table 7-2
Metropolitan Water District
Unbundled Water Rate Components
Adopted for 2006**

Category of Water	\$/AF
Supply Rate Tier 1	\$73
Supply Rate Tier 2	\$169
System Access Rate	\$152
Water Stewardship Rate	\$25
System Power Rate	\$81
Treatment Surcharge	\$122
Total Tier 1 Treated Rate	\$453
Total Tier 2 Treated Rate	\$549

7.2.3 Replenishment Service

Although a majority of the MWD water sold is full service at the Tier 1 rate, there is imported water sold at a discounted rate, better known as Replenishment Service Water. This type of water is used for groundwater replenishment. There are two main types of replenishment water – treated and untreated. Because the replenishment water can be interrupted at anytime, MWD has provided a discount to the rates. However, these rates are not tied to the unbundled rate structure illustrated above. These rates are established by MWD to provide the best incentive to replenish the groundwater basins. Replenishment Service rates for 2006 are shown in Table 7-3.

**Table 7-3
Metropolitan Water District
Replenishment Service Rate
Adopted for 2006**

Category of Water	\$/AF
Replenishment Water Rate Untreated	\$238
Treated Replenishment Water Rate	\$335

Within West Basin, the only replenishment water sold is the treated replenishment water for customers participating in the West Basin and WRD In-Lieu program.

7.2.4 MWD Capacity Charge

MWD’s new rate structure also established a new charge labeled “Capacity Charge.” This charge was developed to recover the costs of providing distribution capacity use



during peak summer demands. The aim of this new charge is to encourage member agencies to reduce peak day demands during the summer months (May 1 thru September 30) and shift usages to the winter months (October 1 thru April 30), which will result in more efficient utilization of MWD’s existing infrastructure and defers capacity expansion costs. Currently, MWD’s Capacity Charge for 2006 is set at \$6,800/cubic feet per second (cfs).

The Capacity Charge is assessed by multiplying West Basin’s maximum usage by the rate. The maximum usage is determined by a member agency’s highest daily average usage (per cfs) for the past three summer periods, as shown below for West Basin’s maximum usage for 2006 – 260.5 cfs.

Table 7-4
Metropolitan Water District
Capacity Charge for 2006

	Peak Flow 2002	Peak Flow 2003	Peak Flow 2004	3-Year Max
West Basin	256.0 cfs	260.5 cfs	258.5 cfs	260.5 cfs

Note: These peak flows are based upon West Basin’s coincident peak of all its MWD connections.

7.2.5 Readiness-to-Serve Charge

The Readiness-to-Serve Charge (RTS) recovers a portion of MWD’s debt service costs associated with regional infrastructure improvements. The RTS charge is a fixed charge assessed to each member agency regardless of the amount of imported water delivered in the current year. Rather, it is determined by the member agencies’ firm imported deliveries for the past ten years. West Basin meets this obligation through its commodity rates.

7.3 West Basin’s Imported Water Rates

As MWD adopted a new rate structure so did West Basin. In 2003, West Basin passed through MWD’s Purchase Order by offering customer agencies voluntary purchase agreements and assessing MWD’s new Capacity Charge. West Basin also revised the administrative surcharge to be applied uniformly to all classes of imported water sold. Described below are elements of the rate structure that West Basin applies to the delivery of imported water.

7.3.1 Purchase Agreements

In order to meet the Purchase Order commitment with MWD, West Basin established its own purchase contract policy with its customer agencies. West Basin’s Imported Water Purchase Agreements mimic the MWD version in terms of an Annual Tier 1 Maximum and Total Purchase Commitment, but offer more flexibility to the customer. West Basin MWD requires only a five-year commitment, as opposed to a ten-year term. Furthermore, customer agencies have the option to adjust their Tier 1 and Purchase



Commitment amounts annually if certain conditions are favorable, and can also reduce their commitment amounts by offsetting imported water demand with recycled water purchased from West Basin. For purchases above the Tier 1 limit, or in the absence of a Purchase Agreement, the customer agency pays the Tier 2 rate (currently \$81/AF above the Tier 1 rate).

Every customer agency of West Basin signed an imported water Purchase Agreement.

7.3.2 Administrative Surcharge

One of the main revenue sources for West Basin is the Administrative Surcharge applied to all imported water sold. In 2003, West Basin revised the Administrative Surcharge to be uniformly applied to all imported water regardless of the type delivered. Revenue from the surcharge recovers West Basin's administrative costs including planning, outreach and education, and conservation efforts. As of July 1, 2005, West Basin's Administrative Surcharge is at \$32/AF.

7.3.3 Readiness-to-Service Surcharge

As described above, MWD levies to West Basin a RTS charge to recover a portion of its debt service costs. Thus, a RTS surcharge is added to West Basin's commodity rates for Non-interruptible and Barrier water to cover this charge. As of January 1, 2006, West Basin's RTS surcharge will be \$60/AF.

7.3.4 Water Service Charge

Water utility revenue structures benefit from a mix of fixed and variable sources. West Basin's Water Service Charge recovers a portion of the agency's fixed administrative costs, but is a relatively small portion of its overall revenue from water rates. As of July 1, 2005, the Water Service Charge is \$20/cfs of a customer agency's meter capacity for imported water meters.

7.3.5 West Basin's Capacity Charge

This charge, as described in Section 7.2.4, is intended to encourage customers to reduce peak day demands during the summer months, which will result in more efficient utilization of MWD's existing infrastructure. West Basin has passed through this MWD charge to its customer agencies by mimicking MWD's methodology. Each customer's Capacity Charge is determined from their highest daily average usage (per cfs) for the past three summer periods. However, because MWD assesses West Basin on the coincident daily peak of all the connections and aggregate of all its customers' daily peak is the non-coincident peak, West Basin is able to lower the Capacity Charge to its customers from \$6,800/cfs to \$5,700/cfs.

7.3.6 Desalter Water Charges



West Basin also sells the water produced by the Brewer Desalter at the effective MWD rate. This includes the MWD Non-interruptible base rate and an acre-foot equivalent for the Capacity Charge. Currently, the rate for desalter water is \$465/AF.

7.4 Recycled Water Rates

West Basin’s recycled water program is one of the largest in southern California, delivering over 28,000 acre-feet of highly treated recycled water to over 180 sites annually. The West Basin Water Recycling Plant in El Segundo provides five different qualities of “designer” water to meet the needs of landscape irrigation, cooling towers, refineries, and industries within the Los Angeles County South Bay region. The WRP also has the potential to expand its delivery up to 100,000 AF of recycled water.

Since 1995, West Basin has encouraged the maximum use of recycled water to industries, cities, and landscape irrigation sites through its water quality and economic incentive of its rates and charges. Below is a description of West Basin’s recycled water rates and charges.

7.4.1 Recycled Water Rates

West Basin contains seven different rates for recycled water. Each rate differs because of the treatment quality, power, and location. All rates, however, are assessed to cover the operation and maintenance costs, and labor and power costs associated with the delivery of recycled water. A majority of these rates are set up in a declining tiered structure, so they may further encourage the use of the recycled water, while the others are set up to service one or more customers at a uniform rate.

Most of these rates are set lower than West Basin’s imported rates to encourage the usage of recycled water. Only highly treated recycled water deliver to the refineries are set above imported rates. West Basin’s recycled water rates for FY 2005-06 are shown in Table 7-5.

Table 7-5
Recycled Water Rates
Fiscal Year 2005-06

Volume (AF/Month)	WBMWD Service Area	West Coast Barrier	Industrial R/O (WB Svc Area)	Nitrified (Ind R/O usage)	Industrial R/O Ultra (WB Svc Area)	Torrance / LADWP Service Areas	Palos Verdes Zone Rate
0-25	\$312/AF	\$430/AF	\$568/AF	\$292/AF	\$750/AF	\$354/AF	\$548/AF
25-50	\$292/AF	\$430/AF	\$568/AF	\$292/AF	\$750/AF	\$334/AF	\$528/AF
50-100	\$272/AF	\$430/AF	\$568/AF	\$292/AF	\$750/AF	\$314/AF	\$508/AF
100-200	\$252/AF	\$430/AF	\$568/AF	\$292/AF	\$750/AF	\$294/AF	\$488/AF
200+	\$232/AF	\$430/AF	\$568/AF	\$292/AF	\$750/AF	\$274/AF	\$468/AF



The “out of service area” rate is assessed to customers outside of West Basin’s service area boundaries, which pay an additional \$40/AF per tier. This additional charge is applied to make up for the recycled water standby charge they are not levied on their parcels.

7.4.2 Recycled Water Standby Charge

There is a recycled water standby charge that is levied by West Basin to each parcel within the service area. An average rate of \$24 per parcel is administered by West Basin to provide a source of non-potable water completely independent of drought-sensitive supplies. The revenue collected from this charge is used to pay the debt service obligations on the West Basin Water Recycling facilities. Each year the Board holds a public hearing where they adopt West Basin’s Engineer’s Report and Resolution to assess this charge.

7.5 Future Water Rate Projections

As the demand for water increases in southern California so does the cost to administer, treat, and distribute imported and recycled water. However, West Basin has worked diligently to ensure that stable and predictable rates are managed for the future. Below are discussions of imported and recycled water rate trends over the next ten years.

7.5.1 Imported Water Rate Projections

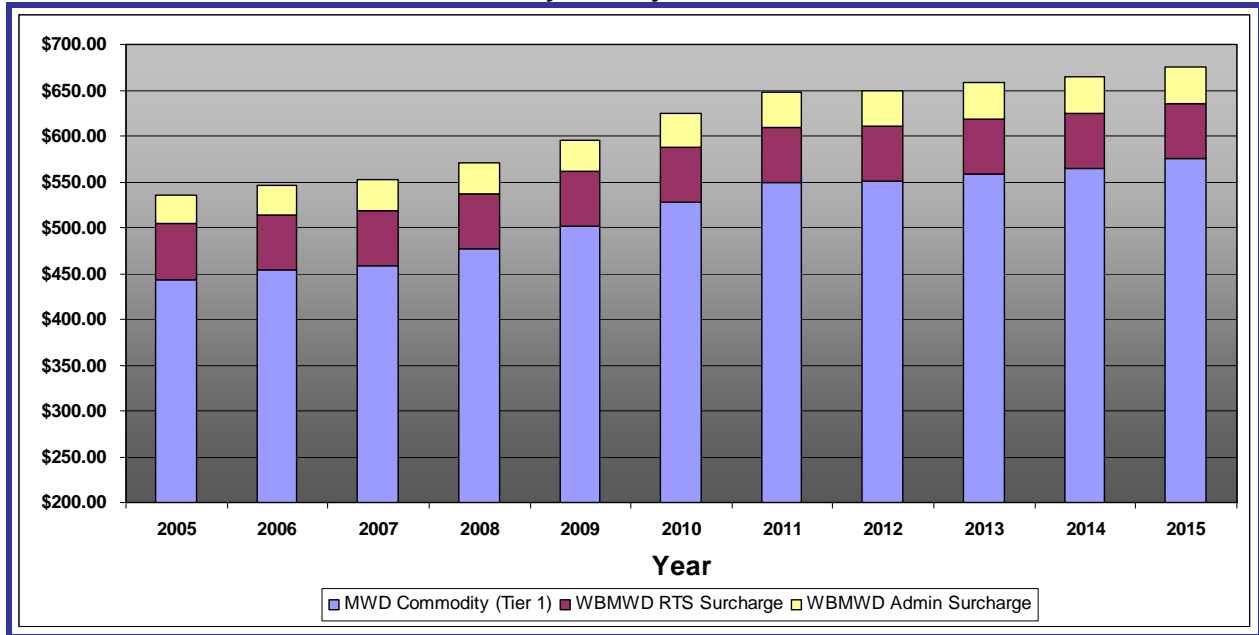
In 2004, the MWD Board adopted its Long Range Financial Plan. This plan was developed to forecast future costs and revenues necessary to support its operations and capital investments. Furthermore, it lays out the financial policy MWD will pursue over the next ten years. According to projected MWD sales, with investments into local resources, MWD estimates imported water rates will increase 4-6% annually.

West Basin’s Administrative Surcharge is projected to increase at an annual average rate of 3%-4%. This increase is determined by West Basin’s Long Range Financial analysis and the budget’s revenue requirements.

Figure 7-1 displays West Basin’s imported water rate projections for the next ten years.



**Figure 7-1
West Basin Imported Water Rates
10-year Projections**



Source: MWD 2004 Long Range Financial Plan & West Basin's Financial Plan.

7.5.2 Recycled Water Rate Projections

Similar to imported water rates, recycled water rates are expected to increase because of higher treatment, maintenance, and power costs. However, West Basin believes in setting recycled water rates at a competitive level to help offset the use of imported water. To achieve this economic incentive, recycled water rates have been projected by West Basin to increase at a slightly lower level than imported water. The recommended rates are projected to increase for all types of recycled water, by an average of 3% annually. However, these rates may vary depending upon energy and chemical costs.



Water Recycling

This section discusses Water Recycling Efforts within West Basin's service area



8.1 Overview

Recycled water is a cornerstone of West Basin's efforts to augment local supplies and reduce dependence on imported water. Since planning and constructing its recycled water system in the early 1990s, West Basin has become an industry leader in water re-use. Recycled water is used for non-potable applications such as landscape irrigation, commercial and industrial processes, and indirect potable uses such as groundwater replenishment. An additional benefit of West Basin's recycled water is less ocean discharge of treated wastewater into the Santa Monica Bay.

In 2005, West Basin delivered 24,069 AF of recycled water to customer agencies inside and outside its service area. Within West Basin's service area, M&I recycled water totaled 13,065 AF; representing approximately 7% of the District's current total water supplies. According to projections, recycled water sales will represent 17% of the District's total water supplies by the year 2030.

This section will provide an overview of the District's recycled water system, its treatment process at its El Segundo Plant, and a description of its distribution systems. In addition, a description of the District's past, current, and projected sales inside and outside of their service area will be discussed, concluding with a discussion of West Basin's system expansion projects and plans to encourage future recycled water use.

8.2 Recycled Water Sources and Treatment

8.2.1 Source Water

The source of West Basin's recycled water is from the City of Los Angeles's Hyperion Wastewater Treatment Plant (Hyperion). The City of Los Angeles has operated Hyperion, located adjacent to West Basin's service area, since 1894. Initially built as a raw sewage discharge plant into the Santa Monica Bay, it has been upgraded over the years to partial secondary treatment (1950), and most recently to full secondary treatment (1998). Hyperion has a dry weather capacity of 450 mgd for full secondary treatment and an 850 mgd wet weather capacity. Hyperion has a daily influent of 362 mgd, or 405,000 AFY, and secondary treatment capacity of 450 mgd. West Basin recycles approximately 24 mgd, or roughly 7.7 percent of the effluent from Hyperion. Ocean disposal accounts for the balance of the secondary effluent from Hyperion.



West Basin purchases secondary effluent from Hyperion prior to ocean disposal and provides at a minimum tertiary treatment and disinfection to meet applicable Title 22 standards. More advanced treatment is provided according to customer specifications. West Basin treats and distributes recycled water at its Water Recycling Treatment Plant (WRP), located in the city of El Segundo, to customer sites in its service area, as well as to sites in the City of Torrance and to the City of Los Angeles. Figure 8-1 shows the West Basin WRP, located in the City of El Segundo in Los Angeles County.

**Figure 8-1
West Basin’s Water Recycling Treatment Plant**



8.2.2 Treatment Process

The effluent received from Hyperion is limited by the City of Los Angeles’ (City) National Pollutant Discharge Elimination System permit. Although the City strives to provide West Basin with a consistent quality of secondary treated wastewater, the WRP has to accommodate inevitable fluctuations in influent quality. Table 8-1 illustrates the amount of historical, current and projected wastewater collected and treated at Hyperion and the amount of recycled water that West Basin treats to Title 22 standards, the minimum treatment standard at the facility. There are other qualities of water that are treated, named “Designer Water,” explained in further detail below.



**Table 8-1
Wastewater Collected and Treated
AF/Calendar Year**

	2000	2005	2010	2015	2020	2025	2030
Wastewater collected & treated in service area¹	355,000	390,000	425,000	465,000	500,000	535,000	570,000
Quantity that meets recycled water standard²	21,900	32,500	48,000	58,100	62,000	66,000	70,000

[1] Data supplied by the Hyperion Wastewater Treatment Plant.

[2] Data supplied by West Basin's Water Recycling Treatment Facility.

Most of West Basin's recycled water undergoes a treatment process to clarify it to quality standards to meet California Code of Regulations Title 22 (Title 22). The level of treatment necessary is approved by the California Department of Health Services (CDHS). Title 22 addresses specific treatment requirements for recycled water and lists approved uses. Approximately 2,000 tests are performed monthly at the West Basin WRP to ensure water quality meets or exceed all State and Federal requirements. West Basin's recycled water program is unique in that it provides a variety of products that are developed at one or more facilities to meet specific customer specifications (hence the nickname "designer water"). In all, West Basin produces five different qualities of recycled water:

- *Disinfected Tertiary Water* - Tertiary recycled water is treated secondary water from Hyperion that undergoes coagulation, flocculation, filtration and disinfection to meet Title 22 standards. Tertiary water can be used for a wide variety of industrial and irrigative purposes where high-quality, non-potable water is needed.
- *Nitrified Water* - Nitrified recycled water is tertiary treated water that has been nitrified to remove ammonia, which can be corrosive to pipe material. This water is used in industrial cooling towers.
- *Softened Reverse Osmosis Water* - Softened reverse osmosis water is secondary treated water from Hyperion that has been pretreated with microfiltration and lime softeners and then treated with reverse osmosis. The water is softened because it can be corrosive to pipe material. This water is used in the seawater barrier to protect the South Bay's coastal groundwater reservoirs against saltwater intrusion from the Pacific Ocean and to replenish the groundwater supplies. Softened reverse osmosis water is superior to State and Federal drinking water standards. West Basin is currently undergoing a major capital project to add both ultraviolet light as well as advanced oxidation to the barrier system, further ensuring the quality of this water and making it the most advanced water treatment facility in the world for recycled water.
- *Pure Reverse Osmosis* - Pure reverse osmosis water is secondary treated water from Hyperion that has been pretreated with microfiltration and further treated with reverse osmosis. This water is used for low pressure boilerfeed water for large scale industrial sites such as refineries.



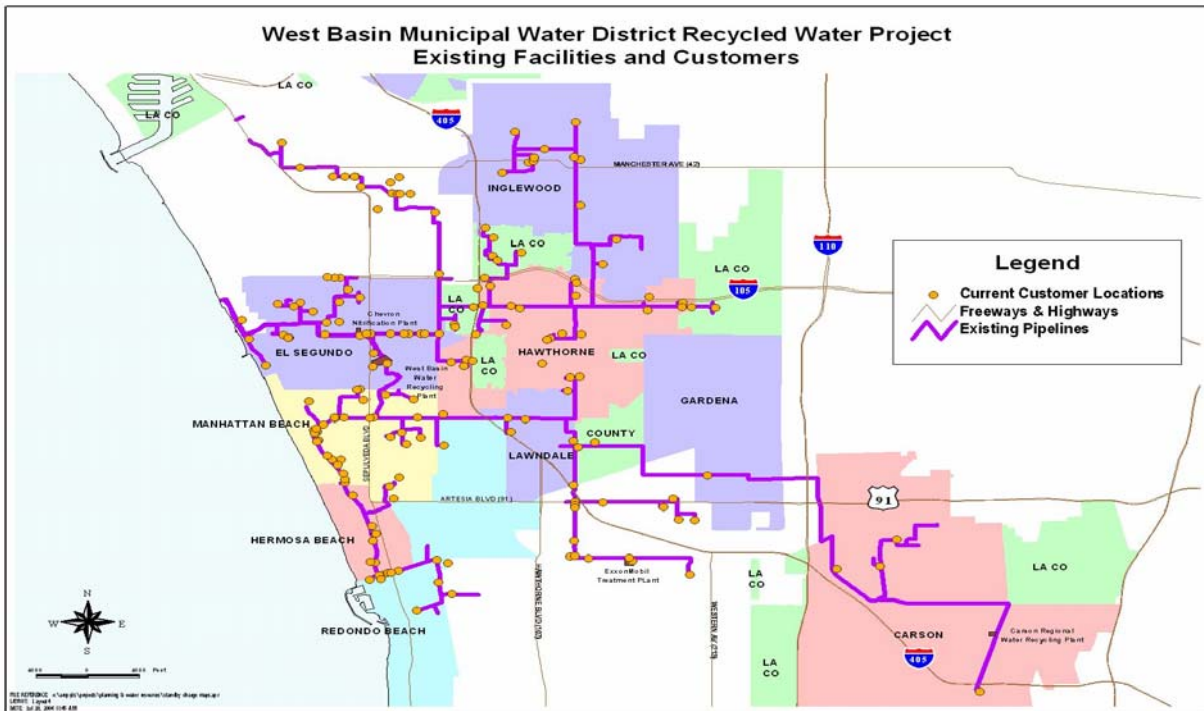
- *Ultra-Pure Reverse Osmosis Water* - Ultra-pure reverse osmosis water is secondary treated water that has been pretreated once with microfiltration and then treated twice with reverse osmosis. Since this water is used for high pressure boilers, it is important that no mineral buildup occurs on the equipment. This water can be used multiple times (cycles) as boilerfeed water before being discharged.

8.3 West Basin’s Recycled Water System

8.3.1 Existing System

In 1995, West Basin opened its state-of-the-art water recycling facility in El Segundo, which is still one of the largest recycled water plants of its kind in the nation. West Basin’s plant has a current capacity of 35 mgd with a 15 mgd expansion expecting to come on-line in early 2006. In 2002, West Basin was recognized by the National Water Research Institute as one of the six National Centers for Water Treatment Technologies in the country, and this past year the District celebrated the plant’s ten-year anniversary of its continuous operation. To date, West Basin has saved over 48 billion gallons of potable water which would have otherwise been imported from Northern California and the Colorado River.

**Figure 8-2
West Basin Recycled Water System**





As Figure 8-2 shows, West Basin’s recycled water system serves the cities of Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Manhattan Beach, Lawndale, Redondo Beach, and unincorporated areas of Los Angeles County. The District also serves the Cities of Torrance and Los Angeles, which are both outside of the District’s service area.

All recycled water is produced initially at the WRP where it is distributed to either end-use sites or one of several satellite facilities. In all, more than 210 sites currently use more than 8 billion gallons annually.

The recycled water distribution infrastructure is separate from the drinking water system. All pipes, pumps and other equipment used to transport recycled water are clearly identified as recycled water to distinguish them from the potable drinking water system.

8.3.2 Recycled Water Use by Type

The type of customers West Basin currently delivers recycled water, as shown in Table 8-2, varies from parks and landscape medians to refineries and industries.

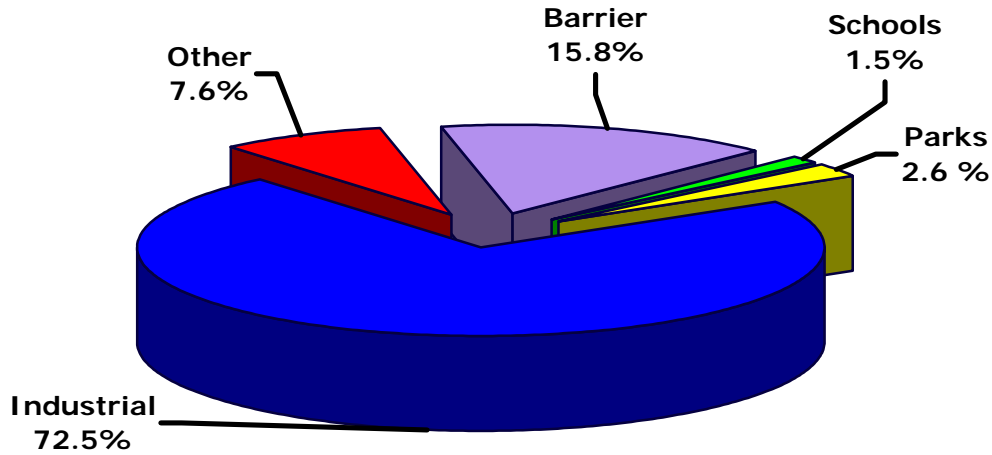
**Table 8-2
Types of Recycled Water Customers**

• Cemetery	• Multi-use
• Industries	• Parks/ Sports Fields
• Golf Course	• School (irrigation)
• Replenishment (Barrier)	• Street Sweeping/ Sewer Flushing
• Landscape & Median	• Refineries
• Cal-Trans (irrigation)	• Others

Figure 8-3 shows the distribution of West Basin’s total FY 2004-05 sales by type of use. The predominate area of recycled water deliveries are to the refineries; making up roughly 72% of the total use. In the upcoming years with expanding the system, the District plans to increase deliveries in both the landscape irrigation and Barrier sector.



Figure 8-3
West Basin Recycled Water Use
By Type of Site FY 2004-05



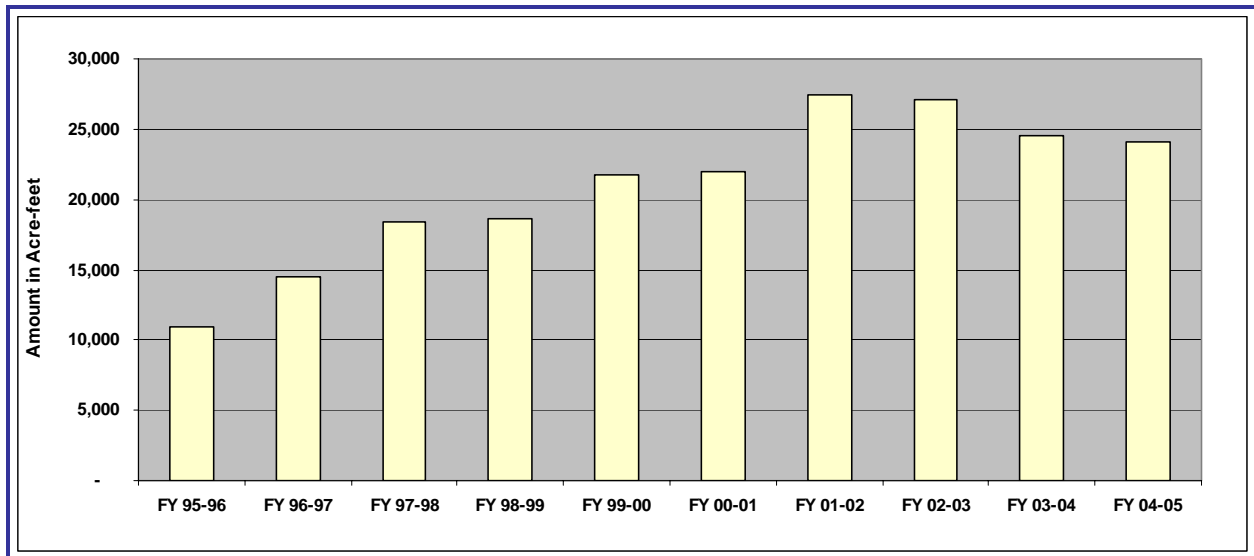
8.3.3 Historical and Current Sales

Historical Water Sales

West Basin’s historical recycled water sales for the past ten years are illustrated in Figure 8-4. Sales increased until 2002-03 and declined in subsequent years due to a change in the source water from Hyperion, which reduced the acceptability of recycled water for the West Coast Barrier Project. After identifying the source of the quality variance, West Basin designed and built a high rate clarifier treatment facility to restore the barrier water to even higher quality standards. The high rate clarifier will go online in early 2006 enabling West Basin to increase barrier use by 5,000 AFY beyond the original level.



**Figure 8-4
Historical Recycled Water Sales
From FY 1996-2005**



The amount of recycled water the District has been able to delivery inside and outside of its service area over the last ten years have total over 209,000 AF, replacing enough potable water to supply the needs of approximately 418,000 families of four for an entire year. West Basin anticipates recycled water sales to increase in the future due to system expansions, new applications, increasing public acceptance and economic incentives.

Table 8-3, provides a more detailed breakdown of historical sales by showing each retail customer agency’s annual purchases for the past ten years.

**Table 8-3
West Basin Historical Recycled Water Sales
FY 1996-2005
(In Acre-Feet)**

West Basin	FY 95-96	FY 96-97	FY 97-98	FY 98-99	FY 99-00	FY 00-01	FY 01-02	FY 02-03	FY 03-04	FY 04-05	TOTAL
CWS - Dominguez	-	-	-	4	1,317	3,297	3,165	3,101	3,639	3,616	18,139
CWS - Hawthorne	26	78	75	92	94	90	116	101	112	111	894
CWS - Hermosa Redondo	26	67	88	128	141	133	130	130	144	107	1,095
City of El Segundo	1,709	3,610	3,943	3,756	4,050	3,542	7,632	8,102	8,310	7,868	52,523
City of Inglewood	243	708	516	533	706	622	707	577	638	595	5,845
City of Manhattan Beach	181	197	177	197	230	272	307	254	301	274	2,389
Inglewood Unified School District	-	-	-	12	22	24	31	30	67	60	246
Southern California Water Co.	121	442	279	240	273	237	282	315	432	435	3,055
West Basin Inland Use	502	631	515	330	-	-	-	-	-	-	1,978
Industrial & Irrigation Subtotal	2,808	5,732	5,593	5,293	6,833	8,216	12,371	12,610	13,643	13,065	86,162



WRD (Replenishment-Barrier)	4,609	5,062	8,355	7,081	7,539	6,753	7,290	6,754	3,935	3,799	61,177
WBMWD's Service Area Total	7,417	10,794	13,948	12,374	14,372	14,969	19,660	19,364	17,578	16,863	147,339
City of Torrance	-	-	-	-	22	91	117	144	196	186	757
City of Torrance - Mobil	3,466	3,653	4,334	6,157	7,030	6,558	7,212	7,328	6,385	6,735	58,858
LA Dept. of Water and Power	-	-	84	138	268	357	398	277	394	283	2,200
Outside WBMWD's Service Area Total	3,466	3,653	4,418	6,295	7,321	7,006	7,727	7,750	6,975	7,205	61,815
TOTAL	10,883	14,447	18,366	18,669	21,693	21,975	27,387	27,114	24,553	24,068	209,154

As discussed above, West Basin's recycled water system services the Cities of Torrance and Los Angeles, which are located outside of the District's boundaries. Therefore, although the total usage within West Basin was 16,863 AF this past year, the total amount of recycled water delivered by West Basin was 24,068 AF.

**Table 8-4
Recycled Water Uses
2000 Projections compared with 2005 Actuals
AF/Fiscal Year**

Type of Use	2000 Projection for 2005	2005 Actual Use
Irrigation/Industrial	33,000	20,268
West Coast/Dominguez Barrier	15,000	3,800
Total	48,000	24,068

In West Basin's 2000 UWMP, the District projected deliveries of recycled water within its service area to reach 33,000 by 2005. As shown in Table 8-4, actual sales in 2005 fell significant below this target. This was mainly due to setbacks in expanding the recycled water program in the southern area of the District which resulted in many large industrial customers not being able to connect. In addition, water quality problems at Hyperion impacted deliveries to the West Coast Barrier. However, with the recent plant expansion projected to be on-line, next year deliveries should place the District back on target.

8.3.4 System Expansions and Projected Sales

Harbor/South Bay Water Recycling Project

Currently, the Harbor/South Bay Water Recycling Project (Harbor/South Bay), a federally funded partnership project between West Basin and the U.S. Army Corps of Engineers, is under construction and consists of sixteen component projects with 68 miles of combined pipelines. The first two laterals of the overall project, the Victoria Lateral and the California State University at Dominguez Hills (CSUDH) Mainline Extension, were successfully completed in April 2003.



Harbor/South Bay is scheduled for completion in 2010 and is expected to conserve more than 490 million gallons of potable water annually.

The \$3 million Victoria Lateral Project added nearly 1.4 miles of pipeline throughout the City of Carson. The project delivers approximately 4 million gallons of recycled water daily for landscape irrigation and industrial application at local sites which include medians along Avalon Boulevard, the Links at Victoria Golf Course, and the Victoria Regional Park.

The \$1.8 million California State University at Dominguez Hills (CSUDH) Mainline Extension consists of a recycled water transmission pipeline connecting to the end point of the Victoria Lateral and serving irrigation sites and cooling towers on the CSUDH campus. The pipeline also serves the newly-built Home Depot National Training Center, including the soccer stadium field.

In addition to the completion of the Victoria Lateral Project and CSUDH Mainline Extension, on-going 2005 activities of the Harbor/South Bay Project include: design and construction of a lateral to serve Los Angeles Southwest College, the design of the Madrona Lateral, the Palos Verdes Extension and the pre-design of Lateral V. The customers served by the 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. This project is detailed below.

West Basin Water Recycling Plant Phase IV Expansion

Undergoing its fourth expansion in 10 years, West Basin's WRP will add an additional 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/South Bay System expansion. The barrier water expansion will enable the blend of seawater barrier injection to increase to 75% recycled water (and 25% potable water), by upgrading the existing 7.5 mgd train with microfiltration pre-treatment, adding a new 5 mgd train of microfiltration and reverse osmosis, and introducing ultraviolet disinfection to the entire 12.5 mgd process. The higher blend of ultra-pure recycled water in the source water for barrier injection will not only improve the quality of the groundwater basin, and conserve potable water, but also lower water costs to WRD (the purchaser of the recycled water) and enhance ecosystem benefits.

Additional upgrades to the WRP will also be implemented, including removal of the lime clarification system, modifications to the solids de-watering system, and the addition of clarifiers upstream of the Title 22 Filters.

Madrona/ Palos Verdes Lateral Extension



The Madrona Lateral will consist of 30,000 linear feet of pipeline, which will provide recycled water for non-potable use to several sites in the City of Torrance, including the City Hall and Recreation Center, Madrona Marsh, Delthorne Park, and various area schools. This \$9 million project is expected to be completed by late 2005. This lateral represents a stepping stone to the Palos Verdes Peninsula.

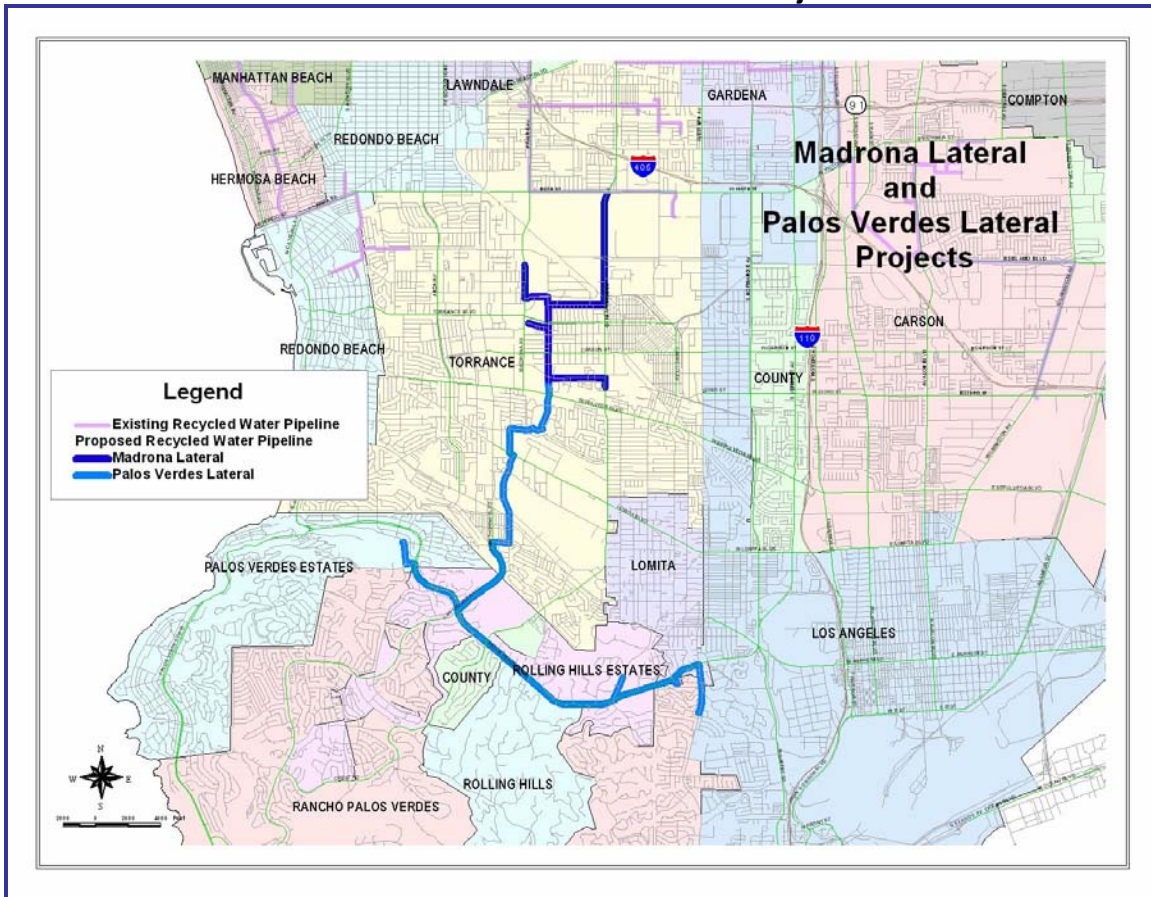
The Palos Verdes Lateral will serve several large irrigation customers along the north side of the Palos Verdes Peninsula such as Palos Verdes Golf Club, Rolling Hills Country Club, Los Angeles County Sanitation District landfill and Green Hills Memorial Park (cemetery). This 34,000 linear-foot pipeline is currently in its pre-design phase and is targeted to be completed in early 2007 at a cost of \$17 million.

West Basin recently applied for State funding through Proposition 50 for the Madrona/ Palos Verde Lateral project. This construction project is an extension of West Basin's existing recycled water distribution system that will serve the City of Torrance and various cities throughout the Palos Verdes Peninsula. This project includes approximately 64,000 linear feet of pipeline that will ultimately serve up to 17 sites with over 800 AFY of recycled water to public and private entities. Recycled water for this project will be provided by West Basin's WRP. Construction on the Madrona Lateral began in January 2005 while design for the Palos Verdes Lateral was underway. The Madrona Lateral is expected to be completed in January 2006 and operational soon thereafter. Construction of the Palos Verdes Lateral is expected to be complete by December 2006 and operational by June 2007.

West Basin will provide recycled water via the Palos Verde Lateral to the Palos Verdes Peninsula to reduce demand on imported water. The ability for West Basin to produce and distribute this water locally means less impact on fragile ecosystems, less energy to pump water long distances, and a drought-proof supply of water. As an added benefit, the cost to produce this water will be less than the cost of imported supplies. An extra 800 AFY of recycled water saves potable water for approximately 1,600 families of four every year and reduces the amount of wastewater that is discharged into the ocean. Figure 8-5 illustrates the Madrona and Palos Verdes Lateral projects in West Basin's service area.



Figure 8-5
Madrona and Palos Verdes Lateral Projects



Projected Sales

As discussed in Section 8.3.3., recycled water sales in fiscal year 2004-05 totaled 24,068 AF. The Phase IV Expansion of the WRP and the Harbor/South Bay System Expansion are expected to enable West Basin to add a minimum of 40,000 AF of sales by 2030. One key to further expanding the system, and increasing sales, is West Basin’s partnership with the City of Los Angeles. Additional oil refineries within the harbor area of Los Angeles, but proximal to West Basin’s existing system, represent a large untapped potential for high-quality recycled water sales. A proven track record with West Basin’s existing refinery customers is expected to convince others that recycled water can increase reliability and reduce costs in water management. Roughly 37,500 AFY of projected recycled water sales through 2030 are attributable to the refinery/industrial sector. Table 8-5 illustrates the projected increase of recycled water over the next 25 years.



**Table 8-5
Projected Recycled Water Use
AF/Fiscal Year**

	2010	2015	2020	2025	2030
Industrial & Irrigation	21,848	32,500	36,250	40,000	43,750
West Coast Barrier (Replenishment)	17,500	17,500	17,500	17,500	17,500
West Basin MWD's Service Area Total	39,348	50,000	53,750	57,500	61,250
City Torrance	6,650	6,650	6,650	6,650	6,650
City of Los Angeles	1,400	1,400	1,400	1,400	1,400
Outside West Basin MWD's Service Area Total	8,050	8,050	8,050	8,050	8,050
Total	47,398	58,050	61,800	65,550	69,300

8.3.5. Potential Recycled Water Use

West Basin is currently acting to fulfill the potential identified in its 2000 Master Plan, as well as other opportunities that have emerged since that Plan was completed. Although limited to an extent by economic feasibility of reaching end users that are not near existing infrastructure, the potential for increased use of recycled water continues to grow with greater acceptance of its use in different applications. Fabric and carpet dyeing, for example, are areas that represent a significant opportunity for increased sales for West Basin.

West Basin will continue to pursue new cost-effective projects both within and outside its service area. Although there are challenges and limitations in connecting customers, such as in the Palos Verde peninsula, there is great potential. The limitations in connecting customers due to their challenges dictate when and how much recycled water will be sold in the future.

The 2000 Master Plan identified and prioritized areas where recycled water has the potential to expand. In this Plan, a database was established to locate and identify future customers. The approach considered pipeline routing, hydraulic analysis and economic interests to project the growth of the system. Much of these findings evolved in the system expansion projects discussed in section 8.3.4.

8.3.6 Encouraging Recycled Water Use

West Basin's marketing efforts have been successful in changing the perception of recycled water from merely a conservation tool with minimal application to a business enhancement tool that lowers operating costs while increasing the reliability of the water supply. West Basin markets recycled water as a resource that:

- Is less expensive than potable water;
- Is more reliable than imported water in a drought; and



- Is consistent with statewide goals for water supply and ecosystem improvement on both the SWP and Colorado River systems.

The target customer is expanding from traditional irrigation users such as golf courses and parks to unconventional commercial and industrial users. Through innovative marketing, recycled water is now being used by oil refineries and for cooling towers. In addition, West Basin is investigating recycled water use in fabric dye houses, co-generating plants, and commercial laundries.

In addition to West Basin wholesaling recycled water at a rate lower than potable water, West Basin provides other financial incentives as well to encourage recycled water use. Some potential recycled water customers do not have the financial capability to pay for onsite plumbing retrofits necessary to accept recycled water. Therefore, West Basin advances funds for retrofit expenses, which can be reimbursed through the water bills. The on-site plumbing retrofit costs are amortized over a period of time, up to ten years at West Basin's cost of funds. Repayment is made using the differential between potable and recycled water rates so that the customer never pays more than the potable rate. Once the loan is repaid, the rate reverts to the current recycled rate.

Optimizing Recycled Water Use

West Basin's plan for optimizing the use of recycled water is carried out through its Recycled Water Master Plan (Master Plan) and its Recycled Water Marketing Plan (Marketing Plan). The Master Plan is West Basin's guiding document for identifying and prioritizing potential customers in all existing and emerging types of recycled water use.

The Marketing Plan is the companion effort to the Master Plan and revisits the strategies and tools employed by West Basin's staff and consultants in generating interest in recycled water with potential customers and the cities in which they do business. The thrust of the Marketing Plan is to emphasize the benefit of recycled water as a "tool for profitability" for businesses and not just the right thing to do in terms of water conservation and the environment. The Marketing Plan will be updated in FY 2005-2006.

Coordination Efforts

Table 8-6 illustrates the District's coordinated effort among key stakeholders as well as their role in the development of West Basin's 2000 Recycled Water Master Plan.



Table 8-6
Recycled Water Master Plan Coordination

Participating Agencies	Role in Plan Development
1. Water Purveyors	Customer Development, Facilities, Impacts, Rates
2. Wastewater Agencies	Recycled Water Supply, Water Quality, Reliability
3. Groundwater Agencies	Rates and Customer Involvement
4. Planning Agencies	Economic Analysis, Rates, Data Assessment, Customer Assessment, Rates, Community Impacts, Customer Involvement, Conceptual Pipeline Routes, Cost Estimates

1. Water Purveyors: See Table 8-3 within this section
2. Wastewater Agencies: Hyperion Wastewater Treatment Facility and West Basin Water Recycling Treatment Plant
3. Groundwater Agencies: Water Replenishment District of Southern California
4. Planning Agencies: Purveyors and Cities within West Basin’s service area

8.3.7 Funding

Capital costs for projects planned for the future have been budgeted to average per fiscal year approximately \$8.1 million. These costs will be covered by the sources identified here and other sources as they become available:

- **MWD Local Resources Program Incentive.** To qualify, proposed recycled water projects by member agencies must cost more than projected MWD treated non-interruptible water rates and reduce potable water needs. Since founding MWD with other municipal water utilities in 1928, West Basin has remained affiliated as a member agency and is therefore considered for the rebates for up to \$250/AF of produced water offered under the program.
- **Grant Funding.** West Basin continuously applies for Federal and State grant funding for recycled water projects, as it becomes available. For example, in 2005, West Basin applied for a Water Recycling Construction grant for the Madrona/Palos Verdes Lateral project through Proposition 50. West Basin submitted an application to the State to fund 25 percent of the \$27.5 million cost of the pipeline. An additional source of funding for water recycled projects is through the U.S Army Corps of Engineers Program, which affords qualified conservation programs 75 percent project funding.



Desalination

This section discusses the Desalination Efforts within West Basin's service area



9.1 Overview

West Basin's expertise in recycled water treatment includes substantial experience in the removal of salt from recycled water supplies. West Basin currently performs extensive research and development, affording them the opportunity to refine their water production and treatment methods, as well as educating the public. Desalination of ocean water is the next natural step in the development of a new water source for West Basin's service area.

Ocean water desalination is typically thought to be too expensive for large-scale use. However, due to recent advances in technology, desalination now costs less than half of what it did 10 years ago, making it an attractive and financially viable option. The cost has dropped because newer membranes last longer and are more energy efficient, thus lowering capital and operational costs.

9.2 Desalting Process and Quality of Ocean Water Desalination

A number of issues are considered when evaluating alternative water supply options. Of primary consideration is a project's ability to provide a safe, reliable, and cost-effective drinking water supply. Providing a safe drinking water supply to West Basin customers is a task of paramount importance to West Basin. All prudent actions are taken to ensure that water delivered throughout the service area meets or exceeds drinking water standards set by the State's primary water quality regulatory agency, the CDHS. West Basin has performed extensive water quality research at its ocean desalination pilot facility. Test results indicate that the District's treatment approach of utilizing microfiltration pretreatment and reverse osmosis treatment provides a reliable water quality that meets all State and Federal drinking water standards.



The desalting process involves removing salt, minerals and impurities from the ocean water with the latest technologies -- microfiltration and reverse osmosis. The ocean water first passes through microfiltration which consists of thousands of strands with pores that are 5,000 times smaller than a pinhole. The water then continues on to undergo high pressure reverse osmosis. Reverse osmosis, a common method used to produce bottled water, is a pressure driven process whereby water passes through a



thin film membrane that filters out impurities. The water produced at the pilot project consists of approximately 350 parts per million (ppm) of salt, lower than typical tap water in southern California. West Basin will use the data acquired from the pilot project in the planning and development of a 0.5 MGD demonstration plant.

9.3 West Basin's Ocean Water Desalination Pilot Project

West Basin's ocean water desalination pilot project is located at the El Segundo Power Plant and marks the first use of microfiltration pretreatment and reverse osmosis for ocean water desalination. The pilot project desalts approximately 40 gallons per minute (gpm) of raw ocean water. The goal of the project is two-fold: 1) identify optimal performance conditions and 2) evaluate the water quality. The research findings are being shared among industry partners to determine the viability and suitability of producing potable desalinated ocean water.

West Basin's ocean water desalination pilot project was designed to be a regional and national asset, and it is an open, collaborative effort that will benefit the entire water industry. To fund the \$1.2 million combined cost of the pilot project, West Basin has partnered with major agencies in the water industry, including the American Water Works Association Research Foundation, California Avocado Commission, City of Tampa Bay, Department of Water Resources, East Bay Municipal Utility District, Long Beach Water Department, Los Angeles Department of Water and Power, Metropolitan Water District, National Water Research Institute, San Diego County Water Authority, South Florida Water Management District, and United States Bureau of Reclamation.

Since it first began operation, West Basin has strived to identify the optimal operational and water quality parameters utilizing a power plant's pre-condenser cooling water as the pilot plant's feed water source to allow reliable and cost efficient ocean desalination treatment. The District recognizes the environmental benefits and capital cost savings of utilizing an existing open ocean water intake substructure and outfall by co-locating the pilot project at an existing power plant site. Following in the footsteps of West Basin's vast desalting experience using advanced membrane treatment, the ocean water desalination pilot project utilizes microfiltration pretreatment and reverse osmosis treatment as the primary treatment processes. These processes have demonstrated tremendous water quality and operational performance since the commissioning of the project. Figure 9-1 illustrates the microfiltration and reverse osmosis membranes used in the pilot demonstration project.



Figure 9-1



Microfiltration

Reverse Osmosis

West Basin will continue to conduct piloting research to focus on meeting current and future regulatory and water quality standards utilizing post condenser water at the hosting power plant site. This research information will be used to formulate a comparative index to the cold water research to determine the most efficient and environmentally safe approach in the development of a demonstration and full scale ocean desalination treatment facility.

9.4 Future Ocean Water Desalination Projects

West Basin's next logical step in moving forward with a full scale ocean desalination treatment facility is to develop and construct a 500,000 gpd demonstration project. This demonstration project is necessary to evaluate the water quality performance and treatment stability, assess efficient energy recovery devices, optimize operational performance utilizing full scale process equipment, and to acquire the necessary data to achieve regulatory compliance and approval. West Basin's ocean water desalination demonstration project will be located within West Basin's service area and in close proximity to the Pacific Ocean. West Basin and its partners will perform the full battery of water quality analyses to ensure that the demonstration project meets all Federal and State Drinking Water Standards.

Additionally, West Basin will construct a research and education center to educate the public on how ocean water desalination is performed and the safe environmental benefits of developing such a precious and reliable water supply resource. In 2005, West Basin was awarded \$1,750,000 in State grants administered under the Proposition 50 funds, to assist in the research and construction of the District's ocean water desalination demonstration project. Table 9-1 lays out the opportunities for West Basin to desalinate ocean water.



Table 9-1
Opportunities for Desalinated Water

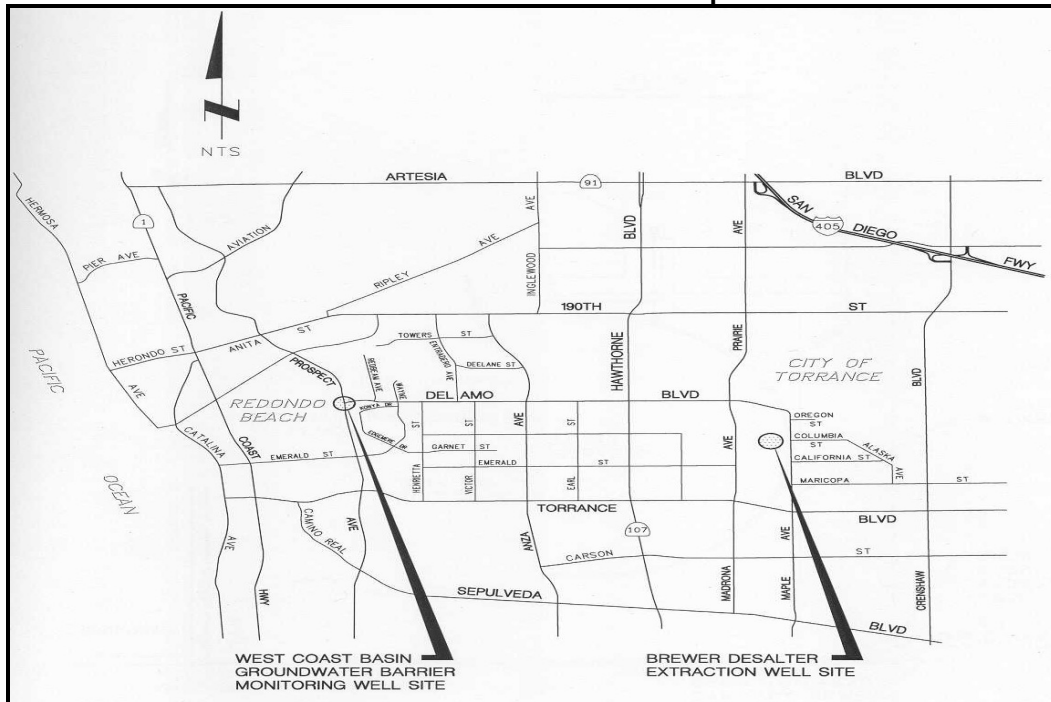
Sources of Water	Yield AFY	Start Date	Type of Use
Ocean Water	20,000	June 2011	Potable

With the knowledge gained by operating the Demonstration Project, West Basin expects to eventually move forward with the planning, design, and construction of a full scale 20,000 AFY ocean water desalination and education facility. West Basin is currently addressing the development of the demonstration project with the Regional Water Quality Control Board and the California Coastal Commission. West Basin anticipates operating the demonstration plant for at least two years while plans are being completed and finalized for the development of a 20,000 AFY full-scale desalination treatment plant. The ultimate goal is to construct a full-scale plant that will diversify the regional water supply and ensure a safe, reliable water source for today and the future.

9.5 Brewer-Desalter Treatment Facility

The Brewer Desalter Treatment Facility, located adjacent to the City of Torrance bus maintenance and storage yard, removes chloride from groundwater impacted by seawater intrusion in the WCGB. The brackish groundwater resulted from seawater intrusion prior to construction of the West Coast Basin Groundwater Barrier. The vicinity map provided in Figure 9-2 shows the location of the Brewer Desalter site.

Figure 9-2
Brewer Desalter Location Map





The Brewer Desalter facility treats brackish groundwater produced by an on-site well. The brackish groundwater passes through cartridge filters and finally reverse osmosis. California Water Service Company's (CalWater) stores the treated water on-site in a 5-million gallon storage reservoir, and ultimately delivers it to consumers for CalWater's distribution system. The Brewer Desalter facility is currently out of service until a new extraction well can be constructed. A new extraction well, located north of the reverse osmosis facility, is expected to be on-line in early 2006.

**Figure 9-3
Brewer Desalter Facility Equipment**



Brewer Extraction Well Site, looking west from a top the 5 MG reservoir



Chemical addition tanks located inside the RO building



Brewer Desalter RO treatment on-site