Appendix I: Central Basin Urban Water Management Plan

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CENTRAL BASIN MUNICIPAL WATER DISTRICT

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Phone: (310) 217-2222 - Fax: (310) 516-1327

DATE: November 9, 2006

TO: Distribution

FROM: Art Aguilar, General Manager

SUBJECT: Amendment to the 2005 Urban Water Management Plan

In December 2005, the Central Basin Municipal Water District (Central Basin) Board of Directors approved the 2005 Urban Water Management Plan (UWMP). The California Department of Water Resources (DWR) has notified Central Basin that the 2005 UWMP is not yet a "complete" plan because of data that was not included.

Therefore, this is a formal notification that Central Basin will be amending the 2005 UWMP. A draft of the amendment is attached for review and comment.

A public hearing is scheduled for Tuesday, November 8, 2006 at 1:00 p.m. during the monthly regular meeting of the Central Basin Board of Directors at the District headquarters (address shown above). If you have any comments please forward them to David Hill by the close of business on November 27, 2006. daveh@centralbasin.org.

Enclosures

Appendix H

This appendix will address those items that were inadvertently left out of Central Basin Municipal Water District's (Central Basin) 2005 Urban Water Management Plan (UWMP).

Item # 1 – Sales to Other Agencies – AF Year

Table 13 provides both actual and projected imported water sales to the retail water agencies within the Central Basin service area in Acre-Feet (AF). Note that replenishment is included in the total amount.

Table 13

Sales to Other Agencies

Agencies Purchasing Imported Water	**Actual**		**Projected**				
	FY 2000-01	FY 2005-06	2010	2015	2020	2025	2030
Bellflower-Somerset Mutual Water Company	0.00	2,105.40	2,324	2,533	2,761	3,002	3,227
California Water Service - East Los Angeles	14,764.20	14,005.10	14,276	15,560	16,961	18,436	19,819
City of Bell Gardens	773.90	1,111.00	854	931	1,015	1,103	1,186
City of Bellflower	2,106.70	0.00	0	0	0	0	0
City of Cerritos	2,554.60	625.20	2,502	2,727	2,973	3,231	3,474
City of Commerce	583.80	423.00	454	494	539	586	630
City of Downey	0.60	0.00	4	5	5	6	6
City of Huntington Park	1,595.20	1,792.90	1,558	1,699	1,851	2,013	2,163
City of Lakewood	0.00	0.00	0	0	0	0	0
City of Lynwood	601.40	1,653.30	1,045	1,139	1,241	1,349	1,450
City of Montebello	1,293.10	1,137.40	1,281	1,397	1,522	1,655	1,779
City of Norwalk	866.50	920.30	588	641	698	759	816
City of Paramount	2,723.30	2,427.90	2,306	2,514	2,740	2,979	3,202
City of Santa Fe Springs	4,156.10	2,601.90	3,636	3,963	4,320	4,695	5,048
City of Signal Hill	274.20	637.20	216	236	257	279	300
City of South Gate	0.00	0.00	1	1	1	1	1
City of Vernon	-225.40	2,784.50	1,080	1,177	1,283	1,395	1,499
County of Los Angeles - Rancho Los Amigos	402.10	357.70	431	470	512	557	599
Golden State Water Company	9,491.10	10,786.70	9,604	10,469	11,411	12,404	13,334
La Habra Heights Water District	1,601.00	114.40	648	707	770	837	900
Maywood Mutual Water Co. No. 1	250.80	220.50	224	245	267	290	311
Maywood Mutual Water Co. No. 2	380.30	204.50	458	499	544	592	636
Maywood Mutual Water Co. No. 3	106.60	0.00	60	65	71	77	83
Orchard Dale Water District	1,328.50	1,216.00	1,286	1,402	1,528	1,661	1,786
Park Water Company	11,356.00	12,097.80	11,200	12,208	13,307	14,465	15,550
San Gabriel Valley Water Co	895.00	880.70	903	984	1,073	1,166	1,254
Suburban Water Systems	931.50	1,991.90	1,827	1,991	2,170	2,359	2,536
Walnut Park Mutual Water Co.	160.30	506.50	501	546	595	646	695
Total	58,971.40	60,601.80	59,268	64,603	70,417	76,543	82,284
Water Replenishment District (Replenishment)	23,450.60	25,418.30	27,600	27,600	27,600	27,600	27,600
Total including Replenishment	82,422.00	86,020.10	86,868	92,203	98,017	104,143	109,884

[1]Imported water demand for replenishment purposes are based upon the Water Replenishment District's projected estimate needs, although they may adjust depending upon groundwater production.

Item # 2 - Planned Water Supply Projects and Programs

The Southeast Water Reliability Project (SWRP) will consist of approximately 12 miles of recycled water transmission pipeline extending from the City of Pico Rivera to the City of Vernon. Increased pumping capacity at the existing Rio Hondo Pump Station will be required and will involve modifications to the pump station and the addition of a new pump station adjacent to the existing site. SWRP will complete Central Basin's recycled water transmission system by connecting the existing Rio Hondo and Century area pipelines across the northern portion of the service area. This "loop" will increase available flow and pressure in many areas of the entire distribution system that are currently not adequately served. Also, SWRP will provide recycled water to customers in the Cities of Pico Rivera, Montebello, Vernon, Los Angeles, the unincorporated county area of East Los Angeles, the San Gabriel Valley Water Company, and the Upper San Gabriel Valley Municipal Water District.

When completed, SWRP is expected to increase recycled water deliveries from the current 4,000 AFY to approximately 11,000 AFY within the next three years and ultimately to 26,000 AFY within 10 years. SWRP is currently in design phase. As shown below in Table 17, it is project that construction will begin in April 2007 and be completed by December 2008.

Since SWRP is part of the recycled water system in Central Basin, the supply is not subject to reductions during dry-year or even multiple dry-year scenarios. There are no other water supply projects currently being planned for Central Basin service area.

Table 17
Future Water Supply Projects

Project Name	Projected Start Date	Projected Completion Date	Normal-Year AF to Agency[1]	Single Dry-Year Yield AF	Multiple Dry-Year Year 1	Multiple Dry-Year Year 2	Multiple Dry-Year Year 3
SWRP	March 2007	Dec 2008	26,000	26,000	26,000	26,000	26,000

[1]Normal year recycled water direct deliveries are based on maximum use after the SWRP construction is completed

Item # 3 – Agency Provided Written Demand Projections to Wholesaler, 20 Years

Table 19 provides the demand projections for non-interruptible imported water from Metropolitan Water District (MWD) for the Central Basin service area. Table 20 provides water demand for all classes of water use in the Central Basin. Table 21 shows the supply by class of water for a single-dry year and multiple dry-years as compared to a normal supply year. Finally, Table 22 provides the factors that could result in an imported water supply deficit.

Table 19
Agency Demand Projections Provided to Wholesale Suppliers - AFY

Wholesaler	2010	2015	2020	2025	2030
MWD – Non-interruptible	59,091	64,691	70,462	76,409	82,535
MWD - Replenishment	27,600	27,600	27,600	27,600	27,600
Recycled Water	11,750	16,500	26,000	26,000	26,000
Total	**98,441**	**108,791**	**124,062**	**130,009**	**136,135**

Table 20 Wholesaler Identified & Quantified the Existing and Planned Sources of Water - AFY					
Wholesaler Sources	2010	2015	2020	2025	2030
Imported Water	59,091	64,691	70,462	76,409	82,535
Recycled Water (Spreading)	50,000	50,000	50,000	50,000	50,000
Replenishment Water	27,600	27,600	27,600	27,600	27,600
Total	**136,691**	**142,291**	**148,062**	**154,009**	**160,135**

Table 21 Wholesale Supply Reliability - % of Normal Year				
Wholesaler Sources	Single-Dry	Year 1	Year 2	Year 3
Imported Water	108%	100%	87%	95%
Recycled Water	100%	100%	100%	100%

Table 22 Factors Resulting in Inconsistency of Wholesaler's Supply				
Name of Supply	Legal	Environment	Water Quality	Climatic
Imported Water	X	X		X

Item # 4 – Water Supply Shortage Stages and Conditions

If a water supply shortage does occur, Central Basin and the other member agencies of MWD will be allocated imported water under a WSMD plan allocation formula that is currently being drafted by MWD. Once the allocation plan is reviewed by the member agencies and approved by the MWD Board of Directors, it will simply go into effect. No additional approvals or amendments to this UWMP will be necessary.

Item # 5 – Minimum Water Supply Available by Source for the Next Three Years

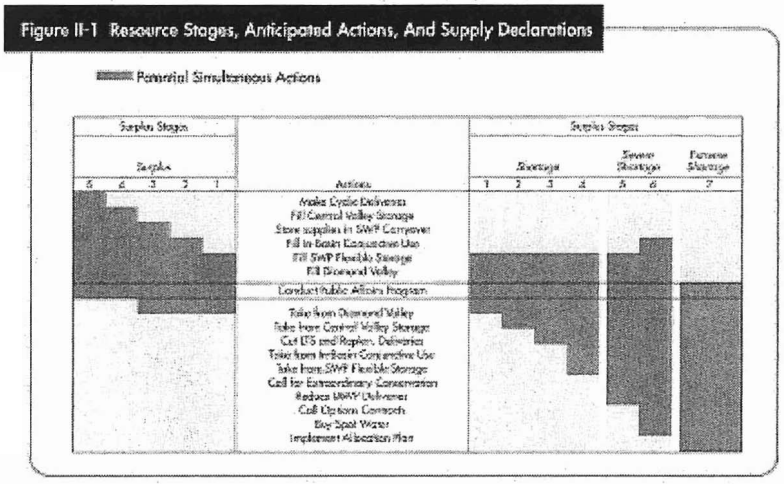
Table 24 provides the minimum water supply necessary to meet demands for the Central Basin service area for the next three years.

Table 24 Three-Year Estimated Minimum Water Supply - AF Year				
Source	Normal	2006	2007	2008
Groundwater	205,960	205,960	205,960	205,960
MWD - Non Interuptable[1]	63,000	68,000	59,308	64,816
Recycled Water [2]	7,400	7,400	9,400	10,900
MWD - Replenishment[1]	27,785	27,785	27,785	27,785
Total	**304,145**	**309,145**	**302,453**	**309,461**

[1]MWD provides imported and replenishment service to the Central Basin service area. MWD reports that since the 2003 IRP Update, they are 100 reliable for deliveries given a repeat of historic drought hydrology through 2025.
[2]Recycled water projected uses include CBMWD deliveries, Cities of Cerritos and Lakewood direct use, and Upper San Gabriel Valley Municipal Water District deliveries.

Item # 6 – List the Consumptive Reduction Methods the Water Supplier Will Use to Reduce Water Use in the Most Restrictive Stages With Up To a 50% Reduction

In April 1999, the MWD Board of Directors adopted the Water Surplus and Drought Management Plan (WSDM) to give policy guidance to staff during periods of water surplus and various stages of drought. The WSDM does not currently provide an allocation plan for the member agencies. That is currently being drafted by the MWD staff and will be ready for review by the member agencies in 2007. **Below is a matrix of what actions take place during the various stages.** Note that multiple actions can take place at the same time.



From MWD's Regional Urban Water Management Plan, November 2005, Page II-18

Item # 7 – Describe the Wastewater Collection and Treatment Systems in the Supplier's Service Area

A thorough description of the County Sanitation Districts of Los Angeles County (LACSD) can be found in Central Basin's UWMP on page 8-1 though 8-3. In addition to the description, Table 33 provides the volume of wastewater that will be collected by LACSD and the volume of recycled water that will be put to direct use. Table 35 shows the amount of actual and potential recycled water that will be used in the Central Basin service area through 2030.

Table 33
Wastewater Collection and Treatment - AF Year[1]

Type of Wastewater	2000	2005[2]	2010	2015	2020	2025	2030
Wastewater Collected & Treated in Service Area	136,000	128,000	140,000	142,000	145,000	145,000	150,000
Volume That Meets Recycled Water Standard[3]	3,682	3,105	11,750	16,500	26,000	26,000	26,000

[1]For LACSD's Los Coyotes WRP and San Jose Creek WRP.
[2]Based on LACSD annual report for FY 2004-05.
[3]All treated effluent for Los Coyotes WRP and San Jose Creek WRP meet the Title 22 standard. The volumes provided are actual (2000 & 2005) and projected for reuse in the Central Basin service area.

Table 35 Recycled Water Users - Actual and Potential (AFY)							
User Type	Treatment Level	2005[1]	2010	2015	2020	2025	2030
Agriculture		0	0	0	0	0	0
Landscape	Tertiary	2,609	8,250	9,000	9,000	9,000	9,000
Wildlife Habitat		0	0	0	0	0	0
Wetlands		0	0	0	0	0	0
Industrial	Tertiary	496	3,500	7,500	17,000	17,000	17,000
Total Central Basin Use	Tertiary	3,105	11,750	16,500	26,000	26,000	26,000
GW Recharge (Spreading)	Tertiary	50,000	50,000	50,000	50,000	50,000	50,000
City of Cerritos	Tertiary	1,714	1,950	1,950	1,950	1,950	1,950
City of Lakewood	Tertiary	352	450	450	450	450	450
	Total	**55,216**	**62,900**	**68,900**	**78,400**	**78,4000**	**78,400**

[1]FY 2004-05 actual. Does not include RW delivered to USGVMWD.

Item # 8 – Describe Methods of Wastewater Disposal and Volume

In 2005, LACSD's two facilities, the Los Coyotes WRP and the San Jose Creek WRP, reclaimed about 128,000 AF of wastewater. Approximately 55,200 AF of the 128,000 AF was recycled by Central Basin MWD, USGVMWD, the Cities of Cerritos and Lakewood. As shown in Table 34, the remaining reclaimed water (about 72,800 AF) was placed in the San Gabriel River which flowed to the Pacific Ocean.

Table 34 Disposal of Wastewater (Non-Recycled) AF Year[1]						
Method of Disposal	2005	2010	2015	2020	2025	2030
San Gabriel River	72,800	77,100	77,850	79,600	78,350	82,100
Total	**72,800**	**77,100**	**77,850**	**79,600**	**78,350**	**82,100**

[1]Volume disposed is the total amount of wastewater treated minus recycled water used in the CB service area, the USGVMWD service area, the Cities of Cerritos and Lakewood, and groundwater recharge.

Item # 9 – Water Quality Impacts

Water quality is discussed in detail in Chapter 5. However, it should be noted that actual imported water quality impacts to Central Basin MWD and to the retail water agencies within the Central Basin service area are minimal. This is because MWD manages water quality issues at their treatment facilities. Any potential impacts to imported water deliveries are routinely reported to the Central Basin staff who then reports the information to the retail water agencies so that appropriate actions can be taken.

Item # 10 – Notification Letter to Cities, Agencies and County

The following notification letter was sent in July 2005 prior to the adoption of the 2005 UWMP. The letter was sent to all cities, water purveyors including Metropolitan Water District, Los Angeles County planning department, the office of the California State Librarian, and the California Department of Water Resources.

Central Basin Municipal Water District
17140 S. Avalon Blvd • Suite 210 • Carson, CA 90746-1296
telephone 310-217-2222 • fax 310-217-2414

July 8, 2005

To Whom It May Concern:

This letter serves as notification that the Central Basin Municipal Water District is currently preparing a 2005 update of its Urban Water Management Plan, pursuant to the Urban Water Management Planning Act (Act) of the California Water Code. The Act requires urban water suppliers to update their Urban Water Management Plans and submit a complete plan to the California Department of Water Resources every five years.

A draft of Central Basin's Plan is currently available for review and comments. A Final Draft will be available for review prior to the scheduled public hearing in October 2005.

Please contact us if you would like to receive a draft Plan. If you would like more information or have any questions, please contact Harvey De La Torre at (310) 660-6233 or via email at harveyd@wcbwater.org.

Thank you,

Art Aguilar
Co-General Manager

Rich Nagel
Co-General Manager

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Central Basin Municipal Water District

2005 Urban Water Management Plan

Prepared by:
Central Basin Municipal Water District
17140 S. Avalon Blvd., Suite 210
Carson, CA 90746

www.centralbasin.org

Central Basin Municipal Water District

2005 Urban Water Management Plan

Prepared by:

Central Basin Municipal Water District
17140 S. Avalon Blvd., Suite 210
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MESSAGE FROM THE BOARD OF DIRECTORS

Since the District's formation in 1952, Central Basin Municipal Water District has remained steadfast in its commitment to ensure a safe and reliable water supply for the region. Through the years, the District has grown and transformed, seeking innovative and viable solutions to meet the changing needs of its communities. All of us at Central Basin continue to expand our efforts to meet the growing water demand while preserving our limited and precious water resource. Through our water recycling, conservation, education and outreach programs, Central Basin has evolved from a potable water wholesaler to a leader safeguarding the region's water supply.

We are proud to submit this 2005 Urban Water Management Plan to the State Department of Water Resources. The Plan reports all current and projected water supplies and demands within Central Basin's service area, demonstrates water reliability for the next 25 years, and provides a comprehensive overview of the District's various programs.

DIRECTORS

Division I - Edward C. Vasquez
Bell Gardens, Downey, Montebello, Norwalk and Vernon

Division II - Robert Apodaca
La Habra Heights, La Mirada, Pico Rivera, Santa Fe Springs and Whittier

Division III - George Cole
Bell, Commerce, Huntington Park, Maywood, portions of Cudahy, Monterey Park and unincorporated areas of East Los Angeles

Division IV - Olga E. Gonzalez
Lynwood, South Gate, portions of Cudahy, Carson, Florence-Graham and Willowbrook

Division V - Phillip D. Hawkins
Artesia, Bellflower, Cerritos, Lakewood, Paramount and Signal Hill

MISSION STATEMENT

"To acquire, sell and conserve imported and other water that meets all required standards and to furnish it to our customers in a planned, timely and cost effective manner that anticipates future needs. The District serves as the official representative for its public at the Metropolitan Water District of Southern California. It also provides leadership, support, advice and communication on water issues to the people and agencies within and outside its boundaries, as appropriate."

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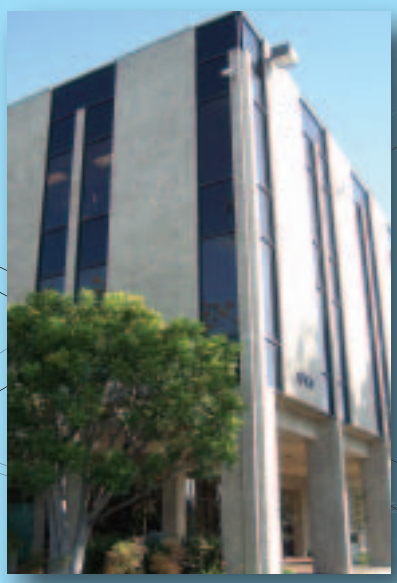

Executive Summary

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Executive Summary

This section is a summary of the components of this Plan

A BRIEF HISTORY

The legislative requirement to prepare an Urban Water Management Plan (UWMP) every five years provides Central Basin Municipal Water District (Central 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 more than five decades, techniques for meeting its objective are continuously evolving.

The history of Central Basin is representative of how water resource management has evolved in southern California during the past half a century. Ensuring that residents and businesses in southern California have safe 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, Central Basin, in 1953 that would join 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. Central 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 Central Basin offered the reliability enjoyed by groundwater producers and non-producers alike. During this time, not only did population within Central Basin's service area grow by 136% from about 593,000 in 1950 to more than 1.4 million people by 1990, but the area also became an industrial center in the region.

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

Central 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 regional recycled water distribution system that would directly offset potable imported water for non-potable uses such as irrigation and industrial applications. Central Basin would also become renowned for its highly successful conservation and education programs that, combined with recycled water, have helped conserve more than 38.3 billion gallons of potable water during the past decade.

By 1996, local 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 accessibil-

ity 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.

Central Basin's aggressive pursuit of the resource development targets within the IRP is changing the face of water supply in the region from mostly groundwater to a more diverse set of supply options.

WATER DEMAND

Total water use, or demand, within Central 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 includes deliveries to the Rio Hondo and San Gabriel River Spreading Grounds in the Montebello Forebay. Table ES-1 summarizes the current and projected retail and replenishment demands.

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 Central 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.

Retail water use within Central Basin's service area is largely the same today as it was 10 years ago despite the addition of more than 145,000 people. The average retail demand for the past 15 years is approximately 260,500 AFY. Clearly, residents are now using less water on an individual, or "per capita," basis, as shown in Figure ES-2.

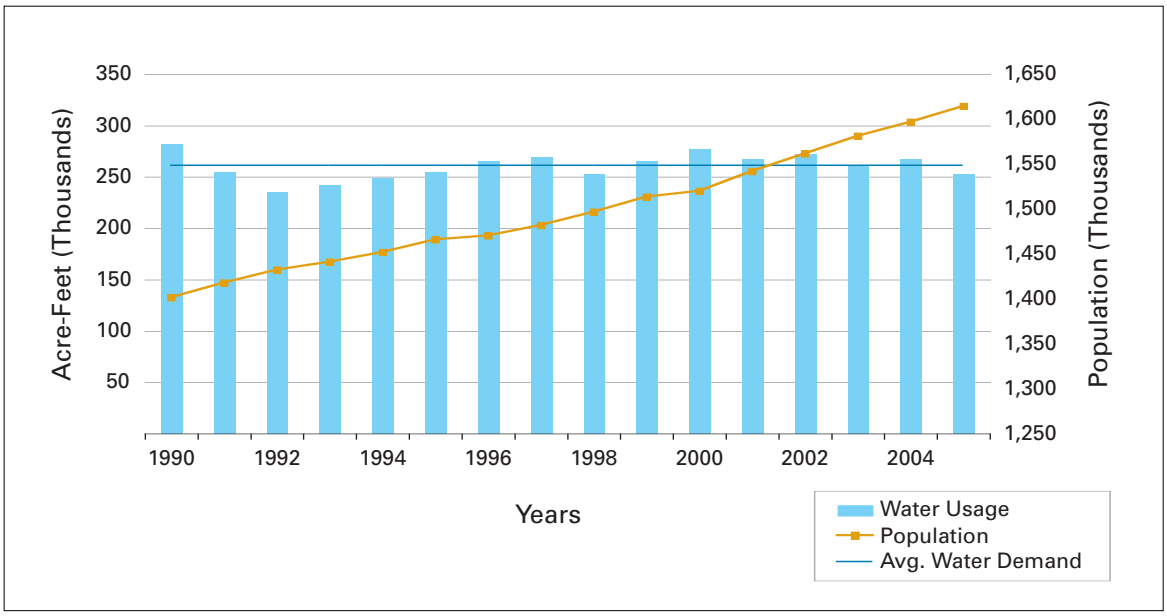
It is apparent that the trend of lower per capita water usage through time, with assistance from MWD and its member agencies, has been successful in continuing a water conservation ethic begun 15 years ago during the last major drought.

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

District Water Demands	2005[1]	2010	2015	2020	2025	2030
Retail Municipal & Industrial Use						
Groundwater[2]	186,549	202,000	202,000	202,000	202,000	202,000
Imported Water	61,033	59,091	64,691	70,462	74,409	82,535
Recycled Water[3]	5,217	12,900	14,150	15,400	16,650	17,900
Total Retail Demand	**252,799**	**273,991**	**280,841**	**287,862**	**295,059**	**302,435**
Replenishment Use						
Imported Water	27,758	27,600	27,600	27,600	27,600	27,600
Recycled Water	50,000	50,000	50,000	50,000	50,000	50,000
Total Replenishment Demand	**77,758**	**77,600**	**77,600**	**77,600**	**77,600**	**77,600**
TOTAL DEMAND	**330,557**	**351,591**	**358,441**	**365,462**	**372,659**	**380,035**

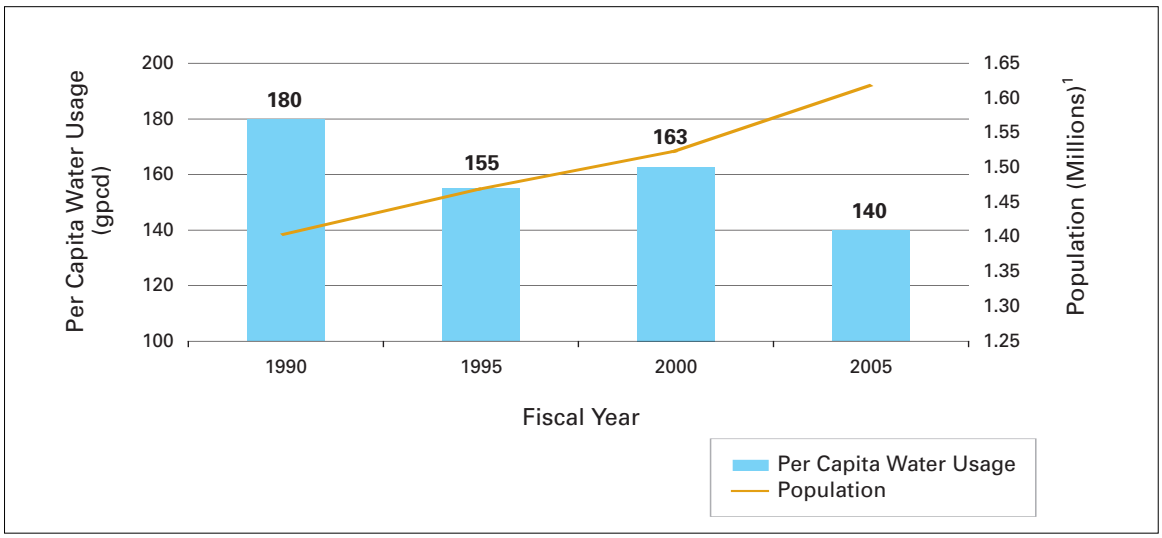
[1] The 2005 demands are based on the 2004-05 year, which is also considered one of the "wettest" years on record.
[2] Includes groundwater production from the Central and Main San Gabriel Basins (est. 42,000 AF).
[3] Includes recycled water sales from Central Basin's service area and Cerritos Water Systems.

Figure ES-1
Historical Retail Demand Compared to Population



Source: CBMWD water use database and MWD Demographic Data, 2005.

Figure ES-2
Per Capita Water Usage, 2001 - 2005



Source: CBMWD water use database
[1] Information based on MWD Demographic Data, 2005.

WATER SUPPLY

Central Basin currently relies on approximately 90,600 AFY of imported water from the State Water Project (SWP) and the Colorado River through MWD to meet the District's retail and replenishment demands. While groundwater supplies remain a significant source of water (68%) for customer agencies in the Central Basin service area, imported water supplements this resource (22%) and assists to mitigate the over-pumping of the groundwater basin. Recycled water is added to the supply mix, serving up to 2% of the area's demands, while conservation rounds out the equation at 8%.

Table ES-2 shows current (2005) and projected (2030) supplies within Central Basin's service area, with imported and recycled water being provided by Central Basin.

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, Central 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, Central Basin's approach is straightforward: continue to reduce the risk of future shortage by distributing the responsibility for supply among several, well-balanced options. Central Basin's projected supply portfolio for 2030, as compared to the current mix, is shown in Figure E-3 on page ES-6.

Central Basin's diversification plan includes expansion of the District's recycled water system, increased conservation efforts and groundwater storage opportunities. The District's future dependence on traditional sources of water (groundwater and imported) will continue to decrease with the expansion of these alternative resources. During the next 25 years, conservation is expected to have a significant dampening effect on retail water demand, lowering projected water use by roughly 58,400 AF in 2030.

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

Likewise in 2006, Central Basin will complete the update of its Recycled Water Master Plan. This effort will provide the basis for completion of the recycled water distribution system and the fulfillment of its full potential to offset the use of imported water. The future Southeast Water Reliability Project will connect the existing Rio Hondo and Century systems across the northern portion of the service area. The project will increase flow and pressure in many areas not adequately served today, reach a large new customer base in several cities

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

District Water Supplies	2005[1]	2030
Groundwater	186,549	202,000
Imported Water	61,033	82,535
Recycled Water	5,217	17,900
Total	**252,799**	**302,435**
Conservation	21,100	58,400
Total	**273,899**	**360,835**

[1] The 2005 demands are based on the 2004-05 year, which is also considered one of the "wettest" years on record.

within the service area and enable new partnerships with neighboring agencies that wish to extend Central Basin's system into their service areas.

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 in order to maintain an adequate supply. Enormous strides made by MWD, Central 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 during 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, the 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 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, Central Basin projections show that supplies will adequately meet service area demands in normal, single-dry and multiple dry-year scenarios as well as other water shortage emergencies.

Regionally, 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 conjunctive use groundwater storage, water transfers and exchanges, and ocean and groundwater desalination. Central Basin supports the ongoing efforts of these programs.

WATER CONSERVATION

Since the drought of the 1990s, Central 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 water use. By current estimates, demand management conservation saves more than 6.9 billion gallons of imported water every year. This represents the average water use of almost 30,000 families in southern California.

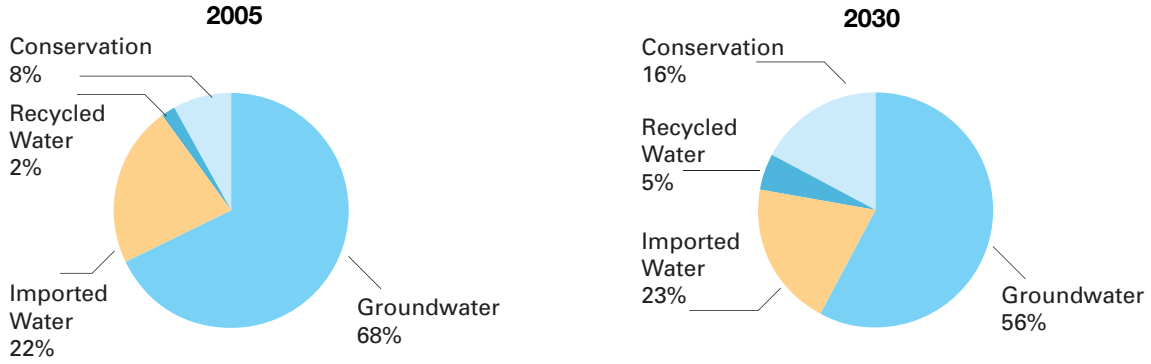
Central Basin water conservation programs follow the recommended 14 Best Management Practices (BMPs) according to the California Urban Water Conservation Council. For fiscal year 2005-06, Central Basin will complete a Conservation Master Plan that will guide the District to meet or exceed the goals of 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.

RECYCLED WATER

Recycled water is one of the cornerstones of Central Basin's efforts to augment local supplies and reduce dependence on imported water. Since the initial planning and construction of Central Basin's water recycling in the early 1990s, Central 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 more than 200 site connections, Central Basin is projected to deliver 5,000 AF both inside and outside of the District's service area in fiscal year 2005-06.

In addition to Central Basin, other agencies distribute recycled water within the District's service area. These agencies include the City of Cerritos, City of Lakewood and WRD. WRD uses recycled water to help replenish the groundwater basin and halt sea-

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



water intrusion. Central Basin purchases recycled water from both the Los Coyotes and San Jose Creek Water Reclamation Plants (WRPs) for distribution within its service area. The WRPs together produce approximately 137 MGD of tertiary-treated effluent, nearly 40% of which Central Basin and agencies within the service area reused in 2000.

Central Basin's recycling program includes the E. Thornton Ibbetson Century Recycled Water Project (Ibbetson Century Project) and the Esteban E. Torres Rio Hondo Recycled Water Project (Torres Project). Both projects deliver recycled water for landscape irrigation and industrial uses.

The Ibbetson Century Project began delivering recycled water in 1992 and now delivers tertiary-treated recycled water from the Los Coyotes WRP, serving 11 cities. In 1994, the recycled water system extension, the Torres Project, reached into the northern portion of Central Basin's service area. The Torres Project delivers tertiary-treated recycled water from San Jose Creek WRP and serves eight cities.

Central 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. Table ES-3 summarizes the current and projected demands for recycled water within Central Basin.

Central Basin's Water Recycling Master Plan Update, slated for completion in 2006, will include future potential sites and users and help secure the alignment for the proposed Southeast Water

Table ES-3
Projected Recycled Water Used within Central Basin Service Area
(In Acre-Feet)

	2005[1]	2010	2015	2020	2025	2030
Central Basin						
Century/Rio Hondo Projects	3,150	10,500	11,750	13,000	14,250	15,500
Total	**3,150**	**10,500**	**11,750**	**13,000**	**14,250**	**15,500**
Other Programs within Central Basin						
City of Cerritos	1,714	1,950	1,950	1,950	1,950	1,950
City of Lakewood	352	450	450	450	450	450
WRD (Replenishment Spreading)	50,000	50,000	50,000	50,000	50,000	50,000
Total	**52,067**	**52,400**	**52,400**	**52,400**	**52,400**	**52,400**
Central Basin's Service Area Total	**55,217**	**62,900**	**64,150**	**65,400**	**66,650**	**67,900**

[1] The 2005 demands are based on the 2004-05 year, which is also considered one of the "wettest" years on record.

Reliability Project (SWRP). This project will "loop" the overall system and connect the Rio Hondo and Century projects and benefit an additional six cities. When operational in 2009, the SWRP will ultimately serve an additional 5,500 AFY of recycled water.

WATER QUALITY

Water quality regulations are an important factor in Central Basin's water management activities. Imported water quality is the responsibility of MWD to comply with State and Federal drinking water regulations. Purveyors that Central 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 through active participation. Imported water meets or exceeds all drinking water standards set by the California Department of Health Services.

Water quality of the Basin is continually monitored by both Central Basin and WRD. Challenges to water quality include potential contamination from adjacent basins, the Basin's susceptibility to seawater intrusion and the migration of shallow contamination into deeper aquifers. WRD and Central Basin have several active programs to monitor, evaluate and mitigate water quality issues.

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

Another potential water quality concern for the Basin is the presence of perchlorate, trichloroethylene and perchloroethylene in the San Gabriel Valley aquifer. In accordance with the plan to "clean up" the contaminated groundwater before it migrates to the Central Groundwater Basin, Central Basin has completed and is successfully operating extraction and treatment facilities that not only protect the local Basin but also recover potable water for distribution to retail agencies in the vicinity.

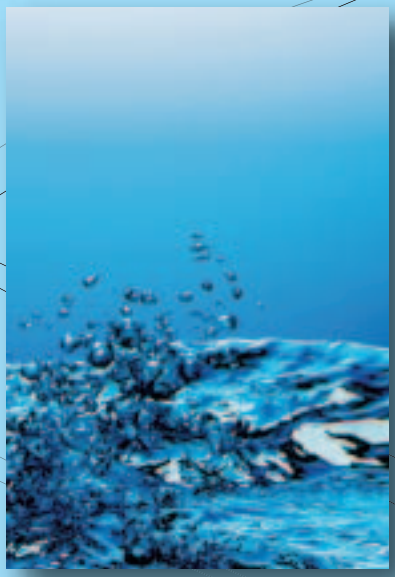
Recycled water meets Title 22 standards through tertiary treatment. Central Basin relies on the Sanitation District of Los Angeles County to meet all applicable State and Federal water quality regulations for recycled water it purchases and distributes through its two systems.

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 Central 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, Central 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. Central Basin also assesses a capacity charge at the retail level designed to recover the cost of MWD's capacity charge. In addition to the pass-through elements of MWD's rate structure, Central Basin's rates include a volumetric administrative surcharge and a fixed water service charge.

Since 1992, Central Basin has encouraged the maximum use of recycled water through the economic incentive of its rates and charges. Central Basin recycled water 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 maintained at a significant reduction to imported water so they may further encourage the use of recycled water.



Section 1

Introduction

1
Introduction

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

The legislature declared that 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.

Central Basin Municipal Water District's (District) 2005 UWMP has been prepared in compliance with the requirements of the Act, as amended to 2005[1] (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*

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 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

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

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

Table 1-1
Coordination with Appropriate Agencies

	Participated in UWMP Development	Commented on the Draft	Attended Public Meetings	Provided Assistance	Received Copy of Draft	Sent notice of intention to adopt
Regional Water Agency	Metropolitan Water District of Southern California	✔	✔		✔	✔
Customer Agencies	Bellflower-Somerset Mutual Water Co	✔	✔	✔	✔	✔
	California American Water Company			✔	✔	✔
	California Water Service Company	✔		✔	✔	✔
	City of Bell Gardens*				✔	✔
	City of Cerritos	✔	✔	✔	✔	✔
	City of Commerce	✔		✔	✔	✔
	City of Downey	✔		✔	✔	✔
	City of Huntington Park		✔	✔	✔	✔
	City of Lakewood	✔	✔	✔	✔	✔
	City of Lynwood			✔	✔	✔
	City of Montebello	✔		✔	✔	✔
	City of Norwalk	✔		✔	✔	✔
	City of Paramount		✔	✔	✔	✔
	City of Pico Rivera			✔	✔	✔
	City of Santa Fe Springs	✔	✔	✔	✔	✔
	City of Signal Hill*				✔	✔
	City of South Gate			✔	✔	✔
	City of Vernon			✔	✔	✔
	City of Whittier			✔	✔	✔
	County of Los Angeles-Rancho Los Amigos			✔	✔	✔
	La Habra Heights County Water District*				✔	✔
	Maywood Mutual Water Co. #1*				✔	✔
	Maywood Mutual Water Co. #2*				✔	✔
	Maywood Mutual Water Co. #3*				✔	✔
	Montebello Land & Water Co.			✔	✔	✔
	Orchard Dale Water District	✔		✔	✔	✔
	Park Water Company	✔	✔	✔	✔	✔
	Pico Water District			✔	✔	✔
	San Gabriel Valley Water Company			✔	✔	✔
	South Montebello Irrigation District			✔	✔	✔
	Southern California Water Company	✔	✔	✔	✔	✔
	Suburban Water Systems			✔	✔	✔
	Walnut Park Mutual Water Company*				✔	✔
	Water Replenishment District*	✔	✔		✔	✔

* Agencies were not required to do a 2005 Urban Water Management 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 the 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.

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 as well as 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 1954 to help mitigate the overpumping in the Central Groundwater Basin (Basin). Central Basin's founders realized they would have to curtail the use of pumping by providing the region with imported water. Therefore, Central Basin joined MWD to purchase, on a wholesale level, potable water imported from the Colorado River and the SWP and then sell it to the local municipalities, investor-owned and mutual water companies and districts. As a water supplier, MWD provides the Southern California region with a reliable supply of imported water. Central Basin remains one of the largest member agencies in MWD's family of wholesalers.

Today, Central Basin wholesales potable water to 24 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. Central Basin supplies imported and recycled water to its customer agencies to help reduce their reliance on groundwater supplies.

Central 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, Central Basin's Board of Directors appoints two representatives to serve on the 37-member MWD Board of Directors. Central Basin's representation on the MWD Board is critical to shaping a regional voice on water issues.

1.3.2 DISTRICT'S SERVICE AREA

Central Basin's service area covers approximately 227 square miles and includes 24 cities and several unincorporated areas in Los Angeles County. Approximately 1.61 million people are served within Central Basin's service area. The cities and their associated divisions include:

Division 1:
Bell Gardens, Downey, Montebello, Norwalk and Vernon

Division 2:
La Habra Heights, La Mirada, Pico Rivera, Santa Fe Springs and Whittier

Division 3:
Bell, Commerce, Huntington Park, Maywood, portions of Monterey Park and areas of unincorporated East Los Angeles

Division 4:
Portions of Carson and Cudahy, Lynwood, South Gate, Florence-Graham and Willowbrook

Division 5:
Artesia, Bellflower, Cerritos, Hawaiian Gardens, Lakewood, Paramount and Signal Hill

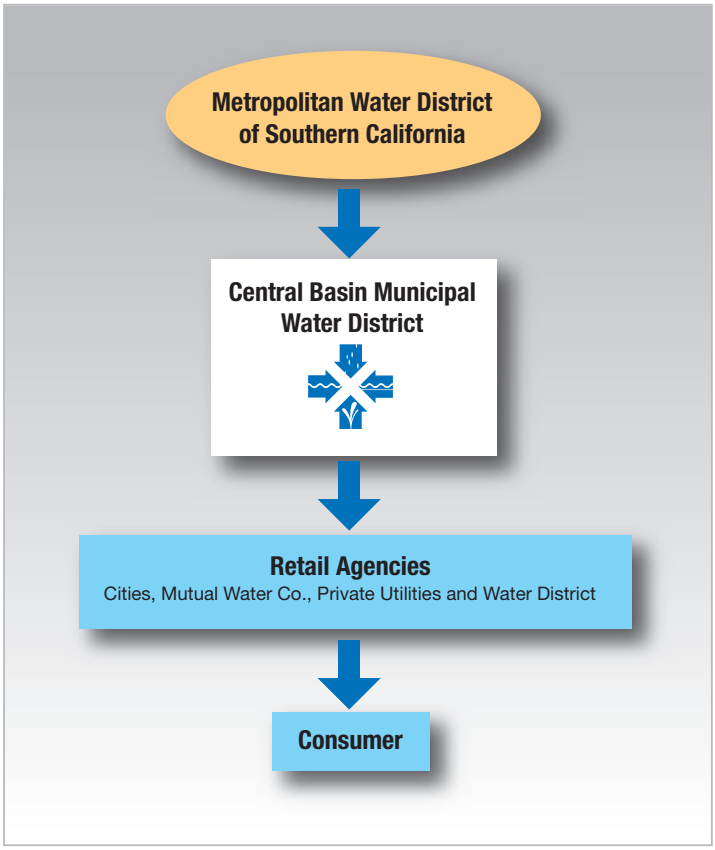
1.3.3 RELATIONSHIP TO METROPOLITAN WATER DISTRICT

Realizing that the Basin could not meet the overlying demand for water in the early 1950s, the cities' leaders and residents formed the District to petition for annexation to the MWD family in order to receive supplemental imported water.

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



Section 2

Water Demand

2

Water Demand

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

2.1 OVERVIEW

Today, the total water demand for the 1.61 million people living within Central Basin's service area is approximately 280,400 acre-feet (AF) with replenishment demand making up 27,600 AF. One acre-foot equals 326,000 gallons and serves the annual water needs of two families. In 1980, Central Basin's population was 1.22 million and the service area's water demand was 260,960 AF. In those 25 years, Central Basin's retail water demand has grown 7.4% while population has grown 30%. One of the contributing factors to this low growth in demand has been in large part because of conservation and education efforts by the water community.

In the last five years, Central Basin's water demand has increased by only 1% while population has increased by more than 5%. This gradual increase in water usage is attributed to Central 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, water use will continue to increase. However, projections show that Central Basin's water usage is expected to increase roughly 0.5% per year during the next 25 years, as illustrated in Table 2-5 on page 2-8.

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

2.2 CLIMATE CHARACTERISTICS

Central 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 year[1]. The combination of mild climate and low rainfall makes the area a popular residential destination, creating a challenge for water agencies in meeting for increasing water demands with a limited water supply.

Areas with low precipitation, such as Southern California, are typically vulnerable to droughts. Historically, Central Basin has experienced some severe dry periods (Droughts of 1977-78 and 1989-92) and until recently the Los Angeles region had the five driest years on record (1999-2004). In fact, anything less than the average yearly rainfall causes concern for water agencies. Central Basin has been actively pursuing and accomplishing these water saving techniques for the last 15 years to ensure adequate future water reliability.

Table 2-1 illustrates the climate characteristics for the Los Angeles region, taken at both the Long Beach Station and the Montebello Station, for the period between 1979 and 2004 (25 years) including standard monthly average ETo[2] (Long Beach Station), the average rainfall (Montebello Station) and the average temperature (Montebello Station). In comparison to other cities with an abundant supply of precipitation each year, the low rainfall in this region invariably challenges Central Basin to provide sufficient, reliable, quality water to meet the area's increasing water needs. The average precipitation for the last 25 years is approximately 16.02 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.

1 According to the National Weather Service

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 2-1
Climate Characteristics - Los Angeles Region
Period 1/1/1979 to 12/31/2004

	Jan	Feb	Mar	Apr	May	June
Standard Monthly Average Eto[1]	1.65	2.15	3.59	4.77	5.12	5.71
Average Rainfall (inches)[2]	3.71	4.07	3.19	0.94	0.24	0.07
Average Temperature (Fahrenheit)[2]	69.4	71.1	72.7	77.8	79.4	83.7

	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	0.02	0.20	0.32	1.28	1.96	**16.02**
Average Temperature (Fahrenheit)	88.6	89.7	87.9	82.6	75.4	70.9	**79.1**

[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 web site at the Montebello Station: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?camont

2.3 DEMOGRAPHICS

Central Basin's service area encompasses 227 squares miles in southeast Los Angeles County, including 24 cities, water agencies, publicly-owned mutual water companies and publicly regulated utilities. This service area includes some of the most densely populated areas in the County. According to the 2000 U.S. Census Report and the Metropolitan Water District of Southern California's (MWD) demographics data, Central Basin has grown from 1.4 million people in 1990 to 1.61 million people today.

Based on MWD's demographic projections, population is expected to increase an average of 3.01% every five years for the next 25 years, or 0.64% annually. By 2030, Central Basin's population is expected to grow by more than 258,000 people. Table 2-2 displays the demographic projections for the next 25 years.

Table 2-2 also displays Central Basin's total households, which are expected to increase 19% by 2030, especially in the Multi-family category where households will increase by 48,000 people. As it relates to water demand, the availability of more households increases the demand on water supplies. As for employment, Central Basin is expected to see a 25% 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 Central Basin's service area have remained fairly consistent. As illustrated in Figure 2-1, the Central Basin region has not seen significant increases in water demands during the past 15 years despite population growth at an average rate of 10,350 persons per year and continued in-fill development in the service area. Central Basin's FY 2004-05 retail water demand was 252,800 AF.

Total water use, or demand, within Central 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 (Alamitos) or to the spreading grounds (Montebello), are not directly delivered to the public but enable continued groundwater production to help satisfy retail demand.

Table 2-2
Demographic Projections for Central Basin's Service Area[1]

Year	2005	2010	2015	2020	2025	2030
Population	**1,614,400**	**1,655,200**	**1,712,300**	**1,768,000**	**1,821,200**	**1,872,500**
Single-family	291,200	300,200	301,800	311,400	320,500	323,800
Multi-family	124,900	132,600	147,000	153,400	160,200	172,900
Total Household	**416,100**	**432,800**	**448,800**	**464,800**	**480,700**	**496,700**
Persons per Household	3.84	3.78	3.78	3.77	3.75	3.74
Employment	591,700	659,700	682,600	702,600	720,500	736,900

[1] Information based on MWD Demographic Data, 2005.
Note: All units are rounded to the nearest hundred; totals may not sum exactly due to rounding.

Figure 2-1 displays Central Basin's total retail water demand from FY 1990 to 2005. As previously discussed, retail demands have remained fairly consistent since 1995 following several years of increasing demands after the drought. The average retail demand for the past 15 years is 260,468 AF.

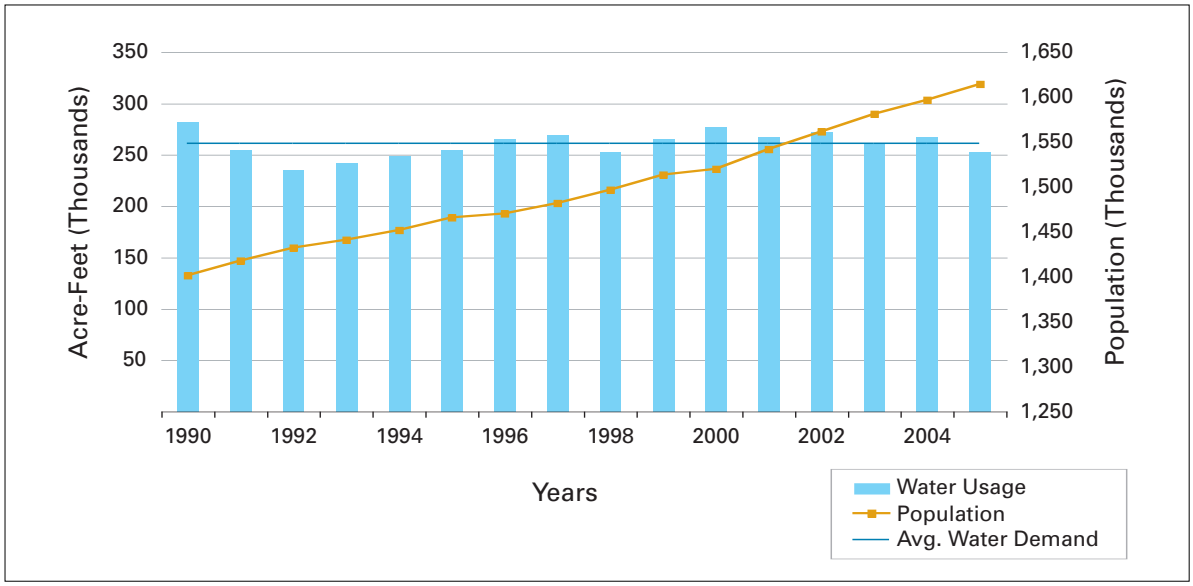
The District averaged 264,167 AF for the past five years, which is only 1.4% above the 15 year average.

Central Basin's service area is using the same amount of water as it did 10 years ago, despite the addition of 148,560 people. This indicates that water conservation and education has significantly affected the manner in which Central Basin's residents are using water today. We can further verify this by reviewing Central Basin's water usage per person in "Per Capita Water Usage."

2.4.1 HISTORICAL PER CAPITA WATER USAGE

According to the Pacific Institute[3], the State's total water usage is equivalent to 183 gallons per capita

Figure 2-1
Central Basin's Historical Total Retail Water Demand[1] vs. Population



[1] Information based on MWD Demographic Data, 2005.

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

per day (gpcd) for the nearly 34 million people living in California. Through conservation measures such as Ultra-Low-Flush Toilets (ULFT), High Efficiency Clothes Washers, low-flow showerheads, new technologies in water irrigation and education programs, Central Basin has gradually reduced Per Capita water usage.

For the last five years the usage has decreased to an average of 152 gallons per day gpcd. Figure 2-2 illustrates the retail water usage per capita for the last five fiscal years comparative to population in Central Basin's service area.

As displayed below, population has been steadily increasing in the last five years while Per Capita water usage decreased to 140 gpcd, verifying the notion that the District's current water resources efforts are meeting the growing water demands of today.

2.4.2 REPLENISHMENT DEMANDS

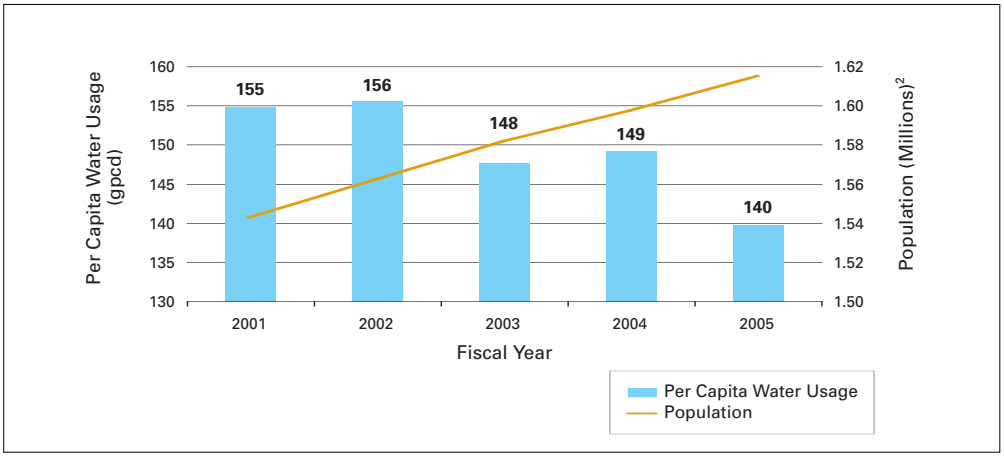
Replenishment water is defined as water that is used to refill or protect the groundwater basin. The Water Replenishment District of Southern California (WRD) is the entity responsible for maintaining and replenishing the West Coast and Central Groundwater Basins. WRD is a special district created by the State and governed by a five-member elected body to replenish and protect these groundwater basins with imported water and recycled water.

Spreading Demands

As groundwater is extracted annually beyond the natural level of replenishment known as basic yield, WRD purchases supplemental water to refill the basin and replenish the amount that is extracted above the basin yield. This replenishment water is a combination of allowable deliveries of recycled water and the purchases of untreated imported water.

As the imported wholesaler, Central Basin sells untreated imported water to WRD to be conserved at the Rio Hondo and San Gabriel River Spreading Grounds (Spreading Grounds) in the Montebello Forebay. Demands at the Spreading Grounds have varied year to year. As shown in Figure 2-3 on the opposite page, imported spreading purchases can range from 45,000 AF to 0 AF in any given year. The cause for variation can be the result of available seasonal water from MWD or operations, maintenance and construction activities at the

Figure 2-2
Historical Per Capita Retail Water Usage[1]



[1] Retail water usage includes groundwater, imported water and recycled water.
[2] Information based on MWD Demographic Data, 2005.

spreading grounds, or unpredictable replenishment needs of the Basin. For example, spreading water deliveries were limited in 1997-98 due to the "El Nino" effect, which brought on heavy rains that met the replenishment needs for the Basin. By contrast, the drought conditions in the region in 1990 increased the need for replenishment deliveries to reach more than 50,000 AF. Nevertheless, WRD's purchases average 27,000 AFY of imported water per year.

Rio Hondo Spreading Grounds. Courtesy of WRD.

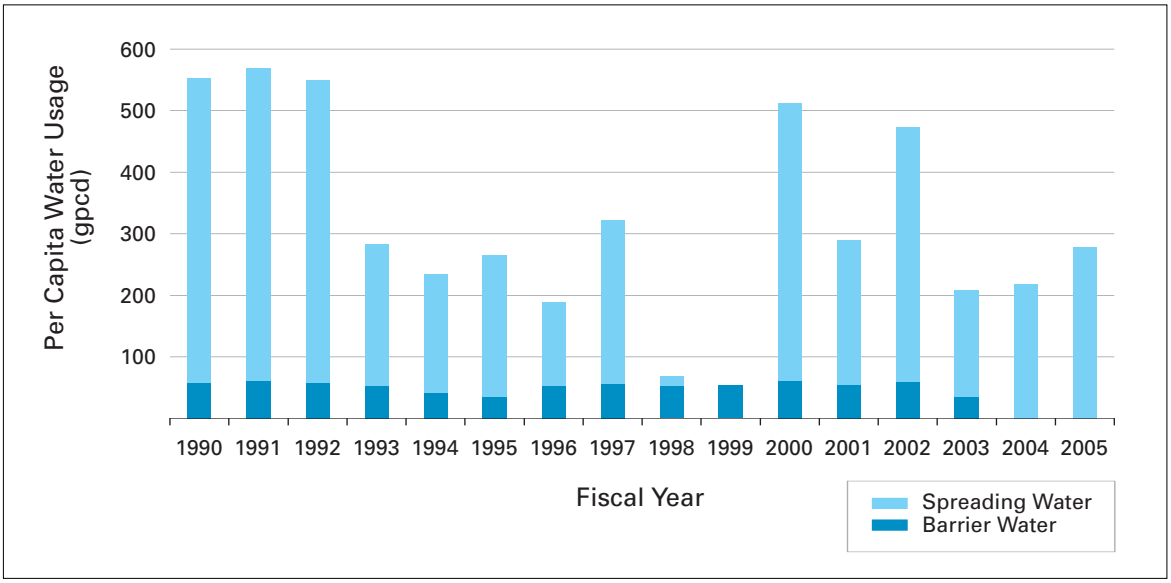
Barrier Demands

Unlike the Spreading Grounds, the demands at the Alamitos Barrier (Barrier) are mostly consistant year to year. This is mainly due to the required regular injection of imported water needed to prevent seawater intrusion from entering into the Basin. For the last 10 years, the average demand at the Barrier has been about 5,300 AF. However, in 2003 the City of Long Beach took over the connection that serves the Barrier with imported water, and Central Basin no longer supplies water to meet those demands. Looking forward, WRD plans to reduce imported demands at the Barrier by 3,000 AF, replacing it with the delivery of highly treated recycled water through WRD's new Leo J. Vander Lans Advanced Water Treatment Center located in Long Beach.

2.4.3 RETAIL WATER DEMAND BY CUSTOMER AGENCY

As mentioned above, Central Basin, as a wholesaler, has not seen significant increases in water demands for the past 10 years. However, local retail customer agencies have experienced

Figure 2-3
Replenishment Demands in Central Basin's Service Area



Source: Central Basin Wateruse Database, 2005

Table 2-3
Total Water Demand Per Central Basin Customer Agency
FY 1990-1995 vs. FY 2000-2005
(In Acre-Feet)

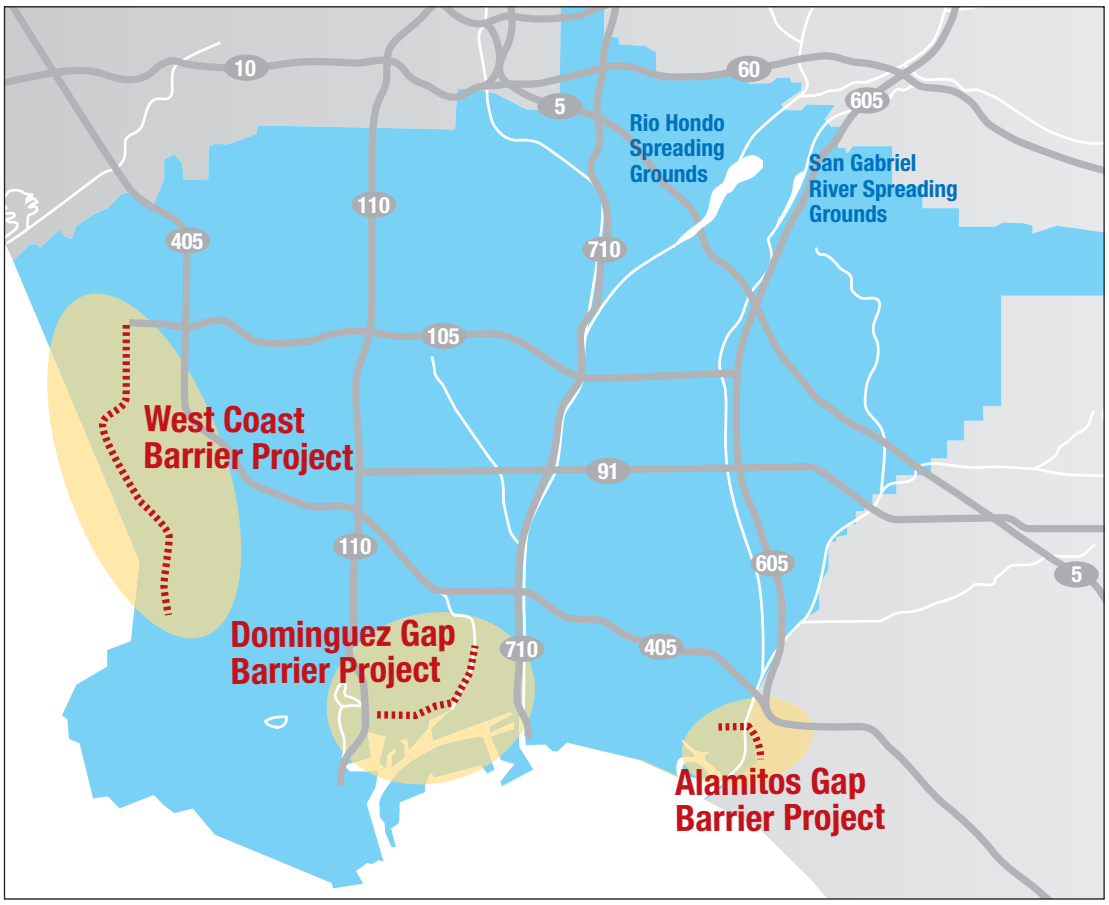
Customer Agency	1990-1995 Average Total Water Use	2000-2005 Average Total Water Use	% Increase/ (Decrease)
Bellflower- Somerset MWC	8,102	6,465	(20.2%)
Cal-Water- East LA	20,500	21,098	2.9%
Cal-Water- Commerce	2,663	2,689	1.0%
City of Bell Gardens	1,204	1,252	4.0%
City of Cerritos	12,239	14,644	19.7%
City of Downey	16,263	18,297	12.5%
City of Huntington Park	5,746	5,826	1.4%
City of Lakewood	8,733	9,545	9.3%
City of Lynwood	6,710	6,850	2.1%
City of Montebello	1,594	1,627	2.1%
City of Norwalk	1,358	1,564	15.2%
City of Paramount	7,407	7,923	7.0%
City of Santa Fe Springs	8,549	8,462	(1.0%)
City of Signal Hill	1,908	2,295	20.3%
City of South Gate	9,368	11,281	20.4%
City of Vernon	8,941	11,729	31.2%
LA Co. - Rancho Los Amigos	947	880	(7.1%)
La Habra Heights Water District	2,331	2,824	21.1%
Maywood MWC No.1	884	941	6.4%
Maywood MWC No.2	1,461	1,318	(9.8%)
Maywood MWC No.3	1,478	1,518	2.7%
Orchard Dale Water District	2,276	2,448	7.6%
Park Water Company	10,928	14,043	28.5%
San Gabriel Valley WC	5,255	3,555	(32.4%)
Southern California WC	30,256	29,998	(0.9%)
Suburban Water System	15,743	15,441	(1.9%)
Walnut Park Mutual WC	1,491	1,567	5.1%
Total	**194,335**	**206,080**	

changes in their overall water demand since 1990. Table 2-3, on the opposite page, illustrates the changes, either increases or decreases, in each retail customer agencies' average water usage during two different five-year periods since 1990.

Although some agencies have seen some dramatic shifts in water demand usage during the past 15 years, the overall average per customer agency saw a 5.5% increase in water demand. Some of the significant changes among customer agencies may be attributed to reductions and/or expansions in service area, an increase or decrease 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 Central 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. Central 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.



Courtesy of WRD.

Water Replenishment District service area and locations of spreading grounds and seawater intrusion barriers

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 Central Basin under normal demand conditions.

As displayed below, the retail demand in Central 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, with imported and recycled water meeting the growth during the next 25 years.

2.5.1 PROJECTED PER CAPITA

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 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 during the next 25 years. Essentially, more people are using less water.

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

Year	Estimated Population[1] (Millions)	Retail Water Usage[2] (AF)	Per Capita (GPCD)
2010	1.655	273,991	148
2015	1.712	281,122	147
2020	1.768	287,400	145
2025	1.821	294,650	144
2030	1.873	301,900	144
		Average	**146**

[1] Information based on MWD Demographic Data, 2005.
[2] Retail Water Usage includes recycled water but does not include replenishment sales.

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 the Barrier with increased deliveries of recycled water.
Furthermore, there are projects currently being studied to increase the amount of storm and recycled water at the Spreading Grounds within the Central Basin. Any one of these projects can affect

Table 2-4
Central Basin's Current and Projected M&I Water Demand (In Acre-Feet)

District Water Demands	2005[1]	2010	2015	2020	2025	2030
Retail Municipal & Industrial Use						
Groundwater[2]	186,549	202,000	202,000	202,000	202,000	202,000
Imported Water	61,033	59,091	64,691	70,462	76,409	82,535
Recycled Water[3]	5,217	12,900	14,150	15,400	16,650	17,900
Total	**252,799**	**273,991**	**280,841**	**287,862**	**295,059**	**302,435**

[1] The 2005 demands are based on the 2004-05 year, which was considered one of the "wettest" years on record.
[2] Includes groundwater production from the Central and Main San Gabriel Basins (est. 42,000 AF).
[3] Includes Recycled Water sales from Central Basin's service area and Cerritos Water Systems.

the projections of replenishment water demands. Below are the estimated replenishment demands during the next 25 years under normal conditions. Although replenishment demands may fluctuate year to year, the overall demand should stay relatively the same because groundwater production within the Central Basin is limited according to the allowable pumping rights each producer is allocated in the Central Basin. 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]	27,600	27,600	27,600	27,600	27,600	27,600
Recycled Water[2]	50,000	50,000	50,000	50,000	50,000	50,000
Total	**77,600**	**77,600**	**77,600**	**77,600**	**77,600**	**77,600**

[1] Imported water demands are based on the Water Replenishment District's projected estimate needs, although they may adjust depending upon groundwater production.
[2] Recycled water is limited to 50,000 AF according to the California Department of Health Service's permit which allows a maximum of 150,000 AF over three years.

Section 3

Water Supply

3

Water Supply

This section discusses the current and future water supply within Central Basin's service area

3.1 OVERVIEW

It is Central 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.

Sixty years ago the average customer agency in Central Basin relied completely on groundwater. Today, however, it relies on a more diverse mix of water resources: 68% groundwater, 22% imported, 2% recycled water (only M&I) and 8% conservation efforts. It is projected that by 2030, the resource mix on average will be 56% groundwater, 23% imported and 5% recycled water, 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 Central Basin, including a review of the District's current and projected water supply mix, a description of each water source on which Central Basin's customer agencies currently rely and expected future supplies that Central Basin is planning and/or developing to meet its region's future demands.

3.2 CENTRAL BASIN'S WATER SUPPLY PORTFOLIO

Since its formation in 1952, Central 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, Central 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 during 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
Historical, Current & Projected Water Supplies

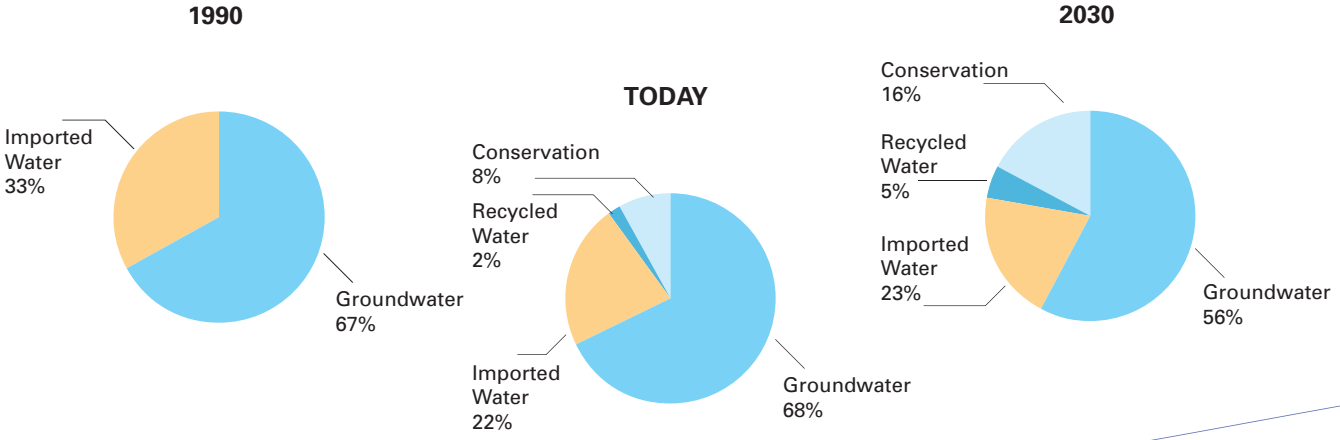


Table 3-1
Historical, Current & Projected Retail Water Supplies
(In Acre-Feet)

Type of Water		FY 1990	Today[1]	2030
Groundwater[2]		187,931	186,549	202,000
Imported Water[3]		94,059	61,033	82,535
Recycled Water[4]		-	5,217	17,900
	Total	**281,989**	**252,799**	**302,435**
Conservation[5]		-	21,100	58,400
	Total	**281,989**	**273,899**	**360,835**

[1] Sales based upon FY 2004-05.
[2] Groundwater production within Central Basin service area only, including imported groundwater production from Main San Gabriel Basin (Avg 42,000 AFY).
[3] Imported retail use only; does not include replenishment deliveries (i.e. Spreading or Barrier).
[4] Recycled retail use only; does not include replenishment deliveries (i.e. Spreading or Barrier).
[5] Conservation consists of active and passive savings according to the District's projected estimates.

3.3 CENTRAL BASIN'S WATER SOURCE

3.3.1 IMPORTED WATER SUPPLY

Central Basin relies on approximately 90,600 acre-feet per year (AFY) of imported water from the Colorado River and SWP 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 550,000 AF per year of Colorado River water. MWD also holds a priority for an additional 662,000 AF 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

1. 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.

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.

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 (DWR), 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 the 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, 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, Central Basin has delivered Non-Interruptible Water (treated full-service), Seasonal Treated Replenishment Water and Seasonal Untreated Replenishment Water.

Non-Interruptible Water is the treated firm supply that is available all year round. Central Basin delivers an average of 63,000 AFY of

non-interruptible water annually. It is used as the main supplemental supply of cities and water agencies and has historically been used as the main supply for the Alamitos Barrier; however, the City of Long Beach now provides water for that barrier.

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 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.

Seasonal Untreated Replenishment Water, better known as "Spreading" water, is delivered to the replenishment spreading grounds in the Montebello Forebay. Spreading water does not require treatment and is generally provided during the seasonal months (October through April), which allows for it to be purchased at a discounted rate. WRD is the sole purchaser of spreading water, and the amount varies year to year depending on replenishment needs of the Basin, with the long term average being approximately 27,600 acre-feet per year.

3.3.2 GROUNDWATER SUPPLY

Groundwater has for many years been the primary supply of water within Central Basin's service area. In fact, it was the sole source of water supply until the Central Groundwater Basin (Basin) was overdrafted in the late 1940s. Today, the average customer agency in Central Basin relies on groundwater production for 62% of its water supply, although there still remain a few agencies in the District's service area that rely exclusively on groundwater to meet all current water needs.

Ultimately, the extensive overpumping of the Basin through the years led to critically low groundwater levels. This overpumping of the Basin resulted in a legal judgment, or adjudication, that limited 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 Basin was operating with an annual overdraft. In order to address this overdraft, imported and recycled water sources and a means to purchase these sources were required. The groundwater producers (pumpers) in the area, which are members of the Central 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 associations 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 in charge of 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 beneficial water needs.

Although the water rights have been bought, sold, exchanged or transferred through 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 Central Basin's service area totaled 163,960 AF. However, not all of these water right holders are water retail agencies. Many of these holders are nurseries, businesses, cemeteries and private entities that make up approximately 23% (37,287 AF) of the total water rights. Shown in Table 3-2 are all of the water retailers' adjudicated groundwater rights in Central Basin's service area for fiscal year 2003-04.

Although most of the groundwater supply is extracted from the Central Basin, there are a number of water retailers that retain groundwater rights within the Main San Gabriel Basin that are extracted and imported within their Central Basin service area. The Main San Gabriel Basin underlies most of the San Gabriel Valley, above Central Basin. It is bounded by the San Gabriel Mountains to the north, San Jose Hills to the east, Puente Hills to the south and by the Raymond Fault and a series of other hills to the west.

Table 3-2
Groundwater Pumping Rights 2003-2004

Central Basin Retail Agencies	Adjudicated Pumping Rights in Central Basin
Bellflower- Somerset MWC	4,313
California Water Service Company- East LA	11,774
California Water Service Company- Commerce	5,081
City of Bell Gardens	1,914
City of Cerritos	4,680
City of Downey	16,553
City of Huntington Park	3,853
City of Lakewood	9,423
City of Lynwood	5,337
City of Montebello	387
City of Norwalk	1,267
City of Paramount	5,883
City of Santa Fe Springs	4,036
City of Signal Hill	2,022
City of South Gate	11,183
City of Vernon	8,039
County LA- Rancho Los Amigos	490
La Habra Heights County Water District	2,498
Maywood Mutual Water Company No.1	741
Maywood Mutual Water Company No.2	912
Maywood Mutual Water Company No.3	1,407
Orchard Dale Water District	1,107
Park Water Company	1
San Gabriel Valley Water Company	2,616
Southern California Water Company	16,439
Suburban Water System	3,721
Walnut Park Mutual Water Company	996
Non-Retail Water Agencies[1]	37,287
Total	**163,960**

Source: Central Basin Watermaster Report, 2004
[1] Water right holders that are not water retail agencies; i.e. nurseries, cemeteries, industries, etc.

The total amount of water extracted from the Main San Gabriel Basin and imported within Central Basin service area totals approximately 42,000 AFY. Table 3-3 displays the water retailers and the amount produced from this adjoining basin for the past five fiscal years.

As illustrated in Table 3-4, the total amount of groundwater produced through the past five years in the Central and Main San Gabriel Basins has remained fairly consistent. The amount of groundwater produced ranges from 94% to 98% of the total groundwater supply available.

The total amount of groundwater projected to be extracted during the next 25 years will be fairly consistent due to the adjudication in both basins. The economic costs to pump groundwater versus the purchases 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 98% percentile of available supply, as illustrated in Table 3-5 on the next page.

Groundwater Recharge

For the past 42 years, WRD has replenished the Basin through "Spreading Grounds" and prevented further seawater intrusion by injecting recycled and imported water into the Alamitos Barrier, which were created by the Los Angeles County Flood Control District (LACFCD) and owned and operated by the Los Angeles County Department of Public Works.

WRD assesses a groundwater production fee, known as their "Replenishment Assessment," to pumpers in the Basin. This assessment provides funds that WRD uses to purchase and produce water for both spreading and injection to replace groundwater pumped as well as hydrological barriers to seawater intrusion. The available supply of replenishment water to physically recharge the basins can be classified as follows:

Table 3-3
Amount of Groundwater Pumped from Main San Gabriel Basin
(In Acre-Feet)

Water Retailer	2000	2001	2002	2003	2004
California Domestic Water Co.	19,886	18,603	21,204	21,338	21,233
San Gabriel Valley Water Co.	279	300	1,500	1,454	1,450
Suburban Water Systems	13,570	12,885	13,773	11,497	12,353
City of Whittier	8,952	8,107	8,116	7,411	8,021
Total	**42,687**	**39,895**	**44,593**	**41,700**	**43,057**

Source: Central Basin Watermaster Report

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

Basin Name	2000	2001	2002	2003	2004
Central Groundwater Basin[1]	158,516	153,242	157,036	152,802	151,785
Main San Gabriel Basin[2]	42,687	39,895	44,593	41,700	43,057
Total	**201,203**	**193,137**	**201,629**	**194,502**	**194,842**
% of Total Water Supply	98%	94%	98%	94%	95%

[1] Includes Central Basin's service area groundwater production.
[2] Water Production from Main San Gabriel Basin and imported into Central Basin's service area.

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

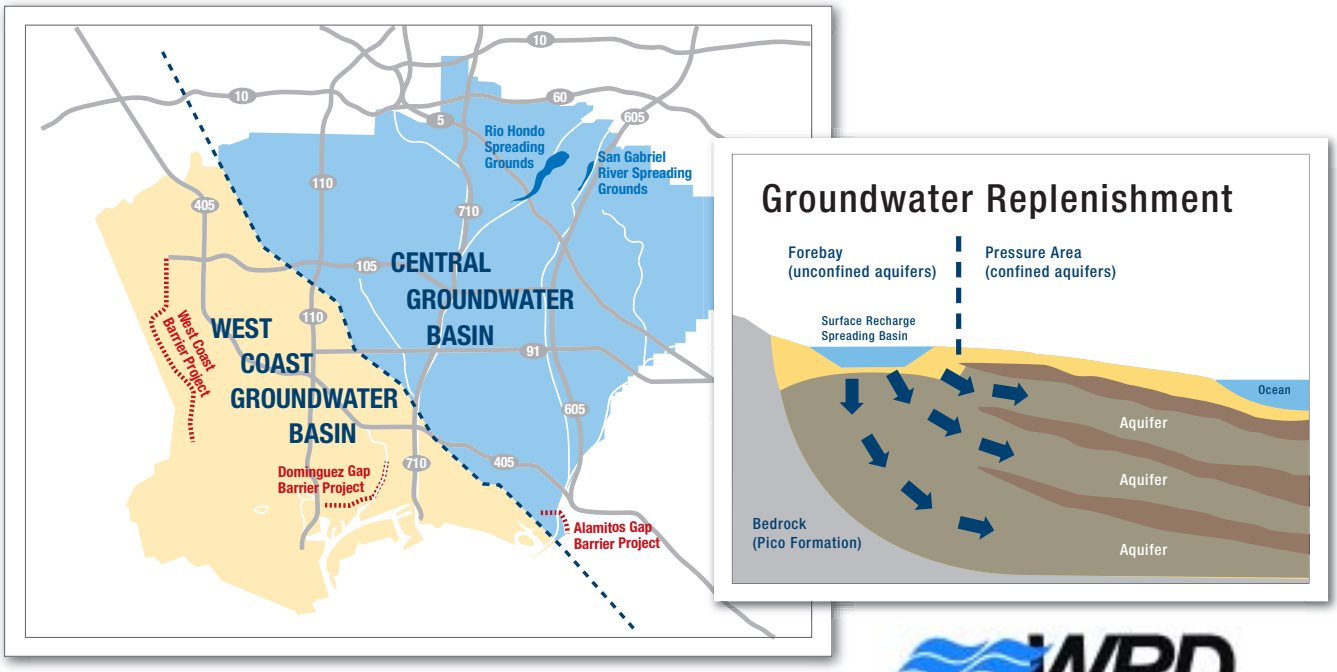
Basin Name	2010	2015	2020	2025	2030
Central Groundwater Basin[1]	160,000	160,000	160,000	160,000	160,000
Main San Gabriel Basin[2]	42,000	42,000	42,000	42,000	42,000
Total	**202,000**	**202,000**	**202,000**	**202,000**	**202,000**
% of Total Water Supply	98%	98%	98%	98%	98%

[1] Includes Central Basin's service area groundwater production.
[2] Water Production from Main San Gabriel Basin and imported into Central Basin's service area.

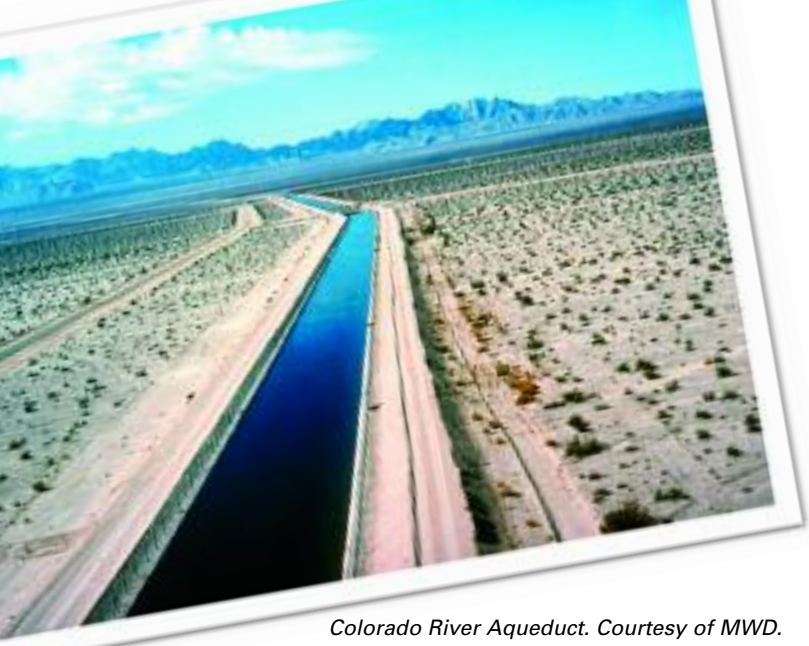
- **Local water**
  Storm flows from the San Gabriel River, Rio Hondo and other waterways within the San Gabriel Valley and flow obligations under the San Gabriel River Judgment with the Upper Area of the Central Basin, defined as "Make-up Water."

- **Recycled water**
  Recycled water purchased from the County Sanitation Districts of Los Angeles County for deliveries at the Montebello Forebay Spreading Grounds or highly treated water for injection into the Alamitos seawater barrier.

- **Imported water**
  Purchased untreated imported water from Central Basin for deliveries at the Montebello Spreading Grounds or treated imported water from the City of Long Beach for injection into the Alamitos seawater barrier.



Courtesy of WRD.



Colorado River Aqueduct. Courtesy of MWD.

WRD also encourages in-lieu replenishment of the Basin. Under the In-Lieu program, pumpers are encouraged through a financial incentive to purchase surplus imported water from Central Basin "in-lieu" of pumping groundwater.

Table 3-6 summarizes the historical amounts of imported water purchased to replenish the Basin at both the Spreading Grounds and at the Alamitos Barrier.

3.3.3 RECYCLED WATER SUPPLY

Recycled water is one of the cornerstones of Central Basin's efforts to augment local supplies and reduce dependence on imported water. Since the planning and construction of Central Basin's water recycling system in the early 1990s, Central 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 201 site connections, Central Basin has delivered an average of 3,800 AF per year both inside and outside of the District's service area. This upcoming fiscal year, the District anticipates recycled water sales to reach 5,000 AF.

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

Fiscal Year	Spreading Water	Barrier Water[1]	Total
1990	49,531	5,756	**55,287**
1991	50,785	6,168	**56,953**
1992	49,229	5,757	**54,986**
1993	22,987	5,261	**28,248**
1994	19,239	4,145	**23,384**
1995	23,008	3,496	**26,504**
1996	13,693	5,269	**18,962**
1997	26,440	5,739	**32,179**
1998	1,562	5,336	**6,898**
1999	0	5,330	**5,330**
2000	45,037	6,169	**51,206**
2001	23,451	5,398	**28,849**
2002	41,268	6,062	**47,330**
2003	17,297	3,479	**20,776**
2004	21,788	0	**21,788**
2005	27,785	0	**27,785**

Source: Central Basin Wateruse Database, 2005
[1] Barrier supplies transferred to the City of Long Beach in 2003.

In addition, the City of Cerritos has its own recycled water system that currently treats and supplies within its City's boundaries and its neighbor, the City of Lakewood, a total of 2,400 AF per year. Together, both these recycled water programs plan to offset potable supplies by 7,400 AF this next fiscal year.

Recycled water deliveries within Central Basin are projected to reach 10,500 AF by year 2010. Refer to a more detailed description of Central Basin's water recycling program in Section 8 of this Plan.

Recycled water effluent from San Jose Creek Plant.

3.4 ALTERNATIVE WATER SUPPLY PROJECTS

3.4.1 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. Central 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 Basin judgment. Included is the availability for a District-sponsored storage program with MWD in which retail agencies with imported water connections could partake. The size of such a program would depend on retailers' total demand and the amount that they could realistically shift of groundwater to imported water.

3.4.2 WATER TRANSFERS & EXCHANGES

Water transfers and exchanges are management tools to address increased water needs in areas of limited supply. Although they do not generate a new supply of water, they do better 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 Central Basin is a member of MWD, there has not been a compelling reason or opportunity to pursue transfers directly.

3.4.3 DESALINATED WATER

Desalination is viewed as a way to develop a local, reliable source of water that assists agencies in reducing their demand on imported water, reducing groundwater overdraft and in some cases make unusable groundwater available for municipal uses. Although Central Basin currently has not identified any projects for desalination of seawater or impaired groundwater, the District is a strong supporter of the endeavor. This additional source of water supply would provide greater water reliability for the District.

In 2005, the District passed a resolution supporting the efforts of its sister agency, West Basin Municipal Water District (West Basin), in the development of a seawater desalination project. West Basin has been operating a desalination pilot project since May 2003 to identify optimal performance conditions and evaluate the water quality of the water produced. The project is located at the El Segundo Power Plant and processes 40 gallons per minute.

Section 4

Water Reliability

4

Water Reliability

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

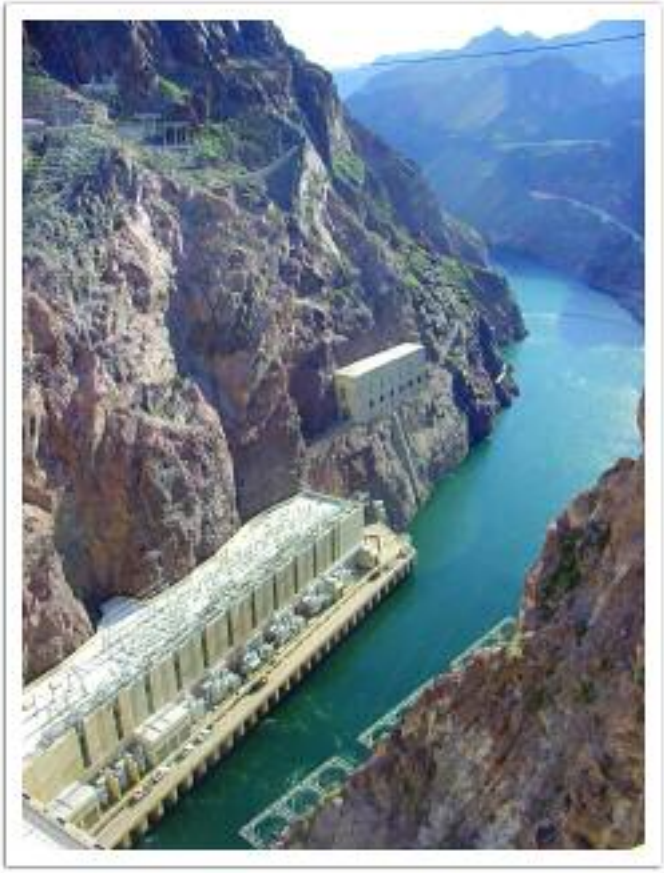
4.1 OVERVIEW

Among the future challenges of continued urbanization in Southern California is the question 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 supply.[1]

This section will discuss how the regional supplier, MWD, in partnership with its member agencies such as Central Basin, plans on ensuring future reliability through water management measures, long-term planning and investment in local resources, Central 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 MWD limits deliveries.

4.2 MWD WATER SUPPLY RELIABILITY

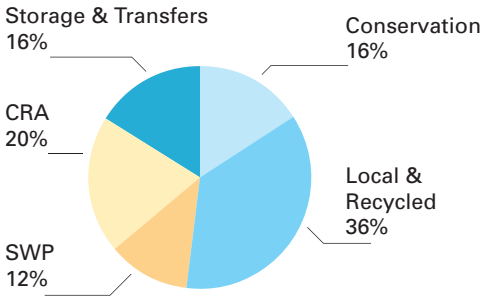
With the experience of the droughts of 1977-78 and 1989-92, MWD has undertaken a number of planning initiatives to ensure water supply reliability. Included among them are the Integrated Resources Plan (IRP), the Water Surplus and Drought Management Plan (WSDM Plan) and local resource investments. Together, these initiatives have provided the policy framework for MWD and its member agencies to manage their water resources in such a way 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% reliability during the next 20 years.



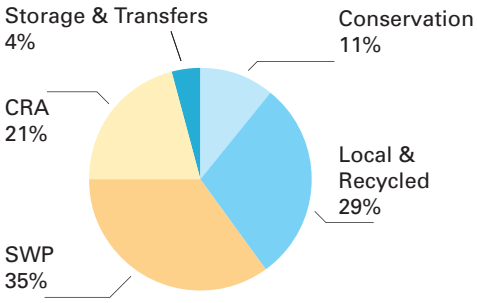
Colorado River water at Hoover Dam in Nevada.

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 during the past decade.

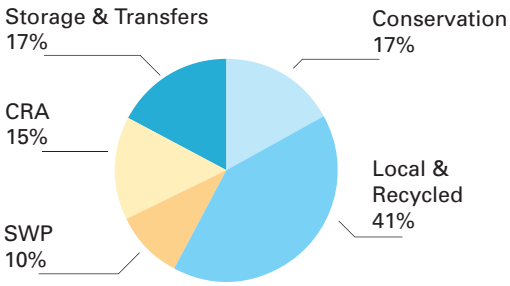
1996 IRP
2020



Prior to the IRP
2020



2003 IRP Update
2025



4.2.1 MWD INTEGRATED RESOURCE PLAN

To meet the challenges of the supply shortages on the State and Colorado River Aqueducts under increases in population and growing State and Federal regulatory requirements, MWD's Board of Directors called for the development of an IRP in 1996. The IRP's objective was to determine the appropriate combination of water resources to provide 100% reliability for full service demands during 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 also subject to revision when conditions and opportunities change through time. In 2003, MWD completed its first update to the IRP, which included revised projected demands and an updated resource supply mix. MWD has 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 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% reliability through the year 2025.

4.2.2 MWD WATER SURPLUS AND DROUGHT MANAGEMENT PLAN

In order for MWD to be 100% 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 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 regional reliability is to further enhance local resources. In addition to the traditional supplies of imported water and groundwater, MWD has looked to invest in numerous local resources projects including recycled water, conservation, groundwater, surface water storage and even ocean water desalination to meet future demands.

Since 1982, MWD has provided financial assistance to more than 75 projects in the areas of water recycling and groundwater recovery totaling approximately $124 million and $41 million, respectfully.

MWD has already invested more than $290 million in water conservation, which has produced significant water savings for the past 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 newly 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 who rely on this water. 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 acre-feet, or 201 billion gallons. The lake nearly doubled the area's surface water storage capacity and provides additional water supplies for drought, peak summer and emergency needs.

Diamond Valley Lake. Courtesy of MWD.

4.3 CENTRAL BASIN'S WATER SUPPLY RELIABILITY

Along with MWD's reliability initiatives, Central Basin has also taken important steps during 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.

Courtesy of MWD.

Colorado River Aqueduct traverses 240 miles of desert to Southern California.

Based on the District's current water supply portfolio, as illustrated in Table 4-1, Central 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 - FY 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 16.42 inches. The "Single Dry Year" is based on the lowest rainfall year - FY 2001-02. The recorded rainfall in FY 2001-02 was at 4.42 inches - the lowest recorded year in more than 100 years. The three "Multiple Dry-Water Years" used below were based upon the most recent multiple dry-year period - FY 2001-02, 2002-03, and 2003-04.

Groundwater is shown constant in all scenarios due to the Basin's adjudication, which limits the total amount that each customer within Central Basin's service area is able to extract. Recycled water, which includes both Central Basin and the City of Cerritos systems, 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, Central 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 and additional conservation programs as well as the exploration of investments in groundwater storage through Conjunctive Use programs.

Table 4-1
Central Basin Municipal Water District
Retail 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]	205,960	205,960	205,960	205,960	205,960
Imported Water	63,000	68,000	68,000	59,308	64,816
Recycled Water[2]	7,400	7,400	7,400	7,400	7,400
Total Supply	**276,360**	**281,360**	**281,360**	**272,668**	**278,176**

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries such as Spreading water
[1] Based upon the total allowable pumping allocation (APA) for each customer agency within Central Basin's service area plus the average amount produced and imported from Main San Gabriel Basin, according to the 2004 DWR Central Basin Watermaster Report.
[2] Includes the available supply of recycled water system for both Central Basin and the City of Cerritos.

4.3.1 NORMAL-YEAR RELIABILITY COMPARISON

As discussed in Section 2.0 Water Demand, Central Basin's normal demands are projected to increase modestly during the next 25 years. Increases in recycled water use during the 25-year planning period equate to a corresponding reduction in the need for imported water.

4.3.2 SINGLE DRY-YEAR RELIABILITY COMPARISON

Central 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 Central Basin MWD service area.

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

Supplies	2005	2010	2015	2020	2025	2030
Groundwater[1]	205,960	205,960	205,960	205,960	205,960	205,960
Imported Water	63,000	59,091	64,691	70,462	76,409	82,535
Recycled Water[2]	7,400	12,900	14,150	15,400	16,650	17,900
Total Supply	**276,360**	**277,951**	**284,801**	**291,822**	**299,019**	**306,395**
Total Demand[3]	**252,799**	**273,991**	**280,841**	**287,862**	**295,059**	**302,435**
Surplus/(Shortage)	**23,561**	**3,960**	**3,960**	**3,960**	**3,960**	**3,960**

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries such as Spreading
[1] Based upon the total allowable pumping allocation (APA) for each customer agency within Central Basin's service area plus the average amount produced and imported from Main San Gabriel Basin, according to the 2004 DWR Central Basin Watermaster Report.
[2] Includes the available supply of recycled water system for both Central Basin and the City of Cerritos.
[3] Total Demand includes Projected Groundwater within Central Basin's service area, Imported and Recycled M&I Demands.

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

Supplies	2005	2010	2015	2020	2025	2030
Groundwater[1]	205,960	205,960	205,960	205,960	205,960	205,960
Imported Water	68,000	68,000	70,560	76,577	82,776	89,160
Recycled Water[2]	7,400	12,900	14,150	15,400	16,650	17,900
Total Supply	**281,360**	**286,860**	**290,670**	**297,937**	**305,386**	**313,020**
Total Demand[3]	**261,647**	**283,581**	**290,670**	**297,937**	**305,386**	**313,020**
Surplus/(Shortage)	**19,713**	**3,279**	**0**	**0**	**0**	**0**

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries such as Spreading
[1] Based upon the total allowable pumping allocation (APA) for each customer agency within Central Basin's service area plus the average amount produced and imported from Main San Gabriel Basin, according to the 2004 DWR Central Basin Watermaster Report.
[2] Includes the available supply of recycled water system for both Central Basin and the City of Cerritos.
[3] Total Demand includes Projected Groundwater within Central Basin's service area, Imported and Recycled M&I Demands.

4.3.3 MULTIPLE DRY-YEAR RELIABILITY COMPARISON

Under the multiple dry-year water scenarios, Central Basin is projected to meet demands by continuing to implement conservation and water recycling. 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]	205,960	205,960	205,960
Imported Water	68,000	59,308	64,816
Recycled Water[2]	10,900	11,400	12,900
Total Supply	**284,860**	**276,668**	**283,676**
Total Demand[3]	**281,484**	**269,302**	**270,888**
Surplus/(Shortage)	**3,376**	**7,366**	**12,788**

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

Supplies	2013	2014	2015
Groundwater[1]	205,960	205,960	205,960
Imported Water	68,000	59,308	64,816
Recycled Water[2]	13,650	13,900	14,150
Total Supply	**287,610**	**279,168**	**284,926**
Total Demand[3]	**283,128**	**270,875**	**277,661**
Surplus/(Shortage)	**4,482**	**8,293**	**7,265**

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

Supplies	2018	2019	2020
Groundwater[1]	205,960	205,960	205,960
Imported Water	69,346	59,308	64,816
Recycled Water[2]	14,900	15,150	15,400
Total Supply	**290,206**	**280,418**	**286,176**
Total Demand[3]	**290,206**	**277,647**	**284,602**
Surplus/(Shortage)	**0**	**2,771**	**1,574**

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

Supplies	2023	2024	2025
Groundwater[1]	205,960	205,960	205,960
Imported Water	75,351	62,228	69,108
Recycled Water[2]	16,150	16,400	16,650
Total Supply	**297,461**	**284,588**	**291,718**
Total Demand[3]	**297,461**	**284,588**	**291,718**
Surplus/(Shortage)	**0**	**0**	**0**

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

Supplies	2028	2029	2030
Groundwater[1]	205,960	205,960	205,960
Imported Water	81,538	68,094	75,150
Recycled Water[2]	17,400	17,650	17,900
Total Supply	**304,898**	**291,704**	**299,010**
Total Demand[3]	**304,898**	**291,704**	**299,010**
Surplus/(Shortage)	**0**	**0**	**0**

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries such as Spreading
[1] Based upon the total allowable pumping allocation (APA) for each customer agency within Central Basin's service area plus the average amount produced and imported from Main San Gabriel Basin, according to the 2004 DWR Central Basin Watermaster Report.
[2] Includes the available supply of recycled water system for both Central Basin and the City of Cerritos.
[3] Total Demand includes Projected Groundwater within Central Basin's service area, Imported and Recycled M&I Demands.

4.4 WATER SHORTAGE CONTINGENCY PLAN

The State requires that each urban water supplier should provide a water shortage contingency analysis within its urban water management plan. 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 Central Basin 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 during 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]	205,960	205,960	205,960
Imported Water	68,000	59,308	64,816
Recycled Water[2]	7,400	9,400	10,900
Total Supply	**281,360**	**274,668**	**281,676**
Total Demand[3]	**278,690**	**266,629**	**273,375**
Surplus/(Shortage)	**2,670**	**8,039**	**8,301**

Note: Supply Reliability covers only retail water demand; does not include replenishment deliveries such as Spreading
[1] Based upon the total allowable pumping allocation (APA) for each customer agency within Central Basin's service area plus the average amount produced and imported from Main San Gabriel Basin, according to the 2004 DWR Central Basin Watermaster Report.
[2] Includes the available supply of recycled water system for both Central Basin and the City of Cerritos.
[3] Total Demand includes Projected Groundwater within Central Basin's service area, 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 guides the management of water supplies for the region during shortages 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% 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, during the next 10 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. The following page shows a four step stage rationing plan that the District would implement to reduce imported deliveries up to 50%.

Central 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 action is necessary, the Board would adopt, by resolution, the appropriate stage of action, which would take effect immediately and the District customer agencies would 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 and water agency 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%, once an allocation plan is determined. Any deliveries exceeding 102% 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.

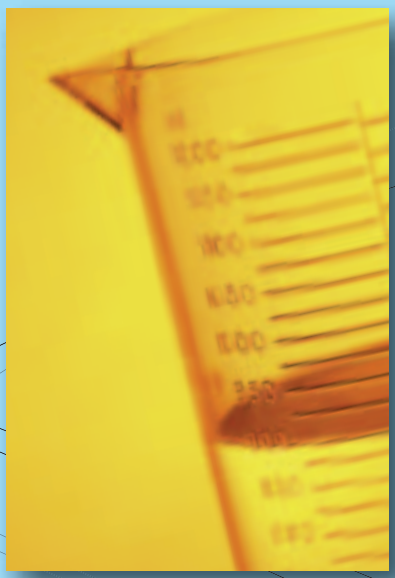
4.4.5 CATASTROPHIC SUPPLY INTERRUPTION

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 concentrates 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 draw 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.



Section 5

Water Quality

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5

Water Quality

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

5.1 OVERVIEW

Water quality regulations are an important factor in Central Basin's water management activities. MWD is responsible for complying with State and Federal drinking water regulations on imported water sold to Central Basin. Purveyors to which Central Basin sells imported water are responsible for ensuring compliance in their individual distribution systems and at the customer tap.

For groundwater quality, Central Basin assists purveyors in its service area in meeting drinking water standards through its Cooperative Basin-Wide Title 22 Groundwater Quality Monitoring Program. Title 22 is in reference to the California Code of Regulations section pertaining to both domestic drinking water and recycled water standards. Central 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. Twenty-nine agencies in Central Basin's service area participate in the monitoring program. Results are compiled in a published annual report.

In March 1999, Governor Gray Davis signed an executive order requiring the use of MTBE (methyl tertiary-butyl ether), a gasoline oxygenate, be phased out by January 1, 2003. This deadline was later postponed to January 1, 2004. Central Basin has been monitoring its groundwater wells since 1996 for MTBE; to date it has not been detected in any wells.

In another development, the California Department of Health Services (CDHS) recommended that drinking water wells be tested for the rocket fuel component perchlorate. Central Basin began monitoring for perchlorate voluntarily in 1997 as part of the Title 22 Monitoring program. CDHS required all water purveyors in the State to monitor for perchlorate under the 2001 Unregulated Contaminant Monitoring Rule. To date, perchlorate has been detected in nine separate wells. Furthermore, the presence of perchlorate in the San Gabriel Basin could impact water quality in Central Basin's service area. In response, the Central Basin Board of Directors has supported a plan to clean up the contaminated groundwater before it migrates into the Central Basin. The "San Gabriel Basin Restoration Fund" was created, and 11 firms agreed to pay $200 million to construct treatment facilities throughout the San Gabriel Valley to remove contaminants and restore the groundwater basin.

GAC vessels at Central Basin's Water Quality Protection Project.

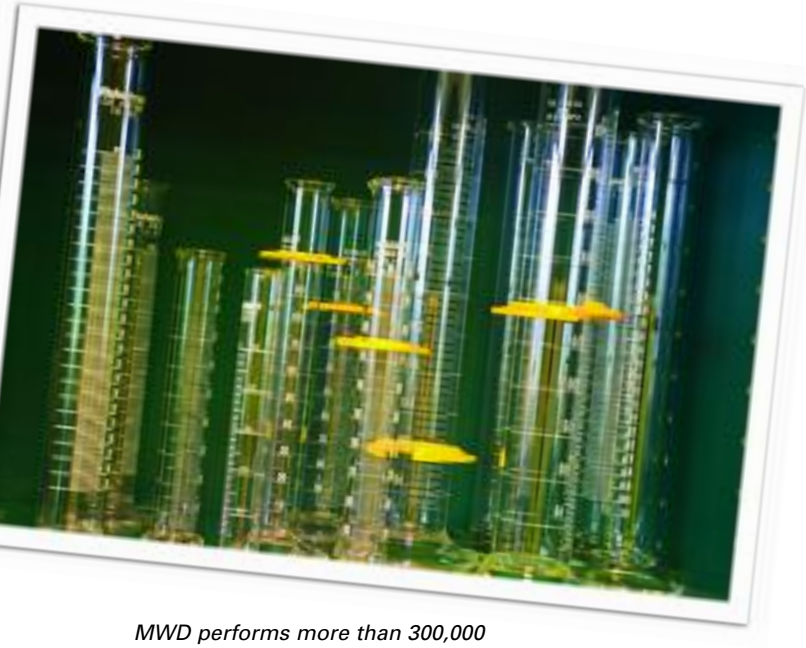
5.2 QUALITY OF EXISTING WATER SUPPLIES

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 Central Basin's customers is a task of paramount importance. 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. MWD is also proactive in its water quality

efforts, protecting its water quality interests in the State Water Project and Colorado River through active participation in processes that would provide for the highest water quality from both sources.

5.2.1 IMPORTED WATER

Central Basin's imported water comes from the State Water Project 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. 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 performs more than 300,000 water quality tests annually.

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. 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 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 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 from the Delta.

- **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 consid-

ered 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/stormwater runoff, wildlife, agriculture, recreation and wastewater.

5.2.2 GROUNDWATER

Groundwater in the Central Basin is continually monitored for the quality of the water because of its susceptibility to seawater intrusion, potential contamination from adjacent basins and migration of shallow contamination into deeper aquifers. The Alamitos Barrier, located in the southwest portion of Central Basin's service area, provides a buffer between the groundwater basin and seawater intrusion. The available supply of replenishment water to physically recharge the Basin includes local and imported water. The local water that recharges the groundwater basin comes from storm flows from the San Gabriel Valley and flow obligations under the San Gabriel River Judgment with the Upper Area of the Central Basin. This water is defined as "Make-Up Water." Imported Water is purchased from MWD to be used for surface spreading at the Montebello Forebay and for seawater barrier injection at the Alamitos Barrier. Recycled water is purchased from the County Sanitation Districts of Los Angeles County for spreading and injection.

As a voluntary service to its purveyors, the District's Water Quality staff coordinates wellhead testing at approximately 150 groundwater wells within the service area to ensure high quality of local supply.

Dual Pump System. Courtesy of WRD.

By outsourcing laboratory services for complex analytical tests, Central Basin helps purveyors save time and money while providing a valuable service for public safety. Due to the mixture of imported and natural groundwater in the Central Basin, testing of the water ensures that the water is safe for drinking purposes.

Water Replenishment District Programs

As the regional groundwater management agency for the Central and West Coast Groundwater Basins, 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.

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 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 focus-

es 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 current WRD Engineering and Survey Report and Regional Groundwater Monitoring Report.

5.2.3 RECYCLED WATER

Tertiary recycled water meeting Title 22 standards can be used for a wide variety of industrial and irrigation purposes where high-quality, non-potable water is needed.

Central Basin relies on the County Sanitation Districts of Los Angeles County (CSDLAC) to meet all applicable State and Federal water quality regulations for recycled water it purchases and distributes through its two systems. Central Basin purchases recycled water from CSDLAC's San Jose Creek Water Reclamation Plant and Los Coyotes Water Recycling Plant (WRP). These two plants together produce approximately 120 MGD of tertiary-treated effluent. Recycled water from CSDLAC's reclamation plants not reused is discharged to the ocean directly and through major flood control channels.

Settling Basin at San Jose Creek Water Reclamation Plant.

5.3 EFFECTS ON WATER MANAGEMENT STRATEGIES

Poor water quality makes a water source unreliable, affects overall supply and increases the cost of serving water to the public. 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 deliberate contamination.

5.4 EFFECTS ON SUPPLY RELIABILITY

The District assists the purveyors in meeting new State and Federal drinking water standards and guidelines. The District also manages research and development projects to find effective solutions to improve water treatment for non-potable use.

As part of a voluntary service offered by the District, the staff coordinates regular wellhead testing through a contract laboratory at approximately 160 groundwater wells in Central Basin's service area. Analytical reports are sent to Central Basin's purveyors and the CDHS. This voluntary service saves purveyors time and money while ensuring high quality of local groundwater supply.

The quality of recycled water is regularly monitored for process control, regulatory compliance and customer development. Through special sampling and testing, customers can have the confidence of knowing that they are receiving the quality of recycled water needed for their use.

5.5 WATER QUALITY PROTECTION PROJECT

In the early 1980s, the San Gabriel Valley aquifer was discovered to have contaminants including trichloroethylene (TCE) and perchloroethylene (PCE) in the water supply. Based on the contamination level, the Environmental Protection Agency (EPA) declared the area as a superfund site. As the contamination plume moved south toward the Central Groundwater Basin during the next 20 years and threatened the local groundwater supplies, Central Basin developed a containment plan known as the Water Quality Protection Project (WQPP).

By taking necessary steps to ensure removal of the contaminants, it prevented any further migration of contamination from the San Gabriel Valley into the Central Groundwater Basin, preventing the contamination from reaching the spreading grounds. The cleanup of the aquifer at no cost to Central Basin produces a safe and reliable supply of potable water to participating producers without affecting water rates and minimizes the impact of rising energy costs to participating producers. Central Basin obtained necessary Federal funds for the implementation of the WQPP with the objective of preventing the further migration of contaminants into the Central Groundwater Basin. Funding legislation was enacted in December 2000 with congressional support.

The $10 million project consists of the construction of two extraction wells with a collector pipeline and treatment facility. The extraction wells will pump out the contaminated groundwater with a combined rate of approximately 3,600 gallons per minute and convey it via the collector pipeline to the central treatment facility for purification. To ensure service while saving costs, Central Basin entered into an agreement with the City of Whittier to co-locate components of the WQPP with Whittier's existing water facilities. Whittier's facilities are utilized to distribute the treated groundwater to purveyors.

Central Basin's Water Quality Protection Project.

Section 6

Water Conservation

6

Water Conservation

This section discusses the Water Conservation efforts within Central Basin's service area

6.1 OVERVIEW

Since the drought of the 1990s, Central 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 Central Basin's service area. By current estimates, demand management conservation saves more than 4.5 billion gallons of imported water every year. This represents the average water use of almost 30,000 families in Southern California.

Central 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.

Central 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, Central Basin has been able to leverage funding and resources to provide effective programs throughout its region.

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, Free Devices, Retrofits, etc.

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

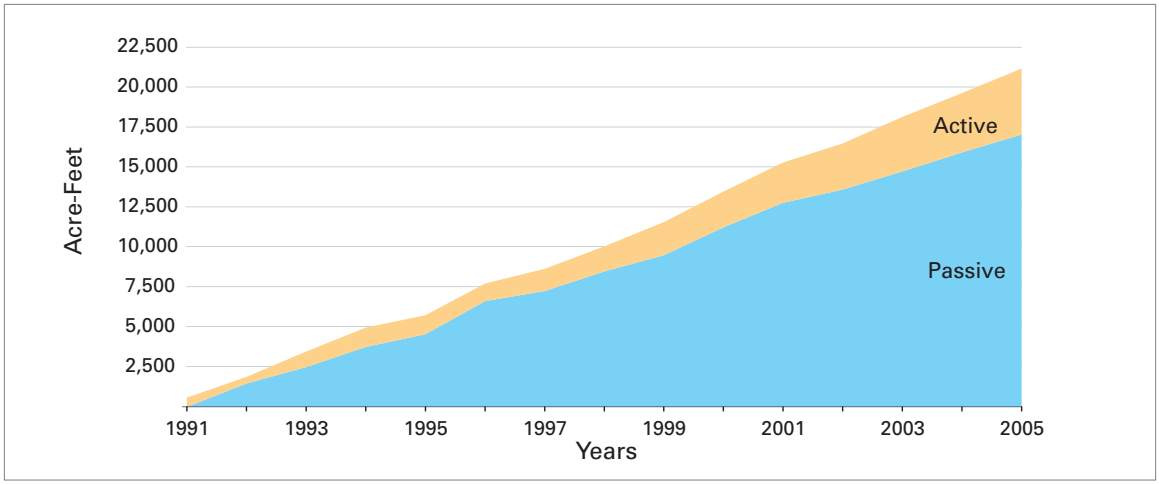
This section will present the past and current water conservation efforts Central Basin has undertaken for the past 15 years, provide a detailed analysis of Central Basin's water conservation programs, according to the California Urban Water Conservation Council's (CUWCC) recommended Best Management Practices (BMPs), and give a brief description of Central Basin's upcoming conservation efforts and its Conservation Master Plan to promote additional water savings for the service area by the year 2030.

6.2 CENTRAL BASIN'S PAST AND CURRENT WATER CONSERVATION EFFORTS

Today, Central Basin's conservation programs are made up of a wide array of cost-effective programs as shown below.

- 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

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

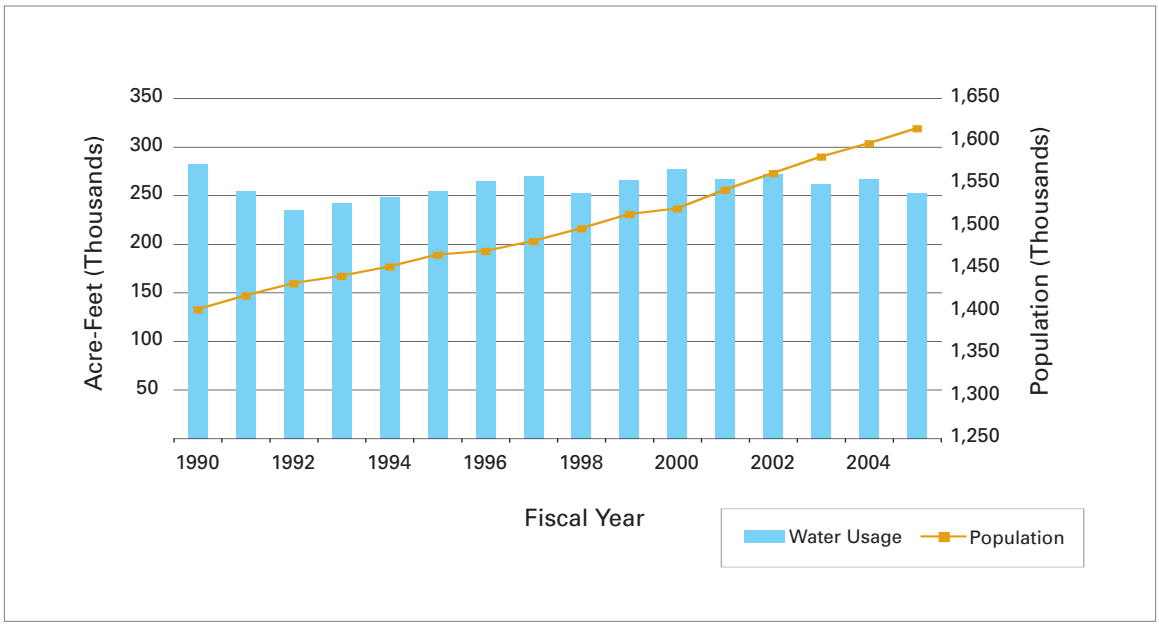


Source: Estimated total water savings from conservation from MWD-MAIN Model 2004.

It is estimated that Central Basin has distributed and installed more than 327,100 devices from 1990 to 2003. As a result, it is estimated that Central Basin currently saves, from active and passive conservation combined, more than 21,100 AF (6.8 billion gallons), or 8% percent annually, of Central Basin's total water demand. The total cumulative savings to date since 1990 is more than 158,900 AF.

Conservation savings can further be verified by comparing Central 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
Central Basin Service Area
Total Water Demand vs. Population Growth
From 1990 to 2005



Source: Central Basin's water use database and MWD Demographic Data, 2005.

6.2.1 METROPOLITAN WATER DISTRICT'S CONSERVATION GOAL

MWD, in adopting its 2004 IRP Update, is committed to an aggressive conservation goal. MWD's IRP Update set water supply targets for Southern California through 2025, which includes a conservation target of 1.1 MAF during 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 and 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.

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

6.3.1 BEST MANAGEMENT PRACTICES (BMPS)

The BMPs 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 below, lists the 14 existing BMPs.

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

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

(Table continues on next page.)

(Table 6-1 continued from previous page.)

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

As a signatory to the MOU, Central Basin currently implements the wholesaler BMPs, which are BMPs #3, 7, 8, 10, 11 and 12. Although only certain BMPs apply to a wholesaler, Central Basin also provides additional support to its cities and water retailers (customers) through BMP #10. As a water wholesaler representing 24 cities throughout southeast Los Angeles County, Central Basin also supports its customers with BMPs #5, 6, 9 and 14. In order to enhance the programs, Central 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 CENTRAL BASIN'S CONSERVATION PROGRAMS

Central Basin's mission is to ensure a safe and reliable supply of water to its service area. Since the drought of the 1990s, Central Basin has strived to expand its role in water use efficiency. Not only is water conservation and education a method for public outreach but it's an essential part of Central Basin's water resources portfolio to drought-proof the region.

Although Central Basin is required to meet only the wholesaler BMPs, Central Basin is committed to assisting its customer agencies with their conservation efforts. Described below are Central 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, showerheads, etc. 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 Central Basin is a water wholesaler and does not have direct access to single- or multi-family customer account data, Central Basin can only provide support to the water retailers. MWD currently provides funding for residential survey devices, and if requested, Central Basin will act as the liaison to MWD and provide retailers with funding available through MWD. It is anticipated that Central 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.

Table 6-2
Residential Plumbing Retrofit Devices

	1990-2000		2000-2005		Total	
Devices	**# units**	**AF**	**# units**	**AF**	**# units**	**AF**
Faucet Aerators	1,154	3.6	0	0	**1,154**	**3.6**
Low-Flow Showerheads	237,049	1,115	7,500	35	**244,549**	**1,150**

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 Central Basin has distributed the following number of faucet aerators and low-flow showerheads, shown in Table 6-2.

6.4.3 BMP #3 - SYSTEM WATER AUDITS, LEAK DETECTION, AND REPAIR

In 1996, Central Basin and its sister agency, West 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, only 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 toward a water retailer, but Central Basin has provided support in the past. As part of its Conservation Master Plan, Central 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 Central Basin is a water wholesaler, this BMP does not directly apply. However, every water agency within Central 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.

South Gate Park outfitted with irrigation controllers.

Central 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 cannot reach or be applied to large landscape areas, Central Basin provides other programs to conserve water. Below is a list of the programs Central Basin is currently implementing.

Irrigation Controller Programs

In 2004, MWD was awarded a Proposition 13 grant for a new Weather-Based Irrigation Controller (CBIC) 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. Central Basin has been working with the PAC to develop the program. Central 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 cannot reach. The funding incentives provided vary 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.

Irrigation controllers can save between 20-50 percent of outdoor water use.

Protector Del Agua Irrigation Program

Central 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.

More than 50% of the potable water used in Southern California goes to maintain landscaping; therefore, offering these classes is an ideal way to reduce outdoor water waste. By educating the public on properly maintaining the irrigation system and trouble-shooting problems, such as over-watering, that are simple yet difficult to address, can be solved without spending additional funding.

Wireless Irrigation Controllers

Central Basin, along with its partners, submitted and received Proposition 50 funding for a research project to test how wireless irrigation controllers can be used to conserve water in outdoor landscaping. Central Basin will partner with cities and water retailers to offer wireless irrigation controllers to schools, parks, businesses and other large landscape areas that are currently using older hydraulic-type irrigation systems. By providing wireless irrigation controllers, sites will have the ability to inexpensively retrofit their current irrigation systems. Wireless irrigation controllers use weather data to irrigate and can save between 20- 50% of outdoor water use and also reduce urban runoff by up to 70%. This research program will be implemented in 2006.

6.4.6 BMP #6 - HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAMS

Beginning in 1999, Central 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 Central Basin and MWD at the time was capped at $35 per washer. That pilot program ended in September 1999.

In 2003, Central Basin again partnered with MWD on a new program. MWD received funding from CALFED and provided a higher rebate incentive. Central 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 Central Basin's more successful programs. When the HECWs first hit the market, they were quite expensive. But market demand has helped to drive the price down. The new HECWs 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 HECWs. In addition to saving 50% water, the HECWs 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 Central 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 Central 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.

Table 6-3
High-Efficiency Washing Machine

	2003	2004	Total
$ per Rebate	$100	$100	**n/a**
# of Rebates	541	758	**1,299**
Water Savings (AF)	8	11	**19**

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 1-877-732-2830.

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 Central 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 Central Basin has distributed during the past two years.

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 Central Basin to continue its rebate program through 2006.

6.4.7 BMP #7 - PUBLIC INFORMATION PROGRAMS

Public information is a very broad term with various meanings. Since Central Basin operates a strong outreach program, public information about Central 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 Central Basin's service area. The purpose is to share information on a variety of topics that would be of interest to customers.

- Central 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.

- Central Basin, through its Speaker's Bureau, provides speakers to local community groups, service clubs and schools when requested. In addition, Central Basin operates a very successful and aggressive school education program that promotes the importance of conservation and recycled water.

- Central 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.

- Central Basin maintains a strong link with the local news media through press releases on important subjects and periodic meetings with newspaper editorial boards.

Children are encouraged to participate in the education programs that Central Basin offers.

6.4.8 BMP #8 - SCHOOL EDUCATION PROGRAMS

Water and environmental education continue to be critical components of Central Basin's outreach strategy. Therefore, Central 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 Central Basin's current and future education programs. Descriptions of every program can be found in Section 6.5.

- *Planet Protector Water Explorations*
- *Think Earth It's Magic*
- *Conservation Connection*
- *Think Earth Curriculum Kits*
- *Water Is Life Poster Contest*
- *Water Wanderings: A Journey Through Water*
- *SEWER SCIENCE*

6.4.9 BMP #9 - CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL (CII) ACCOUNTS

Central Basin, in partnership with MWD, participates in MWD's region-wide CII rebate program. Central 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 - 6 gpm valves. These valves conserve water and heating costs and reduce wastewater discharge. Central Basin supported CUWCC's efforts in marketing the program. The nozzles and installations were provided free of charge to the food services sector.

In 2003, Central Basin applied for and received a $780,000 Proposition 13 grant for the purchase and installation of 2,600 Waterfree Urinals. Waterfree urinals can save an average of 40,000 gallons of water per year. Central Basin is currently working with cities, water purveyors, schools, businesses and other facilities to install the devices.

In 2005, Central 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, Central Basin offers the cities and water purveyors partnering opportunities to increase the rebate amounts. Through 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 Central Basin are done in partnership with and benefit the retail water agencies that are located within the 24 cities serviced by Central Basin.

Among the 14 BMPs Central 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, Central Basin has acquired more than $1 million from State and local grant funding sources for program development and implementation. Furthermore, Central Basin markets, designs and implements a majority of the BMPs within its service area. Central Basin has also invested more than $1 million to provide conservation programs that help increase water supply reliability for the region.

School children enjoy Think Earth It's Magic Program.

Central 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, Central 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 Central 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, Central 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, Central Basin has a water conservation coordinator that not only promotes Central Basin's conservation programs and devices but also works with cities and water agencies to enhance their conservation efforts. This close collaboration between Central Basin's con-

servation coordinator and the customer agencies' staff provides for a successful execution of the BMPs. In addition, Central Basin's conservation coordinator represents the service area at regional and statewide workshops and organizations.

Central 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

Central Basin encourages its customer agencies to adopt water waste prohibition ordinances. Central Basin can also assist local cities and agencies to develop ordinances that will reduce water wasting in the area.

6.4.14 BMP #14 - RESIDENTIAL ULTRA-LOW-FLUSH TOILET (ULFT) REPLACEMENT PROGRAMS

One of Central Basin's more successful programs has been its free ULFT distribution program. Since 1991, Central Basin has provided more than 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 through the years.

In 2004, Central Basin partnered with MWD on a joint project to identify the existing opportunity within Central Basin's service area for this device. Data shows that there are still many inefficient toilets that need to be replaced. Within Central 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, Central 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. Central Basin will continue to partner with cities and water purveyors in order to implement these programs. In addition, Central Basin will continue to offer its $50 rebate for the purchase and installation of ULFTs.

ULFT giveaway event in La Mirada.

Table 6-4
ULFT Rebate Program

	2000	2001	2002	2003	2004	Total
$ per Rebate	$50	$50	$50	$50	$50	**n/a**
# of Rebates	662	895	619	493	649	**3,318**
Water Savings (AF)	19	26	18	14	18	**95**

Table 6-5
ULFT Replacement Program (Free ULFT Distributions to the Public)

	2000	2001	2002	2003	2004	Total
# of Devices	7,250	5,975	3,650	2,574	2,608	**22,057**
Water Savings (AF)	211	174	106	74	75	**640**

Central 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.

6.4.15 ADDITIONAL CONSERVATION PROGRAMS

Central 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 Central Basin supports, including:

Synthetic Turf Program
MWD, in partnership with the USBR, developed and provided funding to test the effectiveness of using synthetic turf. Central Basin helped promote the program by issuing press releases and forwarding information to cities, water purveyors, non-profit organizations and others.

City Makeover Program
Central 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 nonprofit 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

Local residents inspect high efficiency toilet.

- 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 10th year of operation, Planet Protector Water Explorations is a collaborative water education field trip program between Central Basin and the Roundhouse Marine Lab 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.

Think Earth It's Magic School Education Program.

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, more than 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 Plant 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 are educated through the various programs.

Think Earth It's Magic

Through Central Basin's membership as part of the Think Earth Environmental Education Foundation, Think Earth It's Magic is a collaborative program between Central Basin, the CSDLAC 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, more than 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 sur-

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	250	110	190	330	1,014[2]	**1,894**
Grades 4th-6th	1,121	872	830	1,190	1,632	**5,645**
Grades 7th-8th	140	95	105	60	876	**1,276**
High School	0	0	0	0	174	**174**
Total	**1,511**	**1,077**	**1,125**	**1,580**	**3,696**	**8,989**

[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.

vey 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, more than 500 middle school students will have participated in Conservation Connection.

Think Earth Curriculum Kits
Through Central 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. During the past 10 years more than 25,000 students within Central Basin's service area have participated in Think Earth.

"Water Is Life" Poster Contest
All teachers who have or will participate in Planet Protector Water Explorations during the 2004-2005 school year will be notified in February that their students can participate in the 2005 "Water Is Life" Poster Contest, which is sponsored by Central Basin and MWD. In addition, teachers at each of Central Basin's primary through secondary schools will be notified in February. As in previous years, one grand-prize winner is selected from each District and receives a fully-loaded laptop computer during an award ceremony in June 2005. Each grand-prize winner will also have his or her artwork featured in MWD's "Water Is Life" 2006 Calendar. During the past 10 years more than 25,000 students within Central Basin's service area have had an opportunity to participate in this program.

Winner of the 2005 "Water Is Life" Poster Contest. Fifth-grade student Kimberly Cuchilla from Abraham Lincoln Elementary School in the City of Whittier.

6.5.2 FUTURE PROGRAMS

Water Wanderings: A Journey Through Water
Water Wonderings is a collaborative classroom visitation program between Central Basin and the S.E.A. Lab in Redondo Beach. This collaborative hands-on classroom program will take fourth graders on a 2 1/2 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 October 2005 and last through June 2006 for the 2005-06 fiscal year.

SEWER SCIENCE
Staff is currently partnering with the CSDLAC 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. It is staff's intention to have the program developed by the end of Summer 2005 and then to begin marketing efforts to schedule program dates from September 2005 through June 2006.

6.6 FUNDING PARTNERSHIPS

In addition to partnering with MWD on programs, Central Basin also 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, Central Basin, in partnership with its cities and water retailers, developed several conservation programs and applied to the State's grant funding competitive process. If funding is awarded, Central Basin will work with its cities and water purveyors to provide programs to the local communities.

In 2005, the City of South Gate in conjunction with Central Basin received a grant through MWD's City Makeover Program for $6,000 for a demonstration garden at Hollydale Elementary Garden.

6.6.1 PROPOSITION 50 PROGRAMS

In 2005, Central Basin, with support from cities, water retailers and environmental groups, applied for and received Proposition 50 - Chapter 7 - Water Use Efficiency Research Grant in the amount of $164,052. This grant funding from the Department of Water Resources will allow the District to work with its partners to purchase and test wireless irrigation controllers. These controllers will be used to retrofit older hydraulic systems and make them more water efficient. Wireless technology has been proven as an effective way for various devices to communicate and Central Basin, along with its partners, will be using the technology to conserve water in large outdoor landscapes. This program will be implemented in 2006.

Central Basin also applied for the Proposition 50 - Chapter 8 - Integrated Regional Water Management Grant Program. Central 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 landscape workshops and demonstration gardens. If successful, Central Basin will provide education and devices that will conserve water, reduce urban runoff, reduce imported water and increase local water supply reliability.

6.7 CENTRAL BASIN'S CONSERVATION MASTER PLAN

Water Conservation, along with water recycling, will be used to meet a substantial portion of Central Basin's water demands that are gradually increasing. The goal is to minimize Central 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 and water efficient washing machines and large landscape irrigation efficiency programs are just some of the ways Central Basin provides leadership and results in the conservation arena. Conservation is a key component of Central Basin's water resource planning activities and will be implemented to the fullest extent practicable through the long-term.

6.7.1 WATER CONSERVATION MASTER PLAN

Central 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 Central 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 within the 2005-06 fiscal year.

Section 7

Water Rates & Charges

7

Water Rates & Charges

This section discusses Central 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 by water utilities into regulatory compliance, water use efficiency, infrastructure and other reliability programs. This paradox applies to Central Basin's service area as well, although residential water bills vary from retail water agency to retail water 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 Central 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 such as 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 10) of non-interruptible water during a 10-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 its highest year's delivery of non-interruptible water.

In the case of Central Basin, the highest delivery of non-interruptible water was 80,700 AF in 1990. As shown below in Table 7-1, Central Basin's Tier 1 Annual Maximum is 72,360 AF with a Purchase Commitment of 482,400 AF by the end of 2013.

Since signing a Purchase Order with MWD, Central Basin has remained below its Tier 1 Annual Maximum and has been on track to meet its Purchase Commitment by the year 2013.

Table 7-1
Central Basin Purchase Order Terms

Initial Base Allocation	Tier 1 Annual Maximum (90% of Base)	Purchase Commitment (60% of Base x 10)
80,400 AF	72,360 AF	482,400 AF

7.2.2 UNBUNDLED RATES AND TIER 1 & 2

In order 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.

Recycled water use at Pico Rivera Golf Course.

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**

The unbundled MWD water rates for calendar year (CY) 2006 are displayed in Table 7-2.

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 storage and/or 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

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

Table 7-4
Metropolitan Water District Capacity Charge for 2006

	Peak Flow 2002	Peak Flow 2003	Peak Flow 2004	3-Year Max
Central Basin	128.3 cfs	133.4 cfs	149.6 cfs	149.6 cfs

Note: These peak flows are based upon Central Basin's coincident peak of all its MWD connections.

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 through September 30) and shift usages to the winter months (October 1 through 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 Central 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 in Table 7-4 above for Central Basin's maximum usage for 2006 – 149.6 cfs.

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 10 years. Central Basin elected to have MWD collect the majority of the RTS obligation through a "Standby Charge" assessed on all parcels within its service area. The remainder is collected as a surcharge on Central Basin's commodity rates.

7.2.6 MWD STANDBY CHARGE

In 1992, the State Legislature authorized MWD to levy a standby charge that recognized that there are economic benefits to lands that have access to a water supply, whether or not such lands are using it. A fraction of the value of the benefit accruing to all landowners in MWD's service territory can therefore be recovered through the imposition of a standby charge. MWD assessed this charge only within the service area of the member agencies that requested such a parcel charge to help fund a member agency's RTS obligation. Within Central Basin, the MWD Standby Charge is currently $10.44 per parcel.

7.3 CENTRAL BASIN'S IMPORTED WATER RATES

As MWD adopted a new rate structure so did Central Basin. In 2003, Central Basin passed through MWD's Purchase Order by offering customer agencies voluntary purchase agreements and assessing MWD's new Capacity Charge. Central 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 Central Basin applies to the delivery of imported water.

7.3.1 PURCHASE AGREEMENTS

In order to meet the Purchase Order Commitment with MWD, Central Basin established its own purchase contract policy with its customer agencies. Central 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. Central Basin requires only a five-year commitment, as opposed to a 10-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 Central 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).

Out of the 24 cities, water agencies and private water companies that have an imported water connection, seven do not currently have a purchase agreement with Central Basin.

7.3.2 ADMINISTRATIVE SURCHARGE

One of the main revenue sources for Central Basin is the Administrative Surcharge applied to all imported water sold. In 2003, Central Basin revised the Administrative Surcharge to be uniformly applied to all imported water regardless of the type delivered. Revenue from the surcharge recovers Central Basin's administrative costs including planning, outreach and education, and conservation efforts. As of July 1, 2005, Central Basin's Administrative Surcharge is $38/AF.

In 2004, Central Basin and WRD entered into a five-year purchase agreement for untreated replenishment water (Seasonal Spreading). This agreement replaces Central Basin's Administrative Surcharge rate of $37 per acre-foot to an annual fixed payment ($800,000). As a result, this agreement provided Central Basin with a predictable revenue stream and gave WRD a price discount for replenishment purchases above the baseline quantity (21,622 AF).

Central Basin partnered with Upper San Gabriel Valley Municipal Water District to serve recycled water to Rose Hills Cemetery in the City of Montebello.

7.3.3 READINESS-TO-SERVICE SURCHARGE

As described above, MWD levies to Central Basin a RTS charge to recover a portion of its debt service costs, which is covered mostly by the MWD Standby Charge. However, the remaining balance is collected on the commodity rate. This RTS surcharge is added to Central Basin's commodity rates for only non-interruptible water. As of January 1, 2006, Central Basin's RTS surcharge is $8/AF.

7.3.4 WATER SERVICE CHARGE

Water utility revenue structures benefit from a mix of fixed and variable sources. Central 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 $30/cfs of a customer agency's meter capacity for imported water meters.

7.3.5 CENTRAL 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. Central 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 Central Basin on the coincident daily peak of all the connections and aggregate of all its customers' daily peak is the non-coincident peak, Central Basin is able to lower the Capacity Charge to its customers from $6,800/cfs to $5,300/cfs.

7.4 RECYCLED WATER RATES

Central Basin's recycled water program is comprised of two distribution systems: the E. Thornton Ibbetson Century Water Recycling Project and the Esteban Torres Rio Hondo Water Recycling Project with more than 70 miles of pipeline and three pump stations. Since 1992, Central Basin has encour-

aged the maximum use of recycled water to industries, cities and landscape irrigation sites through the economic incentive of its rates and charges. Below is a description of Central Basin's recycled water rates and charges.

7.4.1 RECYCLED WATER RATES

Central Basin commodity rates cover the operation and maintenance and labor and power costs associated with the delivery of recycled water. These rates are set up in a declining tiered structure so they may further encourage the use of recycled water. Furthermore, these rates are wholesaled at a significant reduction to imported rates to promote the usage of recycled water. Central Basin's recycled water rates for FY 2005-06 are shown in Table 7-5.

As shown in Table 7-5, the "outside of the Central Basin service area" rate is assessed to customers outside of Central Basin's service boundaries which pay an additional $20/AF for each 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

In addition to the MWD Standby Charge, there is a recycled water standby charge that is levied by Central Basin to each parcel within the service area. A $10 per parcel charge is administered by Central 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 Central Basin's water recycling facilities. Each year the Board holds a public hearing where they adopt Central Basin's Engineer's Report and Resolution to assess this charge.

Recycled water customer
Metro State Hospital in Norwalk.

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, Central 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 during the next 10 years.

7.5.1 IMPORTED WATER RATE PROJECTIONS

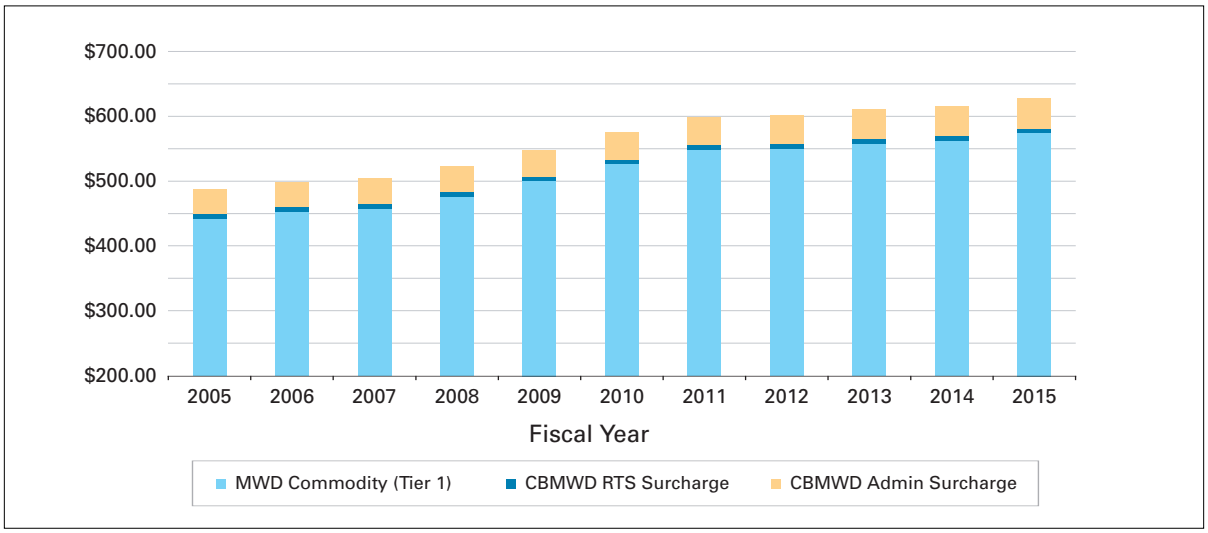
In 2004, the MWD Board adopted its Long Range Financial Plan. This plan was developed to forecast future costs and revenues necessary to support its operations and capital investments. Furthermore, it lays out the financial policy MWD will pursue during the next 10 years. According to projected MWD sales, with investments into local resources, MWD estimates imported water rates will increase 4-6% annually.

Central Basin's Administrative Surcharge is projected to increase at an annual average rate of 3-4%. This increase is determined by Central Basin's Long Range Financial analysis and the budget's revenue requirements.

Table 7-5
Recycled Water Rates
Fiscal Year 2005-06

Volume (AF/month)	Central Basin Service Area	Outside of Central Basin Service Area
0-25	$308/AF	$328/AF
25-50	$286/AF	$306/AF
50-100	$266/AF	$286/AF
100+	$244/AF	$264/AF

Figure 7-1
Central Basin Imported Water Rates
10 Year Projections



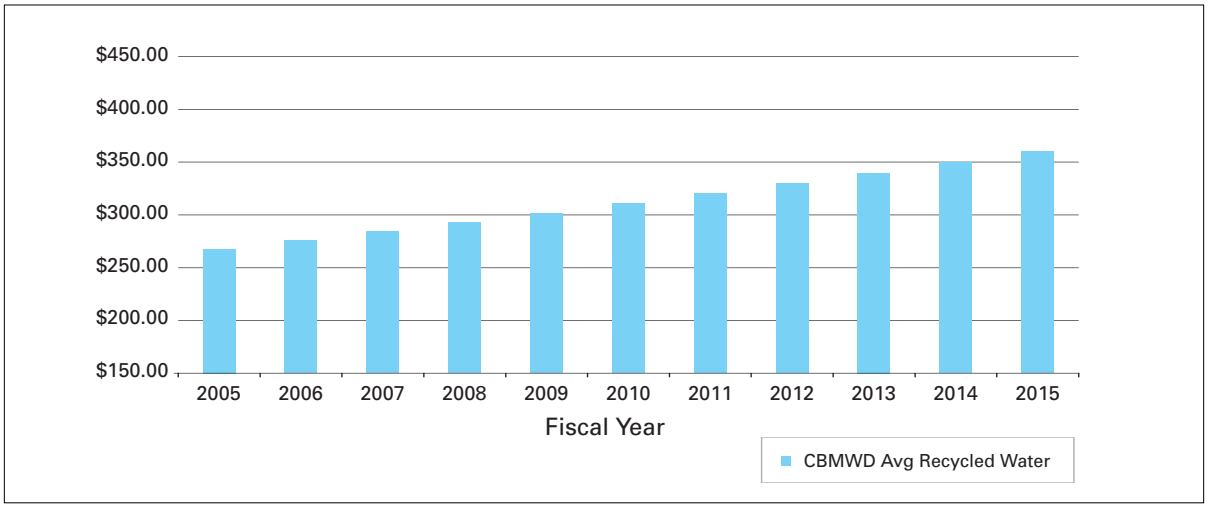
Source: MWD 2004 Long Range Financial Plan & Central Basin's Financial Plan.

Figure 7-1 displays Central Basin's imported water rate projections for the next 10 years.

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, Central Basin believes in setting the rate of recycled water at a competitive level to help offset imported water. In order to achieve this economic incentive, recycled water rates have been projected by Central Basin to increase at a slightly lower level than imported water. The recommended rate increases are projected to be 3% annually. As shown in Figure 7-2, Central Basin's average recycled water rate will be at a competitive level versus imported water rates during the next 10 years.

Figure 7-2
Central Basin Recycled Water Rates
10 Year Projections



Source: Central Basin Financial Plan for the average recycled water rates for within "service area."

Section 8

Water Recycling

8

Water Recycling

This section discusses Water Recycling Efforts within Central Basin's service area

8.1 OVERVIEW

Recycled water is a cornerstone of Central Basin's efforts to augment local supplies and reduce dependence on imported water. Since planning and constructing its recycled water systems in the early 1990s, Central 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 use through groundwater replenishment.

In 2005, recycled water M&I deliveries within Central Basin's service area totaled 5,217 AF, representing 2% of the service area's total water supplies. Recycled water sales are projected to reach 17,900 AF by the year 2030, representing 5% of expected total water supplies.

This section provides an overview of the District's water recycling system and water treatment and distribution. In addition, this section includes a discussion of the District's past, current and projected sales as well as the District's system expansion projects and Master Plan. The section concludes with a brief description of the Cerritos, Lakewood and WRD recycled water programs within Central Basin's service area.

8.2 RECYCLED WATER SOURCES AND TREATMENT

8.2.1 SOURCE WATER

The source of Central Basin's recycled water is the County Sanitation Districts of Los Angeles County (CSDLAC). CSDLAC operates one wastewater treatment plant and six water recycling plants in the Los Angeles Basin. These combined systems produce approximately 489 MGD of effluent, of which approximately one-third is available for re-use. Central Basin purchases a portion of this recycled water from two reclamation plants, Los Coyotes and San Jose Creek, located just outside of the District's service area. Both of these plants provide approximately 55 MGD of tertiary-treated (Title-22) water for distribution. Below is a detailed description of the two recycling plants.

San Jose Creek Water Recycling Plant

The San Jose Creek WRP provides tertiary treatment for 100 MGD of wastewater. The plant serves a largely residential population of approximately one million people. Approximately 35 MGD of recycled water is reused at 17 different reuse sites. These include groundwater recharge at the Montebello Spreading Grounds and irrigation of parks, schools and greenbelts. The San Jose Creek WRP was built in the early 1970s as part of Central Basin and West Basin MWD's Joint Outfall System. This system uses six water reclamation plants and the Joint Water Pollution Control Plant to serve a major portion of metropolitan Los Angeles County.

The goal of the CSDLAC is to recycle as much of the reclaimed water from its water reclamation plants as possible. Approximately 35 MGD of the purified water from San Jose Creek WRP is sent to percolation basins for groundwater recharge. In 1994, the San Jose Creek WRP was connected to the E. Thornton Ibbetson Century and Esteban Torres Rio Hondo Water Recycling projects which supply the water recycling needs of more than a dozen cities combined from the Central Basin water recycling distribution system.

The high quality San Jose Creek WRP final effluent meets the National Pollution Discharge Elimination System (NPDES) requirements for water quality. The following discussion includes

San Jose Creek Water Reclamation Plant.

readings of the sampled constituents in 2003.

The Regional Water Quality Control Board (RWQCB) established a new limit for chloride levels through Resolution No. 97-02 in 2002. The Resolution requires monitoring data and assessment reports on chloride by Publicly Owned Treatment Waterworks on an annual basis. During 2003, chloride levels in the final effluent of San Jose Creek WRP were consistently below the limit (180 mg/l).

The daily maximum final effluent turbidity was 3.4 NTU, and the 24-hour composite final effluent turbidity was 1.0 NTU. All the water reused in 2003 was adequately chlorinated to comply with the coliform limit. Also, all water discharged to the San Gabriel River was properly disinfected and dechlorinated.

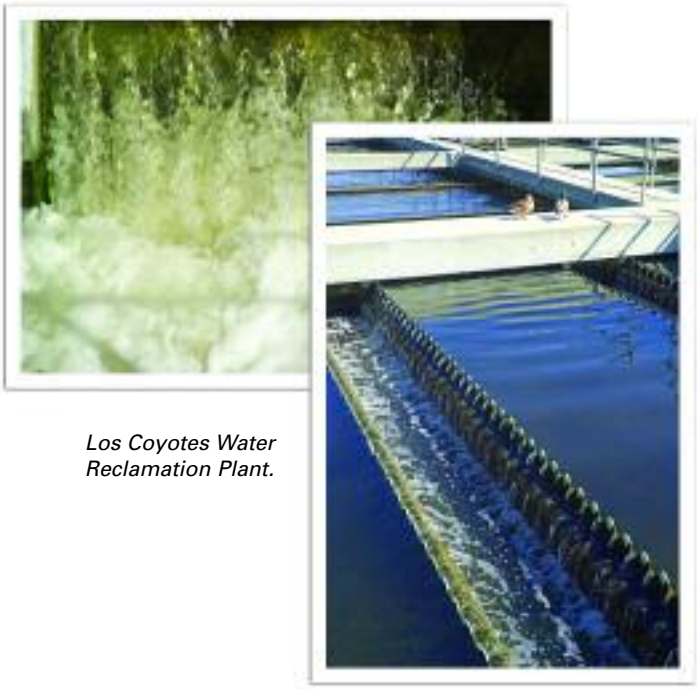
Los Coyotes Water Recycling Plant

The Los Coyotes WRP provides tertiary treatment for 37 MGD of wastewater. The WRP serves a population of approximately 370,000 people. More than 5 MGD of the purified water is reused at more than 200 reuse sites. These include irrigation of schools, golf courses, parks, nurseries and greenbelts and industrial use at local companies for carpet dying and concrete mixing.

Regional water recycling projects such as Century and Rio Hondo are the next step in the evolution of water reuse as the Los Angeles area heads toward a planned basin-wide system linking numerous sanitary agencies and regional and local water purveyors in a highly flexible and reliable reclaimed water distribution system to complement and supplement the precious, limited drinking water supply.

More than 200 reuse sites have been receiving recycled water, which is used for irrigation of parks, golf courses, schools, nurseries, freeway and street medians, and slopes and other greenbelt areas. In addition, various industries, such as the Tuftex Carpet Mill (right), will use recycled water for carpet and textile dyeing, metal finishing, concrete mixing and cooling tower supply.

CSDLAC operates 10 laboratories including the San Jose Creek Water Quality Lab and Treatment Plant Laboratories. These laborato-



Los Coyotes Water Reclamation Plant.

ries have greatly increased the capability to control plant water quality and quality assurances and offer laboratory services in order to monitor the quality of effluent before it reaches the recycled water users.

8.2.2 TREATMENT PROCESS

The wastewater that is recycled at the Los Coyotes and the San Jose Creek plants undergoes tertiary treatment. Tertiary recycled water begins with secondary treated water that undergoes coagulation, flocculation, filtration and disinfection. Tertiary treated water can be used for a wide variety of industrial and irrigation purposes where high-quality, non-potable water is needed. Section 5, Water Quality, of this Plan explains in more detail the wastewater treatment facilities that provide Central Basin with recycled water.

Recycled water undergoes a rigorous, multi-stage treatment process to clarify it to high quality standards. The level of treatment necessary is approved by the California Department of Health Services (CDHS). CDHS requires recycled water to meet California Code of Regulations Title 22 standards (Title 22). Title 22 standards address specific treatment requirements for recycled water and lists approved uses. Approximately 2,000 tests are performed monthly to ensure water quality meets or exceed all State and Federal requirements.

Table 8-1 illustrates the past, current and projected amount of wastewater collected and treated as well as the amount of recycled water delivered by these two plants to the District's distribution system.

The amount of wastewater collected and treated by these two reclamation plants are expected to remain consistent during the next 25 years, despite population increases. According to CSDLAC analysis, these increases are projected not to be significant enough to make it economically feasible to expand these CSDLAC facilities to accommodate an already "Build out" area.

Carpet dyeing with recycled water at Tuftex in Santa Fe Springs.

8.3 CENTRAL BASIN'S RECYCLED WATER SYSTEM

8.3.1 EXISTING SYSTEM

Central Basin's recycling system is comprised of two separate projects: E. Thornton Ibbetson Century Water Recycling Project (Ibbetson Century Project) and the Esteban E. Torres Rio Hondo Water Recycling Project (Torres Project). Both projects deliver recycled water for landscape irrigation and industrial uses throughout the District's service area.

The Ibbetson Century Project began delivering recycled water in 1992. The project currently deliv-

Table 8-1
Wastewater Collected and Treated[1]
(In Acre-Feet)

	2000	2005	2010	2015	2020	2025	2030
Wastewater collected & treated[2]	136,000	103,000	140,000	142,000	145,000	148,000	150,000
Recycled water delivered	32,500	38,000	45,000	47,000	50,000	52,000	55,000

[1] Data supplied by the County Sanitation District of Los Angeles County.
[2] From both the Los Coyotes WRP and the San Jose Creek WRP

ers tertiary-treated recycled water from the CSDLAC's Los Coyotes WRP and serves the cities of Bellflower, Bell Gardens, Compton, Cudahy, Downey, Lakewood, Lynwood, Norwalk, Paramount, Santa Fe Springs and South Gate.

In 1994, the water recycling system was extended into the northern portion of Central Basin's service area. This extension, known as the Torres Project, delivers tertiary-treated recycled water from CSDLAC's San Jose Creek WRP and serves the cities of Bell, Bell Gardens, Commerce, Huntington Park, Montebello, Pico Rivera, Santa Fe Springs and Whittier.

In fiscal year 2004-2005, Central Basin's recycled water system delivered approximately 3,150 AFY to more than 200 sites. It is anticipated, during the next five years that Central Basin will triple its sales with new connections across the northern portion of the service area.

Every year Central Basin connects new customers to recycled water and further reduces demands on potable water.

8.3.2 RECYCLED WATER USE BY TYPE

The types of sites that Central Basin currently serves, as shown in Table 8-2, vary from parks and landscape medians to textile industries and cooling towers.

Table 8-2
Types of Recycled Water Customers

• Landscape	• Textile
• Golf Course	• Median
• Co-Generation (Cooling Tower)	• Nursery
• Cemetery	• Park
• Concrete Mixing	• School (Irrigation)
• Cal-Trans (Irrigation)	• Others

As illustrated in Figure 8-1, the predominated use of recycled water deliveries is landscape irrigation, accounting for almost 66% of the total use. However, in the upcoming years Central Basin plans on increasing its deliveries to the industrial sector. Once the City of Vernon begins receiving recycled water via the Malburg Generating Station and subsequently when the Southeast Water Reliability Project begins operation, the percentage of industrial usage is projected to change significantly during the next 10-15 years.

Installation of recycled water pipeline.

8.3.3 HISTORICAL AND CURRENT SALES

For the past 10 years, Central Basin has seen its recycled water sales gradually increase each year. With landscape irrigation constituting two-thirds of Central Basin's current recycled water use, there have been years where sales have varied primarily due to weather changes. As shown in Figure 8-2, on the opposite page, there have been years, most notably fiscal years 2000-01 and 2004-05, where total recycled water sales have increased or decreased from projected levels because of rainfall.

Figure 8-1
Central Basin Recycled Water Use
By Type of Site FY 2004-05

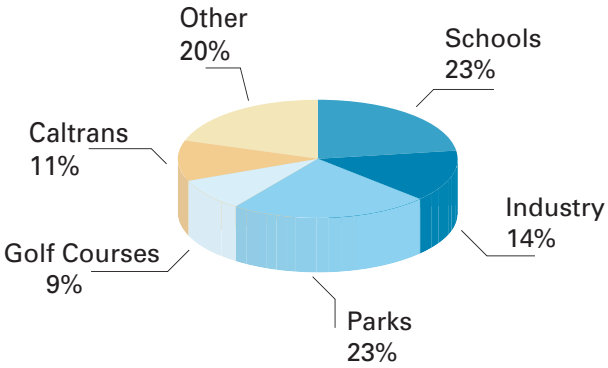
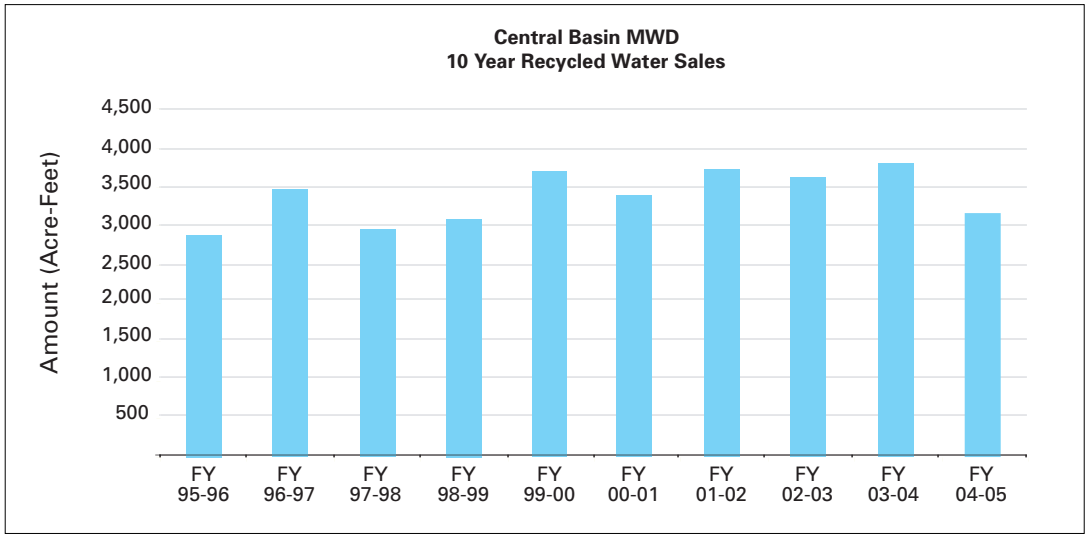


Figure 8-2
Historical Recycled Water Sales
FY 1996-2005



Source: Central Basin Watermaster Report, 2005

The amount of recycled water supplied by Central Basin during the last 10 years has totaled more than 33,800 AF, replacing enough potable water to supply the needs of approximately 67,700 families for more than a year. Central Basin anticipates recycled water 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 converting from potable water to recycled water.

Table 8-3, on page 8-6, displays a more detailed breakdown of historical sales by showing each retail customer agency's annual purchases from Central Basin for fiscal years 1996 to 2005.

Hollydale Pump Station at Hollydale Park in the city of South Gate.

In Central Basin's 2000 UWMP, the District projected deliveries of recycled water to reach 5,800 AF by 2005. As shown in Table 8-4 on page 8-6, actual sales for 2005 fell below this target. Combined with a record rainfall year and delays in connecting large based customers, Central Basin lacked the number of connections to reach the projections set in 2000. Nevertheless, Central Basin anticipates increases in sales during the next 5 - 10 years due to some large projects and partnering efforts among its customer agencies.

8.3.4 SYSTEM EXPANSIONS AND PROJECTED SALES

In 2000, Central Basin conducted a Recycled Water Program Master Plan (Master Plan) to help the District identify all of the potential customers that could benefit from recycled water. In addition, the Master Plan would provide the best system expansion routes to benefit the entire system from which the following system expansion projects were devised:

Southeast Water Reliability Project

The planned Southeast Water Reliability Project (SWRP) represents the fulfillment of the current Central Basin program as originally envisioned. The proposed project would

Table 8-3
Historical Recycled Water Sales by Retail Customer Agency of Central Basin
FY 1996 to 2005
(In Acre-Feet)

Central 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
Bellflower-Somerset Mutual	114	125	95	117	133	131	159	118	125	108	**1,225**
City of Cudahy	-	-	3	9	9	9	8	7	5	6	**56**
City of Downey	532	612	517	636	710	642	733	664	686	617	**6,349**
City of Huntington Park	21	61	44	56	57	49	60	48	64	49	**509**
City of Lynwood	44	74	75	59	55	69	66	70	67	46	**625**
City of Norwalk	87	118	75	89	128	100	120	109	111	53	**990**
City of Paramount	354	376	364	382	485	429	453	431	443	360	**4,077**
City of Pico Rivera	-	-	-	-	-	-	-	35	39	28	**102**
City of Santa Fe Springs	864	1,018	919	817	835	858	893	815	774	630	**8,423**
City of South Gate	144	165	151	151	189	164	191	162	177	213	**1,707**
City of Whittier	94	114	82	102	136	78	77	82	98	66	**929**
Park Water Company	363	448	315	353	479	428	469	471	489	341	**4,156**
Peerless Water Company	17	32	25	20	26	21	22	17	20	16	**216**
San Gabriel Valley Water Co	44	94	56	68	81	72	77	65	76	48	**681**
Southern California Water Co	227	244	224	234	359	358	418	506	610	523	**3,703**
Upper San Gabriel Valley MWD	-	-	-	-	-	-	-	7	35	45	**87**
Total	**2,905**	**3,481**	**2,945**	**3,093**	**3,682**	**3,408**	**3,746**	**3,607**	**3,819**	**3,150**	**33,836**

Source: Central Basin Wateruse Database, 2005

"loop" the overall system hydraulically by connecting the Rio Hondo and Century projects across the northern part of the service area (also known as the "Southeast" area because it roughly covers the southeast portion of Los Angeles County). Cities that will benefit directly from the SWRP include Pico Rivera, Montebello, East Los Angeles, Commerce, Maywood and Vernon.

Table 8-4
Recycled Water Uses
2000 Projections Compared with 2005 Actual

Type of Use	2000 Projection for 2005	2005 Actual Use[1]
Irrigation	4,600	2,654
Commercial	0	0
Industrial	1,200	496
Total	**5,800**	**3,150**

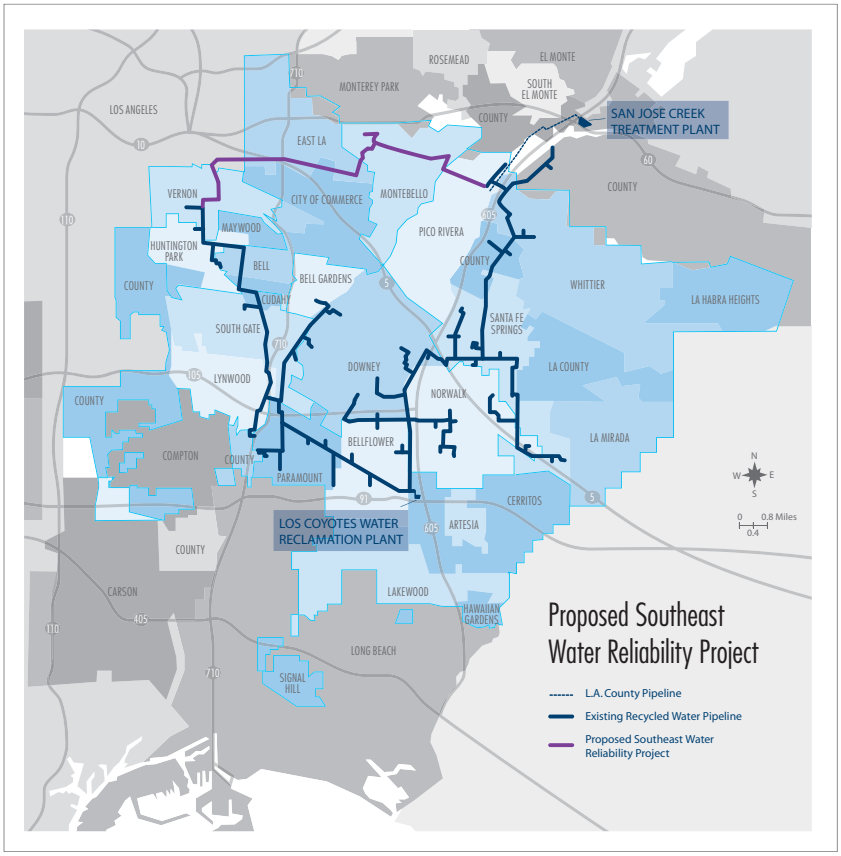
Source: Central Basin Water Use Database, 2005.
[1] Based upon 2004-05 actual sales for Central Basin.

Because the 2000 Master Plan may not accurately reflect recent changes in the industrial base of the areas to be served by the SWRP project, a Master Plan update will be completed in 2006. The Master Plan update will allow Central Basin to refine the alignment of the SWRP project and forecast more accurately future recycled water sales.

Connecting Central Basin's existing projects with the SWRP will increase flow and pressure in many areas of the distribution system that are not adequately served today, and it will provide recycled water to new customers in several cities. Figure 8-3 illustrates the connection of the SWRP to the existing system as it is currently envisioned.

Central Basin is aggressively pursuing State and Federal grant funding to reduce the cost of construction for the SWRP to be borne by Central Basin.

Figure 8-3
Southeast Water Reliability Project
Recycled Water Distribution System



Other Potential System Expansions

The Cities of South Gate, Lynwood and La Mirada have expressed interest in receiving recycled water, in some cases to augment existing demand. These potential new connections will be planned either concurrently or subsequently to the SWRP since they are dependent on the hydraulic benefits of the larger project. Other capital projects planned for the next five years include improvements that will increase the efficiency and reliability of existing facilities, including the pipeline connection in the City of Norwalk.

Projected Recycled Water Sales

According to the Master Plan, the Central Basin's recycled water system is projected to increase from its current sale of 3,150 AF to 15,500 AF by 2030.

As Table 8-5 displays, on the following page, the area of greatest potential growth in sales for the District is within landscape/irrigation. However, with system expansions planning to reach heavy industrial areas, i.e. the City of Vernon, the area of industrial recycled water usage does expect to increase.

The SWRP is anticipated to begin operation in 2009 and ultimately serve an additional 5,600 AFY of recycled water to various customers in the northern service area. However, depending upon the outcome of the updated Master Plan, the ultimate capacity of the SWRP may provide additional sales. Full project capacity will be phased in more than roughly five years to account for the construction of the many lateral distribution lines required to serve individual users.

Based on the current 5,600 AFY estimate of SWRP deliveries, Central Basin's total sales of recycled water is projected to reach approximately 10,500 AFY by FY 2010.

Table 8-5
Projected Future Use of Recycled Water in Service Area
(in Acre-Feet)

Type of Use	2010	2015	2020	2025	2030
Irrigation	7,000	7,750	8,500	9,250	10,000
Commercial	0	0	0	0	0
Industrial	3,500	4,000	4,500	5,000	5,500
Total Projected Use of Recycled Water	**10,500**	**11,750**	**13,000**	**14,250**	**15,500**

8.3.5 POTENTIAL RECYCLED WATER USE

The potential of recycled water use will increase among cities, water agencies and businesses/ industries through the years. The increased cost of imported and groundwater will enhance the beneficial usages of recycled water.

Central Basin will continue to pursue new cost-effective projects both within its service area and in partnership with willing neighboring agencies. Efforts are currently focused on maximizing the potential of the original regional system, for which Central Basin receives an incentive payment from MWD for every acre-foot delivered up to 10,500 AFY through 2019. Although current projections discussed above show Central Basin exceeding that 10,500 AFY incentive limit, the agency is preparing for the long-term financial viability of the water recycling system.

Although there is great potential to increase recycled water use in Central Basin, there are challenges and limitations in connecting customers. Among them are proximity to recycled water pipelines, capacity and pressure to serve, and retrofit cost-feasibility. These factors play a significant role in meeting the potential growth of recycled water. The ability to connect new customers dictates when and how much recycled water will be sold in the future.

In 2000, the Master Plan identified and prioritized areas within Central Basin's service area where recycled water has the potential to expand. In this study, 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 recycled water in Central Basin's service area. Figure 8-4 presents conceptual recycled water projects based on pipeline routing.

Although the Master Plan is in the process of being updated and could influence Central Basin's near-term and long-term projections depending primarily on the potential changes to industrial water, the principle goal of maximizing the potential usage of recycled water throughout the service area will not change.

Partnerships with neighboring agencies have already resulted in projects that expand the Central Basin system and sales beyond the service area limits. Phase I and II of an agreement with Upper San Gabriel Valley Municipal Water District to serve Rose Hills will add approximately 1,500 AFY of sales beginning in 2006, and discussions have already begun to expand this partnership further.

Within Central Basin, discussions have begun with the City of Vernon for a new agreement to potentially delivery between 6,000 to 10,000 AFY of recycled water to a new planned power generation facility.

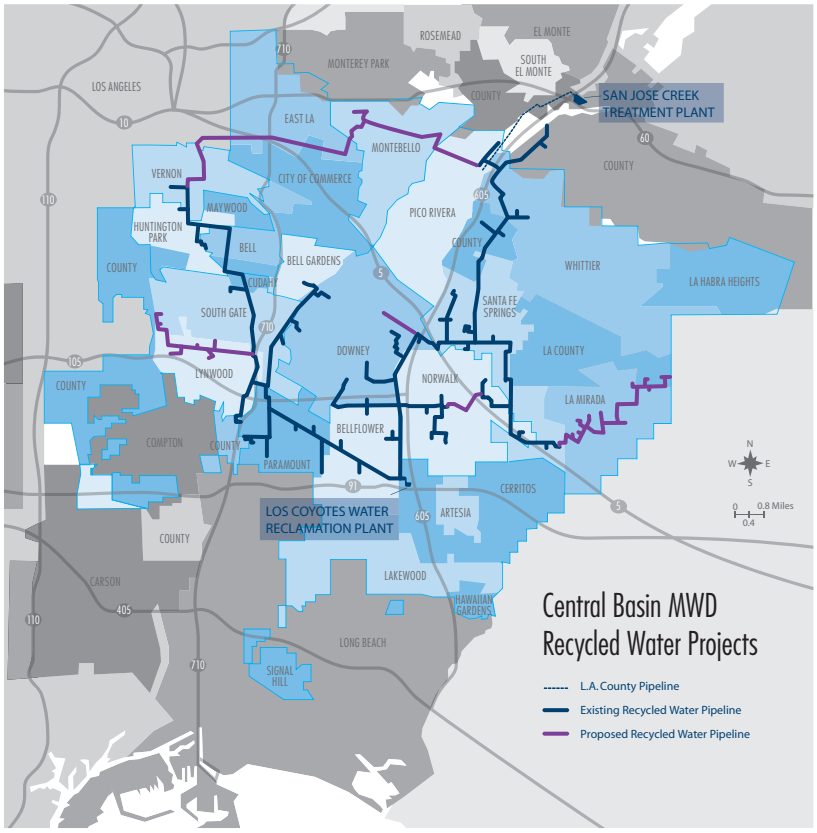
8.3.6 ENCOURAGING RECYCLED WATER USE

Central 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. Central 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.

Figure 8-4
Conceptual Recycled Water Projects



Through innovative marketing, recycled water is now being used by oil refineries and dye houses. In addition, Central Basin is investigating recycled water use in paper production, co-generating plants and printing plants.

In addition to Central Basin wholesaling recycled water at a rate lower than potable water, Central 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, Central Basin advances funds for retrofit expenses and are reimbursed through the water bills. The on-site plumbing retrofit costs are amortized through a period of time, up to 10 years at Central 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 Recycling Water Use

Central Basin's plan for optimizing the use of recycled water will be carried out through two efforts, both of which will be updated during the 2005-06 fiscal year, the Recycled Water Master Plan and the Recycled Water Marketing Plan (Marketing Plan). The Master Plan is Central Basin's guiding document for identifying and prioritizing potential customers. The 2000 Master Plan is currently being updated to capture changes in the industrial and commercial base within the service area, particularly in the northern portion to be served by the Southeast Water Reliability Project.

Recycled water for commercial irrigation in Santa Fe Springs.

The Marketing Plan is the companion effort to the Master Plan and will revisit the strategies and tools employed by Central 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 will be 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.

Coordination Efforts

Table 8-6 illustrates the District's coordinated effort among key stakeholders in the development of the 2000 Central Basin Water Recycling Master Plan. Central Basin plans on continuing the same coordinated effort in the updated Master Plan as well as include some participating agencies in the development process of the Marketing Plan.

8.3.7 FUNDING

Capital costs for projects planned for the future have been budgeted to average per fiscal year approximately $5,600,000.[1] 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, Central Basin has remained affiliated as a member agency and is therefore considered for the rebates for up to $250/AF offered under the program.

- Grant Funding. Central Basin continuously applies for Federal and State grant funding for recycled water projects as they become available. In 2005, Central Basin applied for a Water Recycling Construction grant for the Southeast Water Reliability Project, Phase I Water Recycling Construction Project through

Table 8-6
Recycled Water Master Plan Coordination

Participating Agencies	Role in Plan Development
1. Water Agencies (Purveyors)	Customer Development, Facilities, Impacts, Rates
2. Wastewater Agencies	Recycled Water Supply, Water Quality, Reliability
3. Groundwater Agencies	Rates, Customer Involvement
4. Planning Agencies	Economic Analysis, Rates, Data Assessment, Customer Assessment, Rates, Community Impacts, Customer Involvement, Conceptual Pipeline Routes, Cost Estimates

1. Water Purveyor Agencies: See Table 8-3.
2. Wastewater Agencies: County Sanitation Districts of Los Angeles County
3. Groundwater Agencies: Water Replenishment District of Southern California
4. Planning Agencies: Purveyors and Cities within Central Basin's service area

[1] Approximation is an average based on fiscal year capital project projections during a five year period (FY: 2005-2006 to 2009-2010).

Proposition 50. Central Basin submitted an application to the SWRCB to fund 25% of the $15.2 million cost of the pipeline. An additional source of funding is through the U.S. Army Corps of Engineers Program, which affords qualified programs 75% project funding.

8.4 RECYCLED WATER PROJECTS WITHIN CBMWD SERVICE AREA

8.4.1 CITY OF CERRITOS WATER RECYCLING PROGRAM

The City of Cerritos has its own water recycling system, which is not associated with Central Basin's recycled water program. It serves approximately 80 sites within the cities of Cerritos and Lakewood, which are located in Central Basin's service area. The City of Cerritos receives tertiary-treated recycled water from the CSDLAC's Los Coyotes WRP and serves a little more than 2,400 AFY, of which 450 AFY is sold to the City of Lakewood.

8.4.2 CITY OF LAKEWOOD WATER RECYCLING PROGRAM

The City of Lakewood purchases 450 AFY of recycled water from the City of Cerritos to help offset an equal demand of potable water.

8.4.3 WATER REPLENISHMENT DISTRICT-MONTEBELLO FOREBAY GROUNDWATER RECHARGE

The Montebello Forebay Groundwater Recharge Project allows the spreading of treated recycled water to be melded with imported and storm water within the recharge grounds with CSDLAC and Los Angeles County Department of Public Works (LACDPW). WRD has an agreement to recharge the basin with recycled water. LACDPW owns and operates the recharge facilities, while WRD purchases the recycled water from the CSDLAC. Under the conditions of a regulation permit from the Los Angeles RWQCB, approximately 50,000 AF of recycled water is the annual limit that can be recharged into the spreading grounds.

Montebello Forebay. Courtesy of WRD.

8.5 TOTAL RECYCLED WATER USE IN CENTRAL BASIN

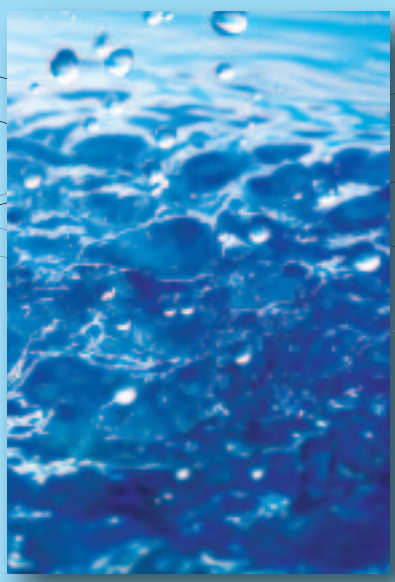
Within Central Basin's service area there are three key water recycling programs that help offset potable water usage and provide groundwater replenishment. Among the three are the Central Basin, Cerritos and WRD water recycling programs. As illustrated in Table 8-7, together these programs delivered 52,400 AF of water recycling in 2005 and during the next 25 years they plan to increase deliveries by 10,500 AF.

Hollywood Sports Park in Bellflower.

Table 8-7
Total Projected Recycled Water Use in Central Basin's Service Area
(in Acre-Feet)

	2005[1]	2010	2015	2020	2025	2030
Central Basin						
Century/Rio Hondo Projects	3,150	10,500	11,750	13,000	14,250	15,500
Total	**3,150**	**10,500**	**11,750**	**13,000**	**14,250**	**15,500**
Other Programs within Central Basin						
City of Cerritos	1,714	1,950	1,950	1,950	1,950	1,950
City of Lakewood[2]	352	450	450	450	450	450
WRD (Replenishment Spreading)	50,000	50,000	50,000	50,000	50,000	50,000
Total	**52,067**	**52,400**	**52,400**	**52,400**	**52,400**	**52,400**
Central Basin's Service Area Total	**55,217**	**62,900**	**64,150**	**65,400**	**66,650**	**67,900**

[1] 2005 demands are based on the 2004-05 year, which is also considered one of the "wettest" years on record.
[2] City of Lakewood receive its recycled water from the Cerritos water recycling system.



Appendices

Appendix A

Urban Water Management Planning Act of 1983, as amended 2005

Appendix B

2005 Urban Water Management Plan Checklist Form

Appendix C

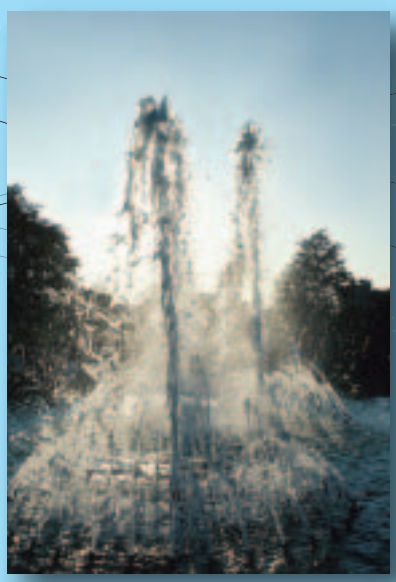
Notice of Public Hearing and Resolution for UWMP Adoption

Appendix D

Notice of Preparation / Draft 2005 UWMP

Appendix E

Water Shortage Contingency Plan Resolution



Glossary

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	Central Basin Municipal Water District
City	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
Basin	Central Groundwater Basin
Bay-Delta	San Francisco-San Joaquin Bay Delta
CRA	Colorado River Aqueduct
CSUDH	California State University at Dominguez Hills
CVP	Central Valley Project
Hyperion	Hyperion Treatment Plant
Ibbetson Century Project	E. Thornton Ibbetson Century Water Recycling Project
Pilot Project	West Basin's Desalination Pilot Project
Spreading Grounds	Rio Hondo and San Gabriel River Spreading Grounds
SWP	State Water Project
SWRP	Southeast Water Reliability Project
Torres Project	Esteban E. Torres Rio Hondo Water Recycling Project
WCGB	West Coast Groundwater Basin
WRP	Water Recycling Plant
WRPS	Water Reclamation Plants

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
WF	Water Factor

MISCELLANEOUS

ACT	California Urban Water Management Planning Act of 1983
BMPs	Best Management Practices
CBIC	Weather-Based Irrigation Program
CII	Commercial, Industrial and Institutional
EOC	Emergency Operation Center
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
MARS	Member Agency Response System
MOU	Memorandum of Understanding Regarding Urban Water Conservation in California
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
SDWP	Safe Drinking Water Program
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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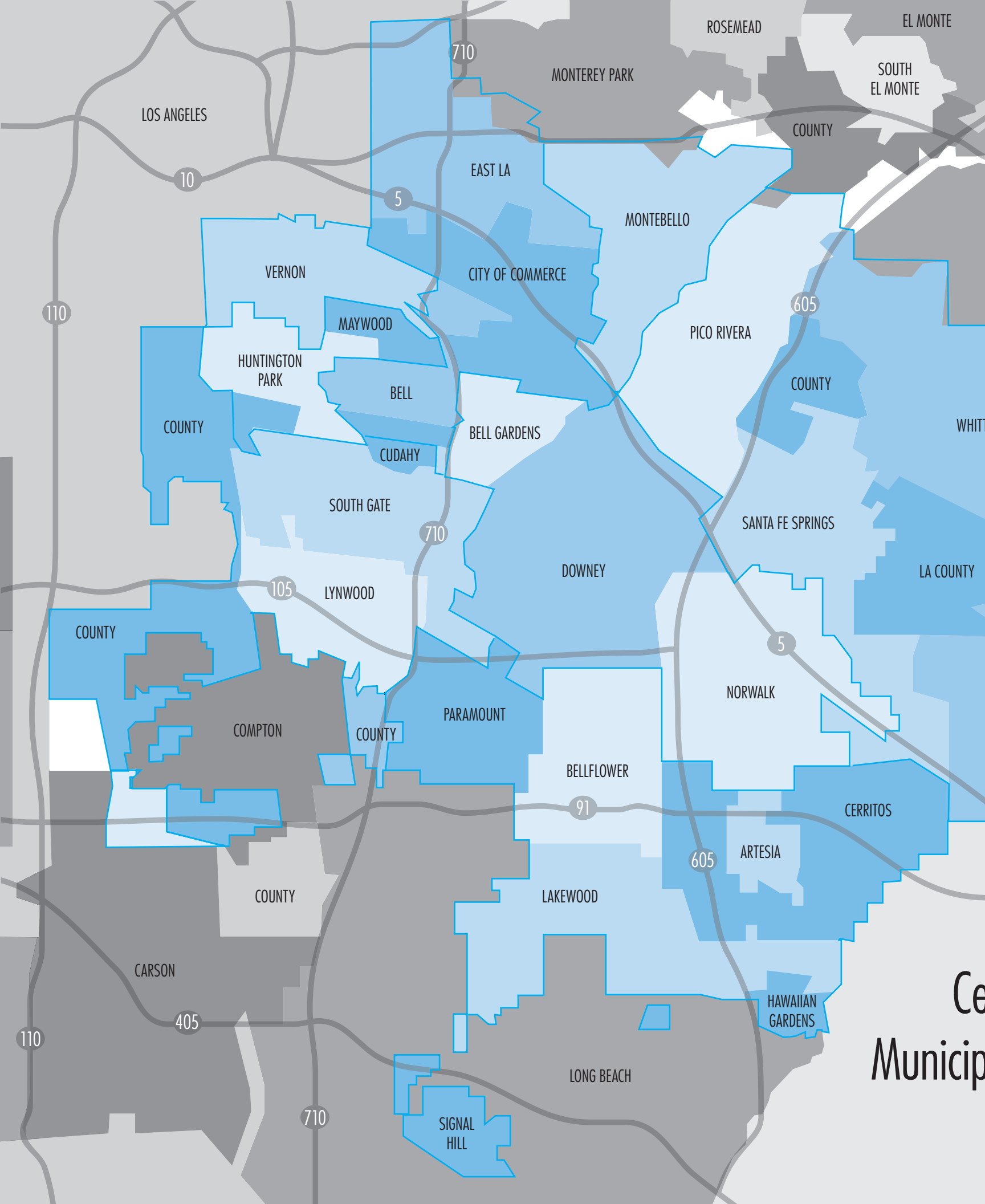
ROSEMEAD
EL MONTE
710
MONTEREY PARK
SOUTH
EL MONTE
LOS ANGELES
COUNTY
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EAST LA
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MONTEBELLO
VERNON
CITY OF COMMERCE
110
605
MAYWOOD
PICO RIVERA
HUNTINGTON
PARK
BELL
COUNTY
COUNTY
BELL GARDENS
CUDAHY
SOUTH GATE
SANTA FE SPRINGS
710
DOWNEY
LA COUNTY
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LYNWOOD
COUNTY
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NORWALK
PARAMOUNT
COMPTON
COUNTY
BELLFLOWER
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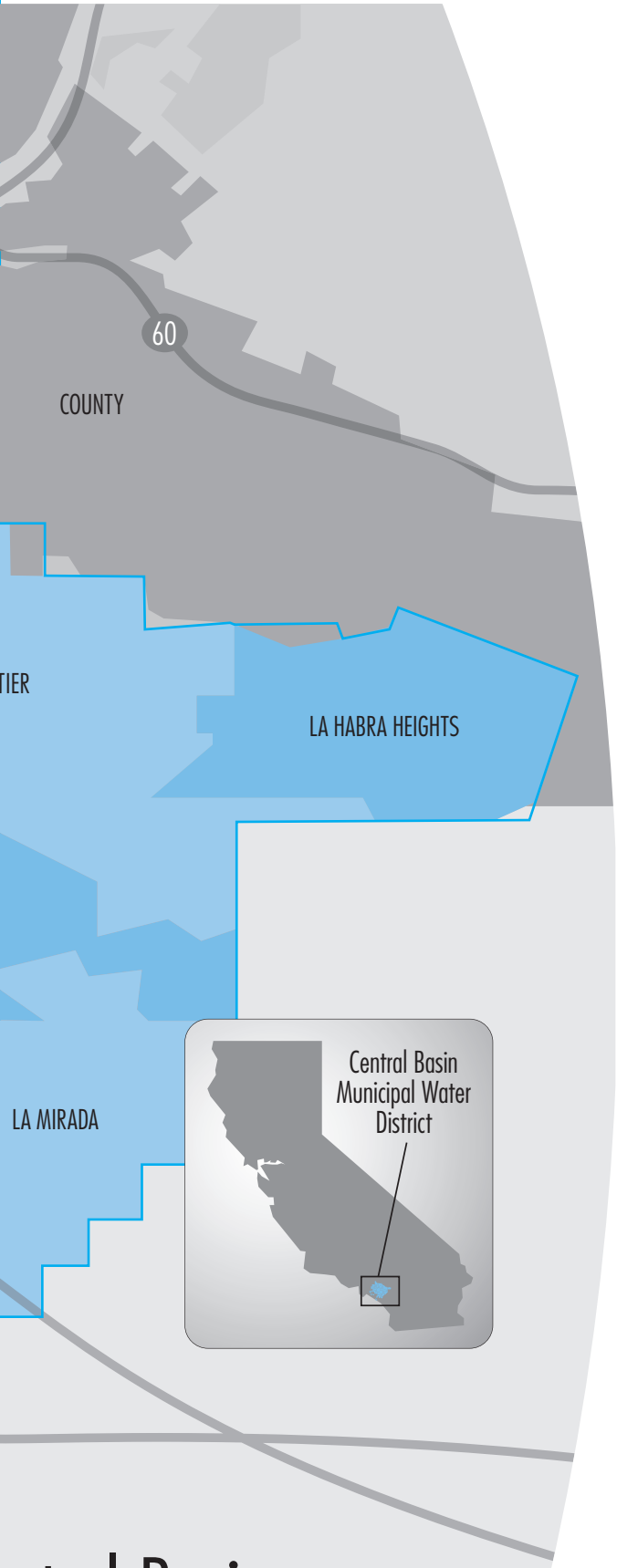

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